

NEW PRODUCTS FOR ANALYSTS

Equipment, Apparatus, Instruments, Reagents, Materials

Mobilab

The first complete testing laboratory-on-wheels to be sold on a ready-made basis is being offered by Fisher Scientific Co. The Mobilab incorporates a standardized laboratory body with all necessary services (gas, water, and electricity; heat and air conditioning) to which laboratory furniture and testing apparatus are added to produce a field laboratory for any desired type of work. Sliding partitions can be used to divide the Mobilab into two or more sections for different types of work.

The unit is also equipped with mobile telephone and radio, and with instruments to detect radiation and to test water and food supplies for contamination.

1

Sigmamotor Pump

Sigmamotor, Inc., has announced a new, larger model of the Sigmamotor pump. A feature of the earlier model was the ability to handle tubing up to 1 inch in diameter. The new pump has a hinged top which makes it possible for tubing to be placed against "fingers" for pumping without disconnecting either end. The fingers consist of a series of chrome plated steel projections which exert pressure on flexible tubing.

No connections at the pump are required. Liquid is pumped from one receptacle to another merely by placing the connecting tubing in the pump. Fluid in the tubing never comes in contact with the pump. There can be no contamination or corrosion from contact with metal pump parts.

The Sigmamotor will pump liquids,

gases, or solids in solution. It has a capacity of from 45 to 250 gallons per hour at 500 r.p.m. Different tubing sizes can be used simultaneously. Several fluids may be pumped in proportion, simultaneously, and independently.

2

Spectrograph

A versatile, new 1.5-meter stigmatic grating spectrograph designed to bring precision spectrography within the reach of small organizations is now available from Bausch & Lomb Optical Co.



The instrument comes in two models, both of which are capable of analyzing a wide range of nonferrous materials and are also suitable for use on the more complex spectra of unalloyed gray irons, plain carbon steels, and low-grade ores. Model 10 gives a spectrum coverage of 2250 to 6250 Å. in the first order, dispersion of 16 Å. per mm., and an actual resolving power of 32,000. Model 11 provides a spectrum coverage of 3700 to 7400 Å. in the first order and 1850 to 3700 Å. in the second order. Dispersion in the first order is 15 Å. per mm. and in the second, 7.5 Å. per mm. The resolving power actually obtained in practice is 70,000 in the second order. In both models, the optical system consists of a concave 40 × 80 mm. Bausch & Lomb certified-precision grating, slit,

quartz cylindrical lens, and film. The combination of cylindrical lens and concave grating provides a stigmatic spectrogram and permits the use of accessory equipment at the slit.

The slit is of the fixed type, ruled in silver on a slide, in widths of 10, 20, and 50 μ. A manual shutter is used and the film holder takes a 10-inch length of 35-mm. film.

The instrument weighs 150 pounds, is 12 inches high, 18 inches wide, and 60 inches long.

3

Radiation Supervisor

Detectolab, Inc., has designed an instrument to provide continuous automatic monitoring of radiation. It is also able to sound remote control alarm systems in safety control centers. The instrument has built-in aural and visual alarm systems, and adjustable sensitivity. It can be simply plugged in and immediately operated. An infinite life type counter that plugs directly into the top of the chassis is used.

An additional feature is an accessory cable and probe that enable the operator to monitor desk tops, floor area, and other suspect areas.

4

Radiocarbon Compounds

Five new chemicals have been added to the list of radioactive carbon compounds available from the Nuclear Instrument & Chemical Corp.

Adenine-8-carbon-14 is a general constituent of the nucleic acids of nucleoprotein found in all cells. Pyruvamide-2-carbon-14 and pyruvamide-3-carbon-14 are useful in the synthesis of labeled

Circle desired
items for further
information on
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TECHNICAL DATA DEPARTMENT ANALYTICAL CHEMISTRY

AUGUST 1953

I am interested in the following circled items:

New Products	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16													

Manufacturers' Literature	17	18	19	20	21	22	23	24	25					
26	27	28	29	30	31	32	33	34	35	36	37	38		

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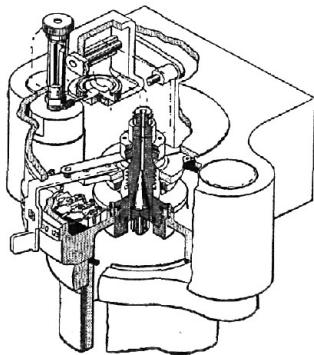
(PLEASE PRINT OR TYPE)

substituted succinic, tartaric, and lactic acids. Acetyl bromide-1-carbon-14 and acetyl bromide-2-carbon-14 are useful reagents for introducing a labeled acetyl group into alcohols, acids, and amines.

