

necessary risk. In making this decision, scientific ends take second place to faith in a dogma (or perhaps we should prefer to call it a working hypothesis) concerning the value of the individual person in relation to the community. It is this same article of faith, together with a second about the power of love in the world, that causes many, like myself, to feel that we cannot allow our scientific abilities to be harnessed to the production of weapons of war. We are aware however that, although we try to apply dispassionate reasoning to the evaluation of all the available evidence, our attitude is based ultimately on faith, and that we therefore cannot ask the scientific world, just because it is *scientific*, to share our views and pass ethical judgments on scientists who act otherwise. What we can ask is that every individual scientist should critically examine what he is engaged upon in the light of such faith as he professes, and satisfy himself that the two are not incompatible. At this particular stage in human history the responsibility for making such a critical comparison may well lie heavier on the scientist than upon the majority of his fellow citizens.

J. L. HAYBITTLE

*Radiotherapeutic Centre,
Addenbrooke's Hospital,
Cambridge, England*

Rats for Research

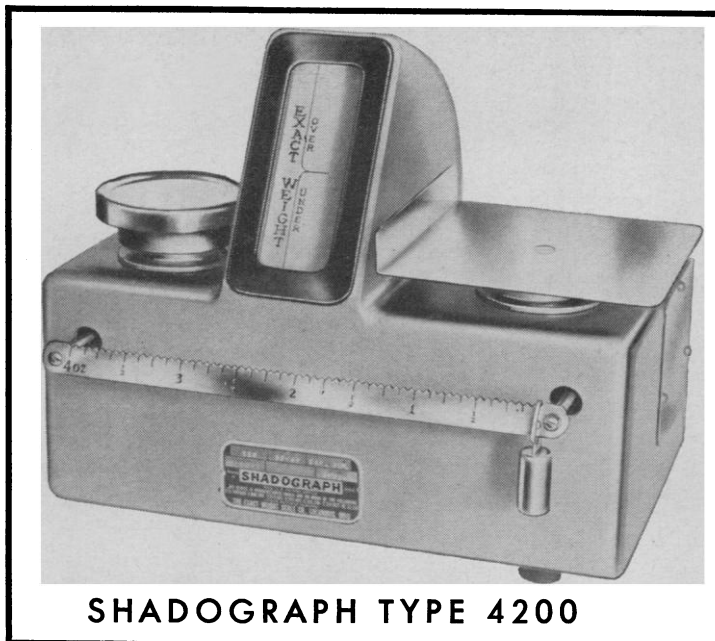
I have about 40 unique male rats which I would like to offer to research institutions. These male breeders are heterozygous for the gene that allows expression of color. When they are mated with a homozygous female albino, the resultant litter is half pigmented and half albino, but otherwise the genetic composition is random. Hence, all the pups have the same father and mother, the same intrauterine environment, and the same post-parturition environment. Differences ought to be attributable to pigmentation. Although I think the rats will be useful primarily in studies of visual acuity (eye pigmentation is black for pigmented, pink for albino) and light aversion, quite possibly other minds will see other uses.

These animals are offered free via freight collect. They will be available through July.

ROBERT B. LOCKARD

*Department of Psychology,
University of Wisconsin, Madison*

8 JUNE 1962



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Disk electrophoresis, so called because different proteins separate out in fine layers 0.1 mm or more thick which in the column resemble a stack of flat disks, offers high sensitivity, high resolution separation of 20 to 30 proteins per run with human serum. Cylindrical columns 70 mm long by 5 mm wide are prepared in three stages with hard polyacrylamide gel, then with soft gel, and finally with soft gel containing the sample. Polymerization of each stage is completed before the next is added. The prepared column is then inserted into a receptacle in the bottom of one buffer tank and the free end inserted into the top of a lower buffer tank. The buffer tanks are provided with electrodes and handle 12 tubes at a time. About ½ hour is required for the separation, after which time the gel column is removed from its tube and transferred to a loose-fitting tube for staining and destaining. Destaining is accelerated by electrophoretically removing unbound dye in less than an hour. The column may then be stored for visual examination and file or may be placed in a special microdensitometer-camera to be photographed or scanned photometrically to provide a chart trace of relative optical density against linear position in the column. Separated fractions can be cut out and eluded for chemical assay. The method resolves .01 μ g of protein directly. The gel does not react with colorimetric reagents for protein, polysaccharides, lipids, or enzymes. is transparent, and

can be adjusted for separation of molecules larger or smaller than typical proteins.—R.L.B. (Canal Industrial Corp., 4935 Cordell Ave., Bethesda 14, Md.)

(Circle 1 on Readers' Service card)

Laboratory heat source, calibrated in millicalories per square centimeter per second, is operated from a standard power line and will accommodate variations in line voltage or frequency over wide limits according to the manufacturer. Radiant power output is adjusted by a dial calibrated from 50 to 500 mcal/cm² sec with calibration points at intervals of 10 mcal. A timer operates the heat source to produce an exposure of 3 seconds whenever the exposure button is pressed. Manual control is also provided.—J.S. (Williamson Development Co., Inc., 317 Main St. W. Concord, Mass.)

(Circle 2 on Readers' Service card)

The **Jouan biospectrophotometer** (Fig. 2) is a fully automatic instrument that records the change, with time, of the optical density of turbid liquids. It was designed primarily for bacterial cultures, but may also be used for other

investigations involving changes of density which are caused by an increase or decrease in light transmission or absorption. Up to six samples can be investigated simultaneously with recording, temperature control, and agitation. Both the intensity and the frequency of agitation can be controlled. Measurements can be made in white or filtered light with Pyrex cells of various lengths and capacities. Individual cuvettes may be removed at any time. A light beam, which originates from a single, centrally located source, passes through each of six cuvettes arranged in a circle in a thermostatically controlled housing. Every 20 seconds a galvanometer measures the transmission from each cell. This value is transmitted to a six-point recorder which writes the six curves. The intensity of the light beam to each cell may be individually adjusted on six independent diaphragms and by a master voltage control.—R.L.B. (Brinkmann Instruments Inc., 115 Cutter Mill Rd., Great Neck, N.Y.)

(Circle 3 on Readers' Service card)

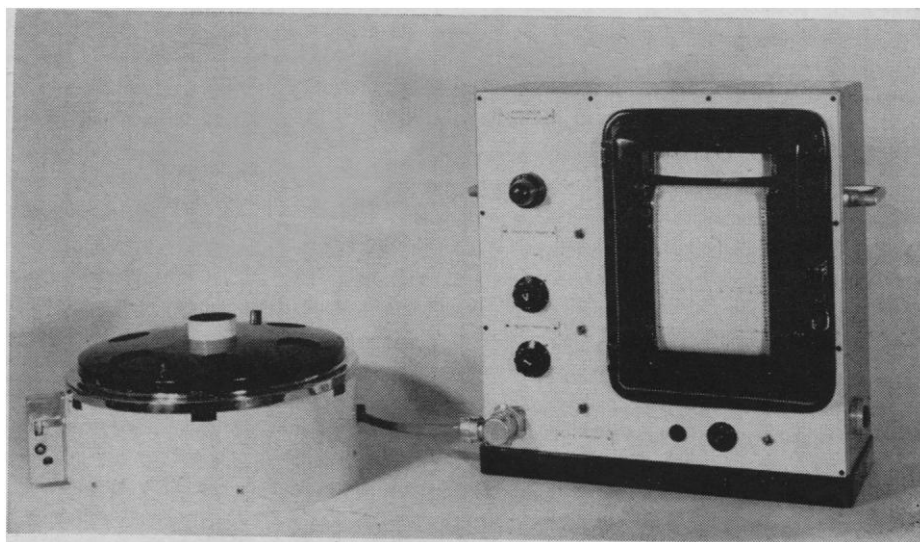
Cryogenic magnet system is capable of developing a field of 50 kgauss at -269°C. The superconducting system consists of the coil and its support, a special power supply, gaussmeter, Dewar assembly, helium liquid level indicator, and helium transfer tube. The solenoid, wound with niobium-zirconium alloy wire, is approximately 3 inches in diameter and 3 inches long, and it produces the 50,000-gauss field within the ½-inch inside diameter. A transistorized power supply furnishes constant-current low-ripple d-c power for use in the superconducting coils. The portable unit is designed for less than 0.1-percent

The material in this section is prepared by the following contributing writers:

Robert L. Bowman (R.L.B.), Laboratory of Technical Development, National Heart Institute, Bethesda 14, Md. (medical electronics and biomedical laboratory equipment).

