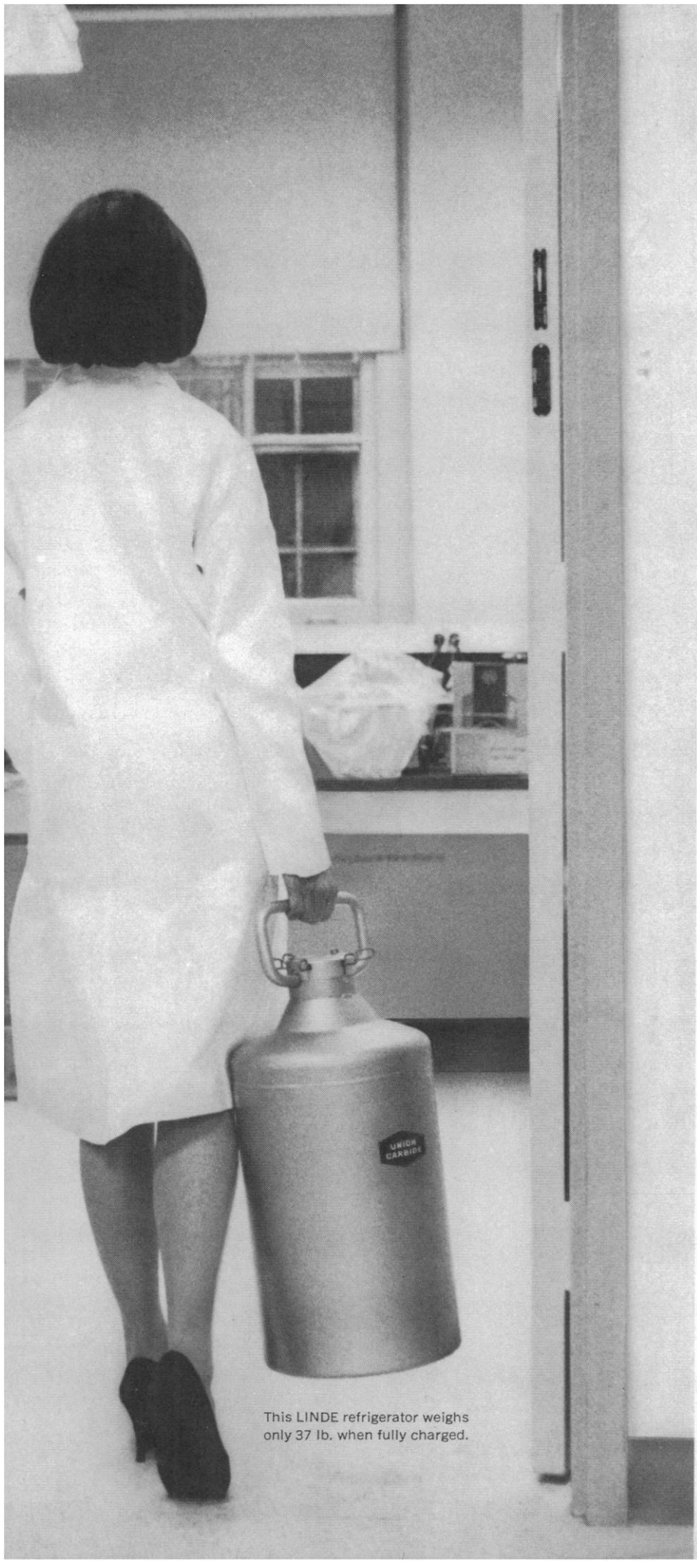
SCIENCE

13 August 1965
Vol. 149, No. 3685

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

RAIN OVER PARIS



This LINDE refrigerator weighs only 37 lb. when fully charged.

Have you been looking for a walk-around cryogenic refrigerator?

Here it is. It's the new LINDE LR-10A-6 Liquid Nitrogen Refrigerator. It combines portability and long-term storage so effectively you'd almost think a researcher designed it for us.

Carry it anywhere—it weighs only 37 lb. fully charged/ holds 6 canisters with a capacity of 115 cu. in./ has a minimum holding time of 3 weeks at —196°C between refills of liquid nitrogen/ is totally nonmechanical, and completely safe for storing biological materials.

This dual-purpose storage and shipping container is just one of many related products available from Union Carbide, the people who know most about cryogenics. Some others: liquid nitrogen refrigerators which store up to 42,900 1.2-ml. ampules on canes...controlled rate freezers...biological transports...liquefied gas containers.

Are you interested in storing biological specimens safely and economically? Choose from the big line of LINDE cryogenic equipment. For further information, mail the coupon.

CHECK COUPON—CLIP—ATTACH TO BUSINESS LETTERHEAD

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Please send me information on:

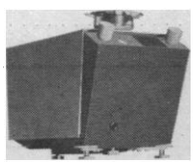
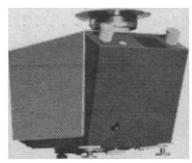
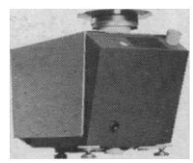
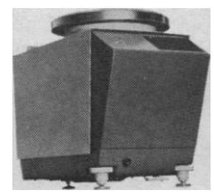
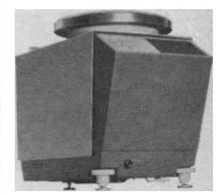
- ☐ The LR-10A-6 Liquid Nitrogen Refrigerator.
- ☐ Larger-size liquid nitrogen refrigerators.
- ☐ Other cryogenic equipment.
- ☐ PLEASE ADD MY NAME TO YOUR MAILING LIST.

UNION CARBIDE **CRYOGENIC PRODUCTS**

LINDE is a registered trade mark of Union Carbide Corporation.

Get more weighing data faster with these versatile new Mettler Top Loaders

Because Mettler P balance controls are simplified and the readouts are highly legible, working with these balances is effortless. Their unique design makes it easy to use each model for five different kinds of weighings.

	P120	P1200	P1000	P3	P10
					
weigh unknowns to...	120 g +10 g tare	1200 g +100 g tare	1000 g +300 g tare	3000 g +2500 g tare	10 kg +3 kg tare
with precision better than...	±0.5 mg	±0.005 g	±0.05 g	±0.05 g	±0.5 g
precision/ capacity relationship of...	1 part in 250,000	1 part in 250,000	1 part in 25,000	1 part in 100,000	1 part in 25,000
checkweigh directly to over-under values from...	+60 mg to −60 mg of target weight	+0.6 g to −0.6 g of target weight	+5 g to −5 g of target weight	+11 g to −11 g of target weight	+50 g to −50 g of target weight
weigh-in to... (Including container)	130 g	1300 g	1300 g	5500 g	13 kg
batch weigh to... (Including container)	130 g	1300 g	1300 g	5500 g	13 kg
measure mass or force below the balance	This is done by simply hanging a suspension device on the hook built into the bottom of the balance. Weighing at some location vertically below the instrument is recommended for work with corrosive, poisonous or radioactive substances in protective compartments, for weighing objects in heating or drying ovens, or objects submerged in liquid.				

If you would like our new catalog on Top Loading Balances write to Mettler Instrument Corp., 20 Nassau Street, Princeton, N. J. 08540.

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13 August 1965
Vol. 149, No. 3685

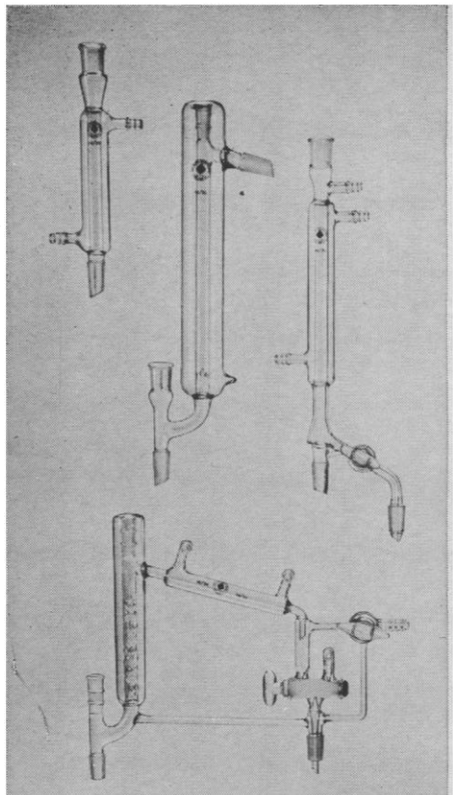
SCIENCE

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., Washington, D.C. 20005. Now combined with **The Scientific Monthly®**. Second-class postage paid at Washington, D.C. Annual subscriptions $8.50; foreign postage, $1.50; Canadian postage, 75¢; single copies, 35¢. School year subscriptions: 9 months, $7, 10 mo $7.50. Provide 4 weeks' notice for change of address, giving new and old address and zip numbers. Send a recent address label. SCIENCE is indexed in the **Readers' to Periodical Literature**.

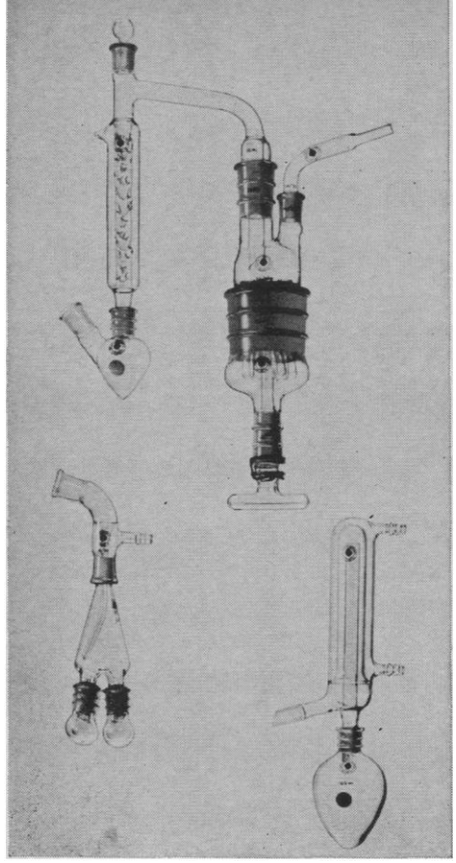
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Convection on a grand scale. This photograph permits one to see the outcome of rain formation processes that extend from the ice crystal levels of the upper troposphere down to the ground. At the uppermost level a pileus cloud, usually associated with thunderstorm formation, can still be seen even though the cloud mass has begun to lose its characteristic cumuliform. The photograph strikingly illustrates the torrential downpour of rain in the downdraft region characteristic of large cumulonimbus clouds. See review of *Weather*, page 739. [Pierre Boulat, LIFE©, Time, Inc.]



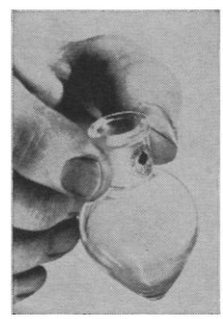
You will like Ace MINI-LAB: Best designed, most complete, all components interchangeable; costs less, uses less space than full scale glassware, reduces consumption of chemicals.



Success is originality that didn't stop there:

Ace Mini-Lab

Introduced in 1950, it is the most complete, best designed line of miniature glassware!



The moment you start working with a simple flask or one of our popular assemblies, a few of which are shown here, you will notice that Ace Mini-Lab not only takes up less space, results in considerable savings in reagent chemicals, but that the good design makes Ace Mini-Lab a pleasure to work with.

Ace Mini-Lab is the first *especially* designed line of miniature glassware. No simple reduction was employed: Our chemists and designers subjected each piece of glassware to practical experimentation until Mini-Lab performed with ease and efficiency. The popularity of Ace Mini-Lab attests to the success of their endeavors: Mini-Lab has been enthusiastically accepted in laboratories, in schools, everywhere.

Ace Mini-Lab is the most complete line of miniature glassware. It can function as your complete laboratory. New items are constantly being added. 27 recent additions are featured in the Ace Mini-Lab brochure.

Ace Mini-Lab is versatile, comes in ⅋ 14/20, ⅋ 19/22, and ⅋ 18/9 joints; a full line of components permits endless variations. The excellent original design and versatility will make Ace Mini-Lab the most satisfactory miniature glassware you have ever worked with. To check our complete selection, see your Ace Catalog 64 or send for Mini-Lab brochure.

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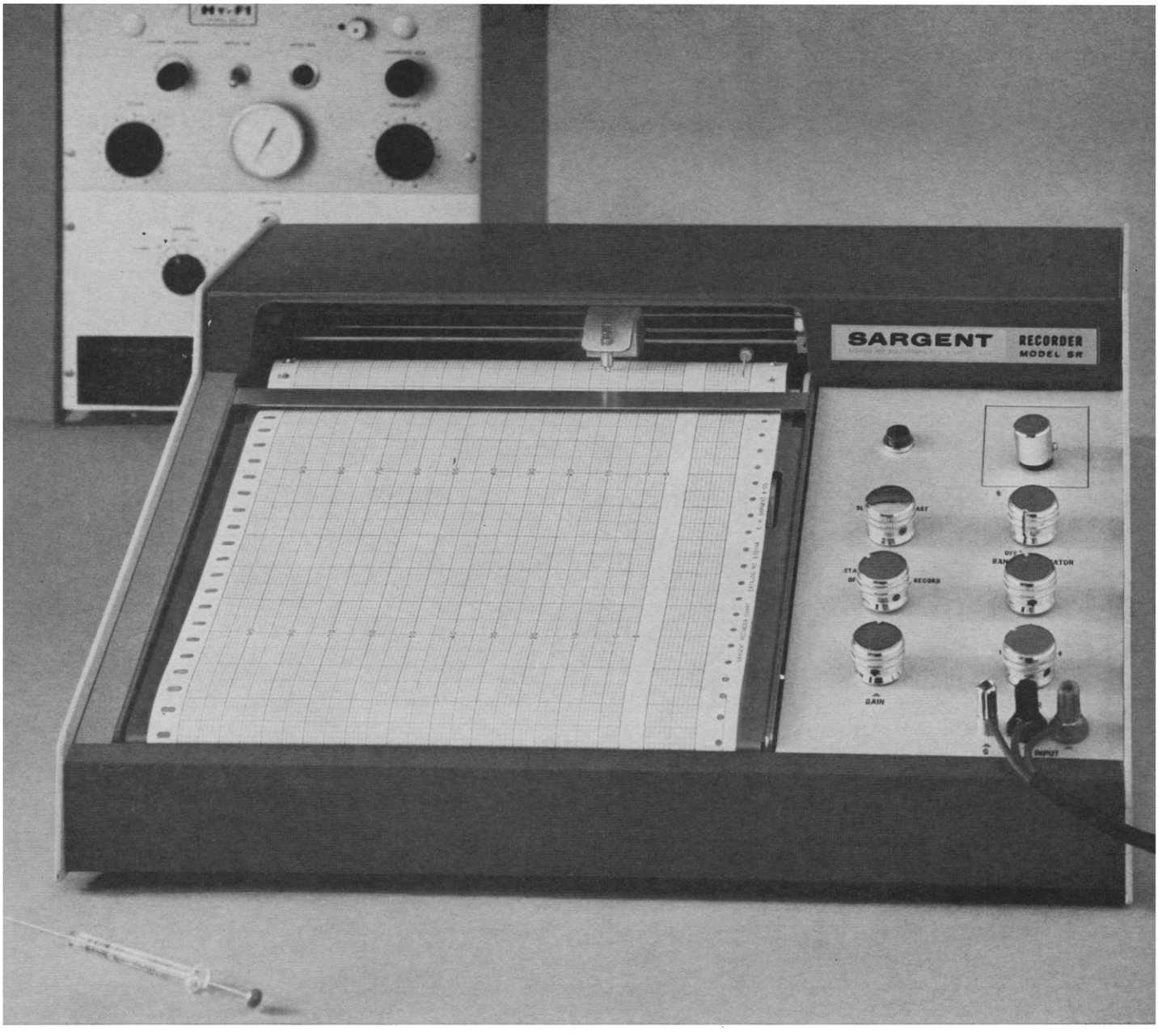

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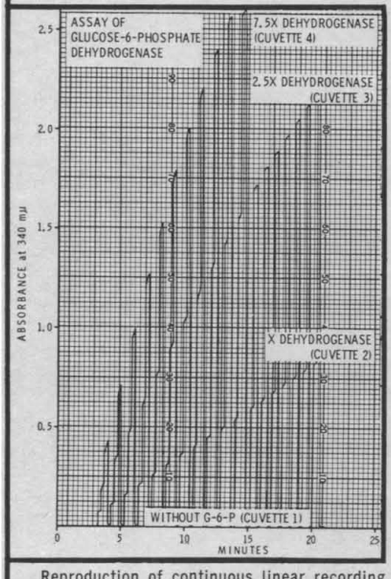


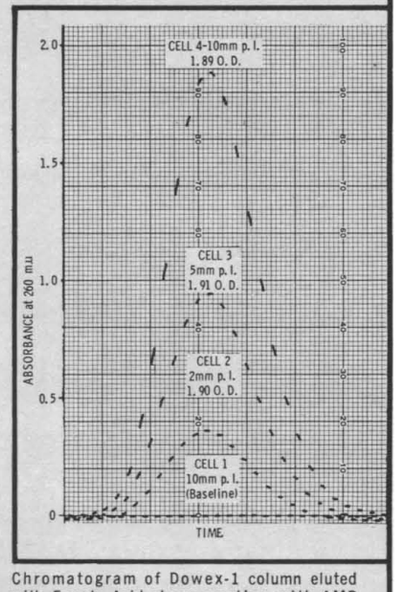
Reproduction of continuous linear recording of assay of G-6-P Dehydrogenese illustrates one of the many types of enzyme kinetic recordings obtainable virtually automatically with the Model 2000 or Series 200 Modular Gilford System.

Scanning for protein using the sucrose density gradient method. A 10 mm pathlength Gilford Flow-Through Cuvette was employed with the Gilford Spectrophotometric Recording System to produce the record shown.

The Gilford Model 2000

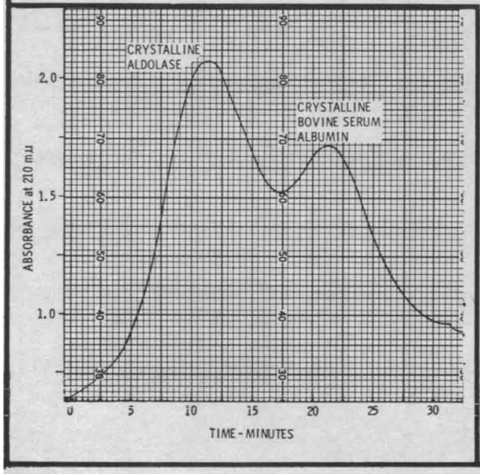
This highly productive spectrophotometric system has the essential flexibility to keep pace with changing directions in research. Based upon a unique photometric system with an output linear with absorbance over a wide range, the Model 2000 system offers exceptional sensitivity and stability together with low noise level and high accuracy. The inherent capability of the photometric element is greatly extended by automation of the sample handling device to provide precise positioning of up to four sample cells with programmed timing. Additions of flow cells, a temperature recording channel, automatic baseline compensation and wavelength programming facilities further enhance the usefulness of the Model 2000. Request brochure and quotation.

Conventional Absorbance Measurements also easier, more accurate. Digital readout: 0.00 to 3.000 O. D. Sensitivity, dark current controls and shutter eliminated. Line operated.



Chromatogram of Dowex-1 column eluted with Formic Acid shows section with AMP peaks only. Record made with Gilford Model 2000 equipped with Gilford Flow-Through Cuvettes and Automatic Blank Compensator.

Salmon Sperm DNA profile illustrates linear registration of both temperature and absorbance changes on the same scale. Gilford Model 2000 equipped with Gilford Linear Thermosensor which measures temperature changes in cuvette chamber.



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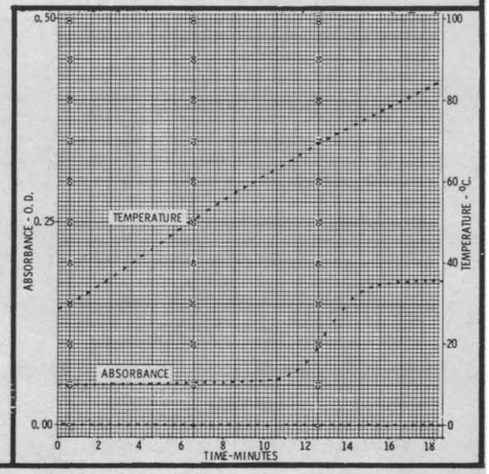


What every Ph.D. should know about cage sanitation:

Anything less than a spotlessly clean cage can cause a fatal infection to an experimental animal during his post-operative recovery period and negate all your test results.

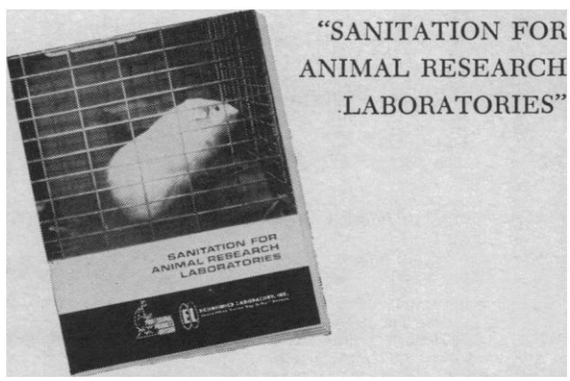
One major cause of unsanitary machine-washed cages is *overfoaming* in the machine, caused by the reaction of the detergent with the high protein soil loads resulting from the animal's feed and waste matter. This overfoaming cuts pump and wash pressure in the machine, thereby preventing it from doing its sanitation job.

