SCIENCE

9 August 1974

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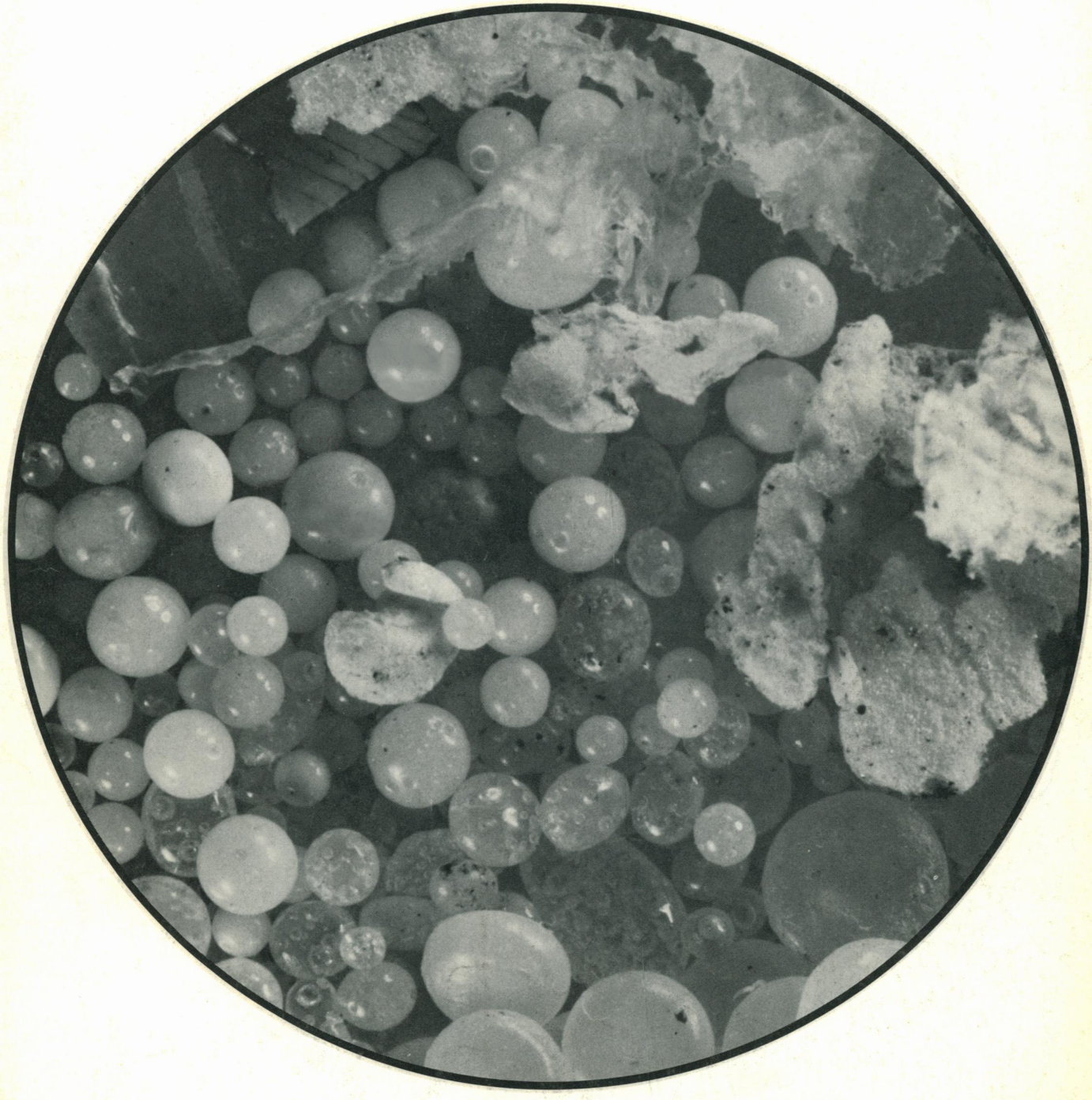
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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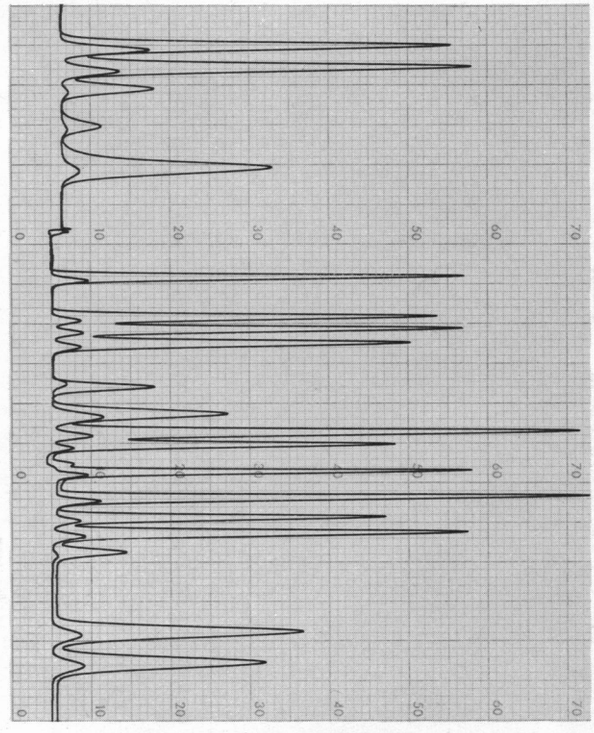

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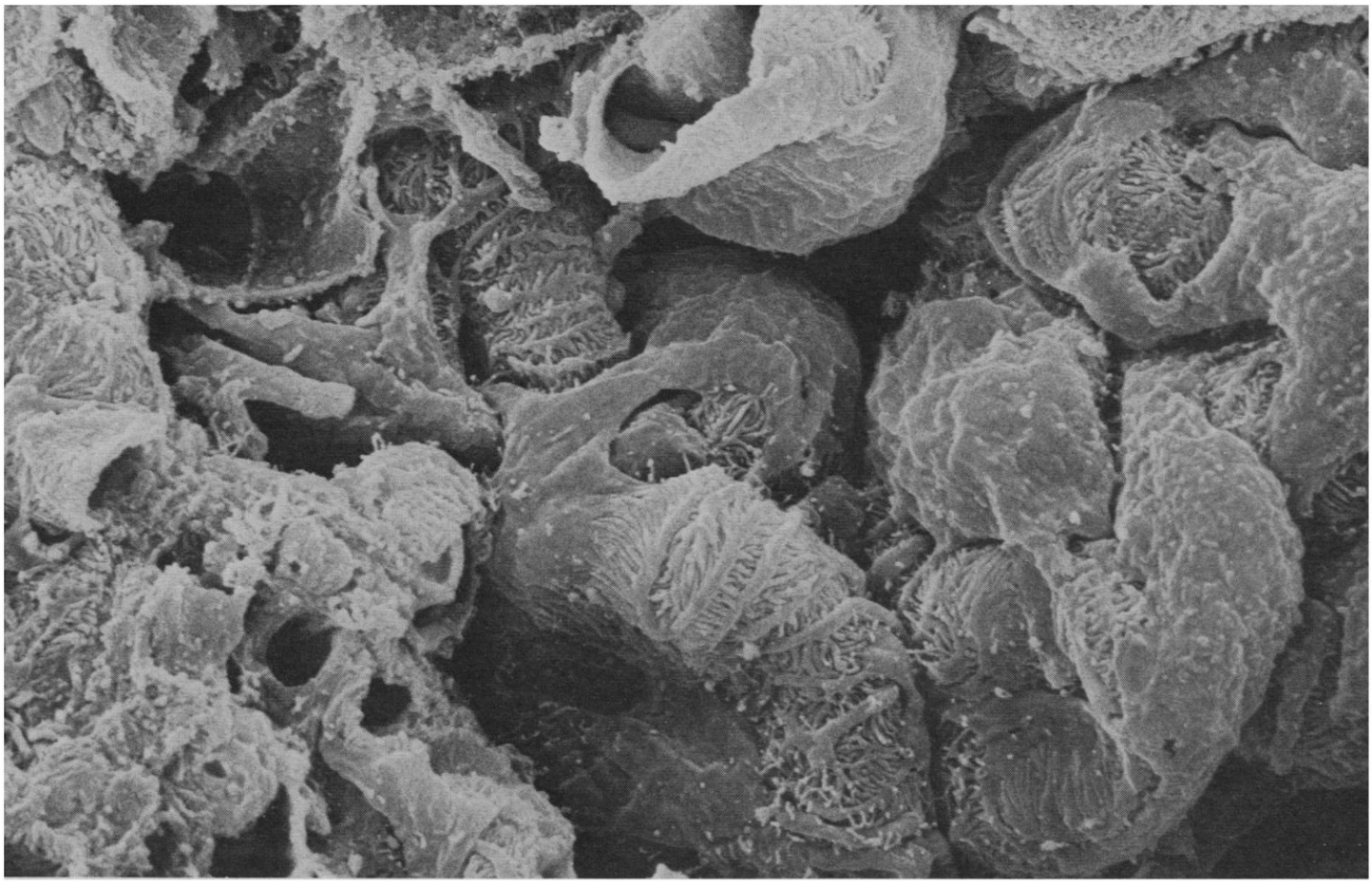