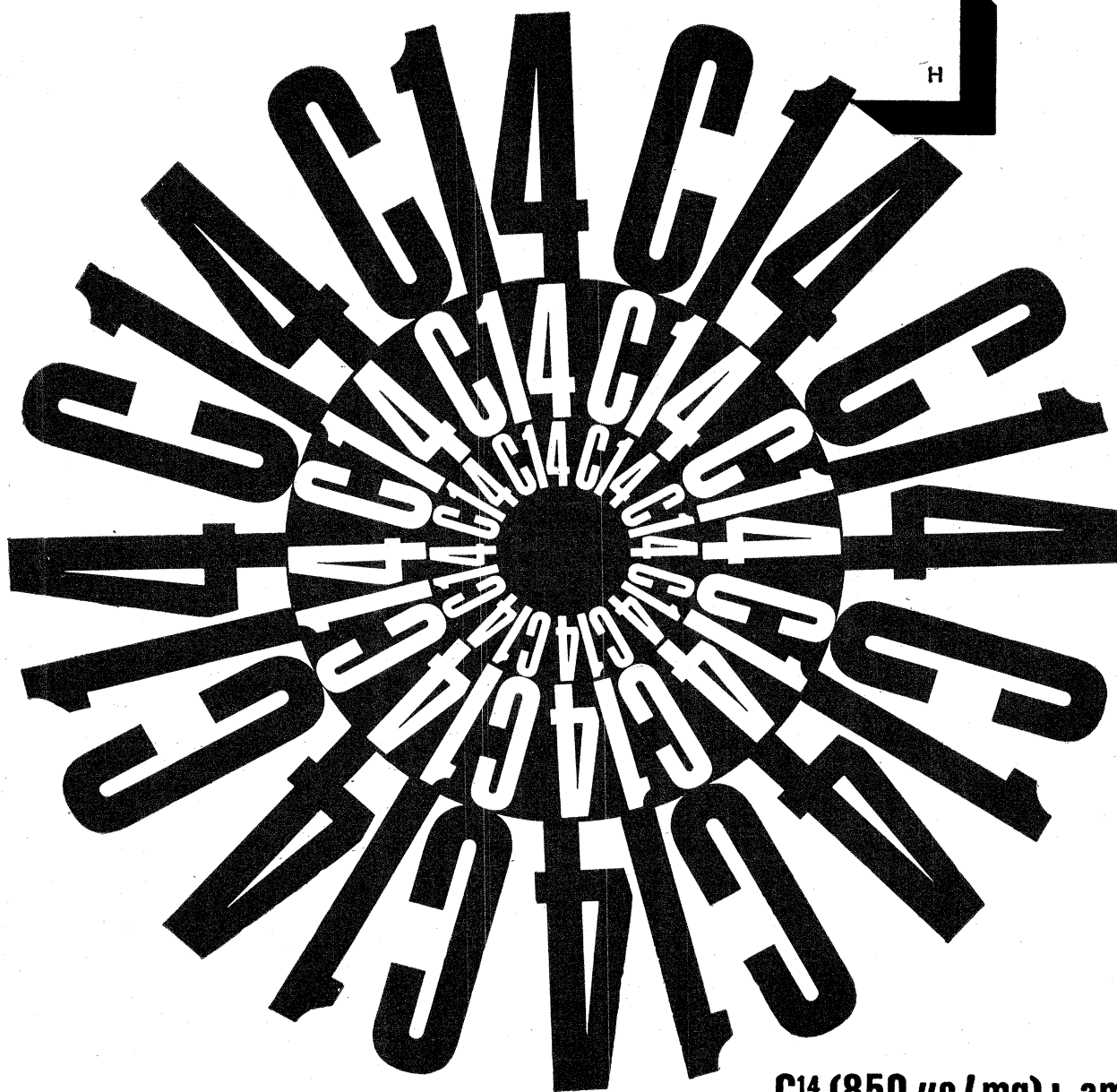
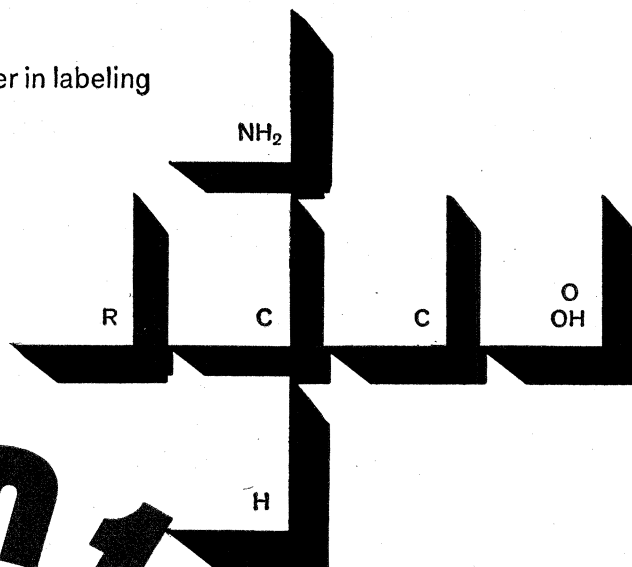
Joshua Stern (J.S.), Basic Instrumentation Section, National Bureau of Standards, Washington 25, D.C. (physics, computing, electronics, and nuclear equipment).

The information reported here is obtained from manufacturers and from other sources considered to be reliable. Neither *Science* nor the writers assume responsibility for the accuracy of the information. A Readers' Service card for use in mailing inquiries concerning the items listed is included on page 435. Circle the department number of the items in which you are interested on this card.



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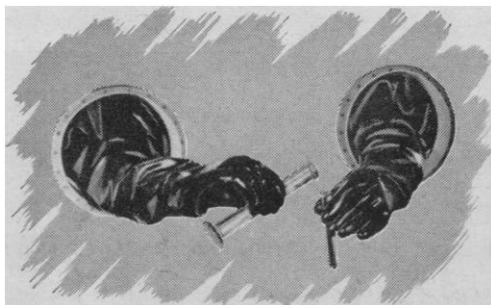
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regulation from no load to full load with input voltage variation from 105 to 125 volts. Protective features are incorporated to prevent damage to the power supply or to the magnet. If the load current increases at a rate greater than 4 amp/sec or if the output voltage increases at a rate greater than 0.1 volt/sec, the power output is reduced to zero. Output current is also reduced to zero when the liquid helium in which the magnet is immersed reaches a predetermined low level. A dumping circuit is provided in the power supply to dissipate a portion of the energy stored in the magnet in the event that it goes into the normal conduction range. Overall diameter of the Dewar container is 8 7/8 inches and inside diameter 4.45 inches. Efficiency of the container is said to be more than 15 times better than conventional containers. Liquid-helium capacity is 7.5 liters.—J.S. (Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.)

