

SCIENCE

27 March 1964

Vol. 143, No. 3613

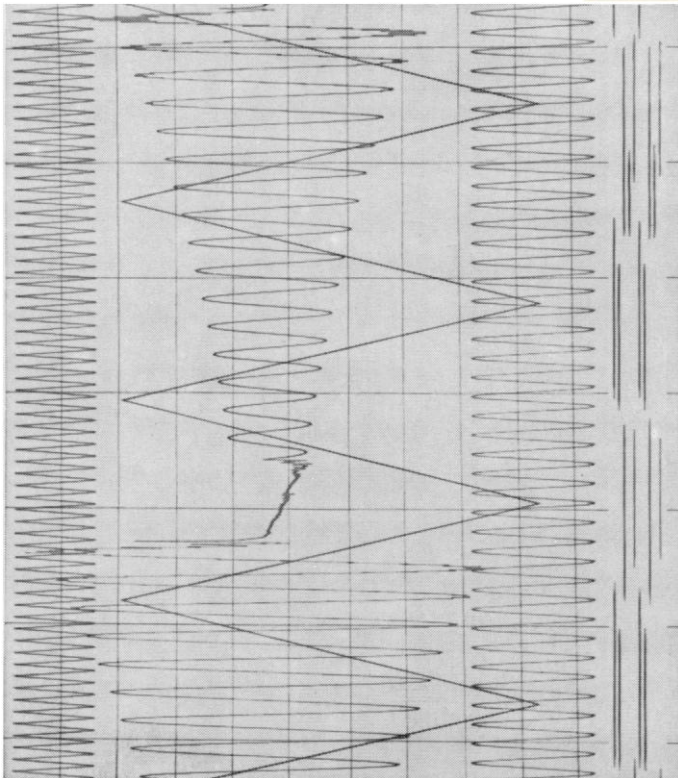
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Index Issue

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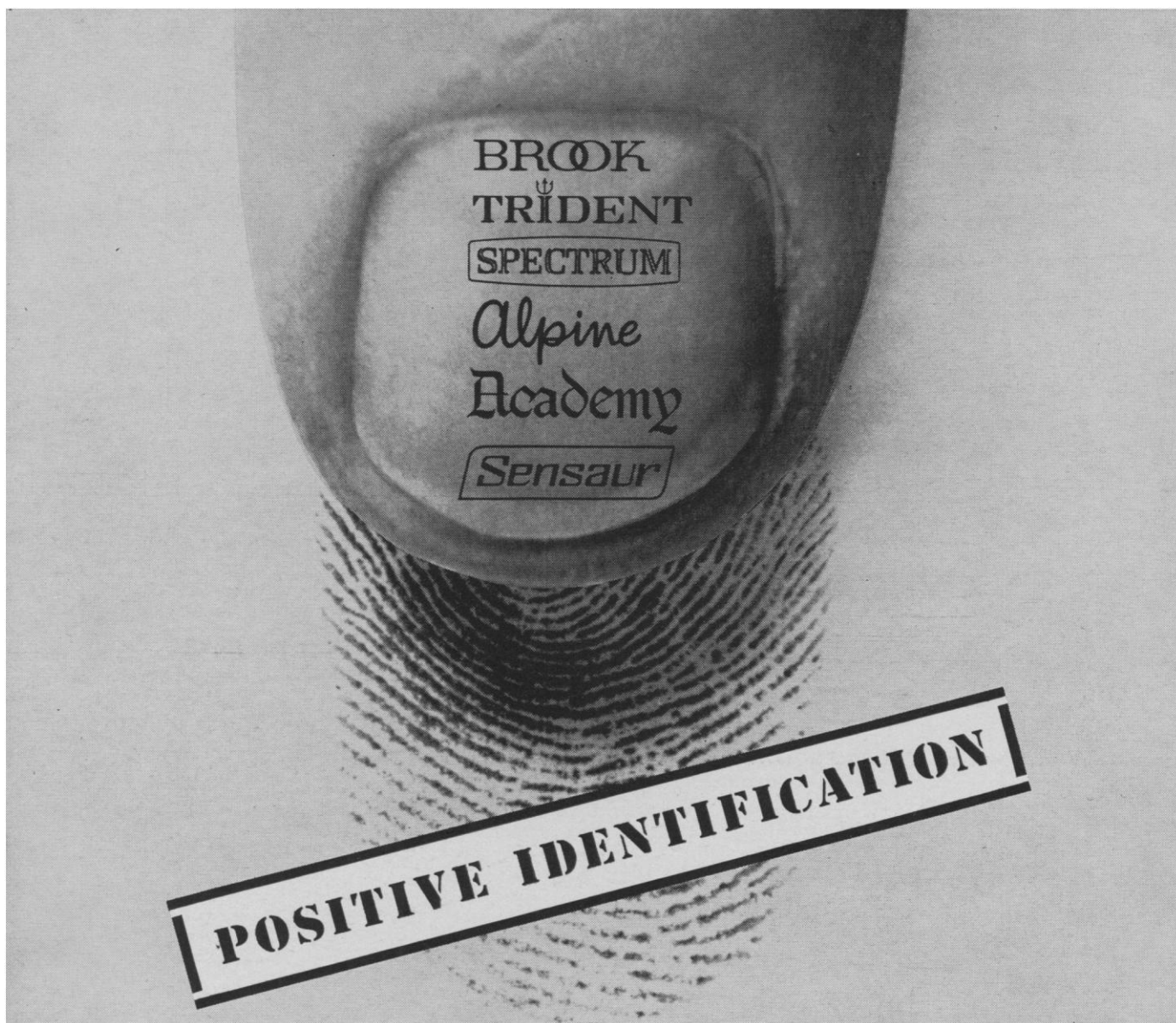


