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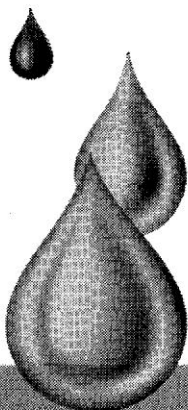
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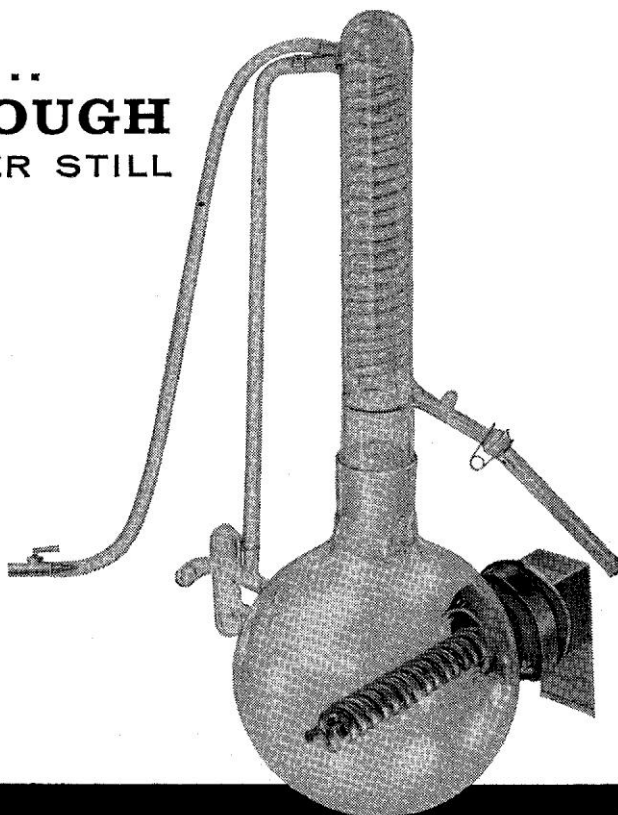


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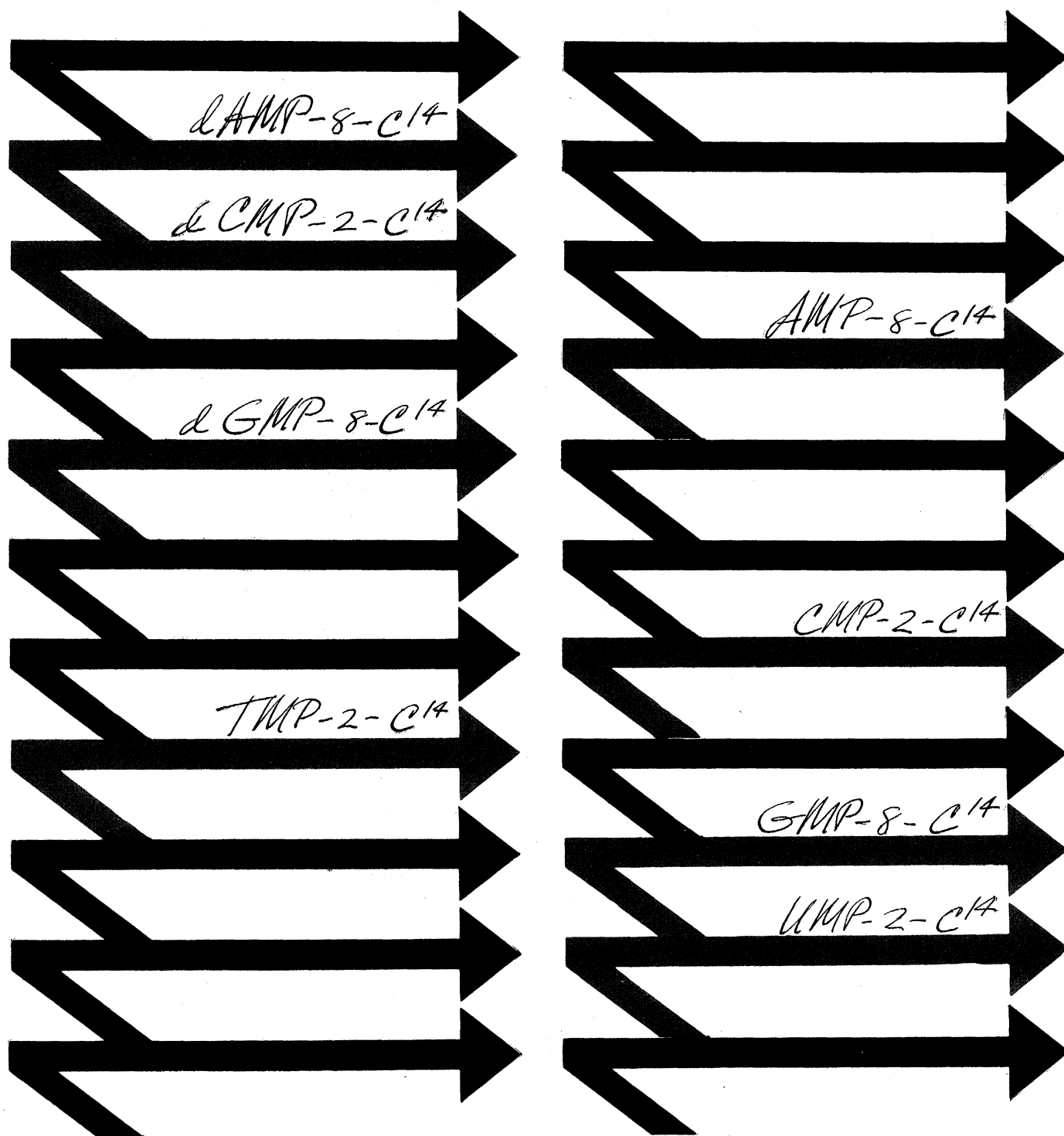
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The material in this section is prepared by the following contributing writers:

