

New Products

The information reported here is obtained from manufacturers and from other sources considered to be reliable, and it reflects the claims of the manufacturer or other source. Neither Science nor the writer assumes responsibility for the accuracy of the information. A coupon for use in making inquiries concerning the items listed appears on page 118.

■ **PRECISION PROJECTOR** for 35-mm data film features film location accuracy, both longitudinal and transverse, within ± 0.0005 in. Up to 200 ft of film is accommodated. Film movement is designed to hold the film without glass pressure plates. Film can be run forward or reverse at $3\frac{1}{2}$ or 24 frames per second. Magnification can be varied from 15 to 20. Optional features include 360-deg rotation and $\frac{5}{8}$ -in. azimuth and elevation motions of the projection head. (Mast Development Co., Inc., Dept. 895)

■ **VOLTAGE REGULATOR TUBES** are subminiature metal-ceramic, corona-discharge types covering the range 400 to 4000 v. Regulation better than ± 1 percent is obtained over a current range 10^{-11} to 10^{-7} amp. Prebreakdown current is less than 10^{-12} amp at room temperature. Operating temperature range is -55° to $+200^\circ\text{C}$. Over-all length is less than 1 in., diameter 0.3 in. (Radiation Research Corp., Dept. 903)

■ **TEMPERATURE MONITORING SYSTEM** is designed to furnish warning when the temperature at any point reaches a preselected high or low limit. Range is -25° to $+600^\circ\text{F}$. All points are monitored continuously by thermistor sensors that terminate in a multiple-channel bridge network. Each monitor module handles ten sensing points. Each alarm-indicator module handles inputs from ten monitor modules. The alarm temperature for each sensing point can be set individually. (Fenwal, Inc., Dept. 906)

■ **ULTRASONIC THICKNESS TESTER** designed for portability weighs less than 5 lb and is self-contained. The instrument is direct-reading for steel, aluminum, or copper and may be calibrated for other materials. Range is 0.09 to 5 in., and accuracy of ± 3 to ± 5 percent is claimed. Flat, cylindrical, or compound-curved surfaces down to 1-in. in radius are accommodated. The device is powered by mercury batteries designed for 70 hr of continuous operation. A battery check is provided on the panel meter. (Branson Instruments, Inc., Dept. 907)

■ **CONTACT-MAKING METER** uses a thermal-type movement based on two bi-metal spirals that are heated by electric current. Ranges of 0 to 5.0 or 0 to 200 amp can be supplied for a-c loads;

10 JULY 1959

Announcing

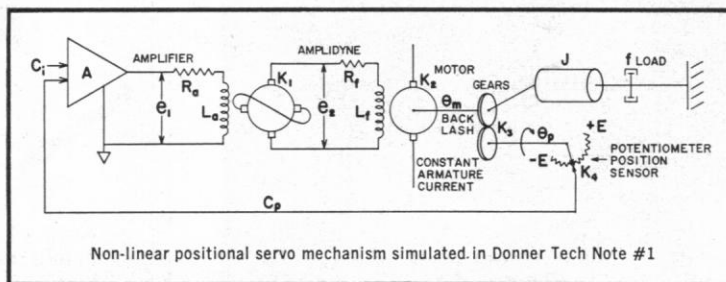
DONNER computer tech notes

News about

- *Computer applications
- *New methods of simulation
- *Application of new feedback design techniques
- *Analog control systems

*Your free copy
of Donner Tech Note #1
is ready now.*

Lead article in the first issue is titled "How to simulate a non-linear control system with an analog computer." A step by step analysis takes you through the intricacies of setting up a Donner analog computer to simulate a non-linear positional servo mechanism.



By simulating the system on the computer, the designer can examine system performance under the influence of every parameter. Changing constants and observing changes in response gives the designer a feel for the system impossible with a strict analytical approach.

Donner Tech Note #1 contains complete photos and diagrams showing the solution to this problem. For your copy, call your nearby Donner engineering representative or write Dept. 507.