But now, a new Economics Laboratory defoaming agent built into two detergents *completely eliminates foam,* enabling *you* to eliminate this major cause of unsanitary conditions. It's called EL F-58, and it may mean the difference between success and failure in your next experimental operation. It is now available in two powerful detergents, EVENT and SPEARHEAD, both of which contain polyphosphate to hold soils in suspension for their complete removal during the final rinse.

The first, EVENT, is recommended for non-aluminum, non-galvanized metal or plastic cages. It is a highly alkaline, non-chlorinated detergent for removing high organic soil loads and is recommended whenever heavy duty cleaning is required.

The second, SPEARHEAD, is recommended for aluminum and galvanized metal cages and racks. Equally effective in hard and soft water, it contains a unique combination of metal corrosion inhibitors. It, too, completely eliminates foaming where organic soil loads are encountered.

For more comprehensive information on cage sanitation, return the coupon below *today* for your *free* copy of this new, up-to-the-minute manual,



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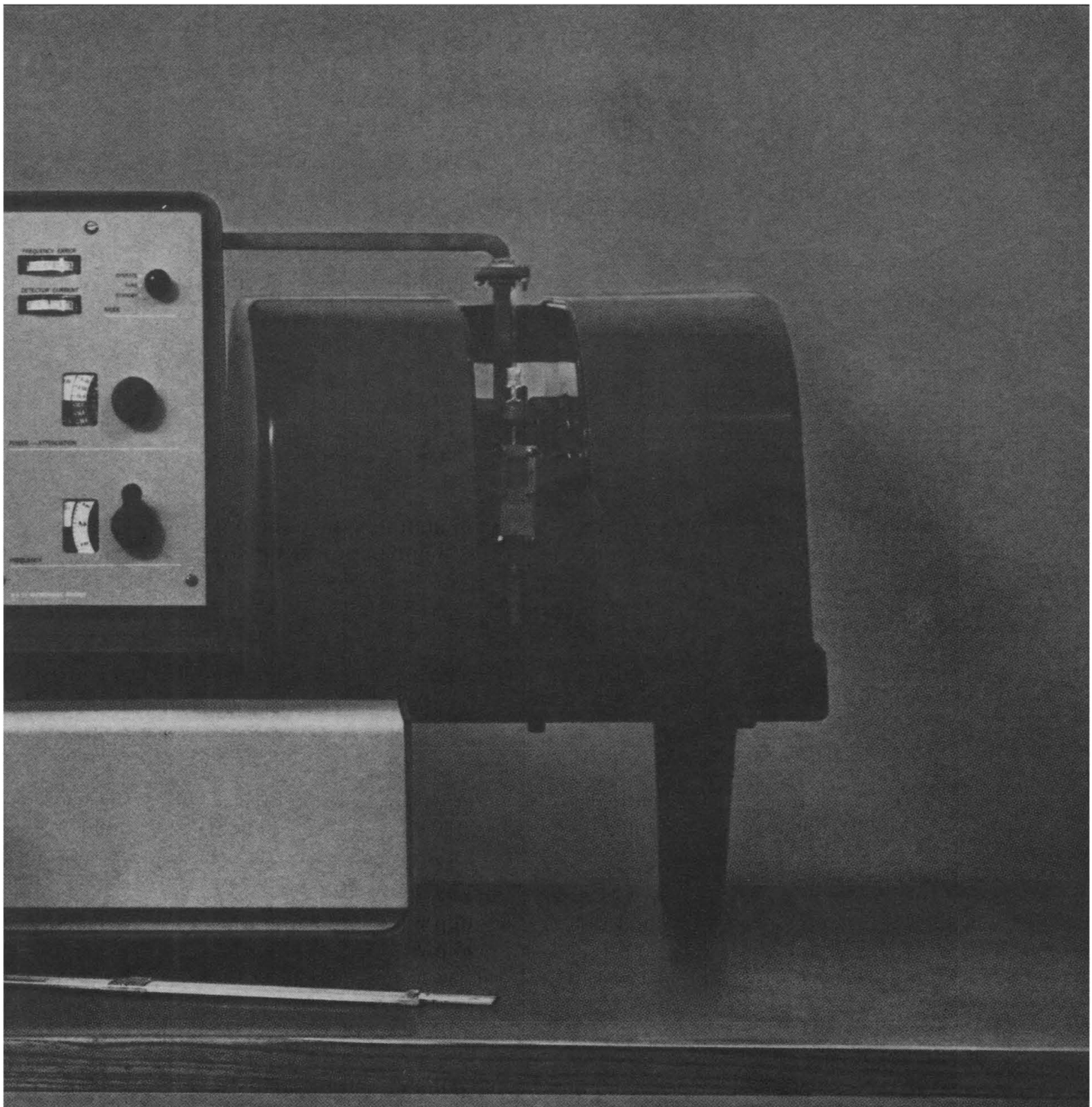

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- a new swing-arm 2½″ miniature with mercury internals for use with null-balance meters
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All five types are available now from your Corning Scientific Instruments dealer.

For *better* results at a saving, use them with whatever make meter you now have.

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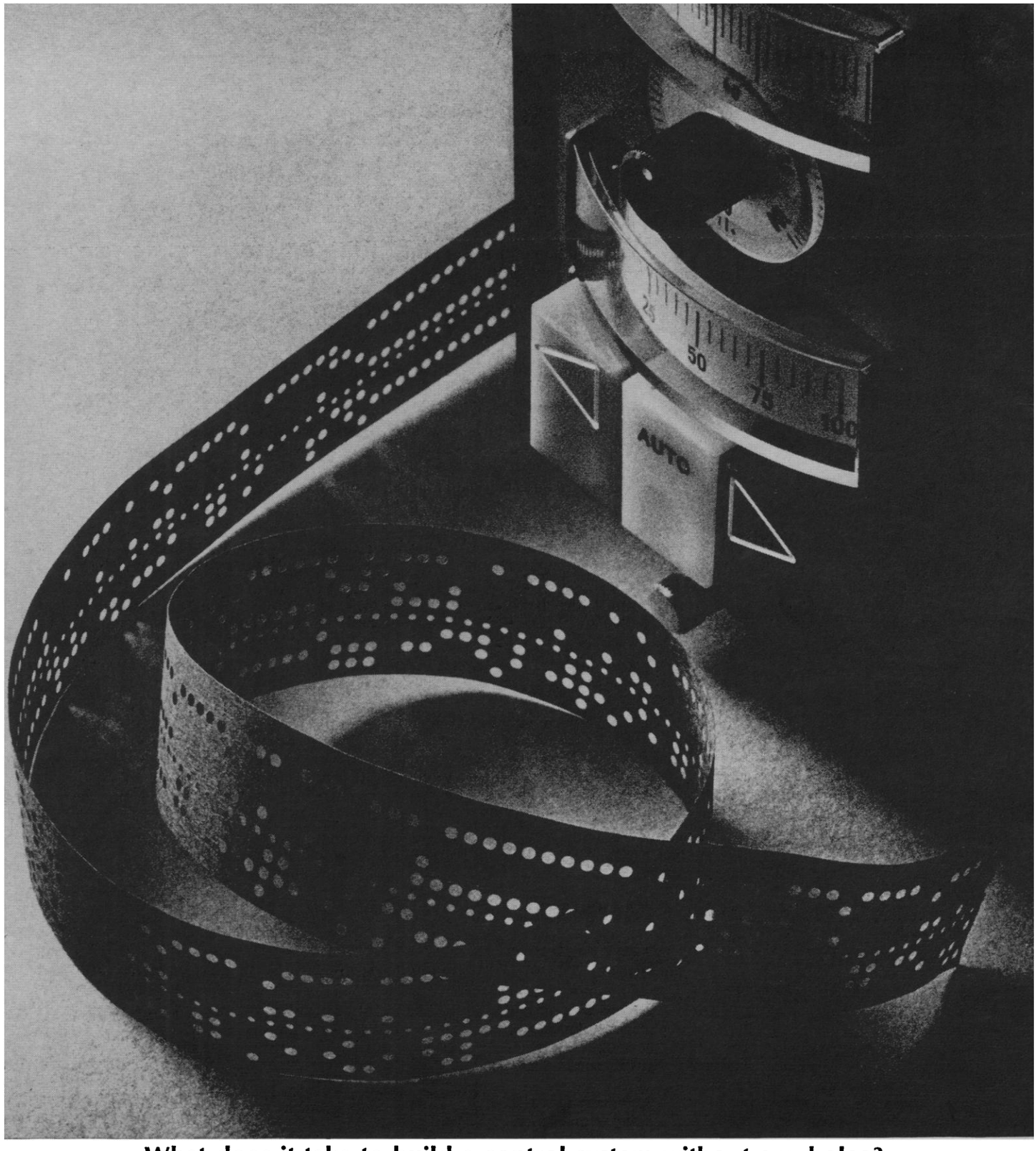

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Now look at the world's leading electric or steam power plants, steel mills, cement plants. You'll find their control systems were engineered and built by L&N. We sort of grew up together.

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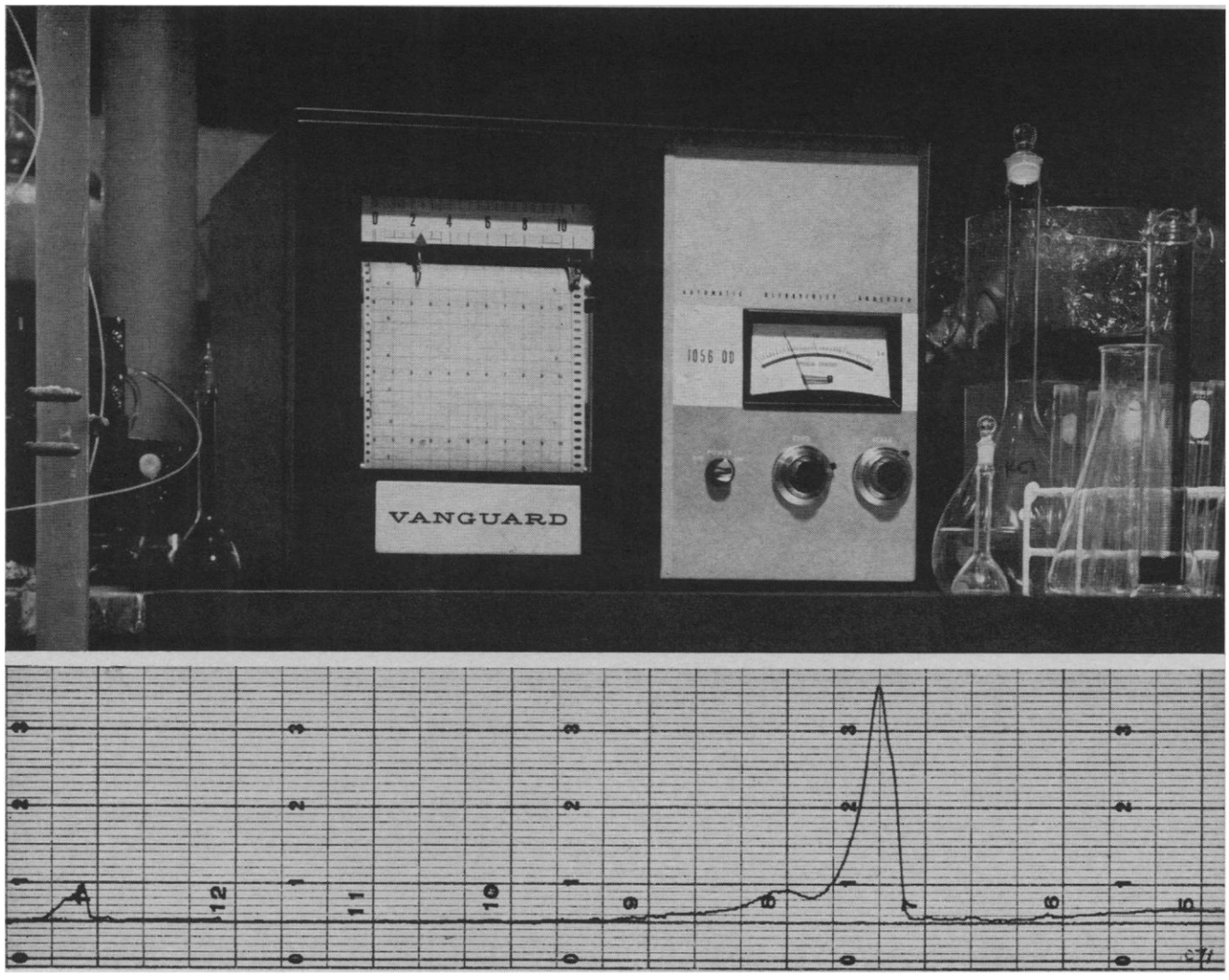

Typical chromatogram of a mixture of unknown proteins from a DEAE cellulose column. O.D. vs. Volume. Full scale is 2 O.D. units.

Reliable way to run UV analysis automatically at any absorption band you select

The TMC-Vanguard Model 1056-OD is an automatic ultra-violet analyzer, designed for extreme versatility and reliability. It has two independent logarithmic converters which provide a chart recording of the optical density of effluent from a chromatographic column, the ordinate of which is linear with optical density. A plane diffraction grating monochromator makes a continuous energy range available from 200 millimicrons well into the visible spectrum. Wave length settings can be made to an accuracy of 1 mu by means of a simple dial control. This makes it possible to run each experiment at a wave length setting providing best chart resolution for the sample of interest.

Split-beam operation of the 1056-OD, utilizing sample and reference cuvettes, provides continuous base line compensation for gradient elutions or other applications where the optical density of the eluent may change.

The location and identification of test tubes containing ultra-violet absorbing fractions is speeded by an automatic chart-marking system. Of course, the detection system is completely self-contained and light-shielded. Solid-state electronics are used throughout. Application assistance and field service are assured by TMC's world-wide facilities.

For complete specifications on the Model 1056-OD, contact nearest office or write: Vanguard Instrument Corporation, 441 Washington Ave., North Haven, Conn.

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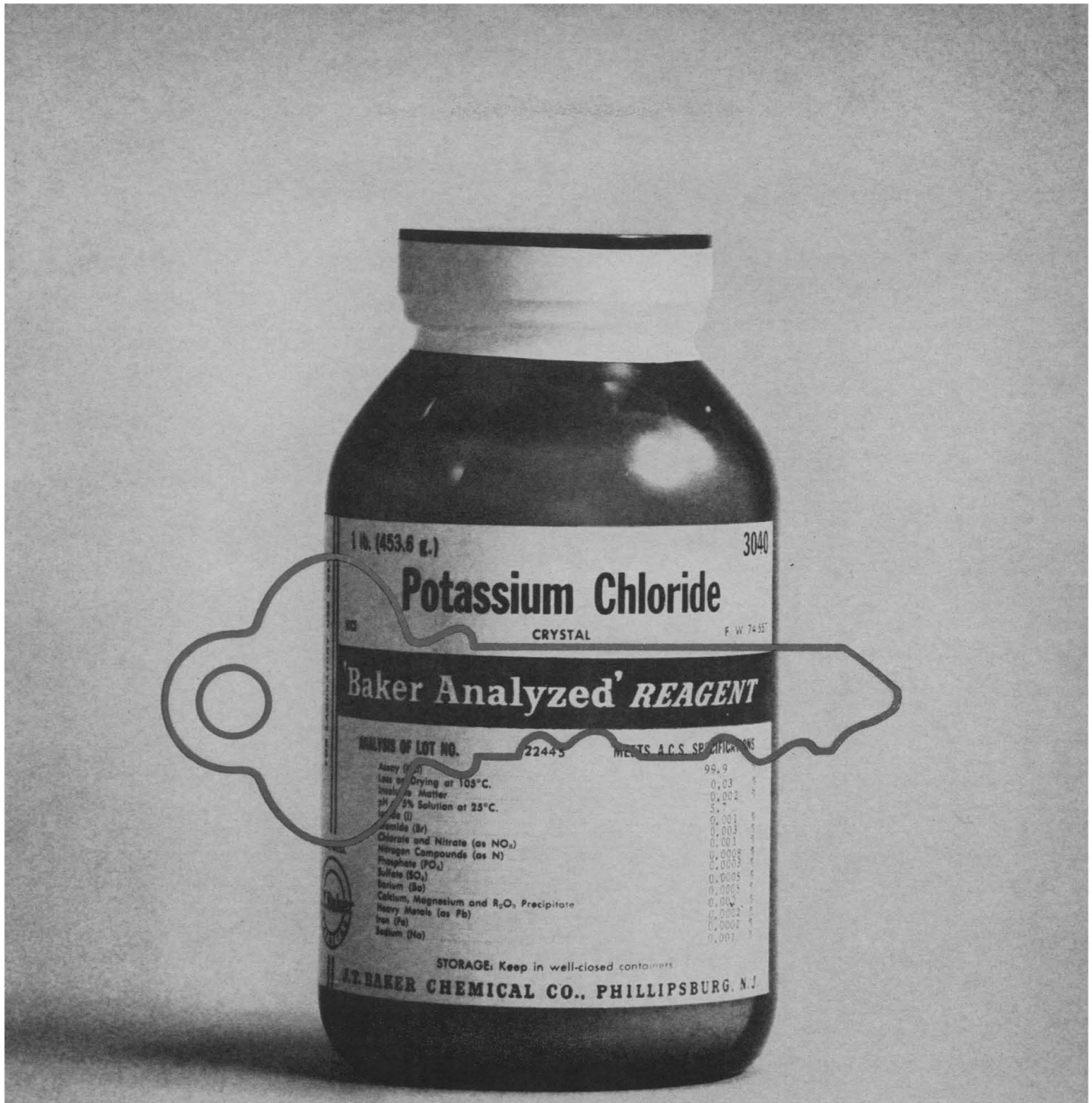

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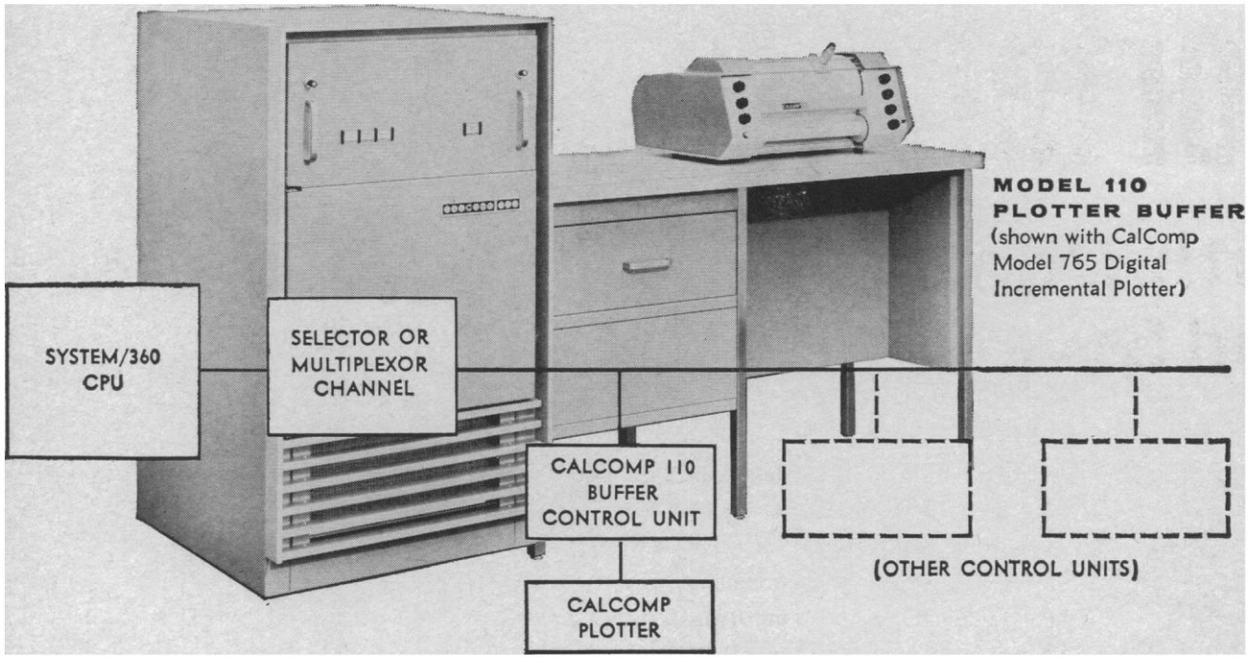

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Performance features include:

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20 mv/div through 10 v/div > 50 Mc
10 mv/div > 45 Mc
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1 mv/div > 25 Mc (Channels cascaded)

Sweep Rates—5 sec/div to 10 nsec/div (with 10X Mag.)

Calibrated Sweep Delay—50 sec to 1 μsec.

CRT—New 4" rectangular, operating at 10 kv.

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Triggering—To 50 Mc, from Channel 1 or combined signals (both sweeps).

