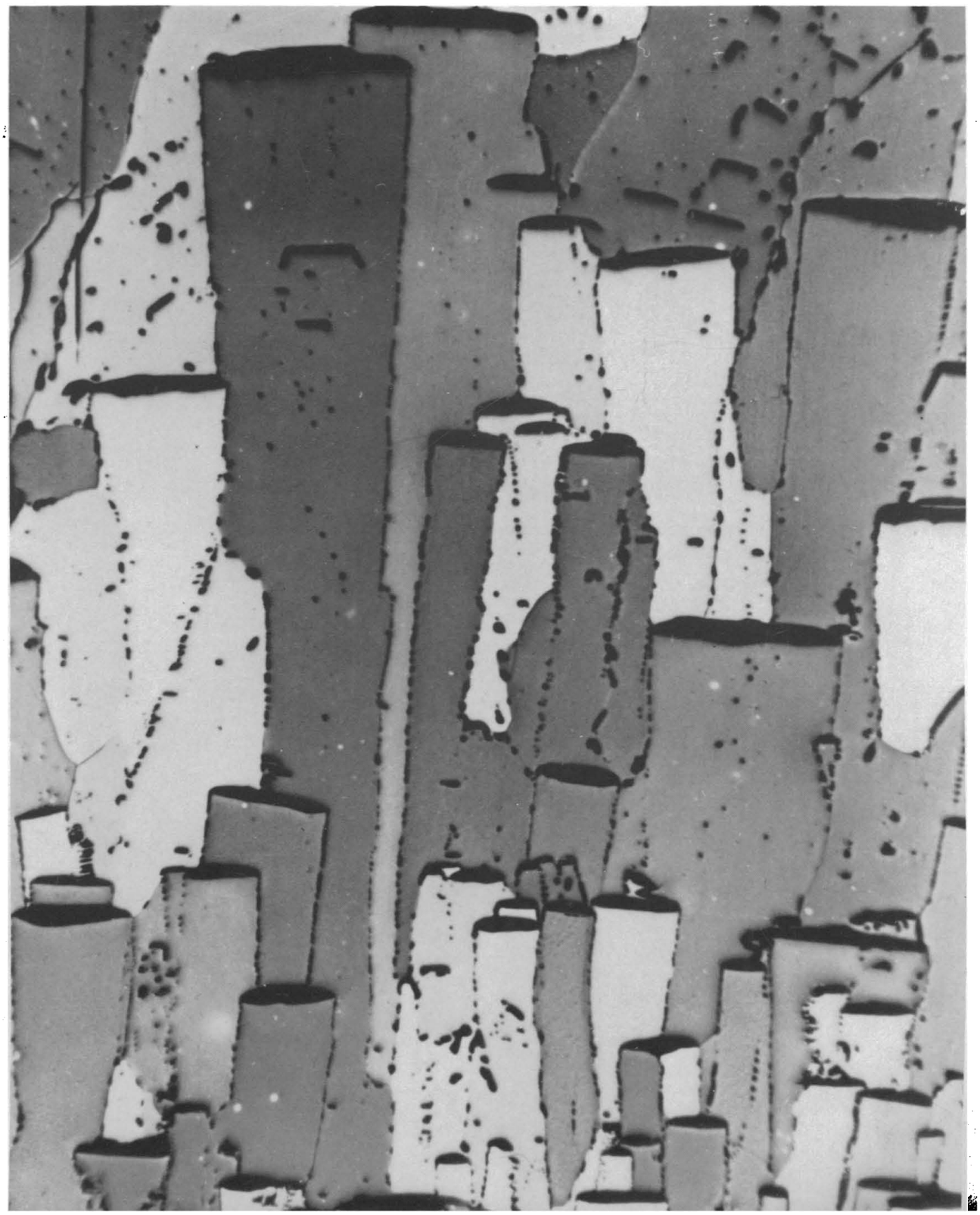
SCIENCE 20 September 1968
Vol. 161, No. 3847
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



THE PERPEX PUMP With peristaltic operation – but NO PULSATION

Continuous, precise delivery of a great variety of liquids and gases without pulsation even at the lowest speeds.

FEATURES:

six gears available:	Choose between 5 : 10 : 20 : 40 : 80 : 150 ml/h
excellent repeatability:	Choice of drive ensures accurate, repeatable pumping speeds
ease of maintenance:	At no point does gas or fluid come in direct contact with pump parts
corrosion resistant:	Quickly and easily disassembled when cleaning is required
minimal tube wear:	Patented roller system eliminates friction, gives long life to chemically resistant, mechanically weak silicon tubing

Ask for the new folder in the actual size of this remarkably compact pump.

LKB

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

HQ LKB-PRODUKTER AB STOCKHOLM, SWEDEN

INTERNATIONAL SUBSIDIARIES: LONDON, THE HAGUE, COPENHAGEN, VIENNA, STOCKHOLM

Circle No. 2 on Readers' Service Card

20 September 1968
Vol. 161, No. 3847

SCIENCE

LETTERS Intrigue in Italy: *N. Di Ferrante*; Tougher Competition in Teaching: *W. H. Hartford*: Behavioral Scientists: Now and Then: *E. N. Anderson, Jr.; G. B. Devey*; Unvarying Climate at Lincoln: *J. P. Ruina*; Contaminating Hamster Cells: *G. Freeman* 1199

EDITORIAL Are Grades Necessary? 1203

ARTICLES Ceramics Today: *J. E. Burke* 1205

Hydrodynamic Studies of Structure of Biological Macromolecules: *V. A. Bloomfield* 1212

Eye Movement Control in Primates: *D. A. Robinson* 1219

NEWS AND COMMENT Defense Research: Questions for Vietnam Dissenters 1225

California: Reagan and the Public Health Controversy 1226

Making of a President: Stanford Students Decry Lack of Voice 1229

BOOK REVIEWS *Science Policy and the University*, reviewed by *H. R. Bowen*; other reviews by *C. M. Huggins, R. Kargon, V. Woodward, A. E. DeMaggio, L. H. Aller, S. J. Hawkes, R. I. Louttit*; Books Received 1232

REPORTS Radiation Bleaching of Thin Lunar Surface Layer: *A. J. Cohen* and *B. W. Hapke* 1237

Transform Faulting and Growth of the Gulf of California Since the Late Pliocene: *D. G. Moore* and *E. C. Buffington* 1238

Taste-Modifying Protein from Miracle Fruit: *K. Kurihara* and *L. M. Beidler* 1241

SCIENCE is published weekly on Friday and on the fourth Tuesday in November by the American Association for the Advancement of Science, 1515 Massachusetts Ave., NW Washington, D.C. 20005. Now combined with **The Scientific Monthly**©. Second-class postage paid at Washington, D.C. Annual subscriptions $12; foreign postage: Americas $3; overseas $5; single copies, 50¢ (back issues, $1) except **Guide to Scientific Instruments**, whic 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 recei address label. SCIENCE is indexed in the **Reader's Guide to Periodical Literature.**

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Sea Urchin Response to Foreign Substances: *H. R. Hilgard* and *J. H. Phillips* 1243

Calcium Supply to Plant Roots: *H. F. Wilkinson, J. F. Loneragan, J. P. Quirk* 1245

Nucleic Acid Molecules: New Microdiffusion Technique for Visualization: *H. D. Mayor* and *L. E. Jordan* 1246

5-Ethyldeoxyuridine, a Thymidine Analog: Photochemical Transformation: *I. Pietrzykowska* and *D. Shugar* 1248

High-Resolution Nuclear Magnetic Resonance Spectra of Selectively Deuterated Staphylococcal Nuclease: *J. L. Markley, I. Putter, O. Jardetzky* 1249

Annulment of Sterol-Induced Sexual Reproduction by Estradiol in *Pythium periplocum*: *J. W. Hendrix* and *S.-M. Guttman* 1252

Liver Adenine Nucleotides: Fructose-Induced Depletion and Its Effect on Protein Synthesis: *P. H. Maenpää, K. O. Raivio, M. P. Kekomäki* 1253

Herpesvirus Type 2: Association with Carcinoma of the Cervix: *W. E. Rawls* et al. .. 1255

Program Clocks in Small Mammals: *J. L. Kavanau* and *C. E. Rischer* 1256

Determination of Lateral Pharyngeal Wall Motion during Connected Speech by Use of Pulsed Ultrasound: *C. A. Kelsey* et al. 1259

Technical Comments: Lunar Soil: An Engineering Term: *E. G. Knox*; National Motives and Psychogenic Death Rates: *D. Lester* 1260

ASSOCIATION AFFAIRS

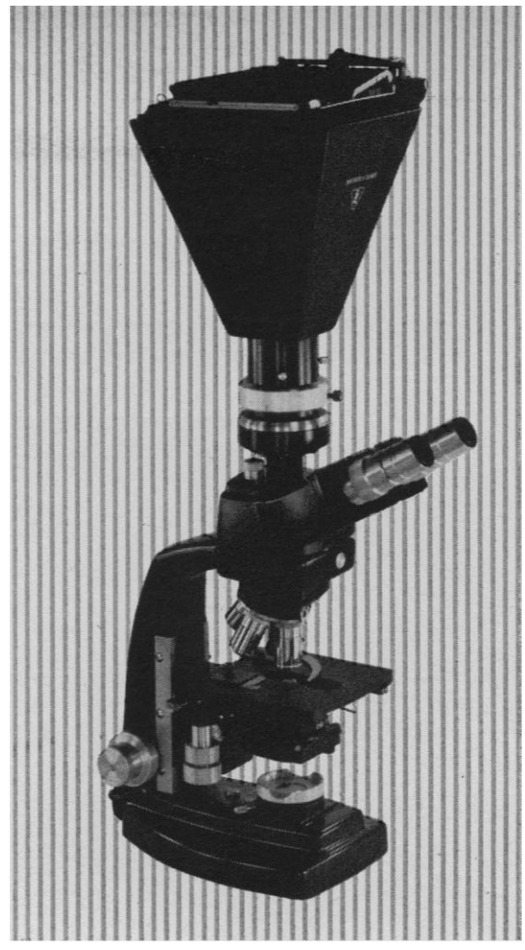
Control of Fertility: *H. Hoagland* 1261

MEETINGS

High-Resolution Autoradiography of Diffusible Substances: *W. E. Stumpf*; Calendar of Events 1262

COVER

Microstructure of uranium dioxide ceramic nuclear fuel produced in a laboratory simulation of operating conditions with a temperature gradient of about 8000°C per inch. Lenticular voids migrate up the temperature gradient to the top and "drag" grains behind them (about × 850). See page 1205. [Dennis M. Rooney, Nucleonics Laboratory, General Electric Company]



precision coordinated response

You're always in full command . . . with a Dynazoom® Microscope. Dynamics and optics are perfectly synchronized in this unique focusing and stage control system. You get instant response, total response, with lowest possible wear and maintenance. No backlash, looseness, friction or roughness. All parts roll smoothly with precision-meshed gears and ball bearings. Such microscope performance cannot be matched for anywhere near the Dynazoom price. But—let your own eyes decide. We can arrange for you to try a Dynazoom/Flat Field in your own laboratory.

Meanwhile we will send you the deluxe Laboratory Microscope brochure, 31-185. Just write Bausch & Lomb, 64209 Bausch Street, Rochester, New York 14602.

Circle No. 34 on Readers' Service Card

See a demonstration of Dynazoom/Flat Field

ADVANCING ELECTRONIC/OPTICAL INSTRUMENTATION

Where can you get accuracy to .0001g in a low cost balance... without sacrificing speed?

Unit also available with pre-weigh.

The NEW Ainsworth Type 28N balance has it... for only $492!

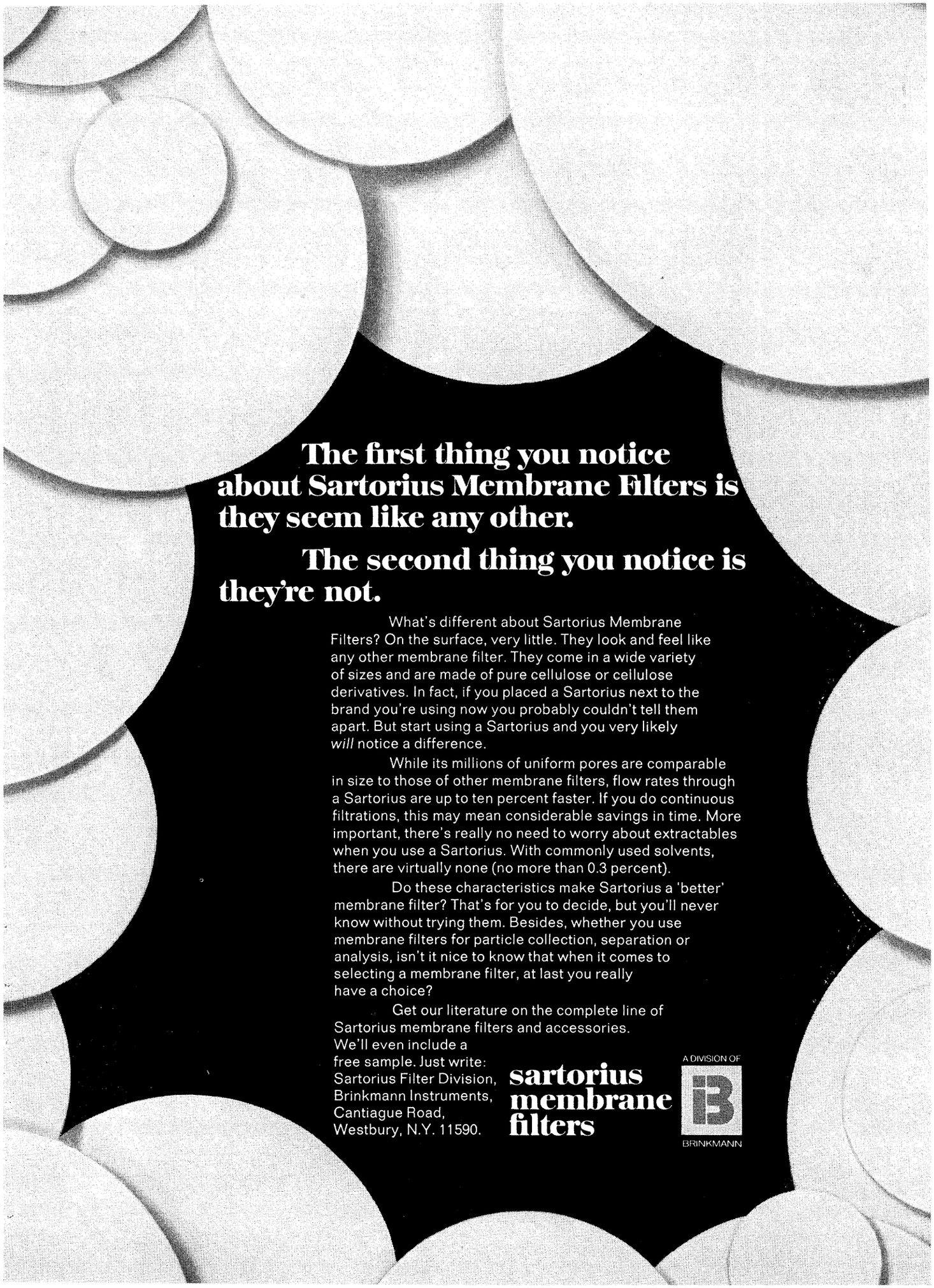
Take an easy-to-see seven-digit readout to 0.1 milligram, speed of a top loading balance, easily accessible front-mounted controls — and you **know** your critical measurements will be highly accurate, fast and easy to make. Add an all-metal case, a baked acrylic finish and a glass base in the weighing chamber and you **know** the Type 28N Balance is safe from spills. You can use it in industry, hospitals and schools. Put in Class S weights, Delrin cams in the mechanism for high wear resistance, and a stirrup with four ruby jewels and you **know** you have a high-quality balance. **Where else but from Ainsworth would you expect this American-made quality—and at a foreign-made price?** For complete information on the new Type 28N Balance, write to Ainsworth, 2151 Lawrence Street, Denver, Colorado 80205, or call your Ainsworth Distributor for a demonstration.

Keeping America in balance since 1880!

AINSWORTH

Circle No. 20 on Readers' Service Card

Circle No. 8 on Readers' Service Card →


The first thing you notice about Sartorius Membrane Filters is they seem like any other.
The second thing you notice is they're not.
What's different about Sartorius Membrane Filters? On the surface, very little. They look and feel like any other membrane filter. They come in a wide variety of sizes and are made of pure cellulose or cellulose derivatives. In fact, if you placed a Sartorius next to the brand you're using now you probably couldn't tell them apart. But start using a Sartorius and you very likely *will* notice a difference.
While its millions of uniform pores are comparable in size to those of other membrane filters, flow rates through a Sartorius are up to ten percent faster. If you do continuous filtrations, this may mean considerable savings in time. More important, there's really no need to worry about extractables when you use a Sartorius. With commonly used solvents, there are virtually none (no more than 0.3 percent).
Do these characteristics make Sartorius a 'better' membrane filter? That's for you to decide, but you'll never know without trying them. Besides, whether you use membrane filters for particle collection, separation or analysis, isn't it nice to know that when it comes to selecting a membrane filter, at last you really have a choice?
Get our literature on the complete line of Sartorius membrane filters and accessories. We'll even include a free sample. Just write: Sartorius Filter Division, Brinkmann Instruments, Cantiague Road, Westbury, N.Y. 11590.
sartorius membrane filters
A DIVISION OF
BRINKMANN

The world's lowest cost, full scale, general purpose computer. $8,500 complete.