These compounds are available in 1-millicurie and 0.5-millicurie packages. 5

Particle Size Distribution Analyzer

A newly designed instrument which quickly and accurately determines the particle size distribution of powdered materials has just been placed in production by the Sharples Corp. Research Laboratories. Four companies are already using commercial models of this instrument; ten more instruments are in the process of being built. The instrument enables a single person to determine the particle size distribution of billions of particles with an accuracy of $\pm 3\%$ in about an hour, a task which formerly would have taken several persons several months to complete.



The Micromerograph utilizes a technique in which powder particles are dispersed in air and are allowed to settle under the action of gravity through a tube onto a servo-electronic balance. The balance (sensitivity, 0.1 mg.; response time, 5 to 10 milliseconds) yields a continuous record of the weight of powder settled, plotted against time. Through the application of Stokes' law,

a particle size distribution curve is obtained.

The average sample is 100 mg. but the instrument can use samples from 25 to 700 mg. This relatively large sample eliminates possible significant statistical errors.

The instrument is housed in one complete, integrated unit mounted on a wall or column. It requires floor space of 13 \times 23 inches and a height of 8.5 feet. A cylinder of nitrogen is required; this compressed gas is used to inject the powder sample into the sedimentation tube through the deagglomerator.

Picture shows a section of the powder sample feeder and deagglomerator. 6

Isotope Chart

Harshaw Scientific has designed a chart of the isotopes arranged to make available, in a convenient form, all the useful information about isotopes. The chart is lithographed in ten colors to make possible rapid identification of isotope half-life and nuclear stability.

The chart is 60 \times 48 inches, with metal edges for hanging. It is printed on a plastic impregnated fiber paper developed for Navy charts, is washable, noncreasing, and tear resistant. 7

Neutron Counters

Radiation Counter Laboratories, Inc., has announced completion of a production run of what are believed to be the longest boron trifluoride neutron counters ever made. The counters, measuring more than 6 feet in length, are of all aluminum construction. In addition, they are filled to a pressure of 120 cm. of mercury with enriched boron trifluoride gas. Large numbers of these counters may be used in a group for maximum efficiency in detecting neutrons. Similar, but shorter, counters have been found to have a transit time of 0.5 microsecond.

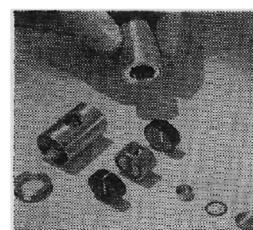
Other counters are available from

ANALYTICAL CHEMISTRY

0.75 inch in active length up to these elongated 6-foot counters. Neutron counters have been filled with from as little as 10 cm. of boron trifluoride to as high as a pressure of 150 cm. mercury. 8

Synthetic-Boundary Ultracentrifuge Cell

Specialize Instruments Corp. has devised an ultracentrifuge cell to make it possible to measure the sedimentation constant of a slow component moving in the presence of a fast component. In effect,



extends the range of ultracentrifugal analysis downward in the macromolecular region from molecular weights of about 10,000 (the former practical lower limit) to about 500.

Principle of the new cell depends upon the layering of one solution, the supernatant, over the mixture under study, thus producing a boundary away from the meniscus. Or, in the case of two components, layering a solution containing only the fast component over a mixture of the fast and slow components. This procedure artificially creates a boundary of the slow component in the presence of the fast component, and measurements of the movement of this boundary are made by conventional optical methods. 9

Ultramicroanalysis Unit

Microchemical Specialties Co. has designed a completely self-contained portable unit for all ordinary drop-scale analysis. It contains all the necessary apparatus arranged in as convenient a manner as possible for efficient working

(Continued on page 26 A)



TECHNICAL DATA DEPT.
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Use this handy return card to save yourself time. It will bring information of use to chemists and engineers in laboratory, pilot plant, and production. The items listed in this special section have been selected by the editors of ANALYTICAL CHEMISTRY for their value and timeliness in helping you to keep abreast of the latest developments in the field.

