20–24. **Research Administration** Inst., American Univ., Washington, D.C. (American Univ., 1901 F St., NW, Washington 6, D.C.)

20–24. Fluid Dynamic Aspects of **Space Flight,** Marseilles, France. (Fluid Dynamics Panel, NATO, 64, rue de Varenne, Paris 7e, France)

20–24. American Soc. of **Tool and Manufacturing Engineers,** annual, Detroit, Mich. (L. S. Fletcher, ASTME, 10700 Puritan Ave., Detroit 38)

20–25. American Acad. of **Neurology,** 16th annual, Denver, Colo. (AAN, 4307 E. 50 St., Minneapolis 17, Minn.)

21. Association for **Symbolic Logic,** New York, N.Y. (Mrs. R. Drew-Bear, Special Projects Dept., American Mathematical Soc., 190 Hope St., Providence, R.I.)

21–23. Joint **Computer** conf., Washington, D.C. (C. S. Jones, 8227 Woodmont Ave., Bethesda 14, Md.)

21–23. **Engineering with Nuclear Explosives,** 3rd "Plowshare" symp., Davis, Calif. (Plowshare Symp. Committee, Lawrence Radiation Laboratory, Bldg. T-105, P.O. Box 808, Livermore, Calif.)

21–24. American **Geophysical Union,** Washington, D.C. (AGU, 1515 Massachusetts Ave., NW, Washington, D.C.)

21–30. **Seismology,** intergovernmental meeting, Paris, France. (UNESCO, Pl. de Fontenoy, Paris 7e)

22–24. Institute of **Electrical and Electronics Engineers,** 16th annual southwestern conf., Dallas, Tex. (F. E. Brooks, Jr., Military Electronics Div., Ling Temco Vought, P.O. Box 6118, Dallas 75222)

22–24 British Inst. of **Radiology,** 25th congr., London, England (BIR, 32 Welbeck St., London, W.1)

22–25. National Council of **Teachers of Mathematics,** Miami Beach, Fla. (H. T. Karnes, Dept. of Mathematics, Louisiana State Univ., Baton Rouge 3)

23–25. American **Gastroenterological** Assoc., Dallas, Tex. (D. Cayer, 2240 Cloverdale Ave. Winston-Salem, N.C.)

23–25. **Illinois State Acad. of Science,** Bloomington. (A. A. Paloumpis, Illinois State Normal Univ., Normal)

23–25. **Medical Women's** Federation, annual, Keswick, England. (MWF, Tavistock House North, Tavistock Sq., London, W.C.1, England)

23–25. **Ohio Acad. of Science,** Cleveland. (J. H. Melvin, 505 King Ave., Columbus 1, Ohio)

23–25. **West Virginia Acad. of Science,** Wheeling. (J. A. Duke, S.J., Wheeling College, Wheeling)

24. **Mississippi Acad. of Sciences,** Columbus. (C. Q. Sheely, Mississippi State Univ., State College)

24. **Parenteral Drug Assoc.,** Chicago, Ill. (PDA, Broad and Chestnut Sts., Philadelphia, Pa.)

24–25. Chemistry of **Microbial Products,** symp., Tokyo, Japan. (H. Umezawa, Inst. of Applied Microbiology, University of Tokyo, Hongo, Tokyo)

24–25. **South Carolina Acad. of Science,** Aiken. (R. W. Rutledge, Clemson College, Clemson, S.C.)

24–25. **South Dakota Acad. of Science,** Sioux Falls. (T. Van Bruggen, Dept. of Botany, Univ. of South Dakota, Vermillion)

26. **Georgia Acad. of Science,** Athens. (T. W. Kethley, Georgia Inst. of Technology, Engineering Experiment Station, Atlanta 13)

26–27. **Water and Geology,** conf., Bloomington, Ind. (A. F. Agnew, Dept. of Geology, Indiana Univ., Bloomington)

26–30. **Cereal Chemists,** 49th annual, Toronto, Ont., Canada. (N. G. Irvine, Grain Research Laboratory, 190 Grain Exchange Bldg., Winnipeg 2, Canada)

26–30. **AAAS, Southwestern and Rocky Mountain Div.,** Lubbock, Tex. (M. G. Anderson, P.O. Box 97, University Park, New Mexico 88070)

26-30. American **Industrial Hygiene** Assoc., Philadelphia, Pa. (G. D. Clayton, 14125 Prevost, Detroit 27, Mich.)