PDP-8/L

Complete. With teletype. With software 4096 12-bit words. 1.6 usec cycle time. All integrated circuit. On-line, real-time. Expandable.

PDP-8/L is the latest achievement in the history of a company that introduced the first under-$100,000 computer, the first under-$50,000 computer, the first under-$20,000 computer, the first under-$10,000 computer.

PDP-8/L is based on the family of PDP-8 machines, thousands of which have been sold and delivered — to scientists in laboratories, instrument builders, manufacturers of process control equipment, industrial users who have automated their machinery. The PDP-8 family is, without question, the most successful set of small computers ever built. Bar none.

To those of you who have never used computers before, because of price, write to us. A large part of our background is in introducing people to their first computers. We can be extraordinarily helpful.

To those of you thinking of incorporating a computer in another system, or another instrument, write to us. Quantity discounts are available. And our experience includes selling more computers as built-ins than any other company in the world.

digital
COMPUTERS · MODULES

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 •

Circle No. 18 on Readers' Service Card

Circle No. 39 on Readers' Service Card→

Now, 3 more good reasons to go to throw-away pipets

Now you can get 2, 5, and 10 ml sizes in PYREX® brand disposable serologicals—the most complete glass line available. And the lowest priced.

Select Corning and every department in your lab can take advantage of the convenience, the safety, and the economy of glass disposables.

Here's the complete serological tineup: No. 7077—1 and 2 ml x 1/100, 5 and 10 ml x 1/10, sterile, individually wrapped, from 13½¢ to 12¢ each.

No. 7079A—6¾" long, 2/10 ml x 1/10 size, nonsterile, as low as 7¢ each.

No. 7078—1 ml x 1/10 or 1/100 sizes, sterile, cotton plugged, as low as 7½¢.

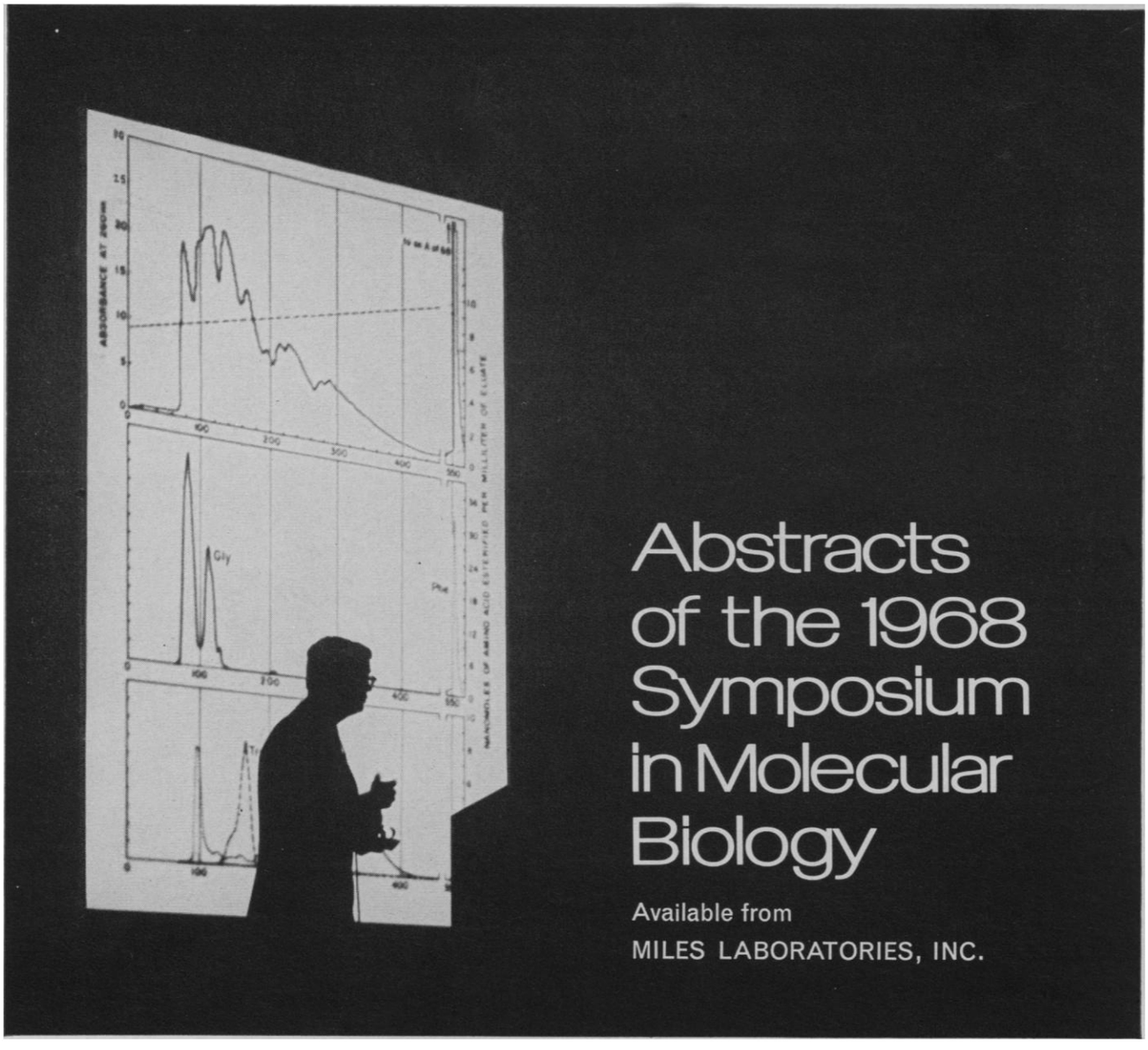
No. 7079—1 ml x 1/100, nonsterile, unplugged, less than 10¢ each.

Plus more disposables: new No. 7058 bacti type and No. 7099-S capillary type microsampling pipets in 5, 10, 20, 25, 50, and 100 lambda sizes.

Every PYREX brand disposable pipet is inert, clean, accurate, nonwarping, legibly marked glass. And combinable with other Corning labware for quantity discount savings. Call your dealer.

Corning Glass Works, Laboratory Products Department, Corning, N.Y. 14830

SELECT CORNING



To scientists throughout the world, Miles Laboratories in Elkhart, Indiana has meant advanced products for research in Molecular Biology since 1961.

Recently over 800 life-scientists from many parts of the world attended the second annual International Symposium in Molecular Biology sponsored by Miles Laboratories. These meetings bring together the world's foremost authorities on the inter-relationships of nucleic acids (DNA and RNA) and the Genetic Code to all the processes occurring within the living cell.

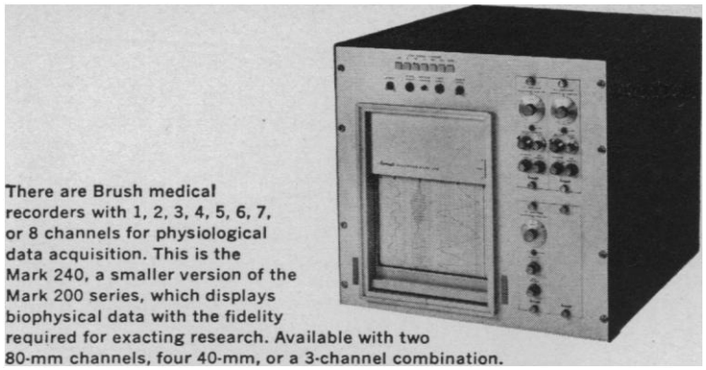
Through the Research Products Division, Miles Laboratories serves the scientific community by generating critical materials required by researchers in health and nutrition—molecular biologicals, immunochemicals, isotopically labeled compounds, enzymes, and protein building blocks.

For a summary of the proceedings and abstracts from the 1968 Symposium entitled: "Transfer of Genetic Information in Protein Synthesis; Synthesis, Structure, and Function of Transfer RNA," write Miles Laboratories, Inc., Research Products Division, Elkhart, Indiana, U.S.A., 46514.

In case you didn't know, we also make professional pharmaceuticals (Ames diagnostic reagents), electronic medical instruments, chemicals and proprietary pharmaceuticals such as ALKA-SELTZER *and* ONE-A-DAY *(brand) vitamins.*

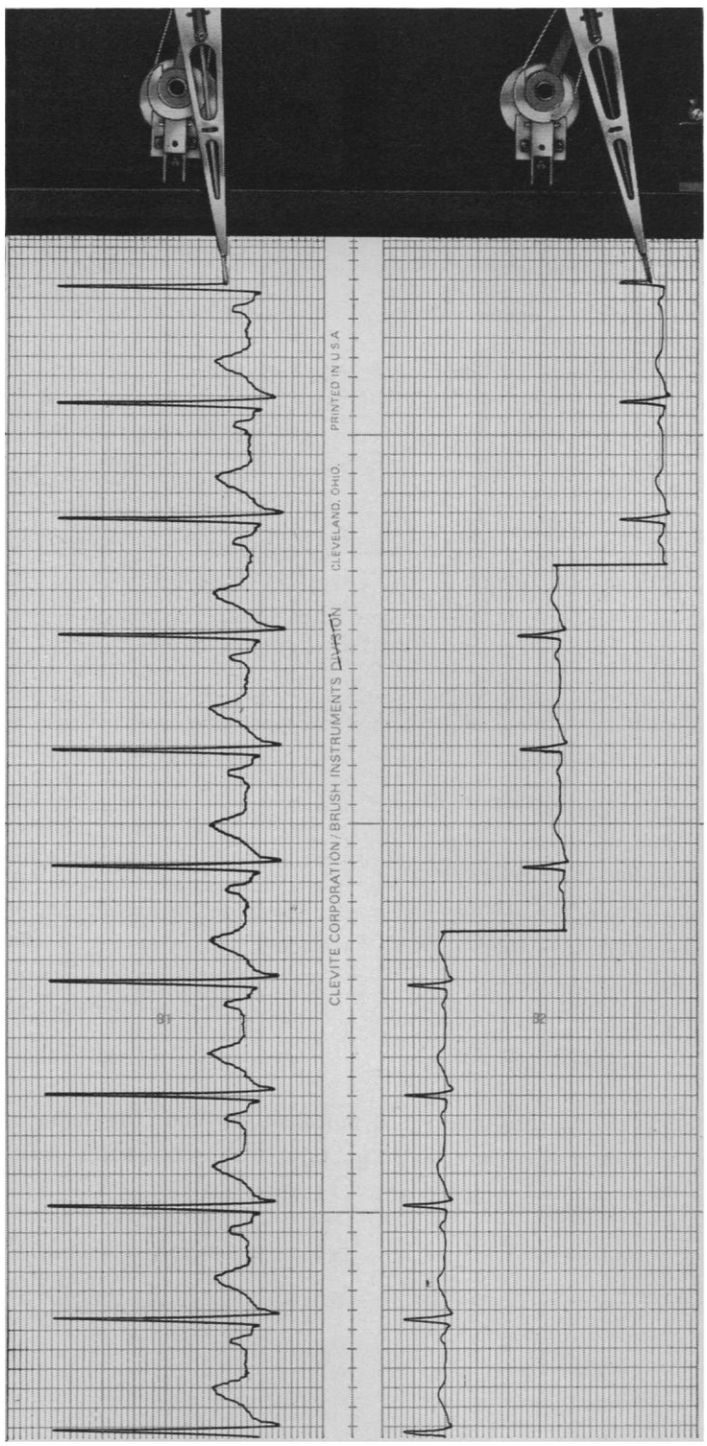
MILES LABORATORIES, INC. Elkhart, Indiana

Circle No. 31 on Readers' Service Card



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.

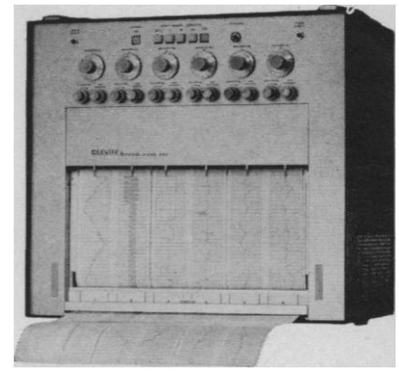
You can believe the high degree of resolution and system accuracy only when you see some sample physiological wave forms actually recorded on a Brush instrument. Write for your set of samples.

CLEVITE 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).

Circle No. 37 on Readers' Service Card

Six important reasons why Brush medical recorders are best for physiological data acquisition



The Mark 260 is a high-performance portable recorder at half the big-system price. Six analog channels and four event channels. Features the Brush patented pressure-fluid system. Frequency response: 70 Hz at half scale; 40 Hz at full scale.

1. Self-calibrating

Brush medical recorders are factory calibrated with instrument standards one step removed from The National Bureau of Standards. Unlike ordinary recorders, they stay that way, test after test, year after year, regardless of baseline position, attenuation, or gain setting.

2. More Physiology

We take the fooling out of recording . . . both kinds: the deceptive traces which result from intermingling physiology with artifact, and the need to fool with calibration controls.

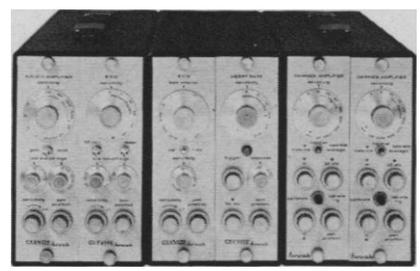
3. Wide Application

Brush data acquisition systems will accommodate a wide variety of physiological parameters, including:

Ballistocardiogram, Blood Pressure, Cardiac Output, Cerebral Potentials, Electrocardiogram, Electroencephalogram, Electrogastrogram, Electromyogram, Electroretinogram, Flow Rate, Gas Concentration, Gas Diffusion, Heart Rate, Muscle Contractions, Nystagmogram, Partial Gas Pressures, Phonocardiogram, Plethysmogram, Pulmonary Capacity, Pulse Waves, Respiration Rate, Smooth-muscle Potential, Temperature, Vectorcardiogram.

4. Choice of Front Ends

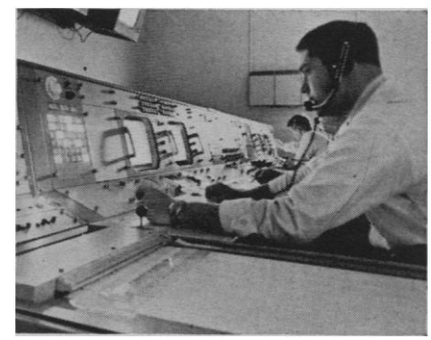
Brush's variety of bio-medical front ends can link nearly all physiological signal sources to *any* display device. All have broadband frequency response (to 10 kHz), a property which



not only preserves wave-form fidelity, but, combined with high power output, provides ample capability to drive tape recorders, oscilloscopes, digital counters, computers, and oscillographs. Or any combination at the same time.

5. High Performance

Physiological monitoring station at NASA's Manned Space Center, Houston, incorporates three 8-channel Brush Mark-200 recorders — one for each Apollo astronaut — for continuous display of ECG, respiration, blood pressure, and body temperature during flight. Telemetered data comes to Houston from stations around the world.



6. Quality Built

Ever since Brush introduced the direct-writing electrocardiograph in 1937 (its crystal penmotor was the first major improvement on Einthoven's string galvanometer), Brush recorders have been the quality standard of the industry.

From component production to system testing, modern Brush medical recorders are built to aerospace standards. No wonder Brush analog recorders are always used *whenever the data is important.*

CLEVITE BRUSH

Clevite Corporation • Brush Instruments Div., 37th and Perkins, Cleveland, Ohio 44114

Gentlemen:
Please send me, without obligation, a set of your sample physiological oscillograms.

Name _____

Title _____

Affiliation _____

Address _____

City _____ State _____ Zip _____

PLEASE SEND THIS COUPON FOR A SET OF SAMPLE PHYSIOLOGICAL OSCILLOGRAMS (actual recordings.)

Brush equipment is available on the U.S. Government GSA schedule to authorized purchasers.

New Electronically controlled water bath shaker.

Controls Temperature Electronically within ± 0.25° C.

Controls Agitation Electronically from 40-400 rpm.

Controls Water Level Electronically.

Controls Heating and Tap-Water Cooling Electronically.

