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 1358.*

■ FREQUENCY COUNTER is arranged to monitor any frequency in the range of 1 to 40,000 cy/sec. Upper and lower frequency limits can be set to define 1-cy increments. Deviation of the input signal beyond these limits actuates indicator lights and produces relay-contact closure for external control. Input frequency is also displayed. (Computer Measurements Corp., Dept. 71)

■ MICROPROJECTION APPARATUS attaches to any microscope with a monocular tube to project images on a French-lens viewing screen 5 in. in diameter. Focusing is accomplished by the microscope adjustments. The light source is not included. (William J. Hacker & Co., Inc., Dept. 93)

■ METABOLISM CAGES for tracer studies on small animals combines a glass cage with associated apparatus for control of air composition and for collection of the products of metabolism. Sizes suitable for rats and mice are available. (Delmar Scientific Laboratories, Dept. 94)

■ CHROMATOGRAPH speeds up paper chromatographic separations without affecting resolution. Centrifugal force is used to accelerate separation and is said to reduce the time required from hours or days to minutes. The equipment permits the flow rate to be held to less than 1 ml/min. Paper up to 35-cm in diameter is accommodated. Rotational speed is variable from 300 to 1550 rev/min. (Precision Scientific Co., Dept. 95)

■ MIXER-GRINDER is designed for preparation of laboratory-size samples. Treatment time is controlled by an automatic timer and is adjustable for periods up to 1 hour. Mixing is done in plastic vials by plastic balls. For grinding, case-hardened-steel or alumina-ceramic vials are available. The device is shock-mounted. (Spex Industries, Inc., Dept. 96)

■ INTEGRATOR for use with spectrophotometer converts the analog motion of the spectrophotometer recorder into digital pulses. The pulses are summed according to a program fed into the integrator by means of punched tape. The program may provide, in addition to sensitivity curves of the human eye, sensitivity of television receptors or color film, or data on light sources, to provide color matching for various viewers and various lighting conditions. Three sets of 200 or more reflectances per sample, cor-

responding to selected ordinates of the color curve, are integrated. The results provided by the device are tristimulus values for the color under study. (Eastman Kodak Co., Dept. 100)

■ RECORDING VACUUM THERMOBALANCE is a spring balance enclosed in a glass chamber for operation at controlled temperatures in a vacuum or in controlled atmospheres. Spring deflections are converted into electrical signals by a transformer-type transducer. Changes in sample weight from 0 to 200 mg can be measured with ± 1 percent accuracy with sample weights up to 10 g. Two furnaces are furnished to allow consecutive determinations with minimal loss of time. Controls permit the heating rate to be set at any of eight values between 5° and 1000°C per hour, or temperature to be set at constant values. The *x*-axis spans of the recorder may be set at 200°, 500° or 1000°C. Among optical features are equipment for concurrent differential thermal analysis, equipment for low-temperature studies, and additional combinations of heating rates and weight ranges. (American Instrument Co., Inc., Dept. 91)

■ PULSE-HEIGHT ANALYZERS, of 100 and 200 channels, accumulate data for a preset time after which the accumulated record in its magnetic-core memory is automatically printed out. A complete print cycle is provided in 25 sec per 100 channels. The analyzer memories may be split into subgroups of 50 channels, each externally programed. (Radiation Instrument Development Lab., Inc., Dept. 92)

■ HARMONIC GENERATOR provides a three-trace signal composed of two sinusoidal waves and their composite for studying interference of waves. The composite is also heard through a speaker. Independent adjustments of amplitude and phase are provided for each of the sinusoids. The instrument can also be used as a low-speed (approximately 250 cy/sec) three-channel electronic switch. (Madison Associates, Inc., Dept. 98)

■ TEMPERATURE TEST CHAMBERS feature low-temperature ranges of – 40°, – 100°, and – 120°F and high-temperature ranges of 240° or 350°F. Relative humidities from 20 to 90 percent can also be provided. Working space is 30 ft^3, and outer dimensions are 4½ by 5 by 7¼ ft. Installation requires only plug in of electrical connection. (Tenney Engineering Inc., Dept. 105)

■ VACUUM PUMP achieves pressures of 10^{-9} mm-Hg. The device uses electronic principles to ionize and remove gas molecules. Pumping speed is 10 lit./sec at 10^{-7} mm-Hg. The ion current which results from the removal of the ionized molecules of gas is measured by a microammeter to provide a measure of the degree of vacuum achieved. Refrigeration systems, cold traps, and vapor traps are not required. A mechanical pump reduces initial pressure to between 15 and 20 μ-Hg, at which point the ion pump begins to function. (Varian Associates, Dept. 108)

■ WIDE-RANGE TEST RECEIVER covers the frequency range from 30 Mcy/sec to 75 kMcy/sec without plug-in units. Linear dynamic range exceeds 40 db. Sensitivity is greater than – 90 dbm at 30 Mcy/sec and – 70 dbm at 75 kMcy/sec. No waveguide connections from receiver to antenna are required. (Scientific-Atlanta Inc., Dept. 103)

■ INFRARED DETECTION DEVICE is available in either focused-beam or wide-angle versions. Radiation at the 10^{-9}w level is said to be detectable. The detector is transistorized and will operate for several months from the self-contained power source. (Lindly & Co., Dept. 101)

