

PHOTOVOLT

Electronic pH METERS

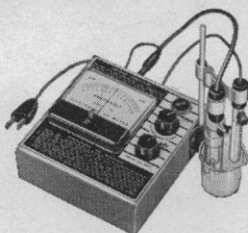
A complete line of pH meters, incorporating permanently frictionless taut-suspension indicating meters, modern electronic tubes and circuits. Simple in operation and maintenance; featuring sealed amplifier plug-in units.

Two-way pH Meter Model 85

- Single range 0-14, scale length 3", readable to 0.05 pH Unit.
- Available — compact battery pack for field use (\$38.00 addtl.).
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High Precision pH Meter Model 110

- Single range 0-14, scale length 7", readable to 0.02 pH unit.
- Temperature control 0-100° C., voltage selector for 80-260 volts.
- Available — carrying cover and baseboard for bottles, beakers.

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Standard Laboratory pH Meter Model 115

- Single range 0-14, scale length 4", readable to 0.05 pH unit.
- Temperature control 20-100° C., available with carrying case.
- Additional millivolt scale for redox measurements and titrations.

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\$175

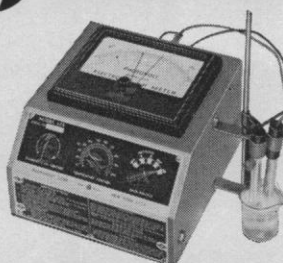


Portable pH Meter Model 125

- Single range 0-14, scale length 5½", readable to 0.03 pH unit.
- Only 3 batteries, standard radio type, 2,000 hours of service.
- Available — carrying frame for instrument, beakers, bottles.

Write for Bulletin #118

\$225



Tester Model 25 for Checking and Adjusting pH Meters

A compact, inexpensive instrument without batteries; for checking performance of PHOTOVOLT and other pH meters. Requires neither electrodes nor buffers. Write for Bulletin #138

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"Television Journal" is being network tested in Washington, D. C.; Lincoln, Nebraska; and Minneapolis-St. Paul, Minnesota. During the academic year "Television Journal" is regularly viewed Thursday evenings at 11:10 p.m. in cooperation with New York City's educational TV station, Channel 13/WNDT.

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- 29 "Explorations in Semantic Space." APA

Minneapolis-St. Paul, Minnesota—Channel 2/KTCA-TV 10:00 p.m., Monday

- Aug. 12 "Lasers." Optical Society of America
- 19 "Electronic Instrumentation for Cardiology." IEEE
- 26 "Mathematics and How Do We Teach It?" CBMS
- Sept. 2 "Computer Simulation of Cognitive Behavior." APA