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SCIENCE

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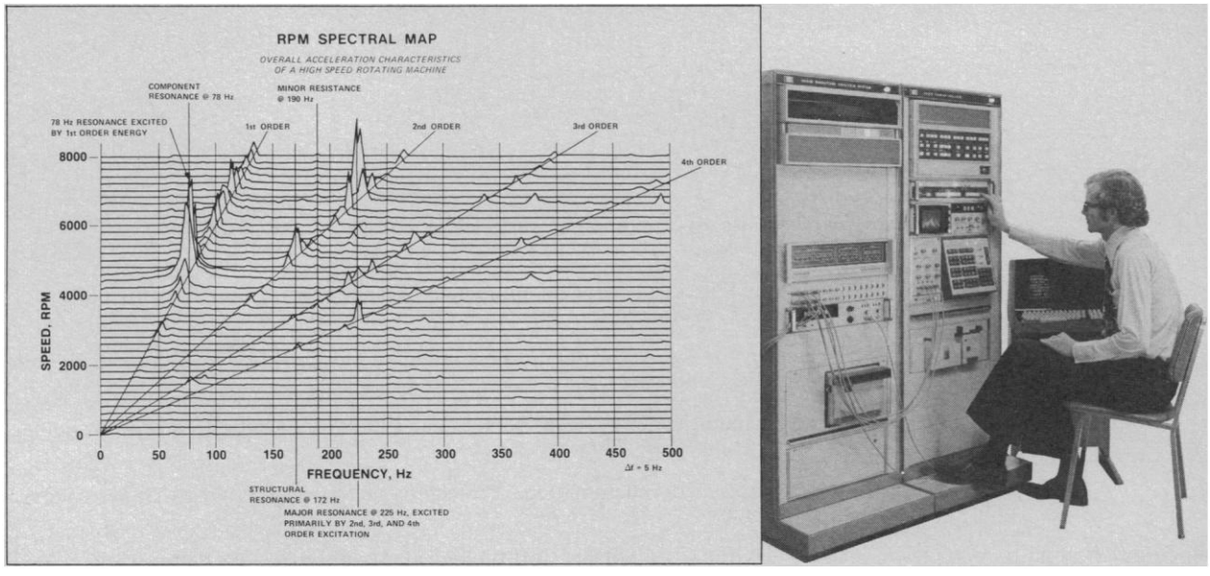
COVER

Plastic particles collected in surface waters over a broad area of the northwest Atlantic Ocean. The background is the 0.947-millimeter nylon mesh used in the neuston collecting net. See page 491. [Harold L. Pratt, National Marine Fisheries Service, Narragansett Laboratory, Narragansett, Rhode Island]



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This kind of intuitive signature analysis has all but passed from the scene as our machines have become more and more complex. In recent years, however, the computer has rehabilitated this powerful diagnostic tool for design analysis, production testing, and preventive maintenance of all kinds of rotating machinery from lawnmowers to jumbo jets.

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Want to take a detailed quantitative look at a resonance problem? Push another button and the system will produce a *spectrum analysis* (signal level *vs* frequency) at the troublesome speed, without retesting—because the original data is always available for further processing. If you suspect an order-related problem with one of the machine components, another pushbutton will get you an *order-tracking* plot (track any specified component and record its vibration as a function of speed). From this frequency-domain analysis, you can easily see the contribution of the suspected component to overall machine noise or vibration.

Three other frequency-domain analyses are available at the touch of a button: *order ratio* analysis, a convenient way to compare order-related component noise or vibration at different machine speeds; *composite power spectrum*, from which you can easily pinpoint the machine speeds that generate the most noise or vibration in a particular band of frequencies; and *time spectral map*, a three-dimensional plot that clearly shows all time-related noise and vibration.

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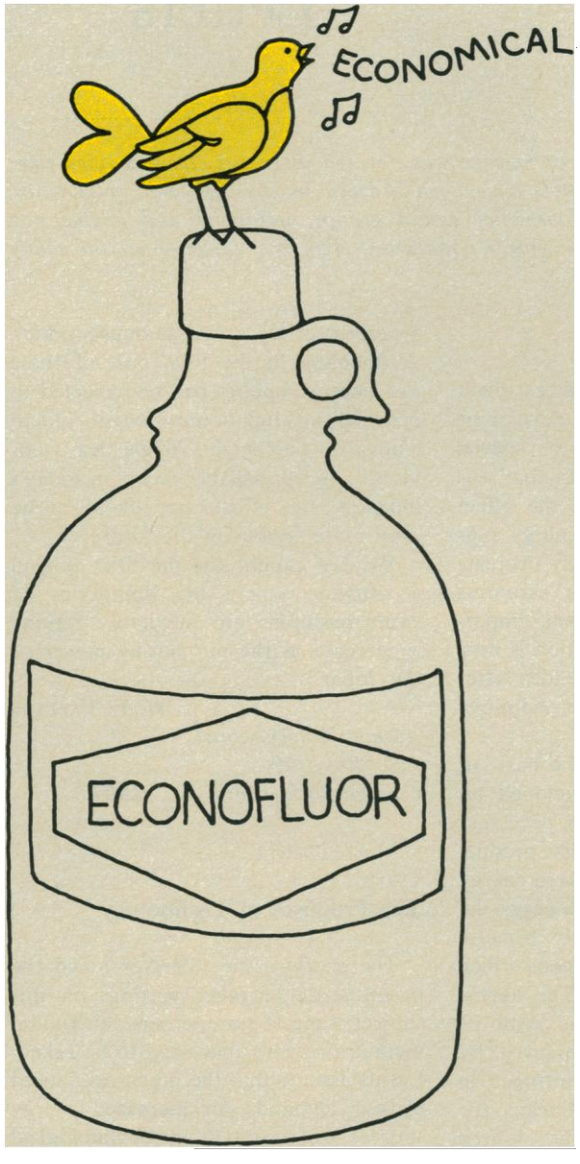

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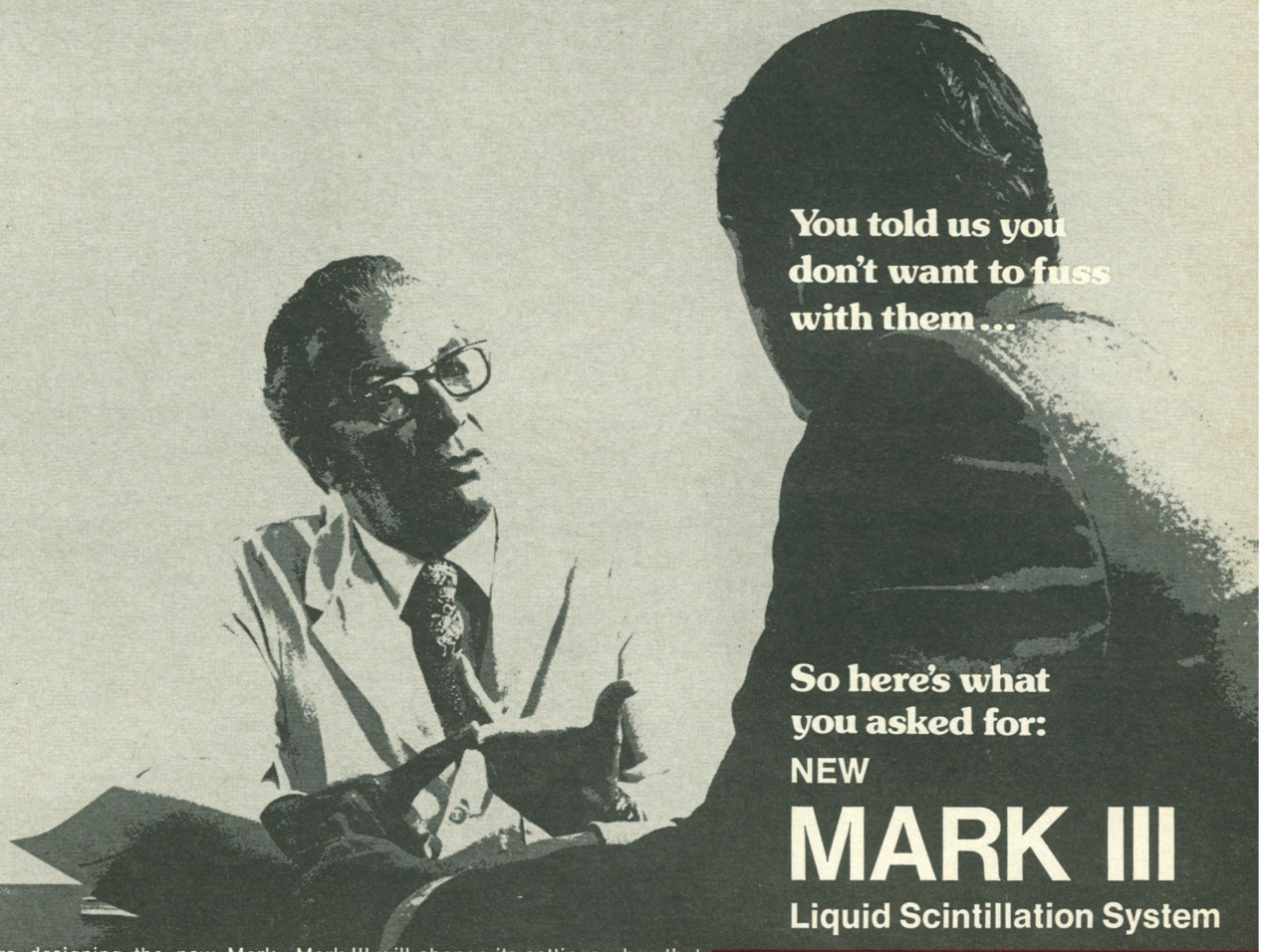