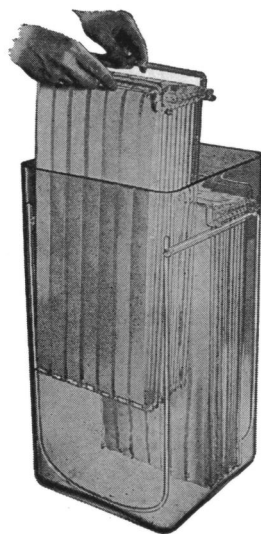
ELECTRONIC ENGINEERS,
exciting opportunity
exists at Donner.
Write today for
full details.

**DONNER SCIENTIFIC
COMPANY**
CONCORD, CALIFORNIA
Phone MUIberry 2-6161 Cable "DONNER"

FOR PAPER CHROMATOGRAPHY—

A NEW & SIMPLE METHOD OF
CHROMATOGRAPHING PAPER STRIPS

The New Kurtz-Miramón Technique



...permits chromatographing large numbers of paper strips at one time in a small space.

...eliminates fumbling with dangling, wet paper strips.

...prevents papers from touching or rubbing together while being developed, washed, sprayed, and dried.

...eliminates use of anchor and anti-siphon rods.

...utilizes all-glass apparatus.

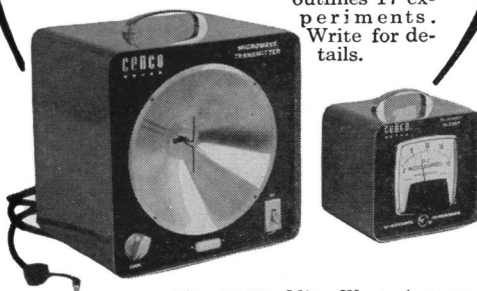
Write for Brochure SK

CALIFORNIA LABORATORY EQUIPMENT CO.
98 Rincon Road • Berkeley 4, California

FOR EXPLORING
MICROWAVE OPTICS . . .

CENCO® MICRO-WAVE APPARATUS

A valuable new teaching aid for school and laboratory that demonstrates principles of physical optics at a meter stick rather than microscope level. Also illustrates basic radar. Special manual outlines 17 experiments. Write for details.

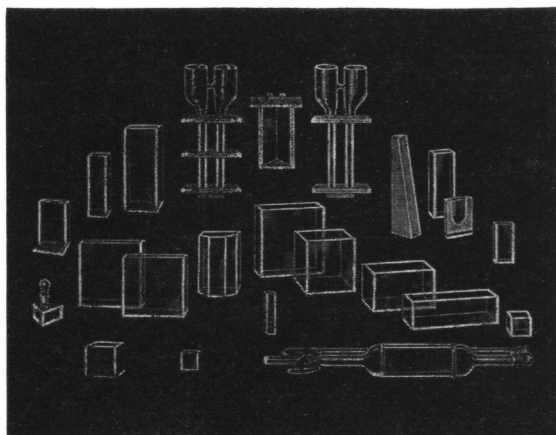


No. 80422 Micro-Wave Apparatus, with transmitter tube.....each \$295.00



CENTRAL SCIENTIFIC CO.
1718-M Irving Park Road • Chicago 13, Illinois
Branches and Warehouses — Mountainside, N. J.
Boston • Birmingham • Santa Clara • Los Angeles • Tulsa
Houston • Toronto • Montreal • Vancouver • Ottawa

GLASS ABSORPTION CELLS made by KLETT

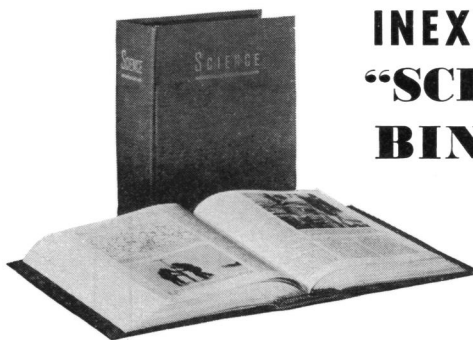


SCIENTIFIC APPARATUS

Klett-Summerson Photoelectric Colorimeters—
Colorimeters — Nephelometers — Fluorimeters—
Bio-Colorimeters — Comparators — Glass Stand-
ards—Klett Reagents.

