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New Products

Water baths for water or oil bath control of reaction temperatures accommodate standard Army Medical, Wasserman, Kolmer, and Kahn racks for serological testing and have an operating range of room temperature to 105°C when oil is used instead of water. The baths are fabricated of stainless steel with immersion-type copper heating units controlled by hydraulic thermostats. Three heating units permit selection of optimum warm-up time and performance. Heat is distributed by a perforated stainless-steel diffuser plate. Gable and concentric ring covers and water level regulator are available accessories. A standard laboratory thermometer indicates operating temperature.—R.L.B. (Central Scientific Co., Dept. S279, 1700 Irving Park Rd., Chicago, Ill.)

Spore trap permits the continuous sampling of airborne spores in the open regardless of weather conditions. Agricultural applications include research into the relationship between plant diseases, spores, and meteorological conditions, while medical research concerned with respiratory allergies and asthma may require information on the many different pollens and spores. The main parts of the instrument comprise the cylinder in which the slit is formed, the top main casting carrying a clock, and the vertical rotating axis. The cylinder is a vertical metal tube, towards the lower end of which is formed the slit, 14 mm wide by 2 mm high, through which the air to be sampled is drawn. A glass slide is carried in a metal holder accurately located so that the slide is always 0.6 mm from the slit. The slide is drawn upwards past the slit by a fine thread wound round a small drum on the clock spindle. A friction drive on the drum allows for easy resetting of the slide holder. The clock rotates once in 24 hr but needs winding only once a week. Air drawn through the horizontal slit impacts the spores onto the slide coated with a sticky substance. A built-in flow meter shows the volume of air being drawn through while the slide is moved past the slit at a constant rate for 24 hr. Every 24 hr a fresh slide is inserted into the holder which has been reset. A suitable suction pump is connected and turned on. The instrument is left unattended for 24 hr collecting spores and pollen which may be related to meteorological or other factors at a specified time. A large vane keeps the sampling section facing into the wind and a rain shield protects the slit area from inclement conditions. The air is sampled at a rate of 10 lit./min and the slide moves at 2 mm/hr. The instrument operates at an efficiency of collection of between 70 and 90 percent, depending on spore type and size and wind speed. Evaluation of the material collected involves counting the numbers of selected spores and pollen in each 2-hr period. These can be plotted against meteorological or other data according to the research being performed. To assist the counting work an electromagnetic push-button counter is available as an accessory. Also available are two types of vacuum pumps: an oilless electric pump and a gasoline driven diaphragm pump.-D.J.P. (Hirst Spore Pump; Brinkmann Instruments, Dept. S268, Cantiague Rd., Westbury, N.Y. 11590)

Oxygen meter operates on new principle which is described as the production of a voltage between two electrodes on a zirconium-calcium oxide tube heated to 650°C. According to the description, oxygen forms ions which move through the material to produce a voltage difference. Unusual and attractive features of the instrument include very rapid response to gas flowing through the heated tube, simplicity, and high output. The reaction tube, heater, thermocouple temperature controller, and indicator voltmeter and flow gauge are all housed in an 8- by 9- by 12-inch cabinet (20 by 23 by 30 cm) provided with 1/4-inch (0.6-cm) gas ports and output terminals for recorders. Response of the electrochemical cell is approximately 1 msec and it is sensitive to one part per million of oxygen, accurate to ± 3 percent. Voltage output is proportional to the logarithm of the partial pressure of oxygen, not responsive to inert gases, CO2, or H2O. Oxidizable gases consume the O2 at the temperature of the cell, reducing the O2 response. Output of several hundred millivolts appears on some of the performance curves but output per O2 decade is not given. Recorders can be connected directly across the cell without loading the meter if they present a resistance greater than 10,000 ohms, so it is clear that this detector is really putting out a good signal. Several options are available in the form of alarms for too much or too little O2, and provision for monitoring inlets to vacuum systems are described. This appears to be a real spin-off item from space research, as it grew out of a fuel cell project when it was noted that the cell produced a voltage related to O2 when no fuel was supplied.—R.L.B. (Westinghouse Scientific Equipment, Dept. S275, 360 Churchill Rd., Pittsburgh, Pa.)

Direct-current nanovoltmeter (model 148) has full-scale sensitivities of from 10 nanovolts (1 nanovolt = 10^{-9} volt) to 100 mv in 18 ranges. Designed for measuring and/or amplifying small d-c voltages, the meter is ideal for measuring small temperature differences and changes indicated by thermocouples, monitoring the electrode potentials during titrations and chemical reactions, and measuring low resistances in very low current circuits. The instrument has 18 overlapping ranges from 10 nanovolts to 100 mv in 1× and 3× steps with indication on a zero-center meter having an accuracy of 2 percent of full scale on all ranges and a resolution of 1 nanovolt on the 10-nanovolt scale. Response speed (10 to 90 percent of full scale) is 3 to 5 sec on the 10and 30-nanovolt ranges and between 0.5 and 3 sec on the 0.1- μ v to 100-mv ranges, depending upon the source

The material in this section is prepared by the following contributing writers:
Robert L. Bowman (R.L.B.), with the assistance of Denis J. Prager (D.J.P.), Laboratory of Technical Development, National Heart Institute,

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).

