

EQUIPMENT NEWS

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 614.

• LOGARITHMIC PICOAMMETER reads from 10^{-11} to 10^{-5} amp without range switching. The meter is designed for monitoring rapidly varying currents in nuclear-reactor control. Polarizing potential of

+ 216 v is provided. Accuracy is within ± 0.02 decade, and zero drift is less than 0.05 decade in 24 hours. Typical response times are small fractions of a second. (Keithley Instruments, Inc., Dept. S953)

ATOMIC MODELS for constructing organic metal chelate compounds are designed according to the method of Stuart and Briegleb and sealed to a magnification of 1.5×10^8 . Four models represent various central metal atoms; six others represent various linkages. (Arthur S. LaPine & Co., Dept. S948)



■ HIGH-SPEED, SEQUENTIAL IMAGE CAM-ERA uses a converter tube with magnetic focus and magnetic deflection. The cathode is 1-in. in diameter, the screen about 3¾ in. Six sequential pictures, each approximately 22-mm square, can be presented on the screen. Five exposure times, from 0.1 to 10 µsec, are available. Repetition rate can be up to 5000 per second. (Hett Associates Inc., Dept. S936)

CIRCUIT TESTER is programed by perforated tape to perform production and maintenance tests, including measurement of impedance, voltage, resistance, leakage, and continuity. For each measurement, any two points are selected from 300 test leads by a crossbar switching unit. Bridges are used to compare the value observed with reference standards contained within the instrument. Accuracy is ± 1 percent for impedance and a-c voltage and ± 0.5 percent for resistance and d-c voltage. An accessory printer for making permanent records of tests is available. (California Technical Industries Division of Textron Inc., Dept. S941)

• VACUUM ARC FURNACE utilizes either consumable or nonconsumable electrodes for production of experimental quantities of high-purity metals. A 0.5-lb charge of titanium, or an equivalent amount of other metals, can be handled. Furnace pressure can be held at any value from 2 lb/in.² above atmospheric pressure to 10 μ -Hg. A high-frequency arc starter is provided to draw the initial arc with the material to be melted. (Vacuum Equipment Division, New York Air Brake Co., Dept. S942)

■ VOLTAGE AND CURRENT CALIBRATOR, for measurement of pulse amplitudes, samples two variable calibrated reference voltages and the signal to be measured and displays them, superimposed, on an oscilloscope. The two reference voltages, of 0.001-percent stability, may be set to define a tolerance range or may be adjusted to the same value as the signal for amplitude measurement. Ten ranges cover 0 to 500 v and 0 to 1000 ma. Zerosuppression permits use of a high-gain oscilloscope. (Electro-Pulse Inc., Dept. S943)

■ WAVEFORM TRANSLATOR provides a means for plotting repetitive waveforms representing frequencies up to 20 kcy/sec on conventional X-Y plotters. The instrument is designed to accept signals from an oscilloscope but may be used independently. Stroboscopic sampling of the signal waveform is the method used to match the rapidly varying pattern to the speed of the plotter. Intensity modulation of the oscilloscope trace allows the operator to observe



momentary plotting positions as the waveform is scanned. The translator can plot Lissajous patterns, hysteresis loops, or complete families of curves. (Transdata, Dept. S945)

GLASS-ENCLOSED CRYSTALS are designed to provide accurate frequency control in the range from 1 to 15 kcy/sec. Components are hermetically sealed in glass bulbs with Noval base. The crystals are operable over the temperature range -55° to $+100^{\circ}$ C with ± 0.02 percent stability. (Dynamic Corporation of America, Dept. S946)

■ MASS-SPECTROMETER DIGITIZER converts analog spectrometer output to provide tabulated digital data. The amplitude and mass number of each spectrum peak are converted into a signal to a parallelentry paper-tape printer. The converter operates at the normal scanning rate of the spectrometer. Components include a control unit, a peak-amplitude digitizer, a mass-number digitizer, and a power supply. Printing with simultaneous operation of a card or tape punch can be provided. (Consolidated Electrodynamics Corp., Dept. S947)