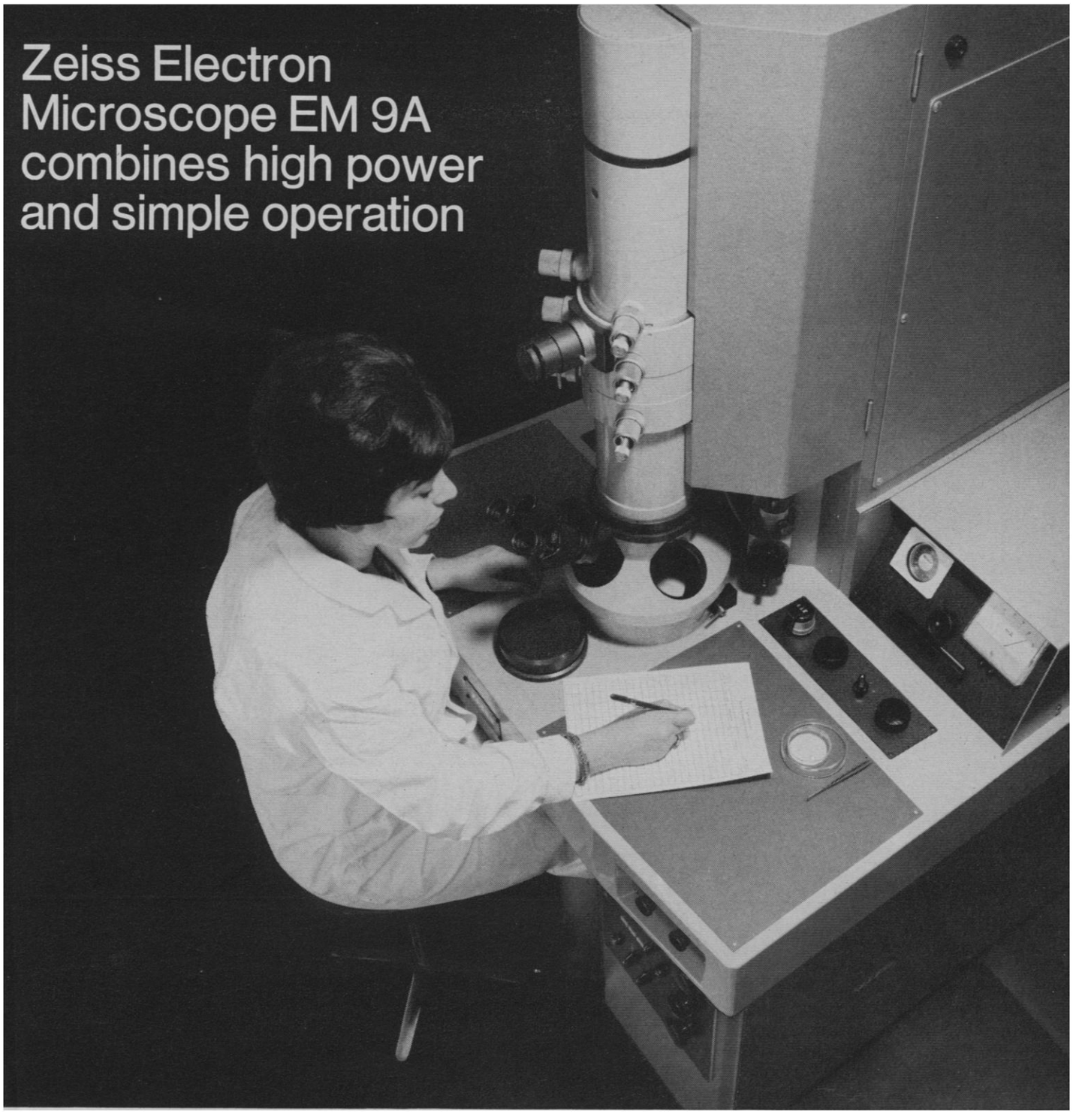
Other new engineering features: Auxiliary safety thermostat protects against overheating. Right-angle mercury thermometer is designed for easier reading without removal, and is also protected against breakage. Extra large shaker capacity.

Send for catalog G77S/9208

NEW BRUNSWICK SCIENTIFIC CO., INC.
1130 Somerset Street, New Brunswick, New Jersey 08903

Circle No. 33 on Readers' Service Card

Zeiss Electron Microscope EM 9A combines high power and simple operation



The EM 9A, designed for easy, dependable, and trouble-free operation, is a powerful research instrument, yet simple enough to operate for teaching purposes.

At the turn of a lever, the automatic photographic system sets correct exposure, takes the picture, numbers micrographs sequentially and neatly stacks up to 75 negatives without reloading.

The EM 9A, with all electrical units built in, is a compact instrument which requires very little space in the laboratory. It is equipped with safeguards to prevent operation errors, and to protect against power and water supply failures.

A host of features make the EM 9A ideal for a wide variety of applications. Its resolving power is 10 to 12 Å. Magnification ranges from 900 to 40,000x. For special work, extremely low magnifications of 60x and 100-500x can be obtained—distortion-free. The accelerating voltage of 60kV is highly stabilized.

The unique fine-focusing device with digital read-out combines the advantages of both step and continuous focusing. The 10x binocular has exceptionally good light transmittance and is equipped with high-eyepoint eyepieces for eyeglass wearers.

Write or phone for complete information. Carl Zeiss, Inc., 444 Fifth Avenue, N.Y., N.Y. 10018. Phone: 212 736-6070. Complete service facilities available.

ZEISS

THE GREAT NAME IN OPTICS

CARL ZEISS WEST GERMANY

Circle No. 13 on Readers' Service Card

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

The Answer is the UltroRac®!!!

The NEW ULTRORAC is the smallest fraction collector with a 200 standard test-tube capacity.

Having rugged precision it is as dependable as the world-famous RadiRac. Remove a ten-tube rack, it continues working – put it in the cold, it continues working – treat it roughly, it continues working – preset the run to end at 50 fractions and it stops at your command.

We guarantee it for 3 years too.

- ✓ Designed to Save Space
- ✓ Designed for Coldroom use
- ✓ Designed for Standard test tubes
- ✓ Compact, removable electronic unit for remote control
- ✓ For time, drop and volumetric capabilities
- ✓ Stainless steel column-support rods – polypropylene racks
- ✓ Provision for event marking
- ✓ Power outlet for flow pump

LKB

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

OTHER HEADQUARTERS FOR SALES AND SERVICE

SWEDEN
LKB-Produkter AB
Fack
Stockholm—Bromma 1

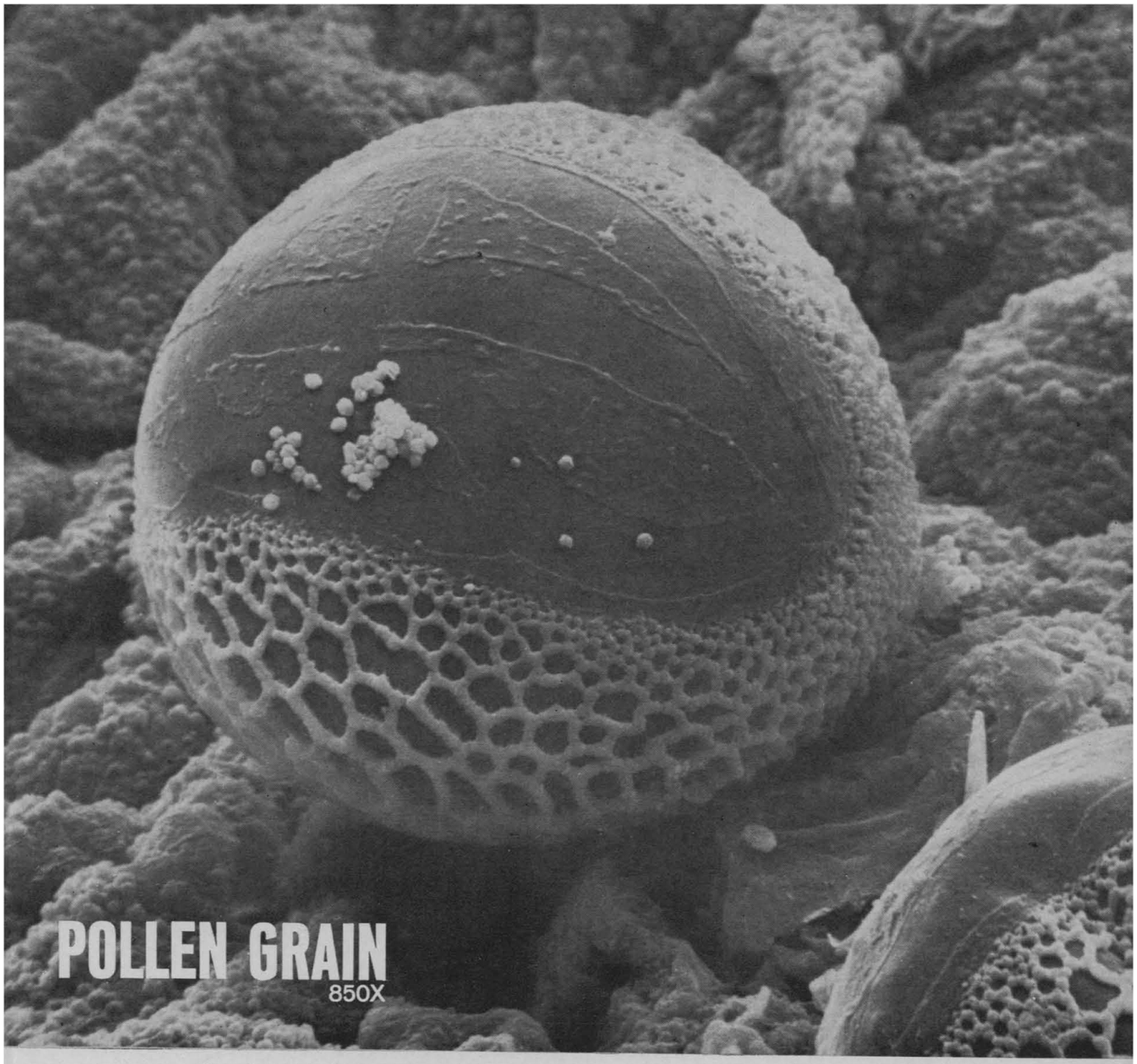
UK
LKB Instruments Ltd.
232 Addington Rd.
S. Croydon, Surrey CR2 8YD

NETHERLANDS
LKB-Produkten N.V.
Zeekant 35,
The Hague

DENMARK
LKB Instrument A/S
Amagerbrogade 34,
Copenhagen S

Circle No. 38 on Readers' Service Card

Circle No. 35 on Readers' Service Card→



of Lilium Longiflorum

Micrograph, Courtesy of Dr. J. Heslop–Harrison
University of Wisconsin, Madison

NEW mark IIa STEREOSCAN®

(SCANNING ELECTRON MICROSCOPE)

Now provides largest field of view... greater magnification range...greater depth of focus

Important Advantages Include:

- Resolution 150-300 A at 20 KV
- Useful magnification range 14X to 50,000X
- At 20X, it offers sample scan area of 5mm x 5mm at a working distance of 1.1cm
- Interchangeable final apertures—increases depth of focus by a factor of 4

Write to Engis Equipment Company, Instrumentation Division for Mark IIa catalog no. SI-968. Contains detailed information.

Engis

INSTRUMENTATION DIVISION
ENGIS EQUIPMENT COMPANY
8035 Austin Avenue, Morton Grove, Illinois 60053 • 312–966-5600

The new Mark IIa Stereoscan scanning electron microscope A product of Cambridge Instrument Co., Ltd., London, England.

Sales and Service exclusively in the U.S.A. by Engis Equipment Company

Circle No. 21 on Readers' Service Card

With S/P's Westinghouse Oxygen Analyzer, you just...

give it the gas and get split-second response

You're in the driver's seat with S/P's Westinghouse Oxygen Analyzer. Give it any inert gas and meter response clocks out at one second. Recovery time sets records, too. And the O_2 range is 1 part per million to 100% . . . that's a pretty wide track! The output of the fuel cell sensing device is read directly on the meter. Trouble free and easy to use, only the stainless steel tubing and platinum coated ceramic tube are exposed to the test gas. This results in exceptional durability even with corrosive gases. Write for the complete Westinghouse O_2 brochure—S/P literature number 9875 —or call your S/P Representative for a demonstration. Step on it.

scientific products

DIVISION OF AMERICAN HOSPITAL SUPPLY CORPORATION

GENERAL OFFICES: 1210 LEON PLACE, EVANSTON, ILLINOIS 60201

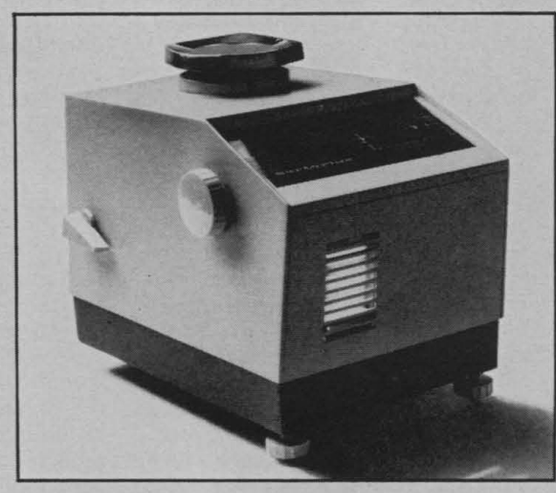
Regional Distribution Centers: Atlanta • Boston • Charlotte • Chicago • Columbus • Dallas • Detroit • Kansas City • Los Angeles • Miami • Minneapolis • New Orleans • New York • San Francisco • Seattle • Washington, D.C.

Circle No. 17 on Readers' Service Card

Circle No. 12 on Readers' Service Card →

Wouldn't it be great if someone designed a 160 g top-loader with 1 mg accuracy and all-digital readout?

Someone has. Sartorius.



There are other top-loading balances with 160 g capacity, but none is as accurate and easy to read as the new Sartorius 2255... and none is as stable.

To eliminate interpolation error with 'between the line' results, the Model 2255 provides all-digital readout to 1 mg. To further insure accuracy, there is absolutely no discernible swing—this balance stays at the indicated weight. There's no need to squint, either. Its huge new optical scale is a pleasure to read, even under the most adverse lighting conditions.

At only $725, the above features alone would make the 2255 a great buy, but there are more. The Taramatic® single knob taring system and below-balance weighing accessories are included at no extra cost.

For research, quality control, student use, or any other application requiring 1 mg weighing accuracy at loads up to 160 g, this is the simplest, yet most advanced top-loading balance available.

Sartorius all-digital top-loaders also come with higher capacities. Our 40-page catalog describes them all. For your copy, just write: Sartorius Division, Brinkmann Instruments, Cantiague Road, Westbury, N.Y. 11590.

sartorius balances

The new HU-11E: the world's highest resolution electron microscope. It also offers the maximum in operating convenience.

The Hitachi-Perkin-Elmer Model HU-11E has a guaranteed resolution of five Angstroms. Better than 1.5 Angstroms has been demonstrated.

And we've made the HU-11E as automatic and as easy to operate as possible. It's easy to align, easy to compensate, easy to focus. So it's easy to take ultra-high resolution micrographs with it.

For instance, we've incorporated a new electromagnetic gun-tilting device that gives you perfect alignment of the electron gun with respect to the condenser lenses. Plenty of brightness is available at direct magnifications to 300,000X.

Beneath the condensers we've added an exclusive new alignment coil. It keeps the beam centered from the lowest to highest magnifications.

There's a new electron gun airlock. If a filament burns out, you don't have to open the column to atmosphere. This is important for cleanliness, especially when you're doing ultra-high resolution work.

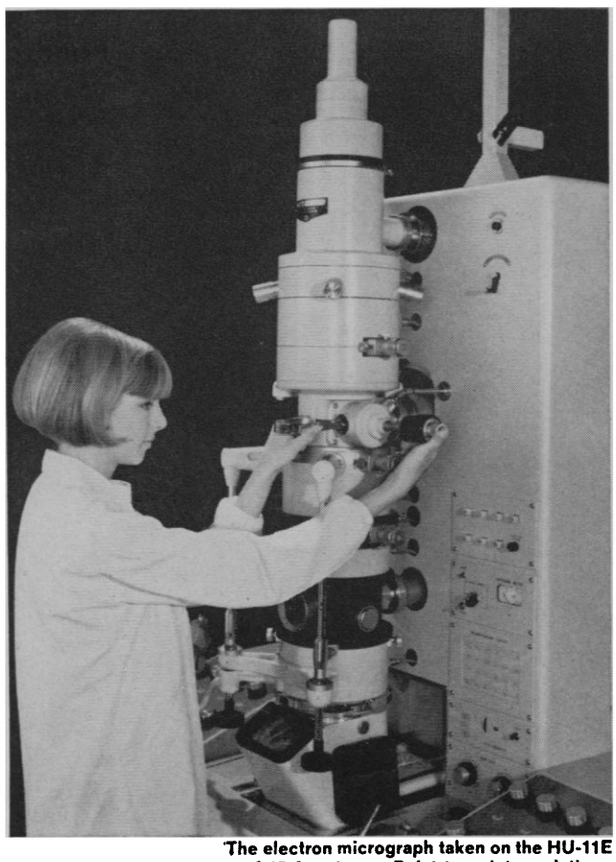
The magnification range is from 1000X to 300,000X direct without disturbing alignment or changing pole pieces. The magnification range is covered in 23 steps—direct reading or continuously. 250X for scanning is available just by flipping a single switch.

