SCIENCE

31 March 1967

Vol. 155, No. 3770

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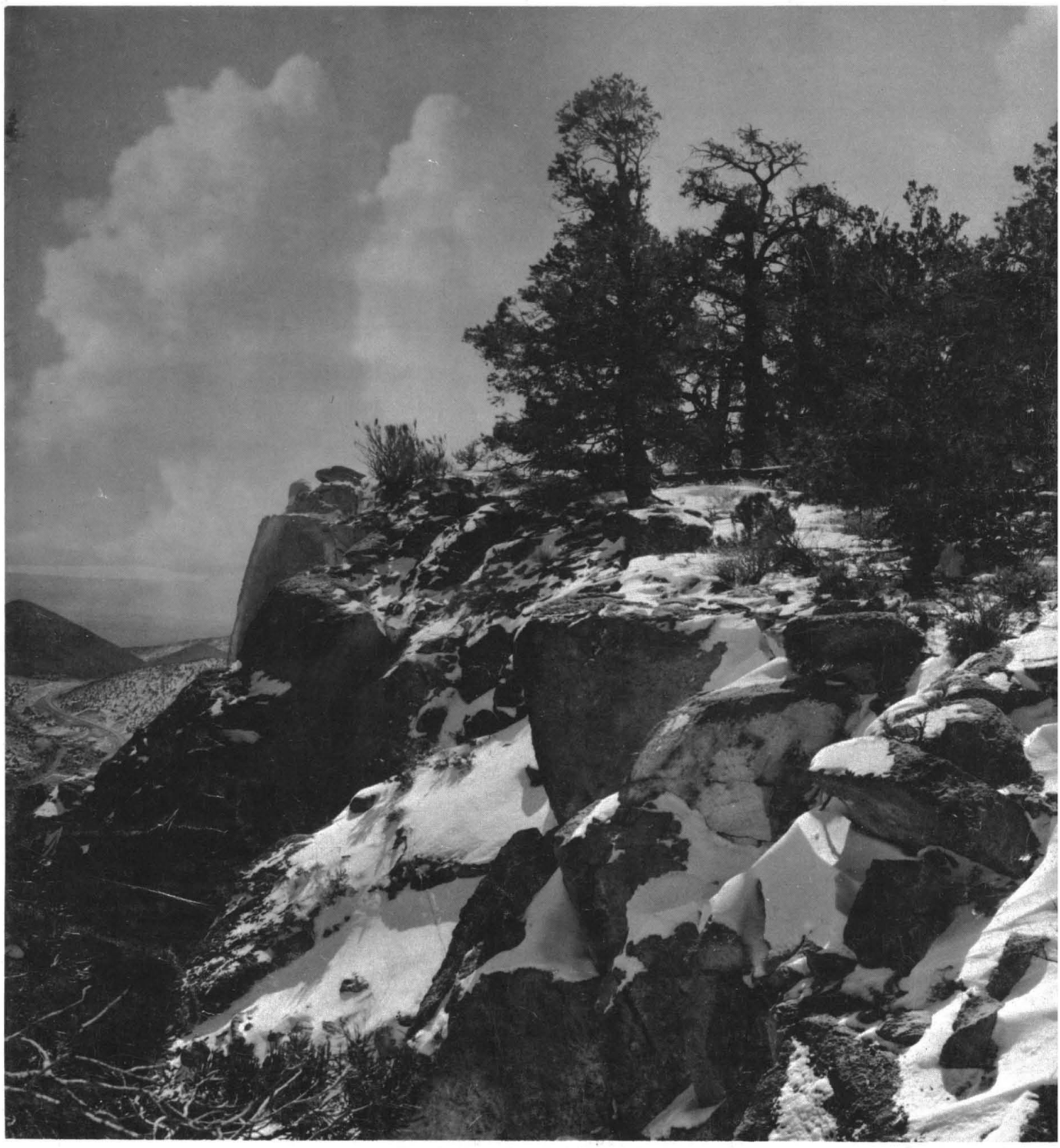