• TEACHING MICROSCOPE is standard in size and operation. A prefocusing gage reduces damage to objectives and slides. Fine adjustment provides tube travel of 0.25 mm/rev with a total range of 1.5 mm. The eyepiece is locked in but can be removed easily. (Bausch & Lomb Optical Co., Dept. S949)

■ ACCELEROMETER, of differential-transformer type, incorporates a self-contained calibration system which can be used to check operation during use. The calibration feature comprises a forcegenerating device which applies a force to the seismic system in proportion to the electrical excitation applied. The natural frequency is approximately 30 cy/sec, and the operating temperature range is from - 65° to + 250°F. (Gulton Industries, Inc., Dept. S950)

■ PULSE-HEIGHT ANALYZER of 100 channels uses quartz-delay-line data storage as originally developed by Hutchinson and Scorrott. The pulse-height spectrum is printed out on paper tape; both channel number and pulse count are recorded decimally. The count in each channel may be viewed on a monitor oscilloscope. A choice of 0.2- or 1-v channel width is provided. Capacity is 10⁵ counts in each channel. Over-all average dead time is 510 µsec. Accessories available include a digital-to-analog converter for plotting spectra. (Technical Measurement Corporation, Dept. S951)

JOSHUA STERN National Bureau of Standards



-PERSONNEL PLACEMENT



Anatomist. Assistant professor or instructor for medical and dental school teaching, prefer person experienced in teaching of gross anatomy. Box 49, SCIENCE. 3/7, 14

(a) Associate Medical Director; preferably physician experienced in pharmaceutical field; major company, East. (b) Analytical Chemist preferably with bioanalytical experience and, also, industrial experience, biochemistry or development chemist with master's or higher and experienced in isolation of natural compounds and chemical engineer experienced in fermentation or chemical pilot plant work; large industrial company; Pacific Coast. (c) Head, Department of Biological Sciences; duties involve supervision and scientific leadership of established group of professional and supporting personnel; should be specialist in one of biological sciences, Ph.D. or M.D.; considerable industrial experience required; one of leading research companies; outstanding opportunity. (d) Chemist qualified in microbiology to direct research laboratory, major industrial company; university city, East; \$10,000-\$12,000. S3-2 Medical Bureau, Burneice Larson, Director, 900 North Michigan Avenue, Chicago. X

M.D., Pharmacologist, experienced with successful career in academic and/or industrial research and ability to work with teams. To assist in scientific direction of pharmacology laboratory of one of the largest pharmaceutical companies, Midwest location. Excellent chance for the right man to head department in the near future. All correspondence will be treated in strict confidence. Box 54, SCIENCE. 3/14, 21, 28

NEW WORLD-WIDE GRADUATE AWARD DIRECTORY. First compilation ever prepared for American scientists, teachers, and librarians to subsidize their education and research in more than 350 universities in 45 states, 30 foreign lands. Stipends \$200-\$10,000. Complete information. Just published. Send \$2 now. CRUSADE, Sci., Box 99, Station G, Brooklyn 22, N.Y. eow

SCIENCE TEACHERS, LIBRARIANS, AD-MINISTRATORS urgently needed for positions in many states and foreign lands. Monthly non-fee placement journal since 1952 gives complete job data, salaries. Members' qualifications and vacancies listed free. 1 issue, \$1.00, Yearly (12 issues) membership, \$5.00. CRUSADE, SCI., Box 99, Station G, Brooklyn 22, N.Y. ew



Biologist, Ph.D. Eastern liberal arts college beginning September. Box 67, SCIENCE. 3/21

Pharmacologist Ph.D. or M.S.

Applicants should preferably have experience in industrial toxicology. We will consider applicants with a background in pathology or physiology.

Candidates should be able to design and carry out all phases of chronic toxicology experiments. They should also have the potential to assume supervisory responsibility for pharmacological research projects.

