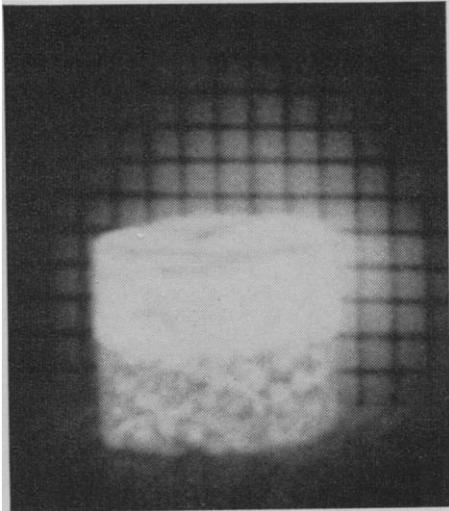


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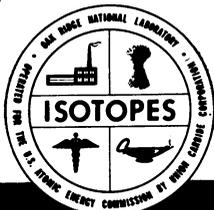
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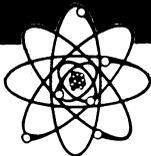
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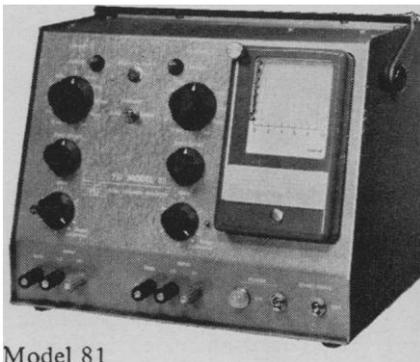


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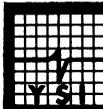
Model 81

Major Features

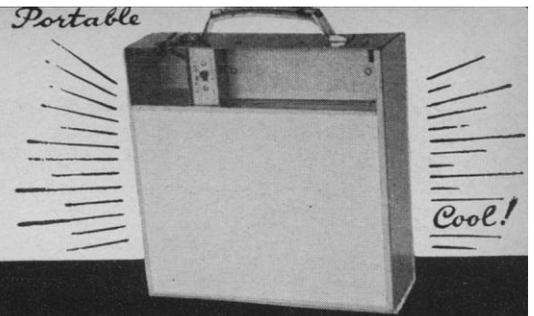
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■ **RESISTIVITY MEASURING TEST SET** for semi-conductor materials features easily interchangeable heads with separate heads for germanium and silicon and a 12-in. traversing platform, for long crystals, with visual scale of travel measure (see Fig. 1). Each probe is mounted on double ruby bushings, and a tolerance of 0.0001 in. variation in probe-point spacing is maintained in use. Accuracy is said to be ± 2 percent. (Semimetals, Inc., Dept. Sci50, 133-20 91 Ave., Richmond Hill 18, N.Y.)

■ **ISOLATION TRANSFORMER** featuring low distributed capacitance between the secondary winding and ground furnishes 350 watts to permit isolating a complete instrument or a component circuit from ground. Shunt capacitance has been reduced to 40 pf. Leakage resistance for the secondary winding exceeds 100 kMohm, and breakdown voltage is greater than 5000. (Elcor Inc., Dept. Sci9, Falls Church, Va.)

■ **MAGNETIC DETECTOR** can measure the magnetic field intensity near the surface of recording media such as magnetic tapes, disks, and drums. The device, said to be capable of resolving 5×10^{-6} in.², comprises a high-gain, low-noise, narrow band-width amplifier and an indium antimonide Hall-effect probe. (Hallex, Inc., Dept. Sci14, 310 E. Imperial Highway, El Segundo, Calif.)

■ **REVERBERATION CHAMBER** subjects parts to be tested to 150 db of acoustic power with a wide-band noise siren powered by air at 30-lb/in.² pressure. Air consumption is 60-ft³/min. The chamber is said to provide random frequency down 5 db at 100 cy/sec and down 10 db at 10,000 cy/sec; sinusoidal-input harmonic distortion is less than 15 percent. Volume of the chamber is 27 ft³; 40 percent of the volume is usable. (PAM Associates, Inc., Dept. Sci57, 4127 Hayward Ave., Baltimore 15, Md.)

