

Equipment

The information reported here is obtained from manufacturers and from other sources considered to be reliable. Science does not assume responsibility for the accuracy of the information. A coupon for use in making inquiries concerning the items listed appears on page 1014.

■ **MICROCOMBUSTION APPARATUS**, to be used for the determination of halogens, sulfur, phosphate, and so forth in organic materials by the Schoniger technique, consists of a heavy-wall conical flask and a ground-glass stopper to which is attached a platinum sample carrier. The sample is burned within the flask charged with oxygen. (Arthur H. Thomas Co., Dept. 1)

■ **FREQUENCY-MARKER GENERATOR** furnishes 11 simultaneous frequency markers uniformly distributed through the range 2000 to 4000 Mc/sec. Any one or a combination of frequencies can be selected for display while the others are shut off. The instrument permits more precise frequency determination than can be made with a frequency meter. (Allen B. Dumont Labs Inc., Dept. 3)

■ **STRAIN-GAGE TRIMMER** is designed to speed gage trimming as much as ten times. A precision micrometer adjustment positions two cutting knives which can be used simultaneously for trimming both edges of a gage within 0.002 in. Knives can be set to trim widths of 0.10 to 1.250 in. Operation is on alternating current. (Baldwin-Lima-Hamilton Corp., Dept. 5)

■ **AUTO COLLIMATOR** measures angles of 1 sec of arc directly. The instrument is an astronomical telescope that has been modified by providing an engraved glass reticle at the focal point of the objective lens and an internal light source to illuminate and project the reticle. The shift in the position of the reticle image reflected back into the telescope by an optically flat mirror is determined by the amount of rotation to which the mirror has been subjected. (George Scherr Co., Inc., Dept. 7)

■ **EXPANDED-SCALE METER** permits the region of interest to be spread over a longer scale span. This is accomplished by electronic suppression of the zero point. Meters can be supplied with pointer movements from 90 to 300 deg. (Miller Instrument Co., Dept. 12)

■ **MICROFILM READER-ENLARGER-PROCESSOR** is a self contained, semiautomatic unit consisting of a projection system with an enlarging easel and a single-sheet processor. The machine is designed for tabulating aperture cards containing 35-mm film inserts. Enlargement ratio is 13.75 to 1, and paper size is 17 by 22

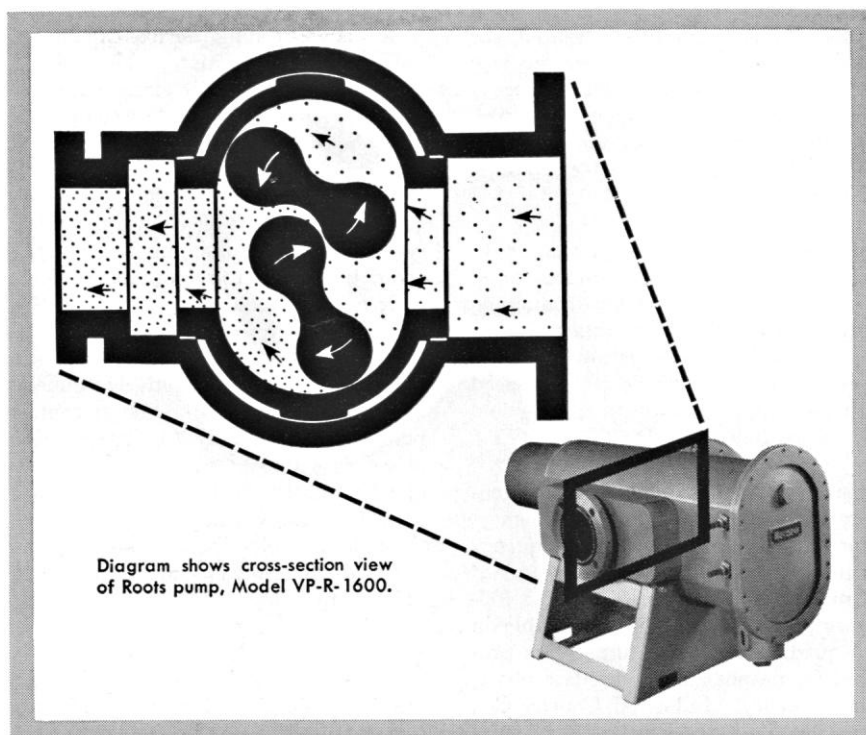


Diagram shows cross-section view of Roots pump, Model VP-R-1600.