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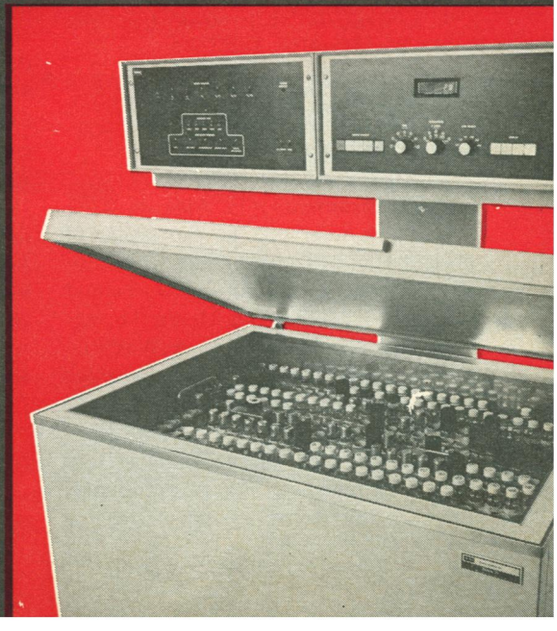

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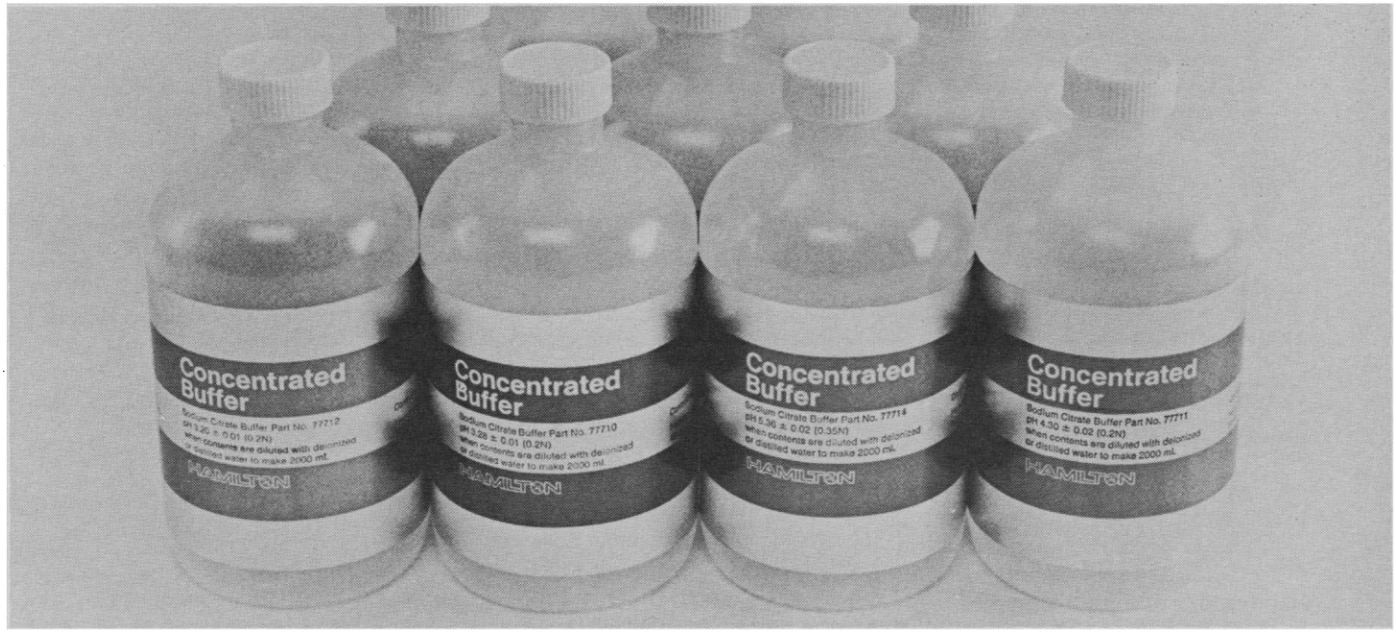
ALS-455

The case for Concentrated Buffers



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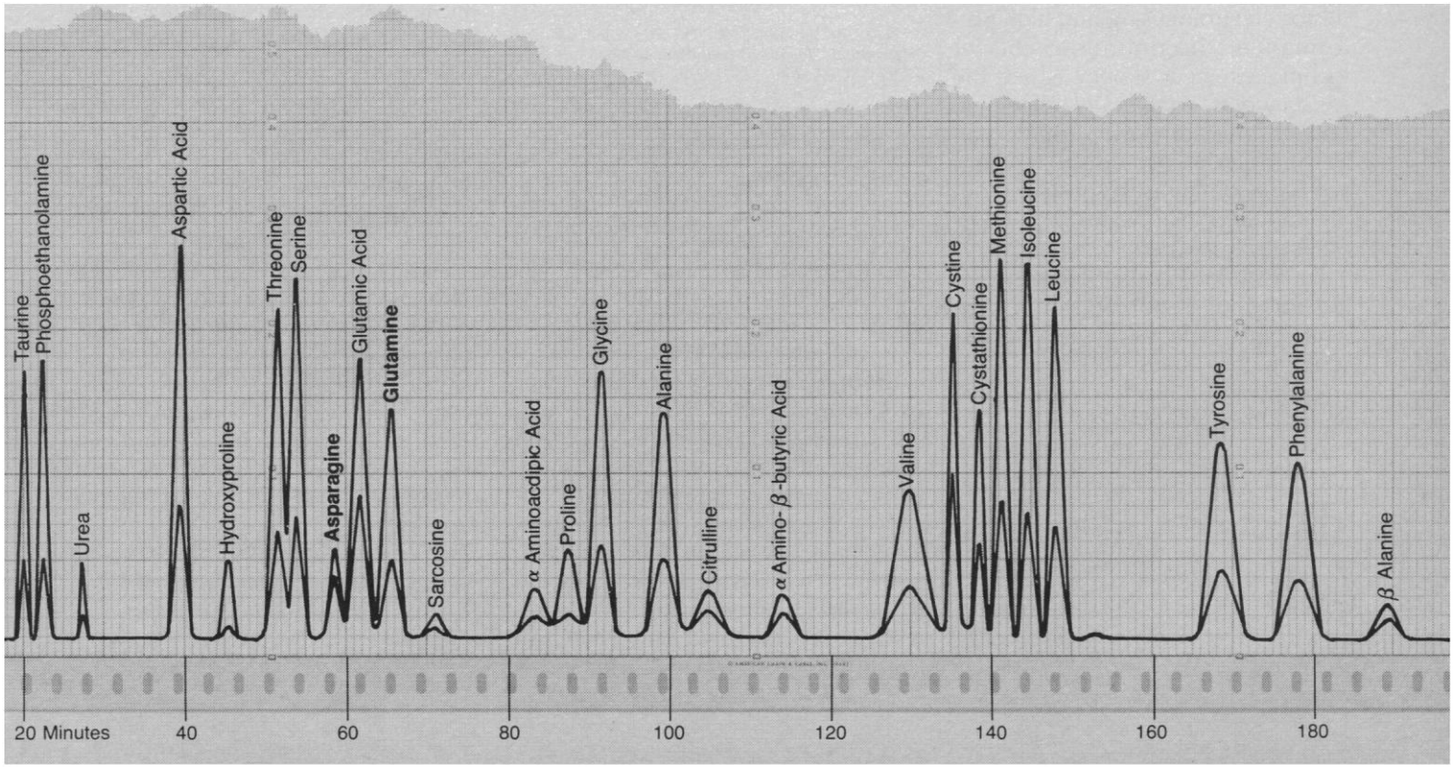


uncertainty in the estimates of ΔP, while the increased cost of production can usually be passed on to the consumer.

2) An investment which is justified at current sales levels would not be justified if sales fall, since it would increase the fixed cost of the industry.

3) The high cost of capital discourages energy-saving investment, since it raises both ΔK and the minimum acceptable value of r.

Initial investments are often more effective than alternatives in conserving energy, yet, initially the uncertainties are greatest and hence additional investments less likely.

As Berg points out, small companies are least able to make energy-saving investments. Not only is capital harder and more expensive for them to obtain, but they run a higher risk than the larger corporations which have an established market. The paradox is that those companies for whom price competition makes investments which save energy advisable (and hence price cuts possible) are the least likely to be able to make the investments. Large corporations, such as automobile, steel, and so forth, are much more able to set prices where they receive the highest return and hence have the least incentive to make energy-saving investments.