■ **HUMIDITY METER** is said to measure dewpoints as low as -150°C . The humidity sensor is a wire coated with a hygroscopic dielectric layer which in turn is coated with permeable gold. The capacitance of the sensor varies with the moisture content of the dielectric layer; the capacitance is indicated on the instrument dial. The capacitance change amounts to 0.1 μf , allowing considerable separation between sensor and indicating instrument. (Atkins Technical, Inc., Dept. Sci22, 1276 W. 3 St., Cleveland 13, Ohio)

■ **PORTABLE FLOW CALIBRATOR** is capable of handling jet fuel flow from 100 to 100,000 lb/hr with accuracy said to be ± 0.25 percent of reading. Other ranges can be provided. The complete instrument weighs 250 lb. The calibrator employs three turbine-type flowmeters with overlapping ranges. The signals generated by the flowmeters drive digital instruments to indicate in 0.1-, 1-, and 10-lb increments. An air purging system permits the calibrator to be used in hazardous areas. (Potter Aeronautical Corp., Dept. Sci52, Union, N.J.)

■ **POLAROGRAPHIC INSTRUMENT** embodies the principles of a-c polarography. The voltage applied to the cell consists of low-level square waves superimposed on a slowly changing d-c polarizing voltage. The normal polarographic step is recorded as a peak whose maximum height occurs at the half-wave potential. The instrument is said to be capable of resolving elements whose half-wave potentials differ by as little as 20 mv. Accessories furnished include a thermostatically controlled constant-temperature bath, four cells, mercury pressurization system, nitrogen supply, and built-in monitoring oscilloscope and recorder. (Instrument Corporation of America, Dept. Sci20, 516 Glenwood Ave., Baltimore, Md.)

■ **RECORDING FLOW PHOTOMETER** charts photometric readings of a sample stream through three separate photometer channels arranged vertically in a straight line so that a single glass absorption cell lines up with the three light beams. The equipment is designed to be directly applicable to amino acid analysis. One measurement is made at 440 $m\mu$ with half-band-width of 16 $m\mu$, and two measurements are made at 570 $m\mu$ and 7- $m\mu$ half-width at two optical path lengths. (Research Specialties Co., Dept. Sci44, 200 South Garrard Blvd., Richmond, Calif.)

■ **DATA ACQUISITION SYSTEM** is a solid-state recording system for acquisition and processing of operating and test data. The system consists of three components: a high-speed scanner in ten channel multiples, an analog-to-digital converter, and an output format control. The scanning and conversion equipment accepts low-level signals without preamplification. The format control receives digital information from either the analog-to-digital converter or from external channels. Also acceptable is digital information from clocks or counters. The format control converts the digital input information to the format required for magnetic-tape programming and computer entry. Input to the system is differential, and scanning speed is 600 channels per second. (Electro-Instruments, Inc., Dept. Sci35, 3540 Aero Court, San Diego, Calif.)

■ **SOIL-RESISTANCE MEASURING UNIT** measures soil resistivity up to 86,500 ohm/cm² when employed with a single rod resistivity setup. For determining anode resistance and other effects when two- or three-electrode setups may be employed, soil resistance up to 10,000 ohms may be measured. The instrument weighs 10 lb with self-contained battery supply. (Associated Research, Inc., Dept. Sci38, 3777 W. Belmont Ave., Chicago, Ill.)