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Vol. 143, No. 3613

SCIENCE

LETTERS	"Brain Drain" Figures: <i>J. A. Saxton</i> ; Mohole: <i>G. Allott</i> ; Rhythm Method: <i>R. G. Potter, Jr.</i> ; Stating the Problem: <i>M. Bunge</i>	1393
EDITORIAL	Federal Support of Basic Research	1397
ARTICLES	Earthquake Source Mechanisms: <i>H. Benioff</i>	1399
	Although progress has been made in the understanding of earthquakes, many problems remain.	
	The Bearing of Philosophy on the History of Science: <i>A. Grünbaum</i>	1406
	Philosophical mastery of the special theory of relativity is required for unraveling its history.	
	Soviet-American Exchanges—Tit-for-Tat Goodwill: <i>S. S. Rosenfeld</i>	1413
	Carefully regulated flow of people plays a small, but significant, role in East-West relations.	
NEWS AND COMMENT	Tobacco: Slow Follow-up on PHS Report; SLAC: Building an Accelerator; Elliott Committee: Hearings Published	1417
BOOK REVIEWS	Birth and Death of a Myth: <i>H. A. Bent</i>	1425
	Anthropometric Survey of Turkey, Greece, and Italy, reviewed by <i>J. L. Angel</i> ; other reviews by <i>T. W. Marton</i> , <i>C. Heimsch</i> , <i>D. P. Keily</i> , <i>W. H. Wagner, Jr.</i> , <i>F. Fremont-Smith</i> , <i>A. T. McPherson</i> , <i>H. Deason</i> , <i>C. H. Ware, Jr.</i> , <i>P. A. Woke</i>	1426
REPORTS	Xenon Fluorosilicate and Related Compounds: <i>A. F. Clifford</i> and <i>G. R. Zeilenga</i>	1431
	Origin of Diamonds in the Ureilites: <i>M. E. Lipschutz</i>	1431
	Mössbauer Effect for Surface Atoms: Iron-57 at the Surface of η Al_2O_3 : <i>P. A. Flinn</i> , <i>S. L. Ruby</i> , <i>W. L. Kehl</i>	1434
	Electrical and Thermal Measurements with Bridgman Anvils: <i>R. S. Kirk</i> and <i>R. J. Vaisnys</i>	1436
	Giant Polytene Chromosomes in Hypodermal Cells of Developing Footpads of Dipteran Pupae: <i>J. M. Whitten</i>	1437

