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I	NRC	Send me Data Sheet on Vacuum Gauges  Diffusion Pumps  Rotary Gas Ballast Pumps  Have your representative call
	EQUIPMENT ORPORATION	Name

### **EQUIPMENT NEWS**

All inquiries concerning items listed here should be addressed to Science, Room 604, 11 W. 42 St., New York 36, N.Y. Include the name(s) of the manufacturer(s) and the department number(s).

- DIGITAL RATEMETER can be used with scintillation counters, Geiger tubes, and proportional counters. A high-voltage supply that is variable from 300 to 3000 v provides current to operate the auxiliary detectors. Input sensitivity is adjustable from 0.2 to 5.0 v. Range is from 0 to 100,000 counts. Time of read-out can be varied from approximately 1.5 sec to 5.0 sec as desired. At the end of each read-out period, the instrument automatically resets itself and displays a new rate of count. (Technical Associates, Dept. S96)
- ELECTROMECHANICAL MANIPULATOR is designed to provide fully remote operation. The distance between the operator and the "slave" is determined by the length of the interconnecting electric cable. A television monitor can be used to present a display at the control console. Electric controls for indexing and locking the manipulator are provided. (Borg-Warner Corp., Dept. S97)
- X-RAY DIFFRACTION BROCHURE discusses basic theory (Bragg's law), definitions, analytic advantages, and applications in metallurgy, chemistry, mineralogy, physiology, pathology, and biology. Included are typical patterns of Laue, rotating crystal, and powder methods of crystal study. (General Electric Co., Dept. S41)
- HEAT-RESISTANT RUBBER withstands swelling by fuels and oils. Hardness, tensile strength, and elongation are comparable to other silicone rubbers. (Dow Corning Corp., Dept. S42)
- COLORIMETER permits color-difference determination in temperature-sensitive materials and in dusty atmospheres. A cooling system and an air filter are provided. The apparatus performs the functions of an abridged spectrophotometer and a tristimulus colorphotometer in analyzing color formulations, determining metameric conditions, and measuring color differences in hue, value, and chroma. (Instrument Development Laboratories, Inc., Dept. S43)
- WATER DEMINERALIZER is a table-model, ion-exchange device for direct-faucet connection. A direct-reading meter, calibrated in ohms per cubit centimeter and in parts per million indicates the quality of water being delivered at flow rates of approximately 1 gal min. (Ion-Exchange Products, Dept. S44)

- PUBRATING REED ELECTROMETER developed for measurement of small d-c currents and voltages at high impedance has a stability of ±1 mv, sensitivity of 0.03 μμα, four ranges, three inputs, and sufficient output to operate with a 1-ma or 100-mv recorder. The instrument is made by Ekco Electronics, Ltd., in England, and operates on 110 or 220-v, 40 to 60 cy/sec electric power. (American Tradair Corp., Dept. S95)
- PUG MILL MIXER for laboratory use has a variable-speed drive of 20 to 30 rev/min. The instrument is driven by a 0.75-hp motor. (Lindcraft Corp., Dept. S45)
- STAINLESS-STEEL EQUIPMENT for handling radioisotopes used in biology is described in a new bulletin. Among the units described are a back-mounted incubator, a biological refrigerator, a microbiological filter canister, refrigerated centrifuge, autoclave, and hood. All items are of modular design. (S. Blickman, Inc., Dept. S94)
- MIGROTOME KNIFE SHARPENER uses a revolving glass wheel as the sharpening surface and a soap solution as coolant and vehicle for the abrasive. The knife is manually applied, and the rotational speed of the wheel is set at a fixed optimum for sharpening and for prevention of burning or chipping. There is a micrometer for adjusting the bevel angle of the knife. (Research Specialties Co., Dept. S80)
- DIRECT-WRITING OSCILLOGRAPH provides instantaneous, permanent recordings of frequencies as high as 250 cy/sec at 1-in. double amplitude. The Datagraph, which has high input impedance, employs a vibrating wire in a magnetic field. The wire burns a contact wherever it touches the electrosensitive paper as it travels over an anvil, providing rectilinear writing. Speed-change pushbuttons select six chart speeds, and separate control knobs set the trace density for each of the two channels. Both the oscillograph and the companion amplifier operate on standard electric power. (Consolidated Electrodynamics Corp., Dept. S82)
- SHIELDING BRICK made of transparent plastic permits observation of processes that involve use of high-level sources of radioactivity. Bricks are hollow blocks; they have a sealable hole through which zinc bromide is introduced to provide shielding. (P. M. Lennard Co., Dept. S93)
- STOCHASTIC GENERATOR is capable of continuous production of random numbers at 10 per second and may be used as a computer accessory. (Loyola Laboratories, Dept. S47)

# New Information on

# **HIGH VACUUM**

# Components, Equipment, Systems

Brochures listed below give engineering data and application information on N R C high vacuum products. These products offer unparalleled reliability, productivity, and ease of operation. They incorporate features which result from experience gained from nearly two decades of designing, building, and operating high vacuum equipment.

P3—Mechanical Pumps—NRC Rotary Gas Ballast pumps maintain peak efficiency even when pumping 100% water and other condensable vapors . . . have paid for themselves in 3 years by oil savings alone.

MB1—Mechanical Booster High Vacuum Pumps—The NRC Series 4700 pumps provide peak speeds over the broad pressure range 5-2200 microns. Seven models. Capacities 1000-12,000 CFM.

DP2—Oil and Mercury Booster and Diffusion Pumps—Unusually easy to maintain . . . long-lived . . . these pumps give top performance despite normal variations in operating conditions.

G4 — High Vacuum Gauges — Outstanding among NRC's line of Thermocouple, Ionization, and Pirani Gauges is Model 520 Alphatron ® Ionization Vacuum Gauge with a 10-4 to 1000 mm Hg. range.

V1—High Vacuum Valves NRC offers hand or air-operated air-release, clapper, slide, throttling, and bellows or O-Ring sealed, globe, angle and wye high vacuum valves. Sizes 1/8" to 24".

S1—Vacuum Seals and Feed Throughs— There is a complete line of NRC vacuumtight devices for introducing electricity or motion into a vacuum system.

F2—Vacuum Furnaces—Efficient, dependable and easy operation are features of NRC High Vacuum Arc, Induction and Resistance Furnaces. Standard Models of capacities from 2 to 2000 lbs. are now being used in all types of melting and heat treating.

A2—Vacuum Analytical Equipment—The NRC Model 912 Vacuum Fusion Gas Analysis Apparatus and the NRC Model 917 Hydrogen in Titanium Determinator are industry's standards for determining gas content of metals.

FD3—Freeze Drying Equipment—Designed for reliability and operator convenience, the complete Freeze Dry line includes laboratory, pilot plant and production-sized models.

### NRC EQUIPMENT CORP.

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Dept. 5B, Charlemont St.



Newton Highlands, Mass.

26 OCTOBER 1956

- COUNTER-CURRENT APPARATUS uses three-phase solvent-system combinations and provides for automatic or manual shaking. (Laboratory Glass and Instrument Corp., Dept. S48)
- MULTIENVIRONMENT TEST CHAMBER produces temperatures ranging from -100° to +400°F and maintains them during operation to within ±2 Fahrenheit degrees accuracy. The stainless-steel chamber has a capacity of 12 ft³. (Mantec, Inc., Dept. S46)
- PIPETTE allows centrifugation of a blood sample for hematocrit determinations while the sample is still in the pipette. The pipette is calibrated in sedimentation rates and hematocrit scales. A U-shaped bore prevents the blood from being expelled during centrifugation. (Delmar Scientific Co., Dept. S87)
- DELAY LINE model 403, designed for use as a component or as test equipment in computer and radar systems, is continuously variable over its delay range from zero to 0.70 µsec. Attenuation is less than 1.0 db; resolution is better than 0.001 µsec; maximum rise time is 0.060 µsec; and impedance is 500 ohm. (ESC Corp., Dept. \$78)
- TYGON FLEXIBLE PLASTIC TUBING is described in a 28-page booklet that covers each of the formulations of Tygon tubing. Applications and limitations of each formulation are presented, as well as physical properties and chemical resistances. (U.S. Stoneware Co., Dept. S83)
- AIR SAMPLER has an automatic flow control that compensates for changes in the resistance of the filter. (Mine Safety Appliance Co., Dept. S84)

- GLASS BLOWING ON THE GLASS LATHE is the title of a manual on the basic techniques of using a glass lathe. (Bethlehem Apparatus Co., Inc., Dept. S92)
- RESISTORS that can operate at temperatures up to 200°C are now available with increased resistance ranges. Maximum resistance has been increased in the ½-watt size to 100,000 ohm, in the 1-watt size to 400,000 ohm, and in the 2-watt size to 1 Mohm. (Corning Glass Works, Dept. S75)
- LINEAR ACCELERATOR, which is to be used in sterilization programs, has been adapted to full-scale production-line application and is now undergoing final tests prior to shipment. The accelerator has electron-beam power outputs of approximately 2 kw at 2.5 MeV and 4 kw at 5 MeV. At reduced power, the machine will operate at voltages up to 7 MeV. Another model has power outputs of 2 kw at 6 MeV and 4 kw at 10 MeV. This unit will operate at voltages up to 14 MeV at reduced power. (High Voltage Engineering Corp., Dept. S50)
- RARE EARTH OXIDES imported from the laboratories of Johnson, Matthey and Co., Ltd., London, England, are available in various grades and chemical forms ranging from spectrographically certified purity as high as 99.998 percent down to lower grades. In addition to oxides, an assortment of rare earth salts are available, as well as several metals. (Jarrell-Ash Co., Dept. S81)
- SILICON RECTIFIERS with welded-case construction and an operating level of 1500 v operate stably at temperatures up to 150°C and have forward current ratings up to 125 ma. The single-element, grown junction rectifiers are available in axial and stud half-wave models. (Texas Instruments, Inc., Dept. S79)
- NEEDLE VALVES made of Teflon plastic can be used with all types of laboratory glassware when micro measurements are required. A catalog describes various operational uses in chromatography and other fields. (Emil Greiner Co., Dept. S85)
- ULTRAVIOLET RADIATION SOURCE designed for use in chromatographic procedures operates at a wavelength of 3660 A. A 5-in., heat-resistant, red-purple filter removes visible wavelengths. (Black Light Corp., Dept. S88)
- CENTRIFUGE permits separation of 160-ml samples at 20 speeds up to 25,000 rev/min and with a force up to 50,000 g. The unit can be operated without refrigeration. A variety of rotors with capacity up to 1 liter is available. (Beckman Instruments, Dept. S91)