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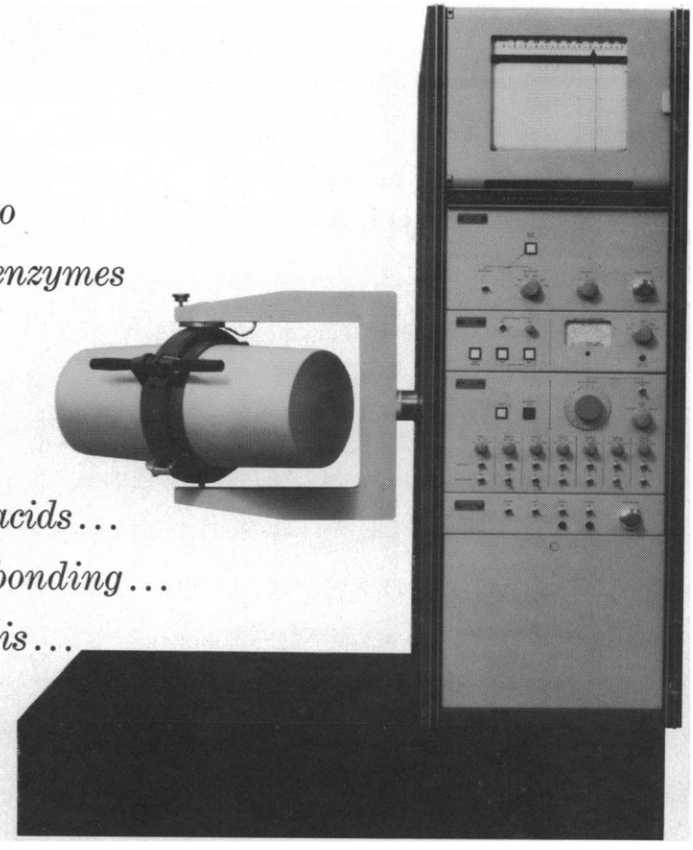

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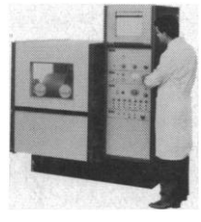
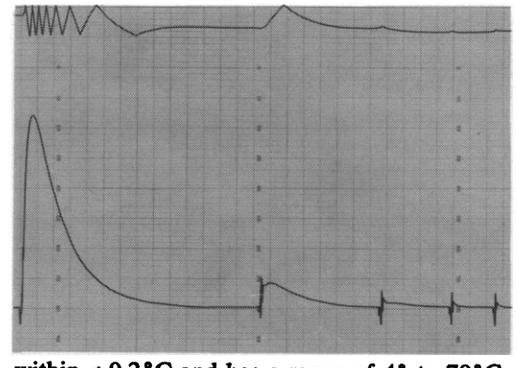


An environmental temperature enclosure, shown on the Model 190B at right, maintains operating temperature of the instrument to within ±0.2°C and has a range of 4° to 70°C.



The Microcalorimeter records rate of heat flow in microcalories per second with time. A representative trace is shown above. It reflects heats of reaction from aldolase cleavage of fructose-1,6-diphosphate. Integration trace, top, facilitates calculation. For additional information on the Beckman Microcalorimeter, write for Data File 190-5.

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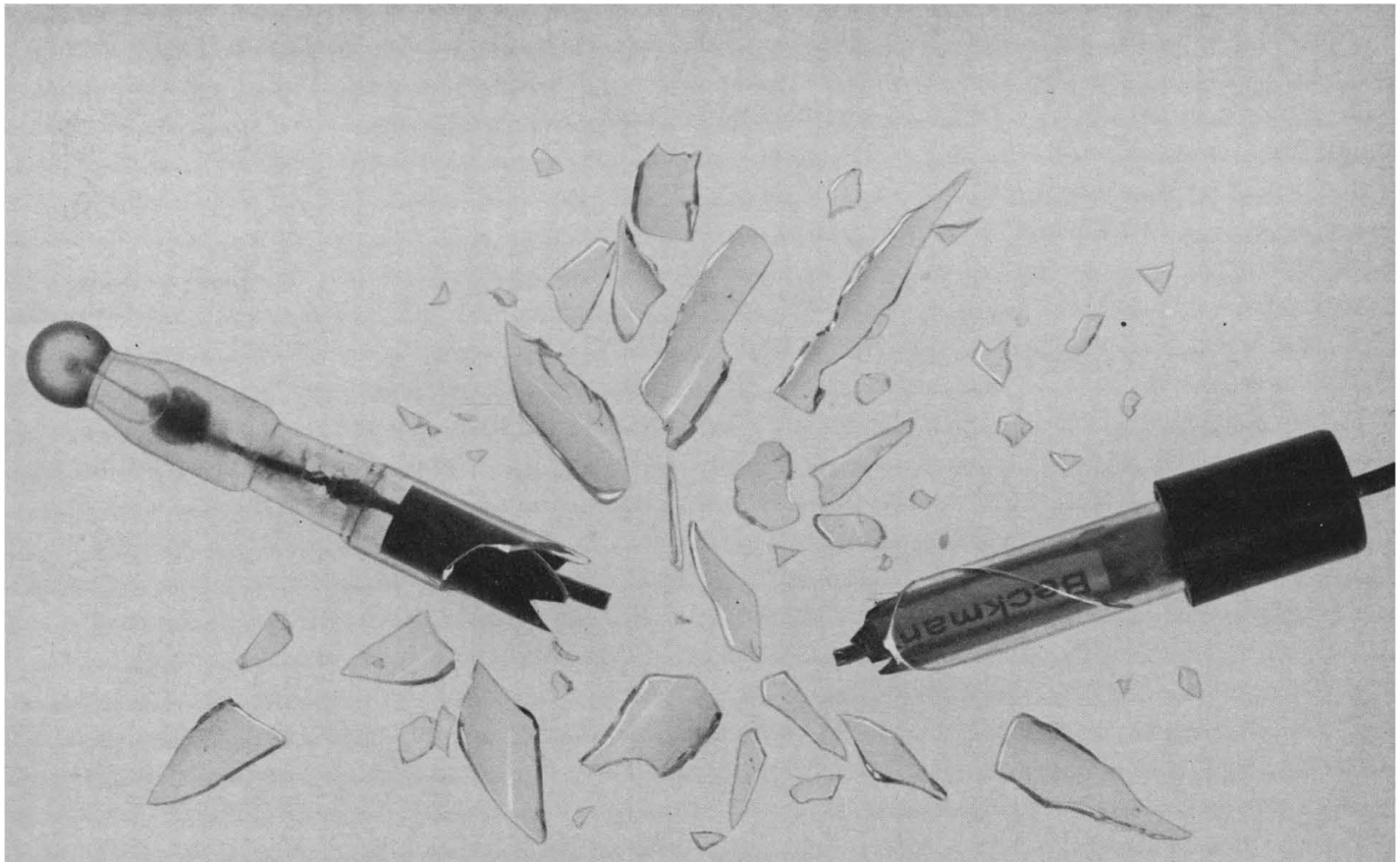