Klett Manufacturing Co.
179 East 87 Street, New York, New York

INEXPENSIVE “SCIENCE” BINDERS



Keep your copies of **SCIENCE** always available for quick, easy reference in this attractive, practical binder. Simply snap the magazine in or out in a few seconds—no punching or mutilating. It opens **FLAT**—for easy reference and readability. Sturdily constructed—holds 26 issues.

Now made of stronger materials to accommodate heavier volumes.

This beautiful maroon buckham binder stamped in gold leaf will make a fine addition to your library. Only \$3.25 postpaid; add 50¢ for orders outside U.S.A. (Personal check or money order, please.) Name of owner, 75¢ extra; year of issues, 50¢ extra.

SCIENCE • 1515 Massachusetts Ave., NW,
Washington 5, D.C.

ranges of 0 to 5 and 0 to 10 amp can be supplied for d-c loads. Adjustable contacts actuate a built-in relay capable of handling 20-amp loads. Repeatability of ± 2 percent is claimed. (Technique Associates, Dept. 912)

■ **DIFFERENTIAL AMPLIFIER** features 7.5 kcy/sec bandwidth and 10^{-6} common-mode rejection from d-c to 60 cy/sec with 1000-ohm unbalance in either input lead. Voltage-gain range is 25 to 1000, and output capability is ± 10 v and ± 20 ma. (Dynamics Instrumentation Co., Dept. 913)

■ **STRAIN INDICATOR** is said to provide resolution ± 0.005 percent, linearity 0.02 percent, repeatability ± 0.01 percent, and absolute accuracy ± 0.05 percent for calibration and linearity testing of strain-gage transducers. Accuracy is independent of input and output impedance over the range 60 to 1000 ohm. Calibration is adjustable from 1 to 15 mv/v. Direct-current power to the transducer is regulated and adjustable between 5 and 15 v. (Baytrex Corp., Dept. 914)

■ **ULTRASONIC DELAY LINES** will store a signal with minimum attenuation for periods ranging from less than 50 to more than 15,000 μ sec. The short-delay lines are constructed of glass with nearly zero temperature coefficient of delay. The very-long-delay lines are of fused silica formed into plates up to 48 in. in diameter. (Corning Glass Works, Dept. 917)

■ **CHROMATOGRAPH** uses argon as carrier gas and an ionization detector for detection of components. Detection depends upon the increase of ionization current that occurs when organic vapors enter the ionization chamber. Increase of sensitivity over thermal detection methods of 100,000 times is claimed. Range of sensitivity is 2×10^6 to 2×10^8 parts of carrier gas for full-scale deflection. Limit of detection is 10^{-11} mole. (Jarrell-Ash Co., Dept. 918)

■ **CHART MARKER** mounts on strip chart recorder and prints an identifying number, 0 through 9, each time its solenoid is energized. The single print wheel of the device advances one number automatically after each print-out, returning to 0 after 9. The device operates on 115 v a-c. (Royson Engineering Co., Dept. 919)

■ **PLOTTER** converts information on IBM punched cards into visual plotted form. The device operates from an IBM card reader and will plot 400 graphs with 4000 points in less than 2 hours. Data points are printed with numbers to separate and identify curves. (Gilmore Industries Inc., Dept. 924)

■ **VACUUM GAGE** of thermal-conductivity type is sensitive in two ranges from 1 to 100 μ and from 1 μ to 500 mm. The instrument uses a magnetic-type amplifier. A built-in circuit, adjustable to operate anywhere within the pressure range of the instrument, may be used as a protective switch for the vacuum system. Signal output for recorder operation is provided. (Consolidated Electrodynamics Corp., Dept. 926)