NEW PRODUCTS, continued

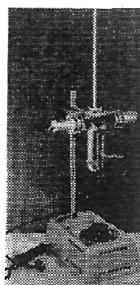
conditions. Acidimetry and oxidimetry titrations, filtrations, precipitations, preparation of volumetric solutions, and all of the basic operations of ultramicro-analysis can be performed with this unit. The apparatus is enclosed in a hardwood cabinet 2 feet high, 3 feet wide, and 18 inches deep. The unit also has built-in electrical connections and four built-in hydro valves for air, gas, water, and vacuum.

10

Melting Point Apparatus

A new reflected light microphotometer attachment for microscope melting point apparatus, called Melt-Meter, has recently been introduced by the National Instrument Co. It is a macro type apparatus and indicates melting points up to 360°C.

With this instrument, the sample is uniformly heated on all sides in a covered well. Precision thermometers supplied with the instrument permit the melting point to be read directly to 0.2°C. without interpolation. A tri-part, reflected lighting system il-



luminates the sample on three sides against a background of soft diffused light. The result is a stereoscopic effect which makes the sample appear as though in relief. Change in state can be observed at the instant melting begins. Transition temperatures of non-crystalline substances can be determined easily. Special attachments permit determination of drip points and melting points of fats, grease, and wax.

A cooling jacket enclosing the melting block permits compressed air to be circulated about the melting block, thus cooling it quickly in preparation for the next test where a large number of samples must be tested in sequence.

11

Voltage Stabilizer

The New York Laboratory Supply Co., Inc., is offering a new, highly regulated 6-volt d.c. power unit designed to eliminate completely storage batteries or storage battery power supplies. This precision voltage stabilizer is recommended not only for general laboratory purposes but also for the Beckman Model DU or Model B spectrophotometers to supply their 6-volt and 2-volt requirements.

The stabilizer has the following out-

put characteristics when operated from the 115-volt a.c. power line, either 50 or 60 cycles: a highly regulated voltage from the main terminals, adjustable between 5.5 and 6.5 volts d.c., with currents up to 5 amperes; also, fully stabilized lower voltages from an intermediate terminal connecting with a built-in voltage divider, which can be set by the user to deliver any value from zero to 6.5 volts d.c. at currents up to 1 ampere; an option of delivering up to 6 amperes from the main terminals (stabilized 5.5 to 6.5 volts) by disconnecting the voltage divider; a further option of delivering any voltage from zero to 10 volts from the main terminals by sacrificing part of the voltage regulation.

In normal operation, the voltage regulation is within $\pm 0.01\%$ of the rated output, against a.c. line voltage changes of $\pm 15\%$, the random fluctuations of output being less than ± 0.0005 volt at the 6-volt terminal.

12

Field Centrifuge

A new centrifuge for the American Petroleum Institute base sediment and water test in the oil field is now being manufactured by International Equipment Co. The 6-volt tester is more compact than previous models; has a rheostat speed regulator with off position; a pilot light; numbered head



positions; top motor removal facilitating motor servicing; sparkproof aluminum construction; and receptacles for tube storage.

13

Camera for X-ray Diffraction

The Research & Control Instruments Division, North American Philips Co., Inc., has available a back reflection camera for precise determination of atomic lattice constants in x-ray diffraction work.

The camera has a radius of 60 mm. and weighs 9.5 pounds. It provides excellent resolution with reasonable exposure periods and covers a range of Bragg angle values from 59° to 88.74°.

V-notch reference marks along the lower edge of the film-turret facilitate accurate calibration and eliminate errors resulting from film shrinkage. The

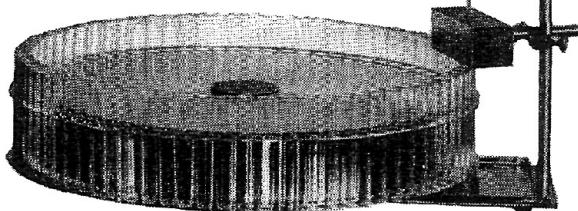
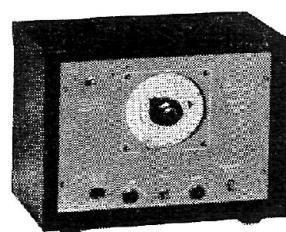
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MODEL 230**AUTOMATIC FRACTION COLLECTOR****BOTH TIME AND DROP COUNTING****For accurate work in the field of column chromatography**

- One outstanding feature is the phototube arrangement for drop counting. Drops from the column fall directly into the test tubes without touching anything. There are no intermediate glass arms and funnels to cause mixing, contamination, evaporation, etc. This is especially important when accurate separations are required and also whenever certain fractions are labeled with radioactive tracers.