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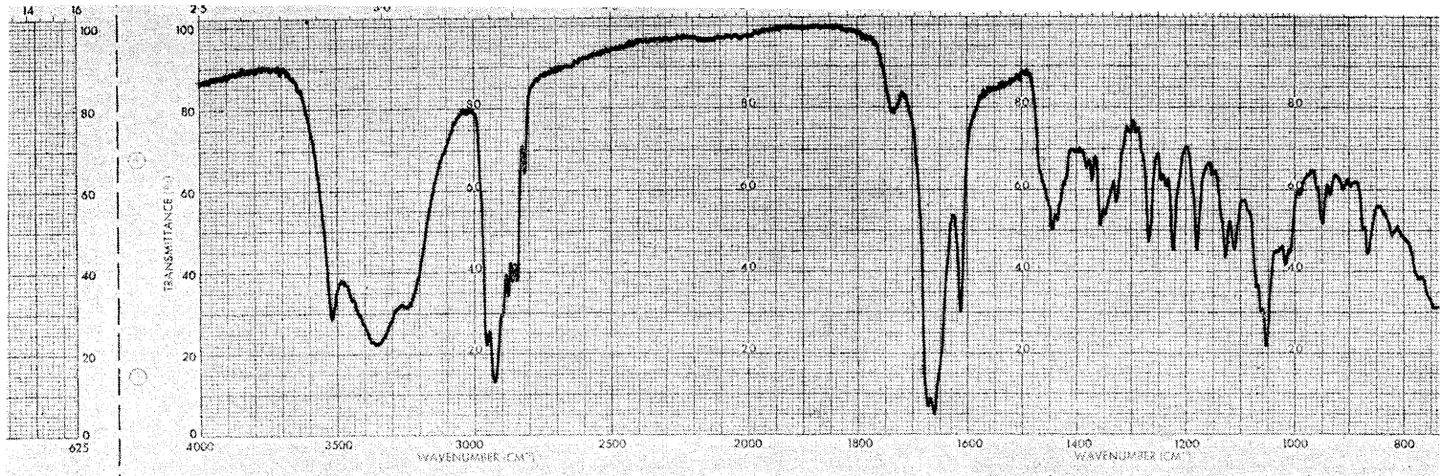
COVER

Pinus monophylla Torr. & Frem. growing on welded tuff along the south rim of Pahute Mesa, Nevada. The woodland is located 400 meters above the lower limit of juniper-dominated woodland and 1000 meters above the desert floor of Yucca Flat. (Elevation at playa, 1190 meters.) Fossil-wood-rat middens contain abundant remains of woodland species, thus indicating that vegetation existed at much lower elevations during the Pleistocene in the now treeless ranges of the Mohave Desert to the south. See page 1640. [Lora M. Shields, New Mexico Highlands University, Las Vegas]



TESTOSTERONE. The sample was prepared as a 0.5 mm KBr disc in a Perkin-Elmer microdie using 2 micrograms of hormone in 1.1 mg of KBr powder. The scan took 12 minutes, using reference attenuation at 10% and a 1 x 4 beam condenser. Excellent resolution and low noise level are demonstrated.