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resistance. Zero suppress of up to at least 100 µv on microvolt ranges and up to 100 mv on millivolt ranges is possible and stability is such that 100 times full scale may be suppressed. In this way, with the instrument set on the 1- μ v range, variations of less than 1 μ v may be measured in a steady-state signal of 100 μ v. The instrument is stable to within 10 nanovolts per 24 hours after 1 hour warmup with reasonably constant ambient temperature, and long-term drift is noncumulative. Input resistance is 1000 ohms on the 10-nanovolt range and increases to 1 megohm on the 100-mv range in $1 \times$ and $3 \times$ steps, with the maximum source resistance one-hundredth of the input resistance on all scales. Input noise is less than 1 nanovolt on the most sensitive range. The gain as an amplifier varies from 10s to 10, corresponding to the range selected. A recorder output of ±1 volt d-c at 1 ma is supplied for full-scale meter deflection on any range. Solid state circuitry is incorporated throughout with the exception of the first two input stages. The instrument may be battery operated for convenience or improved line-frequency isolation. A 6volt nickel-cadmium battery pack will operate from 8 to 16 hours and is automatically recharged when the instrument is reconnected to a-c line.-D.J.P. (Keithley Instruments, Inc., Dept. S266, 12415 Euclid Ave., Cleveland 6, Ohio)

Liquid scintillation counter automatically determines the activity and quenching in up to 200 samples. After each sample count the instrument prints out sample number, time, and background-corrected count rate for each channel. An external standard—a Cs187 point source—moves into the calibration position and the sample is recounted for 1 minute to correct for quenching without the necessity of adding radioactivity to the sample. It is claimed that the use of the external standard chosen to provide good counting statistics in short calibration periods permits counting efficiency to be determined independently of sample counting statistics. Inaccurate results at low counting rates are thereby avoided. All silicon solid-state electronics, with dynamic range, quartz crystal controlled timing, and plug-in determination of settings for commonly used assays are additional claims.-R.L.B. (ANS, Inc., Dept. S277, P.O. Box 37, Wallingford, Conn.)



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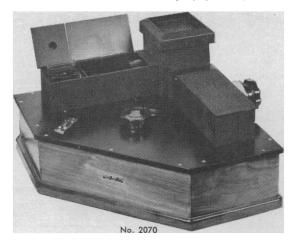
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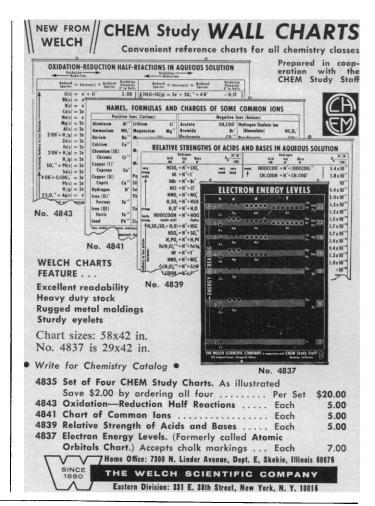


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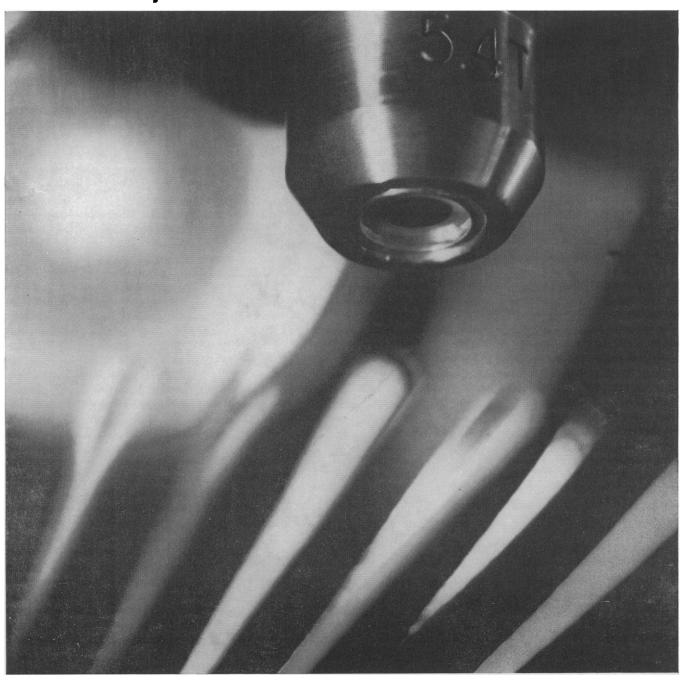
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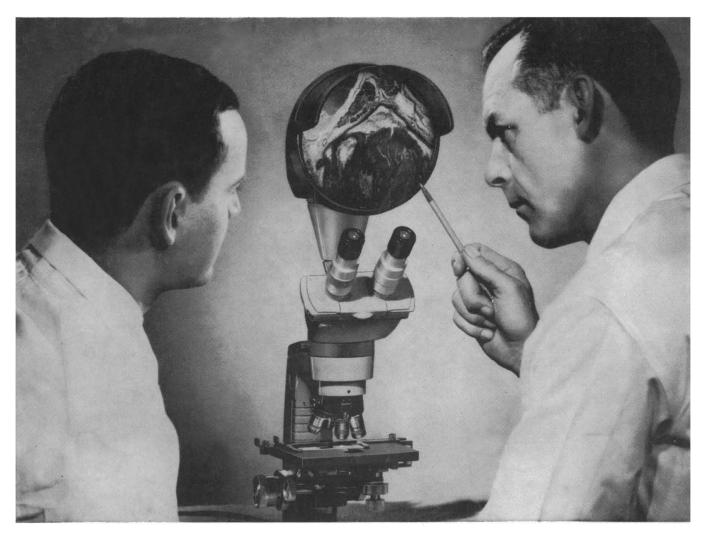
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