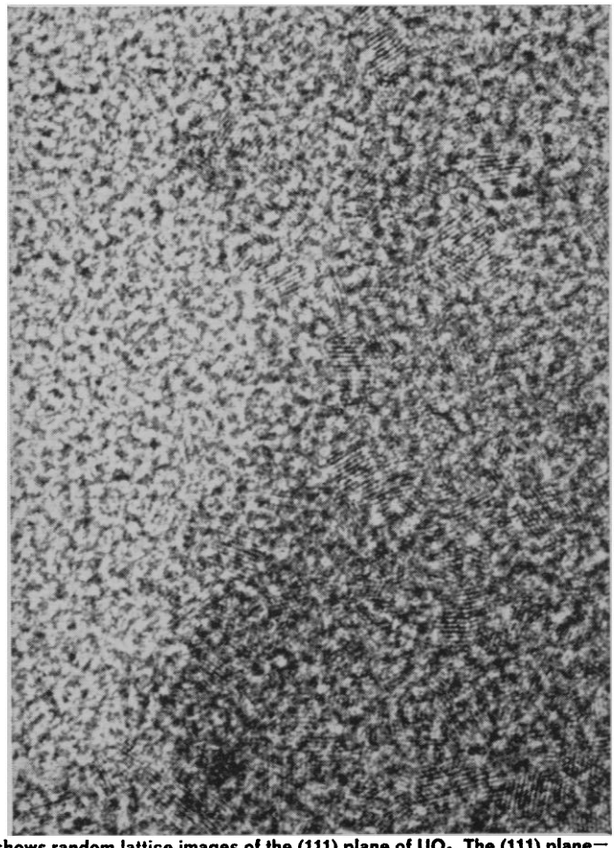
Accelerating voltages of 25, 50, 75 and 100 KV allow you to select the optimum voltage for any type of specimen. Lens currents are automatically changed when the accelerating voltage is changed. Super-stabilized electronics provide stabilities of 1.5 parts per million on the objective lens.

The HU-11E is equipped with a pushbutton vacuum system and a pushbutton camera system. Correct exposures are automatic. It incorporates the very latest in vacuum system design and the best anti-contamination measures, insuring a contamination rate below 0.1A/min.

The HU-11E is for workers who want the ultimate in performance—not just in resolving power, but in convenience features that permit the greatest output of high-quality pictures. We'll be glad to send you complete details. Write to: Perkin-Elmer Corporation, Ultek Division, San Antonio Road, Mountain View, Calif. 94303.

PERKIN-ELMER

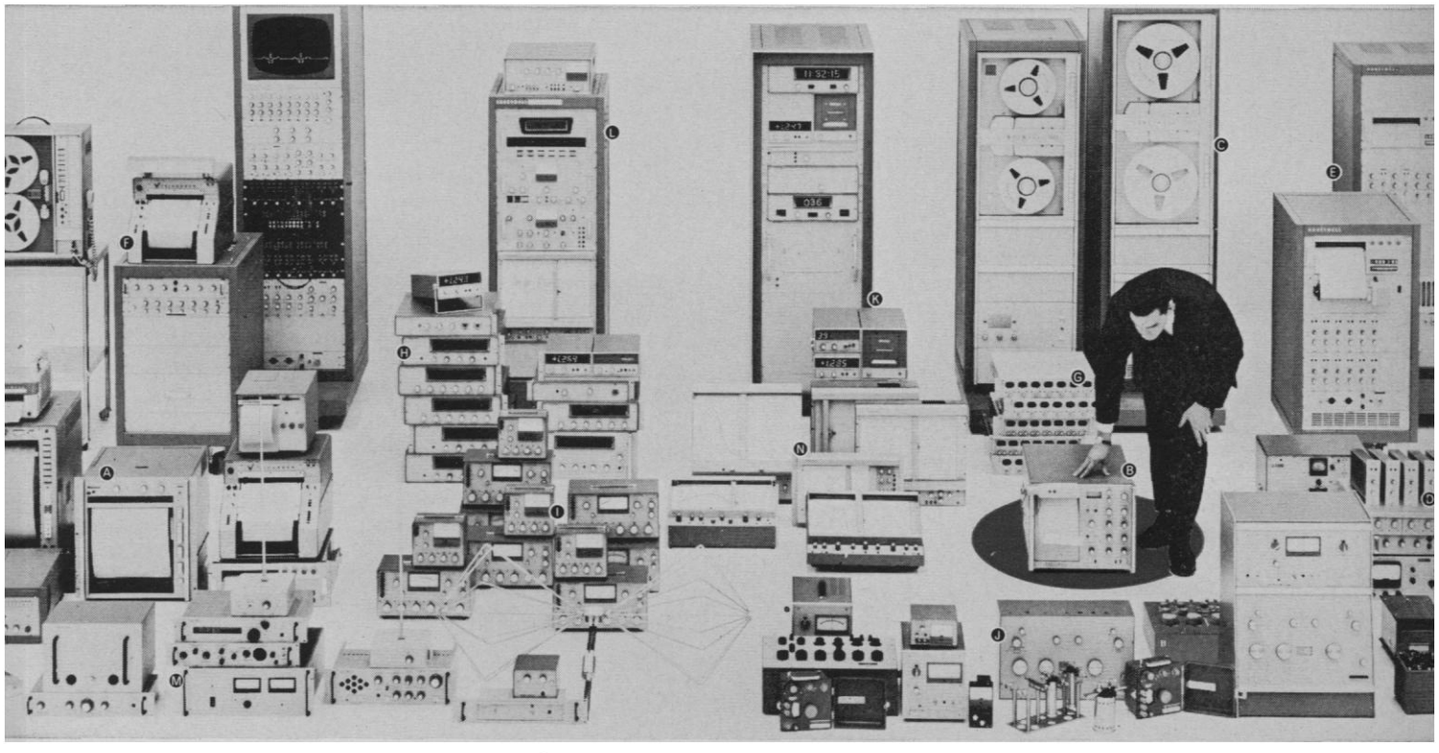




The electron micrograph taken on the HU-11E shows random lattice images of the (111) plane of UO_2. The (111) plane= 3.15 Angstroms. Point-to-point resolution of 3 Angstroms and less is also clearly evident. The HU-11E was operated at an accelerating voltage of 100 KV and an electron optical magnification of 200,000X. Final magnification is 2,000,000X.

This instrument is instantly available to you under Perkin-Elmer's low cost lease plan.

We build 847 instruments to be sure we have the exact 1 you need.

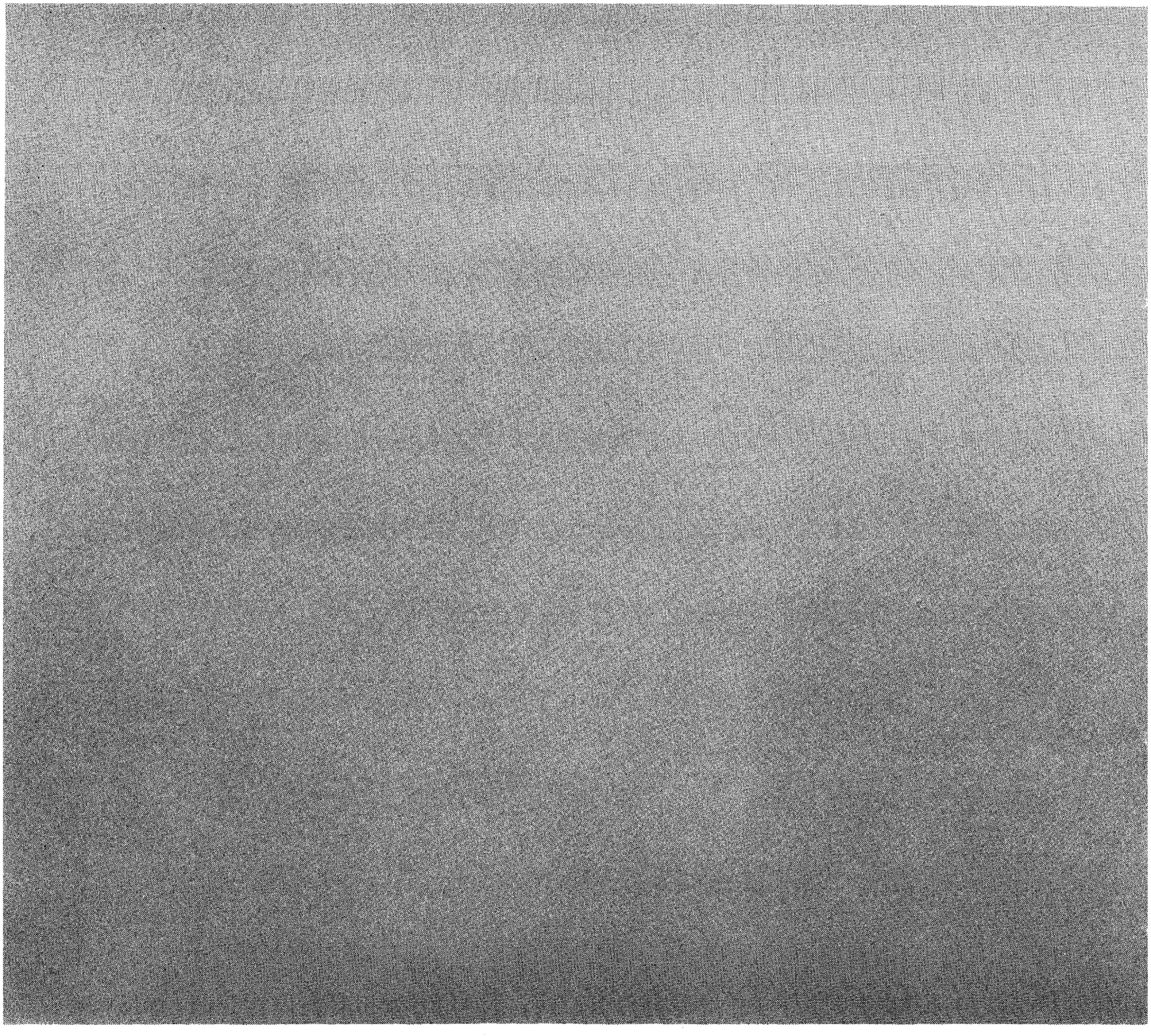


Here's just part of the full Honeywell line, which includes: Ⓐ117 Visicorder direct-recording oscillographs in 6", 8", and 12" models; Ⓑ 2 Model 1806 fiber-optics CRT Visicorder oscillographs; Ⓒ 26 magnetic tape systems, including the 7600 Series in 10½" and 15" reel versions; Ⓓ 84 amplifiers and other signal-conditioning units; Ⓔ 78 analog recording systems; Ⓕ 46 electronic medical systems; Ⓖ 14 oscilloscopes; Ⓗ 37 digital multimeters; Ⓘ 29 differential voltmeters; Ⓙ 179 precision laboratory standards and test instruments; Ⓚ 128 data loggers; Ⓛ 9 analysis systems; Ⓜ 61 EMI products; Ⓝ 37 X-Y graphic recorders.

Your Honeywell sales engineer can zero in on the *precise* solution to your instrumentation problems. Quickly and efficiently. You won't have to settle for "almost" what you need because the Honeywell sales engineer isn't handicapped by a limited line. He can choose from 847 basic instruments whose combinations and permutations approach the infinite.

The solution might be a Visicorder recording oscillograph. Or one of our modular magnetic tape systems. Or an X-Y recorder, a digital multimeter, or a portable potentiometer. But whether it's a single instrument or a complete data system, you can be sure the solution will be the right one, carefully thought out with your future requirements considered as well as your current needs. Local service and nationwide metrology facilities back up your Honeywell instrument or system. And, we can even provide factory training courses for *your* operating personnel. For the full story on how Honeywell can help you, call your local sales engineer or write: Honeywell, Test Instruments Division, Denver, Colorado 80217. **Honeywell**

Honeywell engineers sell solutions



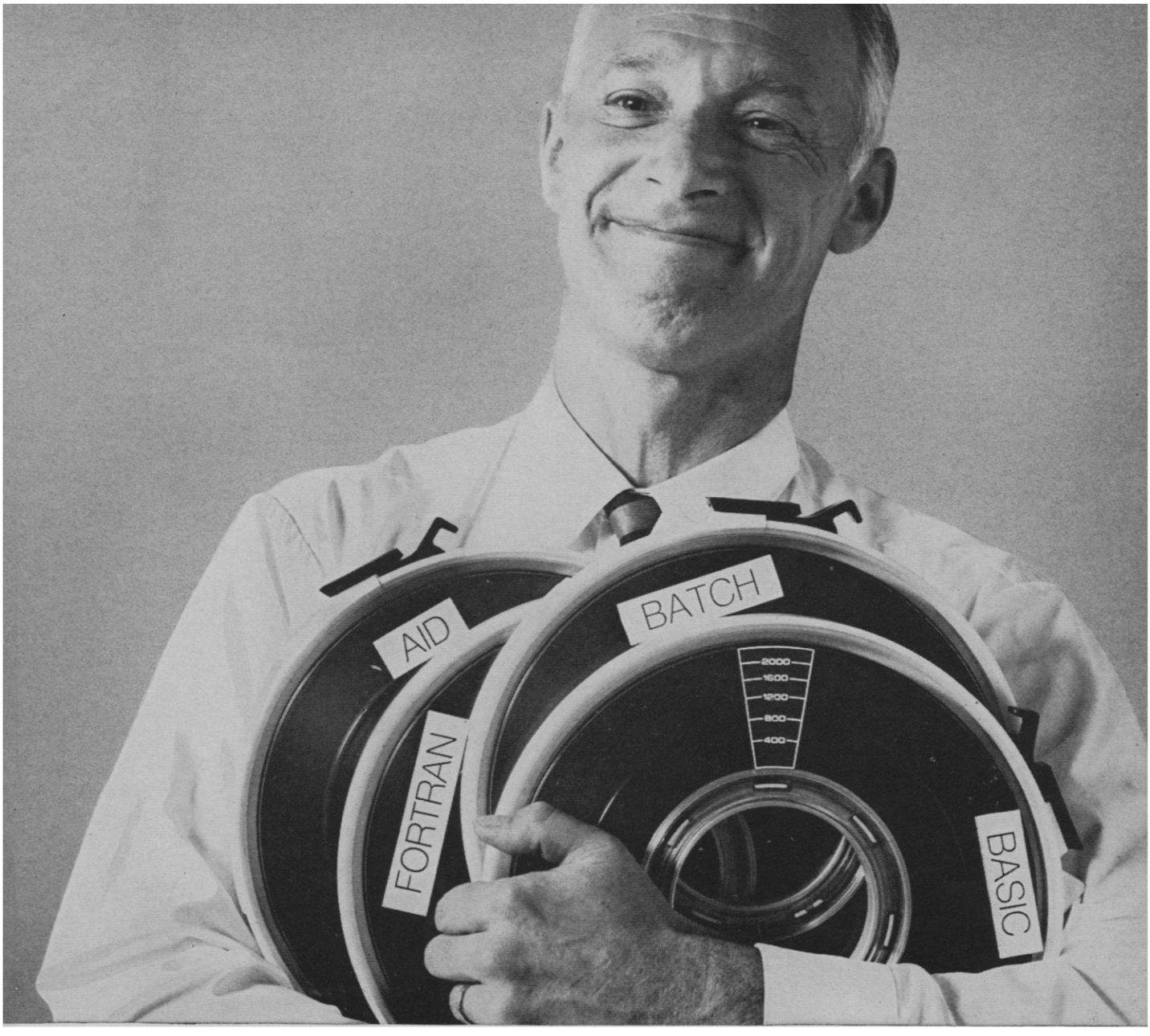
PDP-10 has the best time sharing software very much available anywhere.

It's been working since 1965.

So if you're tired of waiting for "next year" promises, we have all the PDP-10 time sharing software operational now. And what it does now surpasses what others are promising for later. We are delivering it to our customers now.

PDP-10 software exists in several versions. The idea is to give you a software system that can grow in easy compatible steps from batch processing to multiprogramming to full time sharing. Our basic time sharing monitor is a user-proven multiprogramming, time sharing system which allows 16 (or more) on-line users to operate simultaneously. The users will be able to compose BASIC, FORTRAN, AID and MACRO assembly programs, edit them using the powerful TECO text editor, debug them using DDT, and run them.

