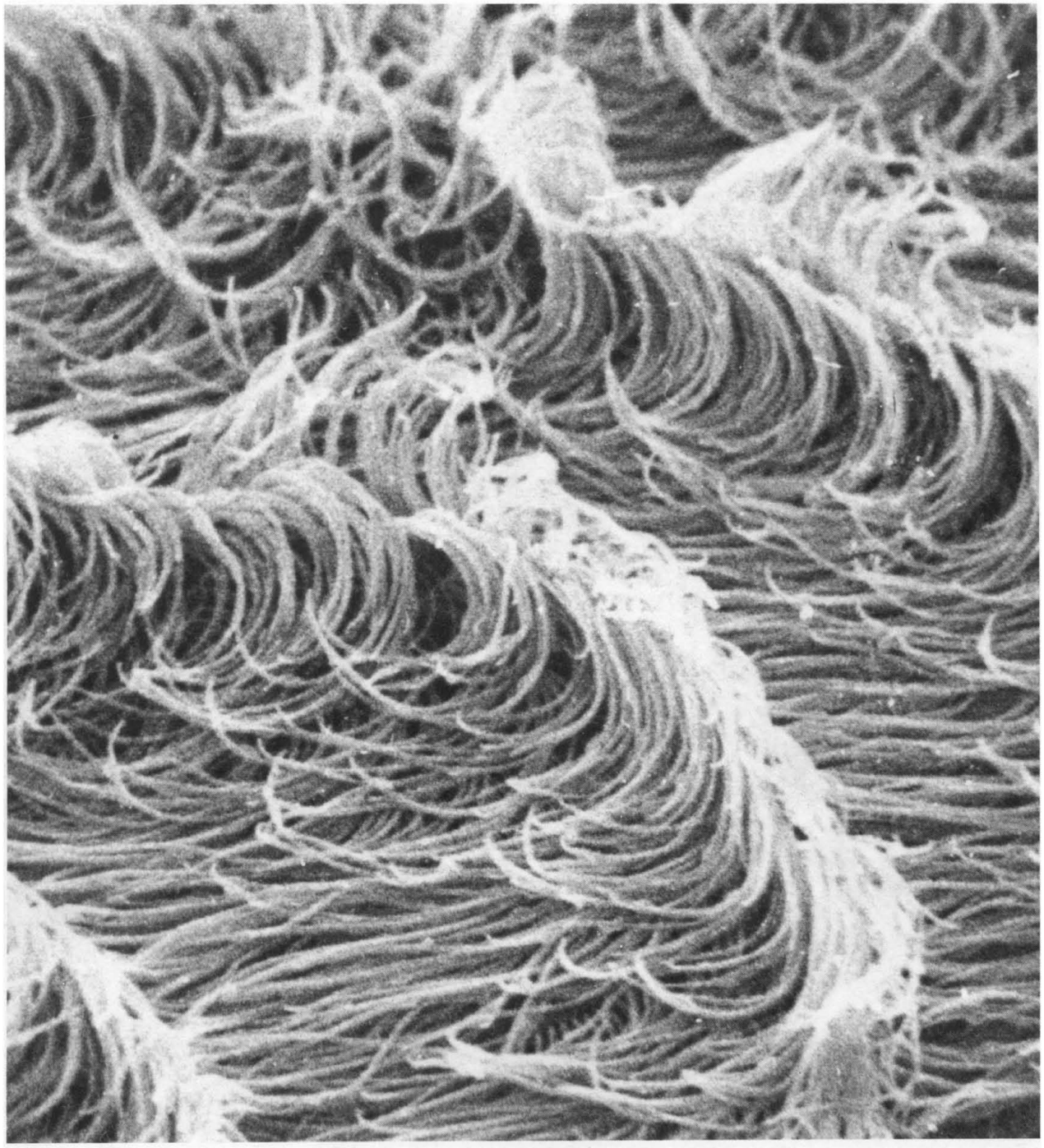
SCIENCE

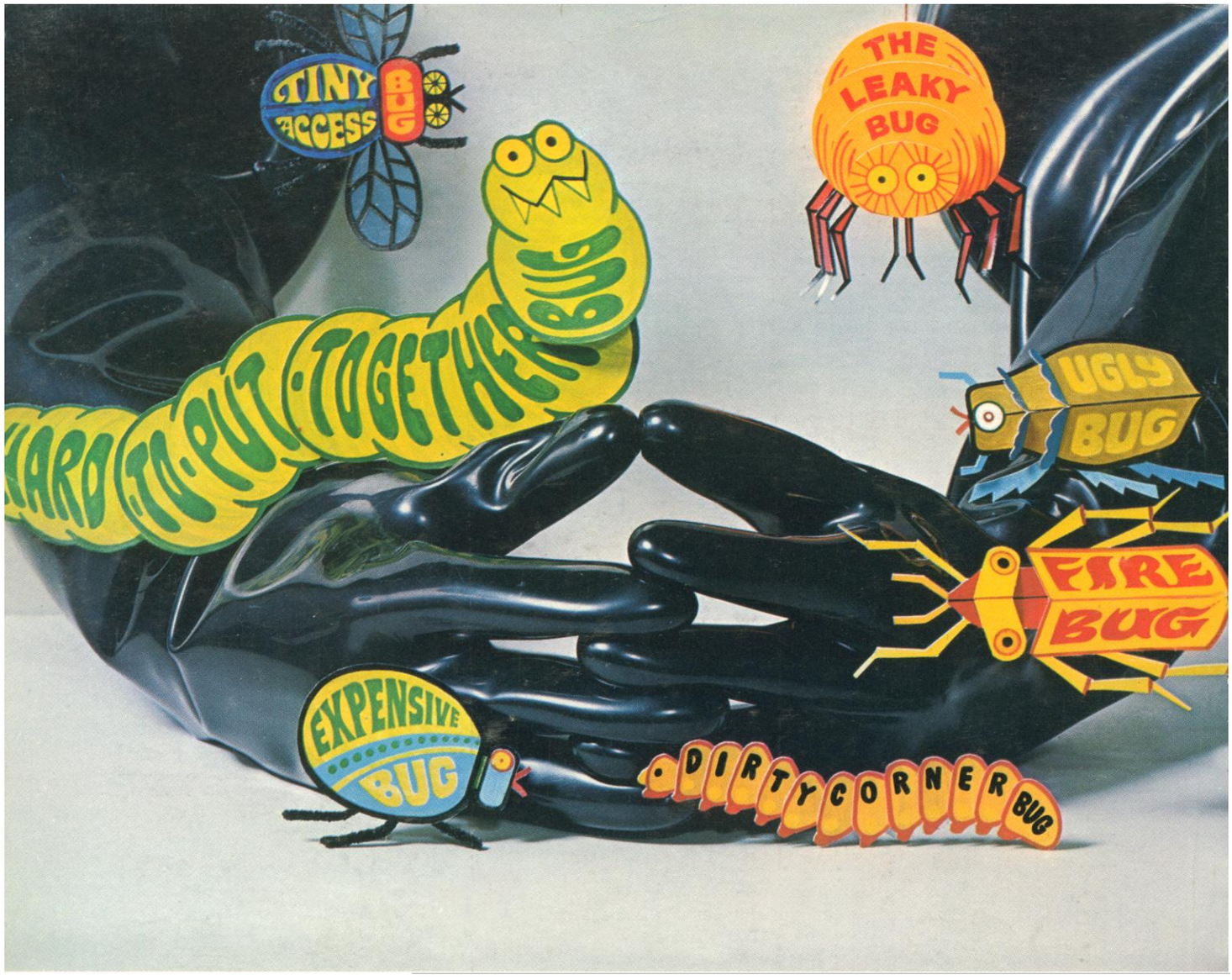
21 February 1969

Vol. 163, No. 3869

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



Proceedings Issue



Some of the things bugging you about your glove box are some of the bugs we've taken out of ours!

Fiberglass is what does it. It makes our one-piece glove boxes rugged, with almost no chance for leaks.

It lets us mass produce them so you get the same high quality in each one at a lot lower cost than old-fashioned types. And they come to you from the factory already assembled, ready to plug in and use.

Since there aren't any corners, joints, cracks or hard-to-reach spots, you can wipe them clean quick and easy with a sponge or cloth. They decontaminate fast. Purge fast.

And our fiberglass is self-extinguishing.

It doesn't corrode. There's no paint to peel off.

We make three types of glove boxes (controlled atmosphere, bacteriological and radioisotope) each with an extra large access door. And, we can supply a whole line of gloves and other glove box accessories.

About the only thing bugging us about our bugless glove boxes is that you may not have one yet. And at the rate they're selling, that shouldn't bug us long. For more information, contact your laboratory supply dealer or write for a fully illustrated catalog containing all details, prices and specifications, to LABCONCO CORPORATION, 8805 Prospect, Kansas City, Mo. 64132.

Radiological | Controlled Atmosphere | Bacteriological

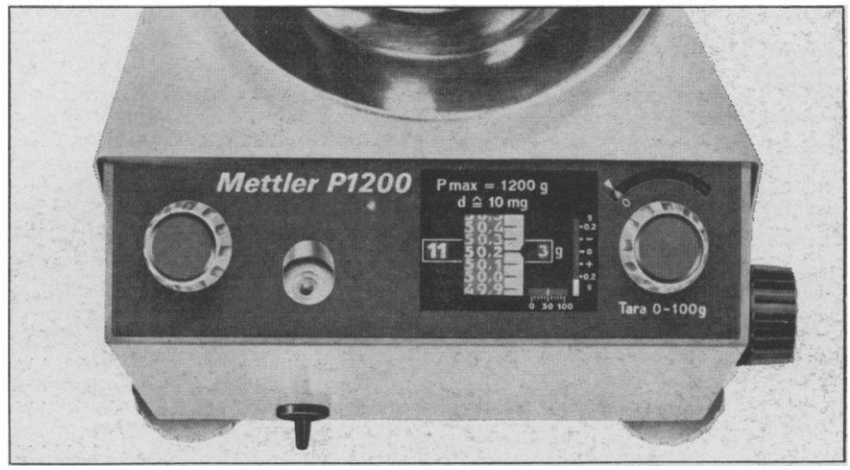
LAB CON CO ***..where new ideas become better products.***

KJELDAHL and GOLDFISCH APPARATUS ■ FIBERGLASS FUME HOODS ■ CORROSION-PROOF LAB CARTS ■ CORROSION-PROOF BLOWERS

Circle No. 15 on Readers' Service Card

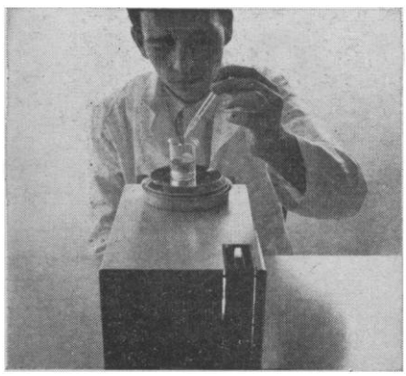
WEIGHT WATCHERS:
These Mettler balances can help reduce your weighing problems

If you have weight problems, chances are they can be solved with one of these three Mettler balances. Two are top-loaders, one an analytical. Collectively, they solve virtually any weighing problem in the laboratory. Individually, they perform their special jobs with unique speed, ease and precision.



Weight Watching Has Never Been Easier

The Mettler P1200, a well established and versatile top-loading balance, now has digital readout. This feature permits even relatively unskilled operators to obtain accurate results without misinterpretation or reading errors.



The P1200 will tackle weighings to 1200 grams (plus 100-gram tare), and give you a precision of ±5 mg. That's better than one part in 250,000. But despite its capabilities for handling the bigger weighing jobs, the P1200 will also complete a weighing in just three seconds. It will also checkweigh to plus or minus values as fast as you can place an object on the scale, and without referring to scale readout. Powdery, granular or liquid substances can be filled rapidly by the use of a filling guide which shows the approximate weight on the pan throughout the entire weighing operation. This eliminates time-consuming interruptions for reading the balance.

Remove Grams — Positively

The P160, another top-loader, weighs unknowns to 160 grams with a precision of ±1 mg. In addition to having all the features of the P1200, it is ideally suited for weight loss studies. It has a reverse scale which gives a positive reading as weight decreases in drying, evaporation and residue determination studies. This feature eliminates time-consuming calculations and the possibility of arithmetical errors. It also simplifies gravimetric titrations (for more information on the advantages of gravimetric titrimetry, write for Bulletin M-1014A).

A Well-Balanced Balance

Slight changes in the balance level of the P1200 and the P160 (as in all Mettler top-loaders) are automatically compensated for by a zero point restoration feature. We call it Mettler Levelmatic. If your balance is out of plumb beyond its compensation range, you won't be able to make a weight reading because the readout is automatically obscured. Because Levelmatic automatically compensates for most shifts in zero position, it is rarely necessary to re-zero the balance before weighing.

Have Your Cake and Eat It

If you need an analytical balance to watch your weight, consider the Mettler H20 . . . it's really two balances in one. It gives you the 160.1-gram capacity of a macro-analytical balance, and the ±0.01 mg precision of a semi-micro instrument. The H20 readout, like the P1200 and P160, is digital. It also has a high-speed filling guide, and an optional accessory will let you weigh objects below the balance; for example, to make specific gravity measurements by weighing objects submerged in liquids. Because of the unrestricted optical taring feature of the H20, you can tare off the weight of your container in seconds, and begin weighing-in with readout at zero. You can't make a weighing mistake. If you're adding several components, you can dial back to zero for each one.

Some Food For Thought

In case you have a weighing requirement that can't be solved by one of these three balances, Mettler has 35 more models ranging from top-loaders that weigh to 13 kilos all the way through analyticals to ultra micro instruments with precision of ±0.1 μg. We'll bet a gram-cracker that one of these will fill the bill. To arrange for a free demonstration or trial, or for further particulars, write to Mettler Instrument Corporation, 20 Nassau Street, Princeton, New Jersey 08540.

Mettler®

Circle No. 21 on Readers' Service Card

21 February 1969
Vol. 163, No. 3869

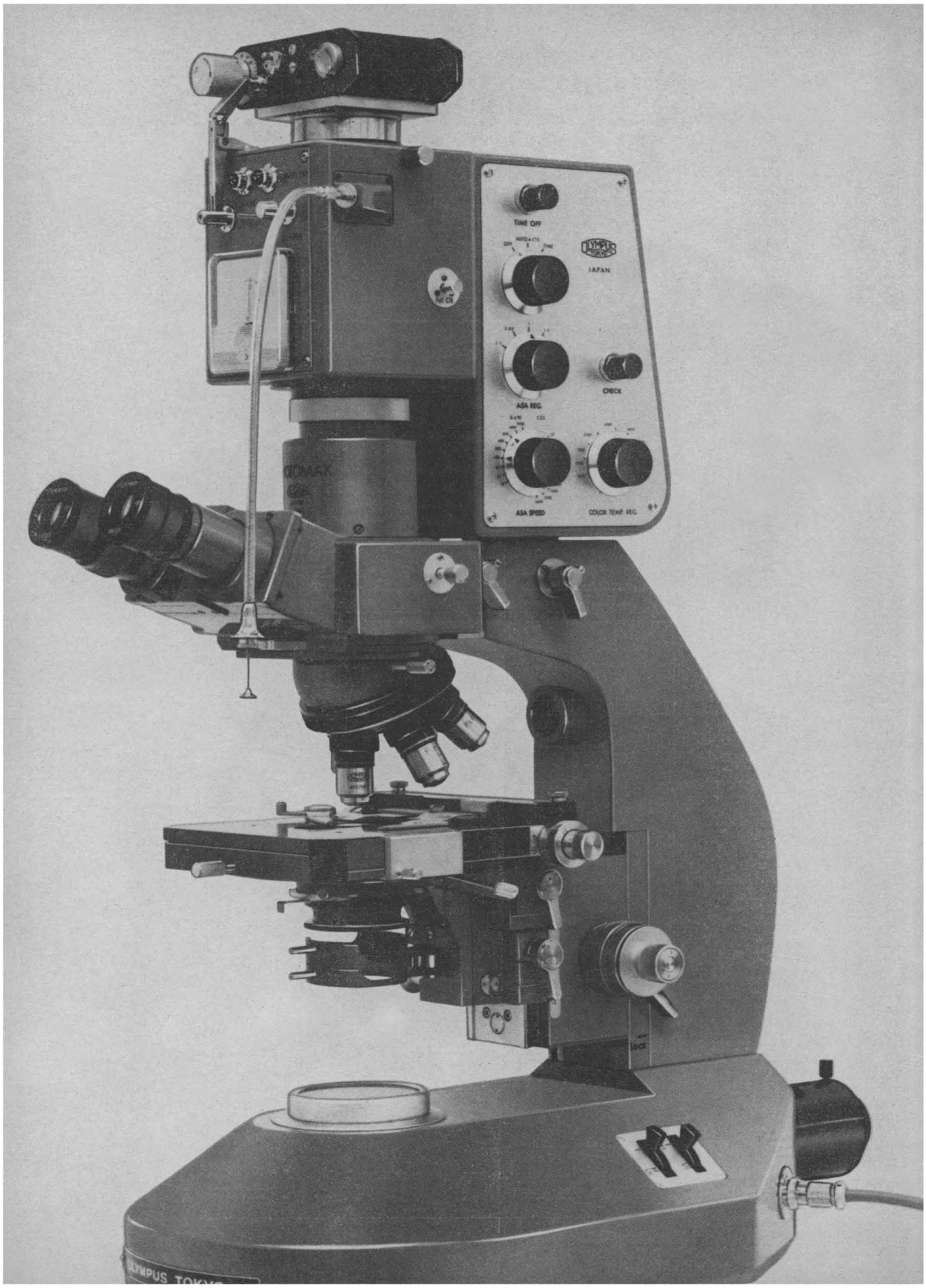
SCIENCE

SCIENCE is published weekly on Friday and on the fourth Tuesday in September by the American Association for the Advancement of Science, 1515 Massachusetts Ave., N Washington, D.C. 20005. Now combined with **The Scientific Monthly**®. Second-class postage paid at Washington, D.C. Advancement of Science. Annual subscriptions $12; foreign postage: Americas $3; overseas $5; single copies, 50¢ (back issues, $1) except **Guide to Scientific Instruments**, whi is $2. School year subscriptions: 9 months, $9; 10 months, $10. Provide 4 weeks notice for change of address, giving new and old address and zip codes. Send a rec address label. SCIENCE is indexed in the **Reader's Guide to Periodical Literature.**

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Scanning electron micrograph of metachronal ciliary waves on *Opalina ranarum*. The three-dimensional form of ciliary beat and the pattern of ciliary coordination are preserved. See page 817. [G. A. Horridge and S. L. Tamm, Gatty Marine Laboratory, University of St. Andrews, St. Andrews, Scotland]


TIME OFF
JAPAN
ASA REG.
CHECK
ASA SPEED
COLOR TEMP. REG.
OLYMPUS TOKYO

If the color on your film doesn't match the color of your specimen, you might as well have shot in black and white.

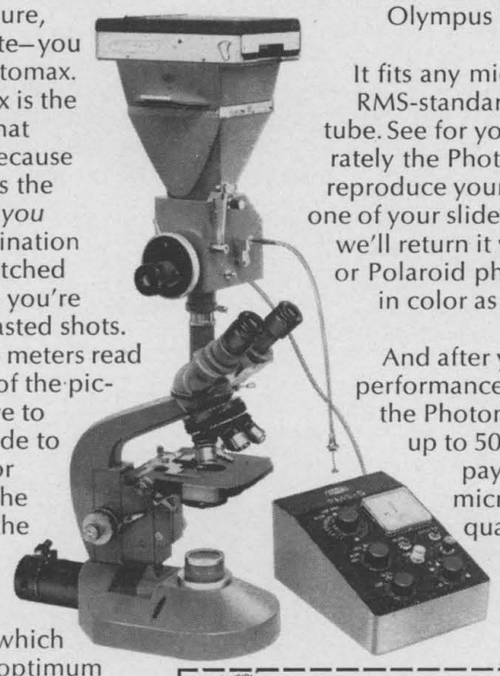
Look at any color photomicrograph. If the white background around the specimen is not pure white, then the colors aren't accurate. If the white is pure, and the colors are accurate—you probably shot it on a Photomax.

The Olympus Photomax is the only photo-microscope that ensures accurate color, because only the Photomax meters the light and tells you, *before you shoot* whether your illumination is too red, too blue, or matched precisely to the color film you're using. No test rolls, no wasted shots.

The color and exposure meters read a spot covering only 5% of the picture area so you don't have to remove your specimen slide to measure illumination color —just frame a portion of the specimen background in the meter crosshair frame.

Photomax sets your exposure automatically, too. And you can choose which specimen details receive optimum exposure: just center one such detail in the meter frame, and press the trigger.

The heavy microscope frame with built-in Köhler base illuminator makes an ultra-stable camera platform. It's a versatile microscope, too: adaptable to dark-field and polarizing observations, its interchangeable nosepieces let you switch from Planachromat to phase contrast objectives sets in seconds.



For many applications, you can also add Photomax automation to your current research microscope, with the Olympus PMS-II automatic color camera.

It fits any microscope with an RMS-standard, upright photo tube. See for yourself how accurately the Photomax system will reproduce your specimens. Mail one of your slides to us today, and we'll return it with a free 35mm or Polaroid photomicrograph—in color as accurate as color film permits.

And after you've compared performance, compare price: the Photomax can save you up to 50% of what you'd pay for other photomicroscopes of equal quality—but without our exclusive color regulation.

Olympus Photomax

OLYMPUS CORPORATION OF AMERICA
PRECISION INSTRUMENT DIVISION/Dept. S.
2 Nevada Drive, New Hyde Park, N. Y. 11040.

Please send information on the ☐ Olympus Photomax recording microscope, ☐ PMS-II camera.

☐ I enclose one of my slides. Please photograph it in ☐ 35mm ☐ Polaroid color, and return it to me free of charge. ☐ Or have my nearest Olympus dealer demonstrate the Photomax in my own lab.

Name_____

Title_____

Organization_____

Address_____

City_____

State_____ Zip_____

Circle No. 47 on Readers' Service Card

Simplifying Zone Electrophoresis

The Millipore PhoroSlide Electrophoresis System makes life easier for people who are bothered by complicated separation methods. It includes unique support strips that simplify handling and storage and a densitometer which displays density patterns on a cathode ray tube. Procedures are available describing the PhoroSlide separation of serum protein, hemoglobin, glycoprotein, haptoglobin, lipoprotein and LDH isoenzymes. Immunoelectrophoresis, too.

Producing Super-Quality Water on Demand

The Super-Q System produces 18 megohm, ultraclean water at the rate of 20 gallons an hour and is small enough to fit comfortably in the laboratory. It uses disposable cartridges for prefiltration, organic adsorption, deionization and Millipore filtration. In several respects, the Super-Q System is more effective and more efficient than a still in providing water for formulating solutions, cleaning apparatus and other critical laboratory uses.

Taking the Uncertainty out of "Cold" Sterilization

"Depth"-type filtration cannot be relied upon to remove all microorganisms larger than a specific size from biological solutions. Millipore filtration removes all microorganisms larger than a specific filter pore size — the critical difference between "almost" and "absolute" filtration. Typical applications: sterilizing pooled control sera and bacteria culture media.

Speeding up Bacteremia Analysis, Fibrinogen Assay and the Detection of Tuberculosis

Millipore techniques make it possible to analyze blood for bacteria in half the usual time; to determine the fibrinogen level in blood in one-eighth the usual time; and to detect *Mycobacterium tuberculosis* in six days instead of twenty-one.

Making Ultrafiltration more Practical

Millipore Pellicon permeable membranes make it possible to achieve high flux rates at low differential pressures. They can be stored dry and will withstand temperatures from autoclaving to freezing. Membranes are available in molecular weight cutoffs of 1,000 and up. Cells are available in sizes of 13, 25, 47, 90 and 142 mm. Typical applications: concentrating spinal fluids and urine samples for electrophoretic and other chemical determinations.

Find out how Millipore systems can solve problems for you. Start now by sending for the Millipore Clinical Application Guide. Millipore Corporation, Bedford, Massachusetts 01730.

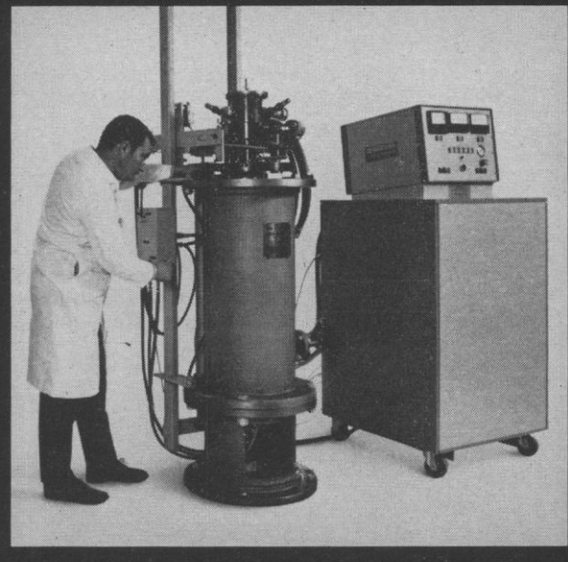
MILLIPORE

systems for analyzing and processing fluids

How Millipore Systems are Solving Problems in Clinical Laboratories

Circle No. 19 on Readers' Service Card

Our extraordinary gravity-increasing machine.



(The only centrifuge that can process over 40 liters/hr. at 90,000 times gravity.)

This is the highest capacity ultracentrifuge ever developed. Its ability to handle up to 400 liters per day at speeds as high as 35,000 RPM provides a new separation capability for research and production. This 35,000 RPM speed—with an aluminum rotor—provides gravitational forces up to 83,500 g, and the titanium rotors now being developed will push the maximum operating gravity field over 90,000 g.

This Model K liquid zonal ultracentrifuge can be used to achieve separations with any of these techniques: continuous flow with banding, continuous flow with pelleting, rate zonal separation, or gradient resolubilization. The continuous-flow-with-banding technique is now being used by several major pharmaceutical companies for the production purification of influenza virus vaccine. This instrument is providing vaccine up to ten times purer thany any previously available commercially. The benefits: fewer local and systemic reactions, full potency with half the dosage volume, marked reduction of non-viral antigens.

This high capacity zonal ultracentrifuge was developed by the AEC and the NIH as part of their joint Molecular Anatomy Program. Electro-Nucleonics, Inc. is the only company making this device available commercially.

Invitation: the availability of a production-scale machine delivering such high gravitational forces should lead to the development of new applications in a wide variety of fields. So whatever your area of interest, if you think the Model K might have applicability to your particular separation problems, talk to us. We'll be most happy to cooperate in exploring its possible usefulness to you. Or for more information, call Walter Carow, collect, at (201) 228-0515, or write to him at Electro-Nucleonics, Inc., Box 803, Fairfield, N.J. 07006. Request File KS.

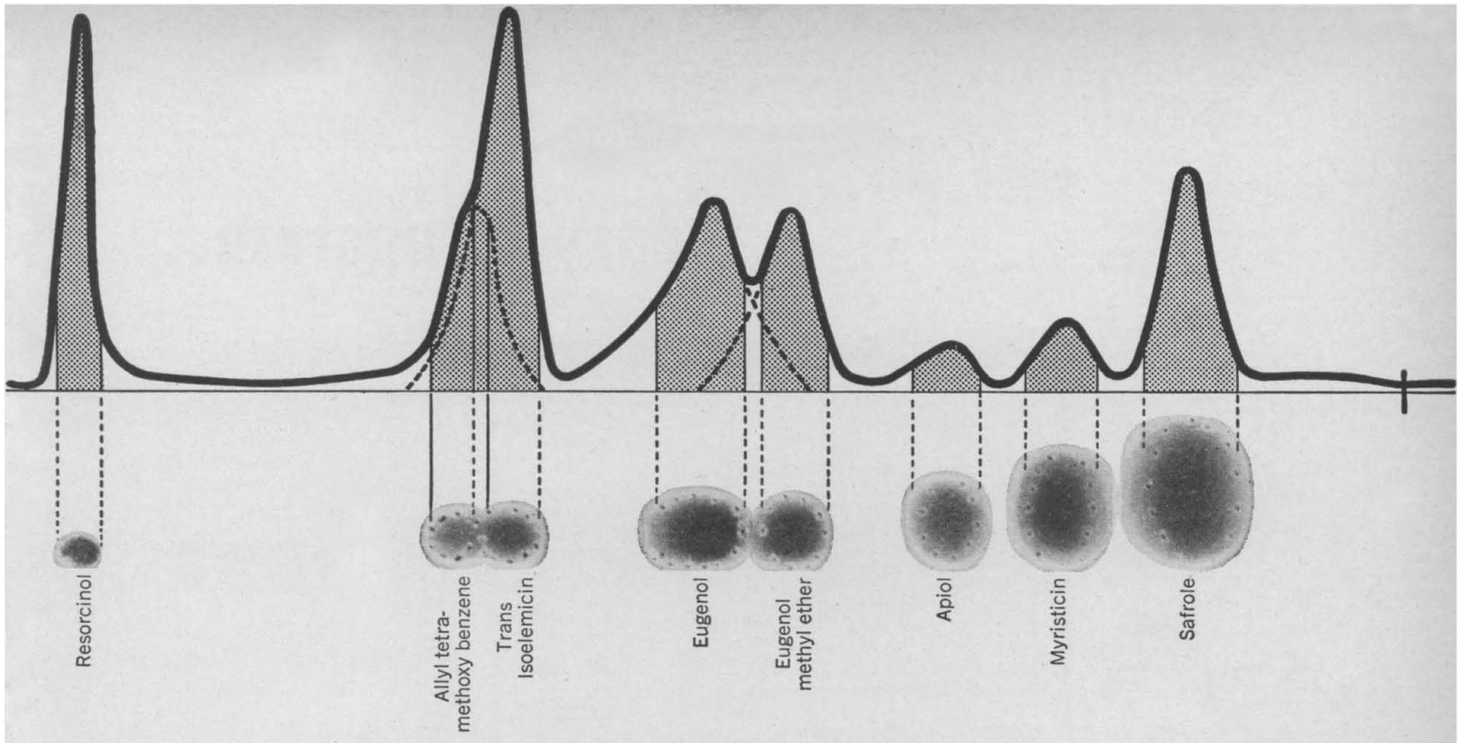
Visit our FASEB Booth H 130

ELECTRO-NUCLEONICS

"reading maketh a wise man"

When Catalog N was conceived, NEN had high hopes that it would become an integral part of laboratory life. From the vast number of requests for replacement copies, we suspect our fondest dreams have been realized. If you've lost track of your copy, we'd be delighted to send another.