Turntable, phototube housing, etc. are made of Stainless Steel.

Price complete for time and drop counting \$795.00



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NEW PRODUCTS, continued

notches, spaced 10° apart, produce a wedge pattern along the lower edge of the exposed film. The collimating slit system is accurately located at 180°, midway between two adjacent V-notches. The slit system is mounted in a machined wedge and is held in place by a knurled screw. The knife edges of the wedge produce two sharply defined vertical lines on the exposed film. From knowledge of the distance between the lines, the film can readily be calibrated for precise determination of line positions.

The specimen holder is rigidly mounted and pivots on a steel shaft. It is slowly oscillated in a small arc by means of a cam driven by a 115-volt, 60-cycle motor.

The camera includes a coupling to which a hose can be connected for gas filling or evacuation.

14

Colorimeter

Coleman Instruments, Inc., has completely redesigned its photoelectric colorimeter to include new power supply arrangements, and revised combinations of accessory equipment.



The system of cuvets and adapters used with this instrument allows instant choice of any of nine cuvet sizes, with minimum sample volumes ranging from 10 to 0.007 ml.

The instrument has interchangeable galvanometer scale panels which permit direct readings in terms of optical density, transmittance, or constituent concentrations. Moreover, there are four ways to measure with the dual measuring system which is available. Both optical density and per cent transmittance readings can be made by either of two methods: instant, direct-reflection readings from the illuminated galvanometer scale, for speed and convenience; or null-point readings from the calibrated slide-wire potentiometer, for the highest possible precision.

15

Mixer

Fisher Scientific Co. has developed a mixer which embodies the motion of

For further information, see coupon on page 23 A



Lo-Flow ROTA-KIT®

A Compact Self-Contained Flow Test Kit

For low flow rates from 5cc/min. to 40,000 cc/min. for gas, and 0.1cc/min. to 1,400 cc/min. for water.



The four metering tubes and all replacements are interchangeable within a given size to within 2% plus or minus. All the components are packed in an attractive plastic kit.

Maximum Corrosion Resistance

Three of the metering tubes, sizes Nos. 1, 2 and 4, can be mounted in one set of adapter fittings. Tubes are readily interchangeable by unscrewing packing section and removing one of the adapter hose fittings. The other set of adapter fittings is used for the No. 6 metering tube, the floats held in metering tubes by means of a force-fitted teflon cross-hair. Meter back plates and retaining posts are threaded to receive the hose nipple adapters.

Safe Pressure Rating 100 lbs.

Eliminates necessity of recalibrating meters in event of tube breakage. Enables the building of reliable and correlated calibration data. Floats are made to close tolerance for accurate interchangeable replacement. The calibration system includes four of pyrex and four of 316 stainless steel floats. Technical booklet accompanying each kit gives data for sizing Rotameters for various flows and conditions with eight approximate calibration curves for air and water.