# Check List of Your Laboratory Needs

### **FISHER**



### INTEGRATED **SOURCE**

### REQUIREMENTS

INSTRUMENT **MANUFACTURING SHOPS** 



CHEMICAL **MANUFACTURING** DIVISION



DEVELOPMENT **LABORATORIES** 



UNITIZED **LABORATORY FURNITURE** 



**CUSTOM GLASS BLOWING** 



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Ainsworth Christian Becker Fisher Gram-atic

Ohaus Seederer-Kohlbusch Torsion Voland

CALORIMETERS

Emerson

Precision

CENTRIFUGES

Precision Fisher International Sharples

**CHEMICALS** 

National Aniline Stains Fisher B.B.L. Media & Dyes Travenol Sera Difco Media Eastman Organics (DPI)

COLORIMETERS

American Optical (Spencer) Beckman Bausch & Lomb (B&L)

CRUSHERS, GRINDERS, PULVERIZERS, MILLS

Braun U. S. Stoneware

DISTILLATION EQUIPMENT

American Sterilizer Precision Stokes **Barnstead** 

**ELECTROPHORESIS APPARATUS** 

FILTER PAPER Fisher Schleicher & Schull Munktells Whatman Reeve Angel

**FURNACES AND OVENS** 

Burrell Lindberg Fisher Precision Hevi-Duty Sentry

**FURNITURE** 

Fisher Unitized (from stock)

**GAS-ANALYSIS APPARATUS** 

Beckman

Fisher

**GLASSWARE AND PORCELAIN** 

Corning (Pyrex and Vycor) Kimble (Exax and Normax)

**HEATERS, HOTPLATES** 

Lindberg Glas-col (Mantles) Precision Hoskins Temco

pH METERS

Beckman

METALLOGRAPHIC EQUIPMENT

American Optical (Spencer) Bausch & Lomb (B&L) Precision-Jarrett

MICROSCOPES & ACCESSORIES

American Optical (Spencer) Bausch & Lomb (B&L)

PETROLEUM-TESTING EQUIPMENT

Fisher/Tag Precision

PUMPS—VACUUM & PRESSURE

Welch

Fisher-Todd

Precision

Precision

Cenco Fisher

REFRACTOMETERS

American Optical (Spencer) Fisher Bausch & Lomb (B&L)

SPECTROPHOTOMETRIC EQUIPMENT

Bausch & Lomb (B&L)

STERILIZERS & INCUBATORS

American Sterilizer

Fisher

**STIRRERS** 

Fastern Precision **Eisher** Waring

Mixco (Lightnin')

TITRATION EQUIPMENT

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**VISCOMETERS** 

Fisher Stormer

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Alcojet available in: Box of 5 lbs .-\$ 300 Case (6×5 lbs.) 15.00 Drum of 25 lbs. lЬ. .45 Drum of 50 lbs. .42 lЬ. Drum of 100 lbs. .40 lь. Drum of 300 lbs. .37 (slightly higher west of the Rockies)

Order from your favorite supplier or write for literature and samples.



- THERMISTOR THERMOMETER has six separate channels, each provided with five different temperature ranges. The instrument covers the range from 30°F to 110°F in overlapping increments of 20°. Accuracy is ±0.25°F. The portable unit has a mercury battery, and thermistor probes can be used either locally or remotely. (Yellow Springs Instrument Co., Dept. S86)
- HYDROMETERS for measuring specific gravity or making other density measurements are available in sets with various calibrations. (Princo Thermometer Co., Dept. S90)
- CUP SINK made of polyethylene is designed to fit in standard laboratory counter tops. It is of standard oval shape and measures 3 by 6 in. A ½-in., pipethreaded tail piece is provided. (American Agile Corp., Dept. S89)
- RADIOACTIVITY MONITOR with fixed or moving filter automatically measures and records airborne radioactivity and warns by light and bell when preset limits are exceeded. The mobile unit will operate unattended for 7 to 10 days, and it can follow either short-term, highlevel radioactivity or more slowly changing, low-level radioactivity. A flexible collecting and counting arrangement is provided for immediate continuous counting, delayed continuous counting, immediate step-wise counting, or delayed step-wise counting. Features include a positive-displacement pump, count-rate meter, variable-speed chart recorder, and a lead counting chamber 2 in. thick. (Nuclear Measurements Corp., Dept. S52)
- CERAMIC PERMANENT MAGNETS have the following properties: high resistivity, low specific gravity, high potential energy, and low incremental permeability. Indox I magnets are nonconductors and are hard, brittle, and lighter in weight than magnets made of metallic alloys. (Indiana Steel Products Co., Dept. S49)
- GALVANOMETER SHUNT is intended to provide greater range for sensitive galvanometers. The redesigned Fisher Ayrton shunt contains carbon-metallic film resistances with individual tolerances of ±1 percent. It has nine switch settings from 1× to 500×. (Fisher Scientific Co., Dept. S51)
- METALLIC COPPER IN LACQUER SOLUTION is the basis of a new colloidal dispersion that is designed for plating nonconductors. The dispersion can be applied by spray or brush. No baking is required. The film will air-dry and can be handled within a few minutes. (Acheson Colloids Co., Dept. S59)



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### from Michigan Kenneth Boulding THE IMAGE: Knowledge in Life and Society \$3.75 September SCIENTIFIC USES OF EARTH SATELLITES **Edited by** J. A. Van Allen \$10.00 November THEORY OF LAND LOCOMOTION The Mechanics of **Vehicle Mobility** \$12.50 November From your Bookseller or

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Ann Arbor

- ELECTRONICS-DATA HANDBOOK gives in 64 pages a selected collection of oftenneeded formulas and data used in radio and industrial electronics. Formulas include those needed for basic circuit analysis, transmission-line calculations, determination of vacuum-tube characteristics, resonance calculations, meter calculations, and so on. (Allied Radio Corp., Dept. S38)
- PORTABLE SCALER, for use with Geiger-Müller tubes and scintillation counters, weighs 24 lb. A high-voltage supply that is stable within 3 v and a built-in timer to collect counting-rate data are provided. Permitting lower-energy gamma rays to be screened out, the direct-reading scaler permits the operator to discriminate against backscatter radiation in gamma-ray measurements. (Berkeley Division of Beckman Instruments, Dept. S39)
- VIAL FILLER dispenses up to 8 oz of liquid per stroke and fills vials singly or in multiples of two. Free-flowing or semiviscous fluids, including aqueous solutions, oils, syrups, suspensions, and saturated solutions, may be dispensed at rates variable from 3 to 60 fills per minute. Volume of fill is adjustable from 0.002 oz per stroke on a calibrated micrometer dial. (National Instrument Co., Dept. S40)
- PORTABLE MOISTURE DETERMINER for use in field stations, laboratories, or quality-control points, weighs 22 lb and can analyze liquid, solid, and gaseous samples. Accuracy of determinations varies from ± 10 percent in the range of 0 to 100 ppm down to ± 0.2 percent in higher ranges. (Central Scientific Co., Dept. S35)
- VAPOR-PHASE CHROMATOGRAPH can use microsamples and operate with adsorption, gas-liquid partition, and reaction columns to handle a variety of compounds, including liquids with boiling points up to 325°C. The chromatograph will separate isomers of close boiling points and components in mixtures with wide boiling-point ranges. The instrument consists of a control unit and an analyzer, the former containing a power input and distribution system, a system for controlling carrier-gas flow, and detector circuit controls. A chromatographic column, a thermostatically controlled heating system, a detector, and a system for introducing the sample constitute the analyzer. The temperature of the analyzer is adjustable in a continuous range of from 60° to 250°C and is regulated to within 0.5°C. An internal sample valve, which is heated to the temperature of the analyzer, controls the size of gas samples to within ± 0.5 percent. (Consolidated Electrodynamics Corp., Dept. S37)

# **Dackard Instruments**

- 1 Liquid Scintillation Spectrometers
- **2 Automatic Fraction Collectors**
- 3 Windowless and Flo-Window Counters

# TRI-CARB LIQUID SCINTILLATION SPECTROMETERS

For counting Tritium, Carbon-14 and other beta emitting isotopes.

Provides the most simple and convenient method for precise counting of beta samples that go into solution with liquid phosphors.

Aqueous samples of various types may also be readily counted.

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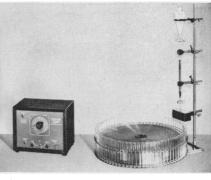
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For precise column chromatography.

Provides both time and drop counting. Can be furnished for time operation only at commensurately lower cost.

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3

# WINDOWLESS AND FLO-WINDOW COUNTERS

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Flo-Window Counter, Model 210, features a very thin metalized window of Du Pont Mylar which offers a minimum of obstruction to low energy radiation. Isolates counting chamber from sample. Eliminates static charge, vapor effects, accidental contamination, etc.



Request Bulletin 200



### INDEX OF ADVERTISED PRODUCTS

Classified in the following pages are the products advertised in Science in the issues from 28 Oct. 1955 through 19 Oct. 1956. This list is intended to aid laboratory workers in finding the manufacturers of all types of laboratory equipment and supplies. At the end of the classified list is a list of companies that advertised in "The Market Place" section during the period 28 Oct. 1955 through 19 Oct. 1956. An index of advertisers in this issue appears on page 862.