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6-Aminopenicillanic Acid: Inhibition of Destruction of Cephalosporin C by Bacteria: <i>R. B. Walton</i>	1438
Compact Bone in Chinese and Japanese: <i>S. M. Garn, E. M. Pao, M. E. Rihl</i>	1439
Molecular and Submolecular Localization of Two Isoantigens of Mouse Immunoglobulins: <i>R. I. Mishell and J. L. Fahey</i>	1440
Polymer Similar to Polydeoxyadenylate-Thymidylate in Various Tissues of a Marine Crab: <i>T. Cheng and N. Sueoka</i>	1442
Homocystinuria: An Enzymatic Defect: <i>S. H. Mudd et al.</i>	1443
Erythromycin: Mode of Action: <i>A. D. Wolfe and F. E. Hahn</i>	1445
Membrane Properties of Barnacle Muscle Fiber: <i>S. Hagiwara, K. Naka, S. Chichibu</i> ..	1446
Electrical Resistance of Cell Membranes of <i>Avena</i> Coleoptiles: <i>N. Higinbotham,</i> <i>A. B. Hope, G. P. Findlay</i>	1448
Guanine: Formation during the Thermal Polymerization of Amino Acids: <i>C. Ponnampereuma et al.</i>	1449
X-ray Diffraction Study of a DNA Which Contains Uracil: <i>R. Langridge and</i> <i>J. Marmur</i>	1450
Unusual Aggregation of a Nonfunctional Tobacco Mosaic Virus Protein: <i>M. Zaitlin and W. R. Ferris</i>	1451
Sensitivity of Female Inbreds of <i>Cucumis sativus</i> to Sex Reversion by Gibberellin: <i>O. Shifriss and W. L. George, Jr.</i>	1452
Actinomycin D: Suppression of Recovery in X-Irradiated Mammalian Cells: <i>M. M. Elkind, G. F. Whitmore, T. Alescio</i>	1454
Excess Lactate: An Index of Reversibility of Shock in Human Patients: <i>G. Broder and M. H. Weil</i>	1457
Defense of Mate and Mating Chamber in a Wood Roach: <i>H. Ritter, Jr.</i>	1459
Lower Limit of Water Availability to Plants: <i>W. R. Gardner and R. H. Nieman</i>	1460
Radiation Induced Aversion to Alcohol: <i>L. J. Peacock and J. A. Watson</i>	1462

MEETINGS	Zoonoses: <i>N. D. Levine</i> ; Neutron Irradiations: Biological Effects: <i>H. H. Smith</i> ; Forthcoming Events	1464
-----------------	--	------