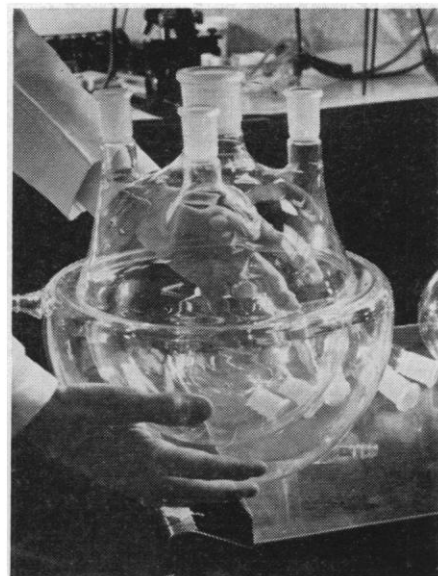
■ **MONOCHROMATIC LIGHT SOURCE** for optical interferometric inspection of surfaces is portable and self-contained in a carrying case. Observations are made by placing the surface to be inspected on a 10-inch flat fixed in position in the illuminator and viewing the underside of the flat through a mirror. (Cartriseal Corp., Dept. 921)

■ **GALVANOMETER AMPLIFIER** is a six-channel, three-stage, transistor d-c amplifier with overload protection at both input and output to eliminate transistor damage and galvanometer burn-out. Each of the six channels is isolated from ground by individual floating power supplies. Voltage gain is adjustable from 0 to 1. Output into a 37-ohm load is ± 2.4 v at 65 ma from d-c to 8 kcy/sec. Noise is less than 3 mv peak-to-peak, and drift is less than 3 mv/ $^{\circ}$ F. (Minneapolis-Honeywell, Dept. 920)

■ **MICROTOME** for metallographic specimens provides automatic advance in steps for 10, 20, or 30 μ for preliminary surfacing after which final preparation is accomplished in steps of 2 to 4 μ . Contact between knife and specimen on the return stroke is avoided by lowering of the specimen. Fine knife tracks are eliminated by electrolytic lap polishing or other means. Speed of cutting is continuously adjustable. Preparation of a sample generally requires 4 to 6 min. (William J. Hacker and Co., Inc., Dept. 927)

■ **PROCESS ANALYZER** operates by detecting refractive-index differences between a process stream and a reference sample. The instrument is a null type designed for continuous operation. An electric or a pneumatic controller can be provided. A range extension feature allows suppression up to 10 times the standard range without initial zero shift or change of reference solution. The analyzer can be furnished with a mass or volume collecting system which replaces the synchronous chart drive on the recorder and permits plotting refractive index change relative to mass of sample passed. (Phoenix Precision Instrument Co., Dept. S925)

JOSHUA STERN
National Bureau of Standards,
Washington, D.C.



5 questions to ask before you buy ground joint flasks

1. What kind of glass? If the answer is PYREX brand glass No. 7740 you can forget about corrosives and thermal shock.

2. How wide a choice? When you order PYREX brand flasks the choice is almost limitless. Sizes range from 5 ml thru 20 gallons. Necks: up to 5, $\frac{1}{2}$ and/or spherical, plus thermometer well.

3. Who makes them? Corning makes multi-neck flasks from sturdy blanks blown expressly for this purpose. Necks are expertly fused onto the body to avoid thin spots. Rugged tooled joints are ground satin smooth and are uniform in every detail. We keep tight control over all critical dimensions. You *always* get proper shape and fit.

4. How about availability? You'll get prompt delivery of PYREX brand flasks from your regular dealer. To be sure, specify the Corning Catalog number.

5. Need something very special? If what you are after isn't listed either in the Custom Section of PYREX brand laboratory ware Catalog LG-1, or supplement No. 3, send us a sketch. Our master craftsmen will expertly fashion it for you, whether it be a minor variation or something completely different.

Send your requests for Catalog LG-1 and Supplement 3, and/or your rough sketch to:

Special Apparatus Section



CORNING GLASS WORKS

34 Crystal Street, Corning, New York
CORNING MEANS RESEARCH IN GLASS

ENGINEERS & SCIENTISTS

Research Opportunities

Aeronutronic Systems, Inc., a dynamic new name in science and research, has immediate need for qualified people to staff senior positions at its new Research Center in Newport Beach, Southern California.