New England Nuclear
575 Albany Street, Boston, Mass. 02118
Telephone (617) 426-7311



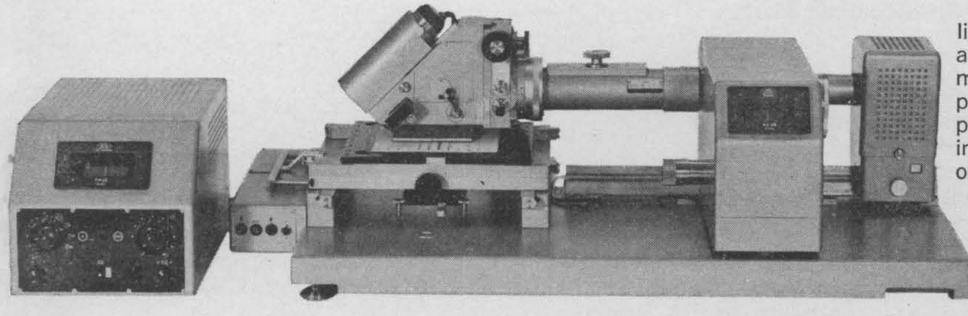
Recording of reflectance of phenol-derivatives (1 μg. each) separated on a silica gel plate treated with molybdic phosphoric acid.

Now— thin-layer chromatograms can tell you more than meets the eye

There's a lot more information contained in a thin-layer chromatogram than you can learn by just looking at it. And there's an easy, accurate and reliable way of extracting that information—non-destructively.

The ZEISS Chromatogram Spectrophotometer not only provides rapid identification of chromatographic zones by direct examination, scanning at any wavelength between 200-2500nm, it also enables you to make quantitative evaluations. We repeat, quantitative evaluations, with no loss of substance. The method is the measurement of light absorption by diffuse reflectance, transmission, or fluorescence at the proper wavelengths.

But even if quantitative evaluations aren't vital to you, the Chromatogram Spectrophotometer will still save you time and increase the accuracy of your routine chromatographic analyses. For instance, in many cases you can eliminate staining altogether. It will identify also many spots where the amount of substance present is too small to be characterized by conventional methods.



And its versatility is such that it is not limited to TLC plates alone. It can, as examples, make transmission measurements of films and plastics, photographic plates, electrophoresis and chromatography strips; reflectance measurements of individual spots or reflectance variations on paper, plastics, tiles and paper chromatographs; fluorescence measurements of individual spots or variations on all of the above.

There are a great many technical details and modes of operation of this unique instrument. For the complete story, write: Carl Zeiss, Inc., 444 Fifth Avenue, New York, N.Y. 10018.

Service nationwide.

ZEISS

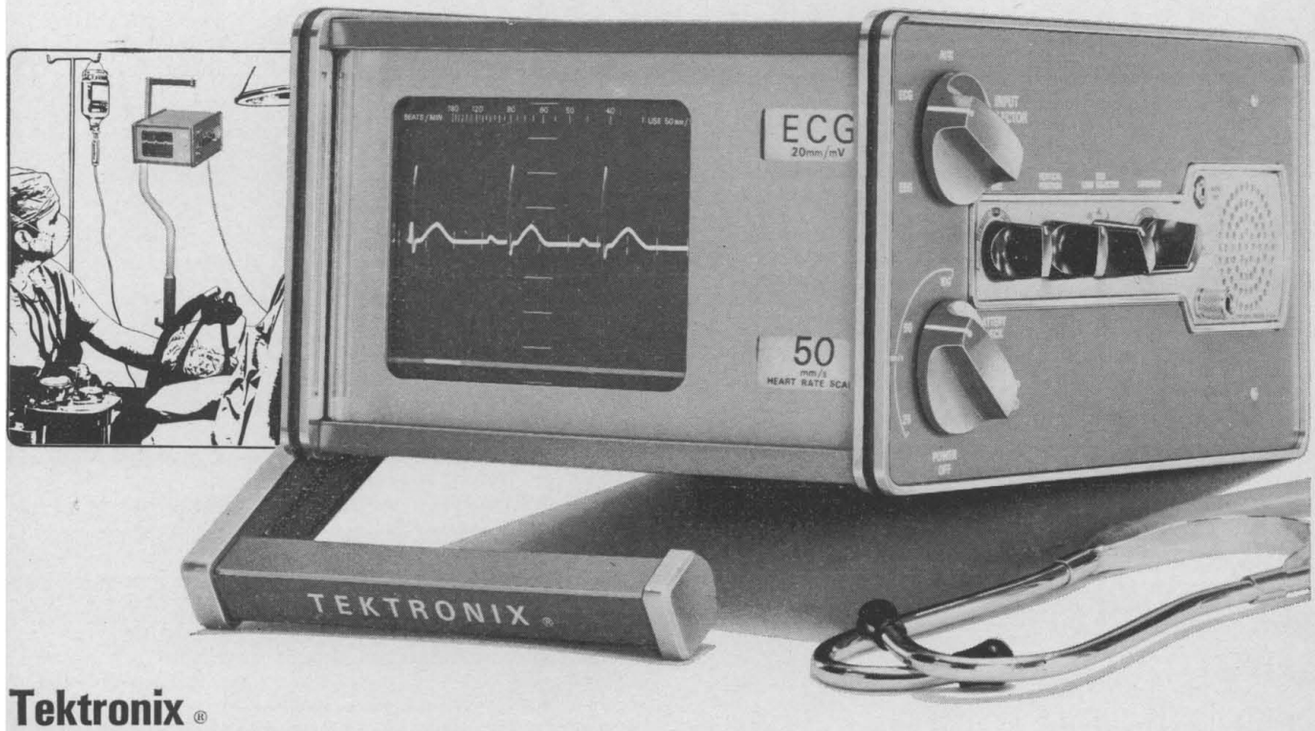
THE GREAT NAME IN OPTICS

CARL ZEISS WEST GERMANY

Circle No. 23 on Readers' Service Card

ATLANTA, BOSTON, CHICAGO, COLUMBUS, DENVER, HOUSTON, LOS ANGELES, PHILADELPHIA, ST. LOUIS, SAN FRANCISCO, SEATTLE, WASHINGTON, D.C.

small...
self powered...
easy to operate...



Tektronix®
Type 410 physiological monitor

- **Battery or AC powered**
- **Clear displays of ECG, EEG or related waveforms on 5-inch screen**
- **Audible heartbeat monitor with automatic alarm**
- **Direct-reading heart rate scale**

The Type 410 Physiological Monitor is a small, self-powered, portable instrument designed specifically to monitor physiological signals in the operating room. Clear displays of ECG, EEG and other related waveforms can be viewed easily on its 5-inch (8 x 10 cm) screen.

Triggered sweep in the ECG mode always positions a QRS complex at the start of each sweep. This feature permits direct reading of the patient's heart rate on a scale scribed at the top of the viewing area. Heart rate can be determined at a glance by reading the number above the peak of the second QRS complex. (Photo shows 78 beats/min.) The Type 410 provides an audible tone at each heartbeat, with an automatic alarm if the ECG signal ceases.

Six clearly-marked controls are provided for easy operation. The INPUT SELECTOR determines the display mode (EEG, ECG or AUX input). The SWEEP SPEED control turns the instrument on, permits selection of 25, 50 or 100 mm/s sweeps, and also serves as a BATTERY CHECK switch. The ECG Lead Selector provides selection of I, II, III, aV_R, aV_L, aV_F, and V leads. The remaining 3 controls adjust vertical position, vertical size and sound level.

The solid-state Type 410 is 5 3/8 inches high, 9 1/8 inches wide and 12 7/8 inches long, including carrying handle. It weighs 12 1/2 pounds, including batteries. It can be operated continuously from self-contained batteries for up to 12 hours. AC operation and battery recharging is accomplished by simply plugging the instrument into an AC outlet. A six-pin output connector permits driving of external amplifiers or recorders.

Type 410 Physiological Monitor with Accessories $850

U.S. Sales Price FOB Beaverton, Oregon

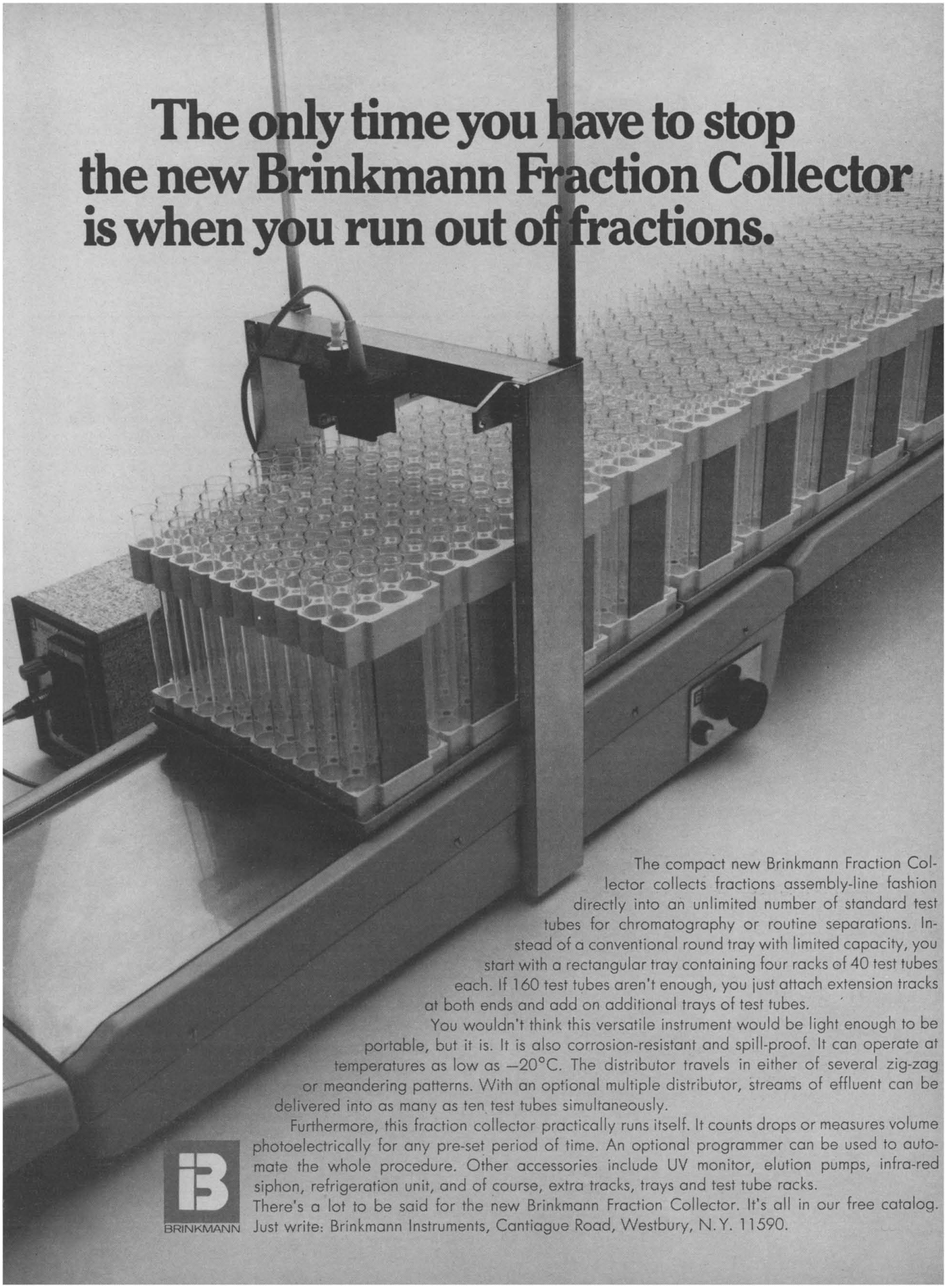
For a demonstration or a complete brochure, contact your nearby Tektronix Field Engineer or write: Tektronix, Inc., P. O. Box 500, Beaverton, Oregon 97005.

Tektronix, Inc.

committed to progress in waveform measurement

Circle No. 3 on Readers' Service Card

Circle No. 50 on Readers' Service Card →



The only time you have to stop the new Brinkmann Fraction Collector is when you run out of fractions.

The compact new Brinkmann Fraction Collector collects fractions assembly-line fashion directly into an unlimited number of standard test tubes for chromatography or routine separations. Instead of a conventional round tray with limited capacity, you start with a rectangular tray containing four racks of 40 test tubes each. If 160 test tubes aren't enough, you just attach extension tracks at both ends and add on additional trays of test tubes.

You wouldn't think this versatile instrument would be light enough to be portable, but it is. It is also corrosion-resistant and spill-proof. It can operate at temperatures as low as −20°C. The distributor travels in either of several zig-zag or meandering patterns. With an optional multiple distributor, streams of effluent can be delivered into as many as ten test tubes simultaneously.

Furthermore, this fraction collector practically runs itself. It counts drops or measures volume photoelectrically for any pre-set period of time. An optional programmer can be used to automate the whole procedure. Other accessories include UV monitor, elution pumps, infra-red siphon, refrigeration unit, and of course, extra tracks, trays and test tube racks.

There's a lot to be said for the new Brinkmann Fraction Collector. It's all in our free catalog. Just write: Brinkmann Instruments, Cantiague Road, Westbury, N.Y. 11590.

BRINKMANN

Here's our new Model 402 ultraviolet-visible spectrophotometer. It's your best buy anywhere!

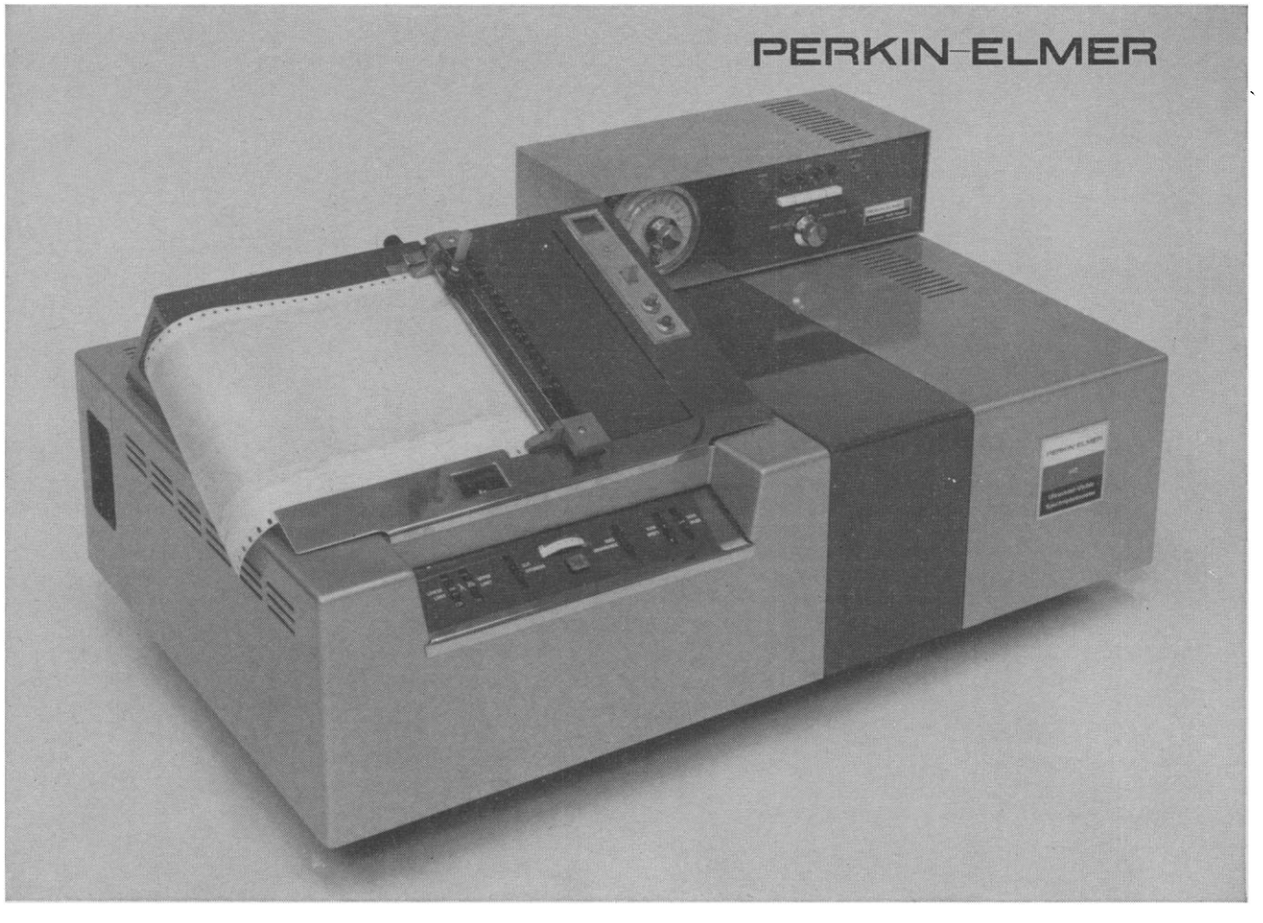
Our new Model 402 is designed for a high level of automation where many samples must be accurately measured during the day with minimum operator attention. You'll find it equally versatile for scanning spectra quickly when monitoring a reaction, a titration, a liquid chromatography separation (often using a flow cell), or for tracing a kinetic reaction on one wavelength with time.

The 402 has a unique Flowchart recording system (Pat. Nos. 3363259, 3396403) using preprinted roll charts for precise, simplified data handling. Any 0.3 absorbance units can be expanded 5X to cover the full ordinate scale with a precision of 0.002 absorbance units.

You can do single, repetitive, or superimposed scans of one to four samples sequentially or at chosen time intervals over the range of 190-850 mμ. You can select any 40 millimicron wavelength interval (or multiples of 40 mμ). You can stop or start scans in any of these wavelength regions at three selected scanning rates.

For time rate analysis (enzyme assays) you can automatically follow a kinetic reaction in each of four sample cells at controlled temperatures and print out a chart of reaction rates for each sample.

You get all this automation, speed, and convenience at moderate cost. It will pay you to come to Perkin-Elmer for your spectrophotometer needs. We offer the broadest line of ultraviolet and fluorescence instruments in the world. For example, our economical Model 202 gives you a range of 190 to 390 and 350 to 750 mμ recorded on notebook size (8½ x11) chart paper, the same high photometric accuracy as the Model 402, 1 to 10X ordinate scale expansion with an external recorder and a wide range of accessories including multiple sampling units. For further information on the new Model 402 or the Model 202 write Instrument Division, Perkin-Elmer Corporation, 723 Main Avenue, Norwalk, Connecticut 06852.



Circle No. 64 on Readers' Service Card

Circle No. 70 on Readers' Service Card →

New cryogenic refrigerator...square cornered, flat topped to fit in with any lab counter

This is our new LR-310 refrigerator—medium-size cryogenic storage for any temperature, from a relatively warm —100°C (actually within the range of some mechanical refrigerators) all the way down to —196°C. There is room for 8 cu. ft. of vapor-phase storage deep down inside it, with better than 8 days' normal holding time. The Super Insulated storage cylinder provides truly economical service. A wide variety of racking systems and accessories customize the unit to many different laboratory requirements.

For further information, contact Union Carbide Corporation, Linde Division, Cryogenic Products Department, 270 Park Avenue, New York, N.Y. 10017

UNION CARBIDE CRYOGENIC PRODUCTS

We could call ourself

Acme • Advanced Instrument • Ainsworth • Alconox • American Optical • Ames • H. Reeve Angel • BBL • Barnstead • Bausch & Lomb • Becton, Dickinson • Bioquest • Blue M • Bronwill • Browne-Morse • Buchler • Buehler • Cahn • Cambridge • Clay-Adams • Coleman • Coors • Corning • Coulter • Dade • Difco • Dillon-Lilly • Eaton-Dikeman • Edmont-Wilson • ERTCo • Falcon • Federal Pacific • Fermentation Design • Forma • Foster • Gelman • Glas-Col • Hamilton • Harleco • Hausser • Hycel • Instrumentation Laboratory • IEC • Jewett • Kimble • Labconco • Lab-Line • Lab-Tek • Lakeside • LaMotte • Leco • Lindberg • Lourdes • Magnuson • Mallinckrodt • Market Forge • Markham • Maryland Plastics • Matheson Coleman & Bell • Mettler • Nalge • Napco • Ohaus • Orion • Oxford • Pharmaseal • Photovolt • Polyscience • Precision • Revco • Rinco • Roehr • Sage • S & S • Scientific Industries • Sherwood • Sylvana • TekPro • Thermolyne • Torsion Balance • Turner • Tyler • Ultra Violet • VirTis • Voland • Wampole • Warner-Chilcott • Welch • Westinghouse • Wheaton • Wilmot Castle • Yellow Springs, Inc.

You can call us S/P for short

Our Founders called us Scientific Products. Our friends call us S/P. Our competitors call us lots of names, with good reason. We represent over 100 leading laboratory equipment manufacturers and stock over 100,000 items in 16 regional sales and distribution centers with 5,415,000 cubic feet of space and our 230-man field representative organization is the largest in the industry and we service every item we sell and that's a mouthful nobody else can say. If you're not yet a friend, you'll find us listed under the name Scientific Products in the Yellow Pages in most major cities. Once we get to know one another, it won't take long before you're calling us S/P for short. S/P... the single source for laboratory equipment, supplies, scientific instruments. Scientific Products, a division of American Hospital Supply Corporation, 1210 Leon Place, Evanston, Illinois 60201.

Circle No. 33 on Readers' Service Card

Picker counts betas. Picker counts gammas.

(And one Picker device even counts both.)

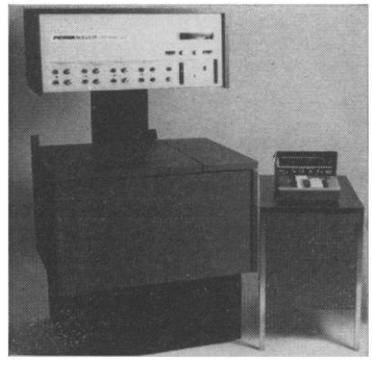
The Liquimat 220: modest price, high performance.
Liquimat® 220: 100 sample automatic liquid scintillation counter with high analytical capability but modest price.
Liquimat 220: ambient temperature operation with better sample solubility and simpler, less expensive cocktail preparation.
Liquimat 220: four independent analysis channels, two for beta counting, two for external standardization.
Liquimat 220: most flexible and useful automatic standardization system.
Liquimat 220: logarithmic energy response to simplify instrument set-up.
Liquimat 220: offers the option of the Picker Nuclear DAC stored-program digital computer for automatic data reduction.
Liquimat 220: choice of three differently priced versions, each graded to yield an optimum performance-to-price ratio. Prices start at $8100 including lister readout.

Circle No. 41 on Readers' Service Card

Liquimat 220

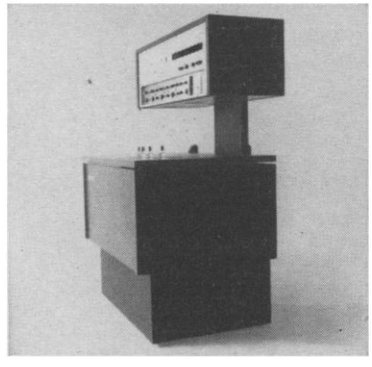
Computerized Liquimat® 330
The most sophisticated liquid scintillation counting system. Combines the Liquimat 330 (a 200 sample, 5 channel, temperature-controlled instrument) with the DAC computer (a full-fledged programmable, general-purpose computer with substantial capability). Converts raw, uncorrected data into meaningful information. The computer can also be easily coupled to other instruments to provide a "computer data reduction center."

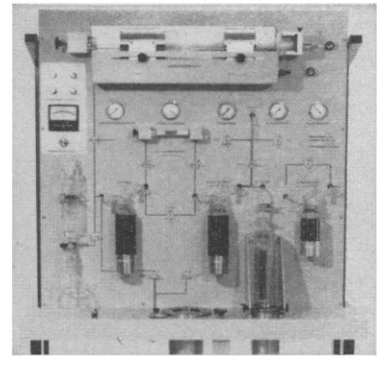
Circle No. 42 on Readers' Service Card



β-γ Liquimat
The only liquid scintillation counter with an integrated gamma counter: three beta channels and one gamma channel, or two beta channels and two gamma. Logarithmic energy response, external beta standardization, temperature control, 200 sample capacity. Gamma detection chamber has 3" x 3" diameter NaI crystal.

Circle No. 43 on Readers' Service Card



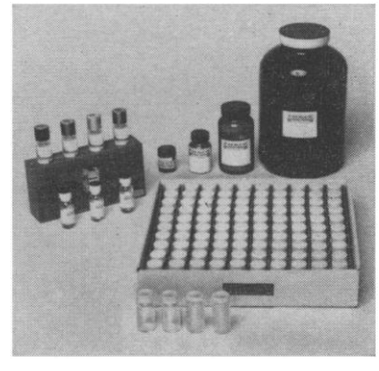


^{14}C Dating Laboratory
The combination of Picker's Benzene Synthesizer and a high-performance version of the Liquimat 220 provides a complete ^{14}C dating (and ^{3}H counting) laboratory for less than $17,000. Converts all low activity ^{14}C materials to benzene for high-efficiency liquid scintillation counting. Non-explosive catalyst produces no fractionation. High yield: typically >90%. Incorporates standard glassware; all connections easily accessible.

Circle No. 45 on Readers' Service Card

Autowell® II
High-efficiency system for automatic counting of one or up to 100 liquid or solid gamma-emitting samples in test tubes. All samples are rotated about a centrally-located shielded detector assembly to ensure a constant low background. Choice of 3" x 3"D or 2¼" x 2¼"D crystals. Single or dual channel pulse height analysis, choice of lister, calculator, or teletypewriter printer.

Circle No. 44 on Readers' Service Card



Liquid Scintillation Supplies
Picker Nuclear has the most-needed supplies for liquid scintillation counting. Immediate delivery available on glass or plastic vials, scintillators of the highest purity, precise standards, and other items. These competitively-priced products are compatible not only with Picker Nuclear counters but with those of other manufacturers.

Circle No. 46 on Readers' Service Card

We'll be happy to forward detailed information on these products.
Write to Picker Nuclear, 1275 Mamaroneck Avenue, White Plains, N.Y. 10605 and request file 234S.

PICKER

Visit our booths at the FASEB meeting.

The gas chromatograph for hard-to-chromatograph materials

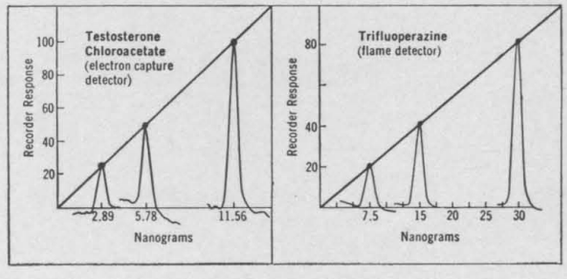
It has system detectability and linearity

There's a long list of materials that have always been hard-to-chromatograph: steroids, pesticides, vitamins, organo-metallics, polyfunctional industrial organic chemicals, to name the most common. The chromatographer who attempts to analyze these materials with an ordinary gc usually runs into two serious problems: inadequate *system* detectability and linearity. In plain English, he is unable to detect very small quantities (around the nanogram level) of these easily degradable materials; and, at higher concentrations, his gc does *not* respond proportionately to different amounts.

In the two plots reproduced here, we offer objective evidence that the HP Model 402 High-Efficiency GC possesses excellent system detectability and linearity. In the first place, the 402 easily detected trifluoperazine and testosterone chloroacetate, both hard-to-chromatograph materials, in the low nanogram range. Moreover, the 402's response is almost perfectly linear.