Robert L. Bowman (R.L.B.), 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 is obtained from manufacturers and other sources considered reliable. Neither *Science* nor any of the writers assumes responsibility for the accuracy of the information.

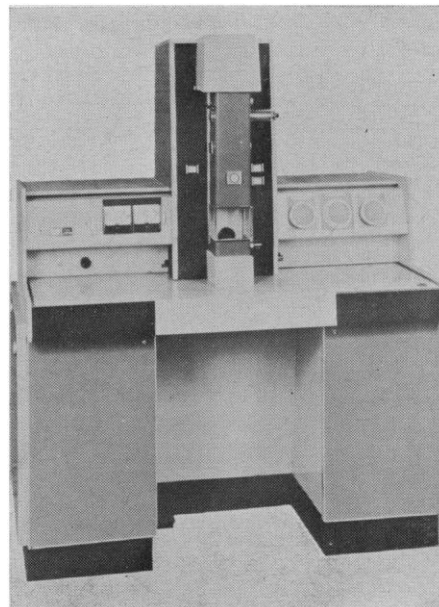
Address inquiries to the manufacturer, mentioning *Science* and the department number.

Temperature-humidity test chamber (model F-18 CHM) can be cooled to -100°F in 38 minutes by its sealed cascade refrigeration system and can be reheated to $+350^\circ\text{F}$ in approximately 20 minutes. A supplemental cooling system provides for thermo-shock cycles. Conditions are programmed and recorded by a two-pen cam programmer controller. Test space is 4 by 3 feet by 20 inches deep. Adjustable shelves are provided. Ports and viewing windows permit inspection. A diffuser distributes conditioned air evenly throughout the chamber. The cascade system dissipates heat from a 1000-watt live load at -65°F . According to the manufacturer, the chamber is designed for program cycle conditions of all known military specifications.—J.S. (Thermotron Corp., Dept. S499, 937 S. Washington, Holland, Mich.)