Our advanced time sharing system offers



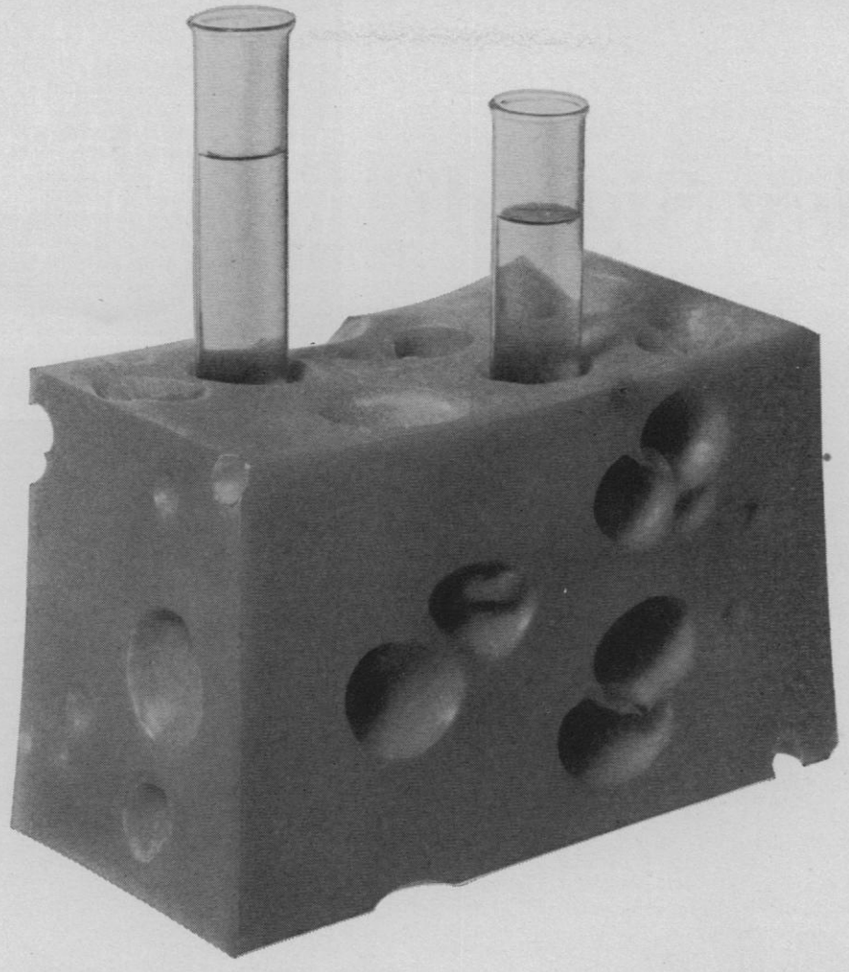
full range disk swapping time sharing incorporating all the features of the basic system with greatly extended capacity. It increases the number of simultaneous users to more than 64. It allows both batch processing and real time operations to go on concurrently with on-line time sharing. It is operational now.

To sum up PDP-10 time sharing is here. Proven by over 1 million hours of console time logged by users. Today you can carry on real-time operations, run batch programs and have on-line time sharing too. PDP-10 is the only computer that is already operating in all three modes all at the same time. PDP-10 is the only computer that can do it all for less than $500,000. And it's available only from us.

digital
COMPUTERS · MODULES

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.

Circle No. 15 on Readers' Service Card



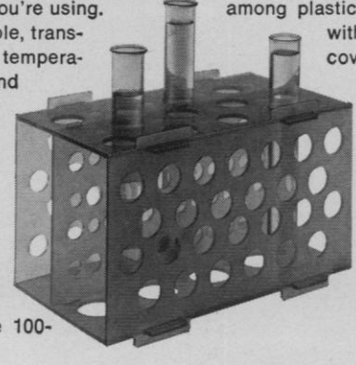
Sometimes nature has the best solution to a design problem

This uniquely designed four-sided test-tube rack holds all standard size test tubes from 6 to 25 mm. All you do is turn it to the side that accommodates the test tubes you're using.

The L130 Multi-Rack is made of unbreakable, translucent polypropylene. It is autoclavable (at temperatures to 250°F.), resistant to strong acids and bases, organic solvents and other commonly used lab reagents and immersible in any standard water bath. Can be disassembled for easy cleaning and compact storage.

The Econo-Multi-Rack is just one of the precision-molded items in our labware line carefully designed to help make your laboratory operations more efficient, more economical.

There's also our sturdy new polystyrene 100-capacity slide box for solid protection and fingertip accessibility. It costs far less than wood and it's a real heavyweight among plastic slide boxes. Comes in black simulated grain, with a numbered index system printed on the inside cover aligned with the numbered system on the moisture-resistant cork bottom. Ask for L153.



The Econo-Ware line includes a full range of sizes in slide boxes as well as disposable graduated beakers and funnels.

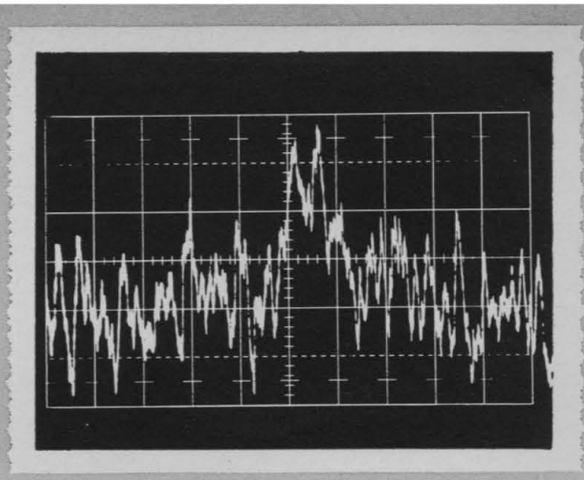
Ask your Econo-Ware distributor about the Multi-Rack, our hefty new slide box or any other labware item. Or request our catalog.

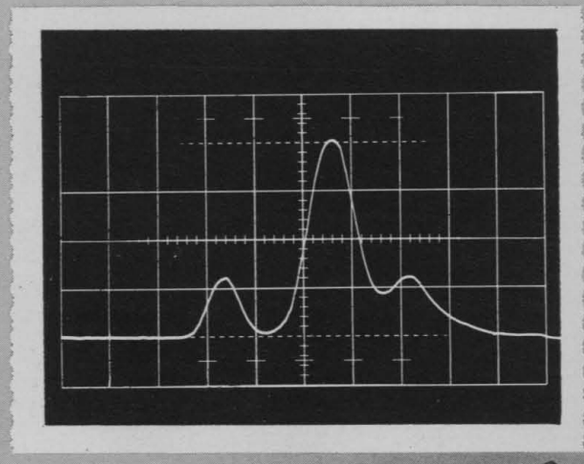
SCIENTIFIC DIVISION
MP MARYLAND PLASTICS, INC.
9 East 37th Street, New York, New York 10016

The Econo-Multi-Rack
The test-tube rack you can use four ways

LW-2

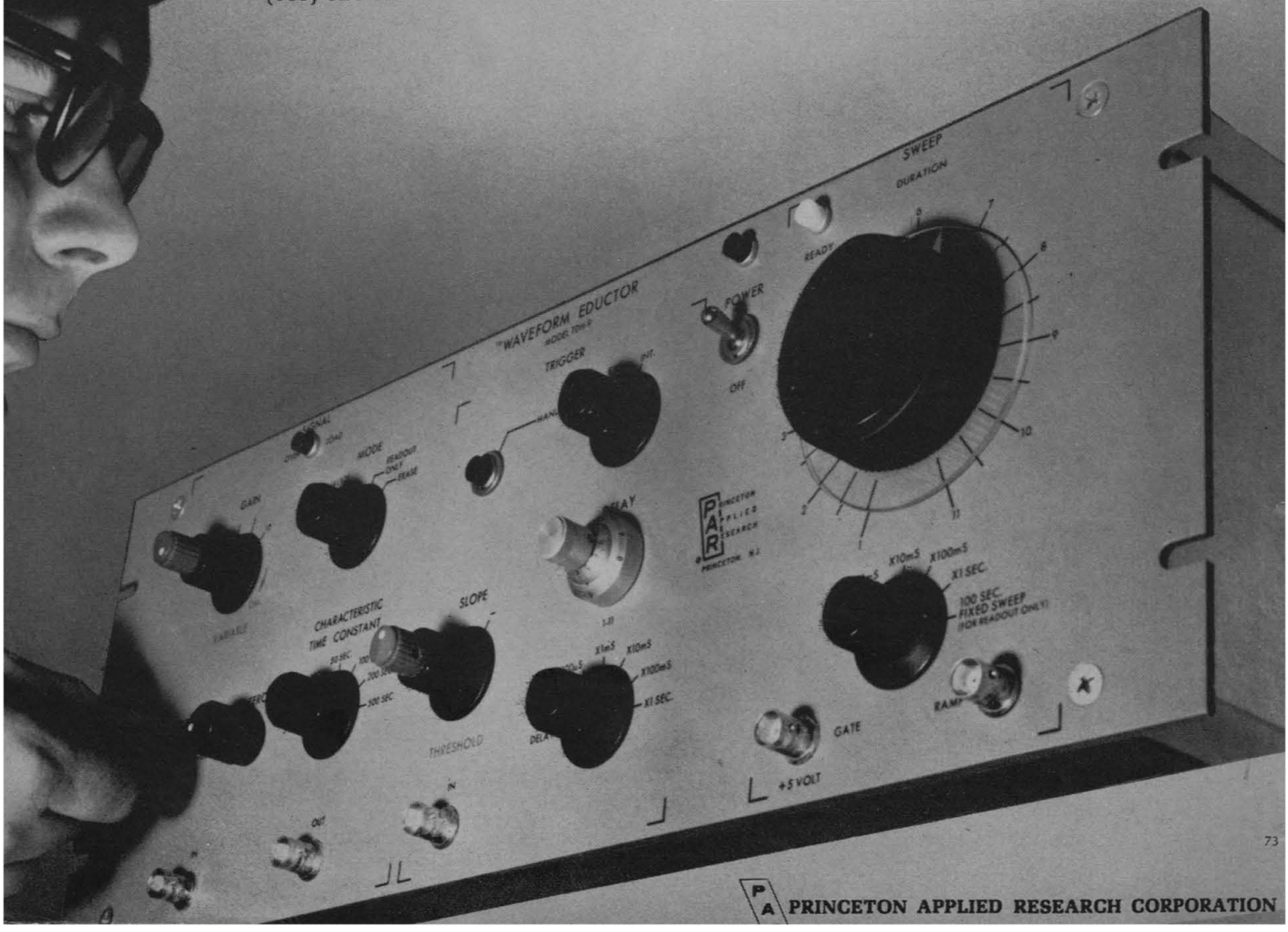
Noisy Signal?





Extract it with a PAR Waveform Eductor™

The PAR Waveform Eductor is a signal averager used to extract repetitive signals from noise. For complete information or to arrange a demonstration of this instrument, which is priced at only $4,200, write Princeton Applied Research Corporation, P.O. Box 565, Princeton, New Jersey 08540, or call (609) 924-6835.



73

PA PRINCETON APPLIED RESEARCH CORPORATION

The Fellows and all other social scientists should do some soul-searching on these points. I have no ready answers. I am afraid, however, that this proposed study is Orwellian rather than scientific, and that its findings should be subjected to careful study on both scientific and moral grounds.

E. N. ANDERSON, JR.
Department of Anthropology, University of California, Riverside

The following "ancients" thought they had found a solution to student unrest and protests. When the studies by our behavioral scientists are completed, will we moderns do better?

Memorandum of 5–6 June 1819 from Gentz to Adam Muller (copy to Metternich):

It has long been, and still is, my belief—and, as I observe with delight, it is yours also—that the precedence of the positive sciences over the philosophical and critical sciences must be emphatically vindicated. Here lies one of the best means of re-establishing the predominance of authority over spurious freedom; for anyone can philosophize and criticize (and mysticize and poetize) as he pleases, but positive sciences have to be *learned*. Only when young people resolve to learn once more, in the true sense, will they again be capable of intellectual obedience, without which academic life is merely a prelude of the wild anarchy in which the entire political life of our day is lost (*1*).

GILBERT B. DEVEY
National Academy of Engineering, 2101 Constitution Avenue, NW, Washington, D.C. 20418

Reference

1. I. Barea, *Vienna* (Knopf, New York, 1966), p. 132.

Unvarying Climate at Lincoln

Nelson's report of Admiral Rickover's testimony to the Senate Foreign Relations Committee earlier this year includes the Admiral's discussion of DoD's Project Themis. He is reported to have said that "Project Lincoln at M.I.T." has seminars that "are held in pleasant places where the climate and the living conditions are good" ("Research probe: Rickover broadsides 'military-scientific complex,'" 2 Aug., p. 446).

Admiral Rickover's statement is incorrect. M.I.T. and Lincoln Laboratory do not receive any funds from Project Themis. Lincoln Laboratory conducts whatever staff meetings and seminars it

has on the laboratory premises which are located in government-owned buildings in Lexington, Massachusetts, adjacent to Hanscom Air Force Base. The implication that Lincoln Laboratory runs seminars or meetings for its permanent staff or for visiting scientists at resort or vacation areas has no basis in fact.

J. P. RUINA
Massachusetts Institute of Technology, Cambridge 02139

Contaminating Hamster Cells

The *Bulletin* of the Tissue Culture Association (September, 1967) lists several "Catastrophies in the tissue culture laboratory." I should like to call attention to our mistaken observation of "enhanced growth of human embryonic cells infected with adenovirus 12" (*1*).

The inadvertent presence of some contaminating hamster cells in cultures from the same human embryo received months apart was responsible ultimately for this "enhanced growth." A similar culture purchased from the same source but derived from a different embryo did not develop accelerated growth. It became clear that a few contaminating cells were transformed in the presence of virus and eventually replaced the human cell population as the latter was less resistant to killing. Identification of the hamster cells was by immunologic and karyotypic studies and by animal inoculation.

In order to test for the possibility that some of the human cells might have been similarly affected, a culture taken soon after infection was passaged under conditions designed to suppress or to eliminate hamster cells immunologically. At least some cells produced virus continuously and many contained T antigen. Growth was very slow and the effort was discontinued after 2 years.

Although the source of the contaminating hamster cells was not rigorously established, attention is called again to the hazard of taking for granted the expected purity of species in cell cultures of this description.

GUSTAVE FREEMAN
Department of Medical Sciences, Stanford Research Institute, Menlo Park, California 94025

Reference

1. I. V. Sultanian and G. Freeman, *Science* **154**, 665 (1966).

The microscope that works a 60-hour week. At least.

You can use the rugged Leitz LABOLUX 10 hours a day, 6 days a week—week in, week out—for the hardest kind of routine lab work, and it won't get out of alignment. It keeps on giving you the same dependable results no matter how hard you push it.

Yet the Leitz LABOLUX is sophisticated enough to be used for critical research projects. And inexpensive enough so you can buy it without making a big hole in your budget.

This fine instrument gives you the famous Leitz precision in all its mechanical and optical components and it is equipped with the new Plano objectives which completely eliminate curvature of field. It's versatile, too, with interchangeable components that make it adaptable to almost any field of investigation—bright field, dark field, phase contrast, incident light, fluorescence, photomicrography. And the LABOLUX has built-in Koehler illumination.

So if you're looking for an all-around microscope that combines ruggedness with precision, look into the Leitz LABOLUX. Write to Leitz for complete information.

Leitz® E. Leitz, Inc., 468 Park Avenue South, New York, N.Y. 10016

68568

20 September 1968, Volume 161, Number 3847 **SCIENCE**

Are Grades Necessary?

College grades and grading systems have become targets of criticism for several reasons. Before the rules concerning student deferment were changed earlier this year, some students objected to the release of grades to draft boards. Grades have symbolized objective examinations, machine records, and other efficient devices and practices that critics have sometimes indicted as evidence of the dehumanization and regimentation of higher education. And students have objected to having permanent grade records given by instructors from whom they feel alienated for courses they consider irrelevant.

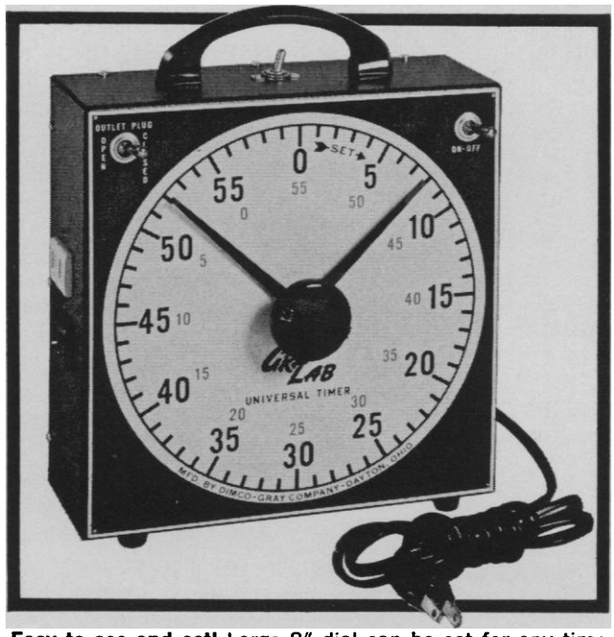
There is irony in this situation. Students sometimes complain of the impersonality of undergraduate instruction, and often justly so. Yet in the impersonality of language laboratories, computer-assisted instruction, and other "teaching stations" that provide the student with a range of instructional material and with rapid feedback to his responses is to be found the best hope of achieving the maximum individualization of instruction—an educational objective that would permit students to decide what and when they want to learn and would permit each to progress at his own self-determined rate. Under such conditions—in theory, although never completely in practice—each student (given the time he needed) could master each course he took. What then would course grades mean?