27. **Tooth Transplant** in Humans, intern. seminar, New York, N.Y. (S. J. Behrman, New York Inst. of Clinical Oral Pathology, 101 E. 79 St., New York 21)

27–28. **Molecules of Life,** colloquium, Yeshiva Univ., New York, N.Y. (B. Horecker, Dept. of Molecular Biology, Yeshiva Univ., 1300 Morris Park Ave., New York 61)

27–29. American Assoc. for **Thoracic Surgery,** Montreal, Quebec, Canada. (AATS, 311 Carondelet West, 7730 Carondelet Ave., St. Louis, Mo. 63105)

27–29. **National Acad. of Sciences,** annual, Washington, D.C. (Office of the Home Secretary, NAS, 2101 Constitution Ave., NW, Washington, D.C.)

27–29. National **Watershed** Congr., 11th, Little Rock, Ark. (G. K. Zimmerman, 1424 K St., NW, Washington, D.C.)

27–30. American **Physical** Soc., Washington, D.C. (K. K. Darrow, APS, Columbia Univ., New York 27)

27–1. **Photographic Science** and Engineering, intern. conf., New York, N.Y. (H. F. Nitka, General Aniline and Film Corp., Bldg. 44, Charles St., Binghamton, N.Y.)

28–30. **Micrographic** Congr., intern. conv., Philadelphia, Pa. (C. E. Nelson, 313 N. First St., Ann Arbor, Mich.)

28–1. Dallas-Southwest **Industrial Trade** Fair, Dallas, Tex. (C. L. Wells, P.O. Box 26010, Dallas 26)

29–1. **Acoustical Fatigue,** 2nd intern. conf., Dayton, Ohio (D. M. Forney, Research and Technology Div., U.S. Air Force Systems Command, Wright-Patterson Air Force Base, Dayton)

29–2. **Peaceful Uses of Space,** 4th natl. conf., Boston, Mass. (G. A. Rogovin, 501 Boylston St., Boston 16)

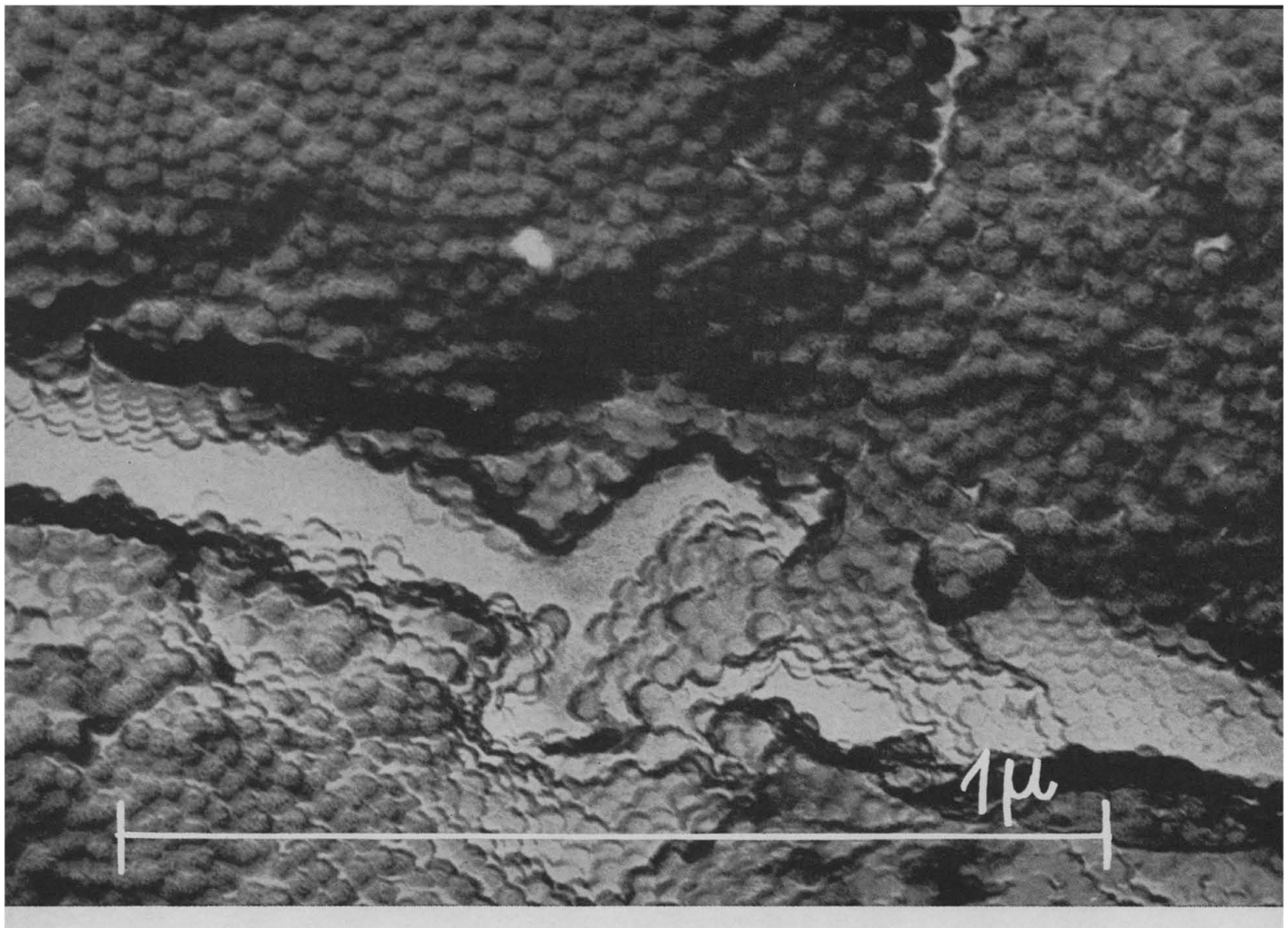
29–2. American **Thyroid** Assoc., annual, Rochester, Minn. (T. Winship, ATA, 110 Irving St., NW, Washington, D.C. 20010)