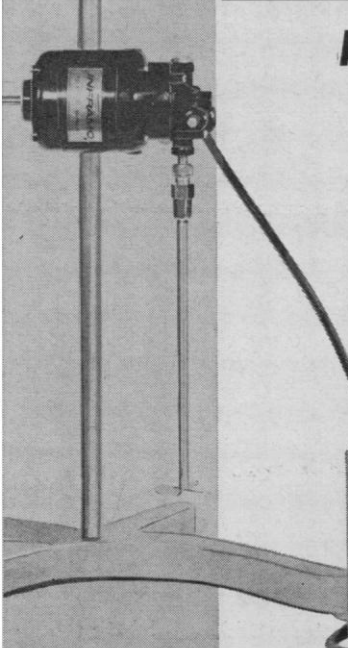
(Circle 4 on Readers' Service card)

General-purpose refrigerated centrifuge (model RC-3) reaches operating speeds automatically in 70 seconds or less. The instrument employs a smooth-walled evaporator rotor chamber, direct drive, and various safety devices including armor-plate protection around the rotor chamber. It has been specially designed to accept all of the manufacturer's angle and horizontal rotors. These include the new BR-4T blood bag rotor with four compartments for plastic bags and the Fenwal type Blood Pack. This centrifuge is ideal for clinical work, blood component separation, and rapid blood-bank programming. Automatic controls, fast acceleration, and a unique braking system reduce centrifuging periods five to ten times. Maximum speed is 5000 rev/min. Forces up to 5140g may be obtained, depending upon the rotor used.—R.L.B. (Ivan Sorvall, Inc., Norwalk, Conn.)

(Circle 5 on Readers' Service card)

Terrain viewing system simulates the earth's terrain as it would appear on a spacecraft's television screen during takeoff and reentry. The appearance of the skies can also be simulated as they would appear as the vehicle moves into or returns from orbit. The system includes a camera, camera positioner, and optical unit. These are used with a three-dimensional terrain map and an easel. The camera is positioned by commands from a punched tape to specified east-west, north-south coordinates and alti-

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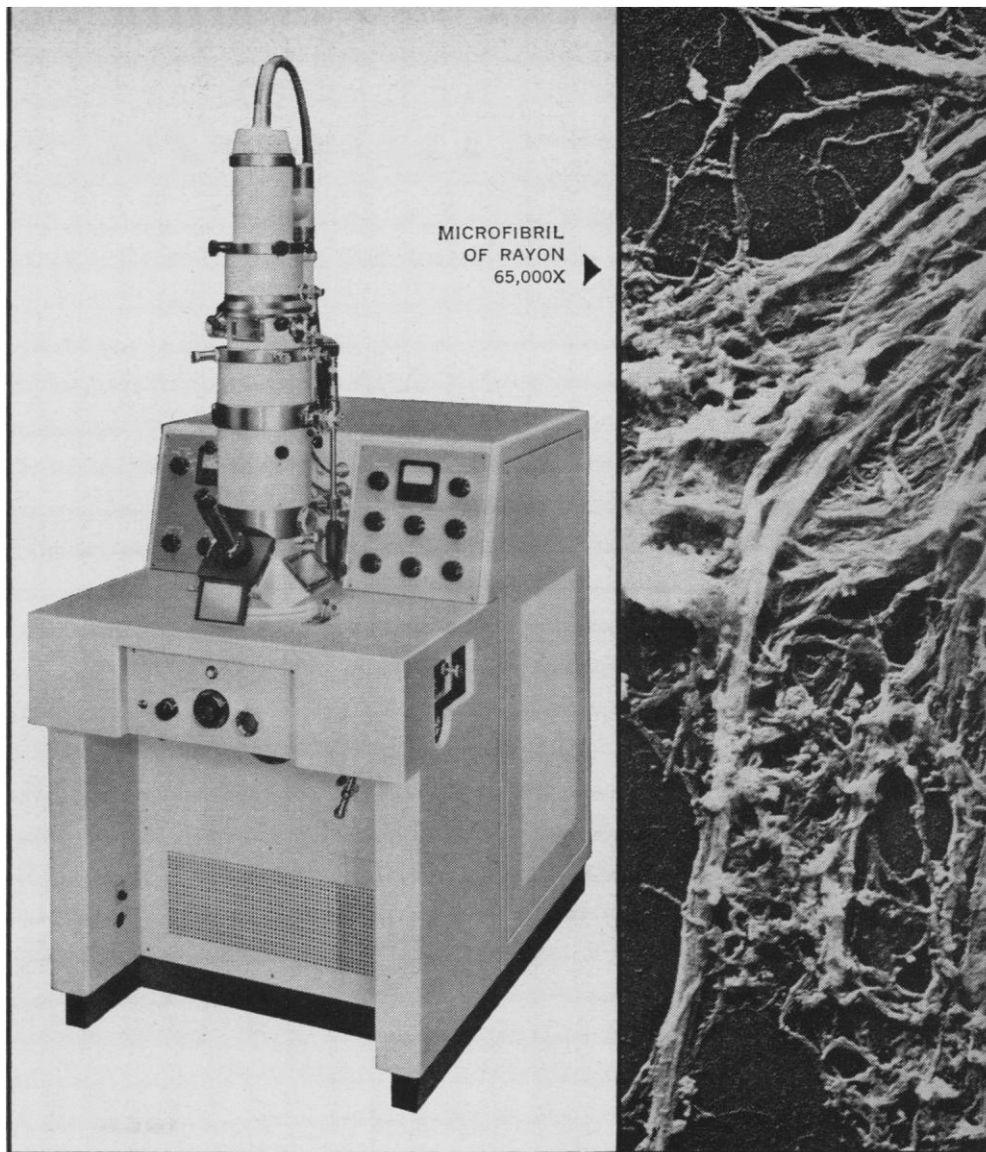
tude over the easel-mounted maps. In addition to simulating the view as it would appear on the TV screen, it can also present the panorama that would be seen through its filter-protected window. A theoretical-horizontal line and one-point perspective grid can be superimposed on the filmed flight path.—J.S. (Kearfott Division, General Precision, Inc., 1150 McBride Ave., Little Falls, N.J.)

(Circle 6 on Readers' Service card)

Graphic recorder (model G-14) uses the null balance potentiometer principle in a new transistor configuration. Quality components are said to provide stability and better than 1-percent accuracy on sensitive 1-mv full scale span. Transistor operating voltages are Zener-diode regulated to minimize the effects of line voltage changes. The potentiometer reference voltage is derived from two Zener diodes eliminating the usual mercury cells. Convenient controls select 1-, 10-, 100-, and 1000-mv spans for 5-in. calibrated paper. Ink pen speed is 0.6 sec full scale for source impedance under 50,000 ohms on 1-mv scale. Higher source impedance is tolerated on higher scales. Full scale zero adjustment and one full scale of zero suppression is provided on control panel. The input may be floated 200 volts above ground.—R.L.B. (Varian Associates, 611 Hanson Way, Palo Alto, Calif.)

(Circle 7 on Readers' Service card)

Impedance bridge (type 1608-A) can measure resistance, capacitance, inductance, and conductance; the results of measurement are indicated on an in-line scale with automatic decimal-point location and automatic indication of units. D and Q information can be read from a dial. Six separate bridges are incorporated to measure series L (Maxwell bridge), parallel L (Hay bridge), series and parallel C (comparison bridge), and series R and parallel G (Wheatstone bridge). Measurement ranges are: resistance, 0.1 mohm to 1 megohm; conductance, 0.01 m μ mho to 1 mho; capacitance, 9.1 pf to 1000 μ f; inductance, 0.1 μ hy to 1000 hy. Nominal accuracy is said to be ± 0.1 percent. A 1-kcy/sec transistor oscillator serves as internal excitation source. A transistor amplifier, with a twin-T resistance-capacitance filter for selectivity, is used as an internal detector. Plug-in modules can be supplied for other generator and detector frequencies. An internal d-c bridge supply furnishes 0 to 300, 0 to 30, and



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0 to 3 volts. A null-indicating meter is used for both a-c and d-c, null being read at the center of the scale. External generators and detectors can also be used.—J.S. (General Radio Co., West Concord, Mass.)