G. THOMAS

Department of Electrical Sciences, State University of New York, Stony Brook 11790

References

1. See, for example, R. G. D. Allen, *Macro-Economic Theory* (Macmillan, London, 1968).
2. *New York Times*, 24 January 1974, p. 1.

Energy and Food

I would like to correct two errors in the article by John S. Steinhart and Carol E. Steinhart (19 Apr., p. 307) on energy and food. They write, "A dramatic suggestion, to abandon chemical farming altogether, has been made by Chapman. His analysis shows. . . ."

First, in the article they cite (*1*), I discussed the economic consequences of regulating or prohibiting various agriculture chemicals. I did not suggest abandoning "chemical farming altogether." Their error, however, is understandable, since my original title was replaced by the inaccurate title "An end to chemical farming?" without my knowledge. Second, I discussed empirical results of other investigators; I undertook no new analysis. The points summarized by Steinhart and Steinhart are, however, worth considering. The consequences of high export demand and high energy prices will be in many respects similar to the effects of chemical regulation, namely, higher net income in farming, more acreage, less chemicals, and a retardation or reversal of emigration from agricultural areas. And, the competitive position of the family farm is improving vis-à-vis the corporate farm (*2*).

DUANE CHAPMAN

Department of Agricultural Economics, Cornell University, Ithaca, New York 14850

References

1. D. Chapman, *Environment (St. Louis)* **15** (No. 2), 12 (1973).
2. B. F. Stanton, *Cornell Agricultural Economics Staff Paper No. 74-8* (Dept. of Agricultural Economics, Cornell Univ., Ithaca, N.Y., 1974).

The distinction between "coastal" and "distant" fishing in Steinhart and Steinhart's article should be clarified, as the reader may be left with the impression that coastal fisheries are more susceptible to overfishing than distant fisheries.

The overwhelming preponderance of catches in the world's fisheries is made in coastal waters. For example, the National Marine Fisheries Service estimates that some 77 percent of the 1973 U.S. catch was taken within 12 miles of U.S. shores. Distant fishing is rarely conducted in mid-ocean, as the term might imply. It is most often distant in the sense that it is conducted off someone else's shores. For example, the more than 300 Soviet vessels fishing off the United States in February were, from their point of view, engaged in distant fishing; from our point of view, a good percentage of them were engaged in coastal fishing.

Distant fishing frequently exploits stocks which have been underexploited by the contiguous country. It is energy-intensive for the obvious reason that it takes a lot of fuel to move the fleet a long distance to the fishing grounds and to move the catch back home. But distant fisheries are more prone to overfishing than traditional coastal fisheries.

ROBERT W. SCHONING

National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Department of Commerce, Washington, D.C. 20235

We regret any erroneous implication that Chapman was advocating the abandoning of chemical farming.

The point raised by Schoning is an important one. Even the proposed "distant" fishing for Antarctic krill is still coastal fishing (although off an unoccupied coast). Sometimes such fishing is in underexploited areas—as the Antarctic case would be—but, all too frequently, fishing distant shores is the first step in overexploitation and leads to political difficulties (as in Iceland), economic difficulties, and overfishing (as in Peru).

JOHN S. STEINHART
CAROL E. STEINHART
Marine Studies Center, University of Wisconsin, Madison 53706

Geothermal Resources: Prospects for Development

May I offer a footnote to Geoffrey R. Robson's fine review "Geothermal electricity production" (19 Apr., p. 371).

On 12 July 1973, Pacific Energy Corporation (the geothermal operating arm of Hughes Aircraft Company) entered into an agreement with Pacific Gas and Electric Company (PG & E) under which it agreed to sell PG & E its established geothermal steam reserves (149 hectares) and to develop additional reserves (1304 hectares), and PG & E agreed to buy all the steam produced in that area, located within The Geysers geothermal field in Sonoma County, California. An initial 55-megawatt power plant will be installed by PG & E by 1977; additional power plants will be installed as additional geothermal reserves are established. PG & E is presently paying geothermal steam suppliers 3.73 mills per kilowatt-hour for steam supply and effluent disposal services. The Pacific Energy Corporation also holds additional leases within The Geysers (about 6000 hectares) that are uncommitted and has applied for federal geothermal leases in Oregon, Washington, Idaho, and Utah.

Barbier and Fanelli (*1*) report that the installed capacity at Larderello-Travalle in Italy is 405.6 megawatts. The installed capacity at The Geysers will be 516 gigawatts by November 1974 (*2*). The 20-megawatt geothermal power plant at Matsukawa, Japan, is owned and operated by the Japan Metals and Chemicals Company; a 10-megawatt plant has recently been installed there by Mitsubishi Mining Company.

While "dry (superheated) steam" field operation is relatively simple, as Robson notes, the work under way to demonstrate binary cycle systems is thought by several major companies to offer a more economical and efficient conversion process (*3*).

The dry steam produced at The Geysers is not only the result of encountering a vapor dominated reservoir. Superheating may also be a function of the thermodynamic process occurring in the well bore and the pipeline system.

One of the major obstacles to geothermal development in the United States is the fact that the federal tax laws do not refer to "geothermal resources" or provide any explicit tax treatment for exploration and drilling expenses.

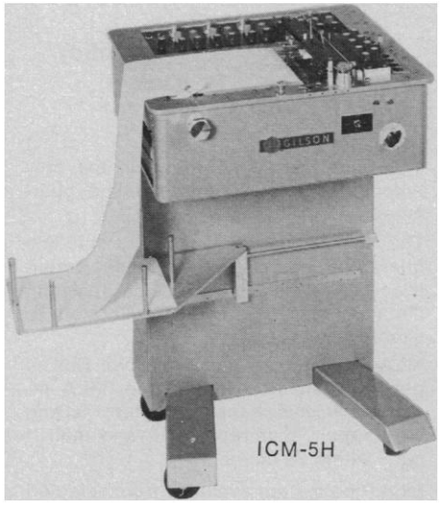
Congress is aware of this oversight, but the current political situation regarding the tax treatment of oil and gas companies has apparently prevented any consideration of the plight of the geothermal developer at this time. Until geothermal exploration costs can be confidently treated as current business deductions, it is unlikely that the rate of geothermal exploration will increase dramatically.

Some 100 companies, partnerships, and individuals have applied for federal geothermal leases (about 3.2 million hectares) since 1 January 1974, when the Federal Leasing Program began. It is hoped that the federal government will change the focus of its political attention and enact remedial legislation that will encourage the development of these lands.

DONALD F. X. FINN
Geothermal Energy Institute, Suite 426, 680 Beach Street, San Francisco, California 94109

References

1. E. Barbier and M. Fanelli, *Overview of Geothermal Exploration and Development in the World* (Istituto Internazionale per le Ricerche Geothermica, Pisa, Italy, 1973), p. 3.
2. *PG & E Environmental Data Statement for Geysers Unit 15* (Pacific Gas and Electric Co., San Francisco, 1974).
3. D. H. Cortez, B. Holt, A. J. L. Hutchinson, *Energy Sourc. J.* 1, 1 (1974); a contrary opinion is held that "theoretically a refrigerant can promise more [electrical] output than does water in the single flash process . . . [but] it appears that double flash can about match anything that refrigerants can hope to attain and is eminently more practical" [B. Wood, in *Geothermal Energy*, N. C. H. Armstead, Ed. (Unesco, Paris, 1973), p. 121].



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9 August 1974, Volume 185, Number 4150 SCIENCE

Hemispheric Cooperation in Science

A new mechanism for facilitating enhanced cooperation among scientists of the Western Hemisphere was created on 10 July 1974 at a meeting in Recife, Brazil, attended by scientists from Argentina, Brazil, Colombia, Mexico, the United States, and Venezuela.* A Coordinating Committee of the Associations for the Advancement of Science in the Americas was formed whose purposes are (i) to unite the American scientific community, to serve the development of the nations and the well-being of their peoples; (ii) to promote, in a cooperative manner, the use of science for the benefit of the people of the hemisphere; (iii) to stimulate the formation of associations for the advancement of science in those countries of the hemisphere which do not have such an association.

Impetus for the formation of the Coordinating Committee was provided by the success of the international meeting held in Mexico City on 20 June to 4 July 1973. Organized around the theme "Science and Man in the Americas," the gathering brought together some of the leading scientists of the Americas. The agenda covered many of the areas in which science and technology interact with societal problems common to the countries of this hemisphere. In a speech at the meeting, Dr. Glenn T. Seaborg, then chairman of the Board of Directors of AAAS, proposed the creation of an Association of Associations for the Advancement of Science. A series of exploratory discussions followed at Mexico City, and later in Bogota and San Francisco. These revealed a common desire to move toward implementing Dr. Seaborg's proposal by improving communication among this hemisphere's scientists. Accordingly another international meeting with a repeat of the theme "Science and Man in the Americas" is likely to occur in 1977. There was also talk of smaller gatherings devoted to single topics such as energy.

Considerable enthusiasm greeted a proposal to establish a journal tentatively titled *Science for Development*. This would be similar in many respects to *Science* but without research reports. It would contain a substantial proportion of articles devoted to major problems of Latin America, for example, tropical agriculture, natural products, arid lands, population, and technology transfer and deal with science related to such problems. The journal would be trilingual—English, Portuguese, and Spanish. Articles would have abstracts in all three languages. There would be coeditors for each of the languages, and the journal would probably be printed in one of the Spanish-speaking countries.

