

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 434.

■ **DELAY RELAYS** use transistor circuitry and RC networks to provide delay intervals from 50 msec to several hours. Accuracy of all types is ± 10 percent. Voltage ranges are from 14 to 32 v d-c or 24 to 220 v a-c. Temperature range is -55° to $+71^{\circ}\text{C}$ or -55° to $+125^{\circ}\text{C}$. (Jordan Electronics, Dept. 253)

■ **TEMPERATURE TRANSDUCER** provides response as fast as 10 msec. With an amplifier, response of 1 msec can be achieved. Accuracy is said to be better than 0.1°F . The amplifier provides output of ± 5 v per 100°F with maximum output of ± 20 v available. The unit will withstand accelerations to ± 25 g at 0 to 200 cy/sec. (Astra Technical Instrument Corp., Dept. 254)

■ **PROPORTIONAL - COUNTER CONVERTER** connects to the input of a scaler to convert it to a proportional counter. The instrument incorporates a transistorized amplifier-discriminator. A standard chamber accepts samples up to 2.25 in. in diameter by 7/16 in. Conversion to chambers for larger or smaller samples may be made readily. (Nuclear Measurements Corp., Dept. 260)

■ **SUPPORT TOWERS** for supporting and positioning antennas, reflectors, and scale-model airframes are constructed entirely of low-dielectric-constant materials above the base unit. The load capacity is 200 lb, and the height is 8 or 16 ft. Positioning drive speed is variable. Two-axis position information is provided. (Scientific Atlanta Inc., Dept. 262)

■ **PORTABLE VOLTMETER** provides ranges for a-c voltage from 1 mv to 1000 v full scale; d-c voltages from 1 to 1000 v full scale; and resistance from 10 ohm to 10 megohm at half-scale. Over-all accuracy is 3 percent. An electrometer input has an input impedance greater than 10,000 megohm for the 0-to-1-v d-c range. Transistor circuitry is used. (Southwestern Industrial Electronics Co., Dept. 263)

■ **TRAINING REACTOR** of pool type is designed for use by universities and engineering schools. The reactor, which may be operated at power levels up to 10 kw, is prefabricated except for the concrete shielding, and can be installed in existing buildings. The pool tank is 7 ft in diameter. Standard equipment includes a thermal column, two beam tubes, and



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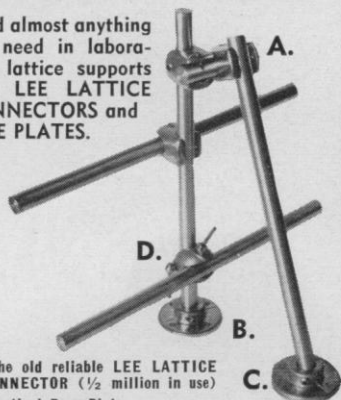


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one through tube. A circular walkway permits viewing of the internal workings of the reactor. (Nuclear Products, Dept. 274)

■ **FREQUENCY CONVERTER** accepts inputs from an impeller-type flow pick-up and converts the input frequency to a proportional d-c voltage. Time constants are selectable from 1 msec to 2 sec. Full-scale frequencies are 500, 2500, and 10,000 cy/sec. Accuracy and stability are said to be better than ± 0.1 percent. (Syston Corporation, Dept. 261)

■ **HEATING BLOCK** is equipped with 13 compartments to accommodate 38-by-300-mm test tubes for aging tests. The temperature is controlled over the range of 100° to 600°F. A temperature controller is provided to prevent override of the master control unit. The block body is made of aluminum and it weighs approximately 169 lb. (Product Packaging Engineering, Dept. 264)

■ **OSCILLOGRAPHIC CHART VIEWER** provides variable chart-drive speeds from 15 in./min to 100 ft/min. Charts up to 16 in. wide and 200 ft long are accommodated. A direction-reversing switch allows re-winding at any time, and an automatic brake prevents supply-roll overrun upon reduction of speed. A sliding cursor has provision for angular adjustment. (Sanborn Co., Dept. 265)

■ **RELAY TESTER** permits measurement of pull-in and drop-out voltages, contact make-and-break time, contact bounce, overlap time on make-before-break and break-before-make contacts, and contact resistance. Display is provided on a meter and oscilloscope. Adapters for a variety of relays are available. (Schmeling Electronics, Dept. 267)