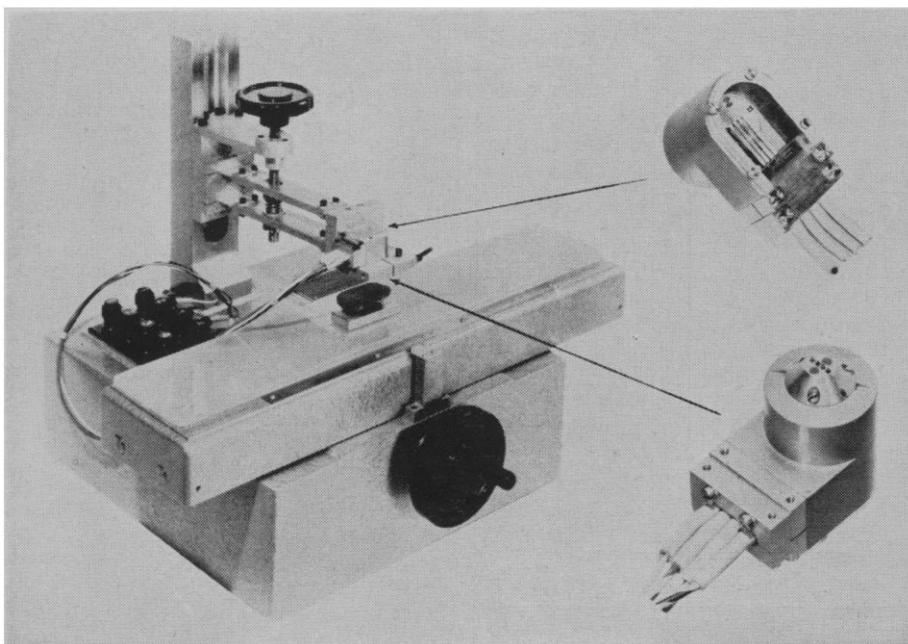


Fig. 1. Resistivity measuring test set.



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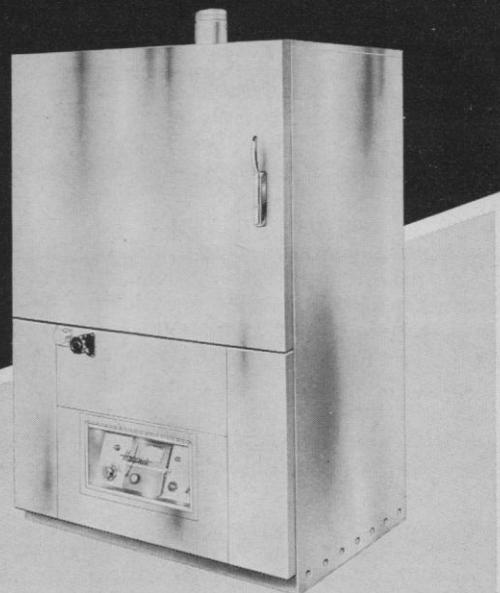
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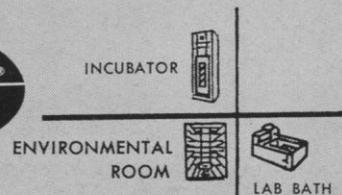


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■ **SERUM-PROTEIN METER** (Fig. 2) provides three-step analysis for protein in serum. The serum sample is centrifuged, the instrument is zeroed with distilled water, and the sample cell containing serum is then placed on the instrument, which reads directly in grams of protein per 100 ml. Sensitivity is 0.1 gram; range is 0 to 12 g/ml. A second scale reads refractive index difference to 0.0234. Measurement requires 2.5 ml of serum. (Bausch & Lomb, Inc., Dept. Sci60, Rochester 2, N.Y.)

■ **PULSE GENERATOR** furnishes pulses of variable repetition rate from 10 Mcy/sec to 100 cy/sec; duration variable between 0.05 and 1000 μ sec; delay variable between 0.02 and 1000 μ sec; rise time less than 10 nsec; and output amplitude 12 volts on open circuit and 8 volts into 180-ohm load. The instrument is transistorized and of modular construction. (Electro-Pulse, Inc., Dept. Sci37, 11861 Teale St., Culver City, Calif.)

■ **MASS SPECTROMETER**, type 21-110, is of the Mattauch-Herzog type in which a tandem arrangement of electric and magnetic fields focuses ions having the same mass but different initial velocities and directions. Mass range is 2 to 2000, and molecules differing in mass by 1 part in 2500 are said to be separable.

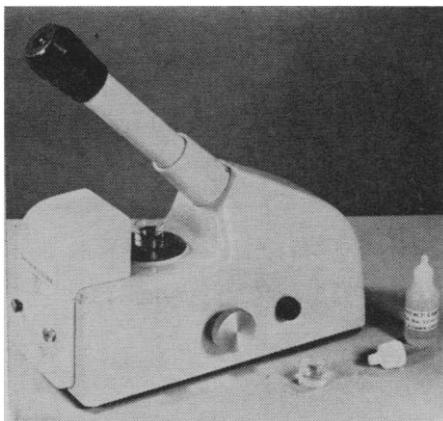


Fig. 2. Serum-protein meter.