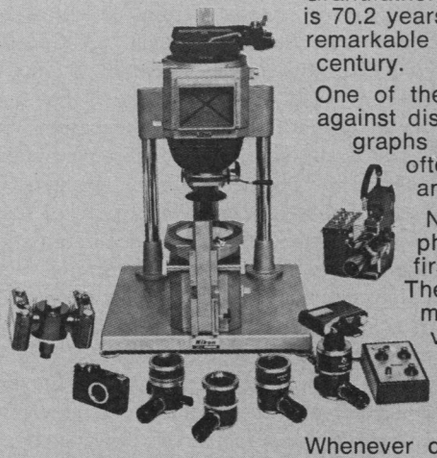
The geography of Latin America, with its nearly impassable mountains and jungles, has long dictated the existence of isolated communities and countries. In former years letters traveled more rapidly from one Latin city to New York than to a nearby country. But times are changing. A Colombian scientist told me, "We have passed from the age of the mule to the age of the airplane in not much more than a decade." Attitudes toward social problems are also changing. Throughout the Western Hemisphere there is growing awareness of the potential role of science and technology in development. The circumstances of the times make this moment an unusually propitious one in which to initiate cooperative efforts.

The path to success in joint hemispheric ventures will not be an easy one. There are differences in language and culture and in tempo and modes of doing business that will be difficult to surmount. However, the exploratory discussions were conducted in a considerate and civilized way leading to the belief that the activities of the Coordinating Committee could foster a pleasant and continuing useful interchange.

—PHILIP H. ABELSON

* Those attending included Alberto C. Taquini and Luis Antonio Santalo, Argentina; Oscar Sala and Luiz Edmundo de Magalhaes, Brazil; Carlos Perez Martinez, Colombia; Edmundo de Alba, Mexico; Leonard M. Rieser and Philip H. Abelson, United States; and Tulio Arends, Venezuela. Secretary of the Committee is Dr. Carlos Perez Martinez, Coordination Committee of the Associations for the Advancement of Science in the Americas, P.O. Box 783, Bucaramanga, Colombia.

Nikon is involved.



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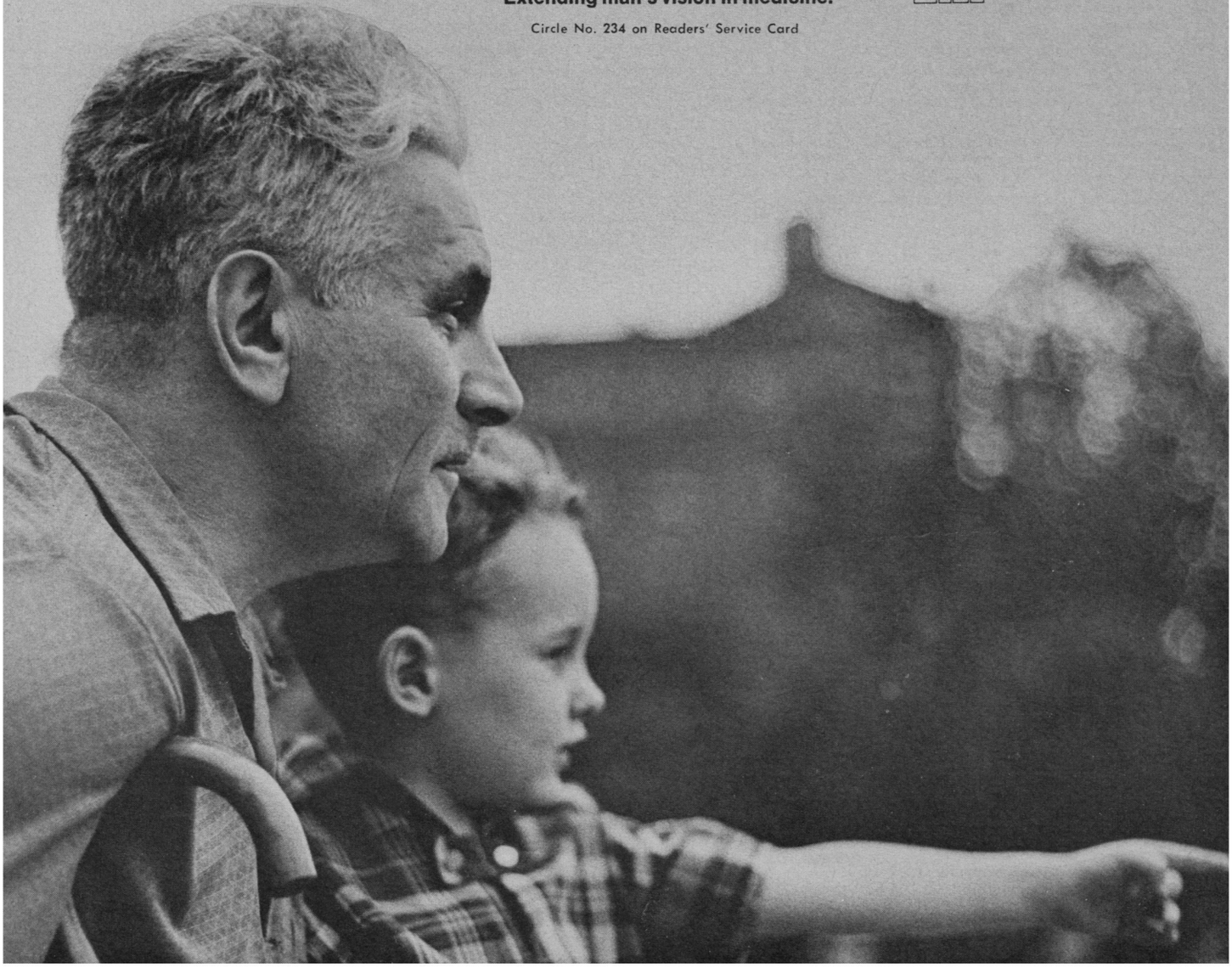

Nearshore Environment Conf., American Geophysical Union, Mystic, Conn. (D. F. Paskausky, Marine Sciences Inst., Univ. of Connecticut, Groton 06340)

9–13. **Medicinal Chemistry,** 4th intern. symp., Medicinal Chemistry Section, Intern. Union of Pure and Applied Chemistry, Noordwijkerhout, Netherlands. (Secretary, Merck Sharp & Dohme BV., Professional and Government Liaison, Waarderweg 39, P.O. Box 581, Haarlem, Netherlands)

9–13. **Nuclear Structure and Spectroscopy** Conf., Intern. Union of Pure and Applied Physics, Amsterdam, Netherlands. (H. P. Blok, Natuurkundig Lab. der Vrije Univ. de Boelelaan 1081, Amsterdam)

9–14. **Ampere on Magnetic Resonance and Related Phenomena,** 18th congr., Intern. Union of Pure and Applied Physics, Nottingham, England. (E. R. Andrew, Dept. of Physics, Univ. of Nottingham, University Park, Nottingham, NG7 2RD)

10–12. **Earth Environment and Resources** Conf., U.S. Environment and Resources Council, Inst. of Electrical and Electronics Engineers, and Univ. of Pennsylvania, Philadelphia. (E. P. Mercanti, 12415 Shelter Lane, Bowie, Md. 20715)

10–12. Institute of **Electrical and Electronics Engineers** and **Computer** Soc., 9th intern. annual conf., Washington, D.C. (T. N. Pyke, Jr., Inst. for Computer Science and Technology, Natl. Bureau of Standards, Washington, D.C. 20234)

11–13. Society for **Management Information Systems,** 6th annual conf., San Francisco, Calif. (Executive-Secretary, SMIS, 221 N. La Salle St., Chicago, Ill. 60601)

11–14. American **Ceramic** Soc., Structural Clay Products Div., Lexington, Ky. (F. P. Reid, ACS, 65 Ceramic Dr., Columbus, Ohio 43214)

12–14. American Assoc. for **Automotive Medicine,** Toronto, Ont., Canada. (A. Carriere, 801 Green Bay Rd., Lake Bluff, Ill. 60044)

13–14. Conference on **Conduction Electron Scattering in Metals,** Low Temperature Group, Inst. of Physics, Norwich, England. (Meetings Officer, IP, 47 Belgrave Sq., London, SW1 8QX, England)

15–19. **Power Generation** Conf., American Soc. of Civil Engineers, American Soc. of Mechanical Engineers, and Power Engineering Soc. of the Inst. of Electrical anl Electronics Engineers, Miami Beach, Fla. (J. J. Heagerty, Technical Conf. Services Office, IEEE, 345 E. 47 St., New York 10017)

15–20. International Symp. on **Macromolecules,** Intern. Union of Pure and Applied Chemistry, Madrid, Spain. (J. G. Fatou, Inst. de Plasticos y Caucho, Juan de la Cierva 3, Madrid-6.

