# Equipment

*The information reported here is obtained from manufacturers and from other sources considered to be reliable.* Science *does not assume responsibility for the accuracy of the information. A coupon for use in making inquiries concerning the items listed appears on page 218.*

■ VACUUM GAGE of thermocouple type uses a nonlinear scale to cover the range from 0 to 1000 μ-Hg with a least indication of 5 μ. Exposure to atmosphere will not cause damage. The instrument is obtainable with either one or two sensing tubes and in models suitable for operation from either a 115- or 230-v supply. (Consolidated Electrodynamics, Dept. 172)

■ FURNACE for growing single crystals of semiconductor materials can produce crystals up to 12 in. long. Temperatures up to 1550°C, controllable through a 15-kw saturable-core reactor to within ±1°C are provided. Crucible capacity is more than 9 $in^3$. A graphite double-helix resistive heating element is used. Crystal-pulling speed is continuously variable from 0 to 9.75 in./hr. Interchangeable heads permit operation under either inert gas or vacuum. (N.R.C. Equipment Corporation, Dept. 177)

■ DISSOLVED-OXYGEN ANALYZER automatically and continuously measures dissolved oxygen in high-purity water. Traces as low as 1 part in $10^9$ are detected. Ranges include 0 to 25, 0 to 50, 0 to 250 parts per billion and a tenfold extended range with the upper portion of the scale compressed for leak tracing during boiler start up. Signal output is 0 to 5 mv and is suitable for input to standard potentiometric recorders. Time for 90-percent response is approximately 2 min. Accuracy is ±5 percent of reading. Calibration and zero are stable to within ±1 part in $10^9$ for periods of weeks over an ambient temperature range 50° to 110°F. Accessories include a multiple-sample system for up to four streams, a calibrator, and temperature and pressure regulators. (Beckman Instruments, Dept. 182)

■ LABORATORY OVEN covers the range from room temperature to 200°C. Inside dimensions are 12 by 10 by 10 in. Air circulation is controlled by a thermostat. Shelves are adjustable in ½-in. increments. Models are available for operation at 110 or 220 v. (Grieve-Hendry Co., Inc., Dept. 189)

■ D-C AMPLIFIER is transistorized and equipped with a self-contained solid-state power supply. Band pass is from d-c to 50,000 cy/sec. Noise is less than 8 μv. Drift rates are expected to be less than 2 μv/wk. Gain is 0 to 1000. (Electro Instruments Inc., Dept. 199)

■ REFRIGERATED BATH is available in two standard sizes of 2.72- and 6.50-gal capacity. The refrigeration equipment includes a hermetically sealed compressor. Range of temperatures is 0° to 100°C with control accuracy of ±0.25°C. Two frequently used temperatures may be set for selection at any time, undisturbed by intervening use at other temperatures. Time required to reduce temperature from 32°C to 0°C is 120 min for the smaller model, 240 min for the larger. (Blue M Electric Co., Dept. 185)

■ DIAPHRAGM PUMP for low-volume pumping of oil-free air is designed for continuous operation. Vacuum up to 22 in.-Hg and pressure up to 40 $lb/in.^2$ are produced. Maximum displacement is 1 $ft^3$/min under free-flow conditions. Weight is 16.7 lb. Models are available for 115-v or 220-v operation. (Air-Shields Inc., Dept. 183)

■ CENTRIFUGE for testing electronic components produces accelerations as high as 50,000 *g*. Acceleration is read directly on a meter which functions through a selector switch, set to the specimen-mounting radius, and an electronic counter that indicates speed of rotation. Slip-ring assemblies are available as optional equipment. Set speeds are reached in less than 1 min. After running for a preset time, the machine automatically brakes to a stop. (American Machine and Foundry Co., Dept. 190)