The high resolution permits extension to analysis of solids by combination of the spectrometer with a radio-frequency-spark ion source. Metal samples are clamped by pin vises into the electrodes of the ion source. The spark across the samples sends ionized molecules of the sample into the mass resolving system. For use with gas or liquids, the spark source is replaced by an electron-bombardment source. Either a photographic plate or an ion-collector plate may be used as the detector. (Consolidated Electrodynamics Corp., Dept. Sci45, 360 Sierra Madre Villa, Pasadena, Calif.)

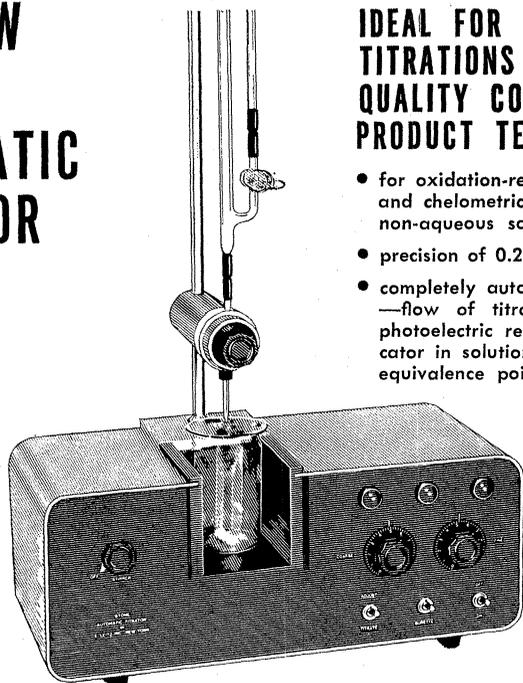
■ **TRANSFER-FUNCTION ANALYZER** obtains transfer functions, frequency by frequency, for random, complex, periodic, or sine wave driving signals. Output is provided in the form of Nyquist or Bode plots. The two signals to be analyzed are respectively the cause and effect signals from the device or system under test. Input-signal voltage levels between 1.0 and 10 volts r.m.s. are accepted. Input impedance is 1.5 Mohm. Operating frequency ranges are 0.5 to 3, 3 to 20, 20 to 200, and 200 to 2000 cy/sec. The input frequency to the unit is swept at a maximum rate of 1 octave in 15 sec; dynamic range is 50 db. Output signals, the in-phase and out-of-phase vector voltages within ± 10 volts d-c, are fed to an X-Y recorder. Output signal errors are stated to be ± 5 percent. (Gulton Industries, Inc., Dept. Sci40, P.O. Box 37, Princeton Junction, N.J.)

■ **FLYING-SPOT PARTICLE RESOLVER** is capable of automatically counting, sizing, and determining the area of microscopic particles within the field of view and of producing a picture of this field on a cathode-ray tube. The instrument also produces an electronic signal suitable for transmission to remote indicators. Magnification up to 8000 diameters is provided with 700-line definition and resolution of 10^{-4} cm. Alternative arrangements permit operation with microscope slides, 35-mm film, and 2-by-2-in. electron micrographs. The instrument can be applied to phase-contrast and dark-field microscope samples by first photographing the samples and using a 35-mm film adapter. (Instrument Corporation of America, Dept. Sci46, 1545 Kennewick Rd., Baltimore 18, Md.)

■ **INTEGRATOR** for standard strip-chart recorders reads out the integral on demand with accuracy said to be ± 0.25 percent of full scale. On a 10-in. wide strip chart moving at 1 in./min, read-out accuracy corresponds to 0.004 in.² of input. The integral is read back into the recorder itself when the operator judges that integration has been completed. The integrator is then reset automatically, and the pen is returned to zero for the next integration. With the addition of a zero-sensing device, the integrator becomes a fully automatic integrating and peak-transmitting device for gas chromatograms. (Schlumberger Well Surveying Corp., Dept. Sci41, Ridgefield, Conn.)