16–18. International Symp. on **Chemical Kinetics Data for the Lower and Upper Atmosphere,** Task Group on Data for Chemical Kinetics, Committee on Data for Science and Technology, and Intern. Council of Scientific Unions, Warrenton, Va. (D. Garvin, Chemistry-B152, Natl. Bureau of Standards, Washington, D.C. 20234)

16–19. International **Power Sources** Symp., 9th, Brighton, Sussex, England. (D. H. Collins, P.O. Box 17, Leatherhead, Surrey, KT22 9QB, England)

16–21. **Magnetic Resonance in Biological Systems,** 6th intern. conf., Kandersteg, Switzerland. (K. Wüthrich, Inst. für Molekularbiologie und Biophysik, ETH-Hönggerberg, CH-8049 Zürich, Switzerland)

16–21. International Acad. of **Pathology,** 10th congr., Hamburg, Germany. (P. Gedigk, Pathologisches Inst. der Universität Bonn, Potsfach D-53, Bonn, FDR)

17–18. **Air Pollution Control** Assoc., 5th annual, Birmingham, Ala. (D. Meffert, Rust Engineering Co., P.O. Box 101, Birmingham 35202)

18–20. American **Ceramic** Soc., Electronics Div., Denver, Colo. (F. P. Reid, ACS, 65 Ceramic Dr., Columbus, Ohio 43214)

22–26. Asian–Australian Congr. of **Anesthesiologists,** 4th, Singapore, Malaysia. (G. Tay, 16 Sunset Terrace, Singapore-21)

22–26. Society of American **Foresters,** New York, N.Y. (H. R. Glascock, Jr., SAF, 1010 16th St., NW, Washington, D.C. 20036)

22–26. **Marine Technology** Soc., Washington, D.C. (R. W. Niblock, MTS, Suite 412, 1730 M St., NW, Washington, D.C. 20036)

22–27. International Soc. for **Electrochemistry,** 25th mtg., Brighton, England. (M. Fleischmann, Dept. of Chemistry, The University, Southampton SO9 5NH, England)

22–27. **Packaging and Transportation of Radioactive Materials,** 4th intern. symp., Nuclear Div., Union Carbide Corp., and U.S. Atomic Energy Commission, Miami Beach, Fla. (H. I. Cobert, Nuclear Div., Union Carbide Corp., P.O. Box Y, Oak Ridge, Tenn. 37830)

23–26. European **Geophysical** Soc., 2nd, Trieste, Italy. (A. Marussi, Istituto di Geodesia e Geofisica, Universita Degli Studi, Trieste)

23–27. International Congr. of **Infectious and Parasitic Diseases,** Warsaw, Poland. (J. Januszkiewicz, 01-201 Warszawa, Wolska 37, Poland)

23–27. Congress of **Neurological Surgeons,** Vancouver, B.C. Canada. (R. G. Ojemann, Massachusetts General Hospital, Boston 02114)

23–27. World **Energy** Conf., 50th anniversary mtg., U.S. National Committee, Detroit, Mich. (D. E. Hart, Engineers Joint Council, 345 E. 47 St., New York 10017)

25–27. North American Conf. on **Motor Vehicle Emission Control,** 3rd, Texas Air Control Board, San Antonio. (H. E. Sievers, TACB, 8520 Shoalcreek Blvd., Austin, Tex. 78758)

25–28. American **Ceramic** Soc., Materials and Equipment and Whitewares Divs., Bedford, Pa. (F. P. Reid, ACS, 65 Ceramic Dr., Columbus, Ohio 43214)

29–2. American **Ceramic** Soc., Basic Science and Nuclear Divs., Williamsburg, Va. (F. P. Reid, ACS, 65 Ceramic Dr., Columbus, Ohio 43214)

29–2. American **Oil Chemists'** Soc., Philadelphia, Pa. (J. C. Lyon, AOCS, 508 S. Sixth St., Champaign, Ill. 61820)

30–2. **Biology of Aging,** Valley Forge, Pa. (R. C. Adelman, Fels Research Inst., 3420 N. Broad St., Philadelphia, Pa. 19140)

30–2. Society for **Industrial and Applied Mathematics,** Montreal, P.Q., Canada. (J. K. Cullum, IBM–T. J. Watson Research Center, P.O. Box 218, Yorktown Heights, N.Y. 10598)

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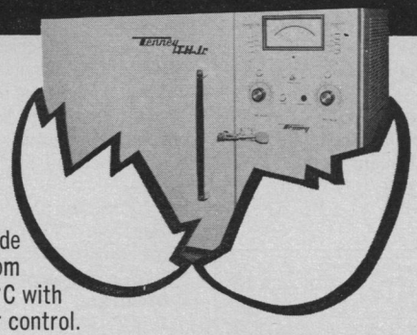

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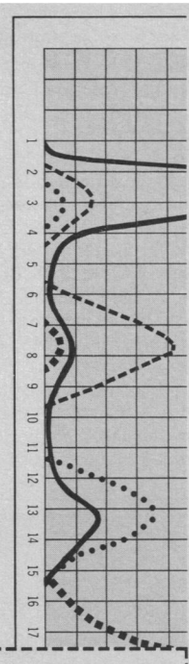

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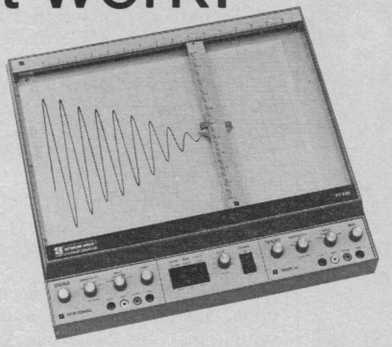

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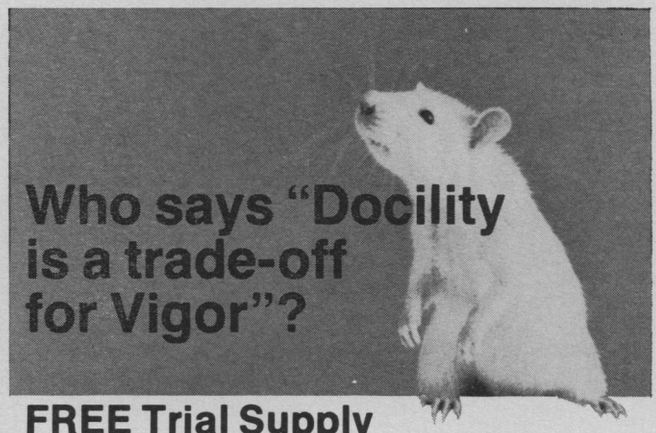

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30–2. **Radiation and the Lymphatic System,** 14th Hanford Biology Symp., U.S. Atomic Energy Commission and Battelle Memorial Inst., Richland, Wash. (J. A. Harrison, Biology Dept., Battelle, Pacific Northwest Labs., Richland 99352)

30–3. International Symp. on **Information Systems: Connection and Compatibility,** Intern. Atomic Energy Agency, Varna, Bulgaria. (G. Seiler, Div. of External Relations, IAEA, P.O. Box 590, Karntner Ring 11, A-1011 Vienna, Austria)

30–4. American **Meteorological** Soc., Atlanta, Ga. (AMS, 46 Beacon St., Boston, Mass. 02108)

30–5. International **Astronautical** Congr., 25th, Intern. Astronautical Federation, Amsterdam, Netherlands. (IAF, 250 Rue Saint-Jacques, 75005 Paris, France)

October

1–3. American **Nuclear** Soc., Los Alamos, N.M. (D. R. Smith, LASL, P.O. Box 1663, Los Alamos 87544)

2–5. American **Medical Writers'** Assoc., Los Angeles, Calif. (L. Sablack, AMWA, 9650 Rockville Pike, Bethesda, Md. 20014)

3–5. Southeastern **Cancer Research** Assoc., Atlanta, Ga. (W. E. Criss, Dept. of Obstetrics-Gynecology, Univ. of Florida Medical School, Gainesville 32601)

3–5. American **Ceramic** Soc., Refractories Div., Bedford, Pa. (F. P. Reid, ACS, 65 Ceramic Dr., Columbus, Ohio 43214)

3–5. Central Assoc. of **Obstetricians and Gynecologists,** New Orleans, La. (M. Lurie, 6650 Northwest Hwy., Chicago, Ill. 60631)

3–9. **Pediatrics,** 14th intern. congr., Buenos Aires, Argentina. (C. Gianantonio, ICP, Casilla de Correo 3177, Buenos Aires)

4–5. American Soc. of **Ophthalmologic and Otolaryngologic Allergy,** Dallas Texas (H. M. Mann, 1600 University Ave., Grand Forks, N.D. 58201)

4–11. American Soc. of **Clinical Pathologists,** Washington, D.C. (M. Damron, Manager of Convention Services, 2100 W. Harrison St., Chicago, Ill. 60612)

6–8. Latin American Soc. of **Hepatology,** 14th congr., Caracas, Venezuela. (P. J. Grases, Apdo Postal 50794, Caracas)

6–10. American Acad. of **Ophthalmology and Otolaryngology,** Dallas, Tex. (C. M. Kos, 15 Second St., SW, Rochester, Minn. 55901)

6–10. **Sigma Xi,** Fontana, Wis. (T. T. Holme, 345 Whitney Ave., New Haven, Conn. 06510)