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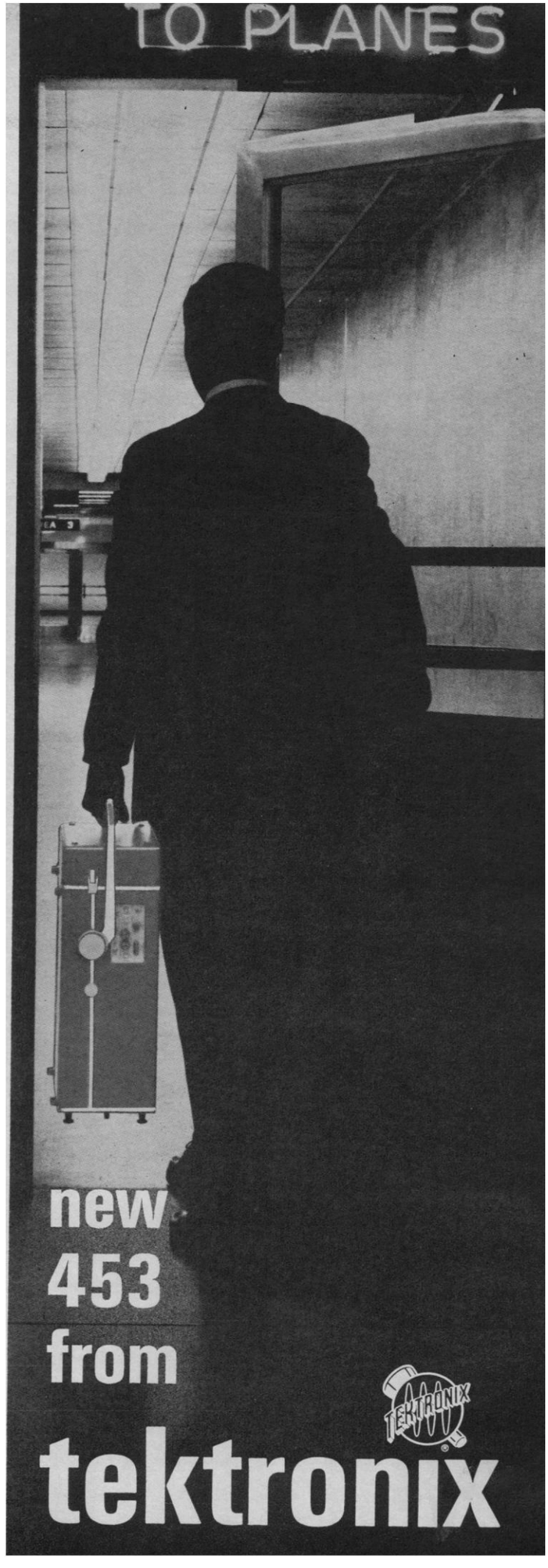

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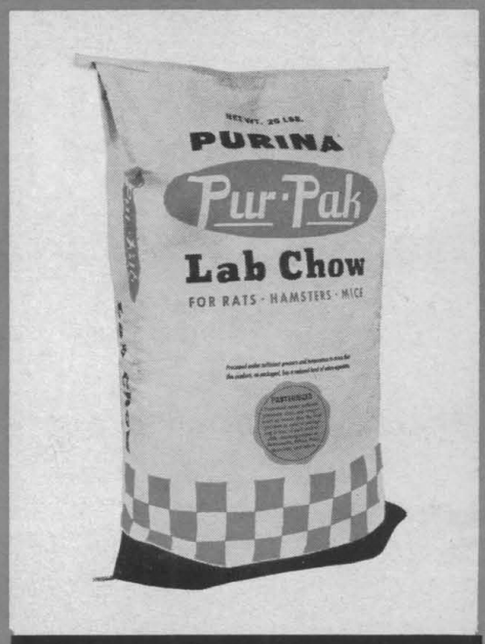
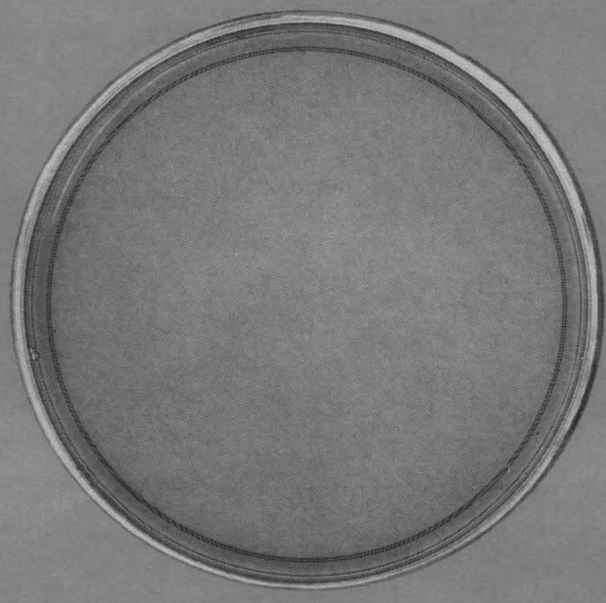
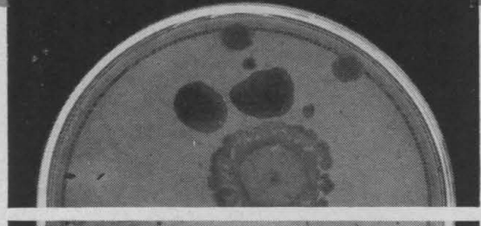
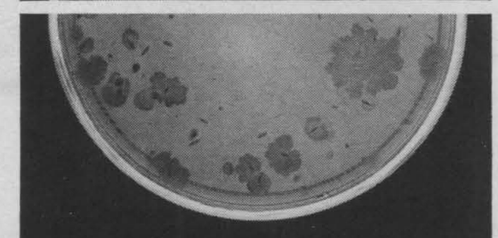




PUR-PAK Plate Count <10/gm

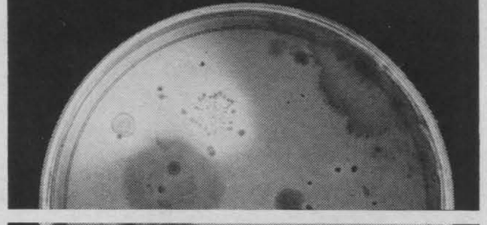
Commercial Diet A Plate Count 2,100/gm

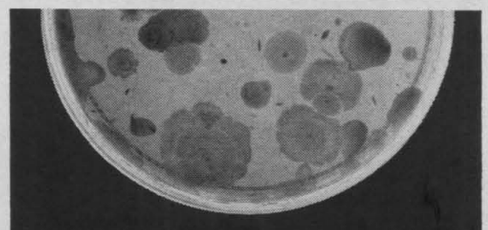




Commercial Diet B Plate Count 4,200/gm

Commercial Diet C Plate Count 4,700/gm





Commercial Diet D Plate Count 190,000/gm

Proof from independent laboratories

Purina® Pur-Pak™

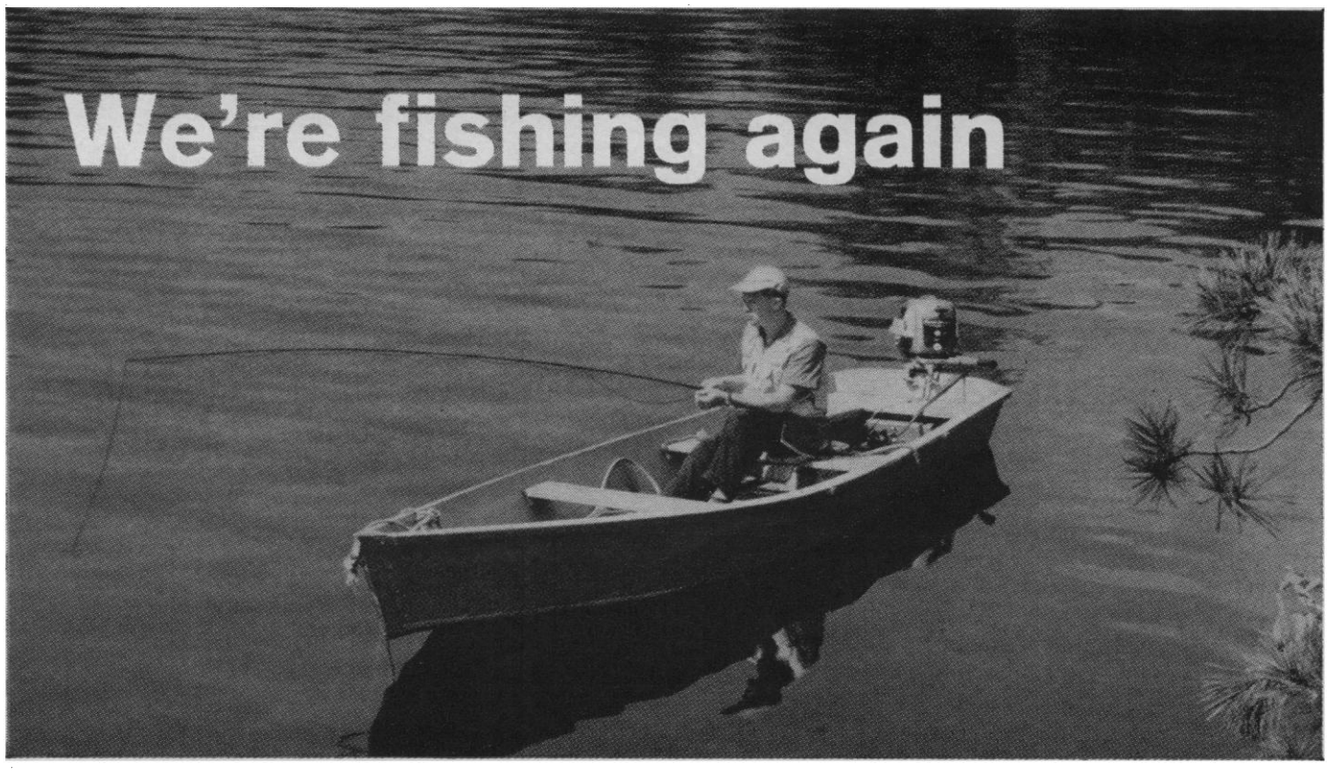
is lower in microorganisms than 4 other leading brands tested

Purina Pur-Pak had a much lower count of bacteria, yeasts and molds than samples of four other leading brands taken aseptically from normal packages and sent to independent laboratories for testing.

You have taken many sanitation precautions to keep unnecessary contamination away from your experimental and breeder colonies. Now you can also take advantage of Pur-Pak to reduce contamination from the feed. See your Purina dealer or salesman or write Carl Strieder, Ralston Purina Company, Checkerboard Square, St. Louis, Missouri 63199.

PURINA, world's leading manufacturer of laboratory animal diets

PURINA CHOWS



to find out if you can use any of these new B&A® compounds

Sulfamide. $NH_2SO_2NH_2$
Sulfuryl Fluoride. SO_2F_2
Trichloroacetyl Chloride. CCl_3COCl
Hexachloroacetone, Technical, 98.5%. $(CCl_3)_2CO$
Thioacetamide, Technical. CH_3CSNH_2
Hydroxylamine-O-Sulfonic Acid. H_2NOSO_3H
Sulfuryl Chlorofluoride. SO_2FCl
Methane Trisulfonic Acid. $CH(SO_3H)_3 \cdot 3H_2O$
Sodium-2-Chloroethane Sulfonate. $ClCH_2CH_2SO_3Na$
N, N-Dimethyl Sulfamyl Chloride. $(CH_3)_2NSO_2Cl$
2, 2-Dichlorobicyclo- (4, 1, 0) Heptane. $C_7H_{10}Cl_2$
4-Methylmercaptophenol. $CH_3SC_6H_4OH$
Sulfur Trioxide-Pyridine Complex. $So_3 \cdot$ Pyridine
Methylene Sulfate. $(CH_2SO_4)_2$
2-Aminoethylsulfuric Acid. $NH_2CH_2CH_2OSO_3H$
Mucochloric Acid. HOCCClCClCOOH
Acetaldehyde Disulfonate, Dipotassium Salt. $(HO)_2CHCH(SO_3K)_2$

Sulfuryl Fluoride and Hexachloroacetone, which were listed in our previous "fishing trip" advertisements, are now commercially available. Sulfamide has generated intense interest and is currently available in pilot plant quantities.

Five of our newest compounds have properties which suggest use as chemical intermediates. Trichloroacetyl Chloride is a trichloroacetylating agent. Sulfuryl Chlorofluoride may give selective reactivity between SO_2F_2 and SO_2Cl_2. Thioacetamide (technical), heretofore available only as a relatively costly reagent, gives highly versatile reactivity with organic halides, aldehydes, nitriles, acid chlorides, etc. 2-Aminoethylsulfuric Acid is an aminoethylating agent. Mucochloric Acid and its derivatives exhibit bactericidal, fungicidal and insecticidal properties.

We have limited technical data on these compounds, which we will be glad to send you. Just mail the coupon. Samples are available at a slight charge.

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A new dimension in ultra-microtomy

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MT-2 "PORTER BLUM" ULTRA-MICROTOME

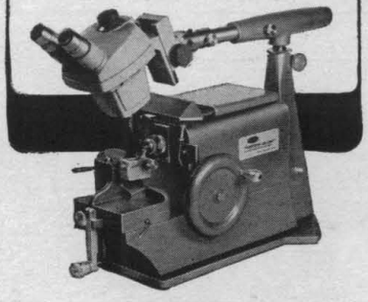
Ultra-thin Sectioning for Electron Microscopy

This Ultra-Microtome is "all but an extension of the operator's will"! Such is the ease with which this very latest development in ultra-microtomy may be operated. New, from its proven mechanical advance system to its specially designed base plate, the unitized MT-2 is the most accurate, most reliable, most compact ultra-microtome available anywhere. Sectioning range is from 100 Å to 4 μ, with provision for alternate "thin" and "thick" sections. Trimming is accomplished on the instrument itself. Universal movement of Stage Assembly and vertical rotation of Knife Holder permits knife positioning at any point in relation to specimen. Every single component is designed to bring maximum accuracy to bear on the optimum sectioning point. No special installation is required. All in all, the SORVALL MT-2 "Porter-Blum" Ultra-Microtome is years ahead of its time as may easily be proved by comparing it with any modern competitive instrument.

Write today for Bulletin SC-8MT-2

MT-1 "PORTER-BLUM" ULTRA-MICROTOME

1/40 to 1/2 Micron — The world's most frequently used ultra-microtome. The ideal economy instrument for both teaching and research. Ask for details.



For other Laboratory Instruments and Centrifuges ask us for our new Product Guide No. SC-8PG.

Ivan Sorvall, Inc.

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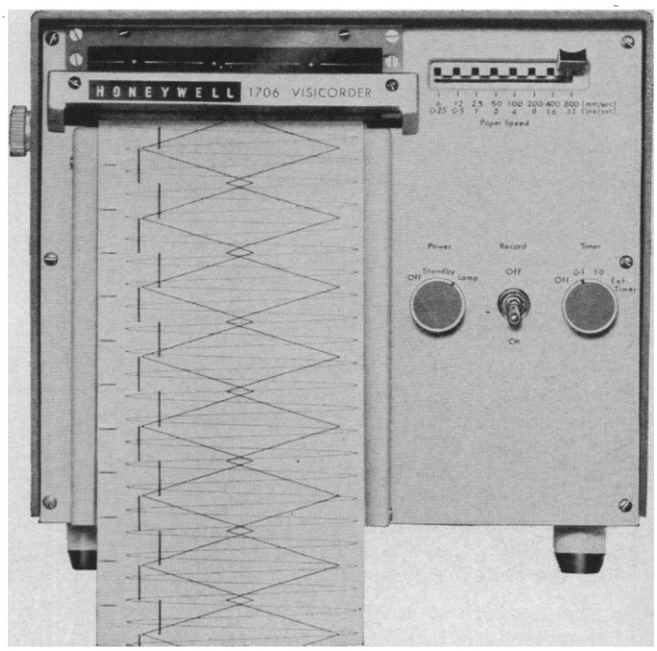
Mightier than the pen



Honeywell's new 1706 Visicorder Oscillograph records up to 6 channels of data from DC to 13,000 cps, yet costs half as much as most pen-writing oscillographs!

If you're recording dynamic data, why settle for the limitations of a pen-writing oscillograph? The new 1706 not only does everything any pen-writer will do, but it also gives you three times the trace excursion and 130 times the frequency response.

Here's how it compares with a typical pen-writing oscillograph:

	1706	Typical Penwriter
Frequency Response	DC-13,000 cps	DC-100 cps
Trace Excursion	120mm (full width of paper)	40mm
Trace Overlap?	Yes	No

And the 1706 does all this at about half the cost of the pen-writing machine!

Other features of the versatile 1706 include: built-in, two-speed timing system; eight paper speeds; galvanometer trace calibration scale at the recording point; simplified galvanometer alignment, and easy drop-in paper loading. And, the 1706 uses Honeywell subminiature galvanometers, interchangeable with all other Visicorder Oscillographs.

For a catalog on the new Honeywell 1706, contact your Honeywell representative or send coupon below directly to Honeywell. Sales and service in all principal cities of the world.

Honeywell, Denver Division
Mail Station 407
Denver, Colorado 80217

Please send Literature on the Honeywell Model 1706 Visicorder Oscillograph to:

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Company_____

Address_____

City_____ State_____ Zip_____

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Honeywell

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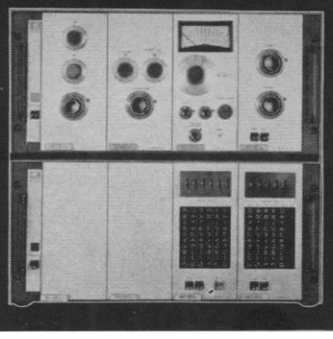
RIDL DESIGNER SERIES

First family of modular nuclear instruments.



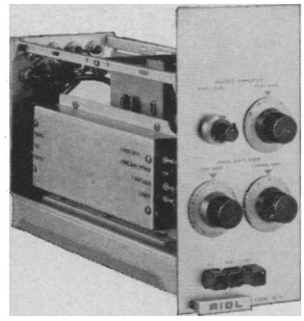
Today you can fulfill your experimental needs with the most complete, useful, and versatile system of modular nuclear instruments currently available — RIDL's Designer Series.* And tomorrow, when those needs change or new ones arise, you will find they are still being met as the series is expanded.

The benefits of totally integrated modular design are therefore always yours in the Designer Series. One of these benefits is the precise matching of your particular requirements. You are also assured of compatibility among modules, both existing and planned.

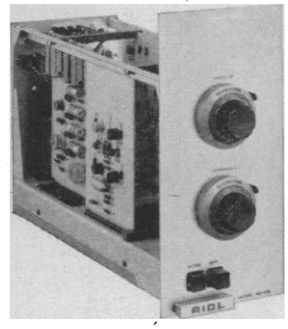
The adaptability and growth potential of the Designer Series helps you overcome the threat of system obsolescence. You can protect your initial investment and budget new purchases knowing that your changing needs will always be met.

The modules illustrated at right are representative of the classes within the Designer Series family. Rounding out the series are detectors, preamplifiers, stabilizers, coincidence equipment, spectrometer sweep units, printers, and programmers. We also offer a wide range of cases and cabinets, as well as kits for your own construction of one-of-a-kind, special-purpose modules.

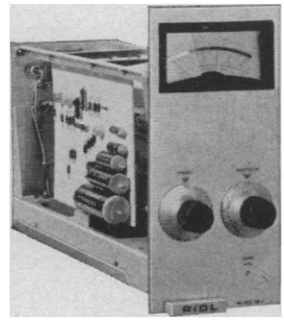
To investigate the unique adaptability of the Designer Series, consult your RIDL sales engineer or write us.



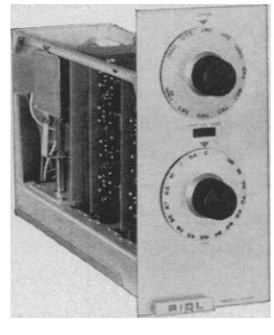
AMPLIFIERS. Single or dual. Also amplifier-discriminators, mixer amplifiers, and double delay line amplifiers.



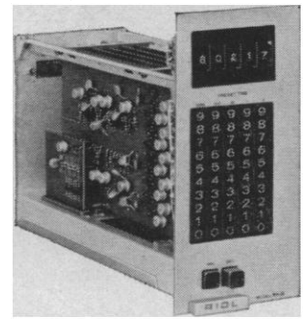
SINGLE-CHANNEL ANALYZERS. With integral and differential outputs, excellent baseline and window stability, wide dynamic range, high count rate, and very short pulse-pair resolution.



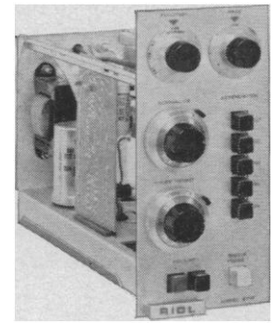
COUNT RATE METERS. Linear or linear/log. Eight linear ranges cover 0 to 10^6 cpm. Log ranges cover 10 to 10^6.



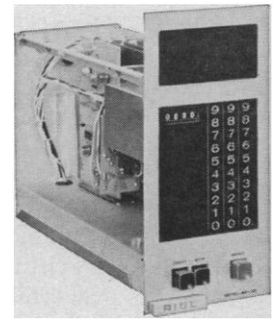
HIGH-VOLTAGE POWER SUPPLIES. Cover range of 0 to 6000 volts. Output adjustable continuously or in increments.