There is a further irony, for many instructors are also skeptical of the grading system. That grading standards vary widely among institutions, departments, and instructors is generally known; a student's grade in a particular course is at best an imperfect measure of what he knows of the course content. When college grades are used to predict success in later life, the correlations usually turn out to be too close to zero to be of much practical use. The scores received by graduating students on tests of the Graduate Record Examination, whether in the humanities, the natural sciences, or the social sciences, appear to be nearly independent of available measures of university or college quality or excellence, after account is taken of differences among students at the time of college admission (Alexander Astin, *Science*, 16 August 1968).

In short, a student's accomplishment in college and later is primarily determined by his own ability, knowledge, and motivation, and at best only slightly by the characteristics of his teachers and his college. This state of affairs is no excuse for abandoning efforts to improve teaching and educational facilities. But it does mean that instructors can be more relaxed about the necessity of assigning grades; that students cannot escape responsibility by explaining their own deficiences in terms of instructor or college inadequacies; and that students can therefore be given substantial responsibility for deciding whether they are to be graded.

The practice of allowing students to take some courses without credit or without grades is spreading. The practice is not one to be made universal and mandatory, for grades provide some students with standards for self-appraisal and for motivation, and they provide the institution with comparative information concerning students. But educational effectiveness and the ability to make institutional decisions concerning the earning of college degrees do not require that grades be given to all students in all courses. A student has wide latitude in deciding which courses to take, how assiduously to apply himself, and how long to remain in a course or in college. Why should he not also be permitted to decide whether he is to be graded, and even whether he is to receive a certificate of enrollment for a specified period of time instead of a grade record and a degree?—DAEL WOLFLE

GRALAB
ALL-PURPOSE TIMERS



Easy to see and set! Large 8" dial can be set for any time within range of 3600 distinct settings (1 sec. to 60 min., 1 min. to 60 hrs., etc.). At end of preset interval, alarm sounds and external load is automatically switched on or off. Split-second synchronous accuracy. Models at $26 to $36. **Write for new 8-page illustrated catalog.**

DIMCO-GRAY COMPANY
207 E. Sixth St., Dayton, Ohio 45402
Circle No. 78 on Readers' Service Card

NEW CATALOG
describes
15 Mettler
top-loading
balances

Mettler's high-speed, easy-to-use, top-loading balances are fully described in a new catalog. Included are units with performance levels ranging from semi-analytical to 11-kilo high capacity. All are precise, rapid-reading and offer improved precision-to-capacity relationships.

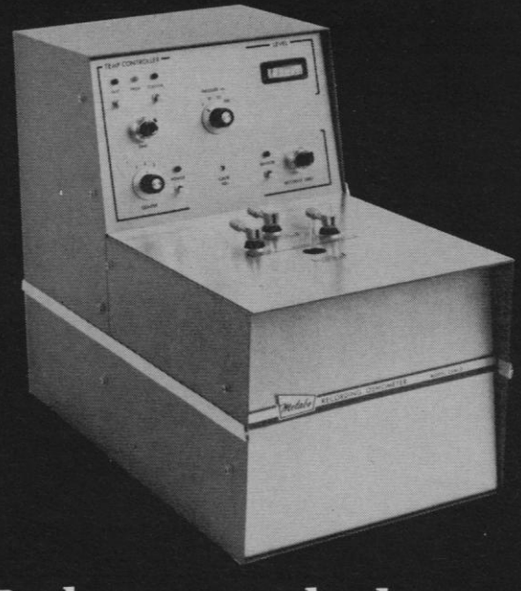
Most unusual is the new Model P160. It features a reversible scale for weight loss studies and gravimetric titrations. Most versatile is the widely-used P1200. Its 1200-gram capacity and ±10-milligram readability make it ideal for the vast majority of routine weighings.

All Mettler top-loaders can be used for five different types of weighings. Included are weighing of unknowns, batching, check-weighing, weighing-in, and below-balance weighing.

Request Bulletin P from Mettler Instrument Corporation, 20 Nassau Street, Princeton, N. J. 08540.

Mettler®

Circle No. 72 on Readers' Service Card



Perhaps somebody could build a better membrane osmometer. So far nobody has.

Two years ago Melabs introduced a significantly-improved instrument for measuring the osmotic pressures of large molecules (10,000 to 1,000,000 number average). Today, the Melabs osmometer still offers more advantages than any other instrument for molecular weight determinations—from proteins to polymers. For example:

Simplified Design. Easier to operate and maintain. Direct-reading strain gauge detection system eliminates servo systems and air bubbles. Both sides of membrane may be flushed with solvent without disassembly.

Wide Pressure Ranges. Four selectable ranges, 0-5 cm solvent; 0-10 cm solvent; 0-50 cm solvent; 0-100 cm solvent.

Wide Temperature Ranges. 5°C to 130°C in Model CSM-2; 40°C to 130°C in Model CSM-1. Built-in variable temperature control.

Water or Organic Solvents. Performs equally well using either. Only stainless steel, Teflon®, and membrane contact sample.

Competitive Pricing. In most cases, Melabs will be lower-priced than competing instrumentation.

To learn more about these well-accepted instruments, write to Melabs, Scientific Instruments Department, 3300 Hillview Avenue, Palo Alto, California 94304.

Melabs®

In Europe, contact Melabs S.A., 393 Chausée de Stockel, Brussels, Belgium.

A. M. Burt (Nashville). Plant tissue was found more difficult to prepare than animal tissue. The prevention of virus redistribution in plant cells during the preparation for autoradiography was discussed by D. E. Schlegel (Berkeley) and W. G. Langenberg (Lincoln). The superiority of section freeze-substitution in the preservation of certain enzyme reactions compared to classical fixation and embedding techniques was demonstrated by J. P. Chang (Houston). Although this method has been used for the tissue preparation in autoradiography, the application of an organic solvent, albeit at low temperature, may obviate its applicability in the autoradiography of diffusible compounds. The implications of freezing and thawing for maintaining tissue structure and viability were discussed in two papers by H. T. Meryman (Bethesda) and B. F. Trump (Durham). It was emphasized that ice crystal disruption and cryosmosis probably cannot be eliminated but may be minimized by rapid freezing and maintenance of low or ultralow temperatures during tissue preparation. Preliminary data on the utilization of low-temperature tissue cutting for electron-microscopic autoradiography were shown by T. C. Appleton (London) with a cryostat microtome and by A. K. Christensen (Stanford) with a freezing microtome. The subcellular morphology in the presented photomicrograms appeared different from those obtained by classical fixation and embedding procedures. Considerable improvement of technique will be needed, however, before judgments on authenticity can be made and classical pictures are challenged. Electron-microscope autoradiography of diffusible compounds will have to await the perfection of low-temperature tissue preparation and, as S. Ullberg (Stockholm) pointed out, the present situation is such that it is still not realizable but promising, as he stated 4 years ago at the conference on Isotopes in Pharmacology held at the University of Chicago, Center for Continuing Education, June 1964. That such hope is justified was eloquently demonstrated by M. M. Salpeter (Ithaca) who provided models for a quantitative approach to the evaluation of resolution and sensitivity based on progress made in EMAR with classical preparative techniques.

WALTER E. STUMPF
Department of Pharmacology, University of Chicago, 947 East 58 Street, Chicago, Illinois 60637

Calendar of Events

National Meetings

October

20–21. American Assoc. of **Poison Control Centers,** 11th, Chicago, Ill. (C. A. Walton, Drug Information Center, Univ. of Kentucky Medical Center, 800 Rose St., Lexington)

20–24. American Soc. for **Information Science,** 31st., Columbus, Ohio. (J. B. Fox, Chemical Abstracts Service, Ohio State Univ., Columbus 43210)

21–23. Interscience Conf. on **Antimicrobial Agents and Chemotherapy,** 8th, New York, N.Y. (American Soc. for Microbiology, 115 Huron View Blvd., Ann Arbor, Mich. 48103)

21–23. **Solar Energy** Soc., Palo Alto, Calif. (The Society, Arizona State Univ., Tempe 85281)

21–24. Society for **Industrial and Applied Mathematics,** Philadelphia, Pa. (B. R. Agins, Courant Inst. of Mathematical Sciences, New York Univ., 251 Mercer St., New York 10012)

21–25. American Assoc. for **Lab. Animal Science,** 19th, Las Vegas, Nev. (J. J. Garvey, Box 10, Joliet, Ill. 60434)

22–24. **Shock and Vibration** Symp., Monterey, Calif. (W. W. Mutch, Code 6020, Shock and Vibration Information Center, Naval Research Lab., Washington, D.C. 20390)

23. American Oil **Chemists** Soc., New York, N.Y. (C. H. Hauber, The Society, 35 E. Wacker Dr., Chicago, Ill. 60601)

23–24. **Helium Applications** Symp., Washington, D.C. (L. A. Gutkind, 725 Liberty, Pitsburgh, Pa. 15222)

23–25. American **Ceramic** Soc., Pasadena, Calif. (H. L. Hedrick, Southern Counties Gas Co., 720 W. 8 St., Los Angeles, Calif. 90017)

23–25. **IEEE Nuclear Science** Symp., Montreal, Canada. (O. L. Tiffany, Bendix Corp., Aerospace Systems Div., 3300 Plymouth Rd., Ann Arbor, Mich. 48107)

24–25. Metropolitan Engineers Council on **Air Resources,** New York, N.Y. (R. A. Fox, P.O. Box 270, Mount Vernon, N.Y. 10550)

24–26. Association for **Research in Ophthalmology,** Chicago, Ill. (Dept of Ophthalmology, Univ. of Florida College of Medicine, Gainesville 32601)

24–26. Society for the **Scientific Study of Religion,** Montreal, P.Q., Canada. (S. Z. Klausner, 3800 Locust St., Philadelphia, Pa. 19104)

25–26. **Orton** Soc., Inc., New York N.Y. (M. B. Rawson, Orton Soc., Inc., Box 153, Pomfret, Conn. 06258)

26–27. American College of **Dentists,** Miami Beach, Fla. (O. W. Brandhorst, 4236 Lindell Blvd., St. Louis, Mo. 63108)

26–27. Southern **Electroencephalographic** Soc., Birmingham, Ala. (G. S. Ferriss, 1542 Tulane Ave., New Orleans, La. 70112)

27–30. Computer Aided **Circuit Design and Analysis,** St. Charles, Ill. (Natl. Electronics Conf., Inc., Oak Brook Executive Plaza No. 2, 1211 W. 22 St., Oak Brook, Ill. 60521)

27–1. American Acad. of **Ophthalmology and Otolaryngology,** Chicago, Ill. (W. L.

Benedict, 15 Second St., SW, Rochester, Minn. 55901)

27–1. American Soc. of **Plastic and Reconstructive Surgeons**, New Orleans, La. (P. P. Pickering, 2850 Sixth Ave., Suite B, San Diego, Calif. 92103)

28–29. Conference on **Evaluation of Safety of Cosmetics**, Washington, D.C. (AMA Committee on Cutaneous Health and Cosmetics, 535 N. Dearborn St., Chicago, Ill. 60610)

28–29. International Conf. on **Materials**, Pittsburgh, Pa. (R. B. Barnhart, Conf. Manager, Warner Hall 111, Carnegie-Mellon Univ., Pittsburgh)

28–30. **Hybrid Microelectronics** Symp., Chicago, Ill. (J. English, Cozzens and Cudahy, 9501 W. Devon Ave., Rosemont, Ill. 60018)

28–31. American Assoc. of **Blood Banks**, Washington, D.C. (L. J. James, 30 N. Michigan Ave., Chicago, Ill. 60602)

28–31. **Instrument** Soc. of America, New York, N.Y. (H. S. Kindler, The Society, 530 William Penn Pl., Pittsburgh, Pa. 15219)

28–1. Society for **Experimental Stress Analysis**, San Francisco, Calif. (The Society, 21 Bridge Sq., Westport, Conn. 06880)

29–31. Conference and Workshop on **Applied Climatology**, Asheville, N.C. (H. T. Harrison, Route 1, Box 266, Weatherville, N.C. 28787)

31–1. **Educational** Conf., 33rd, New York, N. Y. (W. S. Litterick, Educational Records Bureau, 21 Audubon Ave., New York 10032)

31–1. **Entomological** Soc. of America, 40th, Philadelphia, Pa. (J. P. Johnson, Connecticut Agricultural Experiment Sta., Box 1106, New Haven 06504)

31–1. American Soc. for **Microbiology**, 8th, New York, N.Y. (R .W. Sarber, 115 Huron View Blvd., Ann Arbor, Mich.)

31–1. Symposium on **Social Behavior**, 2nd, Oxford, Ohio. (R. A. Hoppe, Dept. of Psychology, Miami Univ., Oxford 45056)

31–1. American Soc. of **Tropical Medicine and Hygiene**, Atlanta, Ga. (G. M. Jeffery, P.O. Box 295, Kensington, Md.)

31–2. **Gerontological** Soc., Denver, Colo. (The Society, 660 S. Euclid, St. Louis, Mo. 63110)

31–2. Society of **Photographic Scientists and Engineers**, Washington, D.C. (R. A. Jones, Papers Chairman, Mail Sta. 68, Perkin-Elmer Corp., Norwalk, Conn. 06852)

November

1–2. Central Soc. for **Clinical Research**, Chicago, Ill. (J. Eckstein, Dept. of Internal Medicine, Univ. of Iowa Hospitals, Iowa City 52240)

1–3. National Council for **Geographic Education**, 54th, Kansas City, Mo. (E. Eiselen, The Council, Room 1532, 111 W. Washington St., Chicago, Ill. 60602)

1–4. **Research in Medical Education**, 7th conf., Houston, Tex. (P. J. Sanazaro, Assoc. of American Medical Colleges, 2530 Ridge Avenue, Evanston, Ill. 60201)

6–8. Conference on **Composition and Dynamics of the Upper Atmosphere**, El Paso, Tex. (J. E. Morris, P.O. Box 26065, El Paso 79925)

6–8. **Diffraction** Conf., 26th, Pittsburgh, Pa. (S. Diamond, U.S. Steel Corp., Applied Research Lab., Monroeville, Pa. 15146)

6–8. Northeast **Electronics Research**, Mtg., Boston, Mass. (A. Uhlir, Inst. of Electrical and Electronics Engineers, NEREM-68, 31 Channing St., Newton, Mass. 02158)

6–8. International **Spi Cellular Plastics** Conf., New York, N.Y. (S. Steingiser, Monsanto Research Corp., Station B, Box 8, Dayton, Ohio 45407)

6–9. American **Ceramic** Soc., Pittsburgh, Pa. (The Society, 4055 N. High St., Columbus, Ohio 43214)

6–9. **Operations Research** Soc. of America, 34th, Philadelphia, Pa. (J. H. Engel, c/o Center for Naval Analysis, 1401 Wilson Blvd., Arlington, Va. 22209)

6–9. Conference on **Respiratory Therapy**, Boston, Mass. (M. J. Nicholson, 605 Commonwealth Ave., Boston 02215)

7–9. American Soc. of **Cytology**, Cleveland, Ohio. (W. R. Lang, 1025 Walnut St., Philadelphia, Pa. 19107)

7–10. Association of **Clinical Scientists**, Washington, D.C. (R. P. MacFate, 300 N. State St., Chicago, Ill. 60610)

8–11. American **Physical** Soc., Plasma Physics Div., Austin, Tex. (W. E. Drummond, Physics Bldg. 330, Univ. of Texas, Austin 78712)

10–15. American Soc. of **Agronomy**, New Orleans, La. (M. Stelly, c/o The Society, 677 S. Segoe Rd., Madison, Wis. 53711)

10–15. **Crop Science** Soc. of America, New Orleans, La. (Secretary, 677 S. Segoe Rd., Madison, Wis.)

10–15. American Assoc. for **Inhalation Therapy**, Houston, Tex. (M. T. Bowers, 4075 Main St., Riverside, Calif. 92501)

11–13. Soc. of **Engineering Science**, 6th technical mtg., Princeton, N.J. (A. C. Eringen, Dept. of Aerospace and Mechanical Sciences, Engineering Quadrangle, Princeton Univ., Princeton 08540)

11–13. **Genetics** Soc. of America, Boston, Mass. (B. Wallace, Dept. of Genetics, Cornell Univ., Ithaca, N.Y.)

11–14. American **Nuclear** Soc., Washington, D.C. (Executive Secretary, 244 E. Ogden Ave., Hinsdale, Ill. 60521)

11–15. American College of **Preventive Medicine**, Detroit, Mich. (E. A. Piszcek, 6410 N. Leona Ave., Chicago, Ill. 60646)

11–15. American **Public Health** Assoc., 96th, Detroit, Mich. (Executive Director, 1790 Broadway, New York, N.Y.)