Neither of these *system* characteristics is likely to show up in the long list of specs that usually describe high-efficiency gc's. But you'd be well advised to make sure that your gc possesses them if you intend to handle hard-to-chromatograph samples. One sure way is to call the nearest HP sales office, or write for Bulletin 4020. Prices start at $4000.

Hewlett-Packard, Route 41, Avondale, Pennsylvania 19311. In Europe: 1217 Meyrin-Geneva, Switzerland.



HEWLETT hp PACKARD

ANALYTICAL INSTRUMENTS

43906

jeol's 5AH amino acid analyzer

highest sensitivity...greatest versatility...lowest price

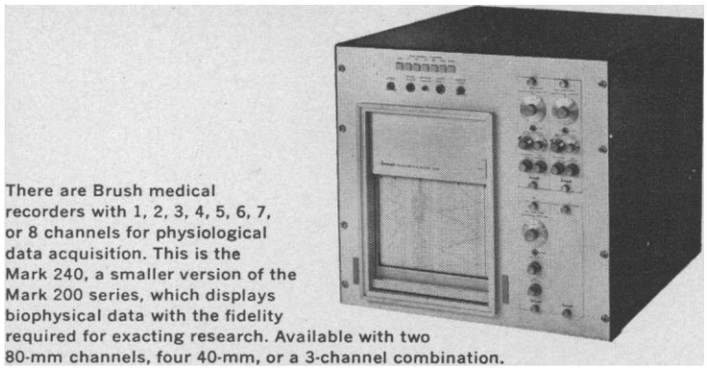
compare the specifications:

Specification	JEOL 5AH	Model "B"
Guaranteed Sensitivity	$1x10^{-9}$mol	$1x10^{-8}$mol
Scale Expander	X3, X10, built-in	X5 optional extra*
Detection System	dual beam with preamplifiers	single beam with no preamplifiers
Automatic Multi-sampler	built-in	optional extra*
Fractionation System	built-in	optional extra*
Automatic Buffer Exchanger	8-step, built-in	4-step, optional extra*
Programmer (punched tape)	built-in multi-program	optional extra* single-program
U. V. Detector	extra	not available
Price	$17,300.00 (delivered)	$25,000.00 (FOB factory)

* Included in total price.

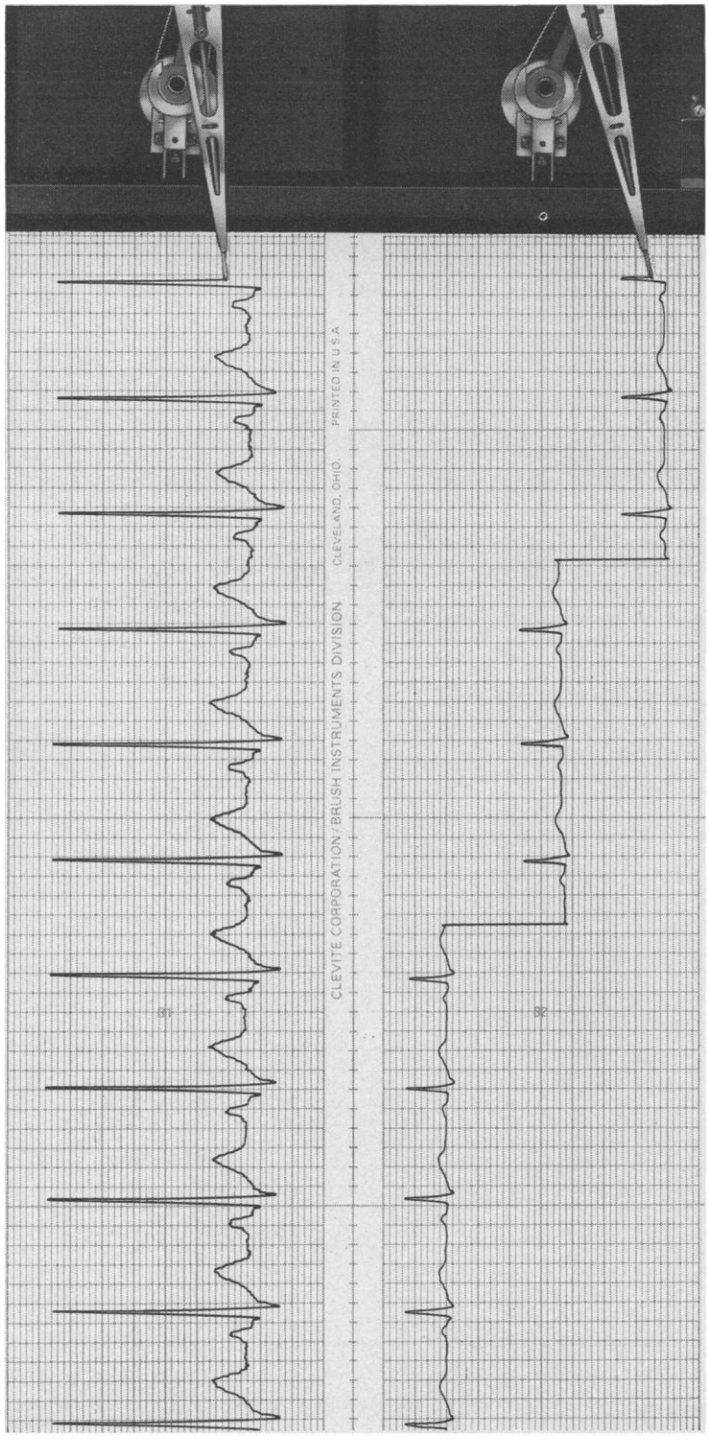
jeol

JAPAN ELECTRON OPTICS LABORATORY CO., LTD. • NEW TOKYO BUILDING., TOKYO, 100
JEOLCO (U.S.A.) INC., 477 RIVERSIDE AVENUE, MEDFORD, MASS. 02155, U.S.A. • JEOLCO (EUROPE) SA., 16 AVENUE DE COLMAR 92 RUEIL-MALMAISON (PARIS) FRANCE • JEOLCO (AUSTRALASIA) PTY. LTD., 1 HELP STREET, CHATSWOOD, N.S.W., AUSTRALIA



There are Brush medical recorders with 1, 2, 3, 4, 5, 6, 7, or 8 channels for physiological data acquisition. This is the Mark 240, a smaller version of the Mark 200 series, which displays biophysical data with the fidelity required for exacting research. Available with two 80-mm channels, four 40-mm, or a 3-channel combination.

Buy Brush medical recorders



and leave the calibration to us

No more calibrating and recalibrating after every test you run.

Brush medical recorders are permanently calibrated when they're built.

And they're designed to be self-calibrating when you use them... so you don't have to start over again after a change of attenuation, gain or pen position. They stay in calibration, test after test, year after year, no matter what adjustments you make.

In addition, Brush medical recorders feature the patented pressure-fluid writing system which produces crisp, razor-sharp, instantly dry traces. No splatter, no puddling, no smearing, regardless of writing speed.

You can believe the high degree of resolution and system accuracy only when you see some sample physiological wave forms actually recorded on a Brush instrument. Write for your set of samples. Clevite Corporation, Brush Instruments Division, 37th and Perkins, Cleveland, Ohio 44114.

CLEVITE BRUSH

Actual chart from a Brush medical recorder reproduced at left shows the trace clarity, sharpness and high resolution that contribute to the superb accuracy of Brush instruments. Note precise duplication of wave form at different baseline positions across the chart (*without* recalibration).

Amersham/Searle cordially invites you to send in for its competitors' radiochemical catalogs.

Our own new 1969 Radiochemical Catalog is now available. And we're proud of it. So proud, in fact, that we're eager to have you compare it with any radiochemical catalog published by anyone else. Anywhere.

To encourage your comparison, we will forward your catalog requests to any or all of the other fine companies in the radiochemical field.

Unusual offer? Perhaps. But when you think about it, how better to make our point? Not just that our catalog is better than theirs, but that it helps demonstrate our ability to better serve all your radiochemical needs.

You'll find we offer (1) the highest specific activities in carbon-14 compounds available in the world, (2) many new products and package sizes, (3) competitive prices, and (4) a new and generous discount policy on multiple package purchases.

Mail the coupon today.

Amersham/Searle

AMERSHAM/SEARLE CORPORATION:
AN ACTIVITY OF G. D. SEARLE & CO. AND THE RADIOCHEMICAL CENTRE

*We will forward requests for our competitors' catalogs to an independent firm of certified public accountants who will audit all returns and transmit photocopies of individual requests to each of the companies checked.

8-218

AMERSHAM/SEARLE CORPORATION 2000 NUCLEAR DRIVE DES PLAINES, ILLINOIS 60018

☐ Please send me my complimentary copy of your 1969 Radiochemical Catalog.

In addition, please ask the following companies to send me their radiochemical catalogs*.

- ☐ Calbiochem
- ☐ ICN
- ☐ Mallinckrodt Nuclear
- ☐ New England Nuclear
- ☐ Schwarz BioResearch
- ☐ Tracerlab
- ☐ Other (specify) _____

NAME _____ TITLE _____

ORGANIZATION _____

STREET _____

CITY, STATE, AND ZIP _____

Filter plus clear, durable polycarbonate frame. As simple as that. The Econo-Filter System comes with a choice of two filters. A disposable filter insert which can be used for an experiment and thrown away. Or a reusable autoclavable nonwoven filter cover that's good for extended use in a number of experiments.

Because the Econo-Filter System is so remarkably simple in design, so completely practical, it's low in cost as well as effective. As effective as any general filtration system can be. It protects laboratory animals from airborne contaminants such as viruses, insects and dust and helps prevent infantile diarrhea. It also provides protection against sudden temperature changes and drafts.

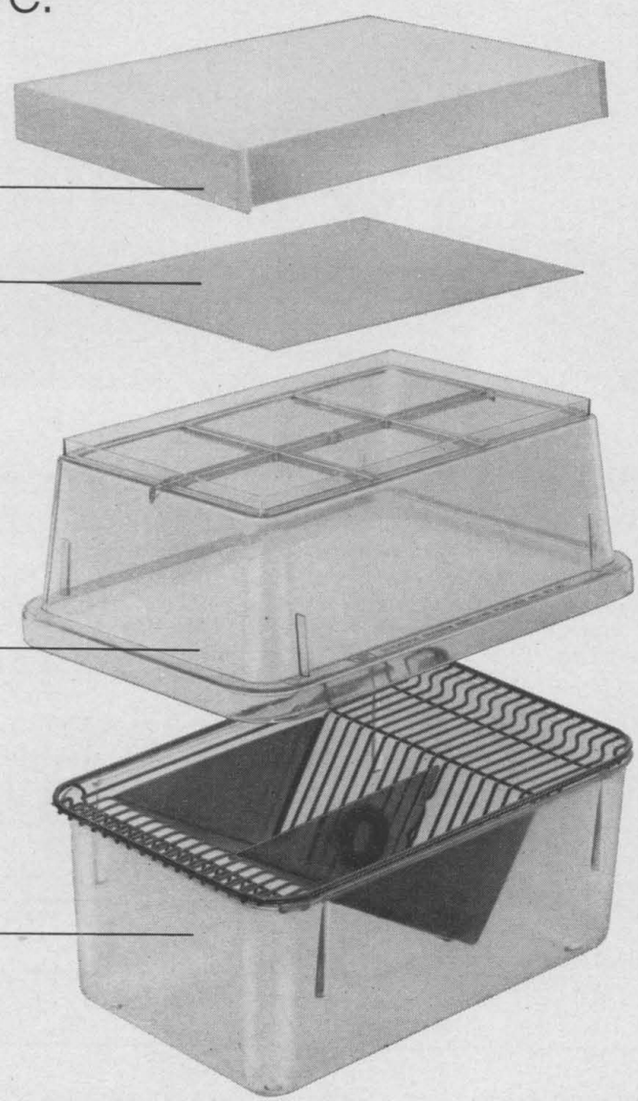
The Econo-Filter System fits all standard plastic mouse cages without special adaptors. With ample room for a full-size water bottle. And full visibility on all four sides.

Your Econo-Cage distributor has the details and prices. He can also tell you about the full Econo-Cage line—permanent and disposable cages, lids, restraining cages and metabolic units. In the widest choice of sizes and materials. From the leading manufacturer of plastic cages. Request our catalog. From your Econo-Cage distributor or from us.

SCIENTIFIC DIVISION
MP MARYLAND PLASTICS, INC.
9 East 37th Street, New York, New York 10016

No filter system is more effective than this one.

Or less expensive.



The Filter.
The reusable E-132 Econo-Filter —durable, autoclavable. For extended use in a number of experiments.

Or the disposable E-02 Econo-Filter. Use it for an experiment and throw it away.

The Frame. (Patent pending)
E-20 Econo-Filter Frame—polycarbonate. Clear, durable, autoclavable, virtually indestructible. Excellent optical clarity. Visibility of animals on all four sides. Fits any standard plastic mouse cage.

The Cage.
Maryland Plastic's E-20 Series of permanent or disposable Econo-Cages.

ECONO-CAGE DISTRIBUTORS:

☐ ALOE SCIENTIFIC ☐ W. H. CURTIN & CO. ☐ FISHER SCIENTIFIC ☐ JOSEPH FRANKLE CO.
☐ E. H. SARGENT & CO. ☐ SCIENTIFIC PRODUCTS ☐ ARTHUR H. THOMAS CO. ☐ WILL SCIENTIFIC, INC.

EC-FS-3

New Gamma / Guard GGA-150

The automatic gamma well scintillation counting system you'd have designed for yourself

- 1, 2 or 3 simultaneous scaler spectrometer channels for multi-peak studies
- accepts an additional sample changer for simultaneous multi-purpose counting without addition of electronics, for example: another GAMMA/GUARD or a LIQUID SCINTILLATION or a PLANCHET sample changer
- background subtract (1-999 cpm), low activity sample reject (10-1000 cpm or cps)
- choice of data presentation: lister, calculator, typewriter/tape punch readout plus numeric visual display
- accepts 25 and 16mm x 150mm test tubes and vials interchangeably in 2" or 3" detectors
- lowest background of any system available . . . 321 cpm for integral counting from 100 keV to ∞ with 3" detector
- lowest background variation of any system available . . . 0.10 cpm per μc of Cs-137 for 100 KeV to ∞ for 3" detector
- statistical accuracy can be verified with multiple sample repeat . . . counting samples 1-7 times
- 150 radioactive sample capacity

Write Tracerlab for Nuclear Instruments or call your nearest Tracerlab office today.

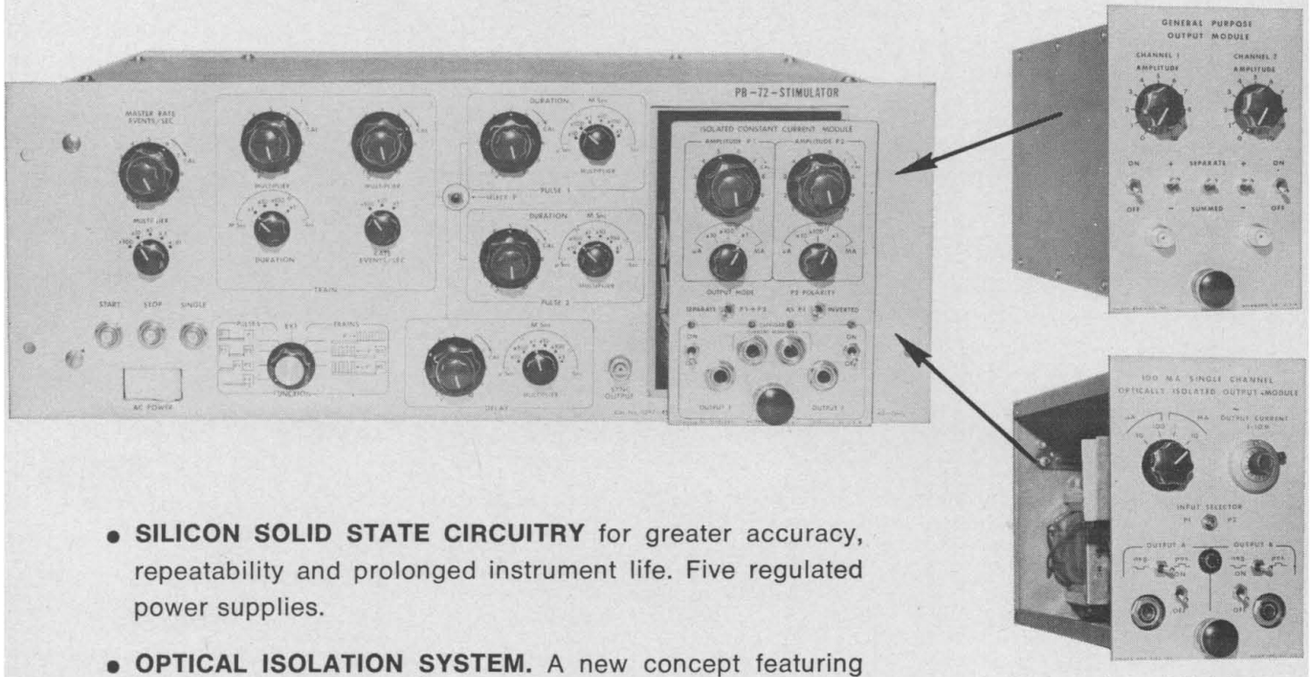
LFE | TRACERLAB

A Division of Laboratory For Electronics, Inc.

Tel: (617) 894-6613 Waltham, Mass. 02154

THE PB 72 CONSTANT CURRENT STIMULATOR

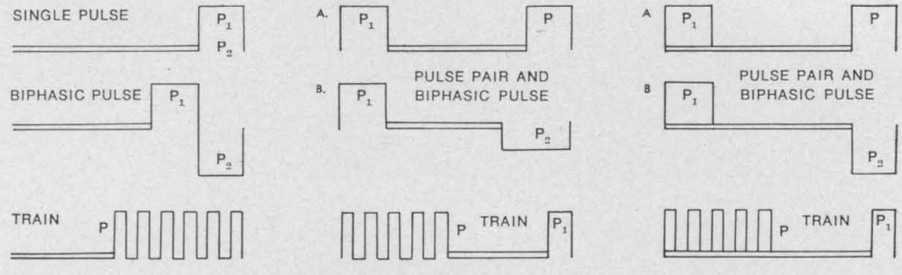
An advanced model research stimulator with multiple phase functions, dual outputs.



Optional Modules

- **SILICON SOLID STATE CIRCUITRY** for greater accuracy, repeatability and prolonged instrument life. Five regulated power supplies.
- **OPTICAL ISOLATION SYSTEM.** A new concept featuring light beam isolation.
- **CAN BE COMPUTER PROGRAMMED.** All rate generators and pulse duration controls can be triggered through a connector on the back panel by means of an or gate input to the circuit. They can also be controlled on any range setting by an external voltage between 0 and – 10 volts.

Here are some of the wave form combinations available:



Visit us at Booth No. M-20 at the Federation Show.

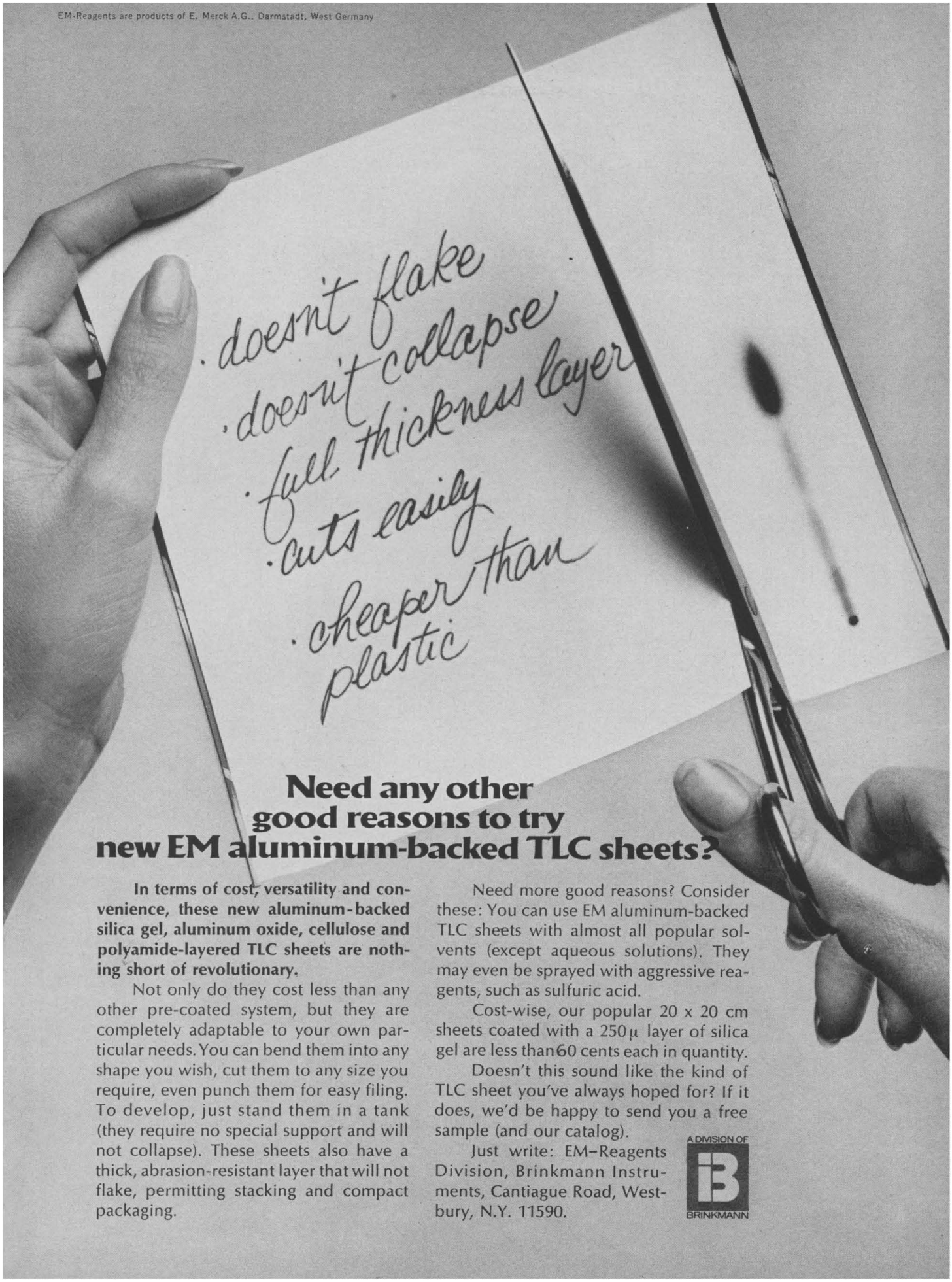
Constant voltage and higher current output units available.

PHIPPS & BIRD, INC.
SCIENTIFIC INSTRUMENT MANUFACTURING DIVISION
SIXTH AT BYRD STREETS • P. O. BOX 2V • RICHMOND, VA. 23205 • (703) 644-5401

Circle No. 68 on Readers' Service Card

Circle No. 12 on Readers' Service Card →

EM-Reagents are products of E. Merck A.G., Darmstadt, West Germany



Need any other good reasons to try new EM aluminum-backed TLC sheets?

In terms of cost, versatility and convenience, these new aluminum-backed silica gel, aluminum oxide, cellulose and polyamide-layered TLC sheets are nothing short of revolutionary.

Not only do they cost less than any other pre-coated system, but they are completely adaptable to your own particular needs. You can bend them into any shape you wish, cut them to any size you require, even punch them for easy filing. To develop, just stand them in a tank (they require no special support and will not collapse). These sheets also have a thick, abrasion-resistant layer that will not flake, permitting stacking and compact packaging.

Need more good reasons? Consider these: You can use EM aluminum-backed TLC sheets with almost all popular solvents (except aqueous solutions). They may even be sprayed with aggressive reagents, such as sulfuric acid.

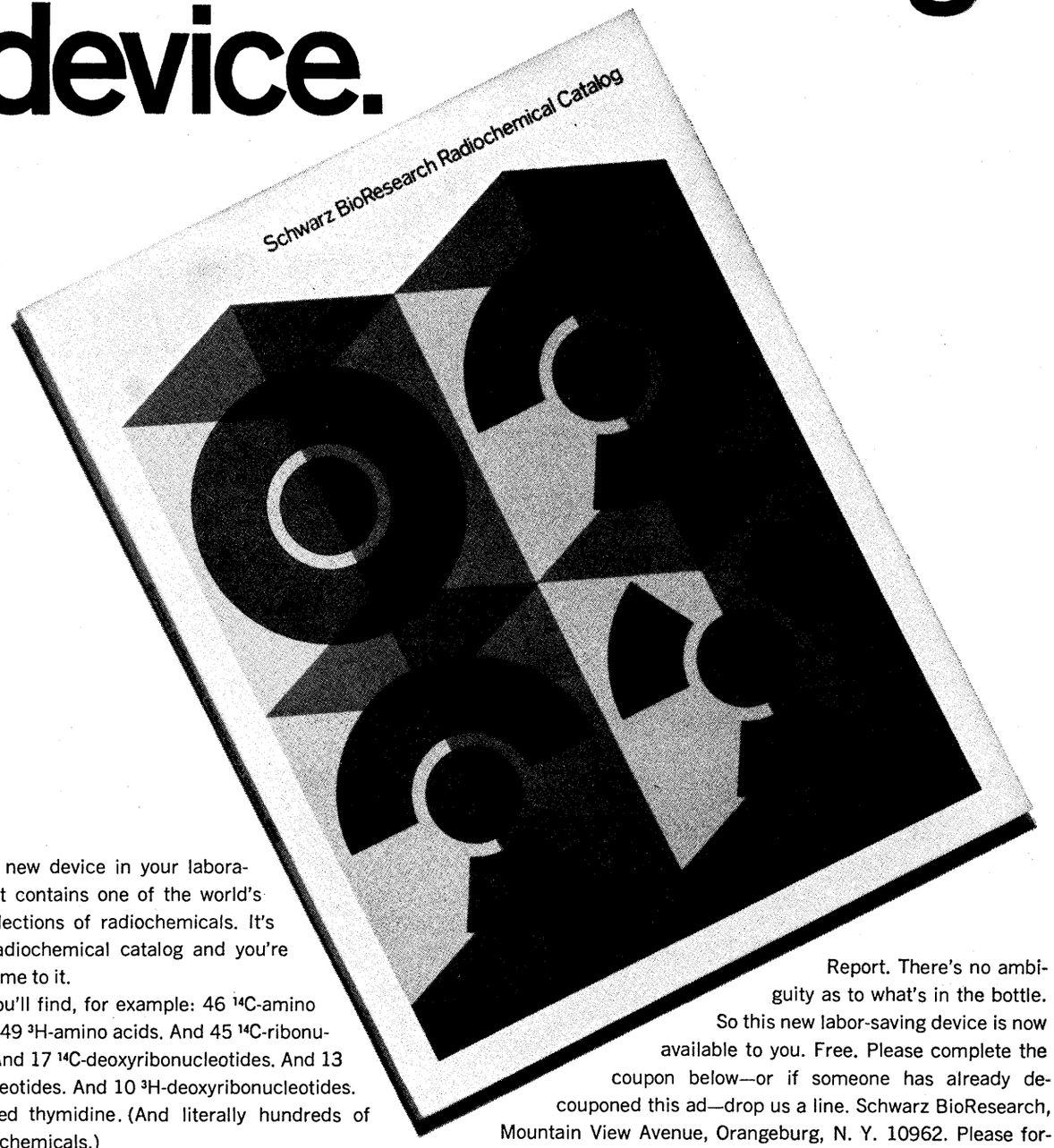
Cost-wise, our popular 20 x 20 cm sheets coated with a 250 μ layer of silica gel are less than 60 cents each in quantity.

Doesn't this sound like the kind of TLC sheet you've always hoped for? If it does, we'd be happy to send you a free sample (and our catalog).

Just write: EM–Reagents Division, Brinkmann Instruments, Cantiague Road, Westbury, N.Y. 11590.

A DIVISION OF
BRINKMANN

Free labor-saving device.



Install this new device in your laboratory now. It contains one of the world's largest collections of radiochemicals. It's our new radiochemical catalog and you're most welcome to it.

Inside you'll find, for example: 46 ^{14}C-amino acids. And 49 ^{3}H-amino acids. And 45 ^{14}C-ribonucleotides. And 17 ^{14}C-deoxyribonucleotides. And 13 ^{3}H-ribonucleotides. And 10 ^{3}H-deoxyribonucleotides. And tritiated thymidine. (And literally hundreds of other radiochemicals.)

These compounds are characterized by high specific activity, e.g. ^{14}C-amino acids are now at 52 mc/matom; ^{3}H-amino acids up to 25-26 c/mmole; thymidine at 20 c/mmole. Prices are equal to or lower than those of other suppliers. Compounds are *available*—in stock almost always. And as with all Schwarz radiochemicals, they are constantly reassayed while "in stock."

Here are the details on this reassay program: every batch of every radiochemical in the house is reassayed every ten weeks. Or oftener. Any batch showing a breakdown in excess of 3% from specification is immediately withdrawn from inventory and repurified. Then this reassay information is also recorded on the Product Analysis Report which contains all the prior analytical information on the specific batch you receive. Every Schwarz radiochemical arrives with its own Product Analysis Report. There's no ambiguity as to what's in the bottle.