How to get vapor-free high vacuum fast... with the *ROOTS* pump

Now you can achieve completely dry pressure in the 10^{-1} to 10^{-5} mm Hg range using only a *mechanical* high-vacuum pump.

Probably the world's fastest pump in this range, the new Roots pump works without the aid of oil or steam vapors.

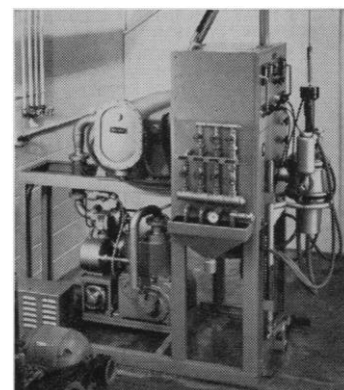
A pair of finely machined rotary pistons do the pumping. The pistons never touch one another or the pump casing, so the Roots pump needs no oil sealing. It cannot contaminate a system with backstreaming vapors.

Consider these other advantages:

- 1. Speed.** The model shown above has a throughput of 10,400 micron cu. ft. per minute at 10 microns.
- 2. No shaft seals, no leaks.** Motor operates within the vacuum.
- 3. No by-pass or valving.** Roughing is done directly *through* the pump.
- 4. Quiet.** The Roots pump does not vibrate when in operation.
- 5. Low power consumption.**

Under a license with the manufacturer, Heraeus (Hanau, Germany), CEC is exclusive agent for all seven models of the Roots pump in this country.

For data on performance and theory of operation, write for Bulletin P8-20.



Heraeus Vacuum Arc Melting Furnaces are also available from CEC. Note Roots pump used. Furnace melts "buttons" to ingots. Particularly useful for obtaining pure samples of metals with high melting points. Information in Bulletin P4-28.



Consolidated Electrodynamics
Rochester Division, Rochester 3, N. Y.

SALES AND SERVICE OFFICES IN PRINCIPAL CITIES

in. Projected images are viewed on a reading table. If prints are wanted, the viewing table is swung out of the way and a conveyor belt system exposes a sheet of photographic paper and carries it through a processing section whence it emerges damp-dry 50 sec after exposure. (Remington Rand, Dept. 11)

■ **BLOOD-SAMPLE AGITATOR** prevents sedimentation in whole-blood samples stored in a refrigerator. Syringes containing samples to be stored are attached to a rotator wheel of the apparatus. A small drop of mercury, which is introduced with the sample, provides stirring action. (Scientific Industries, Inc., Dept. 17)

■ **SERVO TESTER** is a stable sine-wave generator designed for automatic frequency-response measurements. Data-frequency range is 0.3 to 30 cy/sec in a standard instrument. Four suppressed-carrier 400-cy/sec output voltages are available in two quadrature pairs. Controls are provided for output amplitude, data phase, and frequency. (Industrial Control Co., Dept. 24)

■ **OPTICAL COINCIDENCE READING SYSTEM** is an angle-reading device capable of measuring shaft position to 1 sec of arc. An optically flat glass circle with 216 deg graduations is viewed through a microscope eyepiece. Images of graduations diametrically opposite on the glass circle are made to coincide in the reading microscope by means of a deviating prism system, thus eliminating eccentricity error. Units which project images of the scale on a screen are also available. (W. & L. E. Gurley, Dept. 8)

■ **MULTIPLE SWITCH** selectively connects 20 or fewer leads to 20 or fewer contact points in any permutation by insertion of a card with a prescribed arrangement of perforations. A 3- by 5-in. file card is used. In the switch, contact is effected, through the holes in the card, between the grids of printed conductors. (Cinch Mfg. Corp., Dept. 15)

■ **FREEZING-POINT DEPRESSION APPARATUS** combines a null-detecting unit and a freezing unit. Actual temperatures are not measured, the end-point being com-

pared with readings of standard solutions. The detector unit consists of a thermistor probe, a capacitance-compensated a-c bridge, and an amplifier with electron-ray-tube indication. The freezing unit is a Lucite multi-walled cooling chamber and a stirring system. Accuracy is said to be better than ± 2 percent. (American Instrument Co., Inc., Dept. 16)

■ **DIRECT-READING SPECTROMETER** analyzes ferrous and nonferrous alloys in 30 sec, registering on dials the concentrations of up to 30 alloying elements simultaneously. Two models available, a 1.5-m and a 2.5-m spectrometer, employ 30,000 line/in. gratings in Wadsworth stigmatic mounts. First-order dispersions are 5.4 and 3.5 A/mm, respectively, both over the range 2100 to 5000 A. An optional camera permits photographic use of the instruments. Spectrum excitation is provided by a high-voltage spark and a low-voltage a-c arc. Output indicators are calibrated linearly with respect to concentration. (Jarrell-Ash Co., Dept. 14)

JOSHUA STERN

National Bureau of Standards

PERSONNEL PLACEMENT

CLASSIFIED: 25¢ per word, minimum charge \$4.25. Use of Box Number counts as 10 additional words. Payment in advance is required.