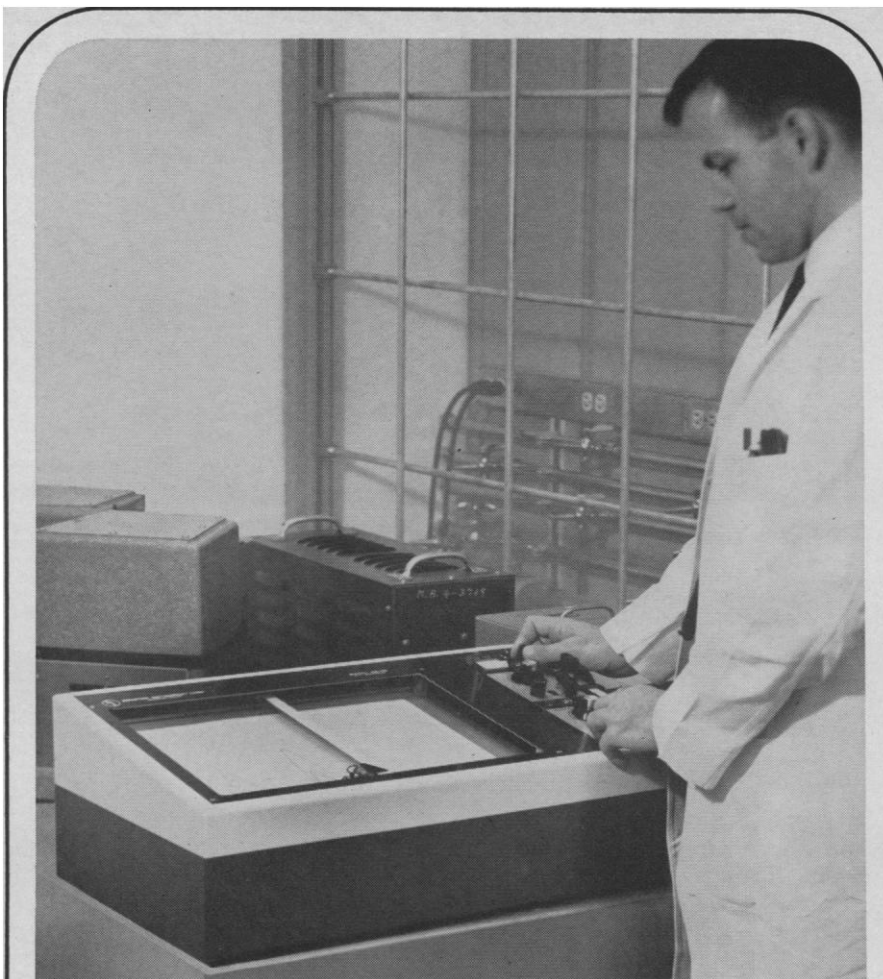
DEPARTMENTS	New Products	1488
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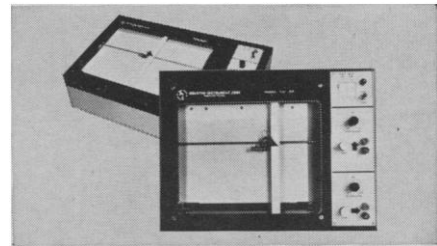
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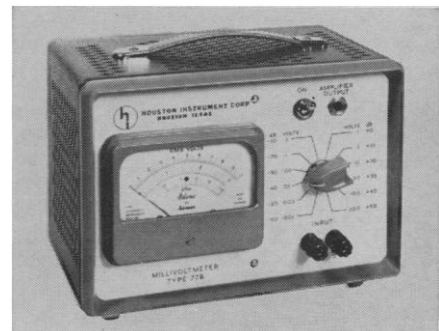
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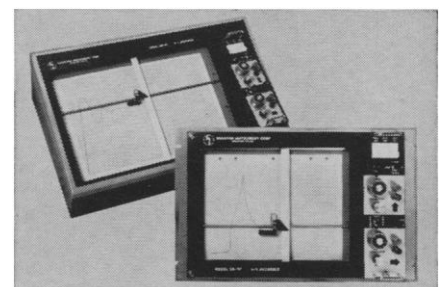