So this new labor-saving device is now available to you. Free. Please complete the coupon below—or if someone has already decouponed this ad—drop us a line. Schwarz BioResearch, Mountain View Avenue, Orangeburg, N. Y. 10962. Please forward to Dept. S.

Schwarz BioResearch, Mountain View Ave., Orangeburg, N.Y. 10962 S
Please send your new radiochemical catalog.

Name_____

Title_____ Dept._____

Institution_____

Address_____
street

city state zip

Schwarz BioResearch
Division of Becton, Dickinson and Company B·D

In the field, or in the lab.

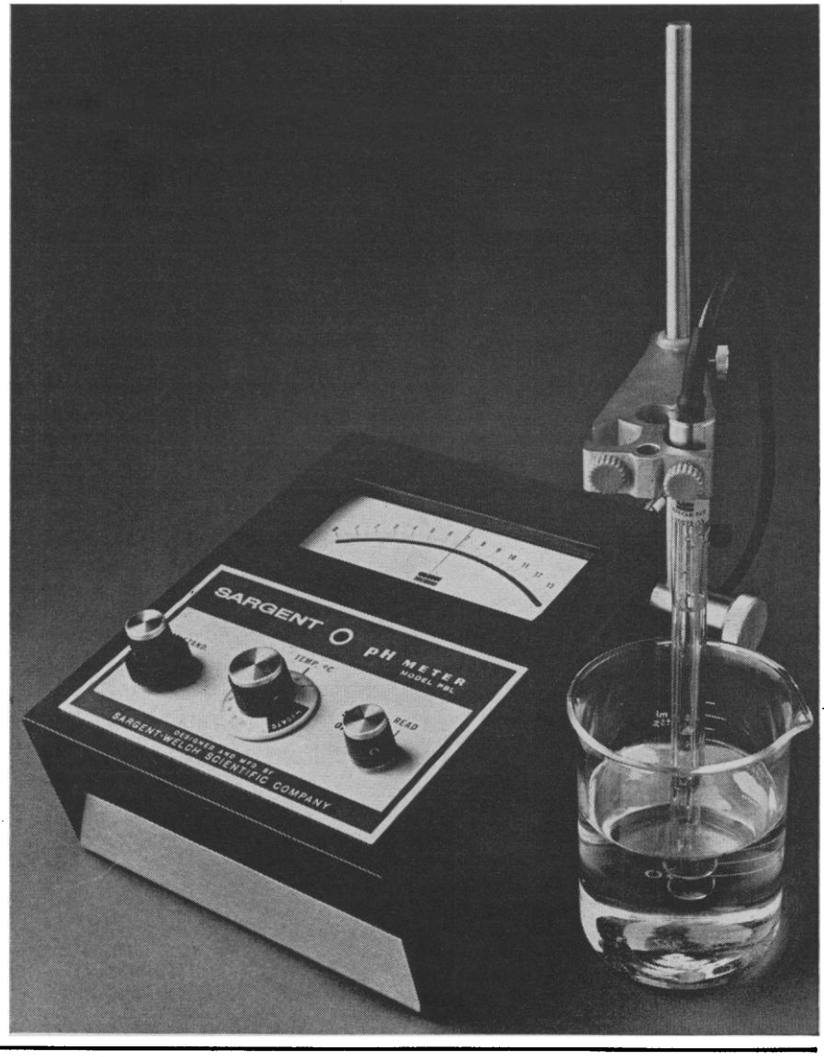
Here's the pH meter that travels with you to the job.

Indoors, our model PBL plugs into the line; outside, you switch on the batteries (and detach the line cord if it's in the way). With its strong steel case, taut-band meter, and solid state circuitry, the rugged PBL is indifferent to the trials of travel.

Put it down flat, stand it on end, or prop it at an angle with the handle. It reads accurately in all these positions. A support rod, which mounts to either side of the case, pivots through 360° to put the electrodes where you want them.

Add to all this a full complement of operating facilities—pH and MV ranges, two-point calibration, Karl Fischer circuitry, recorder output, provision for automatic temperature control—and you have a lot of pH meter for $215.

Write us, or ask your Sargent-Welch representative for full details.

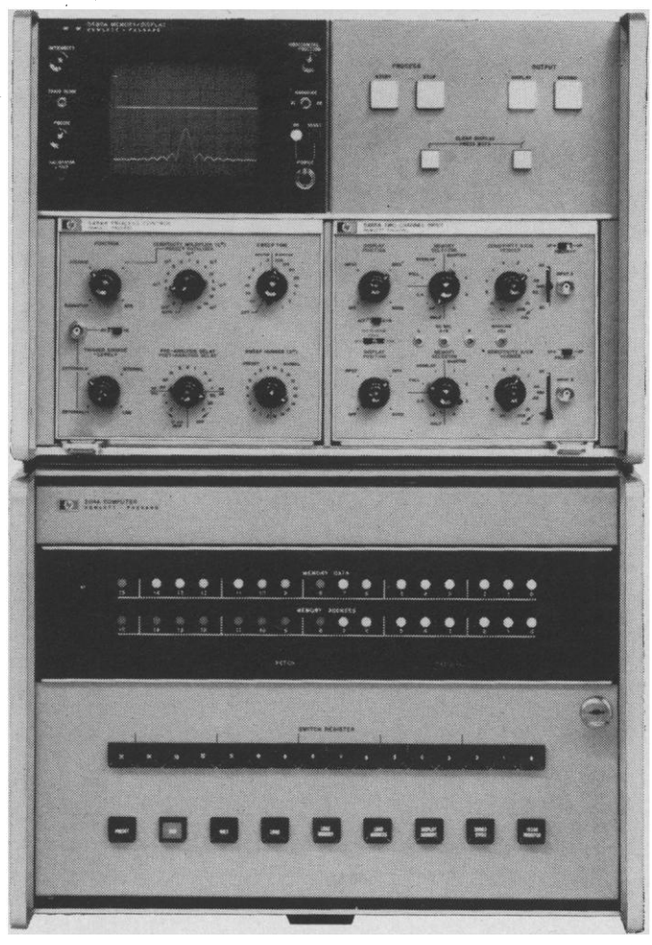


SARGENT-WELCH

Scientific instruments, apparatus, chemicals.
Sargent-Welch Scientific Company
4647 Foster Ave.; Chicago, Ill. 60630

Chicago/Anaheim, Calif./Birmingham
Cincinnati/Cleveland/Dallas/Denver
Detroit/Springfield, N.J./Toronto, Canada

What's so great about adding an HP computer to an HP signal averager?



Getting Fourier Transforms in seconds.

If you want to know more about a noisy waveform than what it looks like, the combination of an HP computer and an HP signal averager is a relatively inexpensive—but speedy—solution.

The 5480A Signal Analyzer operates as an averager to extract your data signal from noise. The HP 2114A Computer then processes the waveform—say, converts it from time domain to frequency domain by Fourier transformation—and displays its real and imaginary parts, magnitude and phase, on the averager CRT.

The standard 5481A system with 4K memory will handle a 250 point, 500 point or 1000 point transform. But since it is modular, you can expand the memory to 8K or larger to give you greater power and flexibility through Executive call-up of subroutines.

A short dialog between you and the computer—you answer simple questions with yes, no, or a number—prepares the Executive tape. This tape calls up system library subroutines or even those you may wish to write. One subroutine gives you program control of the averager for automatic data acquisition.

With the standard system you get the averager, the computer, and a teleprinter with complete interfacing and system software packages—for less than $26,000. Or you can choose one of the larger HP computers and any of the peripherals offered with them.

The HP 5481A Signal Averager / Computer System brings practical, real-time analysis to such difficult applications as nuclear magnetic resonance spectroscopy, optical systems testing and calibration, biomedical, vibration, circuit and servo analysis. Anywhere that noise in the same frequency range is an added problem.

Ask your HP field engineer for complete information. Or write Hewlett-Packard, Palo Alto, California 94304; Europe: 1217 Meyrin-Geneva, Switzerland.

HEWLETT hp PACKARD

SIGNAL ANALYZERS

02831

Circle No. 18 on Readers' Service Card

New Coleman Junior® II Spectrophotometer

Easier reading, faster response, new UV-Visible-NIR range!

Here's the new spectrophotometer that equips you for years of advancing analytical techniques. Junior II combines the reliability of the renowned Coleman Junior® Spectrophotometer with all these added advantages:

Greater range. 325 to 825 mμ. Junior II handles your routine visible determinations and important new tests at UV wavelengths, too—including the new, timesaving enzyme analyses, such as SGOT, SGPT, LDH and MDH.

Easier reading. Illuminated scale is 68% wider, with readout so big and bright you can read it at a glance.

Faster response. Junior II "locks in" on its reading in two seconds, for fast and accurate transmittance/absorbance readout.

100% solid state. Power supply is built in, too, so that you have just one compact case on your lab bench. Also new: jack for recorder, printer or digital readout.

Junior II accepts all present Coleman Junior accessories—Model 21 Flame Photometer . . . Model 12C Electronic Photofluorometer® . . . Both sizes of Vacuvettes . . . All 13 kinds of Coleman macro and micro cuvettes. You continue to use your present "Junior" procedures, calibration tables and clinical methods manual.

Send today for details on the new Coleman Junior II. 20mμ or 35mμ bandpass. Request Bulletin S-310.

Write to Coleman Instruments Division,
The Perkin-Elmer Corporation,
42 Madison St., Maywood, Illinois 60153

PERKIN-ELMER

VISIT OUR BOOTH—PITTSBURGH CONFERENCE

Circle No. 7 on Readers' Service Card

Circle No. 25 on Readers' Service Card ⟶

Reichert Om U2: Only ultra microtome to give you instant start/stop thermal feed.

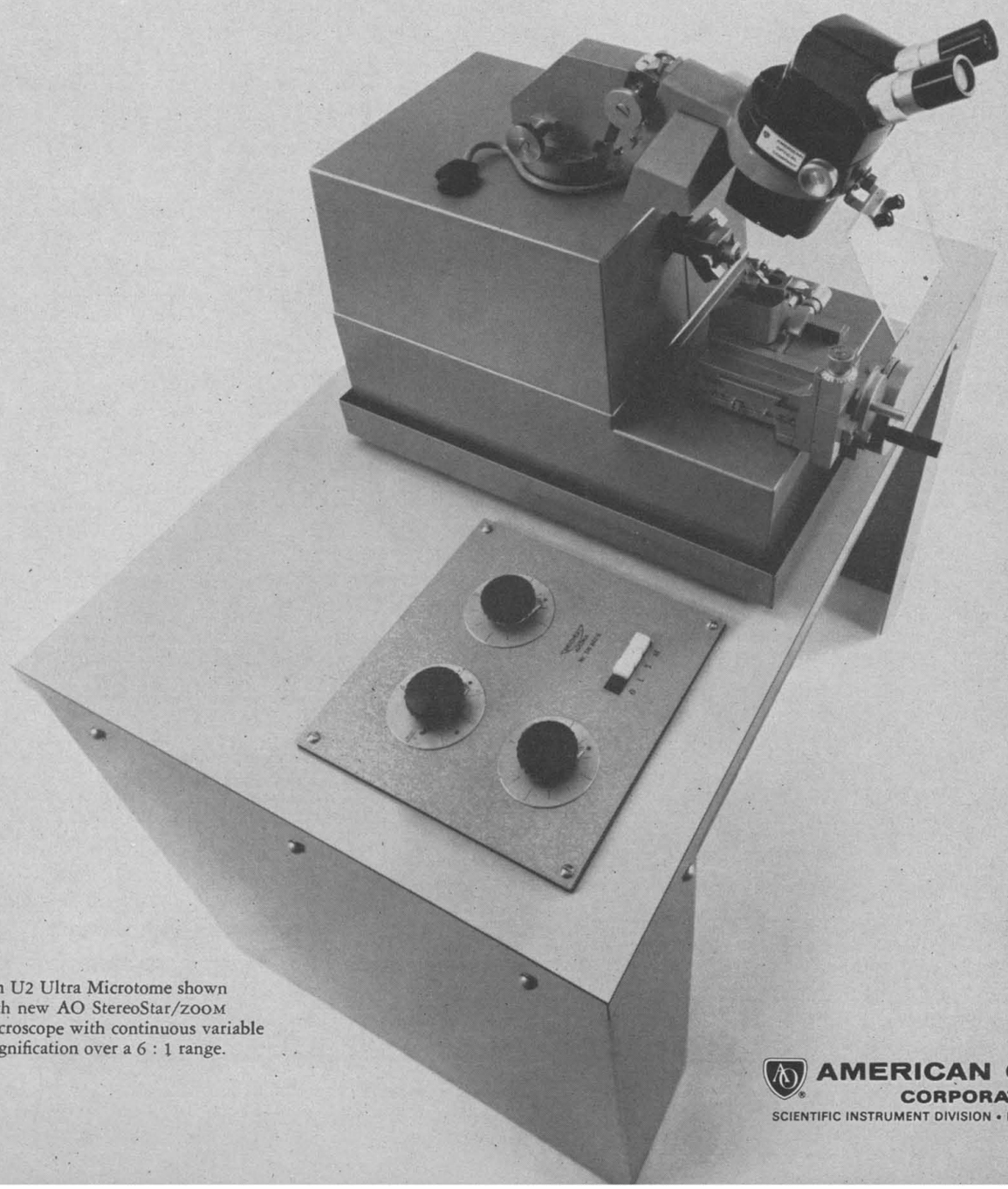
This is the ultra microtome that brings together the extreme accuracy and reliability of thermal feed along with time-saving push-button sectioning.

You stop sectioning simply by pressing the stop button. The thermal feed is automatically stopped at the same time. It is totally inertia-free. No delayed response. When you wish to continue sectioning, the knife requires no readjustment to the specimen. Just press the button and continue to cut at the originally set thickness.

The thermal feed system assures superb thin and ultrathin sectioning and is just one of the many new ideas incorporated in the Om U2 Ultra Microtome. It also offers the unmatched quality of Reichert instruments plus the reliability of AO service.

For convincing demonstration directed to your specific needs write: American Optical Corporation, Reichert Products, Buffalo, New York 14215.

REICHERT
WIEN



Om U2 Ultra Microtome shown with new AO StereoStar/ZOOM Microscope with continuous variable magnification over a 6 : 1 range.

AMERICAN OPTICAL
CORPORATION
SCIENTIFIC INSTRUMENT DIVISION • BUFFALO, N.Y. 14215

NEW PUBLICATIONS FROM plenum PUBLISHING CORPORATION

Now available!
The first volume of a major seven-volume work

HANDBOOK OF NEUROCHEMISTRY*

VOLUME 1: CHEMICAL ARCHITECTURE OF THE NERVOUS SYSTEM

Edited by **Abel Lajtha,** *New York State Research Institute for Neurochemistry and Drug Addiction*

The first volume of outstanding new treatise which will present an up-to-date evaluation of available chemical and biological knowledge recently gathered about the nervous system and brain function. Volume 1, Chemical Architecture of the Nervous System, deals with the basic composition of the nervous system and its relationship to metabolism. Future volumes will discuss mental function, effects of stress and of drugs, mechanisms involved in memory, mental and neurological diseases, and mood effects.

APPROX. 470 PAGES PP APRIL 1969 $35.00

SPECIAL PRICE TO SUBSCRIBERS: $30.00

MODERN ASPECTS OF ELECTROCHEMISTRY,* Number 5

Edited by **J. O'M. Bockris,** *Electrochemistry Laboratory, John Harrison Laboratory of Chemistry, University of Pennsylvania, Philadelphia,* and **B. E. Conway,** *Department of Chemistry, Univ. of Ottawa, Canada*

CONTENTS: Hydration effects and thermodynamic properties of ions, J. E. Desnoyers and C. Jolicoeur. The metal-gas interface, R. A. Oriani and C. A. Johnson. Potentials of zero charge of electrodes, R. S. Perkins and T. N. Anderson. The mechanism of charge transfer from metal electrodes to ions in solutions, D. B. Matthews and J. O'M. Bockris. The study of simple consecutive processes in electrochemical reactions, A. Bewick and H. R. Thirsk. Mechanistic analysis of oxygen electrode reactions, A. Damjanovic.

APPROX. 484 PAGES PP MARCH 1969 $22.50

DRUGS AFFECTING LIPID METABOLISM

Volume 4: ADVANCES IN EXPERIMENTAL MEDICINE AND BIOLOGY*

Proceedings of the Third International Symposium on Drugs Affecting Lipid Metabolism, held in Milan, Italy, 1968

Edited by **William L. Holmes,** *Director, Division of Research, Lankenau Hospital, Philadelphia, Pennsylvania,* **Lars A. Carlson,** *King Gustaf Vth Research Institute, Stockholm, Sweden,* and **Rodolfo Paoletti,** *Chairman, Institute of Pharmacology, University of Cagliari, Cagliari, Italy*

The establishment of lipids as a factor in coronary artery disease stresses the need for drugs that are clearly effective in lowering lipoprotein levels in the human system. In this volume, internationally renowned scientists discuss latest advances in lipid metabolism research and describe effects of various drugs on FFA mobilization, plasma and tissue triglycerides, serum lipoproteins, cholesterol and bile metabolism.

681 PAGES PP MARCH 1969 $27.50

BIOMEDICAL SCIENCES INSTRUMENTATION,* Volume 5

Proceedings of the Sixth National Biomedical Instrumentation Symposium, held 1968, in Pittsburgh, Pennsylvania

A publication of the Instrument Society of America

Edited by **Josephine N. Martin,** *Editor, "Medical Electronics News"*

This volume concentrates on the intensive care unit in hospitals and describes how the latest advances of the engineering industry help medicine care for the critically ill. Analyzes the functions of such vital equipment as resuscitators, cardiac pacemakers, telemetry and various monitoring systems.

167 PAGES PP JANUARY 1969 $10.50

JOURNALS FROM PLENUM

BIOLOGICAL PSYCHIATRY

Edited by **Joseph Wortis,** *Dept. of Psychiatry, Maimonides Medical Center, Brooklyn, New York*

EDITORIAL COMMITTEE: Associate Editors: Christian Astrup and Williamina A. Himwich. **Committee Members:** Wagner H. Bridger, Hudson Hoagland, Arnold J. Mandell, and George A. Ulett.

This new international journal, sponsored by the Society of Biological Psychiatry, will be published quarterly beginning 1969. The Journal, like its predecessor, the annual **Recent Advances in Biological Psychiatry series,** will cover the whole range of psychiatric research—pathological, physiological, pharmacological, electroencephalographic, biochemical, and genetic, also spanning relevant insights from the areas of clinical, psychological, epidemiological, and normative studies. Edited by Dr. Joseph Wortis of the Department of Psychiatry, Maimonides Medical Center, assisted by both an editorial committee and an advisory board of distinguished scientists, the Journal will strive to insure prompt publication of articles of scientific merit, timeliness, and readability including brief reports, occasional theoretical papers and literature reviews, correspondence, and news of the Society and the field in general.

Prospective contributors may submit articles to Dr. Wortis at the department of Psychiatry, Maimonides Medical Center, 4802 Tenth Avenue, Brooklyn, New York 11219.

ANNUAL SUBSCRIPTION (4 ISSUES) VOLUME 1 1969 $21.00

(Please add $2.70 for postage outside U.S.A.)

EXAMINATION COPIES AVAILABLE UPON REQUEST

FOLIA MORPHOLOGICA

Editor-in-chief: **J. Wolf,** *Laboratory for Electron Microscopy of the Czechoslovak Academy of Sciences, Prague*

Assistant Editor: **Z. Vacek,** *Institute of Embryology, Faculty of Medicine, Charles University, Prague*

EDITORIAL BOARD: Prof. L. Borovanský, Prof. E. Klika, Prof. J. Kos, Prof. Vl. Munka, Prof. O. Slabý, Prof. I. Stanek, Prof. Vl. Vrtiš, Prof. K. Zlábek.

FOLIA MORPHOLOGICA, the important quarterly publication of the Czechoslovak Academy of Sciences, will be available beginning 1969. Edited by Dr. J. Wolf and a renowned board of editors numbering specialists in the fields of anatomy, embryology, histology, electron microscopy, and histochemistry, the JOURNAL covers significant international research in all areas of morphology, including the development of new techniques. Of additional value are the numerous illustrations, photographs, microphotographs, and electron micrographs—many in color and printed on enameled stock—included in each issue.

The initial issue of 1969 will include articles on tissue shifts in the tail of the chick embryo, secretory manifestations of the glomus gland, electron miscroscopy of dental pulp and the islets of Langerhans, the angioarchitecture of cardiac muscle, the cytology of tubal epithelium, and the positive one-stage carbon replica of the surface of biological suspensions.

ANNUAL SUBSCRIPTION, VOLUME 17 (4 ISSUES) 1969 $16.00

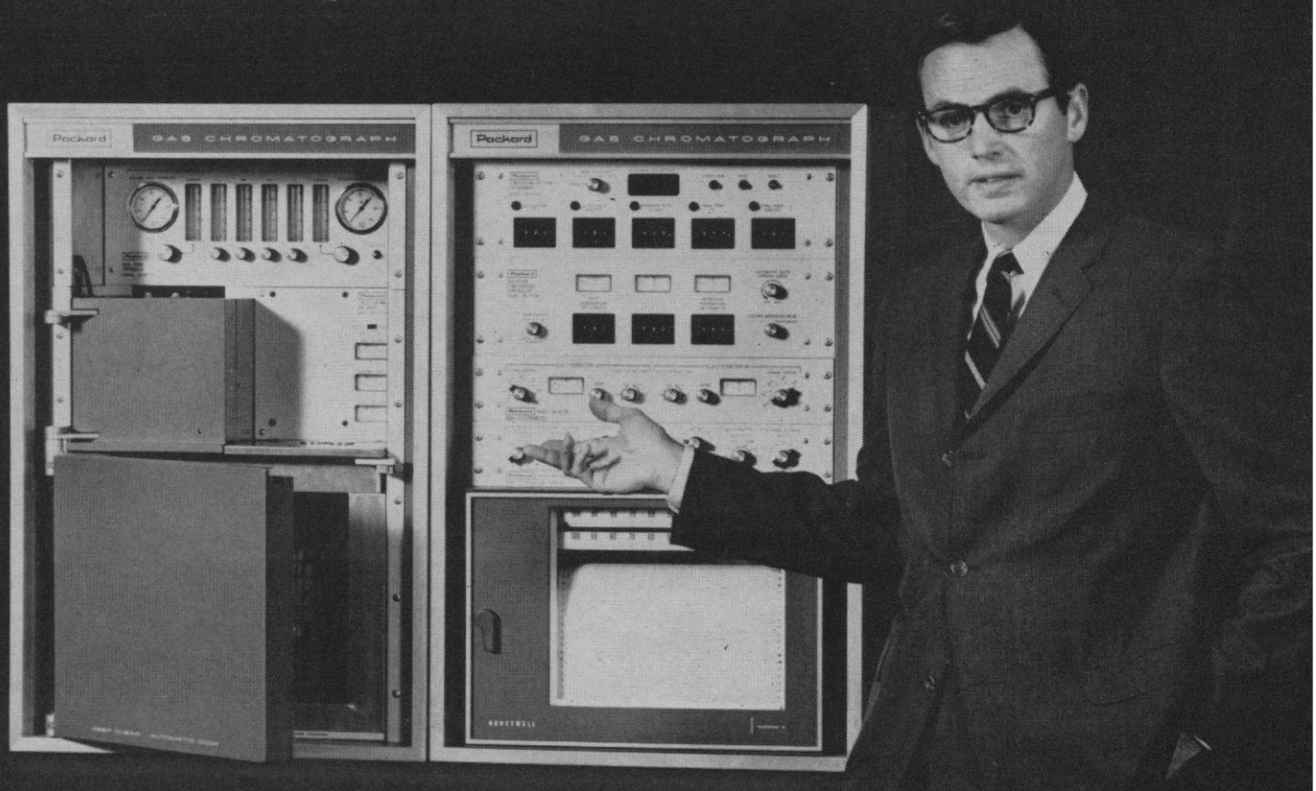
EXAMINATION COPIES WILL BE AVAILABLE UPON REQUEST.

(Please add $2.00 for postage outside U.S.A.)

*Place your Continuation Order today for books in this series. It will ensure the delivery of new volumes **immediately** upon publication; you will be billed later. This arrangement is solely for your convenience, and cancelled by you at anytime.

consultants bureau/plenum press *Divisions of Plenum Publishing Corporation* 227 WEST 17th STREET, NEW YORK, N.Y. 10011, U.S.A.

Here's a New Gas Chromatograph with a Split Personality



Packard

Sensitive enough for analysis at picogram levels—yet fully capable of preparative separation in large quantities . . . that's the kind of split personality we've built into the new 7300/7400 Series Gas Chromatographs. Truly modular construction gives you unequalled versatility in oven and column styles, detector types (all interchangeable), and programmers. Oven door opens and closes automatically as part of the automatic heat/cool cycle, and the highly stable power supply can be set from 0.5 to 1000 volts.

There's never been a gas chromatograph with all these features. And purchase price *includes* packed columns, an accessory kit and installation by a trained technician. Get the full story from your Packard Sales Engineer or write for Bulletin 1058U to Packard Instrument Company, Inc., 2200 Warrenville Road, Downers Grove, Illinois 60515 or Packard Instrument International S.A., Talstrasse 39, 8001 Zurich, Switzerland.

Accurate, precise independent temperature controls at injection ports, column oven and detector . . . your analyses are consistent and repeatable.

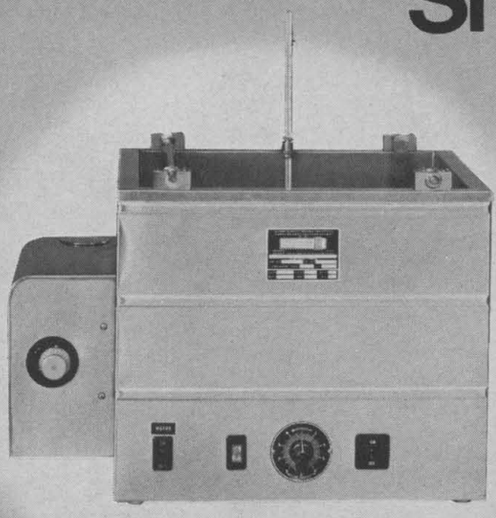
Two separate "electronic ice baths" provide column and detector with absolute temperature control reference points, accurate to within ±0.3°C. Three separate computing temperature controllers establish temperature set points—repeatable within ±0.5°C over the entire 0-500°C range. There's no drifting, no need for periodic re-calibration.

With this kind of dependability in temperature control—exclusive with Packard—you're free to examine other experiment variables that may be masked in other instruments.

Packard offers stimulating career opportunities for scientific and technical personnel. We are an equal opportunity employer.

Circle No. 39 on Readers' Service Card

You "get a fair shake" when you specify Precision Shaking Incubators



Shaking Incubators—3 sizes, 7 interchangeable racks to fit your exact needs.

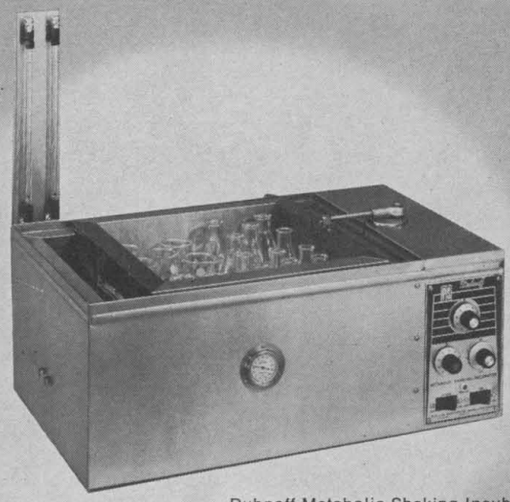
Exceptional durability for lasting service year after year and a choice of instruments for a wide variety of research techniques — that's what you get with Precision Shaking Incubators.

Precision's basic design concepts bring you convenience of operation, materials and components that minimize maintenance, accessories for flexibility and versatility, and dependable uniformity and accuracy, of course.

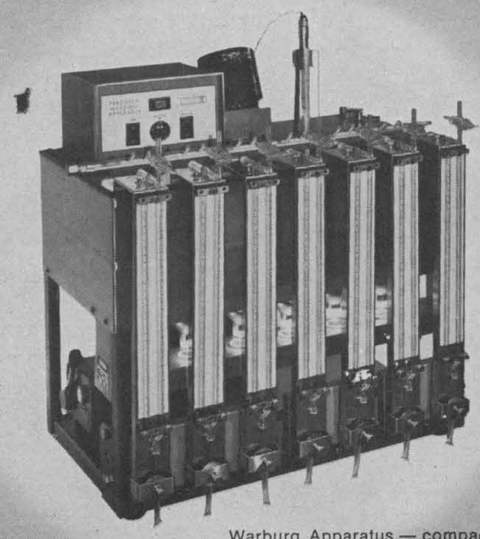
Ask your Precision Scientific Dealer for performance data and specifications. Or write us: Precisicn Scientific Company, 3737 West Cortland Street, Chicago, Illinois 60647.