Accuracy Convenience Economy

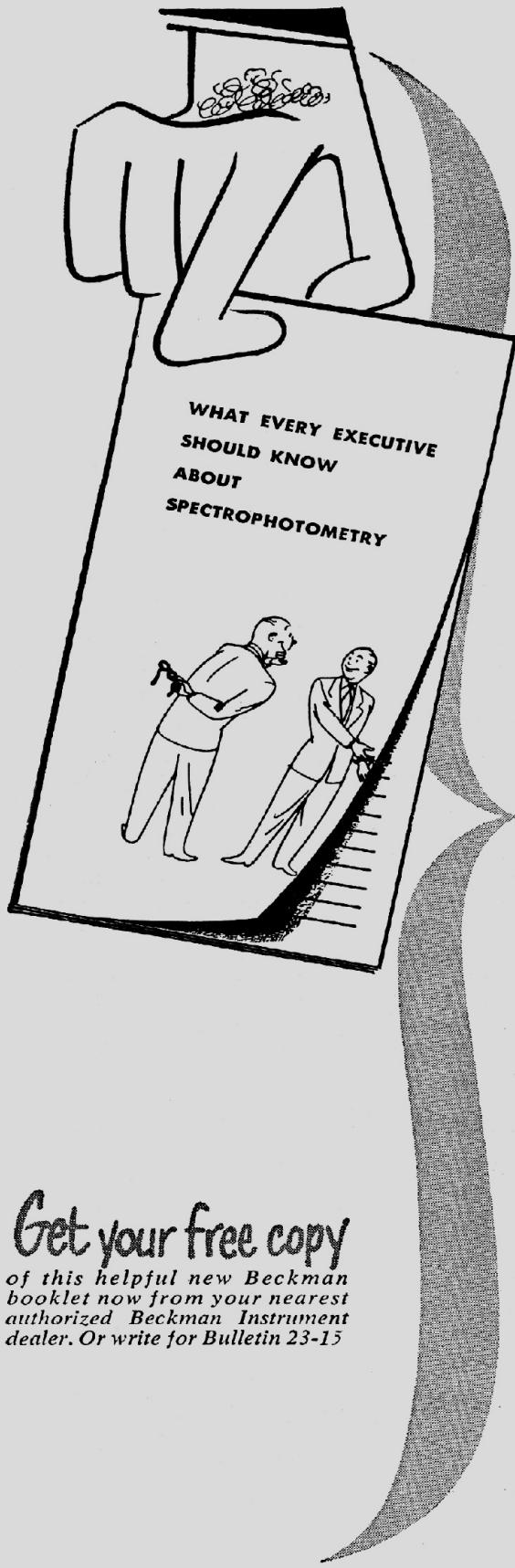
Hose nipple adapters are made of 316 stainless steel. Backplate and retaining posts are attached to the unit. Backplate, retaining posts and mounting stand are made of chrome plated brass. All wettable parts in fluid contact are made of glass or stainless steel. Entire assembly mounts in a square base stand with adjustable lock screw.

AVAILABLE FROM STOCK — Price \$120.00

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FREE...

This helpful new booklet on modern Spectrophotometry

By means of a great new science—Spectrophotometry—laborious, time-wasting analytical procedures are rapidly being replaced with faster, simpler methods of chemical analysis and control.

This booklet, complete with color charts and illustrations, provides for the first time a basic summary of the important facts to know about the interesting subject of Spectrophotometry . . .

- It explains the principles of Spectrophotometry—how light beams are used to simplify the various types of chemical analyses.
- It shows typical absorption spectra and how they are used to quickly identify the individual chemicals and chemical compounds.
- It tells what to look for in a Spectrophotometer and why . . . the importance of adjustable band widths—wide wavelength range—and how to be sure of maximum versatility in the equipment you select.
- It outlines typical money- and time-saving applications for modern Spectrophotometric equipment, ranging from medical laboratories to bottle-making machines . . . synthetic rubber plants to food processing operations . . . paint making to criminal investigations.

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Beckman division

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Beckman Instruments include: pH Meters and Electrodes — Spectrophotometers — Radioactivity Meters — Special Instruments

manual sample shaking in an electric apparatus: the Fisher-Kendall mixer.

The mixer has two arms mounted to rotate 180° out of phase with each other. Each arm has a cast-aluminum "hand" mounted at an acute angle so that when the arms revolve, the sample is (a) slid, (b) thrown back and forth along the jar's length, and also (c) thrown up and down as the jar revolves. Set screws on each of the three fingers on each hand keep the jar firmly in position; suction cups on each finger ensure tight grip. Either arm—or both arms—can be loaded; there is no need to counterbalance them.



The hands, with flexible fingers, adjustable through 360°, can accommodate most shapes and sizes of containers so that mixing and storing may be accomplished in the same container.

All moving parts are inside the apparatus. The motor stalls the instant human hands accidentally enter the orbit of the mechanical ones. The motor is $1/50$ hp. and is mounted in an iron casting with suction-cup rubber feet.

16

MANUFACTURERS' LITERATURE

Pocket Pyrometer. A 4-page bulletin describing a pyrometer designed for quick and accurate measurement of surface and subsurface temperatures through the use of interchangeable thermocouples. Cybertronic Corp. of America (*B-15*). 17

Graph Plotting. Seven-page booklet, "IBM Automatic Graph Plotting," describes a method for the automatic creation of performance and value pictures in graph form from punched cards. International Business Machines Corp. (*AD-14*). 18

Magnesium Trisilicate. Product data sheet for four grades of magnesium trisilicate ($2\text{MgO} \cdot 3\text{SiO}_2 \cdot x\text{H}_2\text{O}$). J. T. Baker Chemical Co. (*Index No. 55311*). 19

Magnesium Trisilicate, U.S.P. A 6-page brochure completely characterizing

(Continued on page 30 A)

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