TIMERS. Five-decade, printing or nonprinting, with ranges from 0.1 to 10,000 minutes or seconds.



PULSE GENERATORS. Offer variable pulse amplitude and polarity, selectable rise and decay times, fixed or variable pulse repetition rates, and exponential or rectangular pulse shapes.



SCALERS. With or without preset count in count capacities from 10^1 to 10^{12}. Accept pulse inputs to 10 mc/sec continuous with pulse-pair resolution less than 10 nanoseconds.

*Trademark of RIDL

NUC:R-4-274

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RADIATION INSTRUMENT DEVELOPMENT LABORATORY
A DIVISION OF NUCLEAR-CHICAGO CORPORATION
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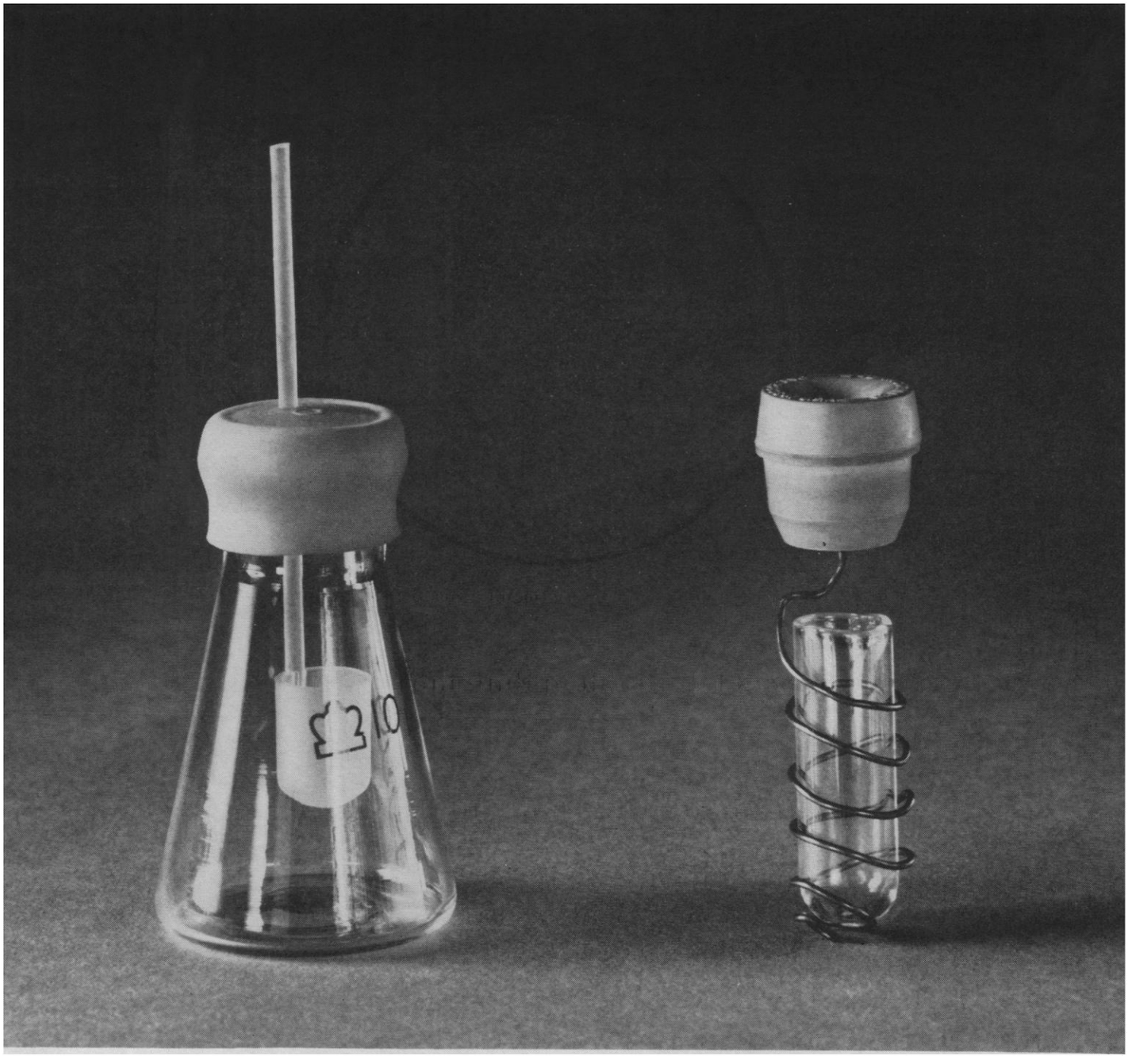
Scientists and engineers interested in challenging career opportunities are invited to contact our personnel director.



Some of our most useful items... start out as customer problems

Our new reaction flask for metabolic studies, for instance. The improvisation on the right was submitted by a customer who obviously needed something better for his studies. Our design team, cooperating with several leading researchers in the field, provided the answer shown on the left.

In place of the homemade wire support, they designed a disposable center well of polypropylene. To prevent leakage, they employed a double-sealed rubber serum cap, complete with off-center positioning hole to maintain proper alignment of center well. Then they put both into a sturdy flask that fits all standard racks and shakers.

Not only does this item solve our original customer's problem, but its utility in metabolic analysis, *in vitro* incubations, and related studies indicates that it's an extremely versatile item that can be used by many laboratories.

Such development is typical of most Kontes products. It might be the redesigning of a Bantam-ware® semi-micro distillation head, or eliminating the mixing well in a Chromaflex® Chromatographic column, or making a better vacuum stopcock. Whether it's improving existing standard designs or offering an entirely new concept in apparatus, constant product improvement has helped Kontes products keep pace with the scientific community. These improvements, however subtle, are your best guarantee of continued dependability and a consistently superior product.

Write for KONTES New Product Bulletin #465. It describes our metabolic reaction flask pictured above and eleven other useful products for the laboratory. Or send us a problem: we'll make you a product.

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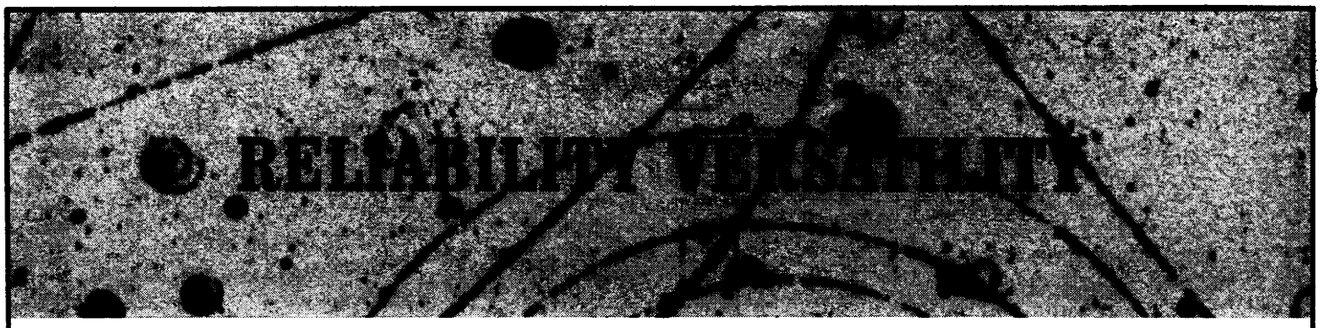
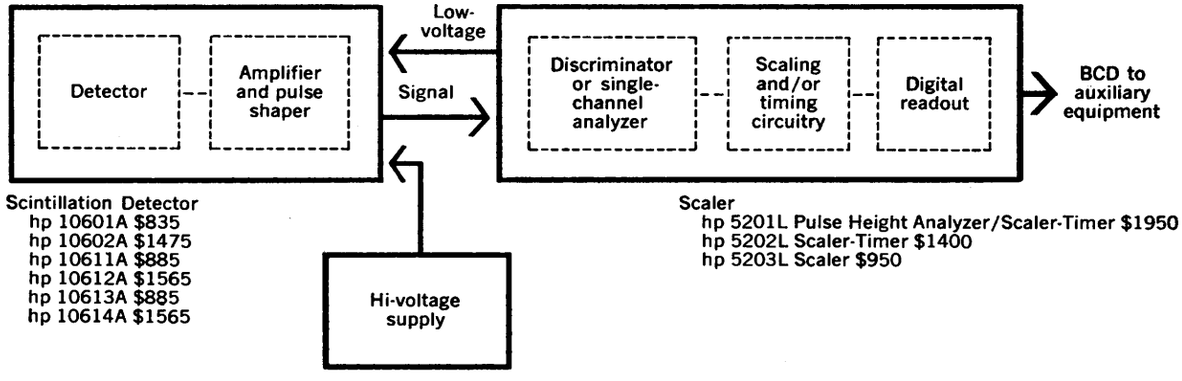


in nuclear instrumentation:

Hewlett-Packard 'built-ins'



Scintillation Detector
hp 10601A $835
hp 10602A $1475
hp 10611A $885
hp 10612A $1565
hp 10613A $885
hp 10614A $1565

Scaler
hp 5201L Pulse Height Analyzer/Scaler-Timer $1950
hp 5202L Scaler-Timer $1400
hp 5203L Scaler $950

hp 5551A $350

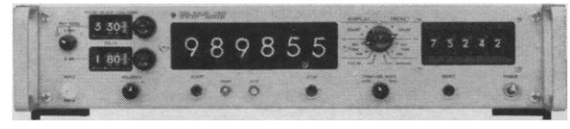
Over fourteen years' experience in electronic counters is utilized for these new Hewlett-Packard nuclear instruments. Field-proven design and packaging concepts give increased reliability, versatility and stability for detecting, counting, displaying and recording nuclear events. These instruments are backed by extensive hp worldwide sales and service facilities.

The hp packaging format—modular cabinets for individual or rack-mount applications—simplifies use with other instruments for complex systems. Further, versatility is increased by packaging the scintillation detector and amplifier in one unit, complete scaler-timer in a second and a high-voltage power supply in a third.

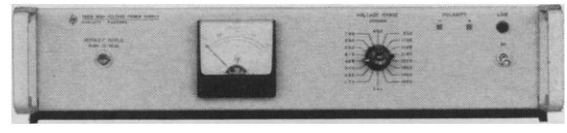
Hewlett-Packard scintillation detectors use premium selected NaI (Tl) crystals and photomultiplier tubes as integral assemblies and provide sufficient built-in gain and pulse shaping capability for driving a single-channel analyzer.

For maximum versatility in value-priced nuclear instrumentation, call your hp field engineer or write for full specifications to Hewlett-Packard, Palo Alto, California 94304, Tel. (415) 326-7000; Europe: 54 Route des Acacias, Geneva; Canada: 8270 Mayrand St., Montreal.

Data subject to change without notice. Prices f.o.b. factory.



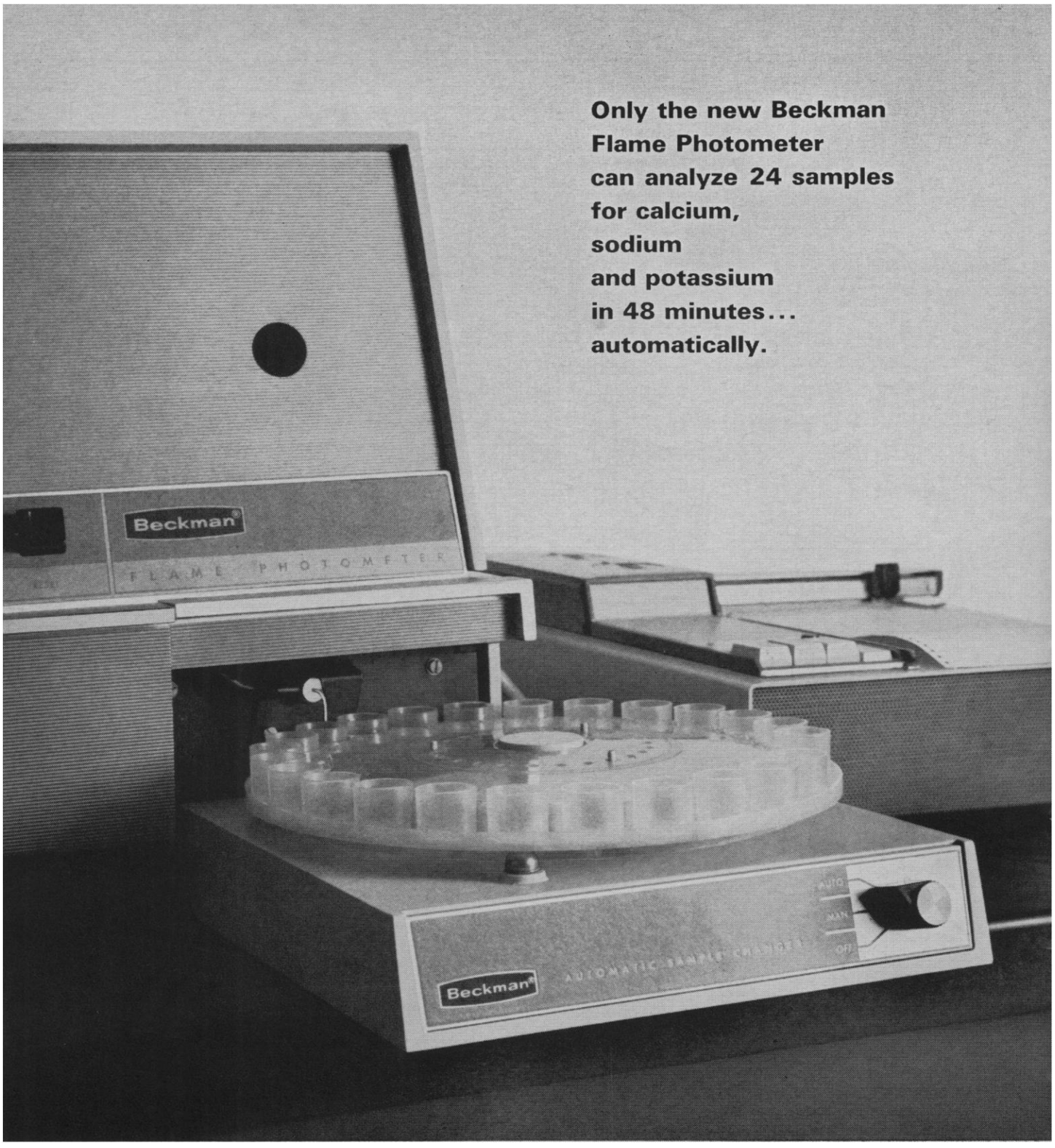
Three scaler models offer broad flexibility. The 5201L includes a scaler-timer with a pulse height analyzer (ideal for differential gamma ray analysis). The 5202L includes a scaler-timer with an integral discriminator for gross counting. Both will totalize counts, count for a preset time or register time for a preset count. The 5203L is a scaler without timer that may be manually operated, externally gated or slaved to a 5201L or 5202L. All instruments have a multiple pulse resolution of 200 nsec and provide BCD output for driving hp digital recorders or other devices.



The 5551A is a stable, highly regulated supply offering an output of 170 to 1615 volts. This equipment can be combined with auxiliary instrumentation from the Moseley and Dymec Divisions of Hewlett-Packard to provide scanning spectrometer and gross counting systems, plus automatic recording.

HEWLETT hp PACKARD
An extra measure of quality

293



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or write for Data File LFP-165.

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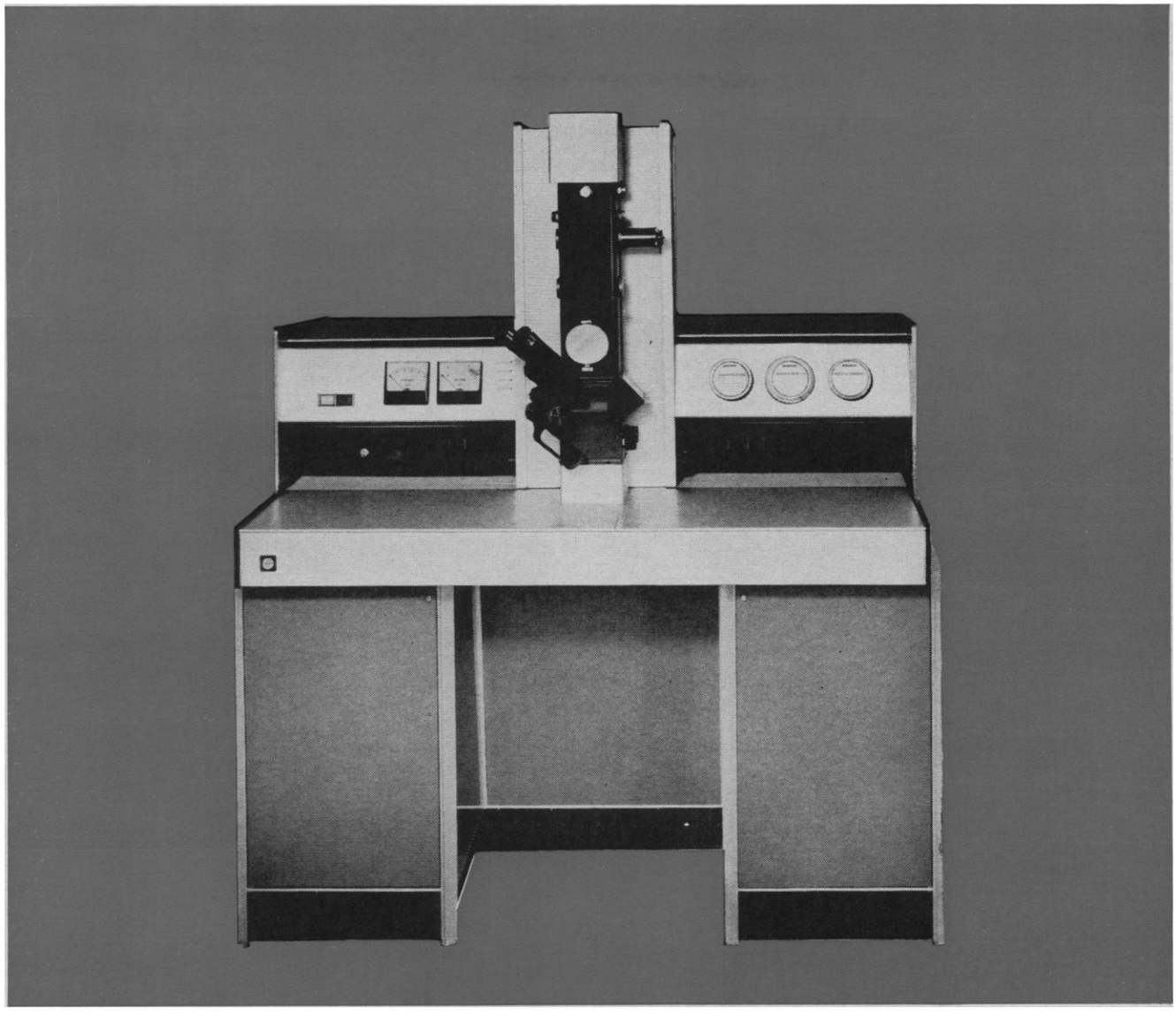

THE EM SYNDROME: ITS CAUSES, EFFECTS, AND CURE

The specialist working with an HR electron microscope is a highly trained scientist. A Ph. D. with a primary interest in creative research work. He owns a very expensive, very complex research tool. One that's indispensable to sophisticated analysis but one that's doing the routine work, as well.

In the typical scientist, this situation creates a dilemma. After all, he *knows* he should be spending the majority of his time on the creative aspects of his research. But he can't. No one else can run his high resolution microscope, so no one else can do the routine work. Caught between two conflicting responsibilities, he thus lives out his day — bothered and bewildered.

Recently, however, Mikros/Varian developed a scientific cure for the EM syndrome — the Mikros EM-20 electrostatic microscope. Our EM-20 cure points the EM scientist back to his HR microscope and creative work by taking over the routine work. That's what it was made for!

It's a guaranteed 30 Å resolution electron microscope with electrostatic optics — *a high quality EM that doesn't need a Ph. D. at the controls.* It needs a technician supervised by a Ph. D. It's inexpensive — the electrostatic power supply costs less than half as much as a magnetic one. It's easy to operate, too. The vacuum system is automatic. And the EM-20 is small and compact — fits lab facilities *and* budgets.

For more information on the Varian cure, contact the Varian Field Sales Office nearest you.