PRECISION PS SCIENTIFIC

SUBSIDIARY OF GCA CORPORATION



Dubnoff Metabolic Shaking Incubator — handles 20ML beakers, 25ML and 50ML flasks simultaneously.



Warburg Apparatus — compact, economical 7-unit model shown. Also 18-unit model.

Aha, the old computer-in-the-pack trick.

You can sneak a computer into your lab without anyone even knowing.

Digital makes a whole series of laboratory systems for special purpose jobs. Pulse height analysis, for instance. Or signal averaging. Or gas chromatography. These systems are called computer packs, and they come with all the needed hardware, all the needed software, all the interfaces your technician needs to get the job done.

But it's the old computer-in-the-pack trick.

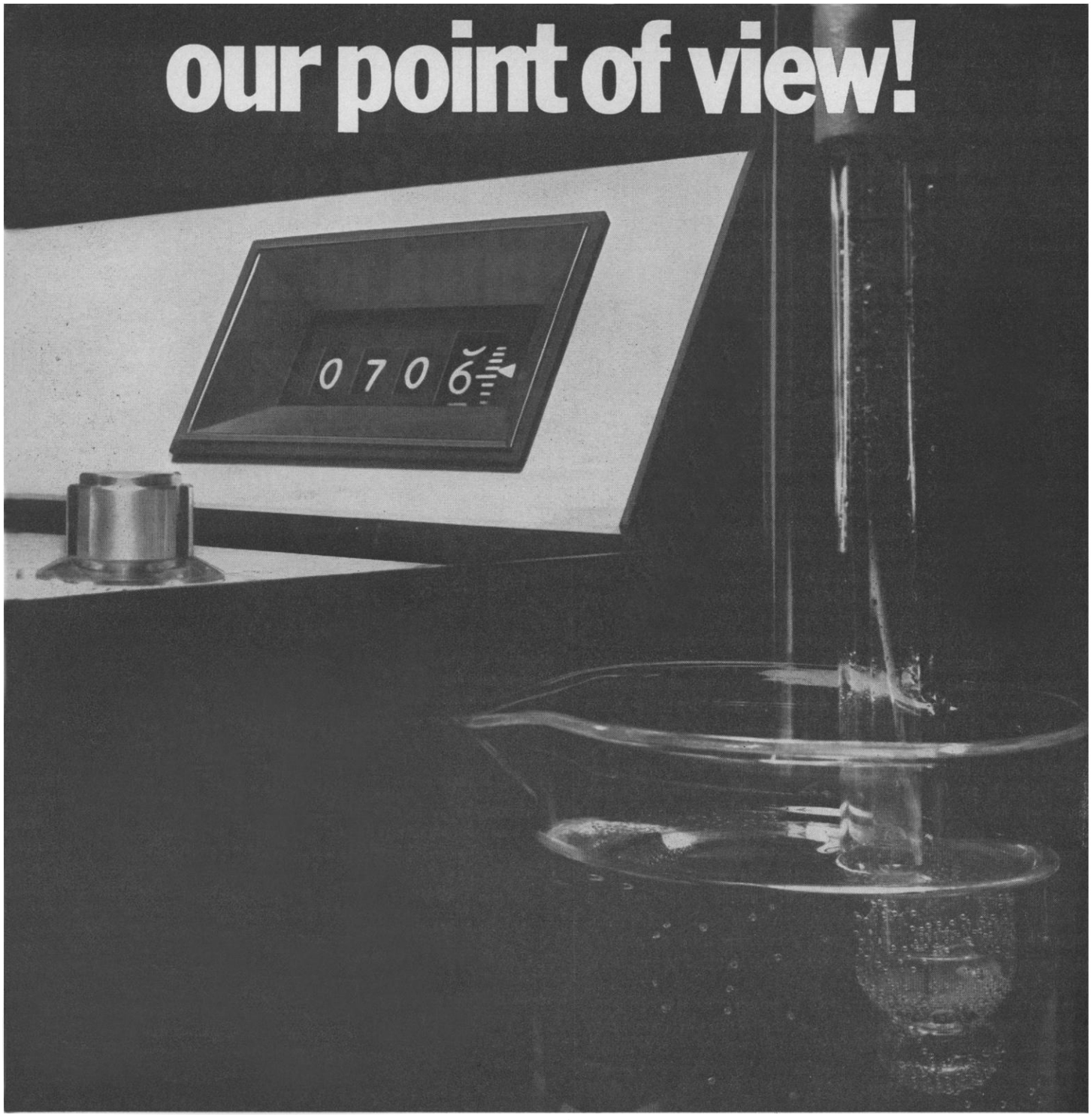
Hit a button and a glorious, 4096-word, core memory, integrated circuit, 1.5-μsec fast, FORTRAN-speaking, general-purpose computer pops up. Presto. Out comes the software that runs more than 3,500 installations around the world.

Some people play the computer packs on two shifts. From 9 to 5, they're just the best special purpose systems money can buy. After 5, well. . . .

DIGITAL EQUIPMENT CORPORATION, Maynard, Massachusetts 01754, Telephone: (617) 897-5111 • Cambridge, Mass. • New Haven • Washington, D.C. • Parsippany, Palisades Park, N.J. • Princeton, N.J. • Rochester, N.Y. • Long Island, N.Y. • Philadelphia • Pittsburgh • Cleveland • Dayton • Huntsville • Cocoa, Fla. • Chicago • Denver • Ann Arbor • Salt Lake City • Houston • Albuquerque • Los Angeles • Palo Alto • Seattle. INTERNATIONAL, Carleton Place and Toronto, Ont.• Montreal, Quebec • Edmonton, Alberta, Canada • Reading and Manchester, England • Paris, France • Munich and Cologne, Germany • Oslo, Norway • Stockholm, Sweden • Sydney and West Perth, Australia.

digital
COMPUTERS · MODULES

our point of view!

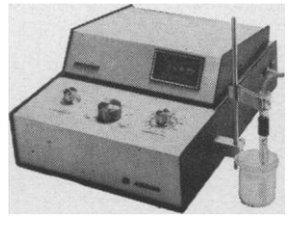


Our pH meter with digital readout gives faster, more accurate readings with less operator fatigue

We call our digital readout pH meter the *Digicord.*

This positive numerical display gives expanded-scale precision without range switching that is readable to ± 0.001 pH or ± 0.1 mv.

Repeatability, stability and full-range linearity are all within ± 0.002 pH in this solid-state instrument.



A single, fast, high-sensitivity electrode is supplied with our *Digicord,* but the unit accepts all standard electrodes, including metal and specific-ion types.

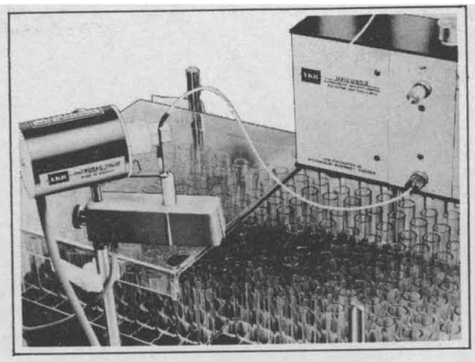
Our point of view is that the *Digicord's* faster, more accurate readings, plus all these other features make it well worth the price of $495. What's your point of view?

PHOTOVOLT CORPORATION *1115 Broadway, New York, N.Y. 10010 • (212) 989-2900*

SEE US AT BOOTH 407

Circle No. 37 on Readers' Service Card ⟶

The LKB UV Analyzer, the Uvicord is completely compatible with the UltroRac. The Uvicord detector unit is here shown incorporated, with the UltroRac, in a separation system.



LKB IN THE SERVICE OF SCIENCE

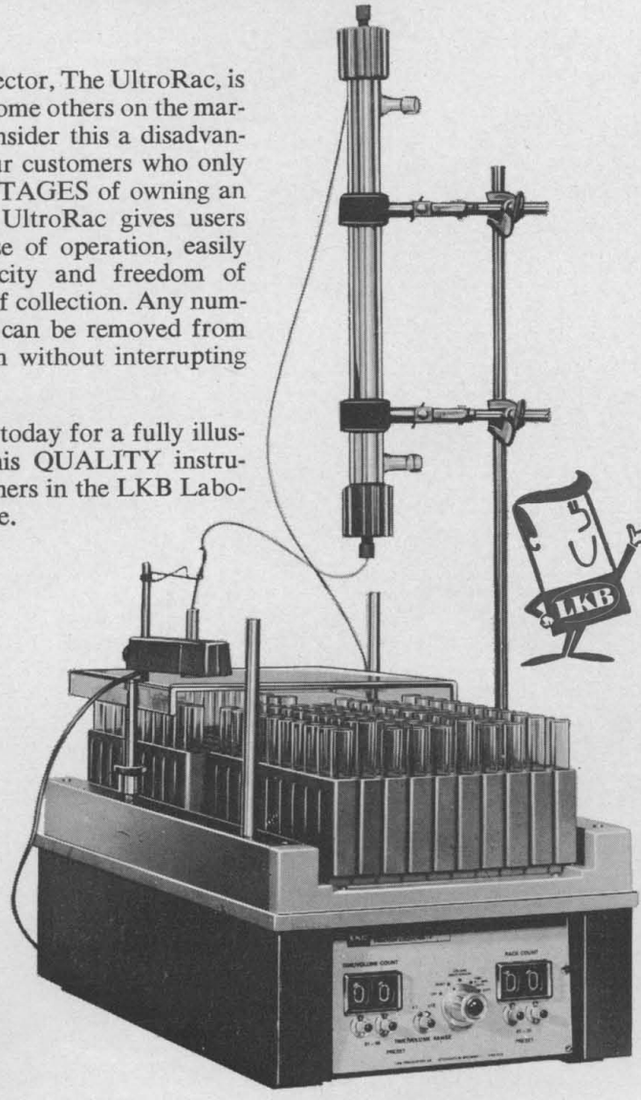
LKB INSTRUMENTS INC.● 12221 PARKLAWN DRIVE ● ROCKVILLE Md. 20852

SALES AND SERVICE THROUGHOUT THE WORLD:
STOCKHOLM, THE HAGUE, COPENHAGEN, ROME, VIENNA, LONDON

A Fraction Larger

Yes, our Fraction Collector, The UltroRac, is a fraction larger than some others on the market, but we do not consider this a disadvantage and neither do our customers who only speak of the ADVANTAGES of owning an LKB UltroRac. The UltroRac gives users reliable collection, ease of operation, easily varied test-tube capacity and freedom of choice in the method of collection. Any number of test-tube racks can be removed from the collecting platform without interrupting the collecting process.

Write or phone LKB today for a fully illustrated brochure on this QUALITY instrument and the many others in the LKB Laboratory Instruments Line.



NO DROPS EVER MISS THE TUBES, EITHER

- Space Saving
- Coldroom Use
- Standard Test Tubes
- Removable electronic unit
- 200 test-tube capacity
- Time, drop and volume
- Stainless steel support rods
- Polypropylene racks
- Provision for event marking
- Power outlet for flow pump
- Electronic counting system
- Positive flow control

Circle No. 2 on Readers' Service Card

Our scanning microscope has a lot less to it than our competition's.

Two lenses instead of three.
So there's less difficulty lining things up. And less loss of intensity, once they're lined up.

Less waiting to change specimens.
Because they pass through our air lock in under 30 seconds. Leaving contamination outside the instrument, where it belongs.

Less guessing about specimen composition with our x-ray detector.

Less fiddling with specimens.
Our goniometer stage lets you tilt and rotate the sample, without touching the focus.

Less time finding what you're looking for with our TV scan.

It has fewer knobs.
So it takes less time to learn how easy it is to operate.

Needs less floor space.
As it's mostly solid state.

Now wait till you see how much more you can do with so much less.

Like using our transmitted electron detector. To observe intricate internal structures.

Or viewing the continuous image on our unique TV scan. For more rapid specimen examination.

Or putting our expert x-ray detector to work. To give you a complete spectrum analysis. All in one step.

Or adding other stages in seconds. To run more special projects.

And that's our JSM-2. More or less.

jeolco U.S.A. INC. ELECTRON OPTICS DIVISION
477 Riverside Avenue, Medford, Massachusetts 02155/Telephone (617) 396-6021

Circle No. 66 on Readers' Service Card

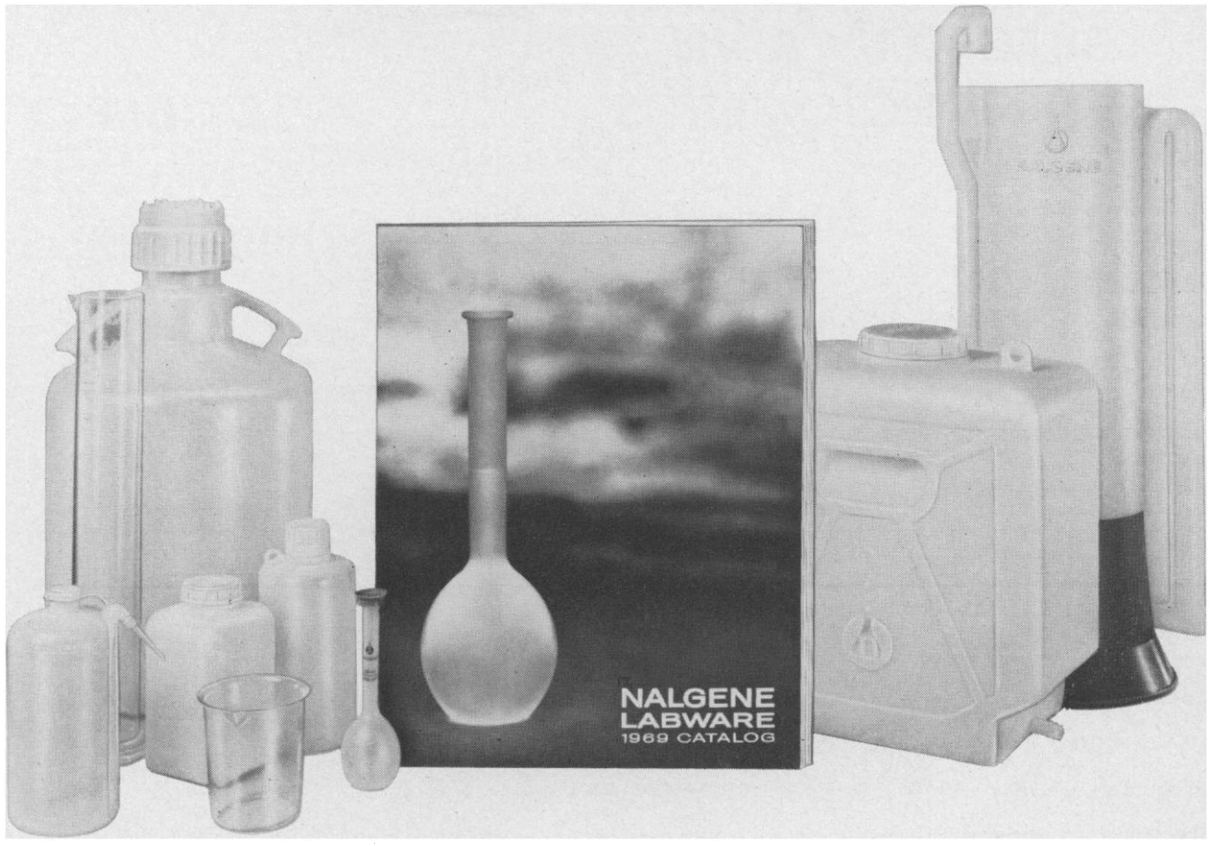
Circle No. 6 on Readers' Service Card ⟶

Our B-20. Give it all you've got.

Feed it the daily routine. Or challenge it with special assignments. Either way, this high-speed refrigerated centrifuge is equal to the job. It's the strong, silent type that takes all the punishment you can dish out. Yet it's so sophisticated it handles B-14, B-15, and Z-15 zonal rotors. Swings 4 x 250ml in a rugged bucket head. Offers belt-driven flexible drive designed to loaf along at 46,300g. And gives you automatic programming, precise temperature control, Turbo-Cover and feedback speed control. In short, an advanced performer that keeps going when the going gets tough. Write for Bulletin B-20. Or call your IEC distributor.

IEC INTERNATIONAL EQUIPMENT CO.

300 SECOND AVENUE • NEEDHAM HEIGHTS, MASSACHUSETTS 02194



Read any good books lately?

Here's one. The 1969 Nalgene Laboratory Catalog—56 pages of descriptions, specifications, and prices on the complete Nalgene® Labware line. Plus, laboratory equipment from other divisions of Sybron Corporation.

This is the most complete line of plastic products manufactured specifically for the laboratory. Every item is precision molded of the proper material, and in the most efficient design for specific laboratory functions. Every year, more and more laboratories *specify* Nalgene Labware to make sure they get all the safety and economy benefits of the finest plastic labware.

Here are some items of special interest from our 1969 Catalog:

NALGENE PIPET WASHER-RINSERS. Exclusive one-piece design eliminates all washer-rinser problems. Back siphoning is impossible. Wide range of cycling speeds. Repeats automatically. Also available—unbreakable Nalgene Pipet Jars and Baskets.

NALGENE LABORATORY BOTTLES. Widest range of unbreakables available anywhere. Variety of materials, designs and sizes to handle any laboratory application. Safer and easier to use because they're designed specifically for the laboratory. New linerless polypropylene closures make them leakproof without danger of contamination. Our Teflon® bottles have fluorocarbon closures.

NALGENE ASPIRATOR CARBOYS. Rectangular and conventional designs—with spigot or tubulation. Tough, rigid, no-leak construction. Sizes from 1 to 13 gal. Larger sizes have molded-in handgrips for greater safety.

NALGENE WASH BOTTLE. One-piece construction of bottle and tube eliminates any possibility of leakage. Entire contents can be dispensed without tipping or shaking. Hundreds of thousands in use all over the world. Sizes from 30-1000 ml.

NALGENE GRADUATES AND BEAKERS IN TPX. Crystal clear, shatter-proof, autoclavable, chemically resistant. Graduates from 10-1000 ml; beakers from 30-1000 ml. TPX is a trademark of Imperial Chemical Industries Limited for their brand of methylpentene polymer.

NEW! NALGENE VOLUMETRIC FLASKS. First plastic volumetric flasks. All the accuracy of standard glass flasks—plus the unbreakability of plastic. Precision molded and individually calibrated, handle any procedure now done with glassware. Won't etch or contaminate. Can be autoclaved repeatedly without affecting accuracy. Sizes from 100-1000 ml.

NEW! NALGENE AUTOCLAVABLE CARBOY. Use to prepare, store, *and autoclave* 5-gallon batches of culture media, distilled water, and other solutions. Withstands repeated autoclaving, has screw closure and two carrying handles for maximum safety and convenience.

NEW! NALGENE DESICCATOR AND PLATE. Unbreakable desiccator with tubulation on lower part for easy handling. Will hold 24-inch vacuum for more than 24 hours, implosion-safe at full vacuum. Cover is transparent polycarbonate; lower part is chemically-resistant polypropylene. Accepts Nalgene Nucerite® Plate (230 mm) or standard glass plate.

Most Nalgene Labware can be assorted for maximum discount—another good reason to specify Nalgene Labware from your lab supply dealer. Ask him for our 1969 Catalog or write Dept. 8502, Nalgene Labware Division, Rochester, New York 14602.

NALGENE LABWARE DIVISION

NALGE
SYBRON CORPORATION

Circle No. 49 on Readers' Service Card

cepted, usable methodology for evaluating, even in relative terms, "the social return commensurate with the cost of investment" of various research activities. What is actually taking place is that agencies doing pure science on a large-scale—NSF, NASA, AEC, and NIH—respond to pluralistic pressures from the various segments of the scientific community and also apply judgments on what areas of research are ripe for major investments. Inasmuch as these agencies, except for NSF, act as spokesmen for particular scientific research areas, Carey's arguments for setting priorities and for centralized decision-making may be quite legitimate.

Lacking an accepted metric for deciding, that is, between expanded lunar exploration versus high-energy physics, the Budget Bureau works with the Science Advisor, who may seek guidance on priorities from the President's Science Advisory Committee, from the National Science Board, or from the National Academy of Sciences. Perhaps it would be desirable to combine federal departments, or at least those sections that deal with pure science, with the National Science Foundation as its core, as was suggested by Science Advisor Donald Hornig at the Dallas meeting of the AAAS. The advantage would be that decisions on priorities can then be made within a single department rather than at the White House level, and that there would be a single spokesman for pure science at the level of a cabinet officer. On the other hand, there is no guarantee that Congress would approve a departmental budget as large as the sum of its components.

Regardless of whether a Department of Science is established, pure science, which has a $2.354 billion budget for FY '69 as compared to the total R&D budget of $18.077 billion (*2*), could well be set at a fixed percentage of the total R&D, and perhaps even grow at a moderate rate. [It came to 11.7 percent in FY '67, 12.5 percent in FY '68, and 13.0 percent in FY '69 (*2*).] The justification would be, of course, that money spent on pure science provides the basic knowledge as well as the manpower to later undertake the mission-related R&D for direct economic and social returns.

One final point: Even mission-oriented R&D cannot be expected to give an immediate return and may require a time scale of, say, 5 to 10 years. As the New York Academy points out, the argument for long-range funding of both mission-oriented and pure research, particularly in the universities, cannot be made too strongly.

S. FRED SINGER
Office of the Secretary,
U.S. Department of the Interior,
Washington, D.C. 20240

References and Notes

1. *Report to Office of Water Resources Research* by the American Society of Civil Engineers, Urban Water Resources Research Program of Harvard University (Cambridge, Mass., February 1969). Note also that, while R & D funding is nearly all federal, the total national investment is mostly nonfederal.
2. *Federal Funds for Research, Development, and Other Scientific Activities*, vol. 17, NSF Publ. 68–27 (National Science Foundation, Washington, D.C., August 1968).

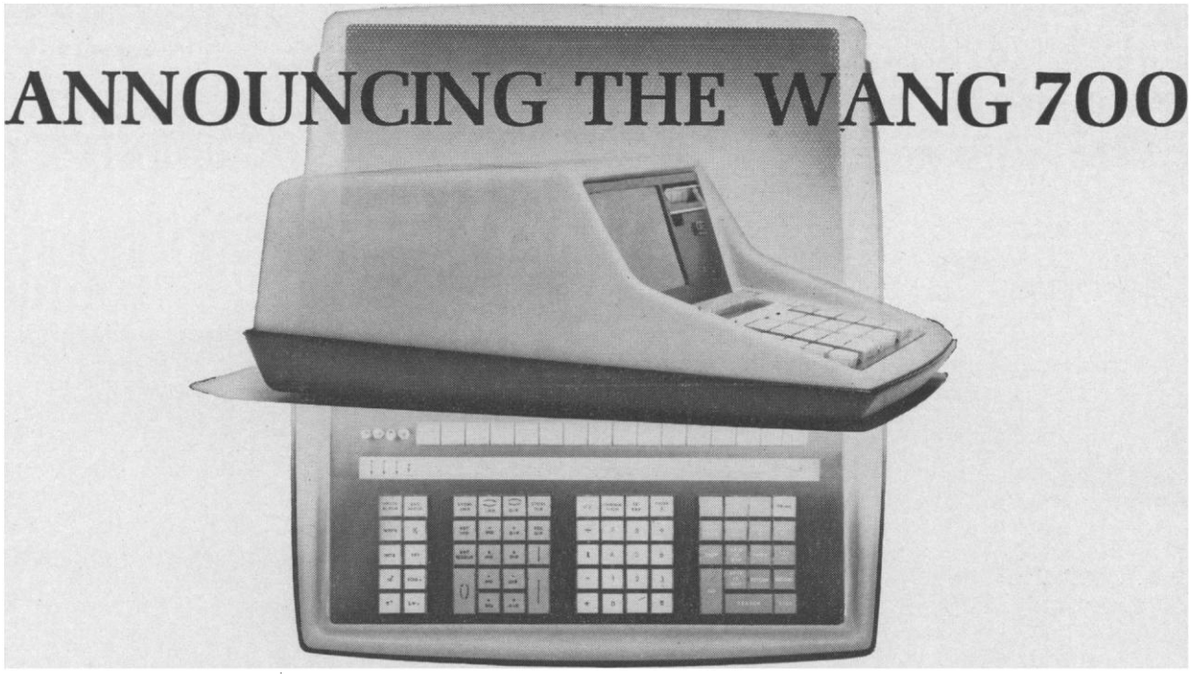
Panama Canal: Widespread Effects

The correspondence of Sheffey and Rubinoff (Letters, 20 Dec.) about the biological effects of a sea-level linking of the Atlantic and Pacific oceans brings to mind an experience I had some years ago as an explorer in the Upernivik district of West Greenland.

On an extensive sledge trip to examine a number of glaciers, I made a stop at Kigtorsak, a small winter colony whose director was a combination of dictator and sage. He was an old man among Greenlanders, but his watery eyes were penetrating and, with the help of a cane fashioned from a willow, he was as spry as a man of 20. He claimed that ice in the area became poor when the Panama Canal was opened and joined the two oceans. This, of course, had an effect upon seal hunting, and the lives of the natives thereabouts were consequently endangered. In many areas of Greenland at that time the seal was still the staff of life. Without it the native would have been unable to penetrate north of the timber line. It provided him with oil for light and heat, with meat to eat, and fur to keep him warm. Because of the lack of seals, hunting had been poor in the Kigtorsak area. Many dogs had to be killed and others kept on starvation rations. No wonder the director was righteously indignant. Two years earlier he had gone so far as to draw up a petition to have the Panama Canal closed (the petition got as far as Godthaab before being shelved).

Fortunately for me, an American, he did not know the exact location of the canal. He believed it to be in Denmark and therefore I was able to enjoy his unstinted hospitality. He entertained me

ANNOUNCING THE WANG 700



...*from any angle,*
the most significant advance in calculator capabilities since the Wang 320.

960 Core-stored Program Steps.

120 Data Registers. Every register can add, subtract, multiply and divide.

Dual Nixie-type Display, 12 digits plus 2-digit (−98 to +99) exponent, each register.

Basic Keys for +, −, x, ÷, $\sqrt{x}$, 1/x, $Log_{10}X$, Log_eX, e^x, |X|, INT(X), π.

Special Function Keys for SIN, COS, TAN, ARCSIN, ARCCOS, ARCTAN, SINH, COSH, TANH, ARCSINH, ARCCOSH, ARC TANH, Polar Conversion, Rectangular Conversion. (Others may be readily substituted.)

Commands for Loops, Branches and Subroutines. Unmatched power for matrix and array operations.

Programs Stored by Tape Cassettes; up to 10 blocks of 960 steps each.

Fastest Execution Time, approximately 300 μsec. for + and −, 3.0 m sec. for x, 3.5 m sec. for ÷, 15 m sec. for Log A, 35 m sec. for e^A.

Fully Self-contained with rear panel connector for forthcoming Selectric output writer.

Exclusive Integrated Circuit Design. First and only high-powered programmable calculator with IC's for more performance at less cost.

For details,
call your nearby Wang office . . .

SALES/SERVICE OFFICES

Alabama (205) 595-0694
Arizona (602) 265-8747
California (415) 692-0584 (213) 776-2985 (916) 489-7326 (714) 234-5651 (805) 962-6112
Colorado (303) 364-7361
Connecticut (203) 288-8481 (203) 223-7588
Florida (305) 841-3691 (305) 564-3785 (813) 877-6590
Georgia (404) 633-4438
Illinois (312) 889-2254 (309) 674-8931
Indiana (317) 631-0909
Iowa (712) 286-5578
Louisiana (504) 729-6858
Maryland (301) 821-8212 (301) 588-3711
Massachusetts (617) 851-7311
Michigan (313) 278-4744 (616) 454-4212 (517) 835-7300
Minnesota (612) 881-5324
Mississippi (601) 982-1721
Missouri (314) 727-0256 (816) 421-0890
Nebraska (402) 341-6042
Nevada (702) 322-4692
New Jersey (201) 272-7160
New Mexico (505) 255-9042
New York (212) 682-5921 (716) 381-5440 (518) 463-8877
North Carolina (919) 288-1695
Ohio (614) 488-9753 (216) 333-6611 (513) 531-2729
Oklahoma (918) 747-0018
Pennsylvania (215) 642-4321 (717) 397-3212 (412) 366-1906
Tennessee (615) 524-8648 (901) 272-7488 (615) 482-3040
Texas (512) 454-4324 (214) 361-4351 (713) 668-0275 (817) 834-1433 (915) 772-4111
Virginia (703) 877-5535 (703) 359-6320
Washington (206) 622-2466
West Virginia (304) 344-9431
Wisconsin (608) 244-9261
Calgary (403) 266-1804
Montreal (514) 482-0737
Ottawa (613) 244-4554
Toronto (416) 364-0327
Vancouver (604) 685-2835

WANG
LABORATORIES, INC.

Dept. 2Q, 836 North Street, Tewksbury, Massachusetts 01876 Telephone: (617) 851-7311
Circle No. 22 on Readers' Service Card

in his home with seal meat and coffee and the conversation of his friends. On the wall of his sod hut was the picture of a child standing on the shore of a pond watching a duck. The director wondered why Danish parents were allowed to bring up their children so idly. Why wasn't the child taught to shoot the duck—a plump bird, too. On a corner shelf in the hut he had some back copies of a paper *Akuagadlutit* (Reading) that had been launched in 1861 (and today flourishes as a bilingual paper issued twice a week). It was from *Akuagadlutit* that he had read about the opening of the Panama Canal.