30–1. Institute of **Hospital Administrators,** annual, Edinburgh, Scotland. (IHA, 75 Portland Place, London, W.C.1, England)

30–1. **Zonal Centrifugation Systems,** Oak Ridge, Tenn. (F. C. Von der Lage, Office of Industrial Cooperation, Oak Ridge Natl. Laboratory, P.O. Box X, Oak Ridge, Tenn. 37831)

30–2. **Agricultural History** Soc., annual, Cleveland, Ohio (A. G. Bogue, History Dept., Univ. of Iowa, Iowa City)

30–2. American **Cleft Palate** Assoc., 22nd annual, Los Angeles, Calif. (ACPA, Parker Hall, Univ. of Missouri, Columbia 65202)



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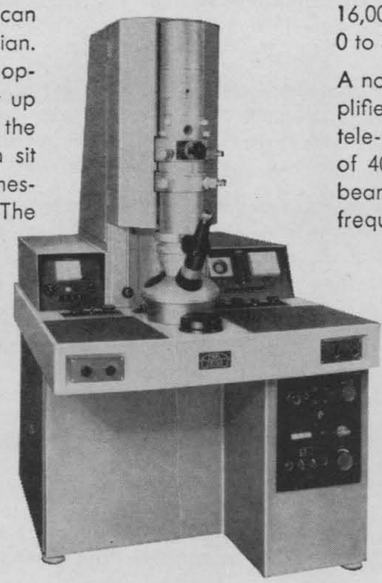

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New Products

Ultrahigh vacuum system (model 125) provides working pressures of 10^{-8} torr or less in a volume of more than 3200 in.^{3} (52,000 cm^3). The system consists of a bell jar and base plate of stainless steel, an oil diffusion pump, a roughing manifold with an ejector and a two-stage roughing vacuum pump, valving, and associated instrumentation and controls. The bell jar, 16 inches (41 cm) in diameter and 16 inches high, is furnished with three ports. The base plate is fitted with seven ports from 1.25 to 4 inches (3.18 to 10.16 cm) in diameter. With the base plate sealed to the bell jar with a gold wire gasket, the entire chamber can be baked to 450°C or cooled to −196°C with liquid nitrogen. By cooling the system with liquid nitrogen, pressures of approximately 1×10^{-9} torr are possible within two hours. Under a 16-hour 400°C bakeout cycle, pressures of 3×10^{-10} torr or less are obtained. Following a bakeout with cooling to 196°C permits pressures less than 1×10^{-11} to be obtained. —J.S. (Westinghouse Scientific Equipment, Dept. S156, Box 868, Pittsburgh 30, Pa.)

Analog magnetic recording drum (model 6037) uses Hall-effect playback heads to achieve low-frequency response and constant output amplitude with variable speed operation. Frequency range of the instrument is 5 to 2000 cy/sec. It is designed for use in precision analog systems as well as in applications where signal delay or storage time is varied by changing drum velocity rather than head position. A servo drive on the drum shaft permits system synchronization or signal follow-up.—J.S. (Instrument Systems Corp., Dept. S157, 111 Cantiague Rd., Westbury, L.I., N.Y.)