(Circle 8 on Readers' Service card)

Audio-frequency a-c calibrator (model 172) provides a regulated and adjustable sine-wave output voltage of 0.1000 to 1099.0 volts in four decade ranges from 50 cy to 10 kcy/sec. Four dials are provided; the first indicates from 0 to 10 and the remainder from 0 to 9, for reading up to five digits. Illuminated decimal points operate in conjunction with range shifts. A fre-

quency-adjustable sine-wave power source is employed to feed a series of step-down transformers to obtain a selected output. Voltage at the reference tap is standardized through use of a reference transformer, an electrothermic a-c to d-c transfer standard used in a differential arrangement, and a Zener reference source as the accurate d-c supply. Accuracy is said to be ± 0.05 percent of indicated value at 10 to 100 percent of each decade range from 50 to 2000 cy/sec. Accuracy is reduced to ± 0.25 percent at 10 kcy/sec in the range 2.5 to 10 kcy/sec. A null meter provides visual indication of operation, and oscillator frequency is selected by push button.

Frequencies within the useful range can be selected in steps of less than 1 cy/sec. According to the manufacturer, reasonable shock, tilting, and temperature variation have no effect on accuracy.—J.S. (Weston Instruments Division, Daystrom, Inc., 614 Frelinghuysen Ave., Newark, N.J.)

(Circle 9 on Readers' Service card)

An ingestible pressure-sensitive telemetry capsule (Pressure Transensor) and its associated receiver are based on a design developed at the Rockefeller Institute for Medical Research. The capsule is a cylinder approximately 20 mm long and 8 mm in diameter and is constructed of a chemically inert epoxy resin. The pressure-sensing mechanism is a flexible diaphragm that covers one end of the cylinder. Pressure acting against the diaphragm causes it to change the inductance of an internal battery-powered transistor oscillator. This change in inductance modulates the frequency of oscillation. The frequency-modulated signal is transmitted to a receiving antenna located a short distance from the subject. An FM receiver demodulates the signal and produces an output voltage proportional to the original pressure variations. The output is recorded on a standard oscillograph. The capsule is easily swallowed and permits a study of intraluminal pressures to be made without the use of connecting wires, tubes, or other extraneous leads. The improved transmitter remains active for a minimum period of 4 to 5 days permitting long-term studies to be made. Furthermore, little or no psychological stress is imposed upon the subject who suffers no discomfort. The capsule can be used repeatedly after sterilization and replacement of the battery. This device appears to have a great potential for new studies of the gastrointestinal tract.

—R.L.B. (Airborne Instruments Laboratory, Deer Park, N.Y.)

(Circle 10 on Readers' Service card)

Calorimeter is designed specifically for measurement of the output characteristics of pulsed optical masers. It can also be used for measuring extremely short-duration, high-power output of other light-emitting devices. It is capable of measuring peak powers to 20 kw and laser output energy to 30 joules. Peak power is measured by a photodiode that receives approximately 4 percent of the total radiation. Output of the photodiode is nominally 100 $\mu\text{V/kw}$ of input radiation. Total energy is derived through the use of a special-



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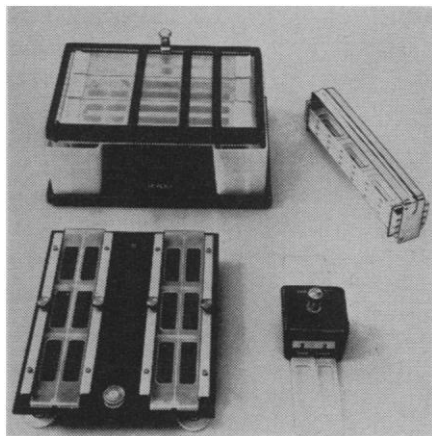
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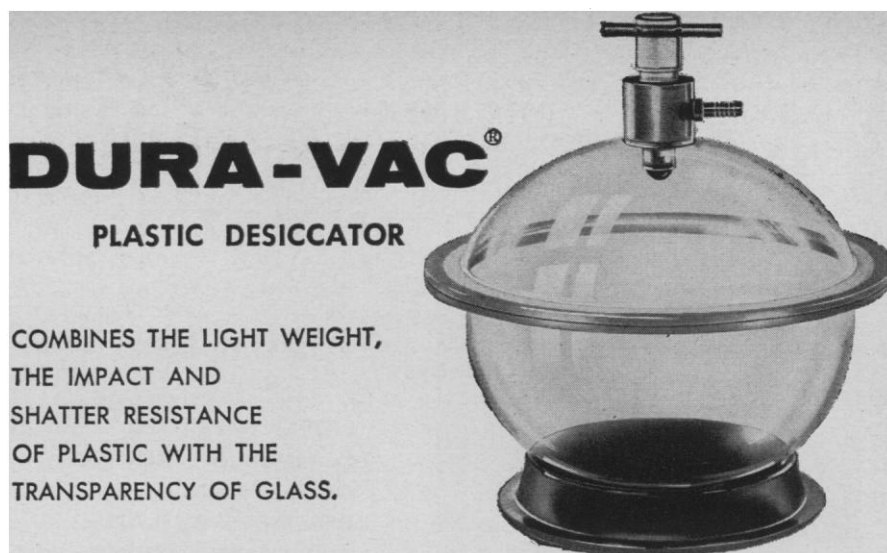
ly designed metallic absorption body. A thermocouple located within the black body measures the rise in temperature resulting from absorption of pulse energy. Output of the calorimeter is nominally $10 \mu\text{V}/\text{joule}$. Outputs are provided for an oscilloscope for plotting intensity versus time, and for a microvoltmeter for indicating total energy of the laser pulse. The instrument is said to be relatively insensitive to small displacements of angular deviations of the input beam.—J.S. (Trion Instruments, Inc., 1200 N. Main St., Ann Arbor, Mich.)

(Circle 11 on Readers' Service card)

Immunoelectrophoresis in agar gel is facilitated by use of a device (Immunophor) capable of handling up to 108 resolutions per day, yet retaining optimum reproducible results when separating human serum into immunoelectrophoretic patterns of about 30 electrophoretically and/or immunologically different protein components. The device incorporates several features which eliminate manual handling of slides, protect the delicate gel layer, and minimize water evaporation from the gel layer. Experimental parameters, such as sensitivity and resolving power, may be selected to suit different analytical problems. The flexibly designed gel punch permits the length of migration path diffusion and the number of wells and troughs to be varied. Trough widths can be set at either 1 or 2 mm. The punch itself produces clean-cut antigen basins and troughs for sharp, reproducible



immunoelectrophoretic patterns. The device can be applied to a wide variety of immunological investigations, including: determination of hereditary blood serum components (haptoglobins, transferrin and Gc-system); study of comparative genetic factors in botany and zoology (species and crossbreeds); identification and classification of anti-

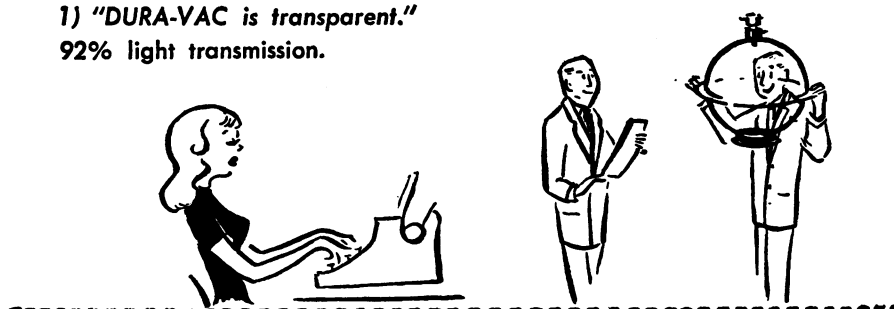


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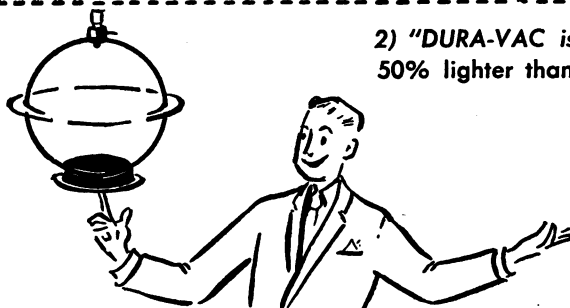
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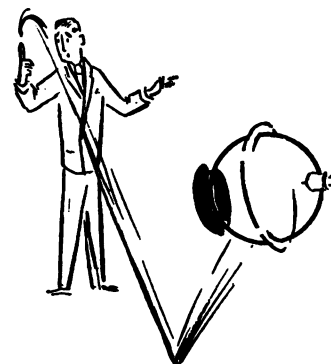