We are a progressive pharmaceutical company located in a pleasant suburb of Chicago.

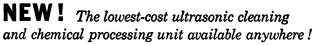
Please reply stating, education, experience, personal data and salary requirements to Box 61, SCIENCE.

(a) Virologist; B.S., M.S. microbiologist to assist in basic virus research problems; tissue culture, chicken embryo inoculation experience required; minimum \$5700; important eastern pharmaceutical concern. (b) Pharmacologist; Ph.D. with small animal experience, head well-equipped animal laboratories; food, harmaceutical consultants; exceptionally good new facilities; to \$8000 plus fringe benefits, bonus; Midwest. (c) Biochemist; M.S. preferred; supervise eight in busy department; university-affiliated large general hospital; to \$7800; Mideast. (d) Bacteriologist; full charge of department, laboratory supervised by two pathologists; \$5100 up; scenic western location; 300-bed hospital. (e) Research Pharmacologist; ph.D. with CNS or cardiovascular training; basic research new medicinal compounds; able to work independently, write reports, evaluate findings; minimum \$7500; East. Woodward Medical Bureau, Ann Woodward, Director, 185 North Wabash, Chicago. X



Biologist. B.S., horticulture, M.S., genetics; Ph.D., physiology; now teaching, research at northeastern university; publications; specialties hormones, developmental genetics, flowering. Desires teaching, research outside Northeast. Box 51, SCIENCE. 3/14

Chemist (major, general chemistry; minor, biochemistry); 6 years, associate professor, biochemistry, one of leading universities; 8 years, director of research, pharmaceutical company. Medical Bureau, Burneice Larson, Director, 900 North Michigan Avenue, Chicago. X



narda SONBLASTER \$175



Generator G-201

Tank NT-201

Now, no one need put off buying ultrasonic equipment because of cost! Narda's mass production techniques have done it again — this time, a 35-watt unit, complete with stainless steel transducerized tank with tremendous activity,

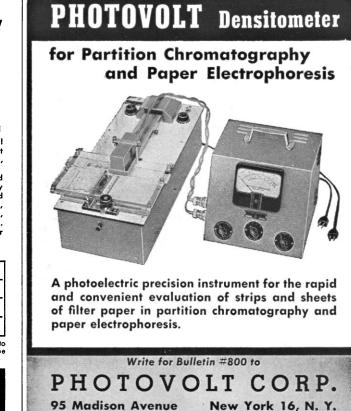
at the lowest price in the industry—and with a 2-year warranty! Hot lab apparatus, medical instruments, electronic components, optical and Hot lab apparatus, medical instruments, electronic components, optical and technical glassware, timing mechanisms—the Narda SonBlaster cleans 'most any mechanical, electrical or horological part or assembly you can think of—and cleans faster, better and cheaper. It's perfect, too, for brightening, polishing, decontaminating, sterilizing, pickling, deburring, and plating; emulsifying, mixing, impregnating, degassing, and other chemical process applications. What's more, two tank sizes are available, and there's a duty cycle timer at only \$10 additional. For more information, write to Dept. \$C-4.

SPECIFICATIONS

Tank Model No	Interior tank size (in.)	Tank Capacity	Price
NT-201	4-5/8 deep x 3-5/16 diam.	1/8 gal.	\$175
NT-202	6-1/2 deep x 4-7/8 diam.	3/8 gal.	\$210
	Model No. NT-201 NT-202	Model No. tank size (in.) NT-201 4-5/8 deep x 3-5/16 diam. 3-5/16 diam. NT-202 6-1/2 deep x 4-7/8 diam. 4-7/8 diam.	Model No. tank size (in.) Capacity NT-201 4-5/8 deep x 1/8 gal. NT-200 6-1/2 deep x 2/8 cml

The SonBlaster catalog line of ultrasonic cleaning equipment ranges from 35 watts to 2.5 Kw, and includes transducerized tanks as well as immersible transducers which can be adapted to any size or shape tank you may now be using.