### **AMPLIFIERS**

General Electric Co. 1956: 1 June, 962 Tracerlab, Inc. 1956: 13 July, 50

### ANALYZERS, RADIATION

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### ANIMALS, EXPERIMENTAL

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Endocrine Laboratories of Madison, Inc. 1955: 11 Nov., 902; 9 Dec., 1153

### ANTIBIOTICS SENSITIVITY **INDICATORS**

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American Hospital Supply Corp., Scientific Products Div. 1955: 2 Dec., 119

### BOOKS, JOURNALS, RECORDINGS

Academic Press, Inc. 1955: 2 Dec., 1110; 30 Dec., 1283 1956: 17 Feb., 291 American Geophysical Union 1956: 14 Sept., 504 Annual Reviews, Inc. 1955: 18 Nov., 987; 16 Dec., 1200 1956: 13 Jan., 78; 10 Feb., 204; 9 Mar., 430; 13 Apr., 646; 18 May, 905; 15 June, 1095; 20 July, 138; 10 Aug., 287; 21 Sept., 552; 12 Oct., 699 Beckman Instruments, Inc., Berkeley Div. 1956: 3 Feb., 191; 2 Mar., 348; 6 Apr., Behavioral Science 1956: 6 Jan., 35; 13 Jan., 78; 20 Jan., 118; 27 Jan., 158 **Biological Laboratory** 1956: 28 Sept., 600 Bowker, R. R., Co. 1956: 27 Apr., 763 **British Information Services** 

1955: 2 Dec., 1111 Cambridge University Press 1955: 4 Nov., 889; 25 Nov., 1033 1956: 3 Feb., 191; 4 May, 814; 13 July, 91; 14 Sept., 501 Columbia University Press

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1955: 4 Nov., 884; 2 Dec., 1106 1956: 27 Apr., 756; 14 Sept., 503 Saunders, W. B., Co.

1955: 28 Oct., 811; 11 Nov., 899; 25 Nov., 995; 9 Dec., 1123; 23 Dec., 1211 1956: 6 Jan., 3; 3 Feb., 163; 2 Mar., 347; 6 Apr., 564; 13 Apr., 611; 20 Apr., 652; 27 Apr., 691; 4 May, 773; 11 May, 819; 18 May, 868; 25 May, 915; 8 June, 1011; 6 July, 3; 3 Aug., 199; 14 Sept., 463; 12 Oct., 655

Scribner's, Charles, Sons 1956: 1 June, 1001

Speller, Robert, & Sons, Publishers 1956: 27 Apr., 755

University of California Press 1955: 18 Nov., 984

U.S. National Museum 1955: 18 Nov., 985; 16 Dec., 1202 1956: 20 Jan., 119; 17 Feb., 299; 16 Mar., 478; 20 Apr., 686; 18 May, 910

Van Nostrand, D. 1956: 5 Oct., 647

Vantage Press, Inc. 1955: 9 Dec., 1151

### MEDICINAL CHEMISTRY, Volumes II and III

A Series of Reviews Prepared under the Auspices of the Division of Medicinal Chemistry of the American Chemical Society.

These two volumes are the latest in a series designed to cover all the important areas of medicinal chemistry. They save valuable research time by collecting in one place all the available data on biological properties of organic compounds.

VOLUME II-Edited by F. F. Blicke, University of Michigan, and C. M. Suter, Sterling-Winthrop Research Institute. 1956. 311 pages. Illus. \$10.00.

**VOLUME** III—Edited by F. F. Blicke, University of Michigan, and R. H. Cox, Vick Chemical Company. 1956. 346 pages. Illus. \$10.50.

### GASEOUS NEBULAE

By L. H. Aller, University of Michigan. The first attempt in the English language to review this important branch of astrophysics. It offers a concise and critical review of astrophysical theory and also provides a quantum mechanical treatment of forbidden line radiation that is more complete than in any other book. A large part of the work is devoted to observations made at the Mt. Wilson and Palomar Observatories. A publication in the International Astrophysics Series. 1956. 322 pages. \$11.00.

### THE HISTORICAL BACKGROUND OF CHEMISTRY

By Henry M. Leicester, College of Physicians and Surgeons of San Francisco. A unique work which follows the development of chemistry through the thoughts and ideas of chemists rather than through the details of their lives.

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diffusion, dislocations, alloys, semiconductors, photoconductivity, luminescence, and imperfections in solids. A publication in the Wiley Series on the Science and Technology of Materials, J. H. Hollomon, advisory editor. 1956. 617 pages. \$12.00.

### SYMPOSIUM ON MONTE CARLO METHODS

Edited by H. A. Meyer, University of Florida. The first full-length treatment of Monte Carlo methods, a device for studying artificial stochastic models of physical and mathematical processes. It consists of papers by 22 leading workers in the field, written about their own research and applications. These papers range from the relatively simple to the highly theoretical. One of the Wiley Publications in Statistics, Walter A. Shewhart and S. S. Wilks, Editors. 1956. 382 pages. \$7.50.

### SCIENCE AND ECONOMIC DEVELOPMENT: New Patterns of Living

By Richard L. Meier, University of Chicago. Traces out new paths for economic development which are suggested and shaped by postwar advances in science and technology.

The author presents a new approach towards adequate levels of living for all parts of the world. Co-published by The Technology Press, M.I.T. 1956. 266 pages. \$6.00.

### CURRENTS, FIELDS, and PARTICLES

By Francis Bitter, The Massachusetts Institute of Technology. Describes-in a novel and refreshing mannermacroscopic electromagnetic phenomena in terms of fields and microscopic atomic phenomena in terms of quanta. Offers a solid introduction to certain abstract concepts, among them energy, momentum, electric and magnetic fields, conservation laws, impedance, reactance, etc. Copublished by The Technology Press, M.I.T. 1956. 599 pages. \$8.50.

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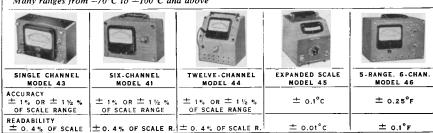
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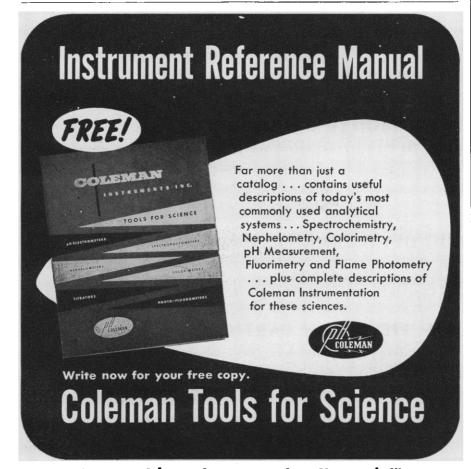
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Wiley, John, & Sons, Inc.
1955: 11 Nov., 904; 2 Dec., 1044–1047
1956: 13 Jan., 71; 16 Mar., 469; 30
Mar., 523; 27 Apr., 692–693
Year Book Publishers, Inc.
1956: 27 Apr., 694

### **CALORIMETERS**

Fisher Scientific 1956: 5 Oct., 608

### CATALOGS

Ainsworth, Wm., & Sons, Inc. 1956: 22 June, 1140; 20 July, 136; 14 Sept., 498

### American Optical Instrument Div.

1955: 28 Oct., 848; 9 Dec., 1160; 23 Dec., 1248

1956: 27 Jan., 160; 10 Feb., 240; 24 Feb., 344; 23 Mar., 520; 20 Apr., 688; 18 May, 912

### Bausch & Lomb Optical Co.

1955: 28 Oct., 814; 11 Nov., 906; 25 Nov., 1002

1956: 6 Jan., 8; 20 Jan., 86; 3 Feb., 166; 17 Feb., 254; 16 Mar., 438; 30 Mar., 526; 27 Apr., 704; 11 May, 822; 25 May, 920; 8 June, 1016; 22 June, 1100; 6 July, 8; 20 July, 102; 3 Aug., 202; 14 Sept., 466; 28 Sept., 566; 12 Oct., 658 Clay-Adams, Inc.

1955: 4 Nov., 889; 25 Nov., 1035; 23 Dec., 1247

1956: 10 Aug., 250

### Coleman Instruments

1956: 30 Mar., 554; 20 Apr., 683; 15 June, 1090

Corning Glass Works 1956: 2 Mar., 346

Du Mont, Allen B., Laboratories, Inc. 1956: 17 Aug., 335

Ealing Corp.

1956: 13 July, 95

Eastman Kodak Co.

1956: 12 Oct., 691 Edmund Scientific Corp.

1955: 4 Nov., 855; 2 Dec., 1050 1956: 6 Jan., 32; 3 Feb., 195; 2 Mar.,

384; 6 Apr., 602; 4 May, 808; 1 June, 1001; 6 July, 40; 3 Aug., 236; 7 Sept., 448; 5 Oct., 644

H. M. Chemical Co., Ltd.

1956: 3 Feb., 198 Harvard Apparatus Co., Inc.

1956: 9 Mar., 395

Jarrell-Ash Co.

1956: 27 Apr., 702

Kontes Glass Co.

1956: 25 May, 955 Matheson, Coleman & Bell

1955: 4 Nov., 851; 2 Dec., 1057

1956: 13 Jan., 43

Norbute Corp., Metalab Equipment Co. Div.

1956: 9 Mar., 426

Nuclear Corporation of America, Inc., NRD Instrument Co. Div.