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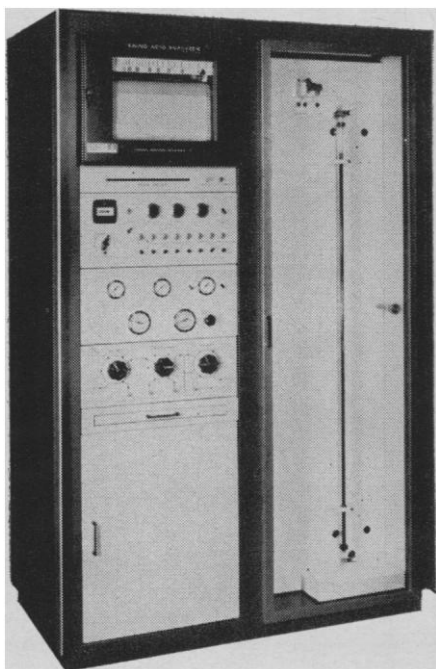
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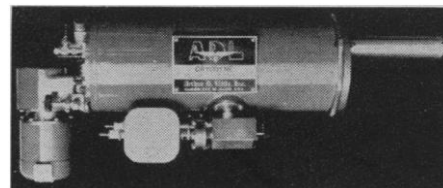


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(Circle 12 on Readers' Service card)

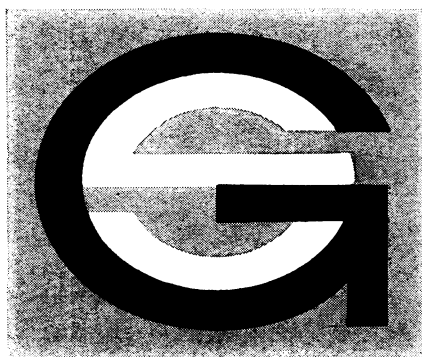
Maser refrigerator (model CRYR-200) is a continuous-duty, closed-cycle refrigerator for field use. It is rated at 250 mw at liquid-helium temperatures, with three intermediate heat sinks: 2200 mw at 100°K, 800 mw at 45°K, and 40 mw at 17°K. The system is said to have a temperature stability, under



constant load, of $\pm 0.06^\circ\text{K}$. The refrigerator employs the Gifford-McMahon cycle that consists of three displacers with ambient temperature seals, regenerators, and two ambient temperature valves, coupled to a Joule-Thomson loop. Helium gas under low pressure is supplied by an air-cooled, two-stage compressor. System reliability of 1000 hours between maintenance periods is said to have been achieved.—J.S. (Arthur D. Little, Inc., 20 Acorn Park, Cambridge 40, Mass.)

(Circle 13 on Readers' Service card)

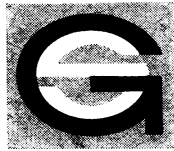
Microprojector (manufactured by W. Watson & Sons Ltd.) obtains Koehler illumination from a 250-watt high-pressure discharge lamp, eliminating the need for a carbon arc lamp. Three standard objectives, parachromats 4× and 10× and microprojector flat-filed objective 40×, are mounted on a rotating turret. The three matched condensers are mounted on a similar turret below the stage. Both turret changes are geared to a single control lever for synchronous changeover of objectives



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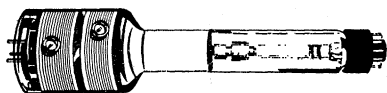
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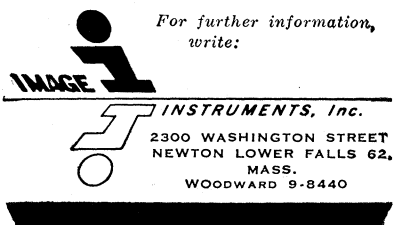
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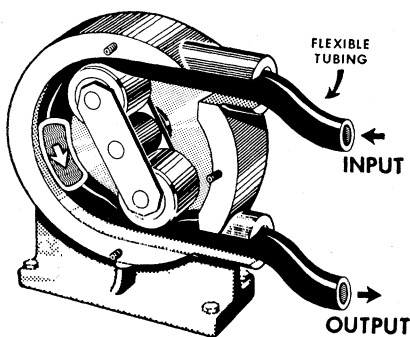
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and condensers with positive location for parfocality and centration. Brilliance is said to be excellent for a screen image diameter of 8 feet at projection distances up to 40 feet.—J.S. (William J. Hacker & Co., Inc., P.O. Box 646, West Caldwell, N.J.)

(Circle 14 on Readers' Service card)

Photographic processing system is a portable unit occupying less than 1 ft² and weighing less than 28 lb. It can develop, fix, and dry 35-mm film at rates up to 50 in./min. Processing chemicals are self-contained. As many as four processing solutions may be applied to the film which is then dried by a blower before emerging from the light-tight cabinet. Solutions are pumped through a porous applicator. The solution wets only the emulsion side of the film, and only the solution touches the emulsion.—J.S. (Photomechanisms, Inc., 15 Stepar Place, Huntington Station, N.Y.)

(Circle 15 on Readers' Service card)

Electron optical column may be assembled in various ways to function as a point-source device for electron and x-ray probe beam diffraction, micro-circuit etching, and the like. The basic unit consists of an electron gun and associated magnetic lens vacuum equipment, high-voltage supply adjustable to 50 kv, filament, and bias unit. The electron gun is supported below a table that forms the base of the electron optical column. Two or more electron lenses together with aperture and stage movements, viewing screens, photographic plates, optical microscopes, and so forth may be mounted on the table or in one of several alternative vacuum work chambers.—J.S. (Electron-Physical Instruments Ltd., 433 Strand, London)

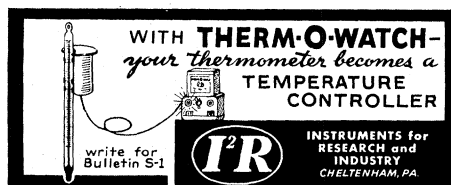
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Miniature vacuum tubes, constructed in the shape of small disks with connecting lugs, measure about 1/3 inch in diameter and range in thickness from 1/10 to 1/16 inch. Weight ranges from 0.27 to 0.57 g. Two types of these tubes are available for development work at this time. The first is a triode intended for use in on-off applications for computer circuits. With a plate voltage of 7.5 and +1.5 volts on the grid, average characteristics are: amplification factor, 5.4 and transconductance, 1000 μ mho. Because of a built-in contact potential bias, the tube does not begin to draw grid current until a positive grid voltage