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ASSOCIATES PALO ALTO, CALIF.
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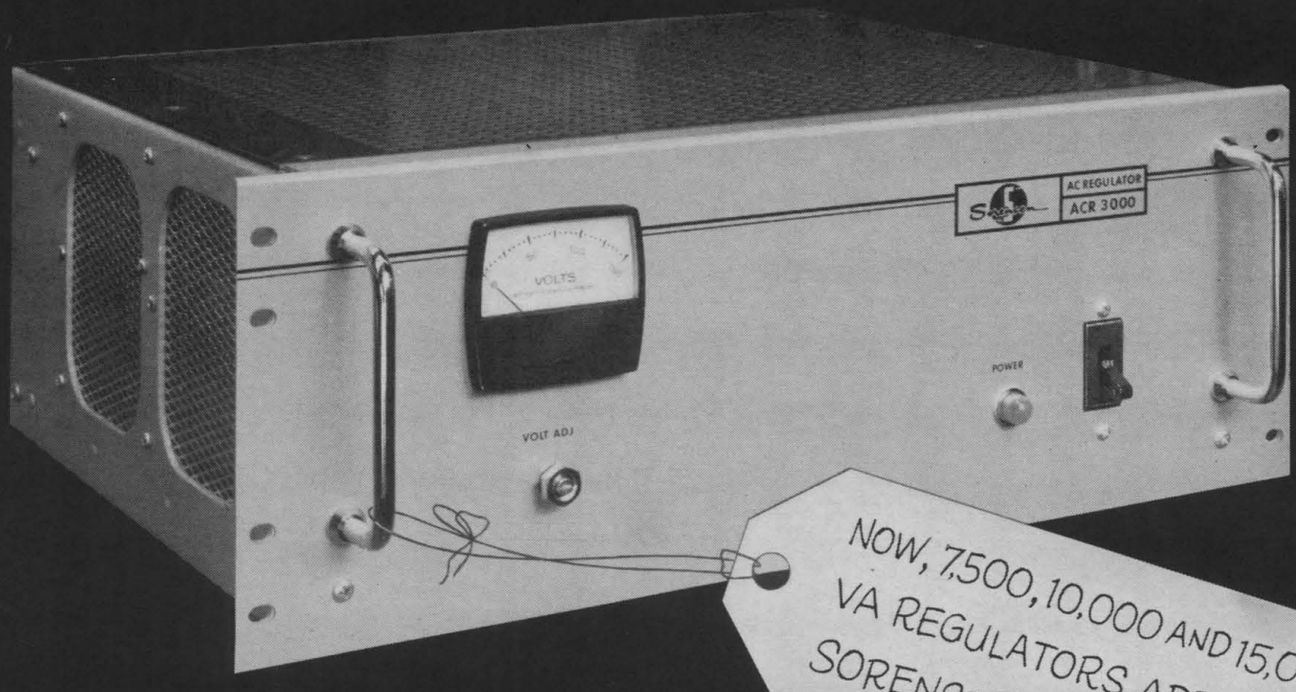
Regulate down to zero power factor with Sorensen's new silicon controlled rectifier ACR Voltage Regulators



NOW, 7,500, 10,000 AND 15,000 VA REGULATORS ADDED TO SORENSEN'S ACR SERIES

Ideal for motor starting, lamp loads, tube filaments, x-ray applications, etc., ACR Series regulators are designed to control the RMS voltage to a variety of loads requiring precision regulation, fast response time, and low distortion.

1 8 MODELS AVAILABLE (500, 1000, 2000, 3000, 5000, 7500, 10000, 15000VA)
2 LOW PRICES (starting at $290)
3 SMALL SIZE AND WEIGHT (about half the volume of competitive regulators)
4 FULL INPUT VOLTAGE RANGE 95-130 VAC; OUTPUT RANGE 110-120 VAC
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11 REMOTE SENSING
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For complete data on the ACR Series and other Sorensen products, send for the new, 160-page book, "Controlled Power Catalog and Handbook." Write: Sorensen, Richards Avenue, South Norwalk, Connecticut.

ACR ELECTRICAL AND MECHANICAL SPECIFICATIONS

MODEL NUMBER	OUTPUT VA RANGE	REGULATION ACCURACY LINE	REGULATION ACCURACY LOAD	EFFICIENCY (FULL VA)	TYPICAL POWER FACTOR	TEMPERATURE AMBIENT (°C)	TEMPERATURE COEFFICIENT (°C)	DIMENSIONS (INCHES) WIDTH	HEIGHT	DEPTH	RACK HEIGHT	PRICE**
ACR 500	0-500	±0.1%	±0.1%	88%	75%	0-50	.03%	15*	5	9	5¼	$ 290
ACR 1000	0-1000	±0.1%	±0.1%	90%	75%	0-50	.03%	19	5¼	11	5¼	340
ACR 2000	0-2000	±0.1%	±0.1%	92%	75%	0-50	.03%	19	5¼	15	5¼	435
ACR 3000	0-3000	±0.1%	±0.1%	95%	75%	0-50	.03%	19	7	15	7	555
ACR 5000	0-5000	±0.15%	±0.15%	95%	75%	0-50	.03%	19	7	20	7	715
ACR 7500	0-7500	±0.15%	±0.15%	95%	75%	0-50	.03%	19	12 7/32	20	12 7/32	850
ACR 10000	0-10000	±0.15%	±0.15%	95%	75%	0-50	.03%	19	12 7/32	20	12 7/32	1,200
ACR 15000	0-15000	±0.15%	±0.15%	95%	75%	0-50	.03%	19	17 15/32	20	17 15/32	1,500

*A 19 inch adapter (rack) panel is available.
**Optional Meter $22.

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11 papers on monitoring and individual sampling techniques in water and air pollution, including sea water, lake profiles, sewage treatment and atmospheric contaminants.

Panel Discussion

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12 papers covering techniques in research, quality control and process control, including single tablet assays, microbiological assays, fermentation assessment and control.

Panel Discussion

MULTIPLE ANALYSIS / SCREENING / DATA PROCESSING

14 papers discuss the 12-channel multiple analyzer, results of large-scale health screening programs, electrophoresis screening and data processing systems.

POWER STATION CHEMISTRY

7 papers on monitoring feed make-up, boilerwater, condensate and flue gases in conventional and nuclear power plants.

Panel Discussion

GENERAL INDUSTRIAL SESSION

12 papers covering metallurgical analyses; chemical and pulp and paper process and quality control; rayon bleach baths and others.

FOODS AND BEVERAGES

8 papers on beer, tobacco, tea, dairy products, yeast, sugars, including chromatographic analyses and the latest digestor techniques.

Panel Discussion

KIDNEY/ IN-VIVO TECHNIQUES

3 papers describing In-Vivo analyses in kidney studies, including blood urea nitrogen, urea extraction, and renal blood flow.

ENZYME ANALYSES

12 papers on new and modified enzyme procedures and kinetic studies, including uric acid, polynucleotide phosphorylase, lactic dehydrogenase and cholinesterase.

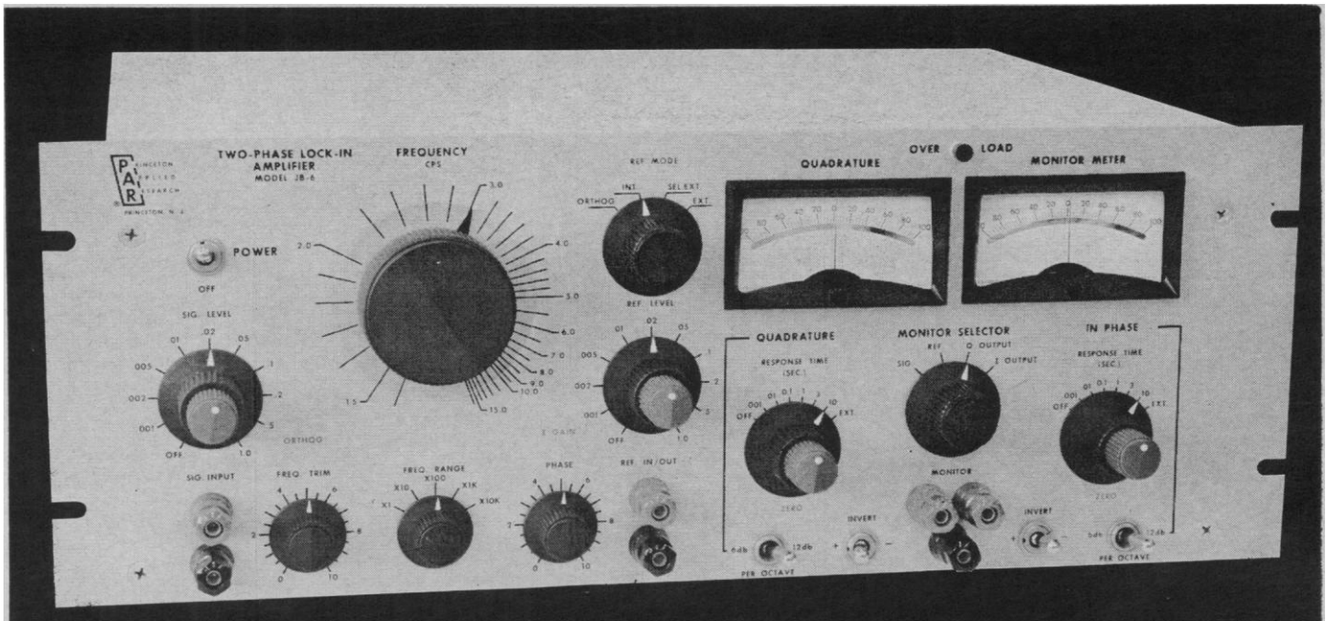
IMMUNOLOGY/ HEMATOLOGY

7 papers on automated blood typing, red and white cell counting and hemoglobin, antibody screening, complement fixation and other methods.

AGRICULTURAL CHEMISTRY

9 papers devoted to pesticides determinations and analyses of calcium, phosphorus, nitrate, and magnesium in soils, plants and fertilizers.

Panel Discussion



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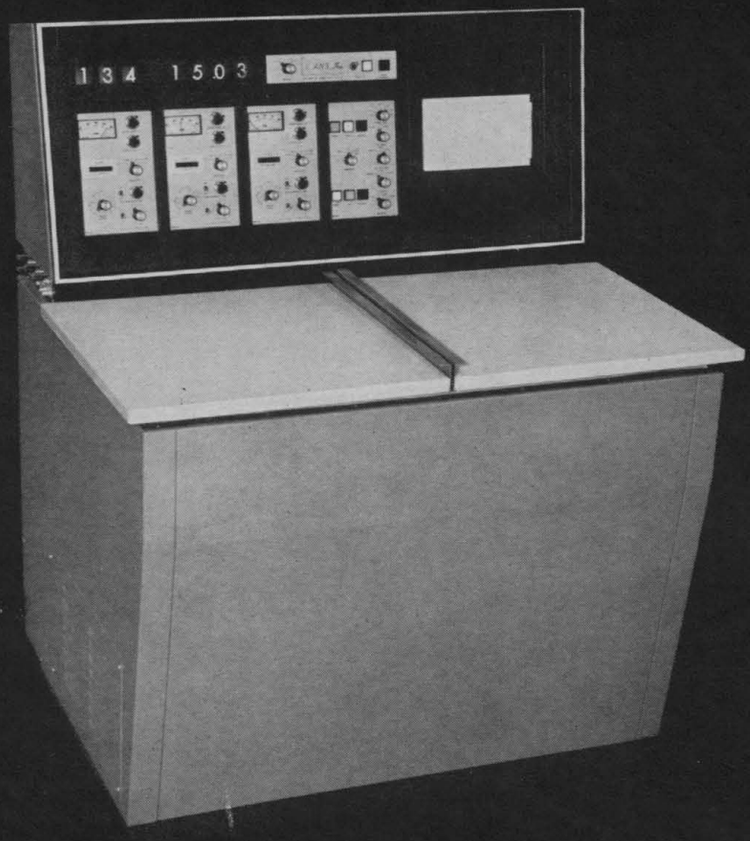

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. . . Rossi says that a working mother is a better example to her children than one "who shelves her books along with her diploma." There are two fallacies in that statement. First, many homemakers read, participate in community affairs, and retain a lively interest in the world. How many truly educated women shelve their books and their intellectual curiosity? Second, Rossi ignores the contribution women can make by showing their children how to use leisure. Experts tell us that one of the crises of the future will be the growth of leisure and the inability to use it wisely. Surely an educated mother who employs her education constructively while remaining at home can teach her children, by example, that free time is a gift to be cherished. . . .

DOROTHY E. WYNNE
165 Princeton Avenue,
Eggertsville, New York

The Critic Criticized

It is clear from his recent letter to *Science* (16 July, p. 245) that all of us have been taking Banesh Hoffman much too seriously in his role as objective test critic. His argument shows no trace of his scientific training. Briefly, it is this: he has raised certain objections to the use of objective tests; Chauncey and Hilton state that they do not have *direct* evidence that these objections are false; hence Hoffman concludes they are true. Note that Hoffman has no evidence to support his arguments; they are entirely a priori ones. Note also that Chauncey and Hilton have a good deal of *indirect* evidence, all of which hangs together, that the arguments are fallacious. For a scientist it is surely a strange sort of argument that the absence of direct data to the contrary proves that a theory is the correct one.

LLOYD G. HUMPHREYS
Department of Psychology,
University of Illinois, Urbana

Hoffman's letter indicates that he is interested in statistical evidence and may have some of his own. I should therefore like to pose two questions for him: (i) Just what kind of statistical evidence would cause him to proclaim publicly that his charges were indeed refuted and that he had been wrong in his evaluation of the best of the multiple-choice tests? (ii) What are the magnitudes of the negative correlations of "depth, subtlety, creativity, intellectual honesty, and superior knowledge" with Scholastic Aptitude Test scores?

JOHN E. MILHOLLAND
Department of Psychology,
University of Michigan,
Ann Arbor

VA Hospitals: Length of Stay

In his argument concerning length of stay of patients in Veterans Administration hospitals (Letters, 11 June, p. 1411), Spratt overlooks these most important points of difference between "private university hospitals" and those of the VA:

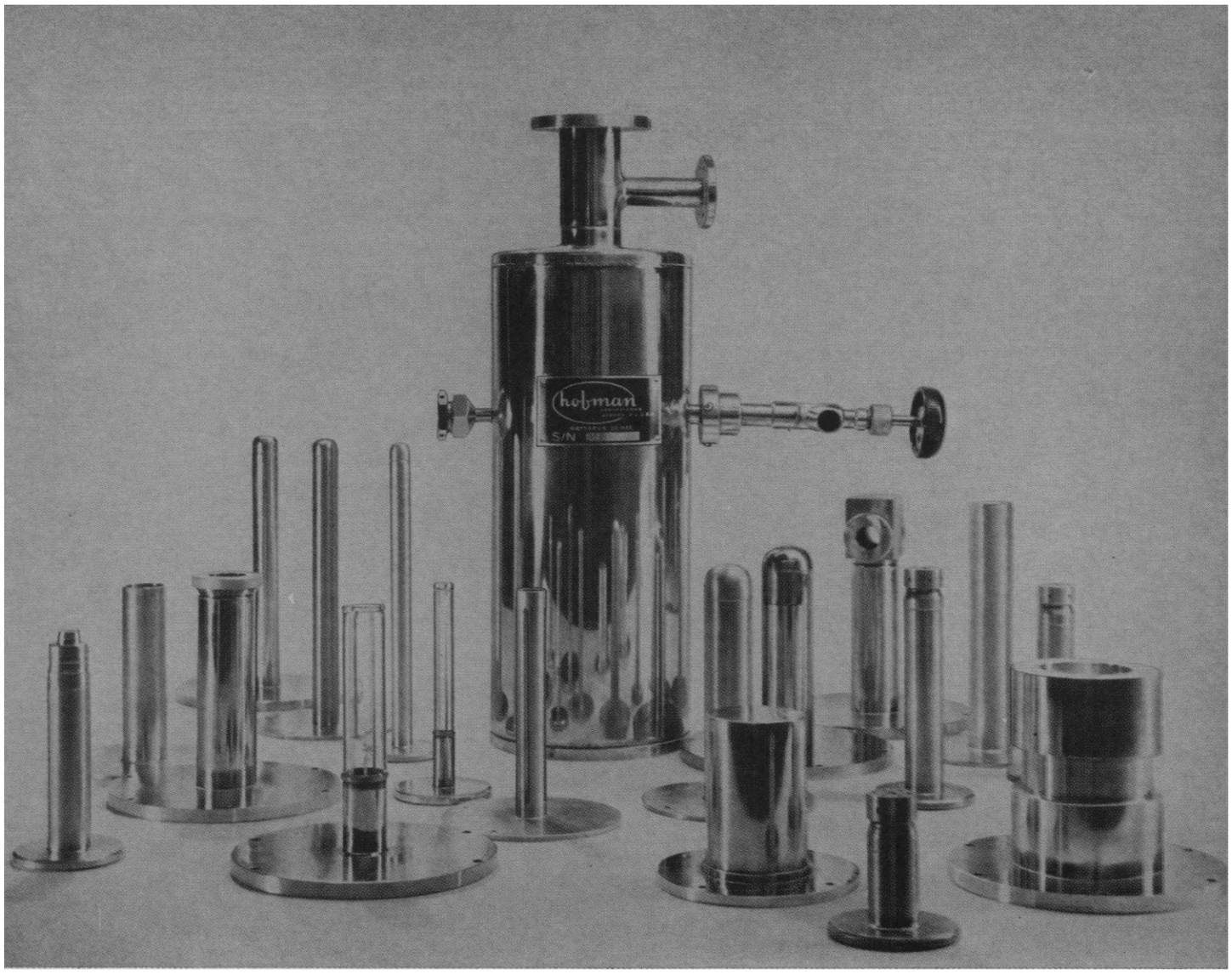
1) Patients discharged from surgical wards in private hospitals are not always ready to walk the streets upon discharge. The operation has been successful, but the recovery takes a long time, and when the patient has run out of insurance money he prefers to hobble home rather than go bankrupt at the rate of $30 a day. A VA hospital, by law, cannot discharge a patient until the patient is ready for discharge.

2) With the aging of the population of veterans, disabling neurological diseases (such as strokes) are on the increase. Such illnesses are not like acute appendicitis; the treatment is long, the progress is slow, the complications frequent. A "private university hospital" usually shuns this kind of patient after a week or two of diagnostic work-up (which, again, takes up the largest chunk of insurance money, leaving the rest for "chronic care" in some nursing home). Through no fault of the private hospital, to the patient it looks as if once he has been squeezed dry of financial resources (usually insurance) he is shipped somewhere else. One can imagine the howling in Congress if VA institutions were to follow this policy.

3) The VA carries on the most extensive training program for medical residents, a benefit which may tend to lengthen hospital stay in some cases.

4) The VA is a very large organization; therefore anecdotes of particular instances are bound to be misleading. The fact is that it provides the cheapest high-quality medical care in our country today.

J. M. SEGARRA
71 Barnard Avenue,
Watertown, Massachusetts



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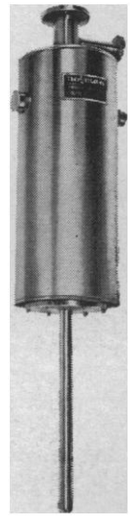

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13 August 1965, Volume 149, Number 3685

SCIENCE

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The Governance of Higher Education

The public's future welfare and the national interest are dependent upon our colleges and universities. Consequently, we may expect that the structure of higher education, its purposes, its directions, even its governance, will soon be more widely debated as political issues. We may anticipate more public concern and governmental involvement in these matters than we have at present, and much more than we have had in the past.

The educational system of a country is, as a rule, consistent with the governmental system of that country. Our federal system, with its checks and balances and its assignment of responsibility to the states and local authorities, has permitted, even required, higher education largely to devise its own methods of governance on a local—or, at most, regional—basis. To date, higher education has not been required to consider its total governance from a national point of view. Now that national and international forces are requiring it to do so, the question society must resolve is whether higher education is organized to do this, and whether by itself it is capable of doing it.

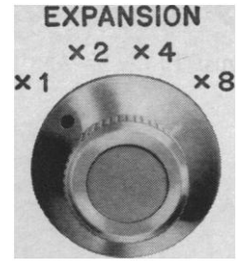
As our large universities have grown in size and affluence, many of them have lost understanding of, and sympathy for, the impoverished institutions. As the liberal arts colleges continue to proclaim their singleness of purpose, self-satisfaction prevents them from fully recognizing the value of a more vocational or technical education for many students. As the junior colleges gain identity and importance, they find themselves suffering from a split personality—they are tied to state departments of education, yet long to be accepted as a part of higher education. As pressures for higher education grow and as the difficulties of admission increase, profit-making educational establishments expand, unfettered by surveillance from the recognized colleges and universities.

What is the locus of leadership for the future governance of higher education? Such leadership can no longer be allowed to rest only with associations of colleges and universities which are almost exclusively concerned with the operation of institutions of their own type, and with organizations of individuals who concentrate on advancing their own professional or scholarly fields of study. Setting sentiment aside, we must be prepared to recognize that civil government will play a more influential part. Increased planning and organization have become necessary concomitants of our increasingly strong federal government, and it will soon be widely recognized that they are necessary in the governance of higher education. It is unreasonable to expect that the autonomy which universities and colleges have traditionally possessed in their functions of teaching and research can be extended to their now numerous public services. As educational institutions receive government funds in ever larger amounts, more planning and organization will be needed to protect the public welfare.

If society is to thrive and progress, higher education must nourish individual freedom and creativity, but it must be prepared to do so under forms of governance different from those which have prevailed in the past. A new day, with intensified public and governmental concern for higher education, is rushing upon us. If higher education does not or cannot assume constructive leadership in facing this new day, the public, through its civil government, will be forced to do so.

—WILLIAM K. SELDEN

[Adapted from the 1965 annual report of the executive director of the National Commission on Accrediting.]