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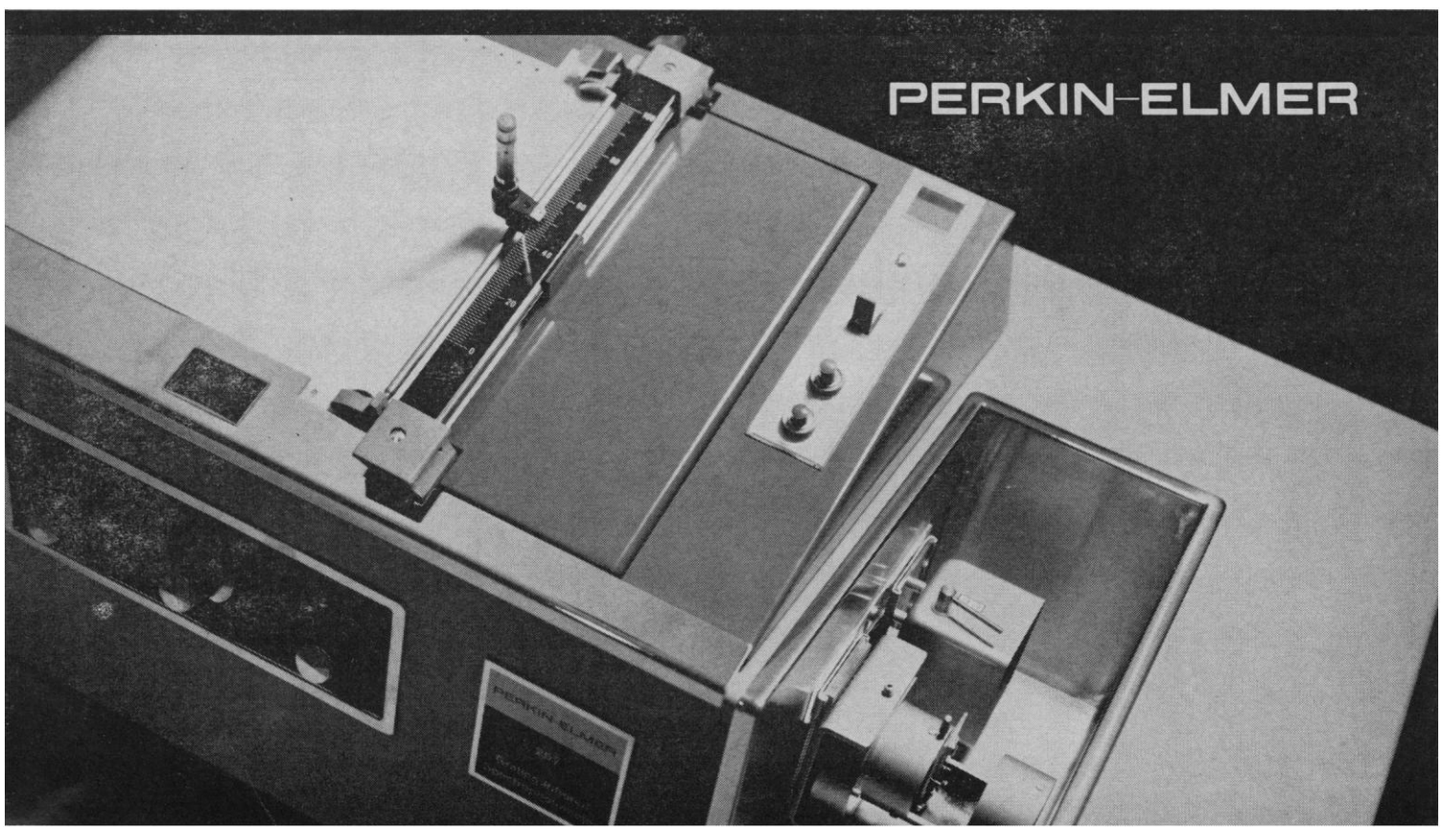