1955: 2 Dec., 1058

1956: 13 Apr., 647; 11 May, 863; 8 June, 1010

### Nutritional Biochemicals Corp.

1955: 28 Oct., 812; 11 Nov., 900; 25 Nov., 1000; 9 Dec., 1158; 23 Dec., 1212 1956: 6 Jan., 34; 20 Jan., 115; 3 Feb., 193; 10 Feb., 299; 16 Mar., 474; 30 Mar., 558; 13 Apr., 612; 27 Apr., 700; 11 May, 859; 25 May, 955; 8 June, 1012; 22 June,

1143; 6 July, 43; 20 July, 137; 3 Aug., 239; 17 Aug., 339; 31 Aug., 419; 14 Sept., 507; 28 Sept., 597; 12 Oct., 693
Olympus Optical Instrument Co. 1956: 7 Sept., 456; 21 Sept., 551
Research Equipment Corp. 1956: 16 Mar., 471; 27 Apr., 757; 11 May, 858; 8 June, 1012; 6 July, 43; 3 Aug., 239; 7 Sept., 424
Research Specialties Co. 1956: 11 May, 856; 14 Sept., 499

1956: 11 May, 856; 14 Sept., 499 Schaar and Co.

1956: 27 Apr., 763; 11 May, 859

Sigma Chemical Co.

1956: 27 Apr., 766; 29 June, 1150; 13 July, 89; 10 Aug., 287

Silge & Kuhne

1955: 2 Dec., 1112; 30 Dec., 1282 1956: 27 Jan., 158; 17 Feb., 296; 23 Mar., 515

Thomas, Arthur H., Co.

1955: 4 Nov., 896; 2 Dec., 1120; 30 Dec., 1288

1956: 6 Jan., 40

Tracerlab, Inc.

1956: 13 Apr., 610; 18 May, 867; 29 June, 1191; 13 July, 50; 17 Aug., 294 United Scientific Co.

1955: 24 Nov., 1032; 2 Dec., 1148 1956: 13 Jan., 74; 27 Jan., 155; 10 Feb., 206; 23 Mar., 516; 27 Apr., 760; 15 June, 1092; 13 July, 90; 27 July, 190; 24 Aug., 374; 28 Sept., 598; 5 Oct., 647; 12 Oct., 697; 19 Oct., 739

Winthrop Laboratories, Inc.

1956: 13 Jan., 72; 10 Feb., 204; 9 Mar., 427; 3 Aug., 237

### **CATHETOMETERS**

Central Scientific Co. 1956: 2 Mar., 352 Eberbach Corp. 1956: 21 Sept., 551

### CENTRIFUGES AND ACCESSORIES

Beckman Instruments, Inc., Spinco Div. 1955: 4 Nov., 858; 30 Dec., 1254 1956: 27 Apr., 768; 22 June, 1144; 31 Aug., 420; 21 Sept., 514 Clay-Adams, Inc.

1956: 16 Mar., 473; 13 July, 95 Custom Scientific Instruments, Inc.

1956: 27 Apr., 696 Fisher Scientific 1956: 5 Oct., 608

International Equipment Co.

1955: 11 Nov., 903; 2 Dec., 1053 1956: 13 Jan., 79; 17 Feb., 242; 16 Mar., 479; 27 Apr., 690; 18 May, 866; 1 June, 963; 13 July, 52; 10 Aug., 248; 14 Sept., 462; 5 Oct., 607 Labline, Inc., Chicago Surgical &

Labline, Inc., Chicago Surgical & Electrical Co. Div.

1956: 2 Mar., 385; 27 Apr., 752 Lourdes Instrument Corp.

1955: 2 Dec., 1106 Precision Scientific Co. 1955: 25 Nov., 998

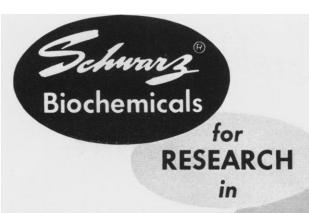
Sorvall, Ivan, Inc.

1955: 2 Dec., 1113

1956: 20 Jan., 84; 9 Mar., 398; 27 Apr., 698; 4 May, 776; 24 Aug., 379; 21 Sept., 510

CHARTS, BIOLOGICAL

Welch, W. M., Manufacturing Co. 1956: 6 Apr., 603



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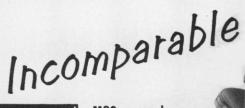
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### CHEMICALS, BIOLOGICAL

Corn Products Refining Corp.

1955: 4 Nov., 856; 18 Nov., 948 1956: 17 Feb., 298

Endocrine Laboratories of Madison, Inc. 1955: 11 Nov., 902; 9 Dec., 1153 H. M. Chemical Co., Ltd.

1956: 3 Feb., 198

LaMotte Chemical Products Co. 1956: 20 Apr., 686

Nutritional Biochemical Corp.

1955: 28 Oct., 812; 11 Nov., 900; 25 Nov., 1000; 9 Dec., 1158; 23 Dec., 1212 1956: 6 Jan., 34; 20 Jan., 115; 3 Feb., 193; 17 Feb., 299; 16 Mar., 474; 30 Mar., 558; 13 Apr., 612; 27 Apr., 700; 11 May, 859; 25 May, 955; 22 June, 1143; 6 July, 43; 20 July, 136; 3 Aug., 239; 17 Aug., 339; 31 Aug., 419; 14 Sept., 507; 28 Sept., 597; 12 Oct., 693

Schwarz Laboratories, Inc.

1955: 18 Nov., 982; 2 Dec., 1112 1956: 13 Jan., 75; 17 Feb., 250; 11 May, 857; 25 May, 953; 15 June, 1091; 27 July, 189; 17 Aug., 331; 7 Sept., 452; 5 Oct., 643 Sigma Chemical Co.

1956: 17 Feb., 304; 16 Mar., 472; 27 Apr., 766; 25 May, 916; 29 June, 1150; 13 July, 89; 10 Aug., 287

Winthrop Laboratories

1955: 11 Nov., 939; 9 Dec., 1124 1956: 13 Jan., 72; 10 Feb., 204; 9 Mar., 427; 6 Apr., 603; 4 May, 774; 8 June, 1014; 3 Aug., 237; 7 Sept., 449; 5 Oct.,

Worthington Biochemical Corp.

1955: 11 Nov., 937 1956: 17 Feb., 296; 27 Apr., 763; 4 May, 814; 25 May, 956; 1 June, 999; 15 June, 1092; 22 June, 1139; 29 June,

CHEMICALS, GASES

Matheson, Coleman & Bell Co. 1955: 2 Dec., 1057

CHEMICALS, GENERAL

Arapahoe Chemicals, Inc. 1956: 25 May, 952 Eastman Kodak Co. 1956: 6 Jan., 31

Fisher Scientific 1956: 5 Oct., 608

LaMotte Chemical Products Co. 1955: 11 Nov., 939

Matheson, Coleman & Bell 1955: 4 Nov., 851 1956: 13 Jan., 43

Michigan Chemical Corp. 1956: 10 Aug., 246

Sigma Chemical Co. 1956: 17 Feb., 304 Winthrop Laboratories, Inc.

1956: 13 Jan., 72 Worthington Biochemical Corp.

1956: 2 Mar., 38

### CHEMICALS, ORGANIC

### Eastman Kodak Co.

1955: 11 Nov., 933

1956: 10 Feb., 202; 4 May, 809; 18 May, 903; 8 June, 1047; 6 July, 39; 10 Aug., 285; 12 Oct., 691

842 SCIENCE, VOL. 124

### CHEMICALS, TRACER

Frosst, Charles E., & Co.
1955: 4 Nov., 894; 2 Dec., 1118; 30
Dec., 1252
1956: 27 Jan., 124
Research Specialties Co.
1956: 14 Sept., 499
Tracerlab, Inc.
1956: 29 June, 1191

### CHROMATOGRAPHY EQUIPMENT

Beckman Instruments, Inc., Spinco Div. 1956: 18 May, 911 Eastman Kodak Co. 1955: 11 Nov., 933 Nalge Co. 1956: 13 Apr., 642 Packard Instrument Co. 1955: 2 Dec., 1109 1956: 18 May, 906; 8 June, 1048; 20 July, 135; 14 Sept., 500 Perkin-Elmer Corp. 1955: 4 Nov., 853; 2 Dec., 1103 1956: 6 Apr., 563 Photovolt Corp. 1955: 28 Oct., 812; 11 Nov., 900; 25 Nov., 1000; 16 Dec., 1164 1956: 20 Jan., 84; 24 Feb., 308; 13 Apr., 612; 8 June, 1014; 6 July, 43; 3 Aug., 237; 31 Aug., 419; 14 Sept., 507; 12 Oct., 699 Research Equipment Corp. 1955: 16 Dec., 1203 1956: 16 Mar., 471; 11 May, 858; 8 June, 1012; 6 July, 43; 3 Aug., 239; 7 Sept., 424 Research Specialties Co. 1955: 11 Nov., 902; 9 Dec., 1153 1956: 11 May, 856 Schaar and Co. 1956: 27 Jan., 154; 27 Apr., 763; 11 May, 859; 7 Sept., 449; 5 Oct., 610 Sorvall, Ivan, Inc. 1956: 30 Mar., 522; 4 May, 776; 20 July, 143 Welch, W. M., Manufacturing Co. 1956: 3 Feb., 191; 6 July, 41; 7 Sept.,

### CLAMPS

Thomas, Arthur H., Co. 1956: 3 Aug., 244

### **CLEANSERS**

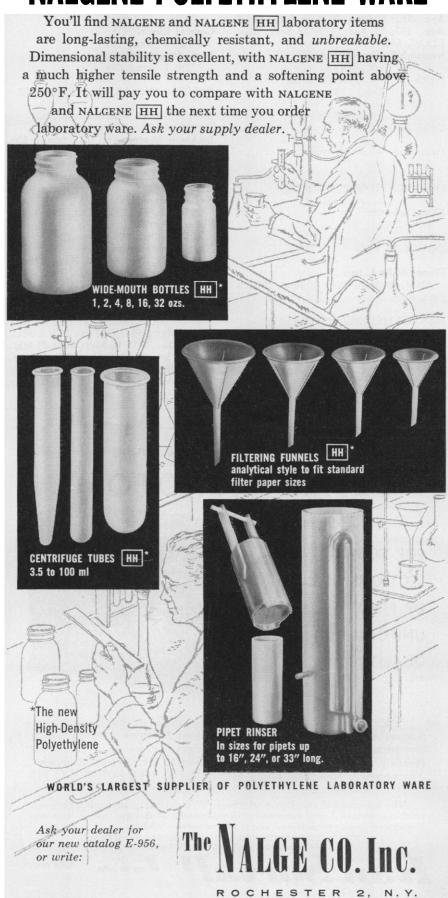
Alconox, Inc.
1956: 31 Aug., 414; 28 Sept., 559
Linbro Chemical Co.
1955: 18 Nov., 982; 2 Dec., 1054
1956: 17 Feb., 293; 23 Mar., 484; 27
Apr., 696; 25 May, 958; 22 June, 1139
Standard Scientific Supply Corp.
1956: 13 Apr., 614

### COLORIMETERS

Bausch & Lomb Optical Co.
1956: 11 May, 822; 25 May, 920; 14
Sept., 466; 28 Sept., 566
Biddle, James G., Co.
1956: 20 Jan., 119; 15 June, 1095
Coleman Instruments, Inc.
1956: 15 June, 1090

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### DENSITOMETERS

Photovolt Corp.