Washington, D.C.—Channel 26/WETA 7:30 p.m., Thursday

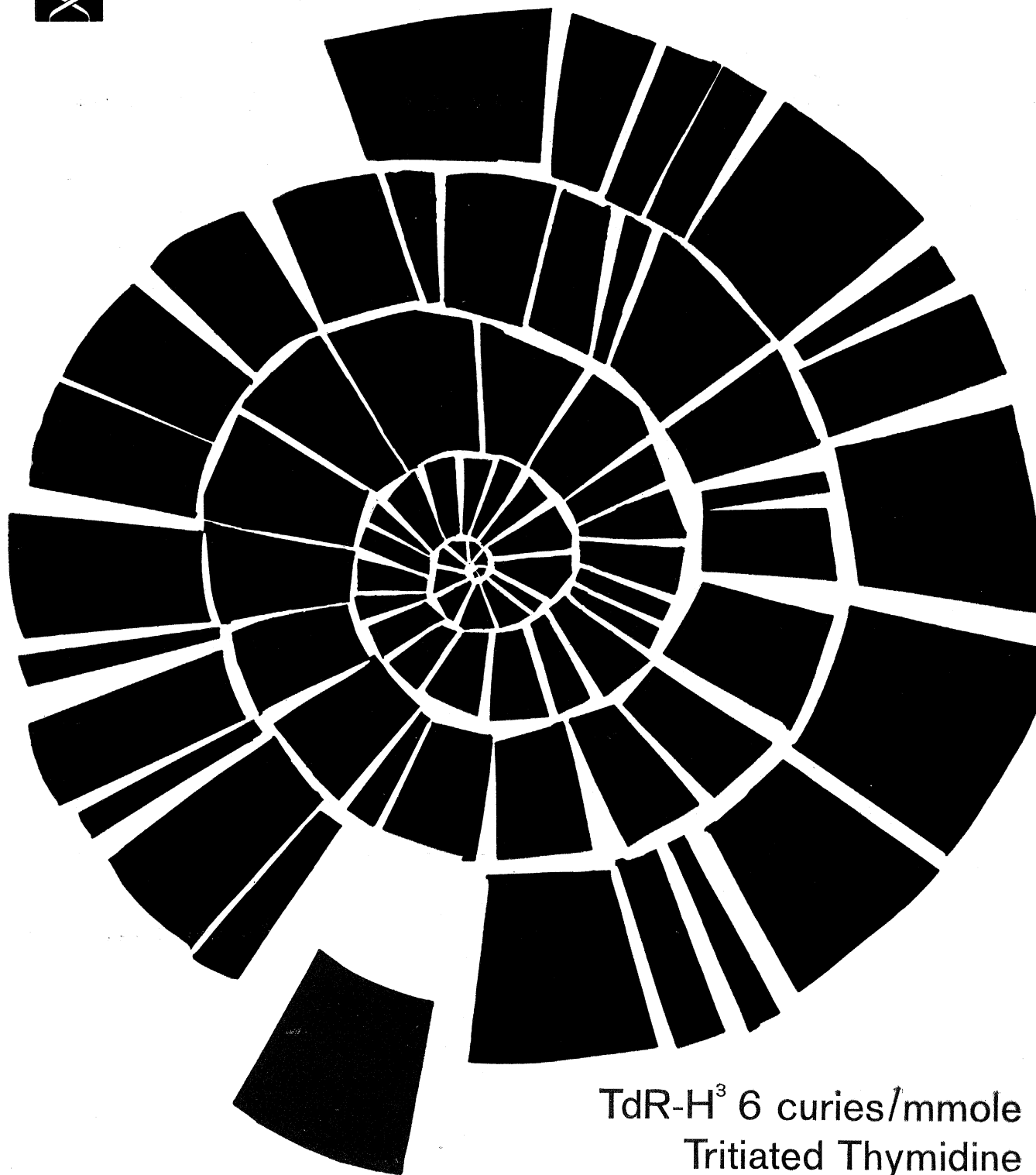
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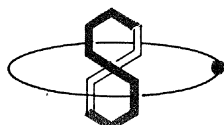


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The material in this section is prepared by the following contributing writers:

Robert L. Bowman (R.L.B.), with the assistance of Denis J. Prager, 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. A Readers' Service card for use in mailing inquiries concerning the items listed is included on pages 385 and 445. Circle the department number of the items in which you are interested on this card.

adapted for transfer directly to computer punch tape or I.B.M. cards by Nuclear-Chicago data converter units. Practically all standard Geiger-Müller, proportional, and scintillation detectors can be used as input to the scaler whose sensitivity is 0.25 volt, and pulse-pair resolution is less than 1 μ sec. The high voltage supply is continuously variable from +400 to +4000 volts, with adequate current for two detectors of any type. All circuitry of Ultrascaler II is solid state. Individual circuits are on plug-in boards allowing fast service and up-grading of any model. Single scaler versions of Ultrascaler II can be expanded to two scaler instruments simply by adding circuit boards. The printing lister may also be replaced by the automatic calculator when desired. No modifications to existing circuitry are required.—D.J.P. (Nuclear-Chicago Corp., 359 E. Howard Ave., Des Plaines, Ill.)

Circle 1 on Readers' Service card

Optical projection balance has a capacity of 1000 g with an accuracy of 0.1 g. The optical range is 110 g and the vernier is easily read to 0.1 g. The torsion construction eliminates friction and wear and the necessity for delicate bearings or knife edges. Because of the elimination of friction in the movement, and the use of a silicone fluid dash pot, oscillations are minimal and the balance is damped quickly. Neither the zero point nor accuracy is affected by moving the instrument or using it out of level. Balance pans are of stainless steel and the enamel epoxy finish resists corrosion.—D.J.P. (Torsion Balance Co., Clifton, N.J.)