The Space Technology Division of this rapidly expanding Ford Motor Company subsidiary has career openings in the following fields of interest:

VEHICLE TECHNOLOGY

Aerodynamic design and testing
Rocket engine development
Rocket nozzle and re-entry materials
High temperature chemical kinetics
Combustion and detonation theory
Combustion thermodynamics
High temperature structural plastics & ceramics
Advanced structures
Rocket vehicle systems

MISSILE DEFENSE

Supersonic aerodynamics
Aerothermodynamics
High temperature heat transfer
Space physics
Re-entry programs

ASTRO SCIENCES

Space electronics
Guidance & control
Communications
Instrumentation
Experimental physics
Plasma and magnetohydrodynamics studies

Visit Aeronutronic's exhibit booth 3822-24 at the WESCON SHOW.

Qualified applicants are invited to send resumes and inquiries to Mr. R. W. Speich, Aeronutronic Systems, Inc.

AERONUTRONIC

a subsidiary of
FORD MOTOR COMPANY
Bldg. 16 — Box 451

Newport Beach, Cal. ORiole 3-2520

Newport Beach • Santa Ana •
Maywood, California

PERSONNEL PLACEMENT

CLASSIFIED: Positions Wanted, 25¢ per word, minimum charge \$4. Use of Box Number counts as 10 additional words. Payment in advance is required. **Positions Open, \$33 per inch or fraction thereof.** No charge for box number.

COPY for classified ads must reach SCIENCE 2 weeks before date of issue (Friday of every week).

DISPLAY: Rates listed below—no charge for Box number. Monthly invoices will be sent on a charge account basis—provided that satisfactory credit is established.

Single insertion	\$33.00 per inch
4 times in 1 year	30.00 per inch
7 times in 1 year	28.00 per inch
13 times in 1 year	27.00 per inch
26 times in 1 year	26.00 per inch
52 times in 1 year	25.00 per inch

For PROOFS on display ads, copy must reach SCIENCE 4 weeks before date of issue (Friday of every week).

Replies to blind ads should be addressed as follows:

Box (give number)
Science
1515 Massachusetts Ave., NW
Washington 5, D.C.

POSITIONS WANTED

Bacteriologist-Biologist, Ph.D. Prefers position in West Southwest, or Midwest. Box 166, SCIENCE. X

Ph.D. Trained in medical microbiology, background in related basic medical sciences, teaching and research experience including tissue culture, biochemical orientation. Desires academic or industrial research position. Box 170, SCIENCE. X

Physiologist-Endocrinologist, Ph.D. Cellular, mammalian, comparative, zoological, and endocrine physiology with biochemical interests. Presently assistant professor. Academic or research. Box 172, SCIENCE. X

Zoologist, Ph.D.; 10 years' teaching, competent limnologist and invertebrate zoologist: crustacea, zooplankton, grants and publications. Seeks teaching position with some opportunity to do research. Box 169, SCIENCE. X

POSITIONS OPEN

(a) **Analytical Chemist, Ph.D.** to supervise and develop analytical and physical chemistry section, prominent eastern pharmaceutical house; radioisotope experience essential; to \$14,000. (b) **Microbiologist, M.D., Ph.D.,** to supervise clinical bacteriology, do developmental microbiological work, research; very busy laboratory, 500-bed hospital and affiliated diagnostic clinic; Midwest. (c) **Biochemist, Ph.D.** preferred to supervise department, teach technologists, set up new tests. Some research opportunities; three new chemistry laboratories under construction in 400-bed hospital; to \$12,000, excellent potential; city of 100,000; Midwest. (d) **Pharmacologist, Ph.D.** to direct screening program, plan, develop specialized experiments, new testing methods; to about \$10,000; eastern concern. (e) **Bacteriologist, M.S., Ph.D.** to head section; prefer experienced serology, virology to expand these services; 800-bed general hospital; important southern university city. Woodward Medical Bureau, Ann Woodward, Director, 185 North Wabash, Chicago. X