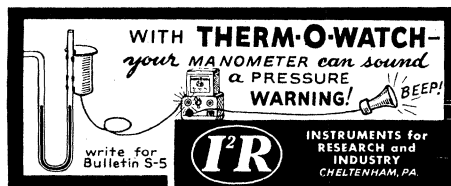


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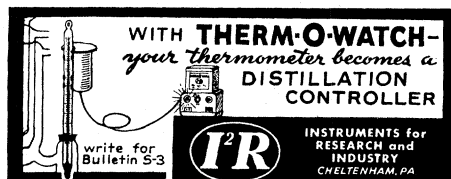
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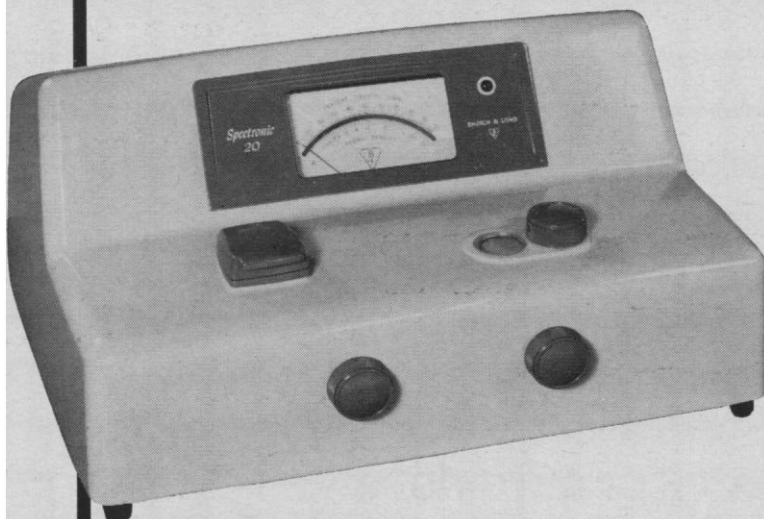
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of 2.3 is reached. The second tube is a diode for control applications in computer circuits. Specifications include: peak inverse plate voltage, 50; steady-state peak plate current, 4 ma; and d-c plate current, 2 ma. The tubes have no heaters but depend on high ambient temperature for operation. Maximum cathode temperature is 590°C.—J.S. (General Electric Co., Owensboro, Ky.)

(Circle 17 on Readers' Service card)

Transistorized decade counting units cover counting ranges from d-c to 300 kcy/sec, 2, 12, 20 and 35 Mcy/sec with five basic plug-in units. They can be provided with either vertical numeral display or numeral indicator-tube display. They can also be supplied without readout provision for use as decade dividers. The units require 3¾ inches of panel space.—J.S. (Computer Measurements Co., 12970 Bradley Ave., San Fernando, Calif.)

(Circle 18 on Readers' Service card)

Teflon plug stopcock has been modified by confining the area of contact with the glass barrel to a narrow region adjacent to the bore. The reduced area of contact permits higher contact pressure to be used to maintain a seal between the Teflon and glass without increasing the force necessary to turn the plug. The barrel is hard borosilicate glass provided with a low friction internal surface. Descriptive brochure of glassware featuring the new stopcock is available.—R.L.B. (Scientific Glass Apparatus Co., Inc., Bloomfield, N.J.)

(Circle 19 on Readers' Service card)

Ruby laser crystals in special configurations including conical, confocal, multifacet, chisel points, and roofs are designed to produce internal reflections, thus doing away with the necessity for coating the output end. The materials are slow-grown and annealed with orientation said to be within 1 deg and parallelism 6 sec of arc or better. Faces are flat and parallel within ¼ wave. The crystals are available in a variety of sizes.—J.S. (Adolph Meller Co., Box 6001, Providence, R.I.)

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Infrared signal generator (model 501) provides a tunable infrared source of variable wavelength from 1 to 14 μ, and calibrated power to 10 μW. Stable square-wave modulation is available from 2 to 2600 cy/sec, and a synchronous reference signal is pro-

vided for low-level integrating measurements. The output signal is available as either a point source radiator or a collimated beam.—J.S. (Telewave Laboratories, Inc., 4320-34th St., Long Island City 1, N. Y.)

(Circle 21 on Readers' Service card)

Digital recorder for particulate spectra (model 120) is designed to record data from particulate monitoring instruments. The recorder provides a paper-tape record, generates data for preset alarm indications, and provides a seven-digit manual keyboard and print-command bar for typing related numbers in between automatic prints. For use with range-cycling particle monitors, the printer follows the counter program, totals individual ranges, and prints grand totals of all included ranges. In desk-top configuration, the recorder can be mounted directly in the cabinet top of the monitoring equipment. Special lint-free paper can be supplied for clean-room use. Punched paper tape can be used to record data in machine language for direct input to computers or other data systems or for conversion to cards or magnetic tape.—J.S. (Royco Instruments Inc., 440 Olive St., Palo Alto, Calif.)

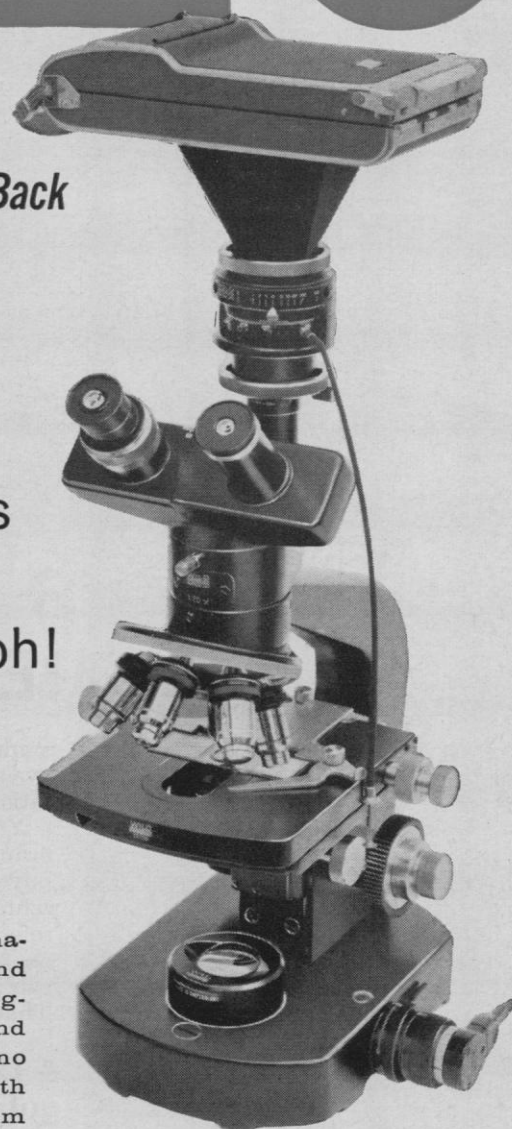
(Circle 22 on Readers' Service card)

Animal metabolism chamber is used in rat breath analysis studies where complete separation of urine and feces is essential and tail-blood sampling is needed. Blood, urine, and feces samples may be obtained at any time without interruption of the breath analysis. The chamber accommodates rats over a wide range of body weights, and its relatively small volume (1.4 lit.) favors high-resolution respiration data. Additional features, such as provision for feeding and electrode ports, will be provided on request. Glass construction reduces contamination problems while allowing the animal to be in view at all times. Model MC-299 consists of two major sections, a pyrex glass chamber, and an animal restrainer (plastic). The chamber houses the restrainer, which is inserted into the chamber through an end port covered with a plastic cap. The chamber has removable urine and feces collection vessels plus a tail port and cap assembly which serves as the gas inlet tube. A second tube, located near the chamber entrance, is the gas outlet port. In many cases, the gas inlet tube will double as an electrode port. Any one

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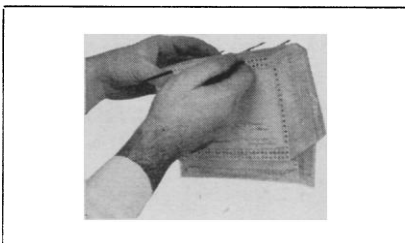
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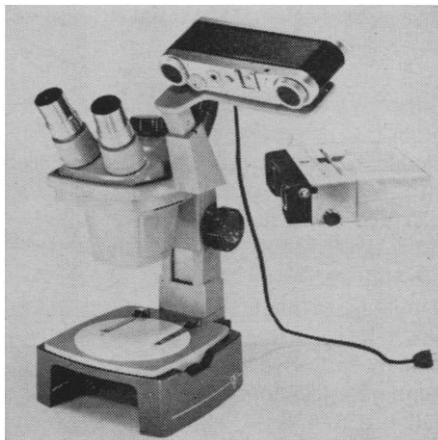
collection vessel may be removed and its contents sampled without interfering with the gas analysis, provided the gas inlet port is then closed. This port will then serve as the gas inlet.—R.L.B. (Atomic Accessories, Inc., 811 W. Merrick Rd., Valley Stream, N.Y.)