■ **SAMPLE APPLICATOR** for chromatography holds up to seven pipettes, rocking them so that their tips are applied 6, 12, or 18 times per minute to the paper surface. The distance between the points of application is 1 in. Warm air from a blower flows continuously to dry the sample between successive applications. Air flow is regulated by individual valves for each sample. Provision is made for connection of a vacuum line to increase drying efficiency. (Scientific Products, Dept. 276)

■ **RESISTANCE CALIBRATOR** operating on methods developed at the National Bureau of Standards, permits calibrations up to 100 megohm, with accuracy of ± 0.01 percent. The instrument consists of 10 precision resistor steps made with encapsulated wire-wound resistors. Each step is adjusted within ± 0.01 percent of nominal. (International Resistance Co., Dept. 277)

■ **LOW-DIELECTRIC-CONSTANT MATERIAL** consists of thin-walled hollow glass spheres ranging in size from 30 to 300 μ in diameter. The bulk appearance resembles sand. Some grades of material are stable at 1500°F. The dielectric constant is 1.15; dissipation factor, 0.002; and bulk density, 10 lb/ft³. (Emerson & Cuming, Inc., Dept. 268)

■ **FORCE TRANSDUCER** is operated on the differential-transformer principle, and provides an output of 1.68 v full-scale into a 5000-ohm resistive load with 115 v, 60 cy/sec excitation. The range is 75 or 240 lb. Linearity is ± 0.5 percent, with hysteresis less than 0.09 percent. Temperature drift and sensitivity at zero are within 2 percent of full scale per 100°F. (Edcliff Instruments, Dept. 270)

■ **THREE-PHASE OSCILLATOR** covers frequencies from 1 to 1000 cy/sec in three decade bands. Output is 7 v line-to-line and 4 v line-to-neutral at no load. The phase shift between any two phases is 120 ± 1 deg. Total harmonic distortion is less than 3 percent. Output impedance is approximately 30 kohm line-to-line, or 10 kohm line-to-neutral. Input is 70 w, 115 v a-c 60 cy/sec. (Genisco Inc., Dept. 275)

■ **SEGMENTAL RECORDER** is a multichannel plotter that features a separate graph on a strip chart of data as a function of time for each input. Up to 192 channels can be plotted; 24-, 32-, 48-, or 96-channel instruments are also available. The individual graphs measure 5 1/2 by 6 in. (Gilmore Industries, Inc., Dept. 280)

■ **VIBRATION TESTER** permits observation of displacement, velocity, or acceleration by choice of switch setting. Six decade ranges cover full-scale displacements from 0.001 to 100 in. Velocity is indicated from 0.01 to 1000 in./sec full-scale, and acceleration scales range from 0.1 to 1000 g. The frequency range is from 5 to 5000 cy/sec. The transducer used is a velocity pick-up. (Ling Electronics, Inc., Dept. 272)

■ **THERMOREGULATOR** is sensitive to a few thousandths of a degree and is adjustable with an accuracy better than 0.1°C. Adjustment is accomplished by micrometer displacement of a plunger in an exact mass of mercury. Temperature is read on a mechanical counter coupled to the micrometer. Range is set by a second, larger plunger. Counter range is 100°C. (Emil Greiner Co., Dept. 278)

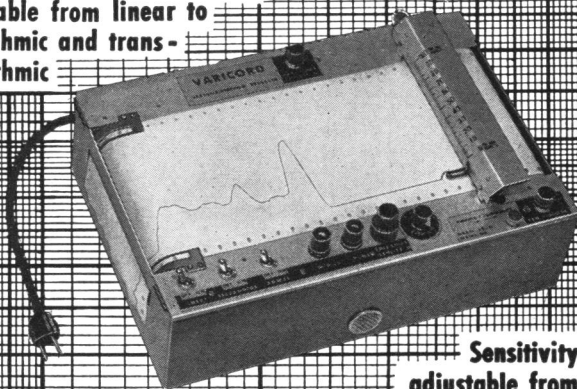
■ **OVEN** for accelerated-aging tests is equipped with a rotating sample holder positioned so that samples can be suspended and rotated at approximately 1 rev/min. The rotating shelf is 14 in. in diameter and has 37 1-in. openings.