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

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Single insertion	\$26.00 per inch
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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, Ph.D. Desires teaching position in biological sciences at college. Box 108, SCIENCE 4/25; 5/2

Bacteriologist, Biochemist, Ph.D., June 1958. Publications in nutrition, proteinase biosynthesis. Desires academic or industrial position. Box 111, SCIENCE X

Bacteriologist, Ph.D., 8 years teaching general, pathogenic, advanced bacteriology, parasitology. Desires academic position in forward-looking department. Will consider clinical laboratory. Box 115, SCIENCE X

Bacteriologist, Ph.D.; 3 years of teaching, 6 years of research experience; bacteriology, genetics of microorganisms, mycology, virology, and tissue culture. Desires academic position. Box 116, SCIENCE.

Geologist-Mineralogist; M.S., 35; holds responsible position major research institute. Wishes relocation to industrial research and development. Well qualified in microscopy, evaluation, report writing, publications. Box 114, SCIENCE X

POSITIONS WANTED

Biochemistry Technician able to set up routine clinical biochemistry laboratory. Box 117, SCIENCE X

Biologist, Ph.D. 1950; microbial genetics, radiation genetics, cytology, isotopes, mycology, botany. Research and teaching experience, publications. Box 110, SCIENCE. 5/2

Comparative Pathologist, Microbiologist, D.V.M., Ph.D. Teaching, research experience, publications. Desires teaching or research. Box 106, SCIENCE. 4/25

Parasitologist, Medical Entomologist, 33, Ph.D.; 2 years' experience teaching, research. Desires research-teaching or research position. Box 118, SCIENCE X

Ph.D.; broad zoological background with specialization in parasitology; prefers teaching parasitology and general invertebrates or teaching in general premedical type of zoology; prefers position in 4-year institution. Medical Bureau, Burneice Larson, Director, 900 North Michigan, Chicago. X

Physiologist, Ph.D. zoology; 6 years' experience teaching graduate and undergraduate levels in a physiology department. Desires appointment in an academic or research position. Box 112, SCIENCE X

POSITIONS OPEN

Zoologist to teach biology, zoology and microbiology

Physicist—physics and general science

Geologist—physical geology and geomorphology

Research should be of a type which can be advanced in small units of state university. Positions of assistant professorship with starting salary at \$5150 to \$5500 and professorships with starting salary at \$7250. Forward credentials and personal history to Dr. F. Reese Nevin, Chairman, Department of Science and Mathematics, State University Teachers College, Plattsburgh, New York. 5/2, 9

POSITIONS OPEN

Bacteriologist or Chemist. With recent B.S. or M.S. degree and training and/or experience with microbiological assay techniques. This immediately available position is in the quality control laboratories of a pharmaceutical manufacturer located in the Midwest. Modern laboratory facilities, regular salary reviews and liberal employee benefits. Please send a detailed résumé, including the approximate salary requirement. Inquiries will be held in strict confidence. Box 113, SCIENCE X

(a) **Biochemist** to Head Department, 500-bed general hospital; East; \$12,000. (b) **Chief Clinical Psychologist** experienced in child guidance clinic to head psychological services in well-established child guidance clinic; metropolitan area Southwest; staff of 10; research opportunity, \$9000. (c) **Analytical Chemist**, preferably with bioanalytical experience, A.B. or higher degree, with 2 to 5 years' experience in isolation of natural compounds, chemical engineer experienced in fermentation or chemical development pilot-plant work and microbiologist; major company expanding fine chemical and other pharmaceutical products derived from fermentation; Pacific Coast. (d) **Biochemist**; full-time research; Florida. S4-4 Medical Bureau, Burneice Larson, Director, 900 North Michigan Avenue, Chicago. X

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UNIVERSITY OF ALBERTA

Applications are invited for a position in the Department of Bacteriology as lecturer, starting salary approximately \$5000 according to qualifications and experience. Duties, to commence on 1 September 1958, will include formal lecturing and laboratory instruction in elementary microbiology. Qualifications—M.Sc. in microbiology plus some teaching experience at university level. Applications should be addressed to the Department of Bacteriology, University of Alberta, Edmonton, Alberta, and should give personal data, details of training and experience. X