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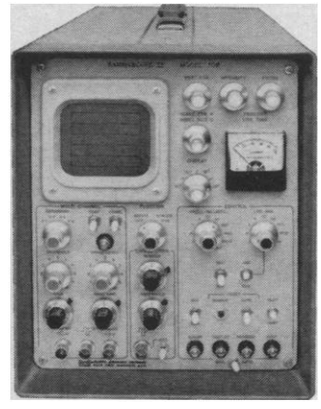

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5–9. **Luminescence**, symp., Munich, Germany. (N. Riehl, Arcisstr. 21, 8 München, Germany)

5–9. International League Against **Rheumatism**, 11th congr., Buenos Aires, Argentina. (A Caruso, Juncal 1875, Planta Baja, Depto. 2, Buenos Aires)

5–9. Physics and Chemistry of **Scintillators**, intern. luminescence symp., Munich, Germany. (H. Kallman, Radiation and Solid State Laboratory, Dept. of Physics, New York Univ., New York 3)

5–10. International Committee of **Electrochemical Thermodynamics and Kinetics**, 16th mtg., Budapest, Hungary. (S. Lengyel, ELTE Fizikai-Kemial es Radiologiai Tanszek, Puskin u. 11–13, Budapest 8)

5–10. **Electromyography**, intern. mtg., Vienna. (K. Pateisky, Universitats Nervenklinik, 14 Lazarettgasse, Vienna 9)

5–10. **Neurology**, 8th intern. congr., Vienna, Austria. (Congress Office, Vienna Academy of Medicine, Alserstr. 4, Vienna 9)

5–10. Ecology of **Soil Bacteria**, symp., Liverpool, England. (N. A. Burges, Univ. of Liverpool, Hartley Botanical Laboratories, Liverpool)

5–12. **Electroencephalography and Clinical Neurophysiology**, 6th intern. congr., Vienna, Austria. (M. A. B. Brazier, Brain Research Inst., Univ. of California Medical Center, Los Angeles 24)

5–14. **Fertility and Sterility**, 5th intern. congr., Madrid, Spain. (J. Ascenzo Aabello, Parque Meliton Porras, 161, Miraflores, Lima, Peru)

6–9. **Organosilicon Chemistry**, intern. symp., Prague, Czechoslovakia. (Inst. of Chemical Process Fundamentals, Prague-Suchodol 2)

6–9. **Thermal Analysis**, first intern. conf., Aberdeen, Scotland. (C. B. Murphy, Bldg. 5, General Electric Co., 1 River Rd., Schenectady, N.Y.)

6–10. **Embryology**, 7th intern. conf., Edinburgh, Scotland. (A. S. G. Curtis, Dept. of Zoology, University College London, Gower St., London W.C.1, England)

6–10. **Plasma Physics and Controlled Nuclear Fusion Research**, 2nd conf., Abingdon, England. (H. H. Storhaug, Div. of Scientific and Technical Information, Intern. Atomic Energy Agency, Kärntner Ring 11, Vienna 1, Austria)

6–10. European Organization for **Quality Control**, 9th conf., Rotterdam, Netherlands. (Secretariat, Weena 700, Rotterdam 3)

6–10. International Union of Directors of **Zoological Gardens**, annual, Berlin, Germany. (E. M. Lang, Zoologischer Garten, Basel, Switzerland)

6–11. **Electromagnetic Distance Measurement**, symp., London, England. (R. C. A. Edge, Field Survey, Ordnance Survey, Leatherhead Rd., Chessington, Surrey)

6–11. **Electromagnetic Wave Theory**, Intern. Scientific Radio Union, symp., Delft, Netherlands. (R. Timman, Technological Univ., Julianalaan 132, Delft)

6–11. **Polarization Phenomena of Nucleons**, 2nd intern. conf., Karlsruhe, Germany. (H. Schopper, Institut für Experimentelle Kernphysik, Kernforschungszentrum Karlsruhe, Postfach 947, 75 Karlsruhe)

6–11. Basic Problems in **Thin Film Physics**, intern. symp., Clausthal-Göttingen, Germany. (R. Nossek, Physikalisches Institut, Technische Hochschule, Clausthal)

6–12. International Soc. for Research on **Nutrition and Vital Substances**, Salzburg, Austria. (H. A. Schweigart, The Society, Bemeroderstr., 61, Hanover-Kirchrode, Germany)

6–12. **Photosynthesis**, Western European conf., Zeist, Netherlands. (J. C. Goedheer, Physica Inst., State Univ., Bijlhouwerstraat 6, Utrecht, Netherlands)

6–17. **Cosmic Rays**, 9th intern. conf., London, England. (C. J. Hatton, Physics Dept., Leeds Univ., Leeds 2, England)

6–17. **Equatorial Aeronomy**, 2nd intern. symp., Brazilian Space Commission, São José dos Campos, Brazil. (F. de Mendonca, Comissão Nacional de Atividades Espaciaia, São José dos Campos)

6–17. **Laboratory Animal Husbandry**, symp., Dublin, Ireland. (M. L. Conalty, Medical Research Council Laboratories, Trinity College, Dublin 2)

7–9. **Electronic Materials**, conf., San Francisco, Calif. (American Inst. of Mining, Metallurgical and Petroleum Engineers, 345 E. 47 St., New York 17)

7–9. Internal **Friction** in Solids, conf., Manchester, England. (G. M. Leak, Dept. of Metallurgy, Univ. of Manchester, Manchester 13)

7–9. **Minerals**, Soc. of Mining Engineers fall mtg., Phoenix, Ariz. (American Inst. of Mining, Metallurgical and Petroleum Engineers, 345 E. 47 St., New York 17)

7–9. Biology of **Parasites of Veterinary Importance**, World Assoc. for the Advancement of Veterinary Parasitology, 2nd intern. conf., Univ. of Pennsylvania, Philadelphia. (S. M. Gaafar, Dept. of Veterinary Microbiology, Pathology, and Public Health, Purdue Univ., Lafayette, Ind.)

7–10. **Virus and Vector on Perennial Hosts**, intern. conf., Davis, Calif. (B. Hewitt, Dept. of Plant Pathology, Univ. of California, Davis 95616)

7–14. **Acoustics**, 5th intern. congr., Liége, Belgium. (J. Frenkiel, 33 rue St.-Gilles, Liége)

8–10. **Automation** in Analytical Chemistry, intern. symp., New York, N.Y. (E. C. Whitehead, Technicon, Research Park, Chauncey, N.Y.)

8–10. **Biochemistry of Copper**, intern. symp., Harriman, N.Y. (J. Peisach, Dept. of Pharmacology, Albert Einstein College of Medicine, Yeshiva Univ., New York 61)

8–10. **Genetics** Soc. of America, Colorado State Univ., Fort Collins. (R. P. Wagner, Univ. of Texas, Austin)

8–10. **Magnet Technology**, intern. symp., Stanford Univ., Stanford, Calif. (R. H. Moulton, Jr., Stanford Linear Accelerator Center, P.O. Box 4349, Stanford Univ., Stanford)

8–10. International Organization for **Medical Physics**, first intern. conf., Harrogate, England. (Secretary, United Kingdom Natl. Committee for Medical Physics, 45/47 Little Britain, London E.C.1)

8–10. **Radiation Effects**, mtg., Asheville, N.C. (American Inst. of Mining, Metallurgical, and Petroleum Engineers, 345 E. 47 St., New York 17)

8–10. **X-Ray Optics and Microanalysis**, 4th intern. conf., Orsay, France. (Mr. Deschamps, Dept. of Physics, Institute de Recherches de la Siderurgie Française, St.-Germain-en-Laye, France)

8–11. **Biological Systems** at the Molecular Level, Naples, Italy. (R. C. Williams, Virus Laboratory, Univ. of California, Berkeley 94720)

8–11. **Biometric** Soc., eastern North America region, Philadelphia, Pa. (E. L. LeClerg, 6804 40th Ave., University Park, Hyattsville, Md.)

8–11. Prevention of **Dental Caries**, symp., Prague, Czechoslovakia. (J. Kostlan, Vinohradska 48, Prague 2)

8–11. American **Political Science** Assoc., Washington, D.C. (E. M. Kirkpatrick, 1726 Massachusetts Ave., NW, Washington)

8–11. American **Statistical** Assoc., Philadelphia, Pa. (D. C. Riley, Univ. of Rochester, Rochester, N.Y.)

8–14. Ecology of **Aphic Parathyses**, symp., Prague, Czechoslovakia. (F. Hrabal, Foreign Relations Dept., Czechoslovak Academy of Sciences, Narodni tr. 3, Prague 1)

8–15. **Nematology**, 8th intern. symp., Antibes, France. (M. P. Ritter, Station de Recherches sur les Nematodes, 123 boul. du Cap, Antibes, Alpes-Maritimes, France)

8–15. **Soil Mechanics**, 6th intern. conf., Montreal, Canada. (M. K. Ward, Natl. Research Council, Ottawa 2, Ontario)

9–11. French-speaking **Anatomopathologists**, 3rd congr., Quebec, Canada. (R. Ganeau, Dept. of Pathology, Hopital du Saint-Sacrement, 150, Chemin Ste.-Foy, Quebec 6)

9–11. **Industrial Electronics and Control Instrumentation**, conf., Philadelphia, Pa. (L. Winner, 152 W. 42 St., New York 25)

9–11. **Parapsychological** Assoc., 8th annual conv., New York, N.Y. (J. G. Pratt, Box 152, Univ. of Virginia Hospital, Charlottesville)

9–11. **Phlebology**, 2nd intern. congr., Wiesbaden, Germany. (H. L. Biegeleisen, Phlebology Soc. of America, 155 E. 72 St., New York 10021)

9–12. Canadian **Agricultural Chemicals** Assoc., 13th annual, Banff, Alberta, Canada. (CACA, 3405 Code des Neiges Rd., Montreal 25, Que.)

9–12. **Mass Spectrometry**, Euchem conf., Sarlat, France. (Gesellschaft Deutscher Chemiker, Postfach 9075, 6 Frankfurt am Main, Germany)

9–13. Association of European **Anesthetists**, congr., Athens, Greece. (P. Maestracci, Centre de Transfusion Sanguine, Rue Delille, Nice, France)

9–13. International Soc. for **Clinical Electroretinography**, 4th symp., Tokyo, Japan. (A. Nakajama, Dept. of Ophthalmology, Juntendo Univ., Tokyo)

9–14. **Econometric** Soc., world congr., Rome, Italy. (L. R. Klein, Univ. of Pennsylvania, Philadelphia 19104)

10. **Manned Space Stations**, intern. symp., Munich, Germany. (German Soc. for Rocket Technology and Travel, Neuensteiner str. 19, Stuttgart-Zuffenhausen, Germany)

10–12. **Comparative Neurophysiology**, symp., Tokyo, Japan. (Yasuji Katsuki, Tokyo Medical and Dental Univ., 3-Chome, Yusima, Bunkyo-ku, Tokyo)

10–12. Structure and Function of the **Limbic System**, symp., Hakone, Japan. (T. Tokizane, Inst. of Brain Research, Univ. of Tokyo, Hongo, Tokyo, Japan)

11–12. **Brain Edema**, symp., Vienna, Austria. (F. Seitelberger, World Fed. of Neurology, Schwarzspanierstr. 17, Vienna)

11–18. International **Cardiovascular** Soc., 7th congr., Philadelphia, Pa. (R. A. Deterling, Jr., 171 Harrison Ave., Boston, Mass. 02111)

11–18. **Plant Environment** in Glasshouses, symp., Bedfordshire, England. (Secretariat, P.O. Box 38, Wageningen, Netherlands)

11–18. International Soc. of **Surgery**, 21st congr., Philadelphia, Pa. (P. Martin, 43, rue des Champs-Elysees, Brussels 5, Belgium)

11–26. **Chemistry in Industry and Agriculture**, intern. conf., Moscow, USSR. (Central Office of Information, Reference Div., London, England)

12–15. International Assoc. of **Milk, Food, and Environmental Sanitarians**, Hartford, Conn. (H. L. Thomasson, P.O. Box 437, Shelbyville, Ind.)

12–17. International **Aeronautic** Fed., 58th annual general conf., Munich, Germany. (Natl. Aeronautic Federation, 1025 Connecticut Ave., NW, Washington, D.C. 20036)

12–17. American **Chemical** Soc., 150th annual, Atlantic City, N.J. (B. S. Baker, Inst. of Gas Technology, 3424 S. State St., Chicago, Ill. 60616)

12–17. **Fracture**, intern. conf., Sendai, Japan. (T. Yokobori, Dept. of Mechanical Engineering, Tohoku Univ., Sendai)

12–17. **Highspeed Photography**, 7th intern. conf., Zurich, Switzerland. (K. Pfister, Secretariat, Postfach 189, 8033 Zurich)

12–18. **Astronautics**, 16th intern. congr., Athens, Greece. (A. L. Jaumotte, Inst. de Mécanique Appliquée, Univ. Libre de Bruxelles, 50, av. F. D. Roosevelt, Brussels, Belgium)

12–18. **Radiology**, 10th Brazilian congr., first Portuguese-Brazilian congr., Rio de Janeiro, Brazil. (A. Arantes Pereira, Av. Churchill 97, S/508, Rio de Janeiro)

12–19. Mechanisms of **Viral Carcinogenesis**, symp., Rehovoth, Israel. (Weizman Inst., Rehovoth)

12–25. **Speleology**, 4th intern. congr., Ljubljana and other cities, Yugoslavia. (W. Bohinec Titova 17a, Ljubljana)

13–15. **Drugs Affecting Lipid Metabolism**, 2nd intern. symp., Milan, Italy. (R. Paoletti, Inst. of Pharmacology, Univ. of Milan, Via Andrea del Sarto 21, Milan)

13–15. Mechanism and Control of **Gastric Secretion**, Univ. of Alberta, Edmonton, Alta., Canada. (Gastric Secretion Symp. Committee, Rm. C148, Univ. Hospital, Edmonton)

13–15. Association of French-speaking **Pediatricians**, 20th congr., Nancy, France. (Prof. Pierson, Hospital General, Nancy)

13–16. **Cancer**, Latin American congr., Bogota, Colombia. (A. Buendia-Ferro, Avenida 1ª no. 9-85, Bogota)

13–16. Optical Properties and Electronic Structure of **Metals and Alloys**, intern. colloquium, Paris, France. (F. Abelès, Institut d'Optique, 3 Boulevard Pasteur, Paris 15e)

13–16. **Natural Mammalian Hibernation**, 3rd intern. symp., Univ. of Toronto, Ontario, Canada. (E. South, Jr., Dept. of Physiology, Colorado State Univ., Fort Collins, Colo.)

13–17. **Environmental Physiology**, symp., Tokyo, Japan. (A. Nixon, Fed. of American Societies for Experimental Biology, 9650 Wisconsin Ave., Bethesda, Md.)

13–17. Microwave Behavior of **Ferrimagnetics and Plasmas**, intern. conf., London, England. (P. J. B. Clarricoats, IEE, Savoy Pl., London W.C.2)

13–17. **Mother-Infant Interaction**, symp., CIBA Foundation, London, England. (CIBA, 41 Portland Pl., London W.1)

13–18. Society of German **Chemists**, general assembly, Bonn, Germany. (The Society, Postfach 9075, 6 Frankfurt am Main, Germany)

13–18. International **Gravimetric Commission**, mtg., Paris, France. (P. Tardi, Intern. Assoc. of Geodesy, 19 rue Auber, Paris 93)

13–18. Electroanalysis of **Organic and Inorganic Substances**, German Chemical Soc., Bonn, Germany. (W. Pfab, Homburg str. 10, 67 Ludwigshafen, Germany)

13–18. French Speaking **Psychiatrists and Neurologists**, 63rd congr., Lausanne, Switzerland. (P. Warot, 10 rue d'Esquermes, Lille, France)

14–16. **Faraday Soc.**, mtg., Bristol, England. (The Society, 6 Gray's Inn Sq., London W.C.1)

14–17. Theory of **Self-adaptive Control Systems**, intern. symp., Teddington, England. (R. W. Wilde, Dept. of Electrical Engineering, Imperial College of Science and Technology, Exhibition Rd., London S.W.7)

14–20. **Hydrogeologists**, intern. congr., Hanover, Germany. (G. Castany, Intern. Assoc. of Hydrogeologists, 74, rue de la Federation, Paris 15, France)

14–20. International **Statistical** Inst., 35th session, Belgrade, Yugoslavia. (The Institute, 2 Oostdiunlann, The Hague, Netherlands)

15–17. **Nuclear and Particle Physics**, conf., Univ. of Liverpool, England. (Inst. of Physics and the Physical Soc., 47 Belgrave Sq., London S.W.1)

15–17. **Regional Science** Assoc., 2nd Far East congr., Tokyo, Japan. (G. Konno, Faculty of Economics, Univ. of Tokyo)

15–17. **Urban Planning** Information Systems and Programs, Chicago, Ill. (American Soc. of Planning Officials, 1313 E. 60 St., Chicago 60637)

15–18. **Bacteriophagy**, 2nd intern. symp., Bucharest, Rumania. (Secretariat, Str. Progresului 10, Bucharest)

16–17. **Astrodynamics** Specialist conf., Monterey, Calif. (V. Szebehely, Celestial Mechanics Research Center, Box 2034 Yale Station, New Haven, Conn. 06520)

16–17. Production of **Automation Elements**, conf., Esztergom, Hungary. (L. Prockl, Scientific Soc. of Mechanical Engineers, Szabadsag ter 17, Budapest 5)

16–18. **Marine Microbiology**, symp., Soc. for General Microbiology, Aberdeen, Scotland. (J. Shewan, Torry Research Station, Dept. of Scientific and Industrial Research, 135 Abbey Rd., Aberdeen)

16–19. **General Practice**, 7th intern. congr., Salzburg, Austria. (K. Englemeier, Intern. College of General Practice, Lange Str. 21a, 4740 Oelde, Westphalia, Germany)

16–19. American **Medical Writers** Assoc., Detroit, Mich. (J. E. Bryan, 2000 P St., NW, Washington, D.C. 20036)

17. Southern **California** Acad. of Science, Los Angeles County Museum, Los Angeles. (C. Rozaire, Los Angeles County Museum, 900 Exposition Blvd., Los Angeles 90007)

17–18. **Dialysis and Transplant**, 2nd intern. conf., Newcastle, England. (W. Drukker, Dept. of Medicine, Queen Wilhelmina Hospital, Amsterdam W., Netherlands)

17–18. British **Tissue Culture** Assoc., Manchester, England. (L. M. Franks, Imperial Cancer Research Fund, Lincoln's Inn Fields, London W.C.2)

18–19. **Minnesota** Acad. of Science, Grand Rapids. (V. E. Anderson, 6 Zoology, Univ. of Minnesota, Minneapolis 55455)

18–21. International Soc. of **Radiographers and Radiological Technicians**, 3rd world congr., Rome, Italy. (E. R. Hutchinson, 159 Gabalfa Ave., Cardiff, Wales)

19–22. **Odontology**, 5th Latin American congr., Buenos Aires, Argentina. (A. F. Alvarez, Argentine Odontological Assoc., Junin 959, Buenos Aires)

19–22. **Power**, natl. conf., Albany, N.Y.

(Inst. of Electrical and Electronics Engineers, Box A, Lenox Hill Station, New York 10021)

19–23. **Cerebral Palsy**, Mediterranean symp., Rome, Italy. (Intern. Soc. for Rehabilitation of the Disabled, 701 First Ave., New York 10017)

19–25. Greek **Chemists** Assoc., 3rd intern meeting, Athens. (Dr. Parissakis, Technical Univ. of Athens, 42 Patission St., Athens)

19–25. **Elementary Particles**, 3rd intern. conf., Oxford, England. (R. C. Pepperell, Rutherford High Energy Laboratory, Chilton, Didcot, England)

19–25. **Immediate Separation and Chromatography**, intern., Athens, Greece. (G. Parissakis, Technical Univ. of Athens, Odos 28 Octovriou 42, Athens)

19–25. World **Medical** Assoc., 19th general assembly, London, England. (H. S. Gear, 10 Columbus Circle, New York 10019)

20. **Organic Solid State**, 3rd annual symp., Franklin Inst., Philadelphia, Pa. (M. M. Labes, Franklin Inst. Research Laboratories, Philadelphia 19103)

20. **Photo-Electronic Image Devices** as Aids to Scientific Observation, symp., London, England. (G. V. McGee, Dept. of Physics, Imperial College of Science and Technology, South Kensington, London S.W.7)

20–22. **Glacier Mapping**, symp., Ottawa, Ont., Canada. (Intern. Assoc. of Scientific Hydrology, 61 rue des Ronces, Gentbrugge, Belgium)

20–24. **Biochemistry**, 8th Latin meeting, Lisbon, Portugal. (S. F. Gomes da Costa, Laboratorio de Quimica Fisiologica, Faculdade de Medicina, Hospital de Santa Maria, Lisbon)

20–24. **Burn Research**, intern. congr., Edinburgh, Scotland. (A. Sutherland, Royal Hospital for Sick Children, Sciennes Rd., Edinburgh 9)

20–24. **Fundamental Research**, 3rd intern. symp., Cambridge, England. (H. W. Emerton, Reed Paper Group Ltd., Research and Development Centre, Aylesford, Maidstone, Kent, England)

20–24. International Council of Societies of **Industrial Design**, 4th general assembly and congr., Vienna, Austria. (Mrs. D. des Cressonieres, 70 Coudenberg, Brussels, Belgium)

20–24. **Thermionic Electrical Power Generation**, intern. conf., London, England. (Inst. of Electrical Engineers, Savoy Pl., London W.C.2)

20–27. Comparative and Cellular **Pathology of Epilepsy**, symp., Liblice, Czechoslovakia. (F. Hrabal, Foreign Relations Dept., Czechoslovak Academy of Sciences, Narodni tr. 3, Prague 1)

21–23. **Chemurgic** conf., Columbus, Ohio. (J. Ticknor, Chemurgic Council, 350 Fifth Ave., New York, N.Y.)