Circle 2 on Readers' Service card

Thermoelectric dew-point indicator (model 108) uses the Peltier effect to cool a rhodium-plated mirror to the dew-point temperature. A solid-state optical system senses and proportionally controls the cooling rate of the mirror, causing the latter to cool to the

dew point of the gas sample and to track this dew point continuously. Temperature of the mirror is measured with a platinum resistance thermometer and a remote-reading servo-type resistance bridge. A Nichrome heating element provides means for clearing the dew deposit from the mirror. The system is completely automatic in operation and may be located remote from the readout station. Maximum temperature depression from a 120° or 60°F (49° or 16°C) ambient is 100°F (37.8°C), and from -40°F ambient the maximum depression is 60°F. Accuracy is said to be better than $\pm 2^\circ\text{F}$ between dew points of -20°F and +120°F (-28.9° and +48.9°C), and better than $\pm 4^\circ\text{F}$ between dew points of -20°F and -100°F. The sensor operates at atmospheric pressure and requires a sample flow of 0.001 ft³/min. Models that operate at line pressures to 700 lb/in² are available. The sensor is fabricated of stainless steel, glass, and Teflon.—J.S. (Cambridge Systems, Inc., 50 Hunt St., Newton 58, Mass.)

Circle 3 on Readers' Service card

Electrically conducting glass panels can be used to reduce the electromagnetic radiation from fluorescent lamp fixtures. Many biological laboratories utilizing high-sensitivity electronic measuring equipment find fluorescent lamps a source of noise; these panels may make it possible to enjoy the advantages of fluorescent lighting without the radiation of interference. A 22-page booklet describing Corning EC No. 70 glass lighting panels gives lighting designs, photometric, and radiation measurements on sample installations.—R.L.B. (Corning Glass Works, Corning, N.Y.)

Circle 4 on Readers' Service card

Metering pump incorporating a built-in air cylinder to actuate the pump slide valve is designed for accurate filling of clear liquids, creams, suspensions, pastes, or semiliquids containing a high percentage of solids. The pump uses a positive acting slide valve in place of ball check valves. Thus, semiliquids cannot clog the valves, since particles are simply sheared off during the valving cycle. The pumps provide a simple means for filling a wide variety of foods, cosmetics, drugs, or chemical specialties. The user need only supply a slow-speed drive (10 to 60 rev/min, depending upon the viscosity of the liquid) coupled to an eccentric, and an air supply of 50 lb/in.² at 0.2 ft³/min.

The pump will then dispense a preset volume of the product with each stroke of the piston. Quantity dispensed per stroke is varied by adjusting eccentricity, or the length of the piston stroke. An accessory micrometric eccentric provides an easy means for adjusting the stroke length. Models are available to dispense from 1 to 520 ml per stroke. All liquid-contacting parts are made of stainless steel.—R.L.B. (National Instrument Co., Inc., Baltimore 15, Md.)

Circle 5 on Readers' Service card

Automatic voltage clamp for active transport studies provides a current to maintain zero voltage across an active biological membrane. Current is continually displayed in microamperes on a multi-range meter and an independent output is supplied for a recorder. Voltage is maintained to $\pm .05$ mv. A variable zero can be used to compensate for spurious electrode potential. Input impedance to the amplifier is 2 megohms, and 2 mv will produce full output of maximum of 2000 μ a through the cell. Maximum drift referred to input

is $\pm 10 \mu$ v. Meter is 1-percent accurate with 5 ranges to cover 100 to 2000 μ a. Recorder output operates a 10-mv potentiometer-type recorder. Power supply is a-c operated floating with leakage path resistance greater than 100,000 megohms. No batteries are used.—R.L.B. (Mechrolab, Inc., 1062 Linda Vista Ave., Mountain View, Calif.)

Circle 6 on Readers' Service card

Scanning pyrometer permits measurement of temperature from 2000° to 5000°F (1100° to 2750°C), in three ranges, as the target under observation is scanned by a moving belt system. An image of the surface being measured is projected onto a belt inside the sensor and scanning-system unit. Holes in the moving belt scan the image at a rate of 30 per second. An area 2 by 4 ft (0.6 by 1.2 m) can be covered when the scanning unit is located at a distance of 8 ft (2.4 m) from the target. Bandwidth of the output signal is 30 cy to 16 Mcy/sec. The output signal, ranging from 0 to 5 volts d-c, can be used to actuate a variety of presentation instruments. The instrument is based on the manufacturer's model 650 automatic brightness pyrometer. The image of the target is projected through lenses without the use of mirrors.—J.S. (Instrument Development Laboratories, Inc., Attleboro, Mass.)

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Solid-state analog - to - time - duration converter accepts a 0- to 5-volt input and produces a time duration impulse output. The time duration signal is represented by a relay contact closure that can be used to key a telegraph loop or tone channel. Maximum current drain with continuous operation is 200 ma at 12 volts d-c. The converter may be shared by a number of analog inputs, each of which may be selected by remote control from a master station, or on a pre-programmed basis by a local timer or commutating selector. At the receiving terminal, the time duration signal can be used to operate standard indicators or recorders. Time duration of output switch closure is linear with input between 20 percent period at zero and 80 percent period for full scale. Standard periods are 2, 3, 5, 10, and 15 sec. Input impedance is 220,000 ohms.—J.S. (Moore Associates, 893 American St., San Carlos, Calif.)