13–15. Eastern **Analytical** Symp., New York, N.Y. (L. M. Brancone, Lederle Labs., Pearl River, N.Y. 10965)

13–16. National Easter Seal Soc. for **Crippled Children and Adults**, Boston, Mass. (Natl. Easter Seal Soc., 2023 W. Ogden Ave., Chicago, Ill. 60612)

14–16. Southern **Thoracic Surgical** Assoc., San Juan, Puerto Rico. (H. H. Seiler, 517 Bayshore Blvd., Tampa, Fla. 33606)

15–16. American **Psychiatric** Assoc., Chicago, Ill. (L. Rudy, Illinois Psychiatric Inst., 1601 W. Taylor St., Chicago 60612) land, Ohio. (W. R. Lang, 1025 Walnut St., Ill. (The Institute, P.O. Box 1485, Pompano Beach, Fla. 33061)

17–20. Academy of **Pharmaceutical** Sciences, 5th, Washington, D.C. (S. W.

Goldstein, 2215 Constitution Ave., NW, Washington, D.C. 20037)

18–20. Institute of **Electrical and Electronics Engineers**, 7th, Cocoa Beach, Fla. (L. E. Williams Aerospace Corp., P.O. Box 4007, Patrick Air Force Base, Fla. 32925)

18–20. American **Petroleum** Inst., Chicago, Ill. (Secretary, Program Commission, 1271 Avenue of the Americas, New York 10020)

18–21. Symposium on **Basic Mechanisms of the Epilepsies**, Colorado Springs, Colo. (J. K. Penry, Section on Epilepsy, Room 8A-03, Bldg. 31, National Inst. of Neurological Diseases and Blindness, National Institutes of Health, Bethesda, Md. 20014)

18–21. Conference on **Engineering in Medicine and Biology**, Houston, Tex. (W. T. Maloney, Suite 620, 6 Beacon St., Boston, Mass. 02108)

18–21. Conference on **Magnetism and Magnetic Materials**, 14th, New York, N.Y. (D. T. Teaney, IBM Thomas J. Watson Research Center, Box 218, Yorktown Heights, N.Y. 10598)

18–22. Society of the **Plastics Industry**, Inc., Chicago, Ill. (The Society, 250 Park Ave., New York 10017)

18–22. American **Water Resources** Conf., 4th, New York, N.Y. (P. Cohen, U.S. Geological Survey, 1505 Kellum Place, Mineola, N.Y. 11501)

19. **Air Pollution Control**, Columbia, Mo. (Extension Div., Whitten Hall, Univ. of Missouri, Columbia)

19–20. Council on **Arteriosclerosis** of the American Heart Assoc., Bal Harbour, Fla. (Dept. of Councils and International Program, American Heart Assoc. Natl. Office, 44 E. 23 St., New York 10010)

19–21. **Photovoltaic Specialists** Conf., 7th, Pasadena, Calif. (R. E. Fischell, Applied Physics Lab., Johns Hopkins Univ., 8621 Georgia Ave., Silver Spring, Md. 20910)

19–22. **Acoustical** Soc. of America, Cleveland, Ohio. (The Society, 133 E. 45 St., New York 10017)

20–22. National Soc. for the **Prevention of Blindness**, Inc., New York, N.Y. (J. W. Ferree, 79 Madison Ave., New York 10016)

20–22. **Microelectronic Packaging and Interconnection** Conf., Palo Alto, Calif. (D. H. O'Neill, Soc. of Automotive Engineers, 485 Lexington Ave., New York 10017)

20–24. Society for **Clinical and Experimental Hypnosis**, 20th, Chicago, Ill. (The Society, 353 W. 57 St., New York 10019)

21–22. **Chemical Kinetics** Symp., Chapel Hill, N.C. (L. Pedersen, Dept. of Chemistry, Univ. of North Carolina, Chapel Hill 27514)

21–24. American **Anthropological** Assoc., Seattle, Wash. (Executive Secretary, 1530 P St., NW, Washington, D.C. 20005)

25–27. American **Physical** Soc., Miami, Fla. (Executive Secretary, 538 W. 120 St., New York 10027)

29–30. **Membrane Proteins** Symp., New York, N.Y. (J. Newkirk, New York Heart Assoc., 2 E. 64 St., New York 10021)

29–30. National Federation of Catholic **Physicians'** Guild, Miami Beach, Fla. (R. H. Herzog, 2825 N. Mayfair Rd., Gelman. Wiley, New York, 1968. xiv + Milwaukee, Wis. 53222)

International and Foreign Meetings

October

21–28. International Symp. on **Physicochemical Mechanisms of Carcinogenesis**, Jerusalem, Israel. (E. D. Bergmann, Dept. of Chemistry, Hebrew Univ., Jerusalem, Israel, or B. Pullman, Institut de Biologie Physico-Chimique, 13, rue Pierre Curie, Paris 53, France)

31–1. Symposium on **Artificial Limbs**, London, England. (Public Relations Officer, Institution Soc. of America, 530 William Penn Pl., Pittsburgh, Pa. 15219)

November

3–8. Israel **Surgical** Soc., 8th congr., Jerusalem. (Organizing Committee, 8th Congr. of the Israel Surgical Soc., P.O. Box 7276, Jerusalem)

4–8. Symposium on the Use of **Nuclear Techniques in the Prospecting and Development of Mineral Resources,** Lima, Peru. (S. Eklund, Intern. Atomic Energy Agency, Karntner Ring 11, A-1010 Vienna, Austria)

4–9. Canadian **Heart** Foundation, Canadian Cardiovascular Society, Vancouver, B.C. (Secretary, Canadian Heart Foundation, 1130 Bay St., Toronto 5, Ont.)

11–13. **Geochemical** Soc., Mexico City, Mexico. (E. C. T. Chao, c/o U.S. Geological Survey, Washington, D.C.)

11–13. **Geological** Soc. of America, Mexico City, Mexico. (R. C. Becker, The Society, Colorado Bldg., P.O. Box 1719, Boulder, Colo. 80302)

11–13. Society of **Economic Geologists**, Mexico City, Mexico. (R. A. Laurence, P.O. Box 1549, Knoxville, Tenn. 37901)

11–13. **Mineralogical** Soc. of America, Mexico City, Mexico. (I. J. Holmes, Dept. of Geology, Columbia Univ., New York, 10027)

11–13. **Paleontological** Soc., Mexico City, Mexico. (R. L. Langenheim, Dept. of Geology, Univ. of Illinois, Urbana)

13–15. International **Reinforced Plastics** Conf., London, England. (British Plastics Federation, Reinforced Plastics Group, 47-48 Piccadily, London, W.1)

18–23. International **Seed Testing** Assoc., 15th, Palmerston, New Zealand. (The Association, Binnenhaven 1, Wageningen, Netherlands)

19–20. Symposium on **Tribology** in Railways, London, England. (Public Relations Officer, Institution of Mechanical Engineers, 1, Birdcage Walk, Westminster, S.W.1, London)

20–24. Pan American Congr. of **Otorhinolaryngology and Bronchoesophagology**, Mar del Plata, Argentina. (C. Arauz, Casilla de Correo 45B, Suc. 53, Buenos Aires, or H. von Leden, 11600 Wilshire Blvd., Los Angeles, Calif. 90025)

20–26. International **Automation and Instrumentation** Conf. and Exhibition, 10th, Milan, Italy. (Studio A. Barbieri, Via Marcona, 49, 20129 Milan)

26–27. International **Aerospace** Exposition, Montreal, P.Q., Canada. (B. G. Newman, Dept. of Mechanical Engineering, McGill Univ., Montreal 2)

28. Symposium on **Hydrostatic and Hydromechanic Transmission**, London, England. (Public Relations Officer, Institution of Mechanical Engineers, 1, Birdcage Walk, Westminster, S.W.1, London)

BOOKS RECEIVED

(Continued from page 1236)

nett, Jr. American Entomological Institute, Ann Arbor, Mich., 1968. xii + 1112 pp., illus. $12. Second printing, with corrections, of the 1966 edition.

Boundary Value Problems for Second Order Elliptic Equations. A. V. Bitsadze. Translated from the Russian edition (Moscow, 1966) by Scripta Technica. M. J. Laird, Translation Ed. North-Holland, Amsterdam; Interscience (Wiley), New York, 1968. xii + 211 pp. $11. North-Holland Series in Applied Mathematics and Mechanics.

Calculus and the Computer Revolution. Richard W. Hamming, Houghton Mifflin, Boston, 1968. xii + 72 pp., illus. Paper, $1.75.

Calculus of Vector Functions. Richard E. Williamson, Richard H. Crowell, and Hale F. Trotter. Prentice-Hall, Englewood Cliffs, N.J., ed. 2, 1968. xii + 434 pp., illus. $10.

Carbocyclic Ring Expansion Reactions. C. David Gutsche and Derek Redmore. Academic Press, New York, 1968. x + 243 pp., illus. $13.50. Advances in Alicyclic Chemistry, supplement 1.

Chimie Nucléaire Appliquée. E. Roth. Masson, Paris, 1968. xi + 629 pp., illus. 98 F. Collection du Conservatoire National des Arts et Métiers.

Chirurgie des Gehirns und Ruckenmarks im Kindes- und Jugendalter. Karl-August Bushe and Paul Glees, Eds. Hippokrates, Stuttgart, 1968 (distributed in the U.S. by Intercontinental Medical Book Corporation, New York). 1195 pp., illus. Figure legends in English and German. $105.

Civil Service Reform in Brazil. Principles versus Practice. Lawrence S. Graham. Published for the Institute of Latin American Studies by the University of Texas Press, Austin, 1968. xiv + 234 pp. $6.50. Latin American Monographs, No. 13.

Clinical Research in Alcoholism. Jonathan O. Cole, Ed. Papers presented at a conference, Washington, D.C., Dec. 1966. American Psychiatric Association, Washington, D.C., 1968. x + 178 pp., illus. Paper, $5. Psychiatric Research Report No. 24.

Concepts of Science. A Philosophical Analysis. Peter Achinstein. Johns Hopkins Press, Baltimore, Md., 1968. xiv + 266 pp. $8.95.

Contemporary Issues in Developmental Psychology. Norman S. Endler, Lawrence R. Boulter, and Harry Osser, Eds. Holt, Rinehart and Winston, New York, 1968. xx + 682 pp., illus. $9.95.

Contemporary Theory and Research in Visual Perception. Ralph Norman Haber, Ed. Holt, Rinehart and Winston, New York, 1968. xiv + 814 pp., illus. $14.95.

A Contemporary View of Elementary Physics. Sidney Borowitz and Lawrence A. Bornstein. McGraw-Hill, New York, 1968. xv + 896 pp., illus. $12.

The Correspondence of Henry Oldenburg. Vol. 5, 1668–1969. Edited and translated by A. Rupert Hall and Marie Boas Hall. University of Wisconsin Press, Madison, 1968. xxvi + 604 pp. $12.50.

Design for Security. Richard J. Healy.

Circle No. 75 on Readers' Service Card

Circle No. 70 on Readers' Service Card

Circle No. 80 on Readers' Service Card

Circle No. 74 on Readers' Service Card

Wiley, New York, 1968. x + 309 pp., illus. $9.95.

Developmental Biology. A Laboratory Manual. Joseph W. Vanable, Jr., and James H. Clark. Burgess, Minneapolis, Minn., 1968. vii + 182 pp., illus. Paper, $5.

Dictionary of Economic Plants. J. C. Th. Uphof. Cramer, Lehre, Germany, ed. 2, 1968 (distributed in the U.S. by Stechert-Hafner, New York). viii + 591 pp. $17.50.

A Dictionary of Genetics. Robert C. King. Oxford University Press, New York, 1968. 292 pp., illus. Paper, $3.95.

Dictionary of Organic Compounds. The constitution and physical, chemical and other properties of the principal carbon compounds and their derivatives, together with relevant literature references. R. Stevens, Ed. Oxford University Press, New York, ed. 4, 1968. 284 pp., illus. $24.

Earl Morris and Southwestern Archaeology. Florence C. Lister and Robert H. Lister. University of New Mexico Press, Albuquerque, 1968. xviii + 204 pp., illus. $7.95.

Early Experience and the Organization of Behavior. John Paul Scott. Brooks/Cole (Wadsworth), Belmont, Calif., 1968. x + 177 pp., illus. Paper, $1.95. Developmental Processes and Behavior Series.

The Economics of Water Utilization in the Beet Sugar Industry. George O. G. Löf and Allen V. Kneese. Resources for the Future, Washington, D.C., 1968 (distributed by Johns Hopkins Press, Baltimore). x + 125 pp., illus. Paper, $4.

Education and Economic Thought. George F. Kneller. Wiley, New York, 1968. xiv + 139 pp. Cloth, $5; paper, $2.95.

Experimental Techniques in Low-Temperature Physics. Guy Kendall White. Clarendon (Oxford University Press), New York, ed. 2, 1968. xi + 397 pp., illus. $12. Monographs on the Physics and Chemistry of Materials.

Experiments in Chemistry. F. R. Longo, J. A. O'Malley, W. C. Oelke, and W. A. Nevill. McGraw-Hill, New York, 1968. viii + 295 pp., illus. Paper, $4.50.

Experiments in Direct Current Circuits. Robert L. Reid and Thomas S. Kubala. Prentice-Hall, Englewood Cliffs, N.J., 1968. xii + 130 pp., illus. Paper, $5.50. Prentice-Hall Series in Electronic Technology.

Food and Man. Miriam E. Lowenberg, E. Neige Todhunter, Eva D. Wilson, Moira C. Feeney, and Jane R. Savage. Wiley, New York, 1968. x + 341 pp., illus. $7.95.

Foundations of Global Non-Linear Analysis. Richard S. Palais. Benjamin, New York, 1968. viii + 131 pp., illus. Cloth, $8.50; paper, $3.95.

Handbook to the Conservation Section of the International Biological Programme. E. M. Nicholson. International Biological Programme, London; Blackwell Scientific Publications, Oxford, 1968 (distributed in the U.S. by Davis, Philadelphia). x + 84 pp. Paper, $2.25. IBP Handbook No. 5.

The Harvey Lectures, Series 62, delivered under the auspices of the Harvey Society of New York, 1966–1967. Academic Press, New York, 1968. xvii + 364 pp., illus. $9.50.

Heavy Weather Sailing. K. Adlard Coles. John De Graff, Tuckahoe, N.Y., 1968. 304 pp., 20 plates, illus. $12.50.

Hilbert Spaces of Entire Functions. Louis de Branges. Prentice-Hall, Englewood Cliffs, N.J., 1968. x + 326 pp. $11. Prentice-Hall Series in Modern Analysis.

Inorganic Syntheses. Vol. 11, William L. Jolly, Ed. McGraw-Hill, New York, 1968. xiii + 231 pp., illus. $10.50.

Inquiry Techniques for Teaching Science. William D. Romey. Prentice-Hall, Englewood Cliffs, N.J., 1968. x + 342 pp., illus. Cloth, $7.25; paper, $3.95.

Insect Abundance. Fourth Symposium of the Royal Entomological Society of London, Sept. 1967. T. R. E. Southwood, Ed. Published for the Society by Blackwell Scientific Publications, Oxford, England, 1968. viii + 160 pp., illus. $9.

Insect Viruses. Karl Maramorosch, Ed. Springer-Verlag, New York, 1968. viii + 192 pp., illus. $9. Current Topics in Microbiology and Immunology, vol. 42.

Ionospheric Radio Communications. Proceedings of a NATO Institute, Finse, Norway, April 1967. Kristen Folkestad, Ed. Plenum, New York, 1968. xii + 468 pp., illus. $25.

Introduction to Chromatography. James M. Bobbitt, Arthur E. Schwarting, and Roy J. Gritter. Reinhold, New York, 1968. viii + 160 pp., illus. Paper, $3.95. Reinhold Science Studies.

An Introduction to Finite Projective Planes. A. Adrian Albert and Reuben Sandler. Holt, Rinehart and Winston, New York, 1968. x + 98 pp., illus. $5.50. Athena Series; Selected Topics in Mathematics.

Introduction to Fourier Optics. Joseph W. Goodman. McGraw-Hill, New York, 1968. xiv + 287 pp., illus. $13.50. McGraw-Hill Physical and Quantum Electronics Series.

Introduction to Modern Biochemistry. P. Karlson. Third English edition, translated from the 6th German edition (Stuttgart, 1967) by Charles H. Doering. Academic Press, New York, 1968. xxii + 483 pp., illus. $11.75.

Kinetics in Analytical Chemistry. Harry B. Mark, Jr., and Garry A. Rechnitz, with the assistance of Ronald A. Greinke. Interscience (Wiley), New York, 1968. xii + 339 pp., illus. $16.95. Chemical Analysis, vol. 24.

Laboratory Manual for Food Microbiology. W. C. Frazier, E. H. Marth, and R. H. Deibel. Burgess, Minneapolis, Minn., ed. 4, 1968. v + 122 pp. Spiral bound.

Laboratory Studies in Developmental Anatomy. Theodore W. Torrey. Burgess, Minneapolis, Minn., ed. 3, 1968. viii + 145 pp., illus. Spiral bound, $5.