21–23. **Fiber** Soc., 25th mtg., Boston, Mass. (Box 625, Princeton, N.J.)

21–23. **Magnetism**, European conf., Vienna, Austria. (Verein Deutscher Eisenhüttenleute, Breit Str. 27, Düsseldorf, Germany)

21–23. **Plasma Electromagnetics of Hypersonic Flight**, 3rd symp., Boston and Bedford, Mass. (A. Cahill, Air Force Cambridge Research Laboratories, L. G. Hanscom Field, Bedford, Mass. 01731)

21–23. **Touch, Heat, and Pain**, CIBA symp., London, England. (CIBA, 41 Portland Pl., London W.1)

21–25. Propagation Factors in **Space Communication**, symp., Rome, Italy, (Lt. Col. E. F. Dukes, Advisory Group for Aeronautical Research and Development, 64 rue de Varenne, Paris 7, France)

22–24. Practice of **Gas Chromatography**, 4th annual mtg., St. Louis, Mo. (N. Brenner, Perkin-Elmer Corp., Main Ave., Norwalk, Conn.)

22–24. Canadian **High Polymer Forum**, 13th, Ottawa, Ont. (D. M. Wiles, Div. of Applied Chemistry, National Research Council, Ottawa)

22–24. **Military Electronics**, conf. (MIL-E-CON 9), Washington, D.C. (L. H. King, Atlantic Research Corp., Shirley Hwy. at Edsall Rd., Alexandria, Va.)

22–24. American Soc. of **Photogrammetry**, 30th semiannual conv., Wright-Patterson AFB, Ohio. (A. J. Cannon, Re-

search and Technology Div., Wright-Patterson AFB)

22–25. Committee of European **Acarologists**, symp., Milan, Italy. (G. Mathys, Stations Federales d'Essais Agricoles, Lausanne, Switzerland)

22–25. **Amblyopia Exanopsia**, intern. symp., Liége, Belgium. (R. Weekers, Clinique Opthalmologique, Universite de Liége, 66 blvd. de la Constitution, Liege)

22–25. British Assoc. for **Cancer Research**, annual, Dublin, Ireland. (J. G. Bennerre, Courtauld Inst., Middlesex Hospital, London W.1, England)

22–26. **Paläontologische Gesellschaft**, mtg., Zurich, Switzerland. (E. Kuhn-Schnyder, Paläontologisches Institut d. Univ. Zurich, Künstlergasse 16, 8006, Zurich)

22–28. **Radiology**, 11th intern. congr., Rome, Italy. (Secretariat, Via Reno 21, Rome)

23–25. French **Medical** Congr., Paris. France. (M. Bricaire, 40 rue Scheffer, Paris 16)

23–25. Society of the **Plastics** Industry, New England sect., 21st annual, Groton, Conn. (The Society, 250 Park Ave., New York 10017)

23–26. **Mycology**, tripartite conf., Germany, Austria, Switzerland; Klagenfurt, Austria. (Ostrian Mycology Soc., Postfach 200, Vienna 1)

23–28. **Electronics and Vacuum Physics**, 3rd Czechoslovak conf., Prague, Czechoslovakia. (Organizing Committee, Ke Karlovu 5, Dept. of Electronics and Vacuum Physics, Prague 2)

24–25. **Communications**, 13th conf., Cedar Rapids, Iowa. (Inst. of Electrical and Electronics Engineers, Box A, Lenox Hill Station, New York 21)

25–30. International Soc. of **Nephrology**, 3rd intern. congr., Washington, D.C. (Secretariat, 9650 Wisconsin Ave., Washington, D.C. 20014)

26–29. American Inst. of **Chemical Engineers**, 57th natl., Minneapolis, Minn. (AIChE, 345 E. 47 St., New York 10017)

27. Society for **Pediatric Radiology**, Washington, D.C. (J. L. Gwinn, Children's Hospital, 4614 Sunset Blvd., Los Angeles, Calif.)

27–29. Chemistry of the **Solvent Extraction of Metals**, intern. conf., Atomic Energy Research Establishment, Harwell, England. (F. K. Pyne, B. 329, Harwell)

27–1. **Community Oral Health**, hemispheric conf., San Juan, P.R. (N. O. Harris, School of Dentistry, Univ. of Puerto Rico, San Juan 00905)

27–1. **Urology**, French congr., Paris, France. (J. Michon, French Assoc. of Urology, 47, boul. des Invalides, Paris 7)

28. Society of Austrian **Chemists**, general assembly, Graz, Austria. (The Society, Eschenbachgasse 9, Vienna 1)

28–29. **Electric Heating**, 7th biennial conf., Cleveland, Ohio. (A. F. Leatherman, Battelle Memorial Inst., 505 King Ave., Columbus, Ohio 43201)

28–30. German Soc. for **Documentation**, 17th annual, Constance, Germany. (The Society, Schubertstr. 1, Frankfurt am Main, Germany)

28–30. Physics and **Nondestructive Testing**, symp., Dayton, Ohio. (D. W. J. McGonnagle, IIT Research Inst., 10 W. 35 St., Chicago, Ill. 60616)

28–30. Industrial and Commercial

Power Systems, conf., Buffalo, N.Y. (J. A. Hart, Allison Div., General Motors Corp., Box 894, Indianapolis 6, Ind.)

28–1. **Experimental Mechanics**, 2nd intern. congr., Washington, D.C. (J. L. Jones, Soc. for Experimental Stress Analysis, 21 Bridge Sq., Westport, Conn. 06880)

28–1. Society for **Experimental Stress Analysis**, Washington, D.C. (B. E. Rossi, 21 Bridge Sq., Westport, Conn.)

28–1. **Inhaled Particles and Vapors**, Cambridge, England. (J. S. McLintock, Medical Service, Natl. Coal Board, Hobart House, Grosvenor Pl., London S.W.1)

28–1. **Medical Electronics**, European symp., Brighton, England. (J. Pearce, 4 Mill St., London W.1)

28–2. **Hyperpure Materials** in Science and Technology, Inst. for Applied Physics of Hyperpure Materials, Dresden, Germany. (The Institute, Dresden A 20, Winterbergstr. 28, East Germany)

29–1. **Analytical Chemistry**, symp., Graz, Austria. (Prof. Gutmann, Austrian Assoc. for Microchemistry and Analytical Chemistry, Eschenbachgasse 9, Vienna 1)

29–1. European **Atomic Forum**, 2nd congr., Frankfurt am Main, Germany. (European Atomic Energy Forum, 26, rue de Clichy, Paris 9)

29–1. German Soc. for **Aviation and Space Medicine**, intern. congr., Munich, Germany. (H. von Diringshofen, German Soc. for Aviation and Space Medicine, Silcherstr. 6, Munich 13)

29–1. American **Vacuum** Soc., 12th annual symp., New York, N.Y. (R. L. Jepsen, Varian Associates, 611 Hansen Way, Palo Alto, Calif.)

October

1–3. French-Language Assoc. of **Scientific Psychology**, 10th study sessions, Marseilles, France. (P. Fraisse, The Association, Inst. de Psychologie, 28, rue Serpente, Paris 6°)

1–11. International **Scientific Film** Assoc., 19th annual congr., Bucharest, Rumania. (ISFA, 38, avenue des Termes, Paris 17°)

2. Association of **Clinical Biochemists**, annual, London, England. (D. W. Moss, Postgraduate Medical School, Ducane Rd., London, W.12)

3–5. **Refractory Metals**, 4th symp., French Lick, Ind. (J. Maltz, Materials Research Div., NASA, 600 Independence Ave., SW, Washington, D.C. 20546)

3–7. American **Phytopathological** Soc., Miami Beach, Fla. (J. R. Shay, Dept. of Botany and Plant Pathology, Purdue Univ., Lafayette, Ind.)

3–8. **Clinical Pathology**, 6th intern. congr., Rome, Italy. (B. L. Della Vida, Via de'Penitenzieri 13, Rome)

3–9. **Water Desalination**, 1st intern. symp., Washington, D.C. (Atomic Industrial Forum, 850 Third Ave., New York 10022)

4–5. **Enzyme Regulation**, 4th intern. symp., Indiana Univ., Indianapolis. (G. Weber, Indiana Univ. School of Medicine, Indianapolis 46207)

4–5. **Physical Metallurgy of Refractory Metals**, conf., American Inst. of Mining, Metallurgical, and Petroleum Engineers, French Lick, Ind. (AIME, 345 E. 47 St., New York 10017)

4–6. **Electronics**, Canadian conf., To-

ronto, Ont. (W. M. Lower, 1819 Yonge St., Toronto)

4–6. **Industrial Organic Analysis**, Analytical Chemistry Div., Chemical Inst. of Canada, Sarnia, Ont. (R. M. Small, Research Dept., Polymer Corp, Sarnia)

4–6. International **Scientific Radio Union**/Inst. of **Electrical and Electronics Engineers**, fall meeting, Dartmouth College, Hanover, N.H. (IEEE, Box A, Lenox Hill Station, New York, N.Y.)

4–7. **Instrument-Automation** Conf., Los Angeles, Calif. (E. M. Grabbe, Instrument Soc. of America, 530 William Penn Pl., Pittsburgh, Pa. 15219)

4–7. **Otorhinolaryngology**, 62nd French congr., Paris, France. (H. Guillon, 6, avenue Mac-Mahon, Paris 16e)

4–7. **Research Equipment**, exhibit and instrument symp., 15th annual, Bethesda, Md. (J. B. Davis, Natl. Institutes of Health, Bethesda, Md. 20014)

4–7. International Committee for **Social Sciences Documentation**, annual plenary assembly, Budapest, Hungary. (J. Meyriat, 27, rue St. Guillaume, Paris 7)

4–8. **Aeronautic and Space Engineering**, Soc. of Automotive Engineers, Los Angeles, Calif. (C. C. King, SAE Western Branch, 999 North Sepulveda Blvd., El Segundo, Calif. 90245)

4–8. Ciba Foundation **Clinical Research** Guest Conf., London, England. (Ciba, 41 Portland Pl., London W.1)

4–10. **Physicists**, conf., Frankfurt am Main, Germany. (G. Schubert, Inst. für Theoretische Physik, Universität, Mainz, Germany)

4–13. International Council for the **Exploration of the Sea**, 53rd annual meeting, Rome, Italy. (The Council, Charlottenlund Slot, Charlottenlund, Denmark)

4–13. **Commonwealth Medical** Conf., Edinburgh, Scotland. (Mrs. J. Hotchkiss, Ministry of Overseas Development, Eland House, Stag Place, London, S.W.1, England)

5–7. Industrial and Commercial **Power Systems**, conf., Buffalo, N.Y. (T. O. Zittel, Bethlehem Steel Co., 3555 Lake Shore Rd., Buffalo 14219)

5–8. International Committee of **Weights and Measures**, session, Sèvres, France. (Intern. Bureau of Weights and Measures, Pavillon de Breteuil, Sèvres, Sein-et-Oise, France)

5–9. **Infectious Pathology**, 4th intern. congr., Freiburg im Breisgau, Germany. (G. Mossner, Hugerterstr. 55, Freiburg im Breisgau)

5–9. **Tuberculosis**, 18th intern. conf., Munich, Germany. (Intern. Union Against Tuberculosis, 15, rue Pomereu, Paris 16e, France)

6–8. **Dynamics of Fluids and Plasmas**, symp., Univ. of Maryland, College Park. (S. I. Pai, Inst. for Fluid Dynamics and Applied Mathematics, Univ. of Maryland, College Park 20742)

6–8. **Optical** Soc. of America, annual meeting, Philadelphia, Pa. (M. E. Warga, OSA, 1155 16th St., NW, Washington 20036)

6–8. Royal Inst. of **Public Health and Hygiene**, annual conf., Weymouth, England. (Secretary, RIPHH, 28 Portland Place, London, W.1, England)

6–10. **Wood and Organisms**, intern. symp., Berlin, Germany. (German Soc. for Wood Research, Danneckerstr. 37, Stuttgart S, Germany)

8–9. **Atlantic Coastal Plain Geological** Assoc., field trip, South Carolina. (D. J. Colquhoun, Dept. of Geology, Univ. of South Carolina, Columbia)

8–9. Association of Midwestern **College Biology Teachers**, 9th annual conf., Northern Illinois Univ., DeKalb)

8–9. **Indiana** Acad. of Science, fall meeting, Notre Dame. (C. F. Dineen, St. Mary's College, Notre Dame)

9. **Paleontological Research** Inst., Ithaca, N.Y. (K. V. W. Palmer, Paleontological Research Inst., 109 Dearborn Pl., Ithaca)

9–10. **Gastroenterology**, French conf., Paris, France. (R. Biguie, 79, Boulevard Malesherbes, Paris 8e)

9–13. American Soc. of **Clinical Hypnosis**, Chicago, Ill. (F. D. Nowlin, ASCH, 800 Washington Ave., SE, Minneapolis, Minn. 55414)

9–17. Electrical, Electronics, and Mechchanical **Engineering**, first Pan American congr., Mexico, D.F. (Inst. of Electrical and Electronics Engineers, Box A, Lenox Hill Station, New York 10021)

10–14. **Water Pollution Control** Fed., 38th annual, Atlantic City, N.J. (R. E. Fuhrman, 4435 Wisconsin Ave., NW, Washington, D.C. 20016)

10–15. International Federation for **Documentation**, congr., Washington, D.C. (Secretariat, FID, 9650 Wisconsin Ave., Washington 20014)

10–15. **Electrochemical** Soc., meeting, Buffalo, N.Y. (Executive Secretary, ES, 30 E. 42 St., New York 10017)

10–15. **Endocrinology**, 6th Pan American conf., Mexico, D.F. (G. Gual, Inst. Nacional de la Nutrición, Dr. Jimenez No. 261, Mexico 7)

10–16. American **Documentation** Inst., Washington, D.C. (J. E. Bryan, 2000 P St., NW, Washington, D.C. 20036)

10–17. **Bronchoesophagology**, 1st Latin American congr., Rio de Janeiro, Brazil. (F. Aprigliano, Rua Alcindo Guanabara, 24, Sob-Loja 206, Rio de Janeiro)

10–17. **Otorhinolaryngology**, 14th Brazilian congr., Rio de Janeiro, Brazil. (W. Benevides, Rua Alcindo Guanabara, 24, Sob-Loja 206, Rio de Janeiro)

10–17. **Plastic Surgery**, 10th Latin American congr., Buenos Aires, Argentina. (J. Norberto Spera, Riglos 624, Buenos Aires)

11–13. **Color Centers in Alkali Halides**, symp., Univ. of Illinois, Urbana. (D. W. Compton, Dept. of Physics, Univ. of Illinois, Urbana)

11–13. **Communications**, 11th natl. symp., Utica, N.Y. (G. E. Brunette, Communications Div. (EMCT) Rome Air Development Center, Griffiss AFB, New York 13442)

11–13. Metabolic Roles of **Lipids**, symp., Cincinnati, Ohio. (C. H. Hauber, American Oil Chemists' Soc., 35 East Wacker Dr., Chicago 1, Ill.)

11–13. **Manned Spaceflight**, 4th meeting, St. Louis, Mo. (J. F. Yardley, McDonnell Aircraft Corp., P.O. Box 516, St. Louis)

11–13. **National Acad. of Sciences**, fall meeting, Univ. of Washington, Seattle. (H. Neurath, Dept. of Biochemistry, Univ. of Washington, Seattle 98105)

NEW BOOKS

(Continued from page 740)

Theorie der Algebraischen Gleichungen. F. Nevanlinna. Birkhäuser, Basel, Switzerland, 1965. 218 pp. F. 34.50.

Electromagnetic Clutches and Couplings. T. M. Vorob'yeva. Translated from the Russian edition (Moscow, 1960) by O. M. Blunn. A. D. Booth, Translation Ed. Pergamon, New York, 1965. 232 pp. Illus. $9.

Electronic Information Handling. Allen Kent and Orrin E. Taulbee, Eds. Spartan Books, Washington, D.C., 1965. 363 pp. Illus. $11. Twenty-five papers given at a national conference (Pittsburgh, Pa.), October 1964; the conference was sponsored by University of Pittsburgh, Goodyear Aerospace Corporation, and Western Michigan University.

Elementary Contemporary Algebra. Merlin M. Ohmer, Clayton V. Aucoin, and Marion J. Cortez. Blaisdell (Ginn), New York, 1965. 254 pp. Illus. $6.50. A Blaisdell Book in the Pure and Applied Sciences, John Kemeny, Consulting Ed.

Elements of Inorganic Chemistry. Robert A. Plane and Ronald E. Hester. Benjamin, New York, 1965. 204 pp. Illus. Paper, $3.95; cloth, $8. The Physical Inorganic Chemistry Series, edited by Robert A. Plane and Mitchell J. Sienko.

Encyclopedia of Polymer Science and Technology: Plastics, Resins, Rubbers, Fibers. vol. 2, *Amino Resins to Casein.* Herman F. Mark, Norman G. Gaylord, and Norbert M. Bikales, Eds. Interscience (Wiley), New York, 1965. 885 pp. Illus. $50.

The Environment in Modern Physics. A study in relativistic mechanics. C. W. Kilmister. Elsevier, New York, 1965. 142 pp. Illus. $5.

Exploring the Physical Sciences. Willard J. Poppy and Leland L. Wilson. Prentice-Hall, Englewood Cliffs, N.J., 1965. 384 pp. Illus. $6.95.

Foundations of Plasma Dynamics. E. H. Holt and R. E. Haskell. Macmillan, New York, 1965. 528 pp. Illus. $12.95.

General Chemistry. W. F. Luder, Robert A. Shepard, Arthur A. Vernon, and Saverio Zuffanti. Saunders, Philadelphia, ed. 3, 1965. 583 pp. Illus. $8.75.

General Chemistry Workbook: How to Solve Chemistry Problems. Conway Pierce and R. Nelson Smith. Freeman, San Francisco, ed. 3, 1965. 270 pp. Illus. Paper, $2.

The General Theory of Sorption Dynamics and Chromatography. Vladimir Vatslavovich Rachinskii. Translated from the Russian edition (Moscow, 1964). Consultants Bureau, New York, 1965. 98 pp. Illus. Paper, $15.

Heat Transfer in Structures. H. Schuh. Pergamon, New York, 1965. 358 pp. Illus. $10. International Series of Monographs in Aeronautics and Astronautics, Solid and Structural Mechanics Division, vol. 7.

Humidity and Moisture: Measurement and Control in Science and Industry. Based on papers presented at the International Symposium (Washington, D.C.), May 1963, Arnold Wexler, Ed. vol. 3, *Fundamental Standards* (576 pp., $25), edited by Arnold Wexler and William A. Wildhack; vol. 4, *Principles and Methods*

of Measuring Moisture in Liquids and Solids (347 pp., $20), edited by Paul N. Winn, Jr. Reinhold, New York; Chapman and Hall, London, 1965. Illus.

An Introduction to Analysis. Daniel Saltz. Prentice-Hall, Englewood Cliffs, N.J., 1965. 288 pp. Illus. $8.95.

An Introduction to the Principles of Metalworking. Geoffrey W. Rowe. St. Martin's Press, New York, 1965. 320 pp. Illus. $7.

Ionic Aliphatic Reactions. William H. Saunders, Jr. Prentice-Hall, Englewood Cliffs, N.J., 1965. 127 pp. Illus. Paper, $1.95; cloth, $4.50. Foundations of Modern Organic Chemistry Series, edited by Kenneth L. Rinehart, Jr.

Ionospheric Radio Propagation. Kenneth Davies. U.S. Department of Commerce, Washington, D.C., 1965 (order from Superintendent of Documents, Washington, D.C.). 484 pp. Illus. $2.75. National Bureau of Standards Monograph 80.

Laboratory Approach to the Physical Sciences. A project manual. Conrad E. Ronneberg. Houghton Mifflin, Boston, 1965. 165 pp. Illus. Paper, $2.95.

Lunar and Planetary Surface Conditions. Nicholas A. Weil. Academic Press, New York, 1965. 234 pp. Illus. $10. Advances in Space Science and Technology, supplement 2, edited by Frederick I. Ordway, III.

Mathematical Analysis of Observations. B. M. Shchigolev. Translated from the Russian edition (1960) by Scripta Technica. H. Eagle, Ed. Iliffe, London; Elsevier, New York, 1965. 366 pp. Illus. $12.50.

Meson and Baryon Spectroscopy. D. B. Lichtenberg. Springer-Verlag, New York, 1965. 159 pp. Illus. Paper, $2.80. Revised edition of the article published in volume 36 of *Ergebnisse der exakten Naturwissenschaften* (Berlin, 1964).

Nuclear Chemistry. Bernard G. Harvey. Prentice-Hall, Englewood Cliffs, N.J., 1965. 128 pp. Illus. Paper, $1.95; cloth, $3.95. Foundations of Modern Chemistry Series, edited by Robert W. Parry and Henry Taube.

Numbers and Ideals. An introduction to some basic concepts of algebra and number theory. Abraham Robinson. Holden-Day, San Francisco, 1965. 116 pp. Illus. $5.95.

Optical Model of the Atomic Nucleus. Ivan Úlehla, Ladislav Gomolčák, and Zdeněk Pluhař. Czechoslovak Acad. Sciences, Prague, 1964; Academic Press, New York, 1965. 147 pp. Illus. $7.75.