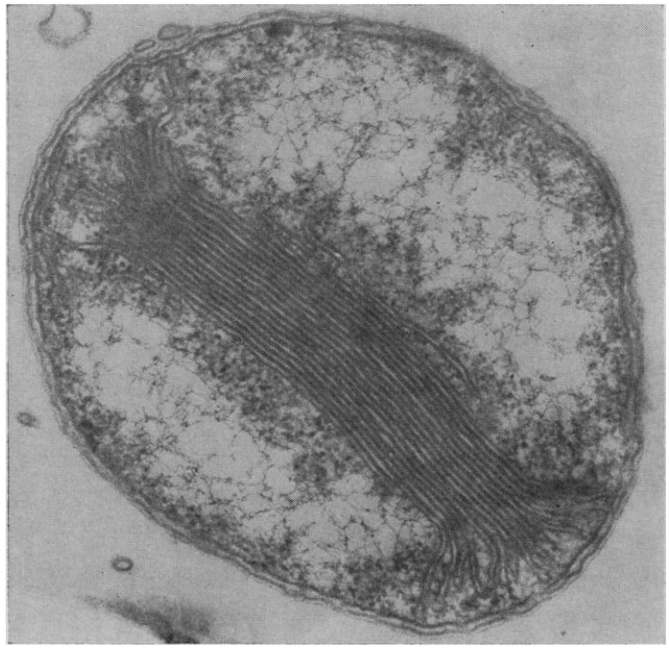

From the book: An electron micrograph of a thin section of a marine bacterium, *Nitrosocystis oceanus*. Extending across the central portion of the cell are the parallel lamellae of the membranous organelle, which contain the enzymes of the electron transmitter system. On either side are light areas containing strands of DNA and near the periphery of the cell are ribosomes, which appear as dark dots. Outside the plasma membrane is a cell wall composed of four dense layers. (Photograph courtesy Dr. S. W. Watson.)

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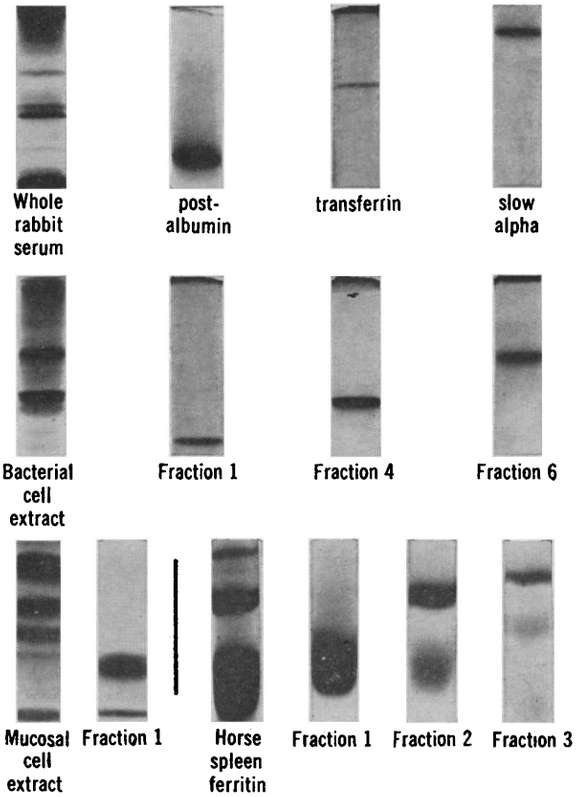

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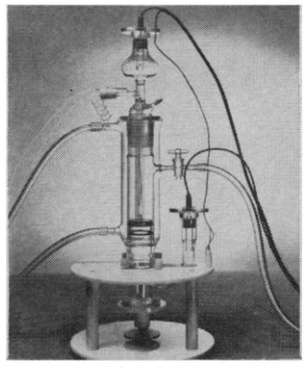

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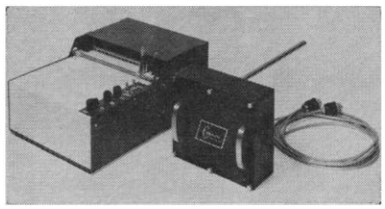

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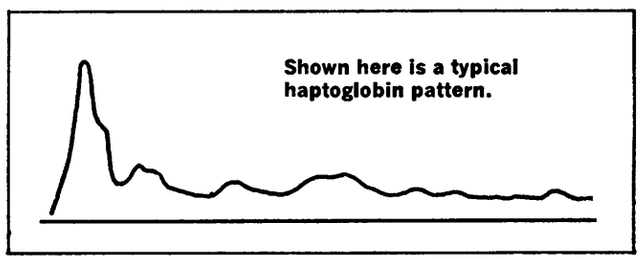