6–10. American Institute of **Ultrasound in Medicine,** 19th annual, Seattle, Wash. (AIUM, 333 W. Kinnear Place, Seattle 98119)

6–10. **Water Pollution Control** Federation, Denver, Colo. (WPCF, 3900 Wisconsin Ave., NW, Washington, D.C. 20016)

6–11. International Soc. of **Planetarium Educators,** Atlanta, Ga. (R. C. Tate, Harper Planetarium, 3300 Collier Dr., NW, Atlanta 30331)

7–9. **Dermatopathology** Symp., New York Univ. School of Medicine, New York. (Office of the Recorder, New York Univ. Post-Graduate Medical Sch., 550 First Ave., New York 10016)

7–9. **Electronics and Aerospace Systems** Conf., Aerospace and Electronics Systems, Inst. of Electrical and Electronics Engineers, and the Washington Section of the IEEE, Washington, D.C. (L. R. Kitty, Suite 700, 1629 K St., NW, Washington, D.C. 20006)

7–9. International Conf. on **Geothermal Energy for Industrial, Agricultural and Commercial-Residential Uses,** Oregon Inst. of Technology, Klamath Falls. (W. Williams, Geothermal Conf., P.O. Box 1901, Klamath Falls 97601)

7–9. Canadian **Spectroscopy** Symp., 21st., Spectroscopy Soc. of Canada, Ottawa, Ont. (J. L. Dalton, Dept. of Energy, Mines and Resources, Mines Branch, 555 Booth St., Ottawa K1A 0G1)

7–10. **Clay Minerals** Soc., 23rd mtg., Cleveland, Ohio. (J. Hower, Dept. of Geology, Case Western Reserve Univ., Cleveland 44106)

7–11. **Accuracy in Trace Analysis: Sampling, Sample Handling, and Analysis,** 7th symp., Inst. for Materials Research, Natl. Bureau of Standards, Gaithersburg, Md. (P. D. LaFleur, B108 Reactor Bldg., NBS, Washington, D.C. 20234)

7–11. **Materials Research** Symp., 7th, Natl. Bureau of Standards, Gaithersburg, Md. (P. D. LeFleur, B108 Reactor Bldg., NBS, Washington, D.C. 20234)

7–11. American **Dietetic** Assoc., Philadelphia, Pa., (R. M. Crum, ADA, 620 N. Michigan Ave., Chicago, Ill. 60611)

7–11. International Working Conf. on **Stored-Product Entomology,** Savannah, Ga. (Organizers, Working Conf. on Stored-Product Entomology, c/o Stored-Product Inst. Research and Development Lab., U.S. Dept. of Agriculture, P.O. Box 5125, Savannah 31403)

8–11. American **Vacuum** Soc., 21st conf.,

Anaheim, Calif. (J. H. Singleton, Westinghouse Research Labs., Churchill Boro Beulah Rd., Pittsburgh, Pa. 15235)

8–13. Society for **Clinical and Experimental Hypnosis**, Montreal, P.Q., Canada. (M. Kenn, SCEH, Suite 1P, 205 West End Ave., New York 10023)

9–10. Conference on **Display Devices and Systems**, Electron Devices Group of the Inst. of Electrical and Electronics Engineers, Soc. for Information Display, and Advisory Group on Electron Devices, New York, N.Y. (T. Henion, Palisades Inst., 201 Varick St., New York 10014)

9–11. American **Ceramic** Soc., Glass Div., Bedford, Pa. (F. P. Reid, ACS, 65 Ceramic Dr., Columbus, Ohio 43214)

9–11. International Symp. on **Electronic Structure of the Actinides**, Argonne National Lab., Argonne, Ill. (F. Y. Fradin, Materials Science Div., Argonne Natl. Lab., Argonne 64039)

9–11. International Congr. on **Obesity**, London, England. (K. Sollyl, 22 Montagu St., London W1H 2BR)

9–11. American Assoc. of **Textile Chemists and Colorists**, New Orleans, La. (W. R. Martin, Jr., P.O. Box 12215, Research Triangle Park, N.C. 27709)

10–11. **Geodesy/Solid-Earth and Ocean Physics Research**, 8th conf., American Geophysical Union, Defense Mapping Agency, Natl. Aeronautics and Space Administration, Natl. Oceanic and Atmospheric Administration, Ohio State Univ., U.S. Geological Survey, Columbus, Ohio. (AGU, 1707 L St., NW, Washington, D.C. 20036)

10–11. Midwest **Quality Control** Conf., 29th, Automotive, Electronics, Inspection, and Aircraft and Missile Divs. of the American Soc. for Quality Control, Indianapolis, Ind. (D. L. Cheak, Code 410, Naval Avionics Facility, 21st and Arlington Ave., Indianapolis 46218)

10–12. Southern Soc. of **Anatomists**, Morgantown, W.Va. (D. S. Jones, West Virginia Univ. Medical Center, Morgantown 26506)

10–12. Western **Industrial Medical** Assoc., Los Angeles, Calif. (H. J. Martin, WIMA, 354 21st St., Oakland, Calif. 94612)

10–13. International **Spore** Conf., 6th, American Soc. for Microbiology, East Lansing, Mich. (R. N. Costilow, Kellogg Center for Continuing Education, Michigan State Univ., East Lansing 48824)

11–14. National Assoc. of **Biology Teachers**, New York, N.Y. (J. P. Lightner, NABT, 1420 N St., NW, Washington, D.C. 20005)

12. **Paleontological Research Institution**, Ithaca, N.Y. (K. V. W. Palmer, PRI, 1259 Trumansburg Rd., Ithaca 14850)

12–16. American Soc. of **Anesthesiologists**, Washington, D.C. (J. W. Andes, 515 Busse Hwy., Park Ridge, Ill. 60068)

12–16. American Soc. of **Oral Surgeons**, 56th annual, Las Vegas, Nev. (ASOS Committee on Scientific Sessions, Suite 930, 211 E. Chicago Ave., Chicago, Ill. 60611)

13–17. **Corrosion Problems in Energy Conversion and Generation** Symp., Electrochemical Soc., New York, N.Y. (C. S. Tedmon, Jr., Room 3A48, Bldg. K-1, Research and Development Center, General Electric Co., P.O. Box 8, Schenectady, N.Y. 12301)

13–17. **Electrochemical** Soc., 146th annual, New York, N.Y. (V. H. Branneky, P.O. Box 2071, Princeton, N.J. 08540)

13–17. American Soc. for **Information Science**, Atlanta, Ga. (J. I. Smith, ASIS, 1155 16th St., NW, Washington, D.C. 20036)

13–18. Pacific **Dermatologic** Assoc., Las Vegas, Nev. (F. Beardsley, 180 Mark Twain Ave., Reno, Nev. 89502)

13–19. World Congr. of **Gastroenterology**, 5th, Mexico, D.F., Mexico. (WCG, Av. Veracruz 93, Mexico 11, D.F.)

14–17. American **Chemical** Soc., 106th Rubber Div. mtg., Philadelphia, Pa. (H. W. Day, DuPont Co., 140 Federal St., Boston, Mass. 02110)

14–17. American Acad. of **Family Physicians**, Los Angeles, Calif. (R. Tusken, 1740 W. 92 St., Kansas City, Mo. 64114)

14–17. Association of American **Medical Colleges**, 85th annual, Chicago, Ill. (AAMC, Suite 200, 1 Dupont Circle, NW, Washington, D.C. 10036)

14–17. Association of **Official Analytical Chemists**, 88th annual, Washington, D.C. (L. G. Ensminger, AOAC, Box 540, Benjamin Franklin Sta., Washington, D.C. 20044)

14–18. American **Ornithologists' Union**, Norman, Okla. (G. E. Watson, Div. of Birds, Museum of Natural History, Smithsonian Inst., Washington, D.C. 20560)

14–18. Conference on the **Precipitation Scavenging of Atmospheric Aerosols and Gases**, U.S. Atomic Energy Commission, Champaign, Ill. (R. C. Semonin, Atmospheric Sciences Section, Illinois State Water Survey, Box 232, Urbana 61801)

14–19. Association of **Engineering Geologists**, Denver, Colo. (W. P. Rogers, AEG, Box 15124, Denver 80215)

14–19. **Psychology** Soc., Paris, France. (P. C. Haber, 100 Beekman St., New York 10038)

15. Oak Ridge **Associated Universities**, Oak Ridge, Tenn. (W. G. Pollard, ORAU. P.O. Box 117, Oak Ridge 37830)

15–17. Conference on the **Atmosphere of Venus**, Goddard Inst. for Space Studies, New York, N.Y. (J. E. Hansen, 2880 Broadway, New York 10025)

15–17. **Biological Safety** Conf., 17th, Research Triangle Park, N.C. (L. A. Taylor, Becton, Dickinson and Co. Research Center, P.O. Box 12016, Research Triangle Park 27709)

15–17. **Human Factors** Soc., Huntsville, Ala. (M. G. Knowles, HFS, P.O. Box 1369, Santa Monica, Calif. 90406)

15–18. American **Chemical** Soc., 10th western regional mtg., San Francisco, Calif. (P. C. Condit, Patent Dept., Chevron Research Co., 576 Standard Ave., Richmond, Calif. 94802)