■ **MAGNETIC-TAPE TESTER** is said to detect tape defects as small as one bit in length at speeds up to 150 in./sec and packing densities as high as 1500 bits per inch. Faults are indicated by a pilot lamp on each channel; the tape transport stops on the fault which is then

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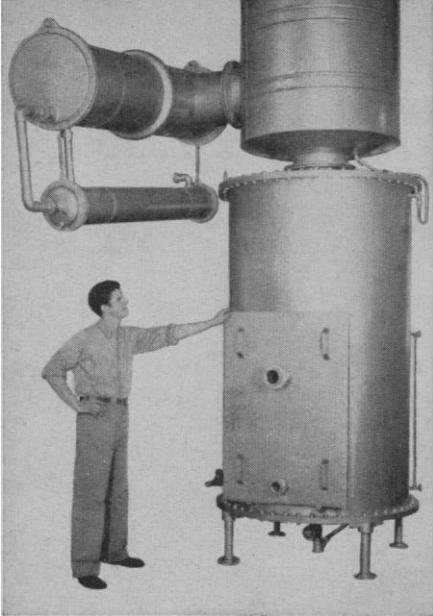
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■ **PULSE GENERATOR** is capable of delivering simultaneously a positive and negative pulse of 2 to 100 nanosecond duration. Rise time is 0.5 nsec, and repetition rate is adjustable between 10 and 100,000 pulses per second. Pulse amplitude is fixed at approximately 8 volts into 50 ohms. Output pulses are preceded by trigger pulses with time difference adjustable over a 100-nsec range. Triggering can be effected by an external source delivering a positive pulse. Because the instrument is all electronic (no mercury switches are used), it can operate in any position. (Edgerton, Germeshausen & Grier, Inc., Dept. Sci19, Boston, Mass.)

■ **VACUUM PUMPING SYSTEM** is a fractionating 6-in. diffusion pump complete with refrigeration, Chevron-type baffle, and hand-operated butterfly valve. The baffle is refrigerated to approximately -30°C by a self-contained, hermetically sealed unit. The system is designed particularly for compactness, over-all height being less than 28 in. Ultimate pressure is said to be less than 5×10^{-7} mm-Hg. (Edward High Vacuum Inc., Dept. Sci36, 1920 Buffalo Ave., Niagara Falls, N.Y.)

■ **COLOR GENERATOR**, for color matching, reconstructs natural daylight by use of color filters, and incandescent, fluorescent, and ultraviolet tubes which are blended by simple preset controls to duplicate the desired type of light. Two table-top models are available, one of which is equipped with a shield that keeps extraneous light away from the object being illuminated. (Gamain Company, Dept. Sci63, 5th and Richmond Sts., Kansas City, Kan.)

■ **THERMAL TEST SET** for measurement of transistor and diode temperatures and other temperatures encountered in electronic equipment design is direct reading; ambient temperature compensation is provided. Accessories include small thermoelectric junctions, a thermometer probe, and evacuated glass thermocouples. Switches permit selection of any one of four outputs. (Rescon Electronics Corp., Dept. Sci62, 151 Bear Hill Rd., Waltham 54, Mass.)

■ **OZONE RECORDER**, model 725-3B, covers the operating range 0 to 100 parts per million by volume. The record is produced on a 6-in. strip chart directly

in terms of ozone concentration. Measurement of ozone is based on an electrochemical reaction occurring at polarizing electrodes immersed in a potassium iodide reagent solution. Sampling rate is approximately 140 cm^3/min . Sensitivity is ± 2 percent of full scale, and response time is 1 min for 75-percent response. Power requirement is 110 volt a-c (100 watts) and one 1.34-volt mercury cell. The instrument will operate unattended for approximately 3 days. (Mast Development Co., Dept. Sci68, Davenport, Iowa)

■ **HYDRAULIC JACK** is designed to apply and maintain the precise loads necessary for use with calibrating instruments, such as proving rings, in the calibration of mechanical-force measur-

ing equipment. A large piston in the pump operates until the pressure reaches approximately 750 $\text{lb}/\text{in.}^2$, after which smaller piston becomes effective. Available capacities are 10,000, 30,000, 60,000, and 100,000 lb. (Morehouse Machine Co., Dept. Sci49, 1742 Sixth Ave., York, Pa.)