Current-voltage source is said to provide drift of less than 0.0001 percent per week. Output current is supplied from 190 μa to 100.1 ma in six ranges, with 10^7 discrete steps in each range, giving resolution of 0.1 per million. Output voltage spans the 3.1- to 10-volt range with 1 μv resolution, also in 10^7 discrete steps. Overall noise is said to be less than 1 μv±0.01 μa below 1 cy/sec. The system is formed of an assembly of individually usable stable units and is furnished for rack mounting. It was designed primarily for calibration of gyro torque.—J.S. (Julie Research Laboratories, Inc., Dept. S166, New York, N.Y.)

Tonometer system provides all the essential equipment necessary for equilibrating small or large blood samples under control of temperature, gas flow and absorption rates. By use of the Farhi tonometer, the equilibration rate and effects on blood of gases such as carbon dioxide, nitrogen, oxygen, anesthetics, toxic gases, and mixtures can be determined. Field tests to date show that in most instances 99 percent equilibration occurs within 3 minutes and complete equilibration in 10 minutes or less, depending upon sample volume. The tonometer is useful in calibrating O_2 or CO_2 electrodes, for determining reference standards in gas chromatography, and for measuring gas solubilities in various liquids. The Farhi system consists of a fully enclosed, constant-temperature water bath in which four round-bottom flasks are immersed and rotated. To suit individual requirements, flasks from 50- to 1000-ml capacity may be used; as little as 2 ml of sample can be equilibrated effectively. Motorized flask mounts spin the flasks at prescribed speeds and liquid samples may be added or removed from the flask at any time while the instrument is operating. The desired gas mixture, supplied by the user from a bottled source, passes into the tonometer's humidifiers, then is flushed through the sample flasks and vented to room atmosphere. The tonometer's water bath is of plexiglass to permit continuous observation of the sample. A 1000-watt electric heater and proportional controller maintain the constant-temperature bath within ± 0.02°C at any point from room temperature up to 60°C. For operation below room temperature, a separate coil is provided within the bath with connections for an external cooling source. Panel controls include: gas flow meter-regulators, water bath temperature controls, flask motor switches, gas toggle valves for channeling gas supplies into two or more tonometers as required, and swagelock connectors for the gas lines.—R.L.B. (Will Scientific, Inc., Dept. S222, Box 1050, Rochester, N.Y.)

Super-Mixer provides a vibrating soft neoprene rubber knob which imparts vibration to test tubes or other vessels held against it to achieve rapid mixing of the contents. A speed control can be set to control the intensity of the agitation. A touch plate switch, in addition to an on-off toggle switch, makes it possible to turn on the mixer and perform the mixing with the hand holding the vessel to be agitated. These devices greatly facilitate uniform mixing of a series of vessels to which reagents are added and mixed.— R.L.B. (Lab-Line Instruments, Inc., Dept. S216, 15th and Bloomingdale Aves., Melrose Park, Ill. 60160)

Potentiometric recorders have an electrically switched three-speed chart drive and a built-in four-position a-c filter to reduce response to spurious signals in the new SR models. These bench-top instruments present a 250-mm-wide record on an inclined platen for easy annotation. A full-scale range of 0.4 to 125 mv is available through the use of accessory range plugs and the built-in range attenuator. Sensitivity is given as 4 μ/mm, reproducibility to 0.1 percent of scale accurate to 0.25 percent. One second full-scale pen, a wide variety of chart speeds, event markers, positional switch to actuate a circuit at a particular place on the scale, in addition to an option of a built-in integrator especially for gas chromatography in the Model SRGC, combine to increase the versatility of these instruments. Signals from 50,000 ohm sources are recorded with-

The material in this section is prepared by the following contributing writers:

Robert L. Bowman (R.L.B.), with the assistance of Denis J. Prager (D.J.P.), Laboratory of Technical Development, National Heart Institute, Bethesda 14, Md. (medical electronics and biomedical laboratory equipment).

Joshua Stern (J.S.), Basic Instrumentation Section, National Bureau of Standards, Washington 25, D.C. (physics, computing, electronics, and nuclear equipment).

The information reported here is obtained from manufacturers and from other sources considered to be reliable. Neither *Science* nor the writers assume responsibility for the accuracy of the information.