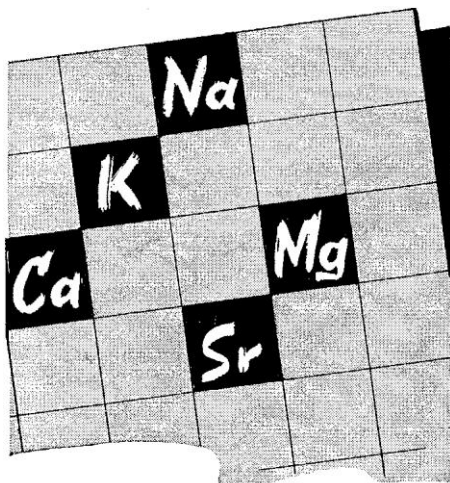
The model 10 **digital voltmeters** feature the capability of making full five-digit measurements at the rate of 5000 per second. Accuracy of $\pm(0.01 \text{ percent of reading} + 1 \text{ digit})$ is said to be maintained up to the top speed of operation of the instrument. Three types of instruments are offered in the series. The model 10A has binary-coded display and output; the model 10B has binary output and display; the model 10C has decimal readout and both decimal and binary-coded-decimal output. Full-scale ranges from ± 9.999 to $\pm 99.999\text{-v}$ are available. Resolution is 100 μv in a 9.999-v instrument and 1 mv in a 99.999-v instrument. Input impedance is 20,000 ohms for a 100-v range instrument and 2000 ohms for a 10-v range instrument. There is no heavy current transient during the early phases of the measurement cycle. Measurement rate can be controlled by the instrument's internal clock or by an external clock. Output power is adequate to drive data recorders or other accessories.—J.S. (Non-Linear Systems, Inc., Dept. S467, Del Mar, Calif.)

The model 7556-1 **six-dial guarded potentiometer** is designed for standard cell checking and calibration, for d-c measurements up to 1500 volts using a suitable volt box, and for calibrating other potentiometers. The instrument has three ranges: 0 to 1.6 v in steps of 1.0 μv ; 0 to 0.16 v in steps of 0.1 μv ; and 0 to 0.016 v in steps of 0.01 μv . The limit of error, assuming that a value other than zero is set on the highest dial, is $\pm(0.003 \text{ percent of reading} + 0.1 \mu\text{v})$ for the high range. The medium and low ranges have the same limit of error plus 0.002 percent for the reduction factors. The instrument is provided with two pairs of terminals mounted in a thermally lagged chamber on the top plate. The components of the potentiometer are housed in a thermally lagged inner shield and all terminals for standard cell; battery and detector are mounted on the back of the instrument. Rack mounting and bench-top mounting are available.—J.S. (Leeds and Northrup Co., Dept. S481, 4901 Stenton Ave., Philadelphia 44, Pa.)

Electron microscope (model EM-30) is said to have resolving power better than 35 Å. Magnification is continuously adjustable from 1000 to 20,000 at the camera plate. The instrument employs electrostatic optics; the specimen image does not rotate with change in magnification. Accelerating voltage is continuously adjustable from 10 to 40 kv. An automatic vacuum system provides pump-down times of 15 seconds to change specimens, 35 seconds to load camera, and 85 seconds for the entire microscope. Other features in-



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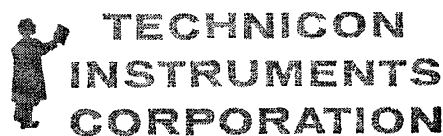


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clude a built-in camera for either 35-mm or 2-inch glass plates, an astigmatism corrector, a beam wobbler, and an interchangeable lens system.—J.S. (Mikros Inc., Dept. S494, 7634 S. W. Capitol Highway, Portland 19, Ore.)

Digital sine-wave generator (model 1350B) synthesizes sine functions by dividing them into increments and generating a binary number for each increment. The binary number is then converted into an analog voltage by a ladder network. Each half cycle of the function is specified by more than a thousand increments. Output pulses are provided to mark each of the four quadrature points: 0, 90, 180, and 270 deg. Timing of the increments is accomplished by means of pulses from a crystal controlled oscillator; frequency of the synthesized waves is said to be accurate to ± 0.02 percent. Amplitudes of the increments are derived from a stable voltage reference source.—J.S. (Navigator Computer Corp., Dept. S500, Valley Forge Industrial Park, Norristown, Pa.)