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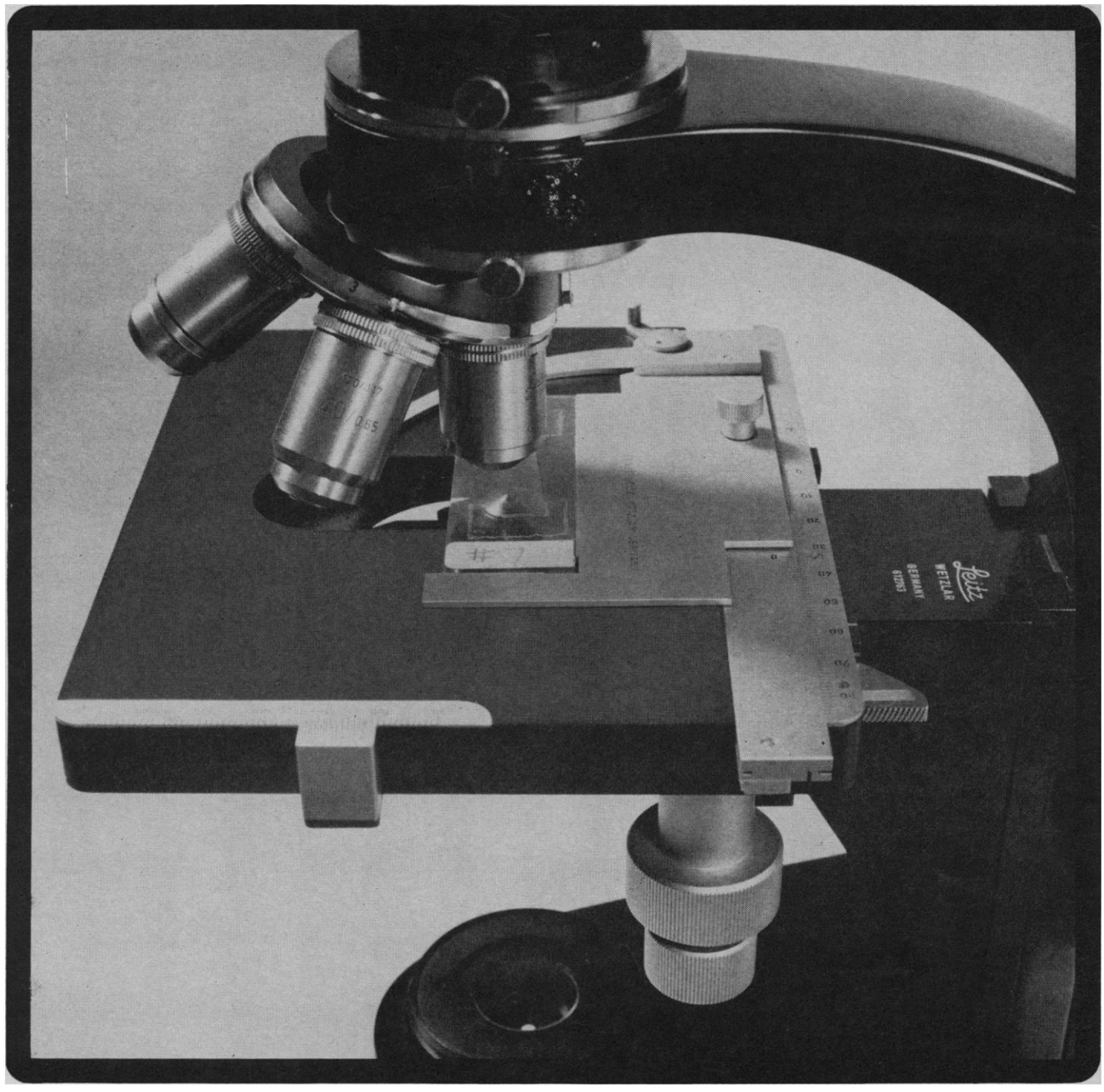