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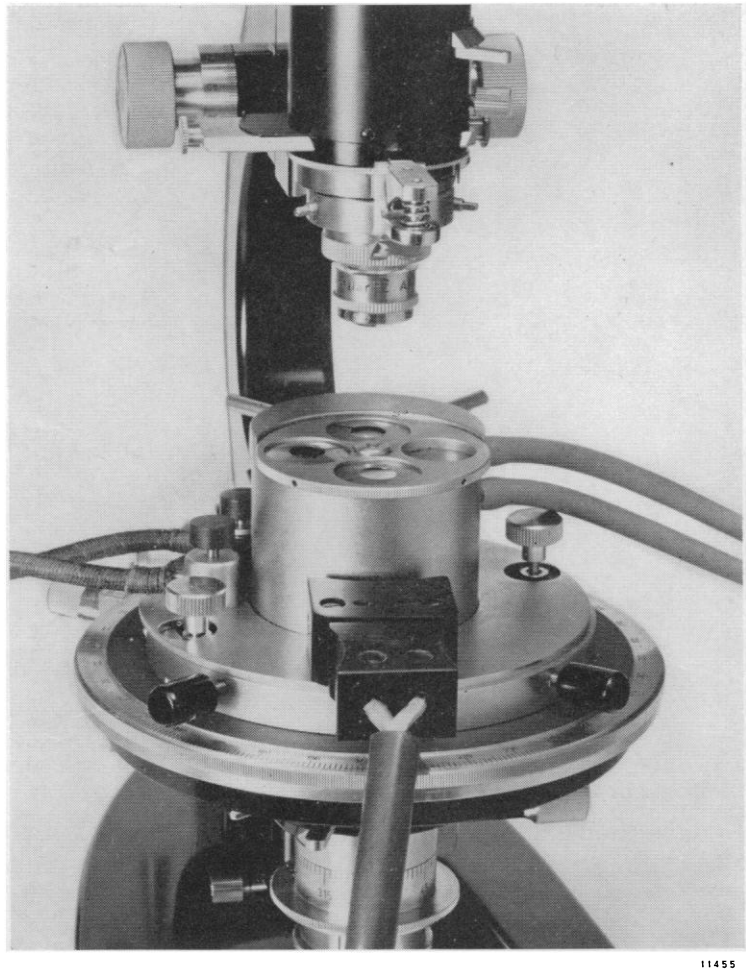

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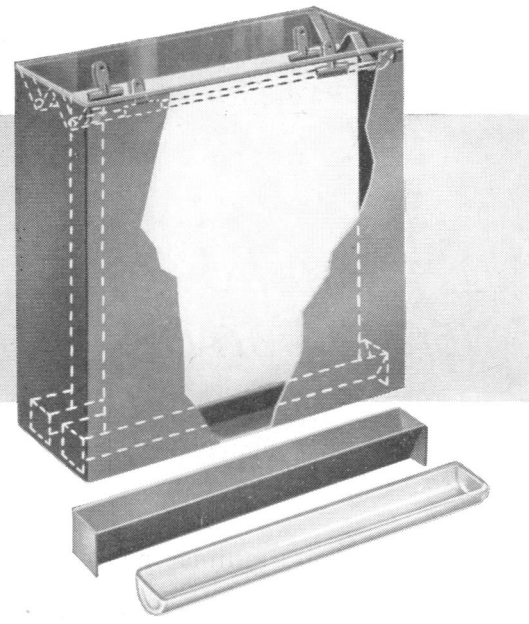

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A simple, compact unit, designed for the development of two paper chromatograms 8 inches square, by one-dimensional or two-dimensional ascending techniques, using micro quantities (1 microliter portions) of test solution. See *"Ascending Paper Chromatography: A Way To Do It," *Journal of the Association of Official Agricultural Chemists, Vol. 40, No. 4 (November, 1957), pp. 999-1029,* by Lloyd C. Mitchell, U. S. Division of Food, Food and Drug Administration.

Tank is approximately 9 inches long × 3½ inches wide × 9 inches deep, of Stainless steel; easy to clean; its small size relative to the paper area speeds achievement of vapor equilibrium.

In use, paper sheets are attached by means of Stainless steel spring clips to rods of either Stainless steel or glass, 8⅞ inches long × 3 mm diameter, which rest on removable, W-shape supports at top of tank. Lower edge of paper sheets is suspended in removable troughs which, in use, are filled with the mobile solvent. The V-shape Stainless steel troughs, 85 ml capacity, are 8¾ inches long × 1 inch wide × 1⅛ inches deep; borosilicate glass troughs, 75 ml capacity, have round bottom and are 8¾ inches long × $1\frac{5}{16}$ inches wide × $\frac{9}{16}$ inch deep. A flat glass cover, with ground edges, permits observation of the ascending solvent front. In the author's technique, cellophane tape is applied around edges of cover to form a vapor-tight seal to retain volatile solvents.

*Author's article, cited above, also describes an adapter to support solvent troughs 3½ inches below top of tank and a slotted cover, permitting use of the Thomas-Mitchell Tank for continuous one-dimensional chromatography employing paper sheets 8 × 4 inches. *Information on request.*

3677. Chromatography Tank, Stainless Steel, Thomas-Mitchell, as above described. Consisting of Stainless steel tank with two supports for rods, glass cover, two Stainless steel troughs, two Stainless steel rods, four Stainless steel Spring Clips, 1 package of 100 Whatman No. 1 paper sheets, 8 × 8 inches, and directions for use..... **31.20**
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