WILLIAM S. CARLSON
University of Toledo, Toledo, Ohio 43606

My letter, published below Sheffey's (20 Dec.), was written independently of his, but I would like to make a specific reply to his comments. My purpose in writing my article ("Central American sea-level canal: Possible biological effects," 30 Aug., p. 857), was not to cause "alarm over the biological consequences of linking the oceans," but rather to provoke action by the scientific community to predict the probable results of permitting two separate biotas to merge, and to measure such changes as may occur when and if the canal is dug.

Such action would also allow us to evaluate Sheffey's suggestion that mixing of the biotas is already proceeding on a substantial scale and his statement that "It seems reasonable to conclude that a sea-level canal would create little or no new threat to the lower links of the ocean food chain." As far as I am aware, the few and incomplete studies which have been made in the past do not support this suggestion. And Sheffey's present assurances are all the more surprising in view of a sentence in the Fourth Annual Report of the Atlantic-Pacific Interoceanic Canal Study Commission (1968 H.R. Document No. 380, p. 8): "The Study of Engineering Feasibility includes biological evaluation of the radiological safety of nuclear excavation, but the bioenvironmental studies are not of sufficient scope or duration to permit determination of the potential effects of biota exchange and the impact of exchange of waters upon environmental resources."

There would appear to be some serious discrepancy here. Of course, intelligent persons can hold different opinions on the subject in the present state of our knowledge. But the point of the

more detailed preliminary studies recommended in my article would be to remove this uncertainty or, at least, reduce it as much as possible. Any attempt to discount the biological effects of a sea-level canal on the basis of currently available data would seem to be premature.

IRA RUBINOFF
Smithsonian Tropical Research Institute, Balboa, Canal Zone

World Population: Control or Crisis?

Two recent articles on the world population crisis presented the problems but offered no permanent solutions (*1*). Hardin said, "No technical solution can rescue us from the misery of overpopulation. Freedom to breed will bring ruin to all." Aldrich quotes W. M. Myers' estimate that "with unprecedented effort mankind can buy two or three decades before being overcome by widespread famine" but he himself concludes that "the question we leave here unresolved is how, or whether, mankind will achieve control of its population."

Man *could* achieve control of population growth, but only by drastic methods and new techniques. At the time of puberty, each girl would have a capsule containing a minute amount of progesterone inserted under the skin which would act as a chemical antifertility agent for 15 to 20 years. When a baby is wanted, the capsule would be removed. After the birth of the baby a new capsule would be inserted. Some restrictions might be required, such as denying parenthood to women under the age of 18 or 20, to unmarried women, and to those who had already produced three children.

If such proposals seem too drastic and dictatorial, consider some of the alternatives. Mexico, for example, has received extensive aid since 1943 from the Rockefeller Foundation and has made great progress in increasing food production. J. George Harrar of the Foundation has noted that food production there tripled while the population doubled. But if Mexico's present rate of population growth (3.5 percent) (*2*) should continue, her population would equal the present population of the United States in 42 years, exceed the present population of the world in less than 130 years, and increase 1000-fold in 200 years. Obviously population

growth must be controlled by high death rates or by low birth rates. The National Academy of Sciences in its report *The Growth of World Population* concluded, "Other than the search for lasting peace, no problem is more urgent" (*3*).

KARL SAX

Bishop Hollow Road,
Media, Pennsylvania 19063

References

1. G. Hardin, *Science*, **162**, 1243 (1968); D. G. Aldrich, Jr., *ibid.*, p. 1309.
2. *United Nations Demographic Yearbook 1968* (Statistical Office of the Economic and Social Affairs Dept. of the United Nations, New York).
3. National Academy of Sciences Committee on Science and Public Policy, NRC Rept. 1091 (Washington, D.C., 1963), p. 2.

Migratory Habits of the Scientific Goose

The rapidly expanding population of the once rare bird, the scientific goose, has increased the importance of attempts to study and interpret the rather exceptional geographic movement patterns of this species. Although permanent nesting areas are found in all habitable regions of the earth, they tend to be concentrated in the vicinity of the major cities. At intervals, which correlate only approximately with seasonal variations, individual birds from widely separated nesting sites simultaneously take flight. They travel, often vast distances, to flocking points where they engage in the "ritual ceremony" or "symposium" which lasts an average of 5 to 7 days, then return to their points of origin. The cycle is repeated again and again, with the only discernible difference being the location of the flocking point.

The assumption that this migratory behavior is related primarily to breeding may be rejected on the grounds that the males greatly outnumber the females; moveover, the frequency of participation appears to accelerate with age, so that the oldest birds (easily distinguishable by their bedraggled feathers and drooping tails) are in almost constant flight. Any alternative hypothesis to explain this mysterious evolutionary adaptation must account for the events of the "ritual ceremony." During this activity the individuals, one by one, take a position facing the others and cackle loudly in turn. Analysis of these sounds has demonstrated characteristic cackling patterns for each individual, the only variation being the addition of

a few novel sounds at the end and the omission of a like number at the beginning of each presentation. Also to be explained are the recent experiments which have shown that the prime characteristic of the migrating individuals is their high position in the pecking order of their home flocks. Moreover, their departure signals a marked relaxation of flock activities as well as an exceptional degree of disorganized and chaotic behavior in the remaining members. In certain respects this overall behavior pattern suggests a form of racial suicide consequent upon the recent extremely rapid rise in the population.

In order to discuss these problems, a Congress on the Migratory Habits of the Scientific Goose has been organized and will be held either on the French Riviera or the island of Tahiti in the fall of 1969.

RONALD G. HARVEY
Ben May Laboratory for Cancer Research, University of Chicago, Chicago, Illinois 60637

Proposed American Society for Neurochemistry

A number of American scientists in the area of neurochemistry have expressed an interest in forming a national scientific society. As a temporary measure, the American members of the International Society for Neurochemistry have selected an organizing committee for the purpose of taking the preliminary steps required in setting up such a society. Anyone actively working in the field of neurochemistry and interested in participating in the work of the founding group is invited to communicate with one of the members of the organizing committee: B. W. Agranoff (Ann Arbor, Michigan), S. S. Kety (Boston, Massachusetts), A. Lajtha (New York City), F. LeBaron (Albuquerque, New Mexico), H. R. Mahler (Bloomington, Indiana), G. M. McKhann (Baltimore, Maryland), E. Roberts (Duarte, California), W. W. Tourtellotte (Ann Arbor, Michigan), D. B. Tower (Bethesda, Maryland), and F. Wolfgram (Los Angeles, California); or with the provisional secretary: J. Folch-Pi, McLean Hospital, Belmont, Massachusetts 02178.

DONALD B. TOWER
Laboratory of Neurochemistry, National Institute of Neurological Diseases and Blindness, Bethesda, Maryland 20014

21 February 1969, Volume 163, Number 3869 **SCIENCE**

AAAS Meetings: A Progress Report

For well over a hundred years the Meetings of the AAAS have reflected the subtle changes and major shifts in the scientific enterprise of the United States. Their history records the bold innovations of the latter half of the 19th century, when research establishments were proposed that still serve today; the enormous growth in size and complexity of the separate branches of science; and the gradual drift into specialization. Of late, they show the beginning of a new phase: the move away from excessive fragmentation and unconcern for unpleasant and unexpected results of technology toward a more lively involvement with the world around.

Much thought has gone recently into redefining the purpose and objective of the Annual Meetings. What can they do effectively? What functions are obsolete because they can be done better elsewhere? Where are the major needs and payoffs? No simple "either-or" answer appeared. However, a number of guiding principles emerged which have already been given practical expression on a scale such that their impact is becoming apparent.

A decided shift is taking place toward framing questions that deal with the consequences of science and technology. Through panel discussions, general symposia, reviews, and lectures, wide-ranging series of subjects are being presented for consideration by a concerned audience. Massive use of "live" television is making a substantial part of the proceedings available to people who have not heretofore considered themselves invited and welcome.

On a more technical level, increasing emphasis is being placed on truly interdisciplinary symposia in which science is advanced through the illumination of topics that will not bend to the attack of a single discipline. Individuals of widely divergent views, including spokesmen for architecture, law, religion, art and the humanities, are often essential participants in this difficult and demanding task.

These two ventures are the growth points of the current enterprise. Their addition to the more traditional undertakings makes it important that consideration be given to the size of the Meetings, so that they are neither so large as to lose the human scale nor so small as to be dull; it demands careful choice of topics that are neither so general as to disappoint the specialist nor so fragmented as to repel the general audience. Time and space must be found for celebrating historical anniversaries and their results, for reviewing the accomplishments of large national research undertakings, for inspecting the interactions between science and other human activities, for reinstituting demonstration lectures and instructive science exhibits.

Two additional ideas are being explored. Detlev Bronk, in 1967, revived the long-neglected concept of an "Open City," where a close bond is established between city and participants through tours, open houses, exhibits, and plays. This was tried and found workable. Athelstan Spilhaus, president-elect of the AAAS, wants attention given to the "non-Meeting" aspects that would permit participation without the need for physical presence. New tools of communication, assisted by the links between the AAAS and regional groups that are attuned to new responsibilities, should make this possible. By television or radio, programs can be made available to diverse local audiences and discussed by many more people than could comfortably be accommodated at the Meeting. Both proposals require the support of people with ideas and with funds. Both will be pursued intensively.

—WALTER G. BERL, *Editor, AAAS Meetings*

Princeton Gamma-Tech:
Please tell me how we may adapt our scanning electron microscope to function simultaneously as an electron microprobe.
Our existing instrument is

manufacturer _____ model _____

name _____

address _____

city _____

state _____ zip _____

Take your existing scanning electron microscope. Add our high-resolution non-dispersive X-ray spectrometer. You can determine the composition of your sample while you're looking at it.

Scan in your usual way. Select a region or particle of interest. Collect the emergent X-rays on the multi-channel analyzer. Push a button. Identification is rapid and direct. While you watch the image.

Available right now—The Princeton Gamma-Tech X-ray spectrometer has already been adapted to existing ports on electron microscopes and/or microprobes manufactured by JEOLCO (shown above), ARL, CAMBRIDGE, CAMECA, HITACHI, and K^2. Adaptations to other instruments are in process.

If you already have a scanning electron microscope, you have most of what you need. For the rest, call us. Phone (609) 799-0345. Box 641, Princeton, New Jersey 08540, U.S.A. Cable PRINGAMTEC.

PRINCETON GAMMA-TECH

Calendar of Events

National Meetings

March

7–11. **Nuclear Medicine**, Miami Beach, Fla. (J. Oswald, P.O. Box 8105, Coral Gables, Fla. 33124)

9–11. American Assoc. of **Pathologists and Bacteriologists**, San Francisco, Calif. (K. M. Brinkhous, Dept. of Pathology, Univ. of North Carolina School of Medicine, Chapel Hill 27514)

9–14. American Soc. of **Photogrammetry**, Washington, D.C. (G. L. Loelkes, 8608 Cherry Valley Lane, Alexandria, Va. 22309)

10–12. **Flight Test, Simulation, and Support** Conf., 3rd., Houston, Tex. (J. C. McLane, Jr., Structures and Mechanics Div., Engineering and Development Directorate, NASA Manned Spacecraft Center, Houston 77058)

10–12. Society of **Toxicology**, Williamsburg, Va. (J. F. Borzelleca, Dept. of Pharmacology, Medical College of Virginia, Richmond 23219)

10–13. Conference on **Electric Fields in the Magnetosphere**, Houston, Tex. (J. W. Freeman, Jr., Dept. of Space Science, Rice Univ., P.O. Box 1892, Houston 77001)

10–13. American **Nuclear** Soc., Idaho Falls, Idaho. (J. E. Kunze, General Electric Co., P.O. Box 2147, Idaho Falls 83401)

10–14. National Assoc. of **Corrosion Engineers**, 25th, Houston, Tex. (Publication Director, 980 M & M Bldg., No. 1, Main St., Houston)

11–14. **Optical Soc. of America**, San Diego, Calif. (M. E. Warga, The Society, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

13–14. Symposium on **Automated, High-Resolution Analyses in the Clinical Lab.**, Oak Ridge, Tenn. (Oak Ridge Natl. Lab., P.O. Box X, Oak Ridge 37830)

13–14. **Microscopy** Symp., 6th, New Orleans, La. (M. L. Zimny, Dept. of Anatomy, Louisiana State Univ. Medical School, 1542 Tulane Ave., New Orleans 70112)

13–15. Conference on **Nuclear Isospin**, 2nd, Asilomar, Calif. (S. D. Bloom, Lawrence Radiation Lab., P.O. Box 808, Livermore, Calif. 94550)

14–15. American **Burn** Assoc., Atlanta, Ga. (J. A. Boswick, Cook County Hospital, 1835 W. Harrison, Chicago, Ill. 60612)

14–15. **Cell Biology–Biophysics**, Chicago, Ill. (J. S. Gross, Dept. of Life Sciences, Indiana State Univ., Terre Haute 47809)

15–19. American Acad. of **Allergy**, Bal Harbour, Fla. (J. O. Kelly, 756 N. Milwaukee St., Milwaukee, Wis. 53202)

16–20. American Inst. of **Chemical Engineers**, 64th, New Orleans, La. (R. M. Persell, U.S. Dept. of Agriculture, Southern Utilization R&D Div., Box 19687, New Orleans 70119)

16–20. American Soc. of **Mechanical Engineers**, Cleveland, Ohio. (The Society, 345 E. 47 St., New York 10017)

17. **Chemiluminescence** Conf., Desert Hot Springs, Calif. (H. W. Schneider, Box 433, North Palm Springs, Calif.)

17–19. **Physical Electronics** Conf., 29th, New Haven, Conn. (T. E. Fischer, Dept.

of Engineering and Applied Science, Hammond Lab., Yale Univ., 14 Mansfield St., New Haven 06520)

17–19. **Space** Congr., 6th, Cocoa Beach, Fla. (G. Meguiar, P.O. Box 1333, Cocoa Beach 32931)

18–19. Central States Section of the **Combustion** Inst., Minneapolis, Minn. (B. Schukraft, Inst. of Gas Technology, 3424 S. State St., Chicago, Ill. 60616)

18–20. National Federation of **Science Abstracting and Indexing Services**, Raleigh, N.C. (S. Keenan, NFSAIS, 2102 Arch St., Philadelphia, Pa. 19103)

19. **Man and His Urban Environment**, Cincinnati, Ohio. (E. C. Foulkes, Dept. of Environmental Health, Kettering Lab., Univ. of Cincinnati College of Medicine, Cincinatti 45219)

20. **Biomedical Engineering**, Cincinnati, Ohio. (D. Hershey, Dept. of Chemical Engineering, Univ. of Cincinnati, Cincinnati)

20–22. American Acad. of **Facial Plastic and Reconstructive Surgery**, New Orleans, La. (J. R. Anderson, 111 Tulane Ave., New Orleans 70112)

23–29. American **Crystallographic** Assoc., Seattle, Wash. (W. L. Kehl, Gulf Research and Development Co., P.O. Box 2038, Pittsburgh, Pa. 15230)

24–25. **Basis of Decision**, Brooklyn, N.Y. (C. McC. Brooks, Downstate Medical Center, State Univ. of New York, 450 Clarkson Ave., Brooklyn 11203)

24–25. **Laser Safety** Conf. and Workshops, 2nd, Cincinnati, Ohio. (L. Goldman, Laser Lab., Children's Hospital Research Foundation of the Medical Center of the Univ. of Cincinnati, Cincinnati)

24–27. American **Physical** Soc., Philadelphia, Pa. (W. W. Havens, Jr., The Society, 335 E. 45 St., New York 10017)

24–28. **Desalination**: Methods and Applications, Berkeley, Calif. (Continuing Education in Engineering, Univ. Extension, Univ. of California, 2223 Fulton St., Berkeley 94720)

25–27. American **Laryngological, Rhinological and Otological** Soc., Inc., New Orleans, La. (V. R. Alfaro, 917 20th St., NW, Washington, D.C. 20006)

26–28. National **Business Aircraft** Mfg. and Engineering Display, Wichita, Kan. (A. J. Favata, SAE Headquarters, 2 Pennsylvania Plaza, New York 10001)

26–28. Symposium on the **Engineering Aspects of Magnetohydrodynamics**, 10th, Cambridge, Mass. (J. Klepeis, Arrangements Committee, Avco Everett Research Lab., 2385 Revere Beach Parkway, Everett, Mass. 02149)

26–28. **George H. Hudson** Symp., 4th, Plattsburgh, N.Y. (M. H. Tourin, State Univ. College of Arts and Sciences, Plattsburgh 12901)

27. **Biochemistry, Assay and Nutritional Value of Vitamin E**, Rosemont, Ill. (W. Davin, Dawes Labs., Inc., 450 State St., Chicago Heights, Ill. 60411)

27–28. **Technical Writing** Inst., Lubbock, Tex. (M. Miles, Technical Writing Inst., Dept. of English, Texas Technological College, Lubbock 79409)

27–29. **Geological** Soc. of America, South-Central Section, Lawrence, Kans., "Basement Rocks of the Mid-Continent" and "Paleo-Environmental Implications of Palynology." (W. M. Merrill, Dept. of Geology, Univ. of Kansas, Lawrence 66044)

28–29. American **Otological** Soc., Inc., New Orleans, La. (W. H. Bradley, 1100 E. Genesee St., Syracuse, N.Y.)

28–30. American **Psychosomatic** Soc., Inc., 26th, Cincinnati, Ohio. (H. Weiner, 265 Nassau Rd., Roosevelt, N.Y. 11575)

28–2. Seminar of the American **Cancer Soc. for Science Writers**, 11th, New Orleans, La. (J. Clark, American Cancer Soc., 219 E. 42 St., New York 10017)

30–2. American **Orthopsychiatric** Assoc., New York, N.Y. (M. F. Langer, Room 1313, 1790 Broadway, New York 10019)

31. American **Astronomical** Soc., Honolulu, Hawaii. (G. C. McVittie, Univ. of Illinois Observatory, Urbana 61801)

31–2. **Advances in Water Quality Improvement**–Physical and Chemical Processes, Austin, Tex. (Center for Research in Water Resources, Univ. of Texas, Rt. 4, Box 189, Austin 78757)

31–2. **Metals Engineering** Conf., Washington, D.C. (R. J. Cepluch, Hartford Steam Boiler Inspection and Insurance Co., 56 Prospect St., Hartford, Conn. 06102)

31–2. Education for the **Peaceful Uses of Nuclear Explosives**, Tucson, Ariz. (L. E. Weaver, Dept. of Nuclear Engineering, Univ. of Arizona, Tucson 85721)

31–2. American Assoc. of **Thoracic Surgery**, San Francisco, Calif. (T. B. Ferguson, Suite 311, 7730 Carondelet Ave., St. Louis, Mo. 63110)

April

1. Arkansas Acad. of **Science**, Fayetteville, Ark. (G. E. Templeton, Dept. of Plant Pathology, Univ. of Arkansas, Fayetteville 72701)

1–2. **Advanced Techniques in Real-Time Simulation**, Philadelphia, Pa. (University City Science Center, Science Center Bldg. No. 1, 3401 Market St., Philadelphia 19104)

1–3. **Numerical Control** Soc., 6th, Cincinnati, Ohio. (P. Senkiw, Advanced Computer Systems, Inc., 2185 S. Dixie Ave., Dayton, Ohio 45409)

1–4. American Assoc. of **Anatomists**, Boston, Mass. (R. T. Woodburne, Dept. of Anatomy, Univ. of Michigan, East Medical Bldg., Ann Arbor 48104)

2. **Oral Cancer** Symp., 7th, Poughkeepsie, N.Y. (Sister M. A. Elizabeth, Poughkeepsie, N. Y.)

2–4. **Picture Bandwidth Compression**, Cambridge, Mass. (E. E. Witchi, Boston Section, IEEE, 31 Channing St., Newton, Mass. 02158)

3–4. American Soc. for Engineering **Education**, Fayetteville, Ark. (E. H. Wright, The Society, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

3–5. Southern Soc. for **Philosophy and Psychology**, Miami, Fla. (D. Browning, Dept. of Philosophy, Univ. of Miami, Coral Gables, Fla.)

3–5. National Conf. on **Schizophrenia**, Topeka, Kan. (Dept. of Education, Menninger Foundation, Box 829, Topeka 66601)

7–9. **Operations Research** Seminar, Cleveland, Ohio. (Office of Public Relations, Case Western Reserve Univ., University Circle, Cleveland 44106)

7–11. **Public Health Aspects of Peaceful Uses of Nuclear Explosives**, Las Vegas, Nev. (Symp. Committee, Southwestern

LO-TEMP BATH HEATS, COOLS $462

Double the range of the average visibility bath! Waco's Lo-Temp Bath maintains temperature at any level from —10°C to +65°C, ±.01°C . . . ideal where precise temperature control is required. Plenty of testing room, too. Coils fit snugly against the bottom. Use the entire volume of the jar. Self-contained unit is only 20½" wide, 27½" high.

No. 882 Waco Lo-Temp Refrigerated Bath, complete with Pyrex jar 12" diam., for 115V, 50/60 cycle AC. **$462.**

Write for WACO Bath Bulletin for complete information

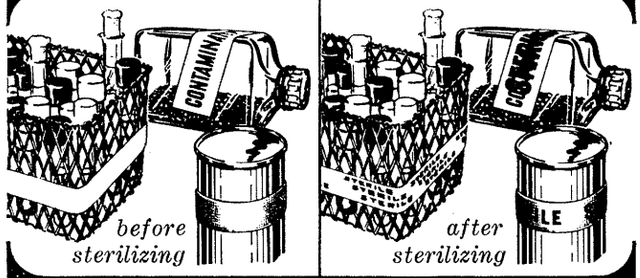
Laboratory Supplies and Equipment.

wilkens-anderson co.

4525 W. Division St., Chicago, Ill. 60651

Circle No. 110 on Readers' Service Card

TSI TAPES AND LABELS



show "STERILE" after service in an autoclave

TSI (Time Sterile Indicator) Tapes and Labels are impregnated with a special chemical to change color after autoclaving. Their pressure-sensitive adhesive sticks to any surface, leaves no messy residue. A variety of tapes are available for use with standard and high vacuum autoclaves as well as high temperature ovens. Special TSI Conversion Labels articulate the change from contaminated to sterile. TSI indicators can be imprinted with any wording you desire. Write for complete information.

TSI ®

All Time Tape products are Bacteriostatic for your Safety

AVAILABLE THROUGH LABORATORY DEALERS.

PROFESSIONAL TAPE CO., INC.

365 EAST BURLINGTON ROAD

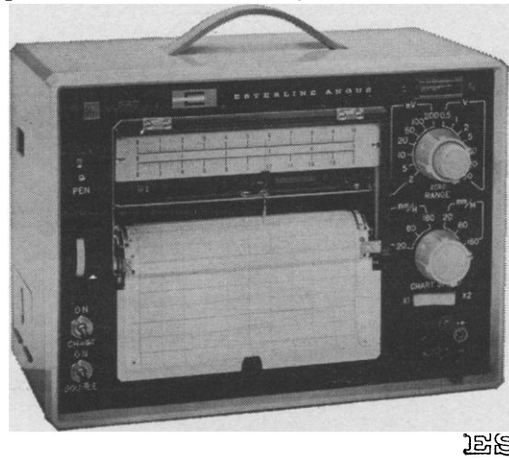
RIVERSIDE, ILLINOIS 60546

Circle No. 104 on Readers' Service Card

A Portable Battery Operated Servo Recorder Priced at $750

A truly portable servo recorder that operates on rechargeable nickel-cadmium or conventional 1½ volt "D" size flashlight batteries or on AC. It features 6" span-sensitivities as low as 2 MV with input impedance of 2 megohms and ½ second full scale response. That's the Esterline Angus Port-A-Graph Servo. This solid state recorder weighs only 15 pounds and measures 12½" wide, 9½" high and 6½" deep. Packed into this compact space are eight millivolt and six volt spans, one of the most simple servo systems ever devised (only two pulleys) and a 12 speed chart drive.

Wherever there's a recording job to be done, this field portable recorder with laboratory instrument specifications is ready to go.



For off-the-shelf delivery, specify Model T171B. For more information, write or call: Esterline Angus, Division of Esterline Corporation, Box 24000, Indianapolis, Indiana 46224 Phone 317/244-7611

ESTERLINE ANGUS

Circle No. 62 on Readers' Service Card

Radiological Health Lab., P.O. Box 15027, Las Vegas 89114)

8–9. **High Performance Composites**, 4th symp., St. Louis, Mo. (G. L. Esterson, Box 1048, Washington Univ., St. Louis 63130)

8–11. **Acoustical** Soc. of America, 71st, Philadelphia, Pa. (B. Goodfriend, 335 E. 45 St., New York 10017)

9–10. American Assoc. of **Planned Parenthood Physicians**, 7th, San Francisco, Calif. (G. C. Denniston, The Association, 515 Madison Ave., New York 10022)

9–11. **Textile Research** Inst., 39th, New York, N.Y. (P.O. Box 625, Princeton, N.J.)

9–12. **Geological** Soc. of America, southeastern section, Columbia, S.C. (D. J. Colquhoun, Dept. of Geology, Univ. of South Carolina, Columbia 29208)

10. Health Conf. on **Diet, Exercise, and Cardiovascular Disease**, Philadelphia, Pa. (R. L. Kunes, Heart Assoc. of Southeastern Pennsylvania, 318 S. 19 St., Philadelphia)

10–12. **Population** Assoc. of America, Atlantic City, N.J. (A. L. Ferriss, Russell Sage Foundation, 1755 Massachusetts Ave., NW, Washington, D.C. 20036)

10–16. American **Leprosy Missions**, 10th PHS seminar, Carville, La. (American Leprosy Missions, 297 Park Ave. South, New York 10010)

11–12. American Soc. for **Engineering Education** (North Central Section mtg.), Windsor, Ont., Canada. (E. H. Wright, The Society, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

12. New Jersey Acad. of **Science**, East Orange. (F. F. Katz, Seton Hall Univ., South Orange, N.J. 07079)

12–16. American Soc. of **Abdominal Surgeons**, Las Vegas, Nev. (B. F. Alfano, 675 Main St., Melrose, Mass. 02176)

12–13. National Guild of **Catholic Psychiatrists**, Washington, D.C. (P. A. Santucci, 4962 Hampden Lane, Bethesda, Md. 20014)

12–13. **Histochemical** Soc., 20th, Atlantic City, N.J. (G. M. Lehrer, Div. of Neurochemistry, Mount Sinai Medical School, 11 E. 100 St., New York 10029)

13–16. **Plant Engineering and Maintenance**, 12th conf., Pittsburgh, Pa. (B. J. Cross, Lederle Labs., Pearl River, N.Y. 10965)

13–17. American Assoc. of **Cereal Chemists**, 54th, Chicago, Ill. (R. Tarleton, 1955 University Ave., St. Paul, Minn. 55104)

13–17. Pacific Coast **Oto-Ophthalmological** Soc., San Francisco, Calif. (F. A. Sooy, Dept. of Otolaryngology, Univ. of California Medical Center, San Francisco 94122)

13–18. American Socs. for **Experimental Biology**, Atlantic City, N.J. (J. F. A. McManus, FASEB, 9650 Rockville Pike, Bethesda, Md. 20014)

13–18. American Soc. for **Experimental Pathology**, Atlantic City, N.J. (R. E. Knotti, 9650 Rockville Pike, Bethesda, Md. 20014)

13–18. American Inst. of **Nutrition**, Atlantic City, N.J. (J. Waddell, 9650 Rockville Pike, Bethesda, Md. 20014)

13–18. American Soc. for **Pharmacology and Experimental Therapeutics**, Inc., Atlantic City, N.J. (E. B. Cook, Executive Officer, The Society, 9650 Rockville Pike, Bethesda, Md. 20014)

14–16. American Inst. of **Mining, Metallurgical and Petroleum Engineers**, Inc., 52nd, Toronto, Ont., Canada. (The Society, 345 E. 47 St., New York 10017)

14–16. **Structures, Structural Dynamics, and Materials** Conf., 10th, New Orleans, La. (A. H. Hausrath, Bldg. 520, Room 144, TRW Systems, P.O. Box 1310, Norton AFB, Calif. 92402)

14–17. American **Cleft Palate** Assoc., Houston, Tex. (K. R. Bzoch, Dept. of Communicative Disorders, Univ. of Florida, Gainesville 32601)

14–17. American Assoc. of **Petroleum Geologists**, 54th, Dallas, Tex. (The Association, Box 979, Tulsa, Okla.)