■ **CROSSBAR SCANNER** provides a 100-channel, six-pole-per-channel capacity which can be readily altered to exchange poles for increased channels. According to the manufacturer, life of the scanner is 20,000,000 operations per cross point. Scanning speeds range up to 50 closures per second per pole. A logic chassis provides commands of start, step, stop, return to "off," reset to zero, designate channel *N* as first, designate

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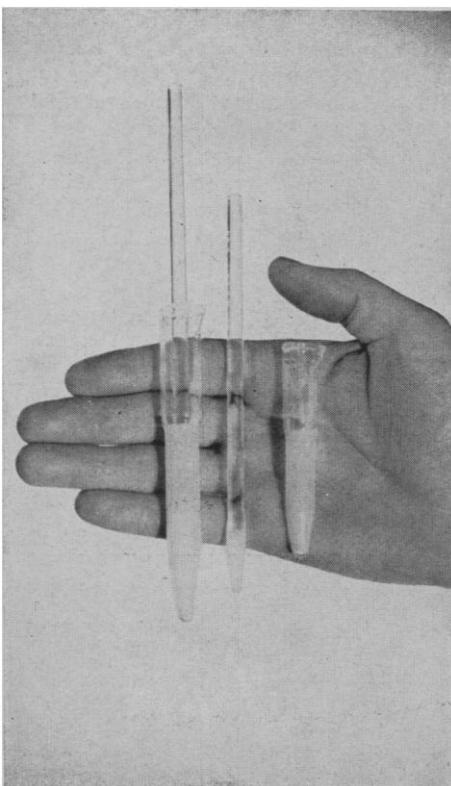
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■ **REMOTELY OPERATED MICROMETER** consists of a micrometer head operating on the screw principle, an electronic control console, and connecting cable. Digital readout to $\pm 10^{-5}$ in. is displayed on the console. Measuring range is 1 in. The head can be remotely zeroed at any point within its measuring range. The micrometer head is said to exert negligible pressure on the work. (J. W. Dice, Dept. Sci7, Englewood, N.J.)

■ **LIQUID NITROGEN LEVEL CONTROLLER** uses a temperature sensing element that sends a signal to a magnetic amplifier if the temperature is above a pre-set range. The amplifier will then cause a solenoid valve to open, admitting more liquid coolant to the baffle. When the required lower temperature is again reached, a second signal from the sensing element causes the solenoid valve to close and turn off the coolant supply. (Consolidated Vacuum Corp., Dept. Sci51, 1775 Mt. Read Blvd., Rochester 3, N.Y.)

■ **MONITORING OSCILLOSCOPE** will simultaneously display up to eight waveforms on a vertically mounted 17-in. cathode-ray tube. Repetitive and single-sweep speeds of 5, 2.5, and 1.5 in./sec are provided. A 25-sec single sweep is also available. Sweep linearity is said to be better than 3 percent. Frequency response of the gating amplifiers is said to be from d-c to 1000 cy/sec; response is 3 db down at 1000 cy/sec. (Sanborn Co., Dept. Sci42, 175 Wyman St., Waltham 54, Mass.)

■ **MICROORGANISM MILL** reduces bacteria, spores, molds, yeast, and pollen granules in hopper capacities ranging from 150 ml to 2 lit. Glass beads, approximately 120 μ in diameter, are incorporated to mix with the slurry, and a set of cutter knives assists in keeping the slurry in suspension. Final refining is performed by hard-faced 2-in. rotor and stator with gap adjustable between 0.0005 and 0.125 in. The equipment is completely enclosed to provide a controlled atmosphere. (Gifford-Wood Co., Dept. Sci33, Hudson, N.Y.)

■ **X-RAY DIFFRACTOMETER**, manufactured by Hilger & Watts, can be used with x-ray equipment having a tube window not less than 10 1/2 in. above the table on which the diffractometer stands. The diffractometer has double-beam operation and six scanning speeds with continuous scanning. A powder sample holder, a block sample holder, and an integrating holder for heterogeneous

samples may be interchanged. Alternative detectors include Geiger-Mueller counter, scintillation counter, or semi-proportional counters. A two-circle version of the diffractometer is intended for work with single crystals. Its detector can be tilted up to 50 deg for measuring reflections above the equatorial plane. (Engis Equipment Co., Dept. Sci61, 431 S. Dearborn St., Chicago 5, Ill.)