(Circle 23 on Readers' Service card)

Chromatography accelerator "chromac" uses centrifugal force to speed the movement of solvent along paper strips to provide fast separation of amino acids, amines, steroids, sugars, dyes, and so forth. The apparatus uses strips of paper about 1/2 in. wide arranged radially on a rotating disk and solvent is metered to the center of the disk by means of a solenoid-controlled valve. Speed control, flow control, and narrow strips are said to have greatly improved centrifugal chromatography, and separations ordinarily requiring 14 to 16 hours can be made in 30 minutes.—R.L.B. (Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.)

(Circle 24 on Readers' Service card)

A stereo camera and viewer attachment for Bausch & Lomb's StereoZoom microscope extends the instrument's versatility to include photomicrography. With this dual purpose instrument, one can now perform visual 3-D observation, then swing the camera unit into place and make permanent records which retain the high image quality of the original. The basic accessory unit is a Graflex stereo graphic camera, to



which prisms have been added, correcting for the convergence angle of the microscope. The camera, designed to fit any model of the StereoZoom, can be attached quickly and easily by means of a mount adapter. The user simply lifts out the power pod, places the mount on the arm, replaces the

pod, and the adapter unit with camera is slipped into place. The camera can be used with 10X, 15X, or 20X eyepieces. The camera is equipped with a double exposure prevention feature, instantaneous and bulb shutter settings, and cable release. Exposure time is fairly short (approximately 1 second from 7X to 15X; 3 seconds at 30X). A variety of quality film (either color or black and white) can be used. Camera unit includes a stereo graphic viewer with built-in battery-operated light source and ground-glass diffusion screen. Viewer can be focused and has interpupillary distance adjustment. Any StereoZoom microscope illuminator can be used for most photomicrography. Bulletin D-1110.—R.L.B. (Bausch & Lomb Inc., Rochester 2, N.Y.)

(Circle 25 on Readers' Service card)

Frequency standard (type XSC) delivers frequencies of 1 and 0.1 Mc/sec. The output-signal amplitude is about 1 volt and source impedance is 50 ohms. The instrument is fully transistorized, has proportional-action temperature control of the crystal oven, and built-in battery reserve power. Frequency changes within 24 hours are said to be less than 1 part in 10^{10} . Stability increases with the duration of uninterrupted service, and the mean daily frequency drift is said to be less than 5 parts in 10^{10} after 10 days of operation. Incremental frequency tuning is possible, the total amount being read directly in terms of parts in 10^{10} on a mechanical register. Spurious modulation of the output voltage is down more than -90 db. Ambient temperature fluctuation between -10° and +40°C is permissible with the built-in battery, and -20° to +50°C without the battery.—J.S. (Rohde and Schwartz, 111 Lexington Ave., Passaic, N.J.)

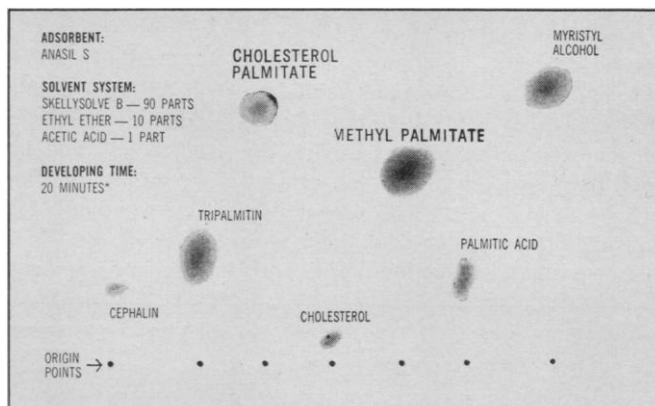
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Magnetic sensor is a laboratory instrument designed for mapping magnetic fields. Field sensing is accomplished by means of a microscopic vacuum-deposited indium-antimonide Hall-effect probe. The instrument is said to be capable of sensing fields as low as 5 oer over an effective area of 5 millionths of a square inch. It can measure the permanent magnetic field produced by tapes, drums, storage devices, and the like, without relative motion between the pickup and the measured surface. According to the manufacturer, the measurement process

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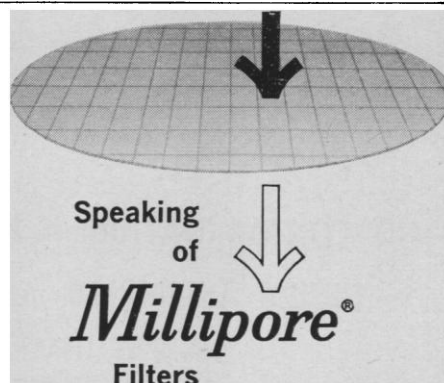
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Harpst, H. C. et. al. 1961
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(Circle 28 on Readers' Service card)

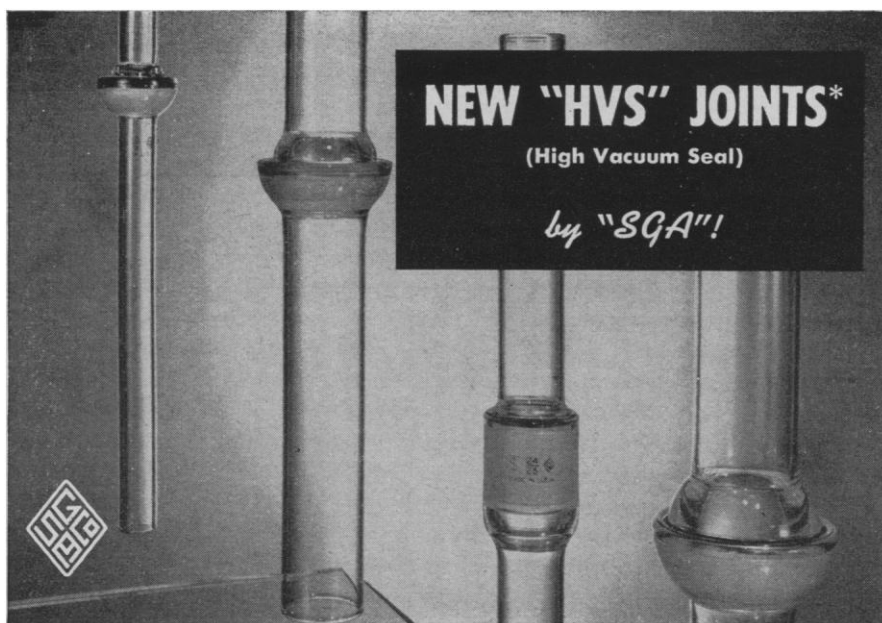
Cell fractionator is capable of separating cell walls from cell contents with minimal denaturation of either fraction. Antigenic, allergenic, and toxic factors have been shown to be associated with cell walls or cell contents so that the method offers a preparation of vaccines that does not induce toxic or allergic manifestations but contains only those antigens essential to confer immunity or protection. The fractionator pumps the cell suspension through a fine orifice at pressure up to 60,000 lb/in.² Heating at the orifice is prevented by cooling the jet with chilled cooling gas.—R.L.B. (Ivan Sorvall, Inc. Norwalk, Conn.)