14–18. American Soc. of **Biological Chemists**, Inc., Atlantic City, N.J. (Executive Officer, The Society, 9650 Rockville Pike, Bethesda, Md. 20014)

14–18. American Assoc. of **Immunologists**, Atlantic City, N.J. (Secretary-Treasurer, The Association, 9650 Rockville Pike, Bethesda, Md. 20014)

16–18. American Soc. of **Neuroradiology**, Cleveland, Ohio. (A. E. Zimmer, Danbury Hospital, Danbury, Conn. 06810)

14–18. American **Physiological** Soc., Atlantic City, N.J. (R. G. Daggs, The Society, 9650 Rockville Pike, Bethesda, Md. 20014)

14–18. Federation of American Socs. for **Experimental Biology**, 53rd, Atlantic City, N.J. (Convention Manager, 9650 Rockville Pike, Bethesda, Md. 20014)

15. **Labeling of Blood Typing Sera**, New York, N.Y. (A. S. Wiener, Office of the Chief Medical Examiner of New York City, 520 First Ave., New York 10016)

16–17. American Inst. of **Aeronautics and Astronautics** (structural dynamics and aeroelasticity conf.), New Orleans, La. (H. Runyan, Dynamics Loads Div., NASA Langley Research Center, Langley Field, Va. 23365)

16–18. Institute of **Electrical and Electronics Engineers** (geoscience electronics symp.), Washington, D.C. (M. E. Ringenbach, Equipment Development Lab., Room 201, Gramax Bldg., 8060 13 St., Silver Spring, Md. 20901)

16–18. American Soc. for **Engineering Education**, southeastern section mtg., Coral Gables, Fla. (E. H. Wright, The Society, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

16–26. **Solid State Chemistry** Advanced Study Inst., Scottsdale, Ariz. (L. Eyring and M. O'Keeffe, Dept. of Chemistry, Arizona State University, Tempe 85281)

17–18. **Fiber** Soc., Raleigh, N.C. (L. Rebenfeld, Box 625, Princeton, N.J.)

17–18. American Assoc. of **Railway Surgeons**, Chicago, Ill. (C. Y. Werelius, 5800 Stony Island Ave., Chicago 60637)

17–19. **Orthopaedic** Symp., 5th, Houston, Tex. (W. M. Granberry, 6624 Fannin St., Houston 77025)

17–19. Association of **Southeastern Biologists**, Memphis, Tenn. (C. D. Brown, Memphis State Univ., Memphis)

17–20. Southwestern Assoc. of **Naturalists**, Tempe, Ariz. (M. J. Fouquette, Jr., Dept. of Zoology, Arizona State Univ., Tempe 85281)

17–22. American **Dermatological** Assoc., Inc., Scottsdale, Ariz. (R. R. Kierland, % Mayo Clinic, Rochester, Minn. 55901)

18–19. Iowa Acad. of **Sciences**, Cedar

Falls, Iowa. (R. Hanson, Dept. of Science, Univ. of Northern Iowa, Cedar Falls 50613)

18–20. American Soc. of **Internal Medicine**, Chicago, Ill. (A. V. Whitehall, 3410 Geary Blvd., San Francisco, Calif. 94118)

20–23. Institute of **Environmental Sciences**, 15th, Anaheim, Calif. (Technical Program Committee, The Institute, 940 E. Northwest Highway, Mount Prospect, Ill. 60056)

20–23. West Virginia Acad. of **Ophthalmology and Otolaryngology**, Greenbrier. (J. E. Blaydes, Jr., 107 Federal St., Bluefield, W.Va.)

20–23. Assoc. for **Research in Ophthalmology**, Sarasota, Fla. (H. E. Kaufman, Office of Secretary-Treasurer, Dept. of Ophthalmology, Univ. of Florida Medical College, Gainesville 32601)

20–24. American **Oil Chemists'** Soc., San Francisco, Calif. (C. H. Hauber, The Society, 35 E. Wacker Drive, Chicago, Ill. 60601)

20–25. Society of **Motion Picture and Television Engineers**, 105th, Miami Beach, Fla. (Executive Secretary, 9 E. 41 St., New York 10017)

21–22. American Soc. for **Artificial Internal Organs**, Atlantic City, N.J. (E. F. Bernstein, Dept. of Surgery, Univ of Minnesota Medical School, Minneapolis 55455)

21–22. **Temperature Measurements** Soc., 6th, Hawthorne, Calif. (C. L. Vaughn, Paper Selection Committee, % The Society, P.O. Box 156, Palos Verdes Estates, Calif. 90274)

21–23. **Effective Use of Computers in the Nuclear Industry**, Knoxville, Tenn. (B. F. Maskewitz, Oak Ridge Natl. Lab., P.O. Box X, Oak Ridge, Tenn. 37830)

21–24. American **Industrial Health** Conf., Houston, Tex. (American Industrial Health Conf., 55 E. Washington St., Chicago, Ill. 60602)

21–25. **Astrodynamics and Related Planetary Sciences**, Washington, D.C. (J. W. Siry, NASA Goddard Space Flight Center, Code 550, Greenbelt, Md. 20771)

21–25. American College of **Physicians**, 50th, Chicago, Ill. (E. C. Rosenow, Jr., 4200 Pine St., Philadelphia, Pa.)

21–25. **Solid State Chemistry** Conf., 2nd, Scottsdale, Ariz. (L. Eyring and M. O'Keeffe, Dept. of Chemistry, Arizona State University, Tempe 85281)

21–26. American Acad. of **Neurology**, Washington, D.C. (S. A. Nelson, 4005 W. 65 St., Minneapolis, Minn. 55435)

22–23. National **Relay** Conf., 17th, Stillwater, Okla. (D. D. Lingelbach, School of Electrical Engineering, Oklahoma State Univ., Stillwater 74074)

22–24. **Telemetering** Conf., Washington, D.C. (R. W. Rochelle, NASA Goddard Space Flight Center, Code 710, Greenbelt, Md. 20771)

22–25. American College **Health** Assoc., Oklahoma City, Okla. (J. W. Dilley, 2807 Central Ave., Evanston, Ill. 60201)

22–25. National **Pollution** Conf., Houston, Tex. (The Conference, 4710 Greeley St., Houston 77006)

23–24. **Electric Process Heating in Industry**, Inst. of Electrical and Electronics Engineers, Philadelphia, Pa. (G. Bobart, Westinghouse Electric Corp., Box 300, Sykesville, Md. 21784)

23–25. Institute of **Electrical and Electronics Engineers** Conv., San Antonio, Tex. (W. H. Hartwig, Dept. of Electrical Engineering, Engineering Science Bldg. 439, University of Texas, Austin 78712)

23–25. **Nondestructive Evaluation of Components and Materials in Aerospace, Weapons Systems, and Nuclear Applications**, San Antonio, Tex. (C. E. Lautzenheiser, Southwest Research Inst., 8500 Culebra Rd., San Antonio 78228)

24–26. American Acad. of **Physical Medicine and Rehabilitation**, Chicago, Ill. (C. C. Herold, 30 N. Michigan Ave., Chicago 60602)

24–26. New York **Roentgen** Soc., New York, N.Y. (S. H. Madell, 1 E. 82 St., New York 10028)

24–26. Illinois State Acad. of **Science**, Decatur, Ill. (K. Harmet, Dept. of Biology, Northern Illinois Univ., DeKalb 60115)

24–26. Ohio Acad. of **Science**, Delaware. (J. H. Melvin, Ohio Acad. of Science, 505 King Ave., Columbus 43210)

24–26. Annual **Wildflower** Pilgrimage, 19th, Gatlinburg, Tenn. (Gatlinburg Chamber of Commerce, Box 527, Gatlinburg, Tenn. 37738 or E. E. C. Clebsch, Dept. of Botany, Univ. of Tennessee, Knoxville 37916)

24–27. Association of **Clinical Scientists**, Mobile, Ala. (R. P. MacFate, 125 N. Rutledge St., Pentwater, Mich. 49449)

25–26. American Soc. for **Engineering Education**, Rocky Mountain Section mtg., Logan, Utah. (E. H. Wright, The Society, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

25–26. American Society of **Group Psychotherapy and Psychodrama**, New York, N.Y. (A. Manzoeillo, P.O. Box 311, Beacon, N.Y. 12508)

25–26. Nebraska Acad. of **Science**, Lincoln. (C. B. Schultz, 101 Morrill Hall,

University Museum, Univ. of Nebraska, Lincoln 68508)

25–26. South Dakota Acad. of **Science**, Vermillion. (T. Van Bruggen, Dept. of Botany, Univ. of South Dakota, Vermillion 57069)

26. American Soc. for **Engineering Education**, Illinois-Indiana Section Mtg., Terre Haute, Ind. (E. H. Wright, The Society, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

26–27. **Eye Bank** Assoc of America, New Orleans, La. (W. Clark, 211 S. Saratoga St., New Orleans 70112)

27–30. American Soc. of **Maxillofacial Surgeons**, San Francisco, Calif. (D. Goulian, Jr., 116 E. 68 St., New York 10021)

27–30. **Southwestern and Rocky Mountain** Div. of AAAS, Colorado Springs, Colo. (M. G. Anderson, Dept. of Biology, New Mexico State Univ., Las Cruces 88001)

28. National **Cystic Fibrosis** Research Foundation, Atlantic City, N.J. (W. H. Boyer, 202 E. 44 St., New York 10017)

28–29. **Photo-Optical Techniques in Simulators**, South Fallsburgh, N.Y. (Photo-Optical Techniques in Simulators Seminar Committee, % SPIE Natl. Office, P.O. Box 288, Redondo Beach, Calif. 90277)

28–30. American Inst. of **Aeronautics and Astronautics**, Cincinnati, Ohio. (J. Lukasiewicz, ARO, Inc., Arnold Engineering Development Center, Arnold Air Force Station, Tenn. 37389)

International and Foreign Meetings

March

20–23. International Assoc. for **Dental Research**, 47th, Houston, Tex. (A. D. Frechette, 211 E. Chicago Ave., Chicago, Ill. 60611)

24–27. International Convention of Inst. of **Electrical and Electronics Engineers**, New York, N.Y. (The Convention, 345 E. 47 St., New York 10017)

25–28. **Autoclaved Building Products**, 2nd intern. symp., Hanover, Germany. (Secretary, Second Intern. Symp. 1969, "Haus der Kalksandstein-industrie," Postfach 66, 3 Hanover-Herrenhausen)

25–28. **Liquefied Natural Gas**, London, England. (Conference Dept., Inst. of Mechanical Engineers, 1 Birdcage Walk, Westminster, London, S.W.1)

27–28. International Congr. for **Heating, Ventilating, Air Conditioning**, 19th, Frankfurt am Main, Germany. (S. Ausschuss, Kongress fur Heizung, Luftung, Klimatechnik, Kongressburo, Konigstr. 5, 4 Dusseldorf 1, Germany)

31–4. International Symp. on **Concrete Bridge Design**, 2nd, Chicago, Ill. (American Concrete Inst., P.O. Box 4754, Redford Sta., 22400 W. Seven Mile Rd., Detroit, Mich. 48219)

April

7–11. Federation of European **Biochemical** Societies, 6th, Madrid, Spain. (Secretariat, Centro de Investigaciones Biologicas, Velazquez, 144, Madrid 6)

8–11. International Symp. on **Laboratory Animals**, Washington, D.C. (B. F. Hill, Charles River Breeding Labs., Inc., Wilmington, Mass.)

9–12. **British Medical** Assoc., clinical mtg., Valletta, Malta. (British Medical Assoc. House, Tavistock Sq., London, W.C.1, England)

14–17. **Cleft Palate,** intern. congr., Houston, Tex. (B. J. McWilliams, Cleft Palate Research Center, Univ. of Pittsburgh, 313 Salk Hall, Pittsburgh, Pa. 15213)

15–17. **Civil Engineering Problems of the South Wales Valleys,** Cardiff, England. (Institution of Civil Engineers, Great George St., London, S.W.1, England)

15–18. International **Magnetics** Conf., Amsterdam, Netherlands. (T. Holtwijk, Philips Research Labs., Eindhoven, Netherlands)

17–18. British Inst. of **Radiology,** London, England. (British Inst. of Radiology, 32 Welbeck St., London, W.1)

19–27. Yugoslav Seminar and Exhibition of **Regulation, Measuring and Automation-Jurema** 1969, 14th, Zagreb. (Jurema, Unska U1, P.O.B. 123, Zagreb)

21–23. Canadian Inst. of **Mining and Metallurgy,** 71st, Montreal, Canada. (Executive Director, The Institute, Suite 906, 1117 St. Catherine St. W., Montreal 2)

21–25. **Switching Techniques for Telecommunication Networks,** London, England. (Conference Dept., Institution of Electrical Engineers, London, W.C.2)

21–26. Canadian **Pulp and Paper** Assoc., 10th, Vancouver, B.C. (W. K. Voss, Ontario Paper Co. Ltd., Thorold, Ont.)

22–25. **Cotton Textile Research,** 1st intern. symp., Paris, France. (Institut Textile de France, 23 rue des Abondances, 92, Boulogne, France)

22–29. **Hydrology of Deltas,** intern. symp., Bucharest, Rumania. (A. I. Johnson, Water Resources Div., U.S. Geological Survey, Federal Center, Denver, Colo. 80225)

28–2. Symposium on **Radiation-Induced Carcinogenesis,** Athens, Greece. (R. N. Mukherjee, Unit of Radiation Biology, Intern. Atomic Energy Agency, Karntner Ring 11–13, A-1010 Vienna, Austria)

May

5–8. **Instrumentation in Aerospace Simulation Facilities,** 3rd intern. congr., Farmingdale, N.Y. (C. R. Spitzer, MS-236, NASA Langley Research Center, Hampton, Va. 23365)

5–8. International **Microwave** Symp., Dallas, Tex. (J. B. Horton, MS 905, Texas Instrument Co., Box 5012, Dallas 75222)

5–9. Commonwealth **Mining and Metallurgical** Congr., 9th, London, England. (Congress Secretary, Commonwealth Council of Mining and Metallurgical Institutions, 44 Portland Pl., London, W.1, England)

6–8. **Nuclear Electronics** Symp., Ispra, Italy. (L. Stanchi, C.C.R. Euratom, 21020 Ispra)

6–8. **Power Thyristors and Their Applications,** London, England. (Conference Dept., Institution of Electrical Engineers, Savoy Pl., London, W.C.2, England)

6–8. **Radiosensitizing and Radioprotective Drugs,** 2nd intern. symp., Rome, Italy. (H. Moroson, Sloan-Kettering Inst. for Cancer Research, Donald S. Walker Lab., 145 Boston Post Rd., Rye, N.Y.)

6–9. **Fluid Sealing**, 4th intern. conf., Philadelphia, Pa. (J. J. Sherlock, Midwest Aero Industries, Inc., P.O. Box 536, Oak Ridge Sta., 4834 Delemere Ave., Royal Oak, Mich. 48073)

7–9. International Joint Conf. on **Artificial Intelligence**, Washington, D.C. (D. E. Walker, Mitre Corp., Bedford, Mass. 01730)

10–11. International Soc. for the Study of **Social and Behavioral Sciences**, Princeton, N.J. (J. Jaynes, Dept. of Psychology, Princeton Univ., Princeton 08540)

11–18. International Exhibition on **Diagnostics**, Munich, Germany. (Munchener Messe-und Ausstellungs-Gesellschaft MBH, Theresienhohe 13, 8 Munich 12)

15–18. International **Revolving-Shutter** Products Fair, Stuttgart, Germany. (Stuttgarter Ausstellungs GMBH, Postfach 990, 700 Stuttgart 1)

26–30. **Spectroscopy**, 15th intern. colloquium, Madrid, Spain. (Secretary, XV Colloquium Spectroscopium Internationale, Serrano 119, Madrid-6)

27–31. International Assoc. of **Thalassotherapy**, 14th, Eforie Nord, Roumania (Prof. Binculescu, Strada Transilvaniei 47, Bucharest, Roumania)

27–1. German Congr. for **Medical Continuation Studies**, 18th, Berlin. (Kongressgesellschaft fur Artliche Fortbildung, Klingsortstr. 21, Berlin 41)

28–7. **Pro Aqua** Congr., 4th, Basel, Switzerland. (O. Jaag, % Secretariat Pro Aqua, Basel 21)

29–3. International Assoc. for **Accident and Traffic Medicine**, 3rd, New York, N.Y. (M. Helpern, % Office of Chief Medical Examiner, 520 First Ave., New York 10016)

29–19. General Assembly of Pan-American Inst. of **Geography and History**, Washington, D.C. (C. A. Forray Rojas, Ex-Arzobispado 29, Mexico, D.F. Mexico)

June

1–12. Symposium on **Non-Destructive Testing of Concrete and Timber**, London, England. (Institution of Civil Engineers, Great George St., London, S.W.1)

2–6. International Symp. on **Yeasts**, Delft and The Hague, Netherlands. (L. Rodrigues de Miranda, Organizing Committee, Julianalaan 67A, Delft)

3–13. International Conf. on **Arid Lands in a Changing World**, Tucson, Ariz. (International Arid Lands Conf., % Dept. of Geochronology, Univ. of Arizona, Tucson 85721)

4–6. **Automated Analysis**, intern. congr., Chicago, Ill. (J. E. Golin, Technicon Corp., Ardsley, N.Y. 10502)

4–7. Union of Textile **Chemists and Colorists**, 21st congr., Baden-Baden, Germany. (Rohrbacherstr. 78, Heidelberg, Germany)

5. European Federation of Intern. College of **Surgeons**, London, England. (F. P. Fitzgerald, 129 Harley St., London, W.1)

5–7. **Mineralogical** Assoc. of Canada, Montreal, P.Q. (J. Beland, Dept. of Geology, Univ. of Montreal, Montreal)

5–11. **Forensic Sciences**, 5th intern., Toronto, Ont., Canada. (L. Ball, Center of Forensic Sciences, Dept. of Attorney General, 8 Jarvis Street, Toronto 2)

6–9. Canadian **Pediatric** Soc., Montreal, P.Q. (J. H. V., Marchessault, 14 Green Ave., St. Lambert, Quebec City, P.Q.)

8–14. Canadian **Medical** Assoc., 102nd, Toronto, Ont., Canada. (The Association, 170 St. George Street, Toronto, Canada)

9–11. International **Communications** Conf., Boulder, Colo. (M. Nesenbergs, Environmental Science Services Administration, Inst. for Telecommunication Sciences, R614, Boulder 80302)

9–12. International **Food** Congr. and Exhibition, 7th, Madrid, Spain. (L. Naranon, % Federacion Nacional de Almacenistas de Alimentacion, Paseo del Prado 18–20, Planta 11, Madrid)

9–13. **Clean Air** Congr. and Exhibition, Dusseldorf, Germany. (V. Deutscher, Postfach 1139, 4 Dusseldorf 1)

9–14. Canadian Assoc. of **Pathologists**, Toronto, Ont., Canada. (D. W. Penner, Winnipeg General Hospital, Winnipeg 3, Manitoba)

10–20. International **Marine and Shipping** Conf., London, England. (Inst. of Marine Engineers, 76 Mark Lane, London, E.C.3)

11–13. Canadian Federation of **Biological Societies** (Canadian Physiological Soc., Pharmacological Soc. of Canada, Canadian Assoc. of Anatomists, Canadian Biochemical Soc.), 12th, Univ. of Alberta, Edmonton. (A. H. Neufeld, Univ. of Western Ontario, London, Ont., Canada)

11–14. Canadian **Psychiatric** Assoc., 19th, Toronto, Ont. (W. A. Blair, 225 Lisgar St., Ottawa, Ont.)

14–20. Canadian Assoc. of **Gastroenterology**, 8th, Toronto, Ont. (The Association, 426 170 St. George St., Toronto 5)

15–18. **Chemical** Inst. of Canada, 19th, Montreal, P.Q. (The Institute, 151 Slater St., Ottawa 4, Ont.)

15–20. Canadian **Anaesthetists** Soc., 20th, Toronto, Ont. (E. R. Campbell, 178 St. George St., Toronto 5)

15–20. International **Data Processing** Conf., Montreal, Canada. (M. Rafferty, Data Process Managing Assoc., 505 Busse Highway, Park Ridge, Ill. 60068)

15–22. World **Medical** Assoc., 23rd, Paris, France. (M. Poumailloux, Domus Medica, 60 Blvd. de Labour-Maubourg, Paris 15)

16–18. **Thermophysics** Conf., 4th, San Francisco, Calif. (E. R. Streed, Vehicle Systems Design Branch, NASA Ames Research Center, N244-6, Moffett Field, Calif. 94035)

16–21. Triennial Congr. of Intern. Federation of **Automatic Control**, Warsaw, Poland. (Organizing Committee, Ul Czackiego 3/5, P.O. Box 903, Warsaw 1)

16–21. **Sarcoidosis**, 5th intern. conf., Prague, Czechoslovakia. (L. Levinsky, University Clinic for Tuberculosis and Respiratory Diseases, 19 Katerinska, Prague 2)

21–29. Quadrennial Congr. of Intern. Council of **Nurses**, Montreal, Canada. (H. M. Nussabaum, P.O. Box 42, 1211 Geneva 20, Switzerland)

22–29. **Application of Mathematics in Engineering**, 5th biennial intern. congr., Weimar, Germany. (H. Matzke, Weimar College of Architecture and Building, Karl-Marx-Platz 2, 53 Weimar)

22–29. **Nephrology**, 4th intern. congr., Stockholm, Sweden. (F. Berglund, Postfack 272, Stockholm 1)

BOOKS RECEIVED

(*Continued from page 804*)

paper, $2.95. Anthropology of Modern Societies Series.

Amdel Eighth Annual Report, 1967–68. Australian Mineral Development Laboratories, Adelaide, S.A., 1968. 92 pp., illus. Paper.

American Universities and Colleges. Otis A Singletary and Jane P. Newman, Eds. American Council on Education, Washington, D.C., ed. 10, 1968. xxvi + 1782 pp. $22.

The American University. How It Runs, Where It Is Going. Jacques Barzun. Harper and Row, New York, 1968. xii + 322 pp. $7.95.

The Analysis of Engineering Structures. A. J. S. Pippard and John Baker. Elsevier, New York, ed. 4, 1968. xiv + 578 pp., illus. $12.50.

Analytical Reaction Gas Chromatography. Viktor G. Berezkin. Translated, with corrections by the author, from the Russian edition (Moscow, 1966). L. S. Ettre, Transl. Ed. Plenum, New York, 1968. x + 198 pp., illus. $12.50.

An Annotated Bibliography of Pathology in Invertebrates Other than Insects. Phyllis T. Johnson, with the assistance of Faylla A. Chapman. Burgess, Minneapolis, Minn. 1968. xvi + 324 pp. $15.

Annual Review of Phytopathology. Vol. 6. James G. Horsfall, Kenneth F. Baker, and D. C. Hildebrand, Eds. Annual Reviews, Palo Alto, Calif., 1968. viii + 458 pp., illus. $8.50; foreign, $9.

The Artificial Insemination of Farm Animals. Enos J. Perry, Ed. Rutgers University Press, New Brunswick, N.J., ed. 4, 1968. xx + 476 pp., illus. $10.

Australian Academy of Science Year Book. Australian Academy of Science, Canberra City, 1968. 112 pp., illus. $2.

The Behavioral Sciences: Essays in Honor of George A. Lundberg. Alfred de Grazia, Rollo Handy, E. C. Harwood, and Paul Kurtz, Eds. Behavioral Research Council, Great Barrington, Mass., 1968. viii + 180 pp. $4.75.

Bibliographia Araneorum. Analyse Méthodique de Toute la Littérature Aranéologique Jusqu'en 1939. Vol. 1. Pierre Bonnet. Entomological Society of America, College Park, Md. xx + 834 pp. + 28 plates. $30. Reprint of the 1945 edition.

Biochemistry of the Acute Allergic Reactions. A symposium organized by the Council for International Organizations of Medical Sciences. K. Frank Austen and Elmer L. Becker, Eds. Davis, Philadelphia, 1968. xii + 340 pp., illus. $12.

Biologieonderwijs in de Sowjet Unie, de Verenigde Staten en Nederland. Een Vergelijkend-Opvoedkundige Studie. Adriaan Johan Treffers. Wolters-Noordhoff, Groningen, 1968. xiv + 252 pp., illus. Paper, 23.50 G.

Biomedical Applications of Gas Chromatography. Vol. 2. Herman A. Szymanski, Ed. Plenum, New York, 1968. viii + 196 pp., illus. $12.50.

Bureaucracy, Politics, and Public Policy. Francis E. Rourke. Little, Brown, Boston, 1968. xii + 180 pp. Paper, $2.75.

The Bureau of Labor Statistics. Ewan Clague. Praeger, New York, 1968. xvi +

272 pp., illus. $6.95. Praeger Library of U.S. Government Departments and Agencies, No. 13.

Calcium Metabolism and the Bone. Paul Fourman and Pierre Royer, with the collaboration of Michael J. Levell and D. Brian Morgan. Davis, Philadelphia, ed. 2, 1968. xxii + 658 pp., illus. $15.

The Calculus of Observations. An Introduction to Numerical Analysis. Edmund Whittaker and G. Robinson. Dover, New York, 1967. xiv + 414 pp., illus. Paper, $2.75. Reprint of the fourth edition (1944).

Carbanions, Living Polymers, and Electron-Transfer Processes. Michael Szwarc. Foreword by Donald J. Cram. Interscience (Wiley), New York, 1968. xvi + 696 pp., illus. $27.50.

Carcinoid and Serotonin. Boris Sokoloff. Springer-Verlag, New York, 1968. x + 124 pp. $6. Recent Results in Cancer Research, vol. 15.

Catalytic and Kinetic Waves in Polarography. Stal' G. Mairanovskii. Translated, with corrections by the author, from the Russian edition (Moscow, 1966) by Bela M. Fabuss. Petr Zuman, Transl. Ed. Plenum, New York, 1968. xiv + 354 pp., illus. $19.50.

Cell Kinetics in Human Leukemia. Kaj Gert Jensen and Sven-Aage Killmann, Eds. Williams and Wilkins, Baltimore, 1968. 128 pp., illus. Paper, $10. Series Haematologica, vol. I, No. 3.

Changing Perspectives on Man. Ben Rothblatt, Ed. University of Chicago Press, Chicago, 1968. x + 298 pp., illus. $8.50. The Monday Lectures.

Charles Ellet, Jr. The Engineer as Individualist. 1810–1862. Gene D. Lewis. University of Illinois Press, Urbana, 1968. x + 222 pp., illus. + 8 plates. $7.50.

Chemical Microbiology. Anthony H. Rose. Plenum, New York; Butterworths, London, ed. 2, 1968. xii + 312 pp., illus. $9.50.

Chemische Thermodynamik. Wolfgang Wagner. Akademie-Verlag, Berlin; Pergamon, New York; Vieweg, Braunschweig, 1968. 192 pp., illus. Paper, DM 6.80. Wissenschaftliche Taschenbücher, vol. 6.

The Chemistry of Imidoyl Halides. Henri Ulrich. Plenum, New York, 1968. x + 238 pp., illus. $12.50.

Collected Papers of the Institute of Physical and Chemical Research. 1967. Rikagaku Kenkyusho, Saitama, Japan, 1967. xx + 1178 pp., illus.

Communal Organizations. A Study of Local Societies. George A. Hillery, Jr. University of Chicago Press, Chicago, 1968. xvi + 376 pp., illus. $11.

Comprehensive Mental Health. The Challenge of Evaluation. Proceedings of a symposium, Madison, Wis., 1966. Leigh M. Roberts, Norman S. Greenfield, and Milton H. Miller, Eds. University of Wisconsin Press, Madison, 1968. x + 342 pp. $10.

Computer Calculations for High-Pressure Vapor-Liquid Equilibria. J. M. Prausnitz and P. L. Chueh. Prentice-Hall, Englewood Cliffs, N.J., 1968. xii + 244 pp., illus. $12.95. Prentice-Hall International Series in the Physical and Chemical Engineering Sciences.

Computers and the Changing World. A Theme for the Automation Age. John Hargreaves. Hutchinson, London, 1967 (U.S. distributor, Hillary House, New

York). xx + 164 pp., illus., + 8 plates. $4.50.

Conflict in Culture. Problems of Developmental Change among the Cree. Working Papers of the Cree Developmental Change Project. Norman A. Chance, Ed. Canadian Research Centre for Anthropology, Ottawa, 1968. x + 110 pp., illus. + 16 plates. Paper, $2.75.

Crime and Culture. Essays in Honor of Thorsten Sellin. Marvin E. Wolfgang, Ed. Wiley, New York, 1968. xviii + 462 pp., illus. $11.50.

A Cross-Cultural Summary. Robert B. Textor. Human Relations Area Files Press, New Haven, Conn., 1967. 2800 pp. $29.50.

Daniel Hale Williams. Negro Surgeon. Helen Buckler. Pitman, New York, 1968. xx + 382 pp., illus. $6.95. Reprint of *Doctor Dan: Pioneer in American Surgery* (1954).

The Dark Side of the House. Yale David Koskoff and Richard Goldhurst. Dial, New York, 1968. xxii + 234 pp., illus. + 8 plates. $5.95.

Diagnose von Arzneimittelallergien. W. Raab and H. Kleinsorge. Urban and Schwarzenberg, Munich, Germany, 1968. vi + 150 pp., illus. Paper, $4.90.

Digital Computing. Fortran IV and Its Applications in Behavioral Science. Richard S. Lehman and Daniel E. Bailey. Wiley, New York, 1968. xxvi + 310 pp., illus. $8.95.