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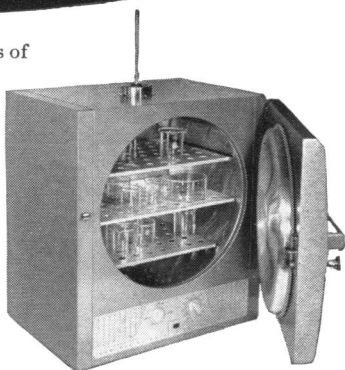
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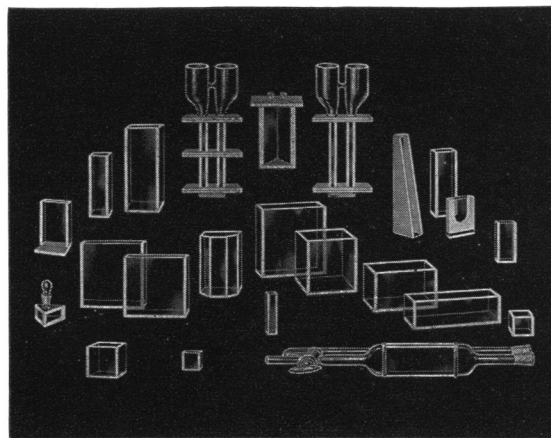
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■ OHMMETER for transistor circuitry features loading of less than 30 mv to 300 ohm. The instrument is direct-reading from 10 mohm to 10 megohm in eight ranges. Accuracy is ± 2 percent. Dimensions are 8½ by 6 by 4½ in. (Electronic Applications, Dept. 281)

■ POTENTIOMETER, SIGNAL SOURCE, and MILLIAMMETER are combined into one instrument designed for testing, calibrating, or servicing controllers and amplifiers. The potentiometer ranges are 0-to-60 and 95-to-105 mv. Voltage taps are provided at 10, 20, 30, 40, 50 and 95 mv, with 0 to 10 mv available from a multiturn slidewire in 2.5 μ v increments. An indicating meter is scaled at 0 to 5 ma d-c. (Technique Associates, Inc., Dept 287)

■ THREE-AXIS FLIGHT SIMULATORS duplicate the forces of flight or vessel motion in yaw, pitch, and roll. Speeds up to 50 cy/sec are possible. The units are hydraulically actuated, and the oscillation frequency between axes may be adjusted independently. (J. W. Fecker, Inc., Dept. 282)

■ OSCILLOGRAPH RECORDER writes by the heated-stylus method on rectangular coordinates. Models are available with two to six channels. The frequency response is flat to 70 cy/sec. Eight chart-drive speeds, from 1 to 250 mm/sec, can be selected. The unit is constructed for 19-in. rack mounting. (Edin Co., Inc., Dept. 266)

■ DIGITAL VOLTMETER is a two-module unit consisting of a switch module and a power module. A five-digit display, with automatic ranging and polarity, covers the range from 0.0001 to 999.99 v. Accuracy is 0.01 percent ± 1 digit. Stability is better than ± 0.01 percent. (Electro Instruments Inc., Dept. 269)

■ DROP-COUNTER ACCESSORY extends the range of the manufacturer's fraction collector from 400 to 800 drops per fraction. In addition, the device may be used to count and register the total number of fractions collected, or the total number of drops. Totals are recorded on a six-digit mechanical register. (Research Specialties Co., Dept. 283)

■ TAPE PERFORATOR accepts fixed data from tabulating or edge-punched cards and variable data through its keyboard, and combines the information in its punched-tape output. The equipment is comprised of a separate input console and tape punch, so that a number of remotely located input stations may feed on a single punch. (Taller and Cooper Inc., Dept. 285)

■ AUTOMATIC STOPPERING DEVICE permits sealing of bottles or vials, in which material has been freeze-dried, while they are still in the vacuum chamber. Stoppers are held above the bottle necks in special holders to permit unobstructed drying. At the end of the drying period, the stoppers are forced into place by a pneumatically operated pressure plate. (F. J. Stokes Corp., Dept. 295)

■ CANNULAS for extracorporeal circulation are fabricated of flexible nontoxic vinyl plastic, and may be autoclaved. A double-lumen cannula and an intraperitoneal cannula are available. The latter is transversely ridged to assure continuous return flow, even when it is surrounded by omentum. (Medical Development Corp., Dept. 296)