1955: 28 Oct., 812; 11 Nov., 900; 25 Nov., 1000, 16 Dec., 1164

1956: 20 Jan., 84; 24 Feb., 308; 13 Apr., 612; 8 June, 1014; 6 July, 43; 3 Aug., 237; 31 Aug., 419; 14 Sept., 507; 12 Oct., 699

Research Equipment Corp.

1956: 7 Sept., 424 Welch, W. M., Manufacturing Co. 1955: 16 Dec., 1166 1956: 3 Feb., 191

### **DESICCANTS**

Hammond, W. A., Drierite Co. 1956: 28 Sept., 598

DISTILLATION EQUIPMENT

Fisher Scientific 1956: 5 Oct., 608

DOUGLAS BAG

Phipps & Bird, Inc. 1956: 25 May, 916; 1 June, 966; 8 June, 1051

**DUST-SAMPLING APPARATUS** 

Ficklen, Joseph B., III

1955: 4 Nov., 891; 16 Dec., 1164 1956: 27 Jan., 155; 9 Mar., 430; 20 Apr., 686

### **ELECTROENCEPHALOGRAPHS**

Electro-Medical Laboratory, Inc. 1955: 11 Nov., 937; 9 Dec., 1153

**ELECTRONICS SYSTEMS** 

General Electric Co. 1956: 2 Mar., 391 Ramo-Wooldridge Corp. 1956: 7 Sept., 460

### **ELECTROPHORESIS APPARATUS**

Aloe, A. S., Co., Aloe Scientific Div. 1956: 4 May, 772; 6 July, 4 Beckman Instruments, Inc., Spinco Div. 1955: 2 Dec., 1099 1956: 27 Jan., 123; 17 Feb., 252; 16 Mar., 434; 20 July, 99; 10 Aug., 291; 12 Oct., 654 E-C Apparatus Co. 1956: 17 Feb., 295; 5 Oct., 648

Fisher Scientific 1956: 5 Oct., 608 Klett Manufacturing Co.

1955: 28 Oct., 839; 4 Nov., 889; 11 Nov., 942; 25 Nov., 1032; 2 Dec., 1108; 9 Dec., 1124; 16 Dec., 1200; 23 Dec., 1243; 30 Dec., 1283

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958; 1 June, 999; 8 June, 1014; 15 June, 1095; 22 June, 1143; 29 June, 1188; 6 July, 41; 13 July, 91; 20 July, 142; 27 July, 195; 3 Aug., 235; 17 Aug., 339; 24 Aug., 379; 31 Aug., 419; 7 Sept., 424; 14 Sept., 501; 21 Sept., 549; 28 Sept., 597; 5 Oct., 651; 12 Oct., 692; 19 Oct., 702

Photovolt Corp.

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Nov., 1000; 16 Dec., 1164 1956: 20 Jan., 84; 24 Feb., 308; 13 Apr., 612; 8 June, 1014; 6 July, 43; 3 Aug., 237; 31 Aug., 419; 14 Sept., 507; 12 Oct., 699

Research Equipment Corp.

1956: 7 Sept., 424

Schaar and Co.

1956: 27 Apr., 763; 11 May, 859

Sorvall, Ivan, Inc.

1956: 30 Mar., 522; 4 May, 776; 20 July, 143

Thomas, Arthur H., Co.

1956: 11 May, 864; 8 June, 1056

### **EVAPORATORS**

Aloe, A. S., Co., Aloe Scientific Div. 1955: 4 Nov., 852; 2 Dec., 1048 1956: 2 Mar., 348; 6 Apr., 601 Machlett, E., & Son 1956: 24 Feb., 343

**EXTRACTORS** 

E-C Apparatus Co. 1956: 28 Sept., 600 Machlett, E., & Son 1955: 25 Nov., 1033

### FERMENTORS AND ACCESSORIES

New Brunswick Scientific Co. 1955: 16 Dec., 1198 1956: 24 Aug., 379; 24 Feb., 342; 20 Apr., 650; 27 July, 192; 21 Sept., 551

Eastman Kodak Co.

1955: 9 Dec., 1147 1956: 6 Jan., 31; 10 Feb., 202; 9 Mar., 425; 18 May, 903

FILTER PAPER

Fisher Scientific 1956: 5 Oct., 608

FILTERS, INTERFERENCE

Axler Associates, Inc. 1955: 2 Dec., 1106

1956: 17 Feb., 295 Bausch & Lomb Optical Co.

1956: 17 Aug., 298; 31 Aug., 384 Photovolt Corp.

1955: 28 Oct., 812; 11 Nov., 900; 16 Dec., 1164

1956: 17 Feb., 297; 11 May, 859

FILTERS, MOLECULAR

Greiner, Emil, Co. 1956: 27 Apr., 767

**FLUOROMETERS** 

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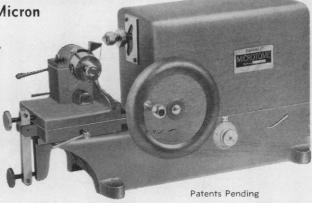
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Biddle, James G., Co. 1955: 28 Oct., 843

1956: 20 Jan., 119; 15 June, 1095

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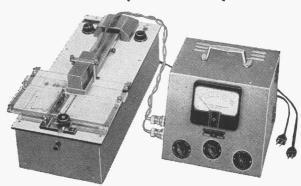
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ADDRESS

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1956: 8 June, 1051
Photovolt Corp.

1955: 25 Nov., 1000; 23 Dec., 1212 1956: 6 Jan., 35; 27 Jan., 124; 10 Feb., 238; 9 Mar., 396; 23 Mar., 519; 6 Apr., 601; 4 May, 811; 1 June, 966; 29 June, 1150; 27 July, 195; 10 Aug., 250; 7 Sept., 451; 21 Sept., 551; 5 Oct., 645

### FRACTIONATORS.

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E-C Apparatus Co. 1956: 17 Feb., 295; 12 Oct., 693

### FRACTION COLLECTORS

1956: 21 Sept., 511

Packard Instrument Co.
1955: 2 Dec., 1109
1956: 27 Apr., 759; 18 May, 906; 8
June, 1048; 20 July, 135; 14 Sept., 500

Research Equipment Corp.
1955: 16 Dec., 1203
1956: 27 Apr., 757; 8 June, 1012; 3

Aug., 239; 7 Sept., 424

Schaar and Co.
1956: 27 Jan., 154; 7 Sept., 449; 5

Oct., 610

Sorvall, Ivan, Inc. 1956: 4 May, 776

Technicon Chromatography Corp. 1955: 16 Dec., 1162

### FREEZING APPARATUS

Aloe, A. S., Co., Aloe Scientific Div. 1956: 1 June, 999
Custom Scientific Instruments, Inc. 1956: 17 Feb., 299
Machlett, E., & Son
1955: 11 Nov., 943; 18 Nov., 981; 25
Nov., 1033
National Research Corp., NRC
Equipment Div.
1956: 17 Feb., 244; 27 Apr., 697

FUNNELS, PLASTIC

Fisher Scientific

1956: 17 Feb., 249

Nalge Co., Inc. 1956: 17 Aug., 332; 14 Sept., 502

### FURNITURE, LABORATORY

Palo Laboratory Supplies, Inc.

1956: 5 Oct., 608
Labline, Inc.
1955: 4 Nov., 891; 18 Nov., 987
Machlett, E., & Son
1955: 11 Nov., 943
Norbute Corp., Metalab Equipment Co.
Div.
1956: 9 Mar., 426

Technicon Co.

1955: 4 Nov., 850; 2 Dec., 1042; 30

Dec., 1250 1956: 23 Mar., 519; 20 Apr., 650; 4 May, 811; 18 May, 907; 15 June, 1060; 13 July, 89; 17 Aug., 333; 14 Sept., 507; 5 Oct., 645

### **GALVANOMETERS**

Biddle, James G., Co. 1955: 28 Oct., 843 1956: 15 June, 1095

### GAS-ANALYSIS APPARATUS

Fisher Scientific 1956: 5 Oct., 608

### **GENERATORS**

Standard Scientific Supply Corp. 1956: 8 June, 1050

### GLASSWARE AND ACCESSORIES

Bellco Glass, Inc.
1956: 9 Mar., 398
Corning Glass Works
1955: 2 Dec., 1107
1956: 6 Jan., 6; 4 May, 771; 6 July, 6;
7 Sept., 425
Fisher Scientific
1956: 5 Oct., 608
Klett Manufacturing Co.
1955: 4 Nov., 889; 18 Nov., 991; 2
Dec., 1108; 16 Dec., 1200; 30 Dec., 1283
1956: 13 Jan., 78; 27 Jan., 155; 10
Feb., 239; 24 Feb., 342; 9 Mar., 427; 23
Mar., 519; 6 Apr., 606; 20 Apr., 650; 4

Dec., 1108; 16 Dec., 1200; 30 Dec., 1283
1956: 13 Jan., 78; 27 Jan., 155; 10
Feb., 239; 24 Feb., 342; 9 Mar., 427; 23
Mar., 519; 6 Apr., 606; 20 Apr., 650; 4
May, 774; 18 May, 905; 1 June, 999; 15
June, 1095; 29 June, 1188; 13 July, 91;
27 July, 195; 10 Aug., 286; 24 Aug., 379;
7 Sept., 424; 21 Sept., 549; 5 Oct., 651;
19 Oct., 702
Kontes Glass Co.