Biochemist, Medical, Ph.D. preferred. To supervise and develop procedures in central laboratory for pathology group serving five large hospitals in Los Angeles, California. Must be familiar with chromatography, electrophoresis and enzyme and steroid methods in clinical medicine. Address replies to Dr. Angus Wright, 679 S. Westlake, Los Angeles 57, California. 7/17, 24

(a) **Clinical Chemist, Ph.D.;** preferably with minimum of 5 years of recent experience as chemistry supervisor in hospital; 12-man group expanding facilities; Pacific Coast; \$8400-\$12,000. (b) **Medical Writer** particularly well qualified in his field; considerable experience required; outstanding opportunity. (c) **Parasitologist** qualified to handle tests for both clinical and research purposes; research department, group of internists; near Chicago. (d) **Organic Chemist** to join staff of small institution devoted to research in medical chemistry and almost exclusively to organic synthesis; California. (e) **Helminthologist** experienced in schistosomiasis; research project; Africa. S7-2 Medical Bureau, Burneice Larson, Director, 900 North Michigan Avenue, Chicago. X

POSITIONS OPEN

Biochemist, M.S. or Ph.D. Position in pharmaceutical research section. Experience in radioactive tracer techniques preferred, but will consider applicant with basic knowledge of techniques. Box 165, SCIENCE. 7/3; 7/10; 7/17

Biologist. To teach embryology, comparative anatomy, and biology laboratory at well-known midwestern college during 1959-60; 14 contact hours, young or retired teachers considered. Box 171, SCIENCE. 7/17

CLINICAL INVESTIGATION

Large Midwest ethical pharmaceutical company has opportunity for physician in department of clinical investigation; prefer man 30 to 40 with some experience past internship; training in nutrition and metabolism desirable though not necessary. Please send complete résumé to

Technical Employment Coordinator
The Upjohn Company
Kalamazoo, Michigan

Geologist, Ph.D. September 1959. Subjects: physical geology, historical geology, geomorphology, meteorology, and astronomy. Apply to: F. Reese Nevin, State University Teachers College, Plattsburgh, New York. 7/3; 7/10

A Good-Sized Charcoal Manufacturer wants an Experienced Production Man with knowledge of building charcoal plants and making charcoal. Box 167, SCIENCE. 7/17, 24

Microbial Geneticist. Position available with eastern pharmaceutical firm in fermentation area. Broad scientific interests necessary. Please indicate qualifications. Box 168, SCIENCE. 7/17, 24

Physical-Biochemist. Prospective or recent Ph.D. as collaborator in studies of protein denaturation at Massachusetts Institute of Technology. Excellent salary; appointment renewable for several years; must be available by September. Box 2176, Potomac Station, Alexandria, Virginia. 7/3; 7/10

PHYSICAL CHEMISTS

Application Research

An opportunity for challenging exploratory studies on application properties of surfactants and water-soluble polymers. Must be able to work effectively in cooperative programs with synthesis laboratories and with sales development groups. Ph.D. or equivalent in physical or organic chemistry.