Also Colorimeters pH meters **Fluorimeters** Nephelometers Glossmeters

Electronic Photometers Reflection Meters Multiplier Photometers Interference Filters

A Portion of the New Sigma Reagent Catalog

One of a series of advertisements which will reproduce the complete list. Complete list available promptly on request. ACETATE BUFFER 0.15M; pH 6.0 Stock No. 105-3 16 fl. oz. **4.50**

ACETONE POWDER, Hog Kidney 21-ACETOXYALLOPREGNANEDIONE (pfs) 3β-ACETOXYBISNORCHOLENIC ACID 21-ACETOXYPREGNENOLONE (pfs) 21-ACETOXYPREGNENOLONE (pfs) Inquire Inquire Inquire
 21-ACETOXYPREGNENOLONE
 (pfs)
 Inquire

 21-ACETOXYPREGNENOLONE
 ACETATE
 Inquire

 N-ACETYL-3,5-DINITRO-L-TYROSINE
 (pfs)
 1 g 5.50 5 g 21.25

 3-ACETYL PYRIDINE
 (pfs)
 5 g 4.00

 cis-ACONITIC ANHYDRIDE
 (pfs)
 1 g 2.25 5 g 9.75

 ADENINE, Sigma
 (pfs)
 1 g 2.25 5 g 9.75

 ADENINE, Sigma
 (pfs)
 1 g 1.50

 Purified grade available at lower cost
 10 g 9.00

 "ADENOPHOS"
 AMPULES Sodium Salt of Adenylic Acid, (Adenosine-5-Phosphate). Only Sigma AMP is actually extracted from muscle.
 10 x 1 cc 5.75

 20 mg/cc. For I.M. use.
 5 cc vial 2.75

 ADENOSINE DIPHOSPHATE
 Sigma Sodium Salt or Barium Salt
20 mg/cc. For I.M. use. 5 cc vial 2.75 ADENOSINE DIPHOSPHATE, Sigma Sodium Salt or Barium Salt. 95% to 100%. From muscle or yeast. This is the only offering in the U.S. actually derived from muscle 1 g 20.50 ADENOSINE-5-PHOSPHATE, Sigma Sodium Salt, ex-tracted from muscle or yeast. (Adenosine Mono-phosphate) 1 g 8.00 10 g 77.50 ADENOSINE-5-PHOSPHORIC ACID 1 H₂O Sigma Cryshatted from huscle of yeast, (Adenosine whole-phosphate) 1g 8.00 10 g 77.50 ADENOSINE-5-PHOSPHORIC ACID • 1 H₂O Sigma Crys-talline, 99-100% (Muscle Adenylic Acid), (Adenosine Monophosphoric Acid) From Muscle or Yeast. 1g 8.00 ADENOSINE-5-PHOSPHORIC ACID Crystalline Muscle Adenylic Acid but prepared by Yeast Fermentation, 1g 3.00 Sometimes "pfs" 5g 10.00 25 g 43.75 100 g 160.00 ADENOSINE TETRAPHOSPHATE Sodium Salt Sigma From Muscle, 95-100% Pure. Offered by Sigma for the first time anywhere. 1g 150.00 500 mg 90.00 250 mg 54.00 ADENOSINE TRIPHOSPHATE, Sigma Disodium 3H₂O Crystalline, From Muscle or Yeast phosphorylation Purity—99-100%. Inorganic P—Approximately 0.3% of total P when prepared in the SIGMA laboratories for the first time anywhere. Also Dipotassium and