Organometallic Syntheses, vol. 1, *Transition-Metal Compounds*. R. Bruce King. Academic Press, New York, 1965. 198 pp. Illus. $6.50.

Orthogonal Families of Analytic Functions. Bernard Epstein. MacMillan, New York, 1965. 90 pp. Paper. $2.50.

Photon Interactions in the Bev-Energy Range. Proceedings of an international conference (Cambridge, Mass.), January 1963. Bernard T. Feld, Ed. M.I.T. Press, Cambridge, Mass., 1965. Unpaged. Illus. $5. Papers presented at a conference sponsored by the International Union for Pure and Applied Physics, the U.S. Atomic Energy Commission, the U.S. National Science Foundation, and the U.S. Office of Naval Research.

Physical Acoustics: Principles and

Methods. vol. 2, pt. B, *Properties of Polymers and Nonlinear Acoustics*. Warren P. Mason, Ed. Academic Press, New York, 1965. 403 pp. Illus. $14. Six papers: "Relaxations in polymer solutions, liquids, and gels" by W. Philippoff; "Relaxation spectra and relaxation processes in solid polymers and glasses" by I. L. Hopkins and C. R. Kurkjian; "Volume relaxations in amorphous polymers" by Robert S. Marvin and John E. McKinney; "Nonlinear acoustics" by Robert T. Beyer; "Acoustic streaming" by Wesley Le Mars Nyborg; and "Use of light diffraction in measuring the parameter of nonlinearity of liquids and the photoelastic constants of solids" by L. E. Hargrove and K. Achyuthan.

Polyesters. V. V. Korshak and S. V. Vinogradova. Translated from the Russian edition (Moscow) by B. J. Hazzard. J. Burdon, Translation Ed. Pergamon, New York, 1965. 564 pp. Illus. $30.

Principles of Structural Glaciology. The petrography of fresh-water ice as a method of glaciological investigation. P. A. Shumskii. Translated from the Russian by David Kraus. Dover, New York, 1965. 511 pp. Illus. Paper, $3. A revised version based on translations made in 1957–1958 and 1960–1961.

Probability, Random Variables, and Stochastic Processes. Athansios Papoulis. McGraw-Hill, New York, 1965. 595 pp. Illus. $19.50. McGraw-Hill Series in Systems Science.

Problems in Higher Algebra. D. K. Faddeev and I. S. Sominskii. Translated by J. L. Brenner. Freeman, San Francisco, 1965. 508 pp. Paper, $3.95.

Proceedings of the 1965 Heat Transfer and Fluid Mechanics Institute, Los Angeles, Calif., June 1965. Andrew F. Charwat, Ed. Published for the Heat Transfer and Fluid Mechanics Institute by Stanford Univ. Press, Stanford, Calif., 1965. 384 pp. Illus. $10. Twenty-two papers.

The Quaternary. vol. 1. Kalervo Rankama, Ed. Interscience (Wiley), New York, 1965. 322 pp. Illus. $15. Four papers: "The Quaternary of Denmark" by Sigurd Hansen; "The Quaternary of Norway" by Björn G. Andersen; "The Quaternary of Sweden" by Jan Lundqvist; and "The Quaternary of Finland" by J. J. Donner.

Quick Calculus. A short manual of self instruction. Daniel Kleppner and Norman Ramsey. Wiley, New York, 1965. 302 pp. Illus. Paper, $2.25.

Radiative Heat Exchange in the Atmosphere. K. Ya. Kondrat'yev. Translated from the second Russian edition by O. Tedder. C. D. Walshaw, Translation Ed. Pergamon, New York, 1965. 421 pp. Illus. $15.

Miscellaneous Publications

(Inquiries concerning these publications should be addressed to the publisher or agency sponsoring the publication, not to Science.)

Abstracts for 1964 (*Geol. Soc. Am. Spec. Pap. No. 82*). Geological Soc. America, New York, 1965. 400 pp. Paper, $3. Abstracts of papers submitted for meetings in Miami Beach, Fla.; Seattle, Wash.; Baton Rouge, La.; Moscow, Idaho; College, Alaska; and Montreal, Quebec, Canada.

DISSYMMETRIES

At the 39th National Colloid Symposium of the American Chemical Society held on June 21-23, 1965, on the campus of Clarkson College of Technology in Potsdam, N. Y., five papers were presented dealing with light scattering studies on various colloidal systems. In three of these, Brice-Phoenix Light Scattering Photometers were utilized in the investigation of micelles and micellar formation. In the other two, the aerosols and polymer latexes, respectively, were studied by means of our instruments. These five papers were preprinted as were the others presented to this Symposium, by the Academic Press prior to the Symposium and will appear in the regular issues of the *Journal of Colloid Science* later this year.

MICELLAR COLLOIDS

In the paper entitled "Nonionic Surface-Active Compounds. X. Effect of Solvent on Micellar Properties," P. Becher of Atlas Chemical Industries, Inc., Wilmington, Del., has reported on the measurements of the critical micellar concentration and micellar weight for polyoxyethylene lauryl alcohol in water-ethanol and water-dioxane mixtures. He observed that the initial micellar concentration increases and the micellar weight decreases with increasing concentration of organic solvents. When ethanol or dioxane were present at the concentration above about 25%, no micelles are formed. The results were discussed in terms of the free energy changes for micellization.

J. Steigman, I. Cohen and F. Spingola of Polytechnic Institute of Brooklyn ("Micelle Formation by a Long-Chain Cation Surfactant in Aqueous Solutions of the Lower Quaternary Ammonium Bromides") have noticed that the critical micellar concentration of hexadecyltrimethylammonium bromide in water is firstly decreased by the addition of the lower quaternary bromides and then increases considerably at higher salt concentrations. The results were interpreted in terms of the effects of added electrolytes on the hydrogen-bonded structure of water.

M. B. Abramson, R. Katzman and R. Curci of Albert Einstein College of Medicine, Bronx, N. Y., presented a paper on "Turbidimetric Studies of the Interaction of Aqueous Micelles of Phosphatidic Acid with Cations". Aqueous micelles of phosphatidic acid, prepared by ultrasonic treatment, are negatively charged at pH higher than 7. The interaction of these micelles with various cations was studied by turbidimetric titrations. Both 90° scattering and dissymmetry were measured. A procedure has been developed to evaluate from the scattering data the formation constant of the product obtained when calcium ions react with phosphatidic acid in the presence of citrate ions.

COATED AEROSOLS

As a continuation of previous studies on aerosols at Clarkson College of Technology, Potsdam, N. Y., reported earlier in this column, W. F. Espenscheid, E. Willis, E. Matijevic and M. Kerker. ("Aerosol Studies by Light Scattering. IV. Preparation and Particle Size Distribution of Aerosols Consisting of Concentric Spheres") described the preparation of coated aerosols consisting of AgCL core spheres encased in a concentric shell of linolenic acid. Firstly, the AgCl aerosol of uniform particle size is prepared and characterized by light scattering and electron microscopy. The vapors linolenic acid are next condensed upon the AgCl particles forming the coated aerosols. These are then analyzed by the polarization ratio methods described previously, using the theory of scattering by concentric spheres. The evaluation of data was performed in terms of the thickness of coating on each particle or the volume of coated material.

POLYMER LATEXES

In another contribution from Clarkson College of Technology ("Calibration of Light-Scattering Instruments. III. Absolute Angular Intensity Measurements on Mie Scatterers".), J. P. Kratohvil and C. Smart developed the expressions relating the geometrical, optical, and calibration constants of a Brice-Phoenix photometer with the quantities related to the Mie angular intensity functions. The use of polarized incident radiation and the effect of the solid angle subtended by the receiver aperture were explored in detail. A Dow polystyrene latex of narrow size distribution and large diameter (1.3 μ) was studied. An excellent agreement between the theoretical Mie intensity functions, computed for this latex, and the corresponding absolute intensities was obtained over the whole angular range for unpolarized, vertically polarized, and horizontally polarized incident light.

For complete information on the instrumentation used in these studies, write to the **PHOENIX PRECISION INSTRUMENT CO., 3803-05 N. 5th St. Philadelphia, Penna. 19140**

An Archaeological Reconnaissance in the Birch Creek Valley of Eastern Idaho (*Idaho State Univ. Museum Occasional Papers No. 13*). Earl H. Swanson, Jr., and Alan Lyle Bryan. Idaho State Univ. Museum, Pocatello, 1964. 36 pp. Illus. Paper, $1.

The British Museum (Natural History) Expedition to East Nepal 1961–62: Introduction and Lists of Localities (*Bull. Brit. Museum Zool.* **12**, *No. 3*). J. G. Sheals and William G. Inglis. British Museum (Natural History), London, 1965. 20 pp. Illus. Plates. Paper, 12s.

Collaborative Tests. Report of a symposium (Brighton, England), May 1964. Pharmaceutical Press, London, 1965. 58 pp. Illus. Paper, 12s. 6d. Eight papers.

Contributions to the Prehistory of Vancouver Island (*Idaho State Univ. Museum Occasional Papers No. 15*). Katherine H. Capes. Idaho State Univ. Museum, Pocatello, 1964. 128 pp. Illus. Paper, $2.

A Critical Review of the Marine Nematode Genus Euchromadora de Man, 1886 (*Bull. Brit. Museum Zool.* **12**, *No. 5*). John W. Coles. British Museum (Natural History), London, 1965. 42 pp. Illus. Paper, 13s.

Diabetes-Related Literature Index. By authors and by key words in the title. For the year 1962. (*J. Am. Dietet. Assoc.* **14**, *suppl. 1*). Irving Graef, Ed. American Diabetes Assoc., New York, 1965. 487 pp. Paper. There are approximately 3200 articles, arranged under both authors and key words.

The Distribution and Abundance of Foraminifera in Long Island Sound. *Smithsonian Inst. Misc. Collections* **149**, *No. 1*). Martin A. Buzas. Smithsonian Institution, Washington, D.C., 1965. 98 pp. Illus. Plates. Paper, $1.50.

ESCP Reference Series. Nos. 4–6. No. 4, *Selected Maps and Earth Science Publications: For the States and Provinces of North America*, compiled by William H. Matthews III (44 pp.); No. 5, *Free Materials for Earth Science Teachers*, compiled by William H. Matthews III and Rolland B. Bartholomew (25 pp.); No. 6, *Planetariums, Observatories, and Earth Science Exhibits*, compiled by William H. Matthews III (36 pp.). Prentice-Hall, Englewood Cliffs, N.J., 1965. Paper, $1 per set. Publications of the Earth Science Curriculum Project, an interdisciplinary science program for secondary schools. The project is sponsored by the American Geological Institute.

The Feeding Mechanisms and Preferred Foods of Three Species of Pycnogonida (*Bull. Brit. Museum Zool.* **12**, *No. 6*). William G. Fry. British Museum (Natural History), London, 1965. 29 pp. Illus. Plates. Paper, 16s.

The First Airplane Diesel Engine: Packard Model DR-980 of 1928 (*Annals of Flight* **1**, *No. 2*). Robert B. Meyer. Smithsonian Institution, Washington, D.C., 1964. 56 pp. Illus. Paper 60¢ (order from Superintendent of Documents, Washington, D.C.).

Form and Function in the Evolution of the Vermetidae (*Bull. Brit. Museum Zool.* **11**, *No. 9*). J. E. Morton. British Museum (Natural History), London, 1965. 52 pp. Illus. Paper, 18s.

The Growth of U.S. Population. Analysis of the problems and recommendations for research, training, and service. Committee on Population, William D. McElroy, Chairman. Natl. Acad. of Sciences–Natl. Research Council, Washington, D.C., 1965. 35 pp. Paper, $1.25.

Hexahedrites (*Smithsonian Inst. Misc. Collections* **148**, *No. 5*). Edward P. Henderson. Smithsonian Institution, Washington, D.C., 1965. 41 pp. Illus. Plates. Paper, $1.

An Index to the Systematic Collection of Minerals in the British Museum (Natural History). British Museum (Natural History), London, ed. 28, 1965. 32 pp. Paper, 4s.

Industrial Synthesis and Applications of Organometallics (*Ann N.Y. Acad. Sci.* **125**, *No. 1*). Harold E. Whipple, Ed. New York Acad. Sciences, New York, 1965. 248 pp. Illus. Paper, $7. Twenty-one papers presented at a conference (New York), June 1964.

Intergovernmental Relations in the United States (*Ann. Amer. Acad. Polit. Soc. Sci.* **359**). Harry W. Reynolds, Jr. American Acad. Political and Social Science, Philadelphia, 1965. 267 pp. Paper, $2.50; cloth, $3.50. Sixteen papers.

Jare Scientific Reports, Biology. Series E, Nos. 22 and 23. No. 22, *Two Small Collections of Copepods from the Antarctic* (40 pp.) by Otohiko Tanaka; No. 23, *Some Octocorals from the Antarctic Waters off Prince Harald Coast* (20 pp.) by Huzio Utinomi. Polar Section, Natl. Science Museum, Tokyo, Japan, 1964. Illus. Plates. Paper.

Kapingamarangi: Social and Religious Life of a Polynesian Atoll (*Bishop Museum Bull. No. 228*). Kenneth P. Emory. Bishop Museum Press, Honolulu, 1965. 369 pp. Illus. Paper, $9.50.

The Laser (*Ann. N.Y. Acad. Sci.* **122**, *No. 2*). Harold E. Whipple, Ed. New York Acad. Sciences, New York, 1965. 264 pp. Illus. Paper, $7. Twenty-eight papers presented at a conference held in May 1964.

Manual of Tide Observations. U.S. Coast and Geodetic Survey, Washington, D.C., 1965 (order from Superintendent of Documents, Washington, D.C.). 80 pp. Illus. $2. This is a revision of *Special Publication No. 196*.

Medical Uses of Radium and Radium Substitutes. Conference summary and conclusions (Chicago, Ill.), September 1964. U.S. Department of Health, Education, and Welfare, Washington, D.C., 1965. 44 pp. Paper.

Memoirs of the Institute for Protein Research, Osaka University. vol. 7. Kozo Narita and Tatsuo Miyazawa, Eds. Institute for Protein Research, Osaka Univ., Osaka, Japan, 1965. 384 pp. Illus. Paper. Thirty-nine papers and abstracts of 21 papers.

Memory Bibliography 1961–1964. An edited compilation of 430 references to the world literature on memory. Neurosciences Research Program, Brookline, Mass., 1965. 60 pp. Paper.

Methods of Surveying and Monitoring Marine Radioactivity. Report of an *ad hoc* panel of experts. International Atomic Energy Agency, Vienna, 1965. 105 pp. Paper, $2 (order from Natl. Agen-

cy for International Publications, New York). *Safety Series, No. 11.*

Mitral Valve Disease (*Ann. N.Y. Acad. Sci. 118, No. 10*). Harold E. Whipple, Ed. New York Acad. Sciences, New York, 1965. 68 pp. Illus. Paper, $1.50.

A Monograph of Parmelia, Subgenus Amphigymnia (*Contrib. U.S. Nat. Herbarium* **36**, *pt. 5*). Mason E. Hale, Jr. Smithsonian Institution, Washington, D.C., 1965. 168 pp. Illus. Paper.

The National Aeronautical Collections (*Publ. No. 4255*). Smithsonian Institution National Air Museum. Paul E. Garber. Smithsonian Institution, Washington, D.C., ed. 10. 1965. 174 pp. Illus. Paper, $2.

The Natural Resources of Northern Wisconsin: A Wisconsin Academy Profile (*Trans. Wisconsin Acad. Sci.* **53**, *pt. A*). Goodwin F. Berquist, Jr., Ed. Wisconsin Acad. Sciences, Arts, and Letters, Madison, 1964. 160 pp. Illus. Paper, $2.50. Twenty-one papers presented at the 94th annual meeting of the Academy.

New and Noteworthy Amphibians and Reptiles from British Honduras (*Bull. Florida State Museum Biol. Sci.* **9**, *No. 3*). Wilfred T. Neill. Florida State Museum, Gainesville, 1965. 54 pp. Illus. Paper, 70¢.

The Non-Therapsid Reptiles of the Lufeng Basin, Yunnan, China (*Fieldiana, Geol. 15, No. 1*). David Jay Simmons. Chicago Natural History Museum, Chicago, 1965. 93 pp. Illus. Paper, $3.

Observations on Marine Mammals in Florida Waters (*Bull. Florida State Museum Bio. Sci.* **9**, *No. 4*). James N. Layne. Florida State Museum, Gainesville, 1965. 51 pp. Illus. Paper, 75¢.

Pesticide Handbook-Entoma. Compiled and edited by Donald E. H. Frear. College Science Publishers, State College, Pa., ed. 17, 1965. 315 pp. Paper, $3; cloth, $4.

The Planetary Food Potential (*Ann. N.Y. Acad. Sci.* **118**, *No. 17*). Harold E. Whipple, Ed. New York Acad. Sciences, New York, 1965. 74 pp. Illus. Paper, $2.50.

Planning for Medical Progress Through Education. Lowell T. Coggeshall. Association of American Medical Colleges, Evanston, Ill., 1965. 117 pp. Illus. Paper, $2. A report submitted to the executive council of the Association.

A Preliminary Revision of the Indo-Pacific Alosinae (Pisces: Clupeidae) (*Bull. Brit. Museum Zool.* **12**, *No. 4*). P. J. P. Whitehead. British Museum (Natural History), London, 1965. 42 pp. Illus. Paper, 16s.

Proceedings of the South Dakota Academy of Science. Sioux Falls, April 1964. W. O. Read, Ed. Univ. of South Dakota, Vermillion, 1965. 227 pp. Illus. Paper, $2. Thirty papers presented at the 49th annual meeting, the award winning paper in the Junior Academy of Science, and abstracts of 44 papers presented before the senior and collegiate sections of the Academy.

Protein Requirements. Report of a Joint FAO/WHO Expert Group. World Health Organization, Geneva, Switzerland, 1965 (order from Columbia Univ. Press, New York). 72 pp. Illus. Paper, $1.25. *World Health Organization Technical Report Series, No. 301.*

Public Health Service Numbered Publi-

cations: A Catalogue 1950–1962. U.S. Department of Health, Education, and Welfare, Washington, D.C., 1965 (order from Superintendent of Documents, Washington, D.C.). 198 pp. Paper, $1.

Revision of the Family Pneumoridae (Orthoptera: Acridoidea) (*Bull. Brit. Museum Entomol.* **15**, *No. 10*). V. M. Dirsch. British Museum (Natural History), London, 1965. 74 pp. Illus. Paper, 26s.

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Silurian Polyzoa from Benthall Edge, Shropshire (*Bull. Brit. Museum Geol.* **10**, *No. 4*). D. E. Owen. British Museum (Natural History), London, 1965. 25 pp. Plates. Paper, 27s.

The Slide Rule Handbook. James Owen Perrine. Baywood, New York, 1965 (available from Gordon and Breach, New York). 112 pp. Ilus. Paper, $3; cloth, $5.

Soviet Antarctic Expedition: Information Bulletin. vol. 3. Translated from the Russian by Scripta Technica and the Geophysical and Polar Research Center, University of Wisconsin. Elsevier, New York, 1965. 389 pp. Illus. $15.

A Study of the Early Tertiary Condylarthran Mammal Meniscotherium (*Smithsonian Inst. Misc. Collections* **149**, *No. 2*). C. Lewis Gazin. Smithsonian Institution, Washington, D.C., 1965 (order from Superintendent of Documents, Washington, D.C.). 102 pp. Illus. Plates, Paper, $2.

The Systematics, Evolution and Zoogeography of Staphlinid Beetles Associated with Army Ants (Coleoptera, Staphylinidae) (*Fieldiana, Zool.* **47**, *No. 2*). Charles H. Seevers. Chicago Natural History Museum, Chicago, 1965. 215 pp. Illus. Paper, $5.50.

Taxonomy and Nomenclature of the Bronzed Cowbird (*Fieldiana, Zool.* **44**, *No. 22*). Kenneth C. Parkes and Emmet R. Blake. Chicago Natural History Museum, Chicago, 1965. 10 pp. Paper, 50¢.

Ten Conferences on the Training of Teachers of Elementary School Mathematics. Report No. 11. Committee on the Undergraduate Program in Mathematics, Berkeley, Calif., 1965. 144 pp. Paper.

The Three-C Site, an Early Pueblo II Ruin in Chaco Canyon. (*Univ. New Mexico Publ. Ser. Anthropol. No. 13*). Gordon Vivian. Univ. of New Mexico Press, Albuquerque, 1965. 48 pp. Illus. Paper, $2.

Transactions of the Wisconsin Academy of Sciences, Arts and Letters. vol. 53. Goodwin F. Berquist, Jr., Ed. Wisconsin Acad. Sciences, Arts and Letters, Milwaukee, 1964. 287 pp. Illus. Paper, $4. Sixteen papers.

The Types of Proctotrupoidea (Hymenoptera) in the British Museum (Natural History) and in the Hope Department of Entomology, Oxford (*Bull. Brit. Museum Entomol. Suppl. 1*). L. Masner. British Museum (Natural History), London, 1965. 154 pp. Paper, 50s.

Vernacular Maize Names and Some African Tribal Migrations (*Ann. N.Y. Acad. Sci.* **118**, *No. 12*). Harold E. Whipple, Ed. New York Acad. Sciences, New York, 1965. 20 pp. Paper, $1.50.