FORINGER

RESEARCH EQUIPMENT

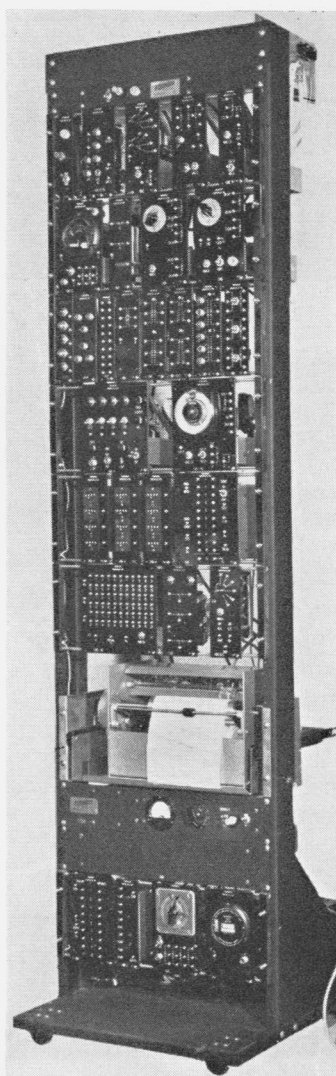
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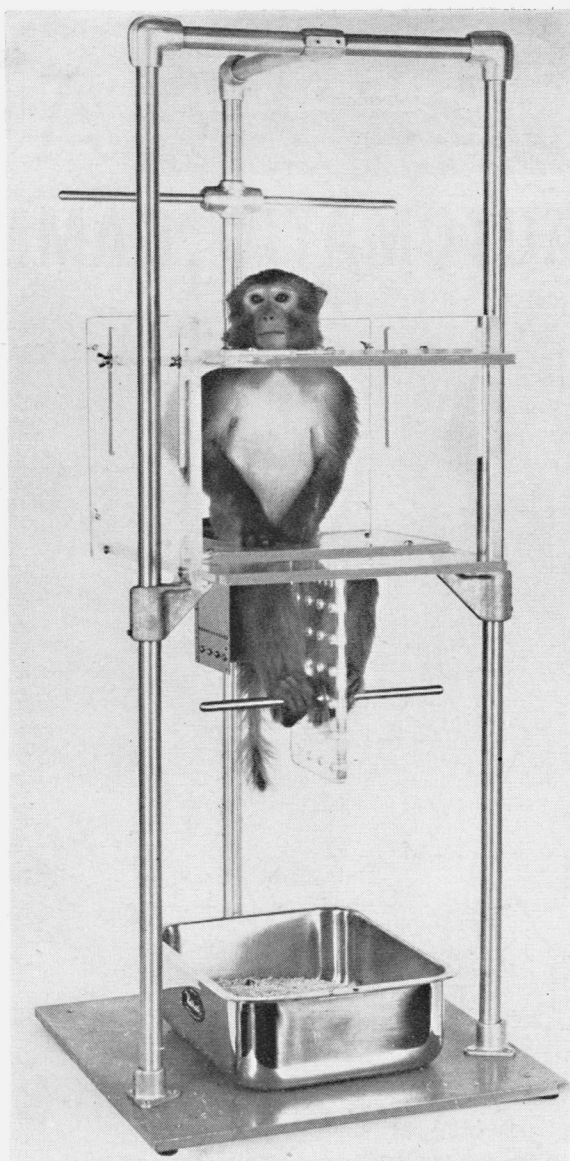
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NOW... Completely Automatic Scintillation Counting!

Here is an instrument that quickly pays for itself by saving staff time. It can be operated twenty-four hours per day and seven days per week without attendance. Also, more samples can be counted and better data obtained by using longer counting periods and more repeat counts.

Test tubes are 16 mm diameter by 150 mm long for standard well-type scintillation detectors. Any number up to ONE HUNDRED SAMPLES can be counted at each loading. After the last sample in the turntable has been transferred to the scintillation detector, counted, and returned to its place in the turn-

table, the unit resets to the first sample and starts over again. Counting periods are based on both preset time and preset count, and counting is stopped by whichever is reached first. Sample number, time interval and scaler reading are all recorded on the paper tape.

The Auto-Gamma Sample Changer is available for many different systems. It can be purchased as a complete unit with a choice of large or small sodium iodide crystals. It can also be used with scintillation spectrometers or with simple scaler systems.

For full information request Auto-Gamma Bulletin.

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