■ MICROWAVE OSCILLATORS cover the range from 1 to 18 kMcy/sec in five swept ranges. Radio-frequency output is 10 mw minimum except in the 12 to 18 kMcy/sec range, in which the output is 1 mw. Frequency variation is linear with time, and sweep rate is adjustable from 10 cy/ to 0.01 cy/sec. (Alfred Electronics, Dept. 186)

■ AUTOMATIC TESTER can select any two of 240 points and measure resistance between them in the range of 1 ohm to 9.99 megohm. The tester may be programed to select 1, 5, 10, or 20 percent nominal tolerance or to pass any value above or below a selected median resistance. Testing rate is 60 to 100 tests per minute. (Lavoie Laboratories, Inc., Dept. 192)

■ COMPUTER LINKAGE SYSTEMS permit analog and digital computers to be interconnected. The system is of modular design. Data from the digital computer are converted to analog voltages in the range ±100 v and presented on command to the analog computer; similarly, analog voltages are converted to digital code form, 11 binary digits, including sign. Analog-to-digital conversion time is 22.5 μsec; digital to analog conversion time is 5 μsec. (Epsco, Inc., Dept. 200)

■ DECIMAL KEYBOARD for integration into electrical and electronic systems contains ten decimal and three optional-assignment keys. Single-pole, double-throw switches operated by the keys will handle 3 amp at 125 v a-c or 2 amp at 30 v d-c. The unit is available with or without housing and cable. (ElectroData Division, Burroughs Corp., Dept. 191)

■ MASSIVE TURNTABLE for mounting complete navigation system platforms weighing up to 500 lb achieves rotational and alignment accuracies of ±2 sec of arc. The table is tiltable ±90 deg. It is driven by synchronous motor at various multiples of the earth's rate of rotation. (Sterling Precision Corp., Dept. 193)

■ WAVE ANALYZER produces in permanent-record form an analysis of any repetitive complex waveform. Plots are either amplitude versus frequency, power versus frequency, or amplitude of a specific frequency versus time. Frequency range is 3 to 10,000 cy/sec. Frequency accuracy is ±1 cy/sec from 3 to 50 cy/sec, and ±2 percent from 50 to 10,000 cy/sec. Amplitude accuracy is ±5 percent of reading or ±0.2 percent of full scale, whichever is larger. (Minneapolis-Honeywell Regulator Co., Dept. 194)

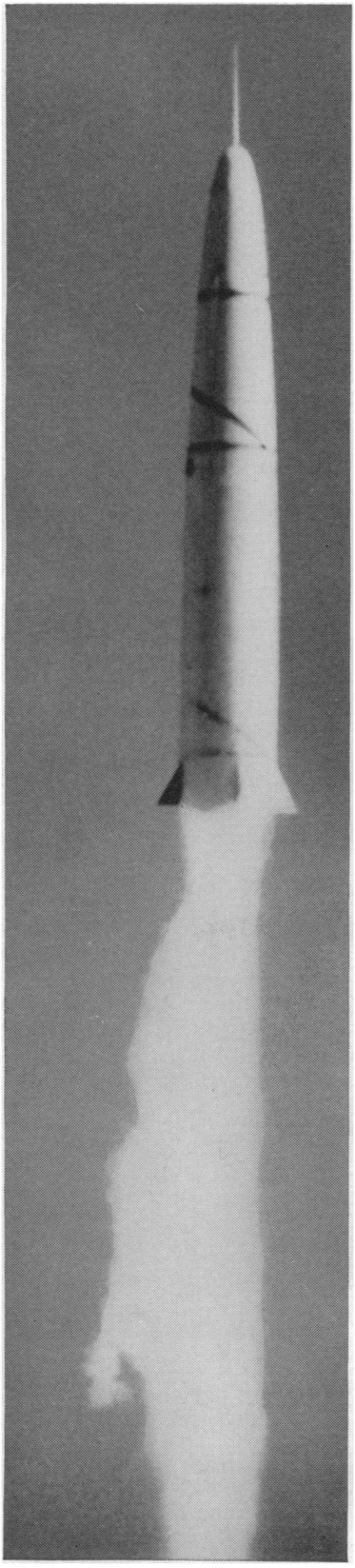
■ ISOLATED POWER SUPPLY designed for transistor circuits measures ⅞ by 1⅛ by 2½ in. and weighs less than 3 oz. Output voltages range from 4 to 26 v, currents from 9 ma at 4 v to 1.5 ma at 26 v. Output is Zener-diode regulated. Shunt capacitance to ground is 20 pf; leakage resistance to ground exceeds 10,000 megohm. (Elcor Inc., Dept. 195)