The Laws of Large Numbers. Pál Révész. Academic Press, New York, 1968. 176 pp. $9.50. Probability and Mathematical Statistics, vol. 4.

Learning and the Professors. Ohmer Milton and Edward Joseph Shoben, Jr., Eds. Ohio University Press, Athens, 1968. xvii + 216 pp. $5.50.

Legal Order in a Violent World. Richard A. Falk. Princeton University Press, Princeton, N.J., 1968. xvi + 610 pp. $15.

Leonardo da Vinci. V. P. Zubov. Translated from the Russian edition (Moscow,

1962) by David H. Kraus. Harvard University Press, Cambridge, Mass., 1968. xx + 335 pp., illus. $9.95.

Light Engineering Production Draughting. Michael G. Harris. Foulis, London, 1967 (distributed in the U.S. by Transatlantic Arts, Levittown, N.Y.). x + 166 pp., illus. $7.25.

Le Livre du Ciel et du Monde. Nicole Oresme. Albert D. Menut and Alexander J. Denomy, Eds. (with a translation from the French and an introduction by Albert D. Menut). University of Wisconsin Press, Madison, 1968. xiv + 778 pp., illus. $17.50.

Macromolecules of Living Systems. Structure and Chemistry. Herbert S. Rhinesmith and Luigi A. Cioffi. Reinhold, New York, 1968. xii + 164 pp., illus. $4.75. Reinhold Science Studies.

Marriage, Family and Residence. Paul Bohannan and John Middleton, Eds. Published for the American Museum of Natural History by the Natural History Press, Garden City, N.Y., 1968. xii + 411 pp. $6.95. American Museum Sourcebooks in Anthropology.

Mathematical Methods for Physicists and Engineers. Royal Eugene Collins. Reinhold, New York, 1968. x + 385 pp., illus. $12.50. Reinhold Physics Textbook Series.

Mathematics and Logic. Retrospect and Prospects. Mark Kac and Stanislaw M. Ulam. Praeger, New York, 1968. x + 170 pp., illus. $5.95.

Matrix Methods in Quantum Mechanics. H. S. Green. Barnes and Noble, New York, 1968. 124 pp., illus. Paper, $2.25.

Modern Mathematical Topics. D. H. V. Case. Philosophical Library, New York, 1968. viii + 158 pp., illus. $4.75.

Modern Psychoanalysis. New Directions and Perspectives. Judd Marmor, Ed. Basic Books, New York, 1968. xiv + 732 pp. $15.

Molecular Basis of Virology. H. Fraenkel-Conrat, Ed. Reinhold, New York, 1968. xiv + 642 pp., illus. $18. American Chemical Society Monograph No. 164.

Molecular Control of Plant Growth. J. Eugene Fox. Dickenson, Belmont, Calif., 1968. x + 118 pp., illus. Paper, $2.50. Dickenson Series on Contemporary Thought in Biological Science.

Molecular Crystals. Their Transforms and Diffuse Scattering. José Luis and Marisa Amorós. Wiley, New York, 1968. xxiv + 479 pp., illus. $22.50. Wiley Monographs in Crystallography.

Monoclonal and Polyclonal Hypergammaglobulinemia. Clinical and Biological Significance. Jan Gösta Waldenström. Vanderbilt University Press, Nashville, Tenn., 1968. viii + 223 pp., illus. $6.95. The Abraham Flexner Lectures, 1965.

New Vistas of Chemotheraphy of Cancer. S. B. Ullman. Published by the author, Toronto, Ont., Canada, 1967. vi + 166 pp. Paper.

No Easy Victories. John W. Gardner. Helen Rowan, Ed. Harper and Row, New York, 1968. xiv + 177 pp. $4.95.

Noncommutative Rings. I. N. Herstein, Mathematical Association of America (distributed by Wiley, New York), 1968. xii + 199 pp., illus. $6.

Les Noyaux Moyens et Lourds. A colloquium of the Société Française de

Physique, Bordeaux, March 1967. Presses Universitaires de France, Paris, 1968. ii + 212 pp., illus. Paper, 35 F. Supplement to *Journal de Physique,* Vol. 29, No. 1 (Jan. 1968).

Outer Space. Prospects for Man and Society. Lincoln P. Bloomfield. Praeger, New York, ed. 2, 1968. xv + 270 pp., illus. $6.50.

Over Land and Sea. A Biography of Glenn Hammond Curtiss. Robert Scharff and Walter S. Taylor. McKay, New York, 1968. x + 310 pp., illus. $6.95.

The Overt Homosexual. Charles W. Socardides. Grune and Stratton, New York, 1968. viii + 245 pp. $7.75.

Peoples and Cultures of the Pacific. An Anthropological Reader. Edited and with an introduction by Andrew P. Vayda. Published for the American Museum of Natural History by Natural History Press, Garden City, N.Y., 1968. xvi + 557 pp., illus. $7.95.

Personal Causation. The Internal Affective Determinants of Behavior. Richard De Charms. Academic Press, New York, 1968. xiv + 398 pp., illus. $13.50.

Plant Propagation. Principles and Practices. Hudson T. Hartmann and Dale E. Kester. Prentice-Hall, Englewood Cliffs, N.J., ed. 2, 1968. xii + 702 pp., illus. $14.

Plasmas et Milieux Ionisés. Evry Schatzman. Presses Universitaries de France, Paris, 1968. 134 pp., illus. Paper, 16 F. La Science Vivante.

Plastic Surgery. A Concise Guide to Clinical Practice. William C. Grabb and James W. Smith, Eds. Little, Brown, Boston, 1968. xxii + 890 pp., illus. Cloth $18; paper, $11.50.

Point Defects and Diffusion in Strained Metals. L. A. Girifalco and D. O. Welch. Gordon and Breach, New York, 1967. x + 169 pp., illus. $6.50; paper, $3.25.

Poisonous and Venomous Marine Animals of the World. Vol. 2, Vertebrates. Bruce W. Halstead. Sections on Chemistry by Donovan A. Courville. U.S. Government Printing Office, Washington, D.C., 1967. xxxi + 1070 pp., illus. $50 for the set of three volumes.

Probabilistic Information Theory. Discrete and Memoryless Models. Frederick Jelinek. McGraw-Hill, New York, 1968. xvi + 609 pp., illus. $19.50. McGraw-Hill Series in Systems Science.

Probabilistic Reliability. An Engineering Approach. Martin L. Shooman. McGraw-Hill, New York, 1968. xx + 524 pp., illus. $16.50. McGraw-Hill Series in Electrical and Electronic Engineering.

Proceedings of the 1968 Heat Transfer and Fluid Mechanics Institute. Seattle, June 1968. Ashley F. Emery and Creighton A. Depew, Eds. Stanford University Press, Stanford, Calif., 1968. xii + 272 pp., illus. $10.

Progress in Aeronautical Sciences. Vol. 9. D. Küchemann *et al.,* Eds. Pergamon, New York, 1968. viii + 472 pp., illus. $20.

Progress in Nucleic Acid Research and Molecular Biology. Vol. 8. J. N. Davidson and Waldo E. Cohn, Eds. Academic Press, New York, 1968. xxiv + 389 pp., illus. $17.50.

Protein Nutrition and Free Amino Acid Patterns. Twentieth annual conference of the Rutgers University Bureau of Biological Research. James H. Leathem, Ed. Rut-

gers University Press, New Brunswick, N.J., 1968. 227 pp., illus. $10.

Publications in Salvage Archeology. No. 7, Arikara Archeology: The Bad River Phase. Donald J. Lehmer and David T. Jones. Jerome E. Petsche, Ed. Smithsonian Institution, Washington, D.C., 1968. iv + 170 pp., illus. Paper. River Basin Surveys, Smithsonian Institution.

Radical Ions. E. T. Kaiser and L. Kevan, Eds. Interscience (Wiley), New York, 1968. x + 800 pp., illus. $30. Reactive Intermediates in Organic Chemistry.

Radioactive Nuclides in Medicine and Biology. Medicine. Solomon Silver. Lea and Febiger, Philadelphia, ed. 3, 1968. xvi + 539 pp., illus. $12.50.

Radioisotopes in the Human Body. Physical and Biological Aspects. F. W. Spiers. Academic Press, New York, 1968. xiv + 346 pp., illus. $15. American Institute of Biological Sciences and U.S. Atomic Energy Commission Monograph Series on Radiation Biology.

RCA Receiving Tube Manual. RCA, Harrison, N.J., 1968. 657 pp., illus. Paper, $1.75. Technical Series RC-26.

RCA Solid-State Hobby Circuits Manual. RCA Electronic Components, Harrison, N.J., 1968. 225 pp., illus. Paper, $1.75. Technical Series HM-90.

Reflections on Men and Ideas. Giorgio de Santillana. M.I.T. Press, Cambridge, Mass., 1968. xiv + 381 pp., illus. $15.

The Regulation of Thyroid Function in Iodine Deficiency. H. Studer and M. A. Greer. Huber, Bern, Switzerland, 1968. 119 pp., illus. Paper, $4.50. First published in German (Bern, 1966).

Research and Experiment in Stuttering. H. R. Beech and Fay Fransella. Pergamon, New York. xii + 224 pp., illus. $9. International Series of Monographs in Experimental Psychology, vol. 6.

Respiratory Function Tests in Pneumoconioses. Report and related papers of a meeting, Geneva, Sept. 1965. International Labour Organisation. International Labour Office, Geneva, 1966. vi + 173 pp., illus. Paper. Occupational Safety and Health Series, No. 6.

The Rockefeller Foundation President's Review and Annual Report 1967. Rockefeller Foundation, New York, 1968. xxii + 266 pp., illus. Paper.

The Sandy Shore. John Hay. Illustrated by Edward Norman and Marcia Norman. Chatham Press, Chatham, Mass., 1968. 62 pp. $2.95.

Scanning Electron Microscopy. Applications to Materials and Device Science. P. R. Thornton. Chapman and Hall, London 1968 (distributed in the U.S. by Barnes and Noble, New York). xvi + 368 pp., illus. $12.75.

Science Activities for the Elementary Grades. B. John Syrocki. Drawings by Constance De Long Mosher, photographs by the author. Parker, West Nyack, N.Y., 1968. xxiv + 216 pp. $8.95.

Science and Civilization in Islam. Seyyed Hossein Nasr. Harvard University Press, Cambridge, Mass., 1968. 384 pp., illus. $8.95.

Science and the Concept of Race. Margaret Mead, Theodosius Dobzhansky, Ethel Tobach, and Robert E. Light, Eds. Columbia University Press, New York, 1968. x + 177 pp., illus. $6.50.

Science, Art, and Communication. John R. Pierce. Potter, New York, 1968. 174 pp., illus. $6.

The Science of Adhesive Joints. J. J. Bikerman. Academic Press, New York, ed. 2, 1968. xiv + 349 pp., illus. $16.

Scientific Selection of Catalysts. A. A. Balandin, B. A. Kazanskii, V. E. Vasserberg, G. V. Isagulyants, and G. I. Levi, Eds. Translated from the Russian edition (Moscow, 1966) by A. Aledjem. Israel Program for Scientific Translations, Jerusalem, 1968 (distributed in the U.S. by Davey, Hartford, Conn.). viii + 274 pp., illus. $11.50.

Search for the Past. An Introduction to Paleontology. James R. Beerbower. Prentice-Hall, Englewood Cliffs, N.J., ed. 2, 1968. xvi + 512 pp., illus. $13.50.

The Second Ten Years of the World Health Organization, 1958–1967. World Health Organization, Geneva, 1968 (distributed in the U.S. by Columbia University Press, New York). xi + 414 pp., illus. Paper, $8.75.

A Self-Study Manual for Indian Universities and Colleges. Malcolm M. Willey and J. Arthur Branch. Ford Foundation, Calcutta, India, 1968. vii + 79 pp. Spiral bound.

Sequential Identification and Ranking Procedures. With Special Reference to Koopman-Darmois Populations. Robert E. Bechhofer, Jack Kiefer, and Milton Sobel. University of Chicago Press, Chicago, 1968. xviii + 420 pp. $17.50. Statistical Research Monographs, vol. 3.

Series Expansions for Mathematical Physicists. Herbert Meschkowski. Translated from the German edition (Mannheim, 1963) by Robert Schlapp. Oliver and Boyd, Edinburgh; Interscience (Wiley), New York, 1968. x + 174 pp., illus. $4.

Simple and Complex Vibratory Systems. Eugene Skudrzyk, Pennsylvania State University Press, University Park, 1968. xlii + 514 pp., illus. $24.50.

Simple Dense Fluids. H. L. Frisch and Z. W. Salsburg, Eds. Academic Press, New York, 1968. xviii + 430 pp., illus. $19.50.

The Skeletal Biology of Earlier Human Populations. A symposium, London, Nov. 1965. D. R. Brothwell, Ed. Pergamon, New York, 1968. viii + 288 pp., illus. $11. Symposia of the Society for the Study of Human Biology, vol. 8.

The Stereochemistry of Macromolecules. Vol. 3. A. D. Ketley, Ed. Dekker, New York, 1968. xiv + 460 pp., illus. $21.75.

Stimulus and Response. The Law of Initial Value. Joseph Wilder. Wright, Bristol, 1967 (distributed in the U.S. by Williams and Wilkins, Baltimore, Md.). viii + 352 pp., illus. $14.

Stochastic Optimization and Control. Proceedings of an Advanced Seminar, Madison, Wis., Oct. 1967. Herman F. Karreman, Ed. Wiley, New York, 1968. xii + 217 pp., illus. $7.95. U.S. Army Mathematics Research Center Publication No. 20.

Stonehenge of the Kings. A People Appear. Patrick Crampton. Day, New York, 1968. xx + 171 pp., illus. $7.50.

Storage and Stability of Compounds Labelled with Radioisotopes. R. J. Bayly and E. A. Evans. Radiochemical Centre, Amersham, England, 1968. 79 pp., illus. Paper.

The Story of Jodrell Bank. Bernard Lovell. Harper and Row, New York, 1968. xvi + 265 pp., illus. $5.95.

Strain Gauges. Kinds and Uses. Hermann K. P. Neubert. Macmillan, London; St. Martin's New York, 1968. xii + 164 pp., illus. $7.

Structural and Operational Schemes of National Science Policy. Conclusions and Recommendations of the Meeting. Third meeting on science policy and research organization in the countries of North Africa and the Middle East, Algiers, Sept. 1966. UNESCO, New York, 1967. 90 pp. Paper, $1.25. Science Policy Studies and Documents, No. 6.

Structure and Change in Indian Society. Milton Singer and Bernard S. Cohn, Eds. Aldine, Chicago, 1968. xvi + 507 pp., illus. $10. Viking Fund Publications in Anthropology, No. 47.

The Structure of Inference. D. A. S. Fraser. Wiley, New York, 1968. xiv + 344 pp., illus. $16.

The Structure of the Quiet Photosphere and the Low Chromosphere. Proceedings of the "Bilderberg" Conference held near Arnhem, Holland, April 1967. C. de Jager, Ed. Springer-Verlag, New York; Reidel, Dordrecht, 1968. 240 pp., illus. $9.

A Study of Franz Brentano. His Psychological Standpoint and His Significance in the History of Psychology. Anton C. Rancurello. Academic Press, New York, 1968. xiv + 178 pp. $8.

The Study of Man. An Introduction to Human Biology. E. J. Clegg. Elsevier, New York, 1968. x + 212 pp., illus. $4.75.

The Study of Personality. An Interdisciplinary Appraisal. Edward Norbeck, Douglass Price-Williams, and William M. McCord, Eds. Holt, Rinehart and Winston, New York, 1968. xii + 400 pp., illus. $7.95.

Superconductivity in Science and Technology. Morrel H. Cohen, Ed. University of Chicago Press, Chicago, 1968. viii + 164 pp., illus. $5.95.

Systems Analysis and Policy Planning. Applications in Defense. E. S. Quade and W. I. Boucher, Eds. Elsevier, New York, 1968. xxiv + 456 pp., illus. $11.50.

Taxonomy of American Species of Linden (Tilia). George Neville Jones. University of Illinois Press, Urbana, 1968. 156 pp., illus. Paper, $5.95. Illinois Biological Monographs, No. 39.

Teratology of the Central Nervous System. Induced and Spontaneous Malformations of Laboratory, Agricultural, and Domestic Mammals. Harold Kalter. University of Chicago Press, Chicago, 1968. xvi + 481 pp., illus. $17.50.

Thermochemical Kinetics. Methods for the Estimation of Thermochemical Data and Rate Parameters. Sidney W. Benson. Wiley, New York, 1968. xii + 223 pp., illus. $9.95.

Thermoelasticity. Heinz Parkus. Blaisdell, Waltham, Mass., 1968. x + 112 pp., illus. $5.50. A Blaisdell Book in Solid Mechanics.

Thermophysical Properties of Carbon Dioxide. M. P. Vukalovich and V. V. Altunin. Translated from the Russian edition (Moscow, 1965) under the direction of the United Kingdom Atomic Energy Authority. D. S. Gaunt, Ed. Collet's,