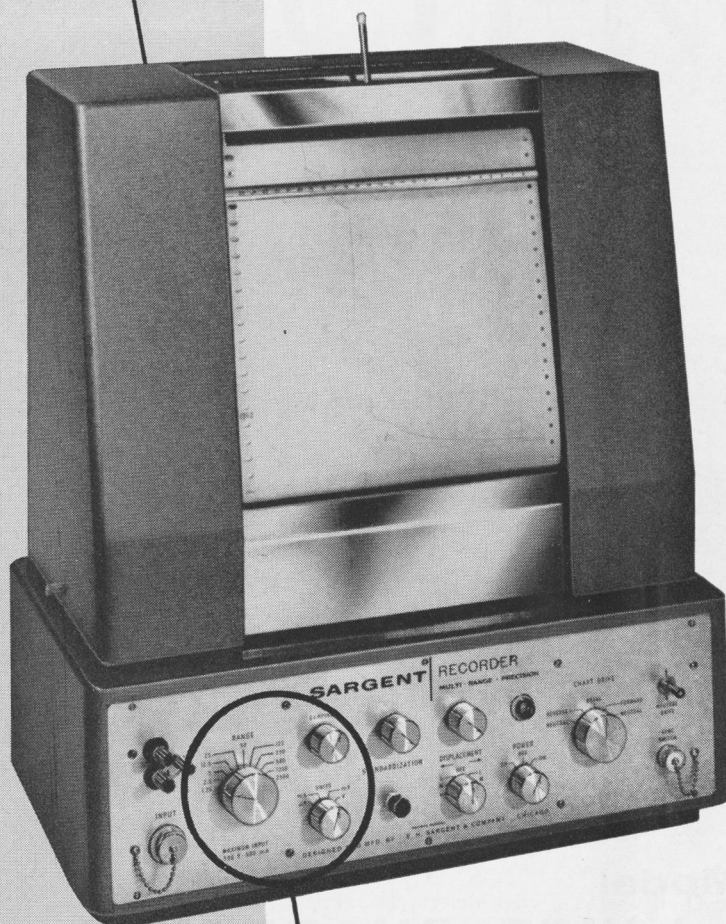
Fundamental Research

Ph.D. in physical chemistry to conduct basic studies in the field of surface chemistry with specific emphasis on one of the following areas of interest to the company—surface adsorption, emulsification, detergency or foam.

• • •

Excellent facilities in a new laboratory building at our Bristol, Pennsylvania, plant in historic Bucks County. Homes and apartments readily available in nearby suburban Philadelphia and Trenton communities. Liberal company benefits, including relocation expenses. A progressive chemical and plastics company that knows the value of a strong, consistent research program. Write, giving full details of training and experience, to

Office of Technical Employment
Rohm & Haas Company
5000 Richmond Street
Philadelphia 37, Pa.



RECORD MANY VARIABLES with the SARGENT RECORDER

(PATENTS PENDING)

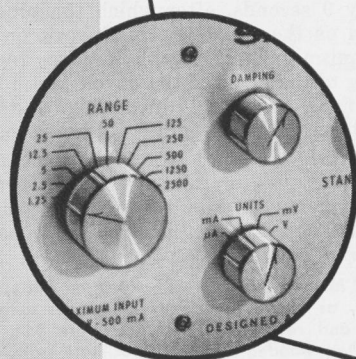
Here in one expertly designed instrument is a Multi-purpose Recorder that measures current and voltage and all other quantities which can be transposed into potential or current signals.

THIS RECORDER FEATURES:

- 18 Current Ranges—18 Potential Ranges—
- 9 Chart Speeds (Time Range)
- (27 Chart Speeds with Multi-range Attachment)
- Designed for Bench Operation

Designed and Manufactured by
E. H. SARGENT & CO.

S-72150 SARGENT RECORDER.....\$1725.00



YOU CAN RECORD:

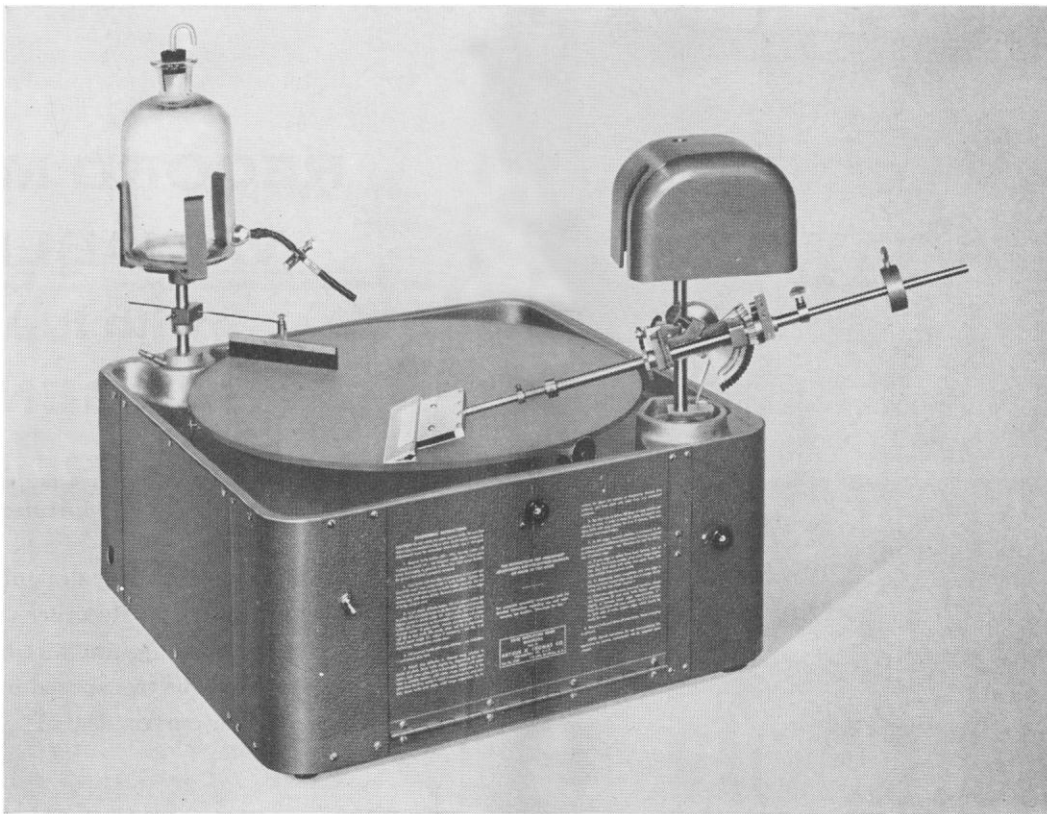
- | | |
|----------------------|---------------------|
| Thermal Conductivity | Dielectric Constant |
| Temperature | Potential |
| Current | Conductance |
| | Light Intensity |

For complete information write for Bulletin R.

SARGENT

SCIENTIFIC LABORATORY INSTRUMENTS • APPARATUS • SUPPLIES • CHEMICALS

E. H. SARGENT & COMPANY, 4647 W. FOSTER, CHICAGO 30, ILLINOIS
DETROIT 4, MICH. • DALLAS 35, TEXAS • BIRMINGHAM 4, ALA. • SPRINGFIELD, N. J.



Fanz, Improved Model MICROTOME KNIFE SHARPENER

... with motor drive and automatic knife lifting and reversing device

Provides more nearly perfect cutting edge than skillful hand honing and stropping. Takes knives up to 325 mm in length and up to 13 mm thick. With simplified, enclosed motor drive and with Miller automatic knife lifting and reversing device. Simplified operating and sharpening directions are printed in white lettering on both sides of hinged front door panel.

A revolving glass disc, 21 inches diameter, is driven against the knife which is automatically swept to and fro in an arc through the center of the disc surface. In each operation, the automatic device sweeps the knife across the glass disc for approximately 28 seconds, during which period it makes 4.5 reciprocating cycles, and is then lifted, turned over and lowered to the disc in approxi-

mately 9 seconds, after which the process is repeated on the opposite side. A scale on the knife mechanism makes possible precise, reproducible setting of the angle of the bevel. Metal housing is 24 1/4 inches square x 11 inches high and is finished in attractive baked gray Hammertone enamel.

An early model of this Sharpener has been in constant use for the past 27 years. During this period more than 25,000 knives sent to us for reconditioning have been sharpened on this machine without repairs excepting occasional replacement of a worn belt.

7203. Microtome Knife Sharpener, Fanz, Improved Model, as above described, with Miller automatic knife lifting and reversing device, complete with glass disc, calibrated wooden wedge to facilitate adjustments; drip deflector, glass reservoir 2 liter capacity, plastic dust cover for glass disc, rubber and Tygon tubing connections, 1 lb. each of white rouge and castile soap, and detailed directions for use. For 115 volts, 50 or 60 cycles, a.c. **767.00**

More detailed information sent upon request



ARTHUR H. THOMAS COMPANY

More and more laboratories rely on Thomas / Laboratory Apparatus and Reagents
VINE ST. AT 3RD • PHILADELPHIA 5, PA.