■ MOTION-PICTURE CAMERA is capable of speeds up to 400 frames per second. Two 16-mm models provide 100- and 200-ft capacities, respectively. Film is stopped completely during exposure and locked in position by a register pin. Operation is on 28 v d-c or 115 v a-c. (D. B. Milliken Company, Dept. 196)

■ SCRATCH INVESTIGATION MICROSCOPE, manufactured by Hilger & Watts in England, can be used in the field to measure scratches up to 0.025 in. deep on flat or curved surfaces. Accuracy is 0.001 in. A camera attachment permits making photographic records on 35-mm film. (Engis Equipment Company, Dept. 198)

■ TEMPERATURE-SENSING RESISTOR is a silicon solid-state device with a positive temperature coefficient of resistance of 0.7 percent/°C. Two configurations are available, an axial-lead molded form and a welded-case form. Resistance ratings range from 100 to 1000 ohm at 25°C. (Texas Instruments Inc., Dept. 184)

JOSHUA STERN
*National Bureau of Standards*



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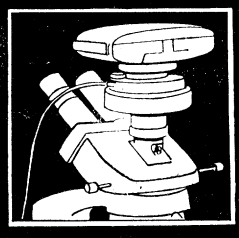

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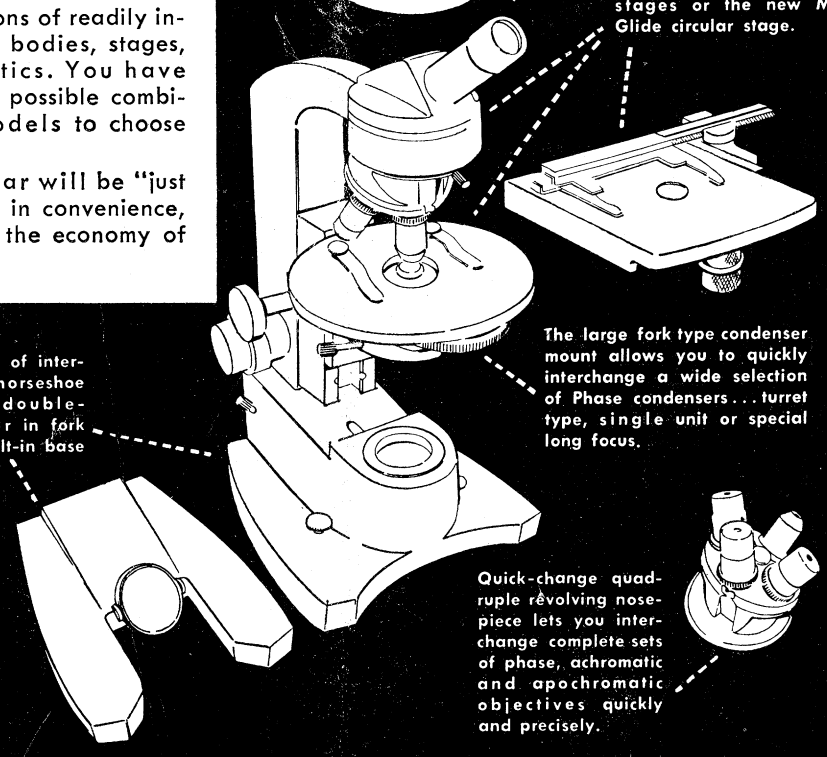

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