■ **ELECTROLYTIC PROCESS UNIT** for hard anodizing, plating, or electrochemical milling consists of a Lucite plating tank equipped with anode and cathode racks, cooling coil, and agitator; a 20-amp rectifier; and a ¼-ton refrigeration unit; the components are assembled into a desk-size unit 45 by 22 by 40 in. high. Optional equipment includes an immersion heater. Operation is on 120 volts a-c. (Allen Aircraft Products, Inc., Dept. Sci39, Ravenna, Ohio)

■ **POLAROGRAPHIC ANALYZER** provides 23 current ranges from 0.5 to 300 μ a full scale and ten polarizing ranges, from +1½ to -5 volts. Accuracy of the unit is said to be \pm ½ percent for current and voltage, repeatability \pm ¼ percent. The recorder chart is 5 in. wide; chart speed is ½ in./min. Bridge drive is synchronous, with a rotation time of 10 min. Standardization is manual against an internal cell. (Nesco Instruments, Inc., Dept. Sci43, 638 W. 17 St., Costa Mesa, Calif.)

■ **PHASE-SHIFTING TRANSDUCERS** are designed for use at specific frequencies to provide an output signal the phase of which is a function of shaft rotation. Maximum operating speed is 5000 rev/min. The transducers are complete phase-shifting systems, consisting of capacitor, bridge network, and balanced-line components in a single housing; components are capacitance coupled. (Nilsen Manufacturing Co., Dept. Sci48, 23 N. Church St., Addison, Ill.)

■ **TWO-PEN, TWO-AXIS RECORDER** includes three servo-actuated drives for x, y, and y₂, isolated from ground. Recording speed is 1½ sec full scale on x-axis and ½ sec full scale on the y-axes. Full-range zero set and one full scale of zero suppression are provided on each axis. Ten input voltage ranges from 7.5 mv to 150 v are provided on the x-axis, and ten ranges from 5 mv to 100 v are provided on the y-axes. (F. L. Moseley Co., Dept. Sci15, 409 Fair Oaks Ave., Pasadena, Calif.)

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circuit reduces the influence of varying cell resistance. Connection can be made to a Z jack for impedance measurements. (LKB Instruments, Inc., Dept. Sci17, 4840 Rugby Ave., Washington 14, D.C.)

■ **RUNNING-TIME METERS**, housed in multiples of ten in a 7-by-13-in. housing, are available for reading to the nearest hour and tenth, tenth and hundredth, or minute and tenth. Signal lights, one for each meter, indicate when time is being accumulated. The unit operates on 26 volts. (Gorrell & Gorrell, Dept. Sci30, Westwood, N.J.)

■ **SEMICONDUCTOR STRAIN GAGE**, model MS 105-350, is said to be bondable to practically all surfaces. The gage, measuring 1 by 0.5 in., consists of a thin silicon element $\frac{3}{8}$ in. long, 0.020 in. wide and 0.0005 in. thick, attached to an epoxy based carrier for application to test surfaces. Integral lead tabs are provided for connection to instrumentation systems. Resistance of the gage is 350 ohms; gage factor is approximately 130. Operating temperature range is -65° to $+180^{\circ}$ F. Maximum operating strain is greater than 3000 μ in./in. (Micro Systems, Inc., Dept. Sci64, 2925 E. Foothill Blvd., Pasadena, Calif.)

■ **STANDARD-GAIN ANTENNAS** consist of a series of 14 broad-band waveguide horns that cover the microwave bands from 0.95 to 90 kMcy/sec. Horns are made of anodized aluminum or plated brass of light-weight construction. Each horn is furnished with data on gain versus frequency characteristics. (Scientific-Atlanta, Inc., Dept. Sci55, 2162 Piedmont Rd., N.E., Atlanta 9, Ga.)

■ **ELECTRONIC STETHOSCOPE**, manufactured by Primo Sound Research Ltd., Tokyo, Japan, is said to amplify up to 100 times more than the conventional stethoscope. High and low filters permit unwanted sounds to be eliminated. An output is provided to feed a tape recorder, oscilloscope, or other instrument. Power is supplied by 6 penlite cells. (Trans-Pacific Electronics, Inc., Dept. Sci18, 4216 Lankershim Blvd., North Hollywood, Calif.)

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■ **VACUUM GAGE** uses tritium to provide ionization. The isotope forms part of the inner metal surface of the instrument. The gage covers the range 0.001 to 100 mm-Hg. Ionization current is produced by a 45-volt battery and is measured by a microammeter. According to the manufacturer, there is no detectable external radiation; no special licensing is required. (Radiation Research Corp., Dept. Sci54, 1114 First Ave., New York 21, N.Y.)