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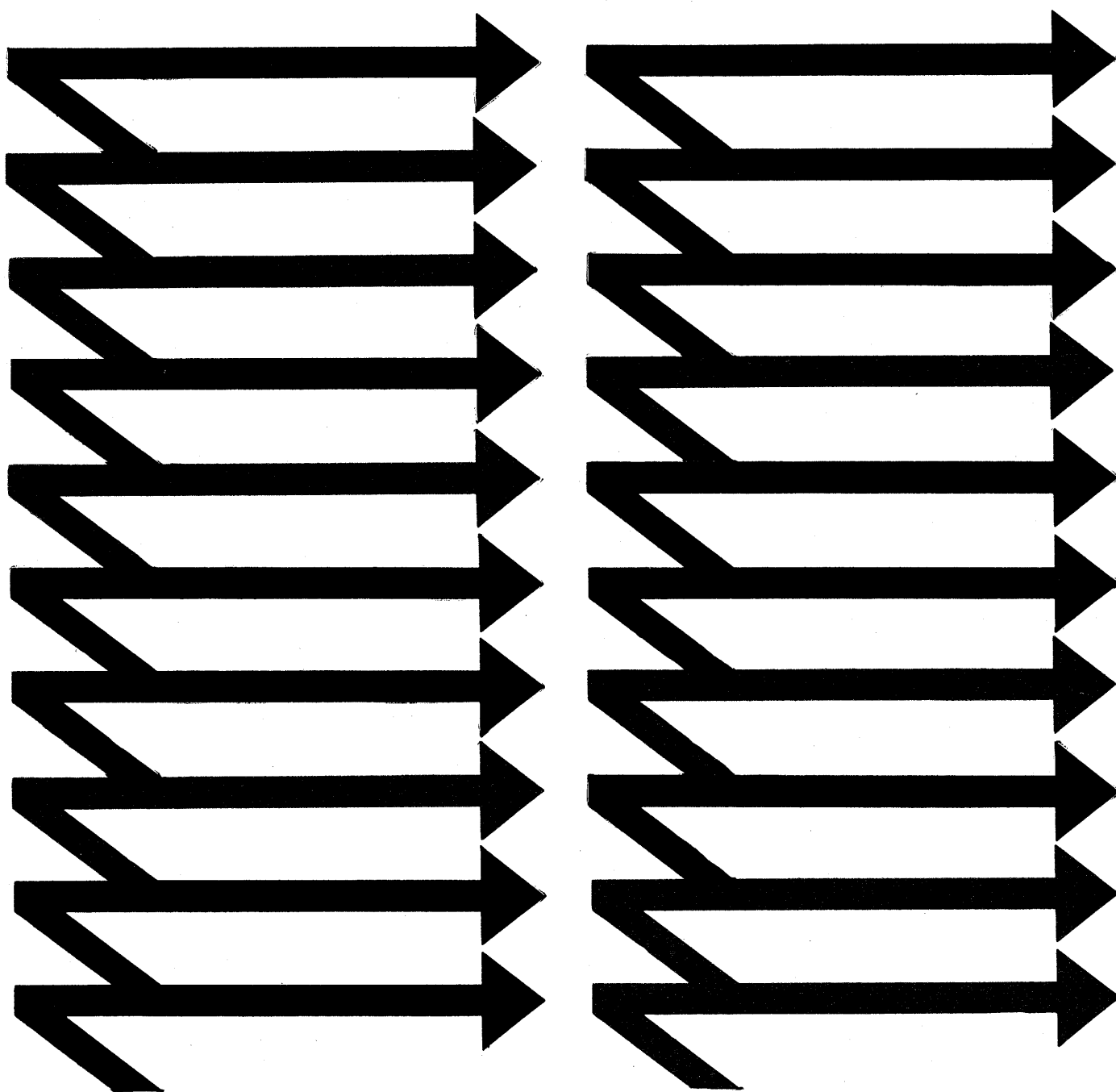
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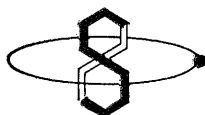
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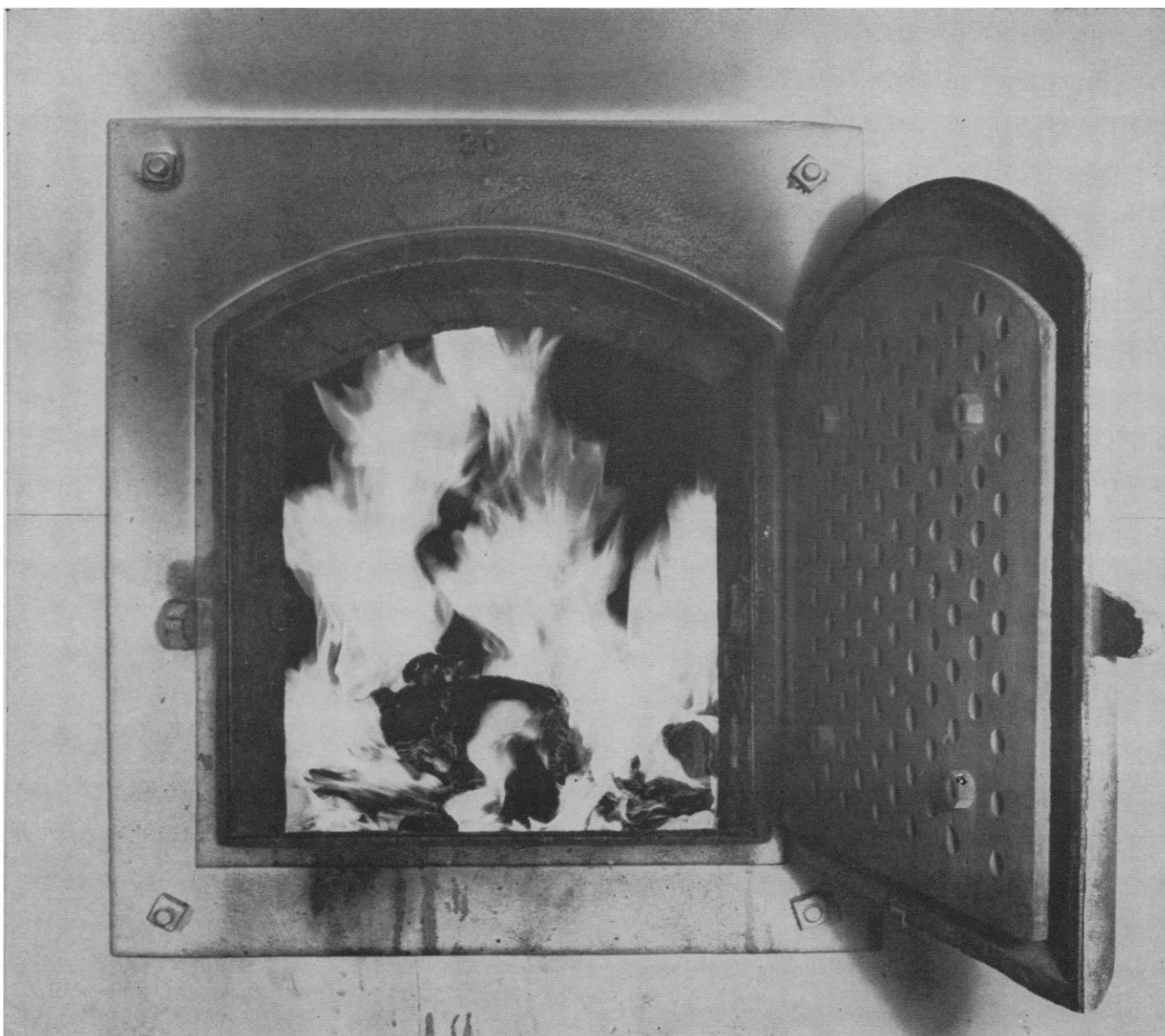
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