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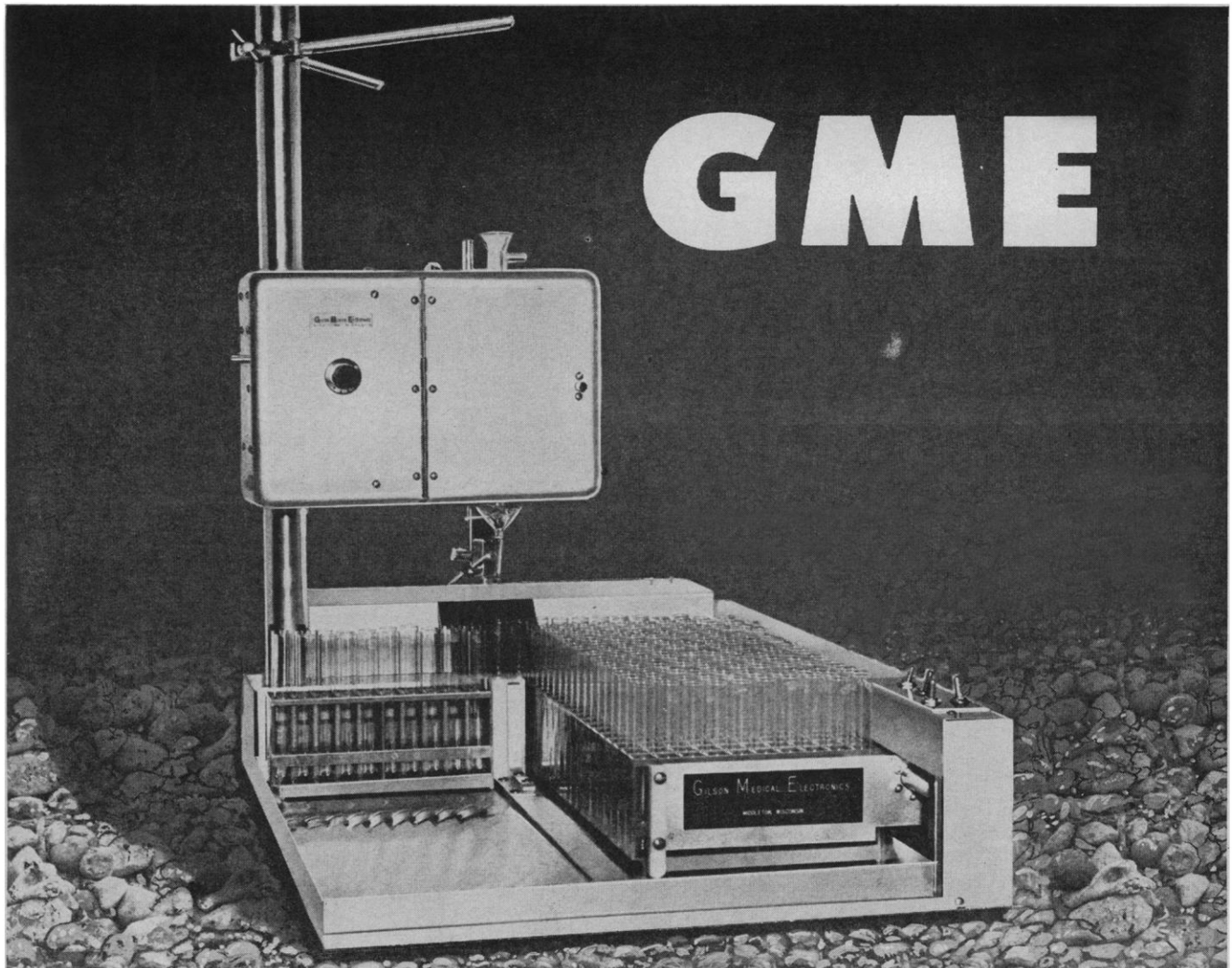

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Marine Science and Technology

In the past several years, Congress and the Executive Branch have made increasingly urgent efforts to improve federal activity in oceanography. This has resulted in part from prodding by academic oceanographers and in part from recognition of the undersea threat to national security, the emergence of science and technology as an instrument of world affairs, and increased international interest in the exploitation of marine resources. The status of our nation's effort in this area has been documented recently in two valuable reports.* One of these, *Oceanography 1966*, was prepared by academic scientists. The other, *Marine Science Affairs*, was issued by President Johnson.

The White House report was prepared by the new National Council on Marine Resources and Engineering Development, of which Vice President Humphrey is chairman and Edward Wenk, Jr., is executive secretary. The council already has selected nine targets for initiative or increased emphasis. Two of these are "food from the sea" and "deep ocean technology."

The Food from the Sea program calls for the United States to provide world leadership in exploiting the oceans for protein for the undernourished. The potential value of fish protein concentrate is well known. What is new is a proposal to help at least one underdeveloped nation master the necessary technology to produce its own requirements.

The *Thresher* catastrophe in 1963 dramatized the fact that this nation had virtually no capacity to find and recover objects from depths of more than 120 meters. In 1966 the recovery of an unarmed nuclear weapon from 850 meters of water near Spain required 3 months, dozens of ships and aircraft, thousands of people, and millions of dollars. A new program has funds to start development of a small manned submersible capable of operating eventually at depths down to 6000 meters. Only 2 percent of the world's oceans are deeper. In developing vehicles to probe the depths, the government will have no monopoly. The Marine Science Affairs report lists a number of undersea research vehicles owned and operated by private enterprise.

In *Oceanography 1966*, the scientists make an excellent presentation on the subjects they know best—scientific accomplishments and challenges. The sections devoted to physical and biological oceanography are particularly strong. Progress in oceanography will help in attaining many practical goals—for instance, food from the sea. With the development of improved sound gear, oceanographers are acquiring the ability to assess directly populations of fish and other large organisms. Commercial fishing records and echo-sounder surveys of anchovy populations off the west coast of South America show that immense numbers of anchovy live in recently upwelled waters of the Peru Current. The fish are most abundant in waters in the temperature range 14° to 18°C. The population shifts in distribution, both vertically and laterally, with the shift of water having this temperature range.

Today marine science is in an especially favorable period of development. Support is increasing as many national goals touching on the sea become urgent. At the same time, new tools and new concepts are expanding the opportunities for research. Sensing this climate, some of the best graduate students are turning to the sea. If such trends continue, the next decade could belong to the oceanographers.—PHILIP H. ABELSON

* *Oceanography 1966, Nat. Acad. Sci.–Nat. Res. Council Pub. 1492* (1967); *Marine Science Affairs—A Year of Transition* (Government Printing Office, Washington, D.C., 1967).