1956: 25 May, 955

Machlett, E., & Son
1955: 4 Nov., 860

Research Specialties Co.
1955: 11 Nov., 902; 9 Dec., 1153
1956: 11 May, 856

Standard Scientific Supply Corp.
1956: 4 May, 775

### GLASSWARE WASHERS

Labline, Inc. 1955: 4 Nov., 891; 18 Nov., 987

### GREASES

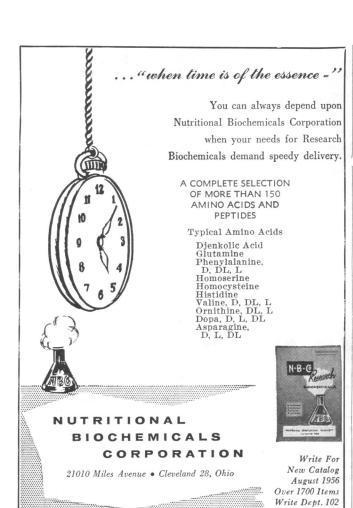
Biddle, James G., Co. 1955: 23 Dec., 1243 1956: 17 Feb., 302; 20 July, 138

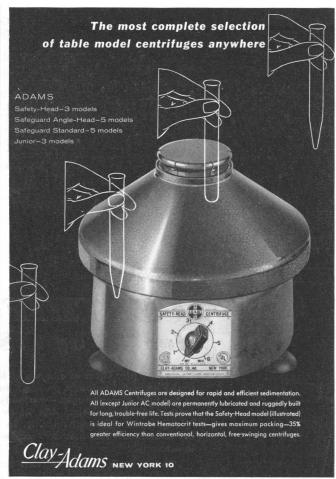
### HEATERS

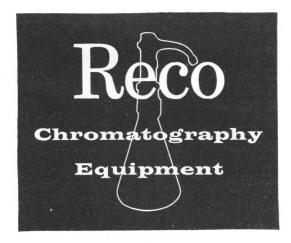
Biochemical Associates
1956: 18 May, 908; 1 June, 1003
Fisher Scientific
1956: 5 Oct., 608
Precision Scientific Co.
1955: 25 Nov., 998

### HOMOGENIZERS

Eberbach Corp. 1956: 5 Oct., 610 Machlett, E., & Son 1955: 18 Nov., 981 Sorvall, Ivan, Inc. 1956: 4 May, 776



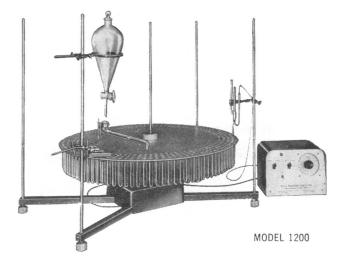




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### **INCUBATORS**

Castle, Wilmot, Co. 1955: 9 Dec., 1151 1956: 11 May, 820 Fisher Scientific 1956: 5 Oct., 608 Labline, Inc., Chicago Surgical & Electrical Co. Div. 1956: 1 June, 1002 Thomas, Arthur H., Co. 1956: 2 Mar., 392

### ISOTOPE CHARTS

Harshaw Scientific 1956: 6 July, 42

### **KYMOGRAPHS**

Harvard Apparatus Co., Inc. 1956: 9 Mar., 395

### LABORATORY JACK

Central Scientific Co. 1956: 30 Mar., 560

### LABORATORY SUPPLIES

Clay-Adams, Inc. 1956: 19 Oct., 702 Standard Scientific Supply Corp. 1956: 17 Feb., 303; 20 July, 133 Synthetical Laboratories 1956: 19 Oct., 704 Thomas, Arthur H., Co. 1955: 4 Nov., 896; 2 Dec., 1120; 30 Dec., 1288 1956: 6 Jan., 40; 16 Mar., 480

### LAMPS

Biddle, James G., Co. 1956: 18 May, 905

Daigger, A., and Co. 1955: 25 Nov., 996–997 Edmund Scientific Corp. 1955: 4 Nov., 855; 2 Dec., 1050 Rudolph, O. C., & Sons 1956: 27 Apr., 696

### MACROSCOPES

Bausch & Lomb Optical Co. 1955: 2 Dec., 1060 1956: 27 Jan., 126; 23 Mar., 482; 12 Oct., 658

### **MANOMETERS**

Will Corp. 1956: 16 Mar., 475

### MARKING PENS

Standard Scientific Supply Co. 1956: 20 July, 133

### MELTING POINT APPARATUS

Nalge Co. 1956: 13 Apr., 642

### MERCURY VAPOR DETECTOR

Kruger, Harold, Instruments 1956: 1 June, 1000

### METALLOGRAPHIC EQUIPMENT

Fisher Scientific 1956: 5 Oct., 608

### MICROANALYSIS EQUIPMENT American Optical Instrument Div.

1955: 11 Nov., 944 1956: 6 Apr., 608 Custom Scientific Instruments, Inc. 1956: 17 Feb., 299 Jarrell-Ash Co. 1956: 28 Sept., 563 Leitz, E., Inc. 1956: 8 June, 1013; 17 Aug., 295; 28 Sept., 561 Stoelting, C. H., Co. 1955: 18 Nov., 990; 16 Dec., 1202

### MICROBIOLOGICAL MEDIA

1956: 27 Jan., 159

Difco Laboratories 1956: 13 Jan., 75; 10 Feb., 239; 6 Apr., 599; 4 May, 811; 1 June, 1003; 29 June, 1150; 27 July, 192; 21 Sept., 549 **Hyland Laboratories** . 1956: 22 June, 1138 Standard Scientific Supply Corp.

1955: 4 Nov., 885 1956: 20 Jan., 82; 16 Mar., 435

### MICROPRINT READERS

Eastman Kodak Co. 1955: 18 Nov., 991; 2 Dec., 1054 1956: 4 May, 809

### MICROSCOPE ACCESSORIES

American Optical Instrument Div. 1955: 23 Dec., 1248 1956: 24 Feb., 344 Bausch & Lomb Optical Co. 1956: 8 June, 1016; 22 June, 1100; 6 July, 8; 20 July, 102



Biological Institute 1956: 20 Apr., 685 Custom Scientific Instruments, Inc. 1956: 13 July, 91 Edmund Scientific Corp. 1955: 4 Nov., 855; 2 Dec., 1050 Fisher Scientific 1956: 5 Oct., 608 Hacker, William J., & Co., Inc. 1955: 2 Dec., 1055; 16 Dec., 1163 Leitz, E., Inc. 1955: 28 Oct., 810; 11 Nov., 901; 18 Nov., 947; 25 Nov., 994; 9 Dec., 1122; 16 Dec., 1208; 23 Dec., 1210 1956: 20 Jan., 83; 17 Feb., 245; 2 Mar., 349; 25 May, 917; 29 June, 1148; 6 July, 5; 3 Aug., 200; 31 Aug., 382; 12 Oct., 700 Rosenthal, Paul 1956: 5 Oct., 647

Sept., 564
MICROSCOPES

Silge & Kuhne

Zeiss, Carl, Inc. 1955: 2 Dec., 1105

American Optical Instrument Div. 1956: 15 June, 1096; 29 June, 1192; 13 July, 96; 27 July, 196; 10 Aug., 292; 5 Oct., 652

1955: 4 Nov., 854; 30 Dec., 1282

1956: 17 Feb., 251; 29 June, 1148; 28

Bausch & Lomb Optical Co. 1955: 28 Oct., 814; 11 Nov., 906; 25 Nov., 1002

1956: 6 Jan., 8; 20 Jan., 86; 13 Apr., 616; 27 Apr., 704; 8 June, 1016; 22 June, 1100; 20 July, 102; 12 Oct., 658 Ferner, R. Y., Co., Inc.

1955: 28 Oct., 847 Fisher Scientific 1956: 12 Oct., 608

Graf-Apsco Co. 1956: 17 Feb., 297

Hacker, William J., & Co., Inc. 1955: 2 Dec., 1055

Olympus Optical Instrument Co. 1955: 2 Dec., 1056

1956: 7 Sept., 456; 21 Sept., 551 Silge & Kuhne

1955: 30 Dec., 1282 1956: 17 Feb., 296

United Scientific Co. 1956: 13 Jan., 74; 27 Jan., 155; 10 Feb., 206; 23 Mar., 517; 15 June, 1092; 27 July, 190; 28 Sept., 598; 5 Oct., 647; 19 Oct., 739

19 Oct., 739 Zeiss, Carl, Inc. 1955: 18 Nov., 992

1956: 27 Jan., 122; 6 Apr., 562; 25 May, 959; 29 June, 1148; 27 July, 150

MICROSCOPES, ELECTRON

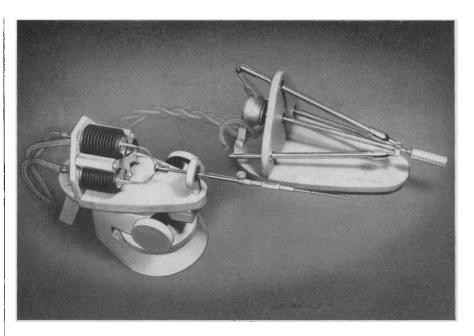
Radio Corporation of America 1955: 16 Dec., 1207

MICROSCOPES, INTERFERENCE

American Optical Instrument Div. 1955: 28 Oct., 848; 9 Dec., 1160 1956: 23 Mar., 520; 18 May, 912

MICROSCOPES, PHASE

Hacker, William J., & Co., Inc. 1955: 18 Nov., 979
United Scientific Co. 1955: 9 Dec., 1148
26 OCTOBER 1956



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### MICROSCOPES, POLARIZING

Bausch & Lomb Optical Co. 1956: 6 July, 8; 3 Aug., 202 United Scientific Co.