15–18. Society for **Experimental Stress Analysis**, New Haven, Conn. (B. E. Rossi, SESA, 21 Bridge Sq., Westport, Conn. 06880)

15–18. **Optical** Soc. of America, Houston, Tex. (J. W. Quinn, OSA, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

15–19. American Assoc. of **Stratigraphic Palynologists**, 7th annual mtg., Calgary, Alberta, Canada. (L. V. Hills, Dept. of Geology, Univ. of Calgary, Calgary, T2N 0Z7)

16–18. **Biological Resources of the**

Chihuahuan Desert Region, United States and Mexico, intern. symp., Texas Parks and Wildlife Dept., Alpine. (D. H. Riskind, Resource Management Section, Texas Parks and Wildlife Dept., John H. Reagan Bldg., Austin 78701)

16–18. American **Cancer** Soc., New York, N.Y. (L. W. Adams, 219 E. 42 St., New York 10017)

16–18. National Council of **International Health**, Reston, Va. (J. S. Cowen, P.O. Box 4909, Chicago, Ill. 60680)

16–18. **Operations Research** Soc. of America, jointly with the Inst. of **Management Sciences**, San Juan, Puerto Rico. (A. Riesco, P.O. Box 2342, Mayaguez, P.R. 00708)

16–19. American Soc. of **Human Genetics**, Portland, Ore. (W. E. Nance, Dept. of Medical Genetics, Indiana Univ. Medical Center, Indianapolis 46202)

16–20. Irish **Otolaryngological** Soc., Cork. (G. D. L. Symth, Eye and Ear Clinic, Falls Rd., Belfast 4, U.K.)

17–18. European Soc. on **Pediatric Hematology and Immunology** and European Soc. of **Pediatric Oncology**, Genoa, Italy. (W. H. Hitzig, Kinderspital, 8032 Zurich, Switzerland)

17–19. Central **Neuropsychiatric** Assoc., Ann Arbor, Mich. (D. W. Sprague, 1417 Marlowe Ave., Lakewood, Ohio 44107)

17–19. American Assoc. for the **Surgery of Trauma**, Hot Springs, Va. (J. A. Boswick, Jr., Univ. of Colorado Medical Center, 4200 E. Ninth Ave., Denver, Colo. 80220)

17–19. National Council of **Teachers of Mathematics**, Southeastern section, Memphis, Tenn. (NCTM, 1906 Association Dr., Reston, Va. 22091)

18–20. National Council of **Teachers of Mathematics**, North central section, Minneapolis, Minn. (NCTM, 1906 Association Dr., Reston, Va. 22091)

19. New Mexico **Acad. of Science**, Las Vegas. (L. M. Shields, Environmental Health Div., New Mexico Highlands Univ., Las Vegas 87701)

19–22. American **Coke and Coal Chemicals** Inst., White Sulphur Springs, W.Va. (L. C. Ferguson, ACCCI, 1010 16th St., NW, Washington, D.C. 20036)

19–24. American Acad. of **Pediatrics**, San Francisco, Calif. (R. G. Frazier, 1801 Hinman Ave., Evanston, Ill. 60204)

20–23. Society for **Neuroscience**, 4th annual mtg., St. Louis, Mo. (SN, Room 200A, Lee Bldg., 9650 Rockville Pike, Bethesda, Md. 20014)

20–24. American Assoc. of **Cereal Chemists**, Montreal, P.Q., Canada. (R. J. Tarleton, AACC, 3340 Pilot Knob Rd., St. Paul, Minn. 55121)

20–24. American **Public Health** Assoc., 102nd annual mtg., New Orleans, La. (J. R. Kimmey, APHA, 1015 18th St., NW, Washington, D.C. 20036)

20–26. International **Cancer** Congr., 11th, Intern. Union against Cancer, Florence, Italy. (P. A. Gardner, IUAC, Div. of Medical Sciences, Natl. Research Council, 2101 Constitution Ave., NW, Washington, D.C. 20418)

20–26. **Physiological Sciences**, 26th intern. congr., Intern. Union of Physiological Sciences, New Delhi, India. (S. K. Manchanda, Dept. of Physiology, All India Inst. of Medical Sciences, Ansari Nagar, New Delhi-16)

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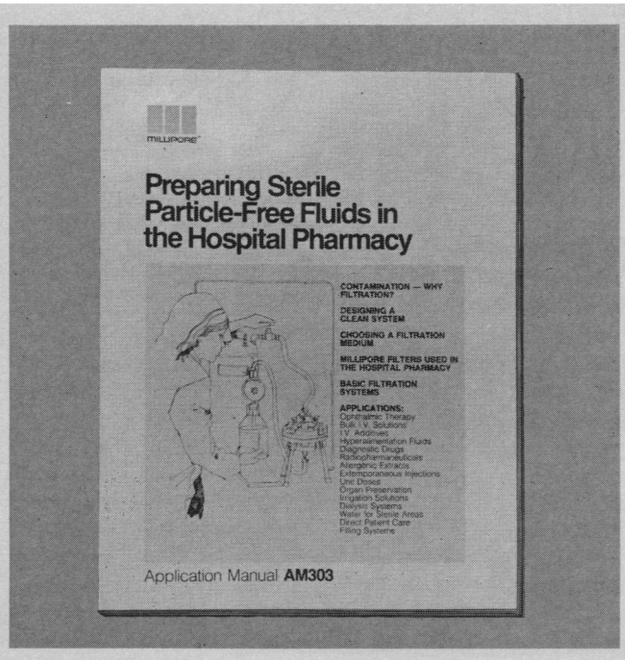

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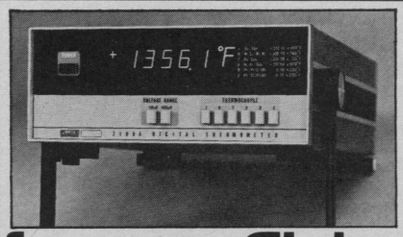

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The model FX60 features replacement of the standard keyboard with a light pen control system which allows for complete control of each operating parameter. The device is applicable to carbon or hydrogen isotopic analyses. Sample tubes up to 10 millimeter (outside diameter) are standard. JEOL Analytical Instruments, Incorporated. Circle No. 894 on Readers' Service Card.

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Labsource HG-125 provides nearly 18 watts in the far ultraviolet, 33 watts in the near ultraviolet, and 29 watts in the visible spectrum. Line and continuum energy is emitted with strong emission at 245, 313, 436, 546, and 578 nanometers and a very intense line at 365 nanometers. Three fiber optic light guides and a set of six optical glass filters comprise the standard system offered with this source. The lamp itself is a high-pressure mercury vapor source housed in anodized extruded material to permit cooling without a blower. PBL International, Incorporated. Circle No. 896 on Readers' Service Card.

Krypton Laser

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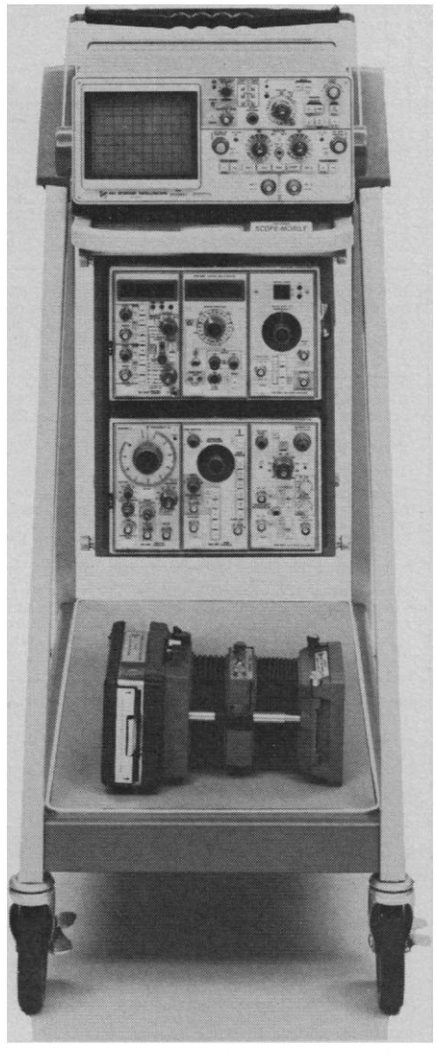

Fig. 1. With the Medical Instrument Calibration System from Tektronix, hospital and laboratory troubleshooting of electronic apparatus is facilitated. The modular components may be removed from the main frame and used in tight spaces for on-site calibration.

Literature

Organic Chemicals Catalog Number 47 contains data on nearly 6000 chemicals with over 1000 illustrated structural formulas. Eastman Kodak Company. Circle No. 897 on Readers' Service Card.

Ultek D-I Pumps covers a line of ion pumps with full specifications, dimensional drawings and photographs. Perkin-Elmer Ultek, Incorporated. Circle No. 898 on Readers' Service Card.

Portable Digital Transducer/Strain Indicators describes an 8-channel device and a 20-channel device for laboratory or field applications. Strainsert. Circle No. 899 on Readers' Service Card.

Chromatography Notes is a quarterly newsletter devoted to liquid separations, packing materials, and instrumentation. Waters Associates. Circle No. 900 on Readers' Service Card.

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