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Ph.D. to supervise work of bio-analytical laboratory and clinical laboratory in independent toxicology consulting laboratory. One to three years' experience desirable but not essential. Laboratory is located in northern suburb of Chicago easily accessible by car. Salary commensurate with degrees and experience. For further information write or call **F. E. Kohn**, Industrial Bio-Test Laboratories, 1810 Frontage Road, Northbrook, Illinois.

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GRASSLANDS

Editor: Howard B. Sprague 1959

6" x 9", 424 pp., 37 illus., index, cloth. Price \$9.00, AAAS members' cash orders \$8.00. AAAS Symposium Volume No. 53.

This volume is intended as a review of knowledge on many aspects of grasslands resources. The 44 authors were selected by their own professional colleagues as being particularly competent to present the respective subjects. Thirty-seven papers are arranged under these chapter headings:

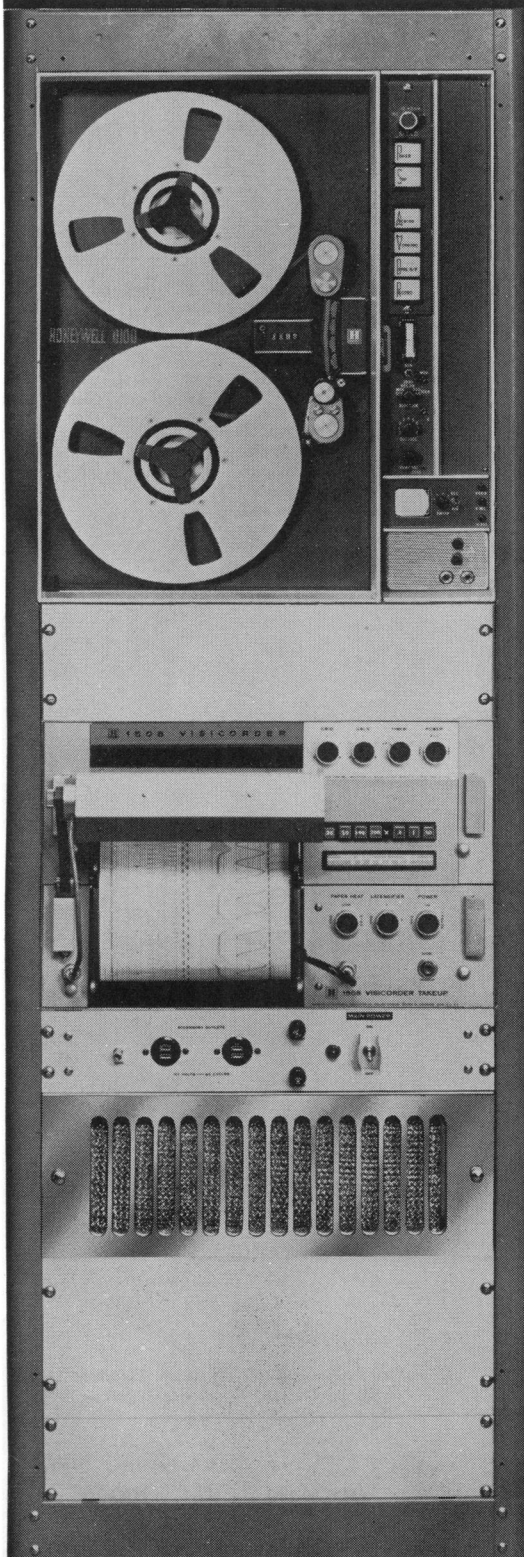
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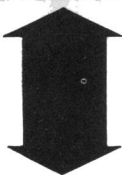


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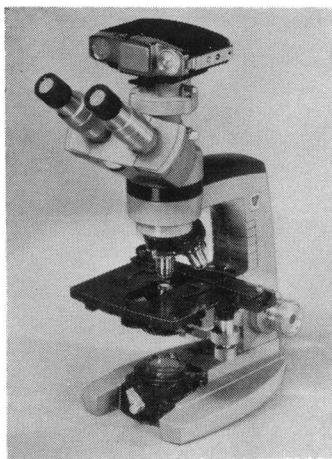
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