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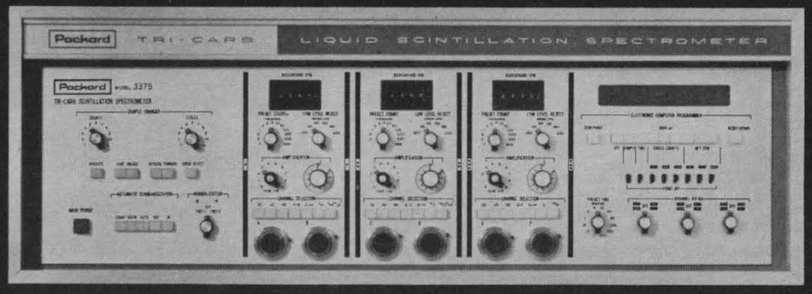

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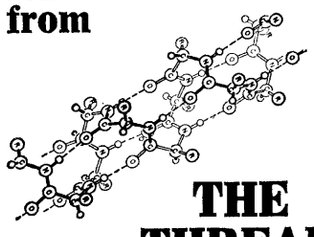

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England. (Meetings Officer, Inst. of Physics and Physical Soc., 47 Belgrave Sq., London, S.W.1)

17–19. Technical Assoc. of **Pulp** and **Paper Industry**, 4th annual water conf., Philadelphia, Pa. (Technical Secretary, 360 Lexington Ave., New York 10017)

17–19. Institute of **Electrical** and **Electronics Engineers**, Jackson, Miss. (J. E. May, 1120 Auburn Dr., Jackson)

17–19. **Urban Transportation**, 2nd intern. conf., Pittsburgh, Pa. (W. H. Shepard, P.O. Box 1291, Pittsburgh 15230)

17–20. American **Geophysical Union**, annual mtg., Washington, D.C. (F. R. Boyd, Eastern Natl. Mtg. Committee, AGU, 1145 19th St., NW, Washington, D.C. 20036)

17–21. American Assoc., of **Immunologists**, Chicago, Ill. (Executive Secretary, Massachusetts General Hosp., Boston)

17–21. American Inst. of **Nutrition**, annual mtg., Chicago, Ill. (Secretary, The Institute, Dept. of Foods and Nutrition, Michigan State Univ., East Lansing)

17–21. American Soc. of **Biological Chemists**, Chicago, Ill. (Secretary, The Society, c/o Harvard Univ., 12 Oxford St., Cambridge, Mass.)

17–21. Central **Service Management**, American Hospital Assoc., Miami Beach, Fla. (E. J. Lanigan, Conv. and Mtg. Bureau, 840 N. Lake Shore Dr., Chicago, Ill. 60611)

17–21. Use of Isotopes and Radiation in **Plant Pathology** Studies, Intern. Atomic Energy Agency and Food and Agriculture Organization, symp., Vienna, Austria. (J. H. Kane, Chief, Conf. Branch, Div. of Technical Information, Atomic Energy Commission, Washington, D.C. 20545)

18–2. International **Hydrographic** Bureau, intern. conf., Monte Carlo, Monaco. (Contre-Amiral Charles Pierre, Quai des Etats Unis, Monte Carlo, Monaco)

18–19. Applications Related Phenomena in **Titanium Alloys**, American Soc. for Testing Materials, symp., Los Angeles, Calif. (The Society, 1916 Race St., Philadelphia, Pa. 19103)

18–20. **Computer** Conf., Atlantic City, N.J. (American Federation of Information Processing Societies, 211 E. 43 St., New York 10017)

18–20. **Space Instrumentation for Industry**, southeastern instrument conf., Cocoa Beach, Fla. (A. L. Keith, 1127 S. Patrick Dr., Satellite Beach, Fla. 32935)

18–21. National Council of **Teachers of Mathematics**, 45th annual, Las Vegas, Nev. (J. D. Gates, NCTM, 1201 16th St., NW, Washington, D.C. 20036)

19. Intensity of **Casual Relationships in Schizophrenia**: Living in Imagination, Assoc. for the Advancement of Psychoanalysis, New York, N.Y. (The Association, 329 E. 62 St., New York 10021)

19. **Oral Cancer** Symp., 5th, St. Francis Hospital, Poughkeepsie, N.Y. (M. A. Engelman, 1 E. Academy St., Wappingers Falls, N.Y.)

19–20. 1967 **Electronics** and **Instrumentation** Conf. and Exhibit, Cincinnati, Ohio. (G. McVey, Procter & Gamble Co., Ivorydale Technical Center, Cincinnati 45227)

19–21. Extended **Care Facilities in General Hospitals**, American Hospital Assoc., Miami Beach, Fla. (E. J. Lanigan, Conv.