Address inquiries to the manufacturer, mentioning *Science* and the department number.

in specifications when no filtering is required, or below 10,000 ohms when full filtering is utilized.—R.L.B. (E. H. Sargent and Co., Dept. S217, 4647 W. Foster Ave., Chicago, Ill. 60630)

Automated hemagglutination system is based on continuous measurement of degree of agglutination resulting from an antibody-antigen reaction. The system provides results expressed in percent agglutination or percent hemolysis, obtained from data automatically recorded on a strip chart. It eliminates the variables inherent in manual methods by a design that decants the agglutinated cells as they are formed. The remaining unreacted cells are then hemolyzed. Color resulting from homolysis is directly proportional to the amount of cells removed and is automatically detected and measured. A blank consisting of red cells and saline but without antibody is handled in exactly the same way as the test sample. Colors developed by hemolysis of the cells in the blank and in the sample are measured and recorded simultaneously. The curve of the blank represents 0 percent agglutination. Percent agglutination in the reactive circuit is then calculated from the difference between the two curves. Completely automatic in operation, cells, antiserum, and reagents are correctly proportioned, mixed, and pumped through the system. All factors in the process —mixing time, proportioning, temperature, reaction time—are held constant. For the producer of serum and viruses, the system provides a standard procedure, a written record, and reproducible results. For clinical and blood-bank operations, the technique virtually eliminates blood typing errors. The chart is a permanent record clearly identifying the sample and the corresponding result. Test rate of 40 complete typings per hour is achieved. By adding circuits, information on other reactive materials can be obtained simultaneously. A range of cell concentrations from 2 to 50 percent can be handled by changing the amount of water used for hemolysis. Cell concentrations of 1 percent and below are hemolyzed with an alcohol solution of benzidine; with this reagent, 0.001 percent cells can be detected. Also available are serological sensitizing agents—such as gum acacia, PVP, papain, ficin, dextran, and so forth—which augment the reaction without developing false results.—D.J.P. (Technicon Instruments Corp., Dept. S226, Research Park, Chauncey, N.Y.)

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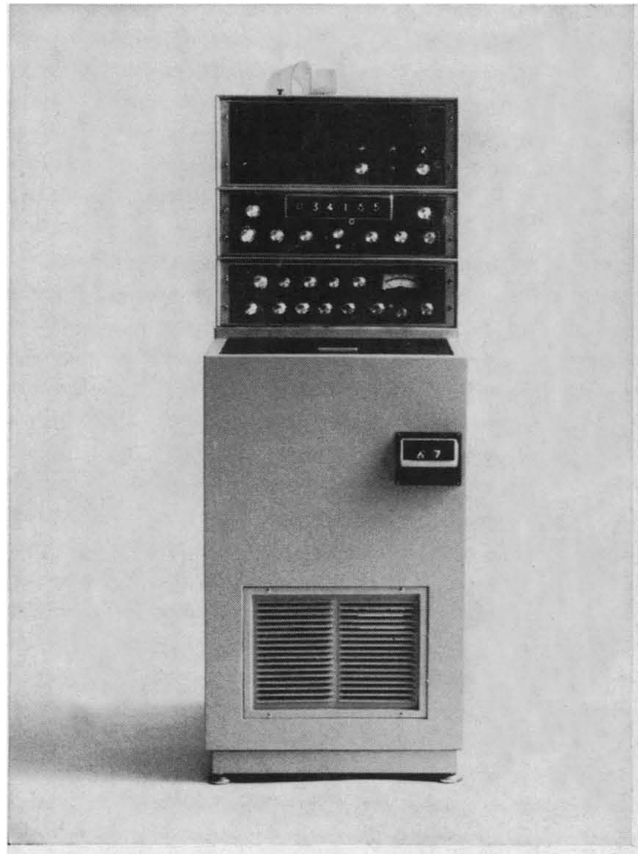

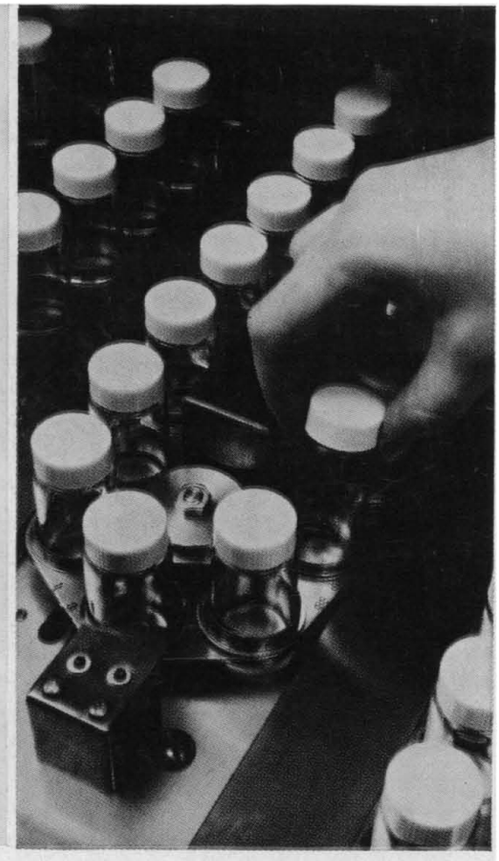

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