1955: 25 Nov., 1032 1956: 24 Aug., 374

### MICROSCOPES, STEREOSCOPIC

American Optical Instrument Div. 1956: 13 Jan., 80; 10 Feb., 240; 9 Mar., 432; 20 Apr., 688; 17 Aug., 340; 21 Sept., 556; 28 Sept., 604; 19 Oct., 740 Bausch & Lomb Optical Co. 1955: 9 Dec., 1126; 23 Dec., 1214 Ercona Corp. 1956: 23 Mar., 484

### MICROSCOPES, STUDENT

American Optical Instrument Div. 1955: 23 Dec., 1248 Edmund Scientific Corp. 1955: 4 Nov., 855; 2 Dec., 1050 1956: 6 Jan., 32; 3 Feb., 195; 2 Mar., 384; 6 Apr., 602; 6 July, 40; 3 Aug., 236 Leitz, E., Inc. 1956: 16 Mar., 436; 30 Mar., 559; 13 Apr., 613; 27 Apr., 699; 11 May, 818; 22

June, 1098; 20 July, 100; 14 Sept., 464 United Scientific Co.

1956: 12 Oct., 697

### MICROTOMES AND ACCESSORIES

American Optical Instrument Div. 1956: 1 June, 1008 Erb & Gray Scientific 1956: 28 Sept., 560 Hacker, William J., & Co., Inc. 1956: 17 Feb., 293; 2 Mar., 387; 16 Mar., 473; 30 Mar., 558 Leitz, E., Inc. 1955: 4 Nov., 857; 2 Dec., 1049; 30 Dec., 1251 1956: 6 Jan., 5; 3 Feb., 199 Sorvall, Ivan, Inc. 1955: 25 Nov., 1035; 2 Dec., 1113 1956: 17 Feb., 294; 4 May, 776; 22 June, 1139; 21 Sept., 510 Thomas, Arthur H., Co. 1956: 6 July, 48

### MIXERS

**Biochemical Associates** 1956: 25 May, 956; 8 June, 1054 Machlett, E., & Son 1956: 10 Feb., 206 Sorvall, Ivan, Inc. 1955: 2 Dec., 1113 1956: 21 Sept., 510

### MONOCHROMATORS

Biddle, James G., Co. 1956: 20 Jan., 119; 15 June, 1095 Farrand Optical Co., Inc. 1956: 10 Aug., 250 Jarrell-Ash Co. 1956: 24 Feb., 306 Perkin-Elmer Corp. 1956: 3 Feb., 162 Photovolt Corp. 1955: 4 Nov., 856; 2 Dec., 1056; 30 Dec., 1252 1956: 13 Jan., 72; 3 Feb., 198; 2 Mar., 390; 30 Mar., 524; 27 Apr., 700; 18 May, 907; 15 June, 1060; 13 July, 91; 24 Aug., 375; 19 Oct., 702

### NITROGEN ANALYZER

Aloe, A. S., Co., Aloe Scientific Div. 1956: 7 Sept., 451; 5 Oct., 651

Biddle, James G., Co. 1955: 23 Dec., 1243 1956: 17 Feb., 302; 20 July, 138

### OPTICAL EQUIPMENT

Rudolph, O. C., & Sons 1956: 17 Feb., 250; 27 Apr., 696

### **OVENS**

Fisher Scientific 1956: 5 Oct., 608 Research Equipment Corp. 1955: 16 Dec., 1203 1956: 7 Sept., 424 Will Corp. 1956: 14 Sept., 503

### PETROLEUM-TESTING **EQUIPMENT**

Fisher Scientific 1956: 5 Oct., 608

### pH INDICATORS

Cambridge Instrument Co., Inc. 1956: 17 Feb., 302 Coleman Instruments, Inc. 1956: 20 July, 134 Fisher Scientific 1956: 5 Oct., 608 LaMotte Chemical Products Co. 1955: 9 Dec., 1124 Photovolt Corp. 1955: 18 Nov., 948; 9 Dec., 1149

### **PHOSPHORS**

General Electric Co. 1956: 7 Sept., 422

### PHOTOGRAPHIC EQUIPMENT

Eastman Kodak Co. 1956: 4 May, 809; 8 June, 1047; 6 July, 39

### PHOTOMETERS, EXPOSURE

Brinkmann Instruments, Inc. 1955: 4 Nov., 866 1956: 27 Jan., 159 Photovolt Corp. 1955: 23 Dec., 1212 1956: 20 Apr., 686; 25 May, 955; 22 June, 1143; 20 July, 137; 17 Aug., 339; 28 Sept., 597 Rosenthal, Paul 1956: 4 May, 810; 28 Sept., 602

### PHOTOMETERS, FLAME

Biddle, James G., Co. 1955: 28 Oct., 843 1956: 20 Jan., 119; 15 June, 1095 Standard Scientific Supply Corp. 1955: 2 Dec., 1051

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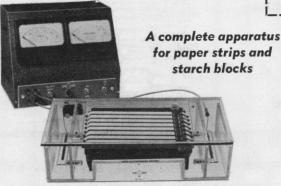
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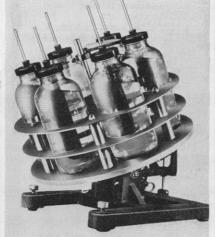
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### PHOTOMETERS, MICRO

Jarrell-Ash Co.

1956: 27 Apr., 702

### PHOTOMETERS, MULTIPLIER

Photovolt Corp.

1955: 4 Nov., 856; 2 Dec., 1056; 30 Dec., 1252 1956: 16 Mar., 474

### **PHOTOMICROGRAPHIC EQUIPMENT**

American Optical Instrument Div. 1956: 27 Jan., 160; 4 May, 816

Biological Institute 1956: 20 Apr., 685

Brinkmann Instruments, Inc.

1955: 4 Nov., 886 1956: 27 Jan., 159 Eastman Kodak Co. 1955: 9 Dec., 1147

Fish-Schurman Corp. 1955: 2 Dec., 1118 1956: 17 Feb., 294

Photovolt Corp.

1955: 23 Dec., 1212

1956: 20 Apr., 686; 25 May, 955; 22 June, 1143; 20 July, 137; 17 Aug., 339; 28 Sept., 597

Rosenthal. Paul

1956: 4 May, 810; 28 Sept., 602

Silge & Kuhne

1955: 4 Nov., 854; 2 Dec., 1112; 30 Dec., 1282

1956: 27 Jan., 158; 17 Feb., 296; 23

Mar., 515 Zeiss. Carl, Inc.

1956: 6 Apr., 562; 29 June, 1148; 28 Sept., 564

### PIPETTES AND ACCESSORIES

Bellco Glass, Inc.

1956: 9 Mar., 398

Clay-Adams, Inc.

1956: 27 Jan., 159; 13 Apr., 646; 15 June, 1060

Instrumentation Assoc.

1956: 10 Feb., 206; 8 June, 1054

Machlett, E., & Son 1955: 4 Nov., 860

National Instrument Co.

1955: 4 Nov., 889; 2 Dec., 1054

Phipps & Bird, Inc.

1956: 27 Jan., 152: 10 Feb., 235: 24 Feb., 308; 27 Apr., 700; 4 May, 772; 11

May, 820 Sorvall, Ivan, Inc.

1956: 4 May, 776

Standard Scientific Supply Corp.

1956: 4 May, 775

### **POLARIMETERS**

Fish-Schurman Corp. 1956: 20 July, 142

Jarrell-Ash Co.

1956: 24 Feb., 306

Rudolph, O. C., & Sons 1956: 17 Feb., 250; 27 Apr., 696

### POWER CONTROLLER

Heller, Gerald K., Co. 1956: 2 Mar., 387

### **PROJECTORS**

Bausch & Lomb Optical Co.

1955: 28 Oct., 814; 11 Nov., 906; 25 Nov., 1002

1956: 3 Feb., 166; 17 Feb., 254; 2 Mar., 354; 16 Mar., 438; 30 Mar., 526; 12 Oct., 658

Eastman Kodak Co.

1956: 10 Aug., 285 Hacker, William J., & Co., Inc.

1955: 2 Dec., 1055

Silge & Kuhne

1956: 17 Feb., 296

Zeiss, Carl, Inc.

1956: 23 Mar., 483; 24 Aug., 342

### **PUMPS**

Biddle, James G., Co. 1956: 19 Oct., 702

Central Scientific Co.

1955: 11 Nov., 898

Fisher Scientific

1956: 5 Oct., 608

Harvard Apparatus Co., Inc.

1956: 8 June, 1054 Welch, W. M., Manufacturing Co. 1956: 4 May, 774

### PUMP PLATE

Central Scientific Corp.

1956: 24 Aug., 344; 21 Sept., 512

### PYROMETERS

Standard Scientific Supply Corp.

1956: 17 Aug., 296

### RADIATION COUNTERS

American Hospital Supply Corp.,

Scientific Products, Div. 1956: 10 Aug., 247

Beckman Instruments, Inc., Berkeley Div.

1955: 4 Nov., 888 1956: 6 Jan., 38; 24 May, 770

Biddle, James G., Co.

1956: 20 Jan., 119; 15 June, 1095

Cambridge Instrument Co., Inc.

1955: 2 Dec., 1118

1956: 13 Apr., 646

Central Scientific Co.