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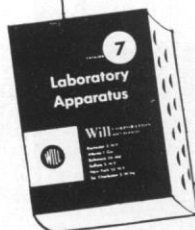
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*Shoreham	all 9.00	all 12.00	all 12.00	20.00-50.00
*Statler	all 10.00	all 14.00	all 14.00	24.00-30.00
*Washington	7.00- 8.00	11.00-12.50	11.00-12.50	24.50-45.00
*Willard	10.00-12.50	13.00-17.00	14.00-18.00	25.00-35.00
Roosevelt	7.00- 9.00		10.00-12.00	18.00-24.00
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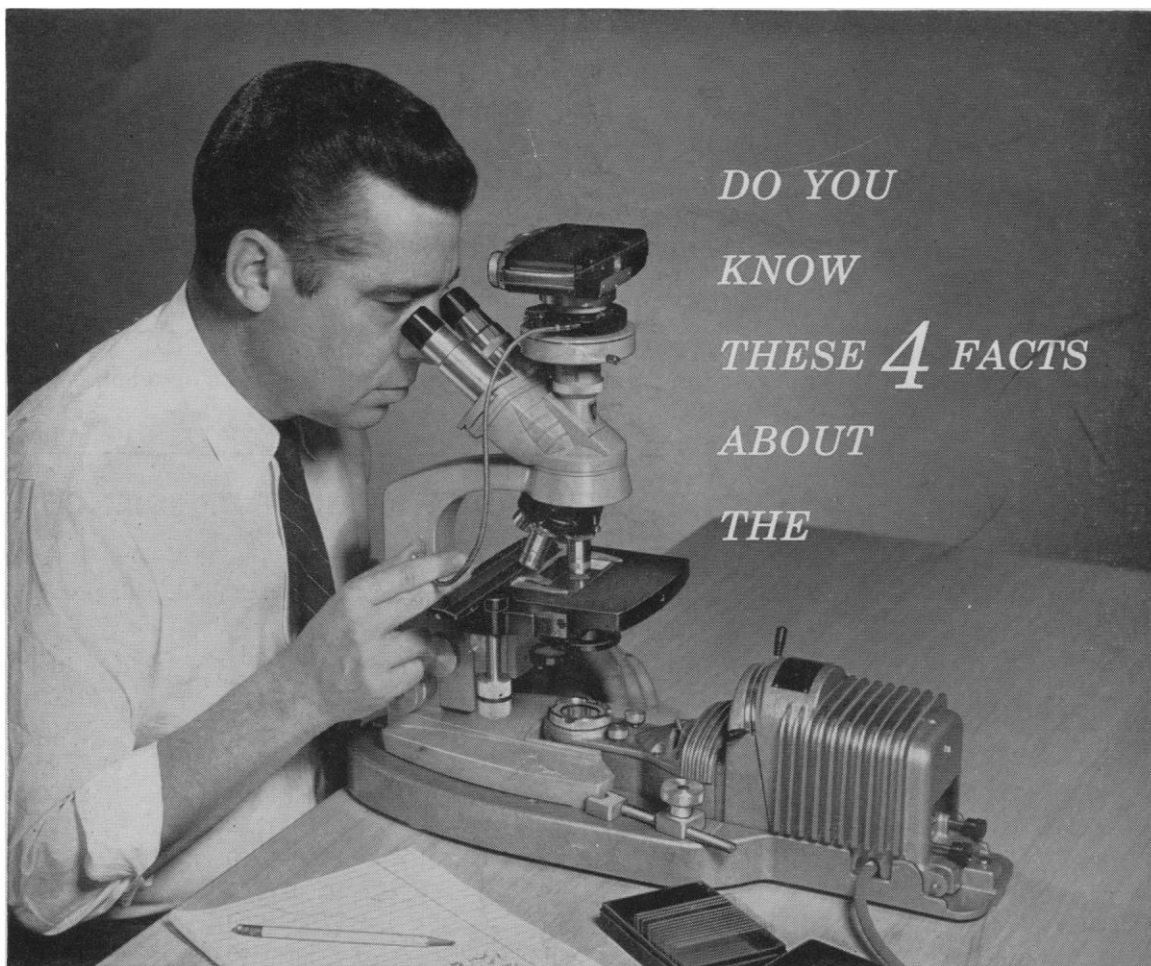
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