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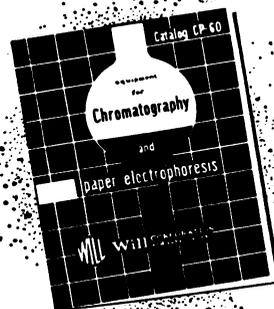
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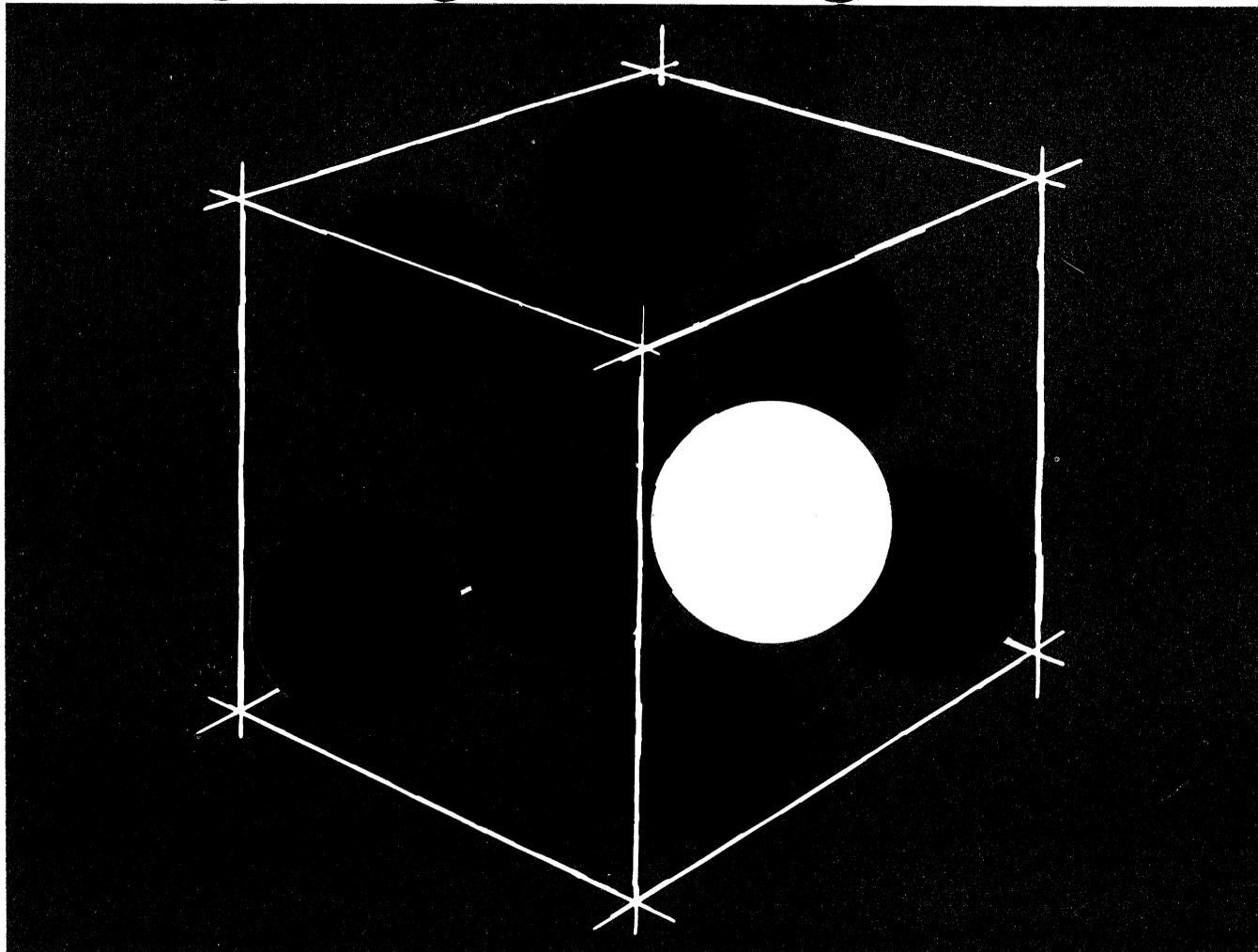
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