1956: 6 Jan., 2; 1 June, 964

Nuclear Corporation of America, Inc., NRD Instrument Co. Div.

1955: 2 Dec., 1058 1956: 13 Apr., 647; 11 May, 863; 8

June, 1010 Nuclear Instrument and Chemical Corp.

1955: 28 Oct., 841; 25 Nov., 998; 2 Dec., 1104

1956: 27 Jan., 153; 24 Feb., 339; 30 Mar., 553; 27 Apr., 761; 25 May, 914; 29 June, 1146; 27 July, 191; 24 Aug., 346; 31 Aug., 415; 28 Sept., 599

Packard Instrument Co.

1956: 27 Apr., 759; 8 June, 1048; 13 July, 92

Tracerlab, Inc.

1956: 13 Jan., 32; 10 Feb., 203; 9 Mar., 394; 13 Apr., 610; 18 May, 867; 17 Aug., 294

### RADIATION RESEARCH **EQUIPMENT**

Cambridge Instrument Co., Inc. 1955: 2 Dec., 1118

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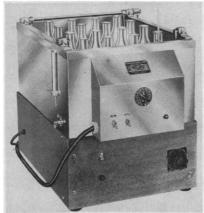
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Lindsay Chemical Co. 1956: 20 July, 144; 21 Sept., 555

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Varian Associates
1956: 3 Feb., 195; 6 Apr., 602; 1 June, 1000; 3 Aug., 238; 5 Oct., 643

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Aloe, A. S., Co., Aloe Scientific Div. 1956: 3 Aug., 237 American Hospital Supply Corp., Scientific Products Div. 1956: 18 May, 870 Lab-Tronics, Inc. 1956: 17 Feb., 243 Sanborn Co. 1956: 27 Apr., 695; 15 June, 1058; 20 July, 98

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Fisher Scientific 1956: 5 Oct., 608 Jarrell-Ash Co. 1956: 24 Feb., 306

### RHEOSTATS

Biddle, James G., Co. 1955: 18 Nov., 990 1956: 9 Mar., 431; 17 Aug., 336

### SHAKERS

Clay-Adams, Inc. 1956: 17 Feb., 250; 18 May, 905; 7 Sept., 424 Eberbach Corp. 1956: 10 Feb., 204; 24 Feb., 308; 9 Mar., 396; 23 Mar., 484; 6 Apr., 603; 19 Oct., 704 New Brunswick Scientific Co. 1955: 4 Nov., 894; 18 Nov., 991; 2 Dec., 1110; 30 Dec., 1286 1956: 13 Jan., 75; 27 Jan., 158; 10 Feb., 238; 9 Mar., 430; 23 Mar., 516; 6 Apr., 601; 4 May, 814; 18 May, 907; 1 June, 966; 15 June, 1095; 13 July, 95; 10 Aug., 286; 7 Sept., 449; 5 Oct., 651; 19 Oct., 704

### SKELETON, MODEL

Welch, W. M., Manufacturing Co. 1955: 18 Nov., 950 1956: 27 July, 195

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Phipps & Bird, Inc. 1956: 27 July, 147

### SOLAR ENERGY CONVERTERS

Edmund Scientific Corp.
1956: 6 Apr., 602; 4 May, 808; 1 June, 1001; 7 Sept., 448; 5 Oct., 644
International Rectifier Corp.
1956: 27 July, 146; 24 Aug., 343; 28
Sept., 603

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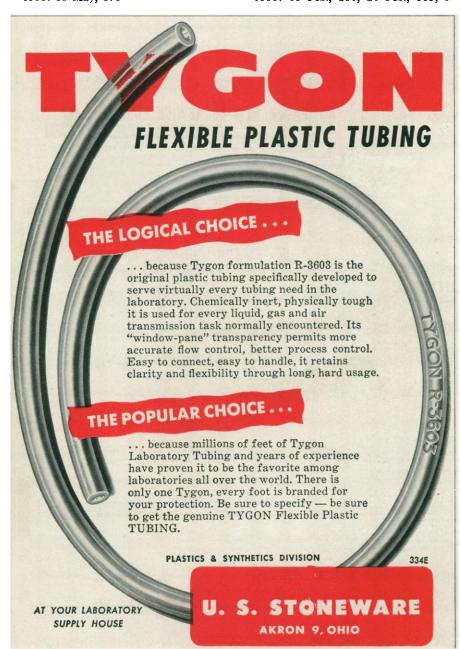
Brinkmann, C. A., & Co. 1955: 28 Oct., 843 Jarrell-Ash Co. 1956: 27 Apr., 702; 28 Sept., 563

### SPECTROMETERS AND ACCESSORIES

Biddle, James G., Co. 1955: 28 Oct., 843 Ealing Corp. 1956: 13 July, 95 General Electric Co. 1955: 9 Dec., 1159 Jarrell-Ash Co. 1956: 27 Apr., 702; 28 Sept., 563 Nuclear Corporation of America, Inc., NRD Instrument Co. Div. 1956: 13 Apr., 647 Nuclear Instrument and Chemical Corp. 1955: 2 Dec., 1104 1956: 27 Jan., 153 Packard Instrument Co. 1956: 27 Apr., 759 Perkin-Elmer Corp. 1955: 4 Nov., 853 1956: 1 June, 1007

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American Optical Instrument Div. 1955: 25 Nov., 1040
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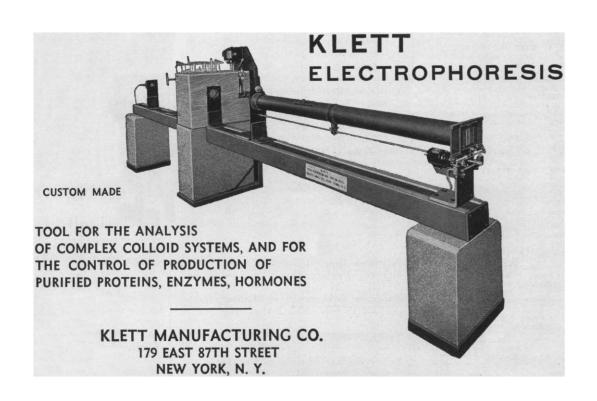
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Castle, Wilmot, Co. 1956: 13 Jan., 73; 10 Feb., 239; 14 Sept., 499; 12 Oct., 699 Fisher Scientific 1956: 5 Oct., 608

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American Electronic Laboratories, Inc. 1955: 25 Nov., 1031 Lab-Tronics, Inc. 1955: 2 Dec., 1112 1956: 27 Jan., 124; 17 Feb., 243; 24 Feb., 342

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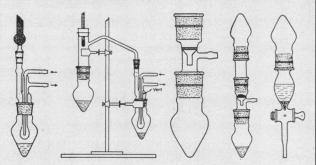
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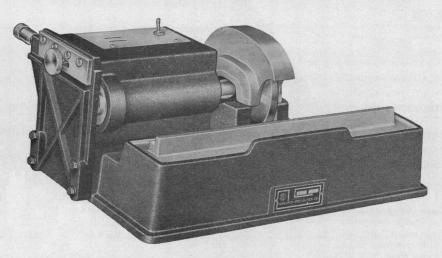
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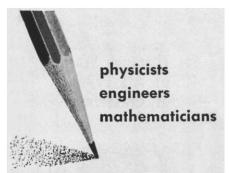
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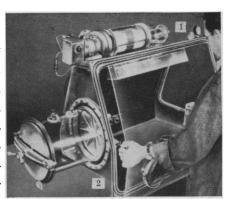
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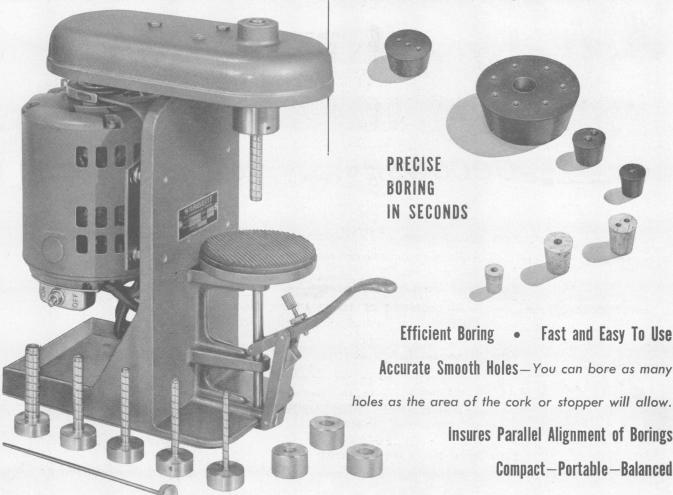
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S-23207 POWER BORING MACHINE—Electric, Sargent. The apparatus is essentially a condensed drill press with the vertical motion inverted, the drilling platform being elevated with respect to a fixed bearing head by a compound lever mechanism. In operation the spindle which holds the borer is driven at a constant rate of 800 r.p.m. by a V-belt drive. This speed provides clean fast cutting over the entire range of common diameter from 5 to 22 mm. A safety limit adjustment saves cutting borer edges and eliminates frequent sharpening. This adjustment limit stop prevents contact of the cutting borer edge with the metal plate of the drilling platform but still permits penetration through the stopper into the rubber supporting disks and so assures clean breakout.

An ejecting rod supplied with the machine removes stopper plugs by inserting the rod through the hollow shaft and borer.

Fast and Easy To Use

A special aluminum oxide sharpener supplied with the instrument maintains the correct cutting edge angle of the cutting borer to insure quick smooth boring and long borer life.

Height, 131/2 inches; width, 6 inches; length, 14 inches; weight, 22 pounds.

Complete with six S-23211 stainless steel cutting tubes including one each size Nos. 1 to 6 inclusive, three knurled ring holders, one bottle of Aerosol, ejecting rod, aluminum oxide sharpener and three wire cord and plug for operation from 

For complete information write for bulletin No. PB

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