Timing sequencer of modular construction is an all-transistor instrument that can be assembled in a wide variety of counter sizes and an unlimited number of presetting channels. Counting rates ranging from 0 to 100 kcy/sec are programmed during the cycle. Event times are preset in decimal digits on the front panel. Display is provided by gas-discharge numeral tubes. Outputs are relays or silicon controlled rectifiers. An optional output provides a pulse train for recording time on strip-chart recorders and cameras.—J.S. (Ken Lee Electronics, Dept. S502, 2869 Kennedy St., Livermore, Calif.)

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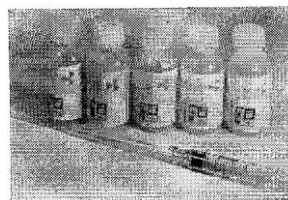
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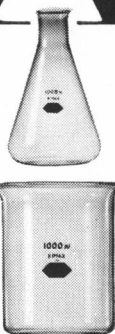
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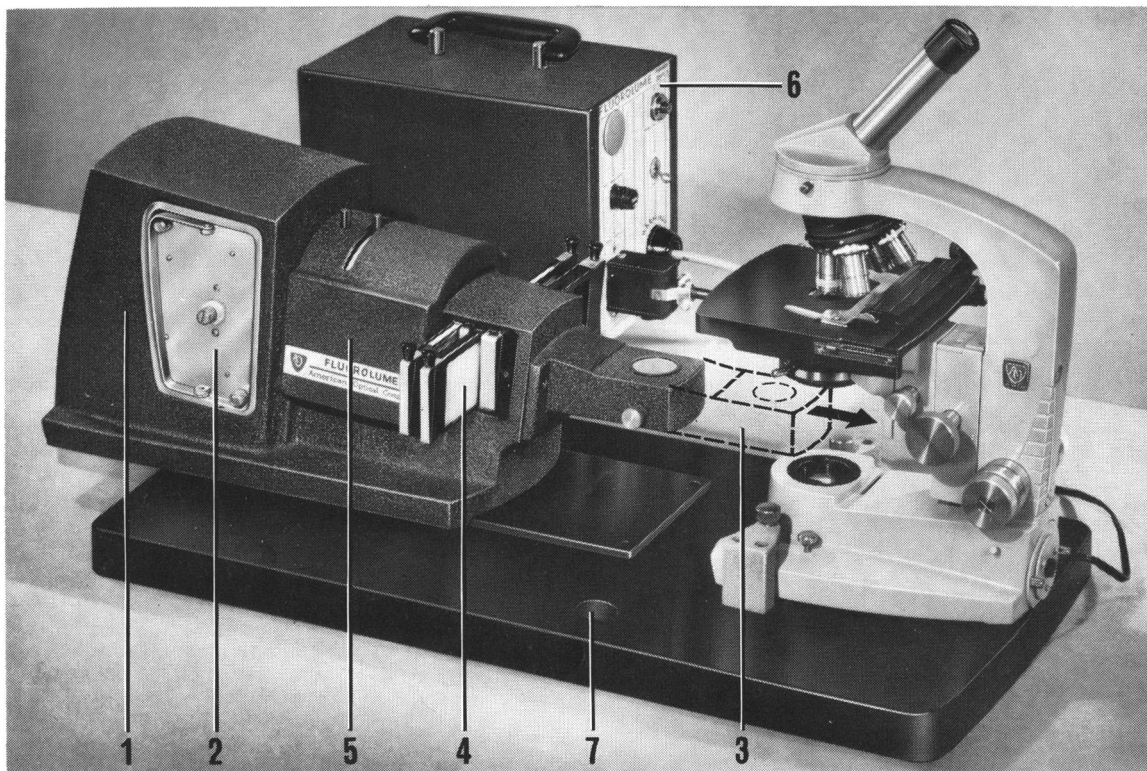
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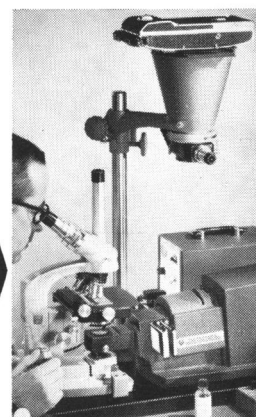
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