(Circle 29 on Readers' Service card)

Thin-layer chromatography, a comprehensive bibliography now in its second edition, brings thin-layer chromatography up to date as of December 1961, with a total of 167 entries.—R.L.B. (Research Specialties Co., 200 S. Garrard Blvd., Richmond, Calif.)

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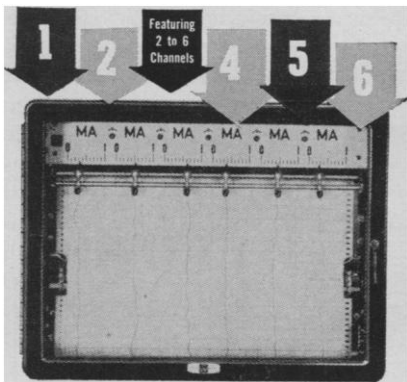
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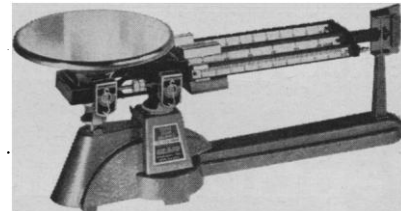
Large-scale **sampling oscilloscope**, (model LS 421) employs a 14 inch magnetically deflected cathode-ray tube. A random sampling method enables the instrument to be used as an X-Y plotter for repetitive phenomena ranging from d-c to as high as 5 Mcy/sec. Fifty thousand samples per second are taken independently of the frequency of the waveform under examination. X-Y plotting is achieved by carrying out electronically a process analogous to conventional plotting. The sampling circuits periodically determine the instantaneous values of e_x and e_y simultaneously and store the two values thus obtained for a certain length of time. The stored values are then applied to the magnetic deflection system while the beam current is held below cutoff. When the deflection system has stabilized to the proper deflection levels represented by the stored values, the tube is unblanked and the point plotted. Since the sampling rate is fixed by the internal circuits, no relationship need exist between it and either e_x or e_y . The points are thus plotted in a random fashion on the tube face. The cathode-ray tube used is electrostatically focused and provides a spot size of 0.5 mm. Horizontal calibrated sweep speeds are 0.2 sec/cm to 20 nanosec/cm.—J.S. (International Telephone and Telegraph Corp., 320 Park Ave., New York 22)

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Portable **scaler** (model 30) uses solid-state circuitry and electromagnetic digital readout. Weight is 2 lb and power is supplied by four mercury cells. Timing must be provided externally. Count capacity is 9999 and maximum count rate is 400/sec. Input sensitivity is 250 mv. Pulse width at negative pulse is 5 msec minimum.—J.S. (Kleber Laboratories, Inc., 2530 N. Ontario St., Burbank, Calif.)

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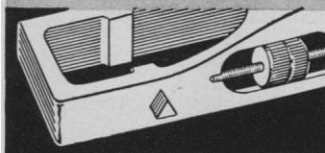


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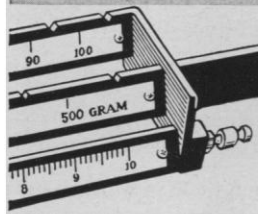
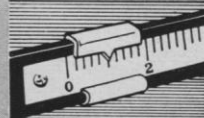


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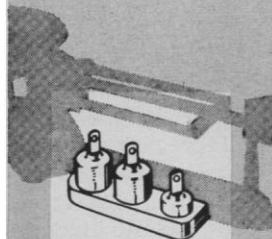
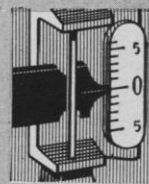


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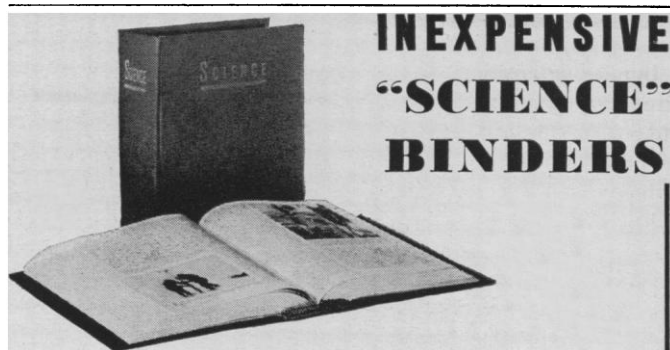
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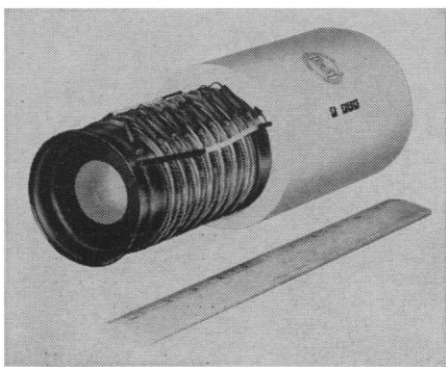
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(Circle 34 on Readers' Service card)

Non-Newtonian viscometer, a 15-speed Epprecht type, measures viscosity from 0.2 to 10^7 centistoke/sec. It is capable of 15 readings in the speed range 5.6 to 352 rev/min with shear rates from 1 to 2000 sec and shearing forces from 2 to 20,000 dynes/cm². Operating current is 110 v, 60 cy/sec.—J.s. (J. W. Fecker, 4709 Baum Blvd., Pittsburgh 13, Pa.)

(Circle 35 on Readers' Service card)

Image intensifier tubes, manufactured by English Electric Valve Co., Ltd., have photon gain of 100,000 or better and experimental units are said to have been selected with gain up to 1 million. The tube features a 1 inch di-



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(Circle 36 on Readers' Service card)

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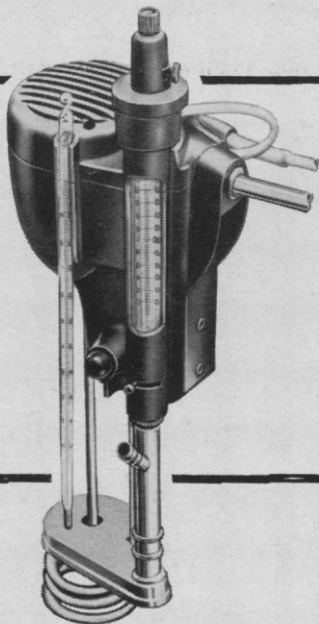
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8 JUNE 1962

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Correspondence concerning the position should be addressed to: **Dr. Charles R. Schroeder, Director, San Diego Zoological Gardens, P.O. Box #551, San Diego 12, California.**

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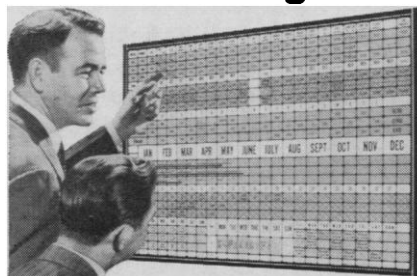
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Editor: Carl F. Kayan

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Presented by 33 American and European authors at the Washington Meeting, AAAS, December 1958

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The purpose of the volume is primarily to focus attention on the growing problems of international usages and goals in terms of the different systems employed, as contrasted to those of our own national operations tied to established practices. The purpose of this volume is to alert the technologists on the general confused situation, the clamors, the needs, and the proposals to ameliorate the confusion.

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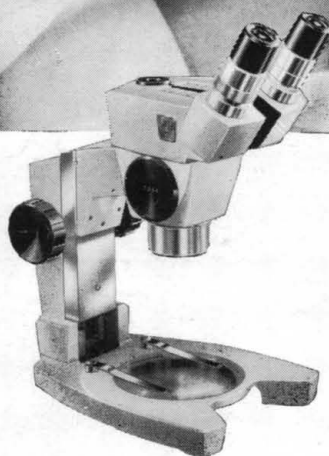
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