Dibarium (Amorphous) To the best of our knowledge there is no legitimate Crystalline Potassium ATP 1 g 6.40 ADENYLIC ACID—See Adenosine-Phosphoric Acid. L-ALANINE SOLUTION 0.2M, pH 7.5 Stock No. 340-1. For determination of SCP-Transaminase 50 ml 4.00 DL-ALANINE SOLUTION—Stock No. 340-3 0.4M pH 7.5. Equiv. to 0.2M L-Alanine for determination of SCP-T. 50 ml 3.90 50 ml **3.90** 1 g **4.00** 10 g **35.00** ALBUMIN, BOVINE, Cryst. (pfs) 1 g 4.00 10 g 35.00 ALCOHOL DEHYDROGENASE, Cryst. From Yeast. Stock No. 340-26. Activity when shipped about 150,000 units/mg of protein 1 g 125.00 500 mg 73.00 100 mg 15.00 ALCOHOLIC KOH, See Potassium Hydroxide ALDOLASE, 5 x Cryst. (Suspension) (pfs) 1 g 100.00 ALKALINE PHOSPHATASE, See Phosphatase Alkaline ALLYL (CIYCINE (ofs) 1 g 4.00 5 g 17.00 ALLYL CLYCINE (pfs) 1 g 4.00 5 g 17.00 ALUMINA $C\gamma$ —Aged, 10-20% Solids. Price based on Gross Cel. Wgt. 10 g 7.75 50 g 21.50 100 g 35.75 4-AMINO-5-AMINOMETHYL-2-METHYL PYRIMIDINE dIHC1 (pfs) 5 g 5.00 5g 5.00 5-AMINO BARBITURIC ACID, See Uramil 5-AMINO BARBITURIC ACID, See Uramil γ -AMINO-n-BUTYRIC ACID (pfs) 1 g 2.50 10 g 12.00 4-AMINO-5-CARBETHOXY-2-ETHYL MERCAPTOPYRI-MIDINE (pfs) 1 g 4.00 5 g 15.00 10 g 25.00 4-AMINO-5-CARBETHOXY-2-HYDROXY-PYRIMIDINE See 5-Carbethoxy Cytosine 5-AMINO-6-CARBOXY-2,4-DIHYDROXY-PYRIMIDINE See 5-Amino Orotic Acid 4-AMINO-5-CARBOXY-2-ETHYLMER-CAPTOPYRIMI-DINE (pfs) 5 g 40.00 1 g 10.00 500 mg 6.00 4-AMINO-5-CARBOXY-2-HYDROXY-PYRIMIDINE— See Cytosine-5-carboxylic acid Other package sizes shown in complete catalog. **TELEPHONE COLLECT from anywhere in the world** Day, Station to Station PRospect 1-5750 Night, Person to Person Dan Broida-WYdown 3-6418 SIGMA CHEMICAL COMPANY 3500 DeKalb Street, St. Louis 18, Mo., U.S.A.

MANUFACTURERS OF THE FINEST BIOCHEMICALS AVAILABLE

Buy Now, Add Later

Microstar's Building Block Concept of design, exclusive with AO Spencer, lets you add parts as new needs arise.

Special inclined monocular and vertical monocular bodies available. 35 mm camera for crisp inexpensive photomicrography. Coupled system lets you shoot what you see.



Choice of 3 interchangeable full 360° rotatable bodies, monocular, binocular and trinocular; inclined for comfort.

No other microscope can offer you such a wide choice of interchangeable parts and accessories.

You can adapt the Microstar to your exact needs with various combinations of readily interchangeable bodies, stages, bases and optics. You have more than 600 possible combinations or models to choose from.

Your Microstar will be "just right" for you in convenience, comfort and the economy of real quality. Focus the stage and the specimen to the objectives with low positioned coarse and fine adjustments. Choose from 3 interchangeable stages; graduated or ungraduated mechanical stages or the new Micro-Glide circular stage.

The large fork-type condenser mount allows you to interchange brightfield, phase and dark field condensers quickly and precisely.

Your choice of interchangeable horseshoe base with double-plano mirror in fork mount, or built-in base illuminator.

Get your copy of the complete Microstar story. Write for BROCHURE SB124. Dept. C-2



American Optical Company

INSTRUMENT DIVISION, BUFFALO 15, NEW YORK