Directorio de Científicos e Instituciones de Centroamérica y Panamá. Published by the Centro Regional de la Unesco para el Fomento de la Ciencia en América Latina, with the collaboration of the Organization of American States, Montevideo, Uruguay, 1968. iv + 268 pp. Paper.

The Diversity of Green Plants. Peter R. Bell and Christopher L. F. Woodcock. Addison-Wesley, Reading, Mass., 1968. x + 374 pp., illus. Paper, $6.50. A Series of Student Texts in Contemporary Biology.

The Draft and You. A Handbook on the Selective Service System. Leslie S. Rothenberg. Anchor (Doubleday), Garden City, N.Y., 1968. xx + 340 pp. Paper, $1.45.

Drafting. Technical Communication. Lawrence S. Wright. McKnight, Bloomington, Ill., 1968 (distributor, Taplinger, New York). xviii + 438 pp., illus. $8.60.

Ecology of Insect Vector Populations. R. C. Muirhead-Thomson. Academic Press, New York, 1968. viii + 176 pp., illus. $9.50.

The Economic Management of Research and Engineering. Peter C. Sandretto. Wiley, New York, 1968. xiv + 210 pp., illus. $9.50.

The Electrochemistry of Oxygen. James P. Hoare. Interscience (Wiley), New York, 1968. xiv + 438 pp., illus. $19.50.

Electron Beam and Laser Beam Technology. L Marton and A. B. El-Kareh, Eds. Academic Press, New York, 1968. xii + 306 pp., illus. $13.50. Advances in Electronics and Electron Physics, Supp. 4.

Electron Image Storage. B. Kazan and M. Knoll. With contributions by W. Harth. Academic Press, New York, 1968. xiv + 498 pp., illus. $19.50.

Encyclopedia of Polymer Science and Technology. Plastics, Resins, Rubbers, Fibers. Herman F. Mark, Norman G. Gaylord, and Norbert M. Bikales, Eds. Vol. 9,

Molding to Petroleum Resins. Norbert M. Bikales, Jo Conrad, Aria Ruks, and Janet Perlman, Eds. Interscience (Wiley), New York, 1968. xvi + 864 pp., illus. $50; by subscription, $40.

English Barometers, 1680–1860. A History of Domestic Barometers and Their Makers. Nicholas Goodison. Potter, New York, 1968. xiv + 354 pp., illus. $15.

Enzyme Biochemistry of the Arterial Wall. As Related to Atherosclerosis. Tibor Zemplényi. Lloyd-Luke, London, 1968. xii + 276 pp., illus. 90s.

The Epidemiology of Depression. Charlotte Silverman. Johns Hopkins Press, Baltimore, 1968. xx + 188 pp., illus. $7.50.

Error Detecting Logic for Computers. Frederick F. Sellers, Jr., Mu-Yue Hsiao, and Leroy W. Bearnson. McGraw-Hill, New York, 1968. xx + 300 pp., illus. $15.

Etude Géologique du Guidimaka (Mauritanie). Essai de Résolution Structurale d'une Série Épimétamorphique. Roger Lille. Bureau de Recherches Géologiques et Minières, Paris, 1967. 402 pp., illus. Paper, 135 F. Mémoires du Bureau de Recherches Géologiques et Minières, No. 55.

Evolution and Hominisation. Papers to the theory of evolution as well as dating, classification and abilities of human hominids. Gottfried Kurth, Ed. Fischer, Stuttgart, Germany, ed. 2, 1968 (U.S. distributor, Abel, Portland, Oreg.). xii + 300 pp., illus. $12.50.

Excitons, Magnons and Phonons in Molecular Crystals. Proceedings of a symposium, Beirut, 1968. A. B. Zahlan, Ed. Cambridge University Press, New York, 1968. xii + 224 pp., illus. $11.50.

Exercises in Psychological Testing. E. R. Oetting and George C. Thornton III. Harper and Row, New York, 1968. viii + 232 pp., illus. Paper, $3.95.

Experience and Capacity. Proceedings of the Fourth International Interdisciplinary Conference on Learning, Remembering, and Forgetting, Pacific Palisades, California, 1966. Daniel P. Kimble, Ed. New York Academy of Sciences, New York, 1968. 248 pp., illus. Paper, $6.50.

Experiments in Physics. L. A. Sanderman. Pacific Books, Palo Alto, Calif., ed. 4, 1968. vi + 190 pp., illus. Paper, $3.95.

Exploring Space with a Camera. Edgar M. Cortright, Ed. National Aeronautics and Space Administration, Washington, D.C., 1968 (available from the Superintendent of Documents, Washington, D.C.). x + 214 pp., illus. $4.25. NASA SP-168.

Feedback Control Theory for Engineers. P. Atkinson. Plenum, New York, 1968. xiv + 434 pp., illus. $14.50.

Fundamentals of Biostatistics. Stanley Schor. Putnam, New York, 1968. ii + 318 pp., illus. $8.95.

The Future of Statistics. Proceedings of a conference, Madison, Wis., 1967. Donald G. Watts, Ed. Academic Press, New York, 1968. xviii + 318 pp., illus. $12.50.

Galen's System of Physiology and Medicine. An Analysis of His Doctrines and Observations on Bloodflow, Respiration, Humors and Internal Diseases. Rudolph E. Siegel. Karger, Basel, Switzerland, 1968 (U.S. distributor, Phiebig, White Plains, N.Y.). xii + 420 pp., illus. $23.50.

Geochemistry of Organic Substances. S. M. Manskaya and T. V. Drozdova.

Translated and edited by Leonard Shapiro and Irving A. Breger. Pergamon, New York, 1968. xxiv + 348 pp., illus., + plates. $18. International Series of Monographs in Earth Sciences, vol. 28.

Geo-Code. Vol 1, West Edition. Sydney W. Gould. The Gould Fund (Connecticut Agricultural Experiment Station), New Haven, Conn., 1968. xvi + 264 pp., illus. $12, plus 50¢ postage.

Germany. An Introductory Geography. T. H. Elkins. Praeger, New York, 1968. 334 pp., illus. $7.

Grasslands of the Monsoon. R. O. Whyte. Praeger, New York, 1968. 328 pp., illus. + 40 plates. $9.50.

Handbook of Vacuum Physics. Vol. 2, Physical Electronics. A. H. Beck, Ed. Parts 4–6, pp. 399–599. Part 4, Electron Optics; E. A. Ash. Part 5, Heavy Current Electron Beams; A. H. Beck. Part 6, Gridded Valves: Theory and Design Principles; A. H. Beck. Pergamon, New York, 1968. Illus. $8.50.

H-ICDA. Hospital Adaptation of ICDA. Based on *International Classification of Diseases* (1965 Revision, WHO) and *Eighth Revision International Classification of Diseases, Adapted for Use in the United States* (PHS Publication No. 1693). Vol. 1, Tabular List (xviii + 662 pp.). Vol. 2, Alphabetic Index (vi + 498 pp.). Cloth, $8 the set; paper, $5. Bound together, cloth, $10. Commission on Professional and Hospital Activities, Ann Arbor, Mich., 1968.

The Hudhúd of Dinulawan and Bugan at Gonhadan. Francis Lambrecht. Saint Louis University, Baguio City, Philippines, 1967. vi + 449 pp., illus. Cloth, $8; paper, $2. Reprinted from Saint Louis Quarterly, vol. 5, Nos. 3–4 (Sept.–Dec. 1967).

Human Dimensions of the Atmosphere. Papers by a National Science Foundation Task Group, Feb. 1968. Superintendent of Documents, Washington, D.C., 1968. vi + 174 pp., illus. Paper, $1.50.

A Hundred Years of Sociology. G. Duncan Mitchell. Aldine, Chicago, 1968. xiv + 310 pp. $6.95.

The Idle Thoughts of a Surgical Fellow. Being an Account of Experimental Surgical Studies, 1956–1966. Stacey B. Day. With a foreword by Robert A. Good. Cultural and Educational Productions, Nutley, N.J., 1968. 344 pp., illus. $12.90.

Infantile Cerebral Paralysis. Sigmund Freud. Translated from the German by Lester A. Russin. University of Miami Press, Coral Gables, Fla., 1968. 376 pp. $15.

Information Retrieval Systems. Characteristics, Testing, and Evaluation. F. Wilfrid Lancaster. Wiley, New York, 1968. xvi + 224 pp., illus. $9. Information Sciences Series.

Instrumental Analysis Using Physical Properties. Clifton E. Meloan. Lea and Febiger, Philadelphia, 1968. xii + 180 pp., illus. $7.50. Medical Technology Series, vol. 2.

Interaction in Families. An Experimental Study of Family Processes and Schizophrenia. Elliot G. Mishler and Nancy E. Waxler. Wiley, New York, 1968. xii + 436 pp. $11.95. Wiley Series in Psychology for Practicing Clinicians.

Intermediate Quantum Mechanics. Hans A. Bethe and Roman W. Jackiw. Benjamin, New York, ed. 2, 1968. xvi + 400 pp.,

illus. $11. Lecture Notes and Supplements in Physics.

International Colloquium on Health Planning. Dec., 1967. Prins Leopold Instituut voor Tropische Geneeskunde, Antwerp, 1967. 180 pp., illus. Paper.

International Encyclopedia of the Social Sciences. David L. Sills, Ed. Macmillan and Free Press, New York, 1968. 17 vols., approximately 9000 pp., illus. $495.

International Review of Cytology. Vol. 24. G. H. Bourne, J. F. Danielli, and K. W. Jeon, Eds. Academic Press, New York, 1968. xviii + 398 pp., illus. $19.50.

Introduction to Computer Engineering. B. S. Walker. Hart, New York, 1968. 386 pp., illus. $12.

An Introduction to Linear Difference Equations. Paul M. Batchelder. Dover, New York, 1967. xiv + 226 pp., illus. Paper, $2. Reprint of the 1927 edition.

Introduction to Medical Decision Making. Lee B. Lusted. Thomas, Springfield, Ill., 1968. xxii + 274 pp., illus. $18.75.

Introduction to Natural Science: Supplements to Part 1, The Physical Sciences. Teacher's Guide, V. Lawrence Parsegian (x + 198 pp., paper). Laboratory and Mathematics Supplement, V. L. Parsegian, Alan S. Meltzer, Abraham S. Luchins, K. Scott Kinerson, and Edith H. Luchins (xii + 210 pp., illus., paper). Academic Press, New York, 1968.

An Introduction to Operations Research. Patrick Rivett. Basic Books, New York, 1968. x + 206 pp., illus. $5.95.

An Introduction to Planetary Physics. The Terrestrial Planets. William M. Kaula. Wiley, New York, 1968. xviii + 492 pp., illus. $14.95. Space Science Text Series.

Introduction to the Study of Soils in Tropical and Subtropical Regions. P. Buringh. Centre for Agricultural Publishing and Documentation, Wageningen, Netherlands, 1968. 120 pp., illus. Dfl 12.50.

Introduction to the Theory of Abstract Algebras. Richard S. Pierce. Holt, Rinehart and Winston, New York, 1968. x + 148 pp. $5.50. Athena Series: Selected Topics in Mathematics.

Introduction to Zoology. Theodore H. Savory. Illustrated by Melchior Spoczynski. Philosophical Library, New York, 1968. viii + 240 pp., illus. $6.

Invertebrate Zoology. Vol. 2. Arthropod Relatives, Chelicerata, Myriapoda. Alfred Kaestner. Translated and adapted from the German edition (Jena, 1967) by Herbert W. Levi and Lorna R. Levi. Interscience (Wiley), New York, 1968. x + 478 pp., illus. $22.95.

In Vitro. Vol. 3, Differentiation and Defense Mechanisms in Lower Organisms. A symposium of the Tissue Culture Association, Philadelphia, 1967. M. Michael Sigel, Ed. Williams and Wilkins, Baltimore, 1968. xii + 212 pp., illus. $11.50.

JBS. The Life and Work of J. B. S. Haldane. Ronald W. Clark. Coward-McCann, New York, 1969. 328 pp. + 8 plates. $6.95.

Kirk-Othmer Encyclopedia of Chemical Technology. Vol. 16, Polyamides to Quinones. Herman F. Mark, John J. McKetta, Jr., Donald F. Othmer, and Anthony Standen, Eds. Interscience (Wiley), New York, ed. 2, 1968. xiv + 914 pp., illus. $50; by subscription, $40.

Lagrangian Dynamics. An Introduction for Students. C. W. Kilmeister. Plenum, New York; Logos, London, 1968, 136 pp., illus. $7.50.

Languages of Art. An Approach to a Theory of Symbols. Nelson Goodman. Bobbs-Merrill, Indianapolis, Ind., 1968. xiv + 278 pp., illus. $8.

Lasers. A Series of Advances. Vol. 2. Albert K. Levine, Ed. Dekker, New York, 1968. xii + 444 pp., illus. $19.75.

Lasers. Tools of Modern Technology. Ronald Brown. Doubleday, Garden City, N.Y., 1968. 192 pp., illus. Cloth, $5.95; paper, $2.45.

Lattice Defects in Semiconductors. Ryukiti R. Hasiguti, Ed. University of Tokyo Press, Tokyo; Pennsylvania State University Press, University Park, 1968. x + 514 pp., illus. $25.

Learning Better Nutrition. A Second Study of Approaches and Techniques. Jean A. S. Ritchie. Food and Agriculture Organization of the United Nations, Rome, 1968 (U.S. distributor, Columbia University Press, International Documents Service, New York). xii + 264 pp., illus. $4. FAO Nutritional Studies, No. 20.

Low-Noise Microwave Amplifiers. H. N. Daglish, J. G. Armstrong, J. C. Walling, and C. A. P. Foxell. Cambridge University Press, New York, 1968. viii + 168 pp., illus. + 20 plates. $7.50. Institution of Electrical Engineers Monograph Series, No. 2.

The Luo of Kenya. An Annotated Bibliography. Carole E. DuPré. Institute for Cross-Cultural Research, Washington, D.C., 1968. x + 166 pp. Cloth, $2.95; paper, $1.95. ICR Studies, No. 3.

Magnetism and Magnetic Materials 1968 Digest. A Survey of the Technical Literature of the Preceding Year. Hsu Chang and Thomas R. McGuire, Eds. Academic Press, New York, 1968. xvi + 320 pp. $13.

The Management and Conservation of Biological Resources. John D. Black. Davis, Philadelphia, 1968. xii + 340 pp., illus. $7.50.

Man-Made Fibers. Science and Technology. Vol. 3. H. F. Mark, S. M. Atlas, and E. Cernia, Eds. Interscience (Wiley), New York, 1968. xii + 708 pp., illus. $27. Polymer Engineering and Technology Series.

Man the Hunter. Richard B. Lee and Irven DeVore, Eds., with the assistance of Jill Nash. Aldine, Chicago, 1968. xvi + 416 pp., illus. $6.95.

The Measurement of Environmental Factors in Terrestrial Ecology. A symposium, Reading, England, 1967. R. M. Wadsworth, L. C. Chapas, A. J. Rutter, M. E. Solomon, and J. Warren Wilson, Eds. Blackwell Scientific Publications, Oxford, 1968. x + 314 pp., illus. $9.50. British Ecological Society Symposium, vol. 8.

Mechanics of Generalized Continua. Proceedings of the International Union of Theoretical and Applied Mechanics Symposium on the Generalized Cosserat Continuum and the Continuum Theory of Dislocations with Applications. Freudenstadt and Stuttgart, Germany, 1967. E. Kroner, Ed. Springer-Verlag, New York, 1968. xii + 360 pp., illus. $19.50.

Mechanik I. Grundbegriffe, Kinematik, Statik. Studienbuch für Studenten der Ingenieurwissenschaften im 1. Semester. Karl-August Reckling. Vieweg, Braun-

schweig; Akademische Verlagsgesellschaft, Frankfurt, 1968. viii + 264 pp., illus. Paper, DM 9.80. Uni-texte.

Mechanisms of Molecular Migrations. Vol. 1. B. S. Thyagarajan, Ed. Interscience (Wiley), New York, 1968. x + 342 pp., illus. $17.50.

Medical Handbook. Edited for the International Planned Parenthood Federation Medical Committee by R. L. Kleinman. IPPF, London, ed. 3, 1968. 112 pp., illus. Paper, $2.50.

Metabolism. Philip L. Altman and Dorothy S. Dittmer, Eds. Federation of American Societies for Experimental Biology, Bethesda, Md., 1968. xxiv + 744 pp., illus. $20. Biological Handbooks.

Metal Matrix Composites. A symposium, Boston, 1967. American Society for Testing and Materials, Philadelphia, 1968. vi + 234 pp., illus. $18.50; 20 percent discount to members. ASTM Special Technical Publication No. 438.

Methods of Experimental Physics. Vol. 7, Atomic and Electron Physics. Parts A and B, Atomic Interactions. Benjamin Bederson and Wade L. Fite, Eds. Academic Press, New York, 1968. Part A, xviii + 510 pp., illus. $21.50; part B, xvi + 376 pp., illus. $17.

The Microscope. A Practical Guide. George Herbert Needham. Thomas, Springfield, Ill., 1968. xii + 116 pp., illus. $6.50.

Mind as a Tissue. Proceedings of a conference held at Lankenau Hospital, Philadelphia, 1966. Charles Rupp, Ed. Harper and Row, New York, 1968. x + 358 pp., illus. $16.50.

The Model Aircraft Handbook. A revision by Howard G. McEntee of the book by William Winter. Crowell, New York, 1968. vi + 226 pp., illus. $6.95.

Models in Architecture. H. J. Cowan, J. S. Gero, G. D. Ding, and R. W. Muncey. Elsevier, New York, 1968. x + 228 pp., illus. $11. Elsevier Architectural Science Series.

Modern Aspects of Mass Spectrometry. Proceedings of the 2nd NATO Advanced Study Institute, Glasgow, Scotland, July 1966. Rowland I. Reed, Ed. Plenum, New York, 1968. xii + 389 pp., illus. $20.

The Molecular Basis of Life. An Introduction to Molecular Biology. Readings from *Scientific American*. With introduction by Robert H. Haynes and Philip C. Hanawalt. Freeman, San Francisco, 1968. viii + 368 pp., illus. Cloth, $10; paper, $4.95.

Neurological Control System. Studies in Bioengineering. Lawrence Stark. Plenum, New York, 1968. xx + 428 pp., illus. $17.50.

The Neuropsychology of Development. A Symposium. Robert L. Isaacson, Ed. Wiley, New York, 1968. xii + 180 pp., illus. $8.95.

Neutron Cross Sections and Technology. Proceedings of a conference, Washington, D.C., 1968. In two volumes. D. T. Goldman, Ed. National Bureau of Standards, Washington, D.C., 1968 (available from the Superintendent of Documents, Washington, D.C.). xl + 1342 pp., illus. $10.50.

New Perspectives in Archeology. Sally R. Binford and Lewis R. Binford, Eds. Aldine, Chicago, 1968. x + 374 pp., illus. $9.75.

Nonlinear Differential Equations of

Chemically Reacting Systems. With ten figures. George R. Gavalas. Springer-Verlag, New York, 1968. x + 112 pp., illus. $8.50. Springer Tracts in Natural Philosophy, vol. 17.

Notes and Comments on Vertebrate Paleontology. Alfred Sherwood Romer. University of Chicago Press, Chicago, 1968. viii + 304 pp. Cloth, $6.95; paper, $3.85.

Nuclear Chemistry. Vol. 2. L. Yaffe, Ed. Academic Press, New York, 1968. xii + 412 pp. $22.

Nuclear Physics. An Introduction. Haro von Buttlar. Translated from the German edition (Frankfurt, 1964) by Fernando B. Morinigo. Academic Press, New York, 1968. xii + 548 pp., illus. $14.50.

Nuclear Reaction Analysis. Graphs and Tables. J. B. Marion and F. C. Young. North-Holland, Amsterdam; Interscience (Wiley), New York, 1968. viii + 172 pp., illus. $12.

Nucleic Acids in Immunology. Proceedings of a Symposium Held at the Institute of Microbiology of Rutgers, The State University. Otto J. Plescia and Werner Braun, Eds. Springer-Verlag, New York, 1968. xviii + 726 pp., illus. $22.

Occurrence, Causes and Prevention of Nutritional Anaemias. Gunnar Blix, Ed., assisted by Sylvia Molin. Almqvist and Wiksell, Stockholm, 1968, 184 pp., illus. Sw. Kr. 45. Symposia of the Swedish Nutrition Foundation, No. 6.

Ocean Currents. G. Neumann. Elsevier, New York, 1968. xii + 352 pp., illus. $20. Elsevier Oceanography Series, No. 4.

The Office. A Facility Based on Change. Robert Propst. Business Press, Elmhurst, Ill., 1968 (distributor, Taplinger, New York). 72 pp., illus. Paper, $8.

Oil and Water. The *Torrey Canyon* Disaster. Edward Cowan. Lippincott, Philadelphia, 1968. xvi + 242 pp., illus. $6.95.

The Old Stone Fort. Exploring an Archaeological Mystery. Charles H. Faulkner. University of Tennessee Press, Knoxville, 1968. xii + 72 pp., illus. Paper, $2. A University of Tennessee Study in Anthropology.

Optical Interactions in Solids. Baldassare Di Bartolo. Wiley, New York, 1968. xviii + 542 pp., illus. $19.95.

Organic Chemistry. Structural Problems. Meldrum B. Winstead. Sadtler Research Laboratories, Philadelphia, 1968. ix + 259 pp., illus. Spiral bound, with Answer Section (26 pp., illus., paper), $4.95.

Organic Functional Group Analysis. Theory and Development. George H. Schenk. Pergamon, New York, 1968. x + 300 pp., illus. Cloth, $6; paper, $4.50. Commonwealth and International Library, Selected Readings in Analytical Chemistry.

Organometallic Compounds of the Group IV Elements. Vol. 1, The Bond to Carbon, part 2. Alan G. MacDiarmid, Ed. Dekker, New York, 1968. xiv + 266 pp., illus. $17.75.

Overweight. Causes, Cost, and Control. Jean Mayer. Prentice-Hall, Englewood Cliffs, N.J., 1968. x + 214 pp., illus. $5.95.

Perspectives in Ecological Theory. Ramón Margalef. University of Chicago Press, Chicago, 1968. viii + 112 pp., illus. $4.50.

Pharmaceutical Synonym Dictionary for Students of Pharmacy. Lola V. Hopkins.

Franklin Printers of Monroe, Monroe, La., 1968. iv + 28 pp. Paper, $1.50. Reprint of the 1966 edition.

Photons, Electrons, Phosphorylation and Active Transport. R. N. Robertson. Cambridge University Press, New York, 1968. x + 96 pp., illus. $5.50. Cambridge Monographs in Experimental Biology, No. 15.

Photosynthesis. G. E. Foggs. Elsevier, New York, 1968. xii + 116 pp., illus., 12 plates. Paper, $3.95.

The Phylogeny of the Oreodonts. Part 1, Merycoidodontinae, Eporeodontinae, and Laptaucheniinae, Three Subfamilies of Oreodonts, with an Appendix to the Revision of the Merycoidodontidae. Part 2, Summary and Conclusions concerning the Merycoidodontidae. C. Bertrand Schultz and Charles H. Falkenbach. American Museum of Natural History, New York, 1968. 500 pp., illus. Paper, $15. AMNH Bulletin, vol. 139.

Physiological Chemistry of Lipids in Mammals. Edward J. Masoro. Saunders, Philadelphia, 1968. xiv + 306 pp., illus. $7.75. Physiological Chemistry Series.

The Physiology of Sense Organs. DeForest Mellon, Jr. Freeman, San Francisco, 1968. viii + 110 pp., illus. $4. University Reviews in Biology.

Plant-Disease Development and Control. Subcommittee on Plant Pathogens of the Committee on Plant and Animal Pests. National Academy of Sciences, Washington, D.C., 1968. xvi + 208 pp., illus. Paper, $4.75. NAS Publication 1596. Principles of Plant and Animal Pest Control, vol. 1.

Plant Immunity. Biochemical Aspects of Plant Resistance to Parasitic Fungi. L. V. Metlitskii and O. L. Ozeretskovskaya. Translated from the Russian. Plenum, New York, 1968. vi + 114 pp., illus. $12.50.

Prepaid Group Practice Health Plans. Proceedings of a seminar conducted by the University of Colorado Center for Labor Education and Research, Denver, 1968. Walter H. Uphoff, Ed. University of Colorado Press, Boulder, 1968. vi + 98 pp. Paper, $2. CLEAR Publication No. 2.

Prevention of Suicide. World Health Organization, Geneva, 1968 (U.S. distributor, Columbia University Press, New York). 84 pp. Paper, $1.25. Public Health Papers, No. 35.

Priority Queues. N. K. Jaiswal. Academic Press, New York, 1968. xiv + 242 pp., illus. $12. Mathematics in Science and Engineering, vol. 50.

Proceedings of the Fourth Meeting of the Federation of European Biochemical Societies, Oslo, 1967. In six volumes. Regulation of Enzyme Activity and Allosteric Interactions; E. Kvamme and A. Pihl, Eds. (viii + 172 pp., illus. $8). The Biochemistry of Virus Replication; S. G. Laland and L. O. Fröholm, Eds. (viii + 108 pp., illus. $8). Structure and Function of Transfer RNA and 5*S*-RNA; L. O. Fröholm and S. G. Laland, Eds. (viii + 188 pp., illus. $8). Cellular Compartmentalization and Control of Fatty Acid Metabolism; F. C. Gran, Ed. (viii + 116 pp., illus. $8). Control of Glycogen Metabolism; W. J. Whelan, Ed. (viii + 224 pp., illus. $8). Structure and Function of the Endoplasmic Reticulum in Animal Cells; F. C. Gran, Ed. (viii + 100 pp., illus. $8). Universitetsforlaget, Oslo; Academic Press, New York, 1968.

Proceedings of the Sixteenth Japan National Congress for Applied Mechanics. Tokyo, 1966. Chuo Kagaku-Sha, Tokyo, 1967. xii + 392 pp., illus. Paper, $10.

Progress in Physical Organic Chemistry. Vol. 6. Andrew Streitwieser, Jr., and Robert W. Taft, Eds. Interscience (Wiley), New York, 1968. viii + 472 pp., illus. $17.

The Properties of Fresh Concrete. Treval C. Powers. Wiley, New York, 1968. xxii + 664 pp., illus. $29.50.

Psychosocial Nursing. Elizabeth Barnes, Ed. Tavistock, London, 1968 (U.S. distributor, Barnes and Noble, New York). xx + 316 pp., illus. Cloth, $10; paper, $4.75.

Rebellion or Revolution? Harold Cruse. Morrow, New York, 1968. 272 pp. $6.95.

Recent Advances in Pediatric Clinical Pathology. C. Charlton Mabry, Irene E. Roeckel, Robert E. Gevedon, and John A. Koepke. Grune and Stratton, New York, 1968. viii + 248 pp., illus. $14.50.

Research in Progress. A record of subjects taken up for research by scholars registered for doctoral degrees with the Indian universities during 1958–66. Vol. 1, Physical Sciences. Inter-University Board of India and Ceylon, New Delhi, 1968. xx + 432 pp. $11.

Revolution in Optics. S. Tolansky. Penguin, Baltimore, 1968. 224 pp., illus., 12 plates. Paper, $1.45.

Riots and Rebellion. Civil Violence in the Urban Community. Louis H. Masotti and Don R. Bowen, Eds. Sage, Beverly Hills, Calif., 1968. 460 pp. $8.50.

The Rodents of Libya. Taxonomy, Ecology and Zoogeographical Relationships. Gary L. Ranck. Smithsonian Institution Press, Washington, D.C., 1968 (available from the Superintendent of Documents, Washington, D.C.). viii + 264 pp., illus., 8 plates. Paper, $1.50. U.S. National Museum Bulletin 275.

The Role of Potassium in Agriculture. Proceedings of a symposium, Muscle Shoals, Ala., 1968. V. J. Kilmer, S. E. Younts, and N. C. Brady, Eds. American Society of Agronomy, Crop Science Society of America, Soil Science Society of America, Madison, Wis., 1968 (distributor, ASA). xvi + 512 pp., illus. $7.50; members of ASA, CSSA, SSSA, $6.

Scientific Thought. Cases from Classical Physics. J. A. Easley, Jr. and Maurice M. Tatsuoka. Allyn and Bacon, Boston, 1968. xii + 340 pp., illus. Paper, $2.95.

Seismic Methods for Monitoring Underground Explosions. An Assessment of the Status and Outlook. Report by a Seismic Study Group. David Davies, rapporteur. International Institute for Peace and Conflict Research (SIPRI), Stockholm, 1968. 132 pp., illus. $2.50.

The Self in Social Interaction. Chad Gordon and Kenneth J. Gergen, Eds. Vol. 1, Classic and Contemporary Perspectives. Wiley, New York, 1968. xiv + 478 pp. $9.95.

The Social Order of the Slum. Ethnicity and Territory in the Inner City. Gerald D. Suttles. University of Chicago Press, Chicago, Ill., 1968. xxii + 248 pp., illus. $8.95. Studies of Urban Society.

Southwest Pacific. A Geography of Australia, New Zealand, and Their Pacific Island Neighbors. Kenneth B. Cumberland. Praeger, New York, rev. ed., 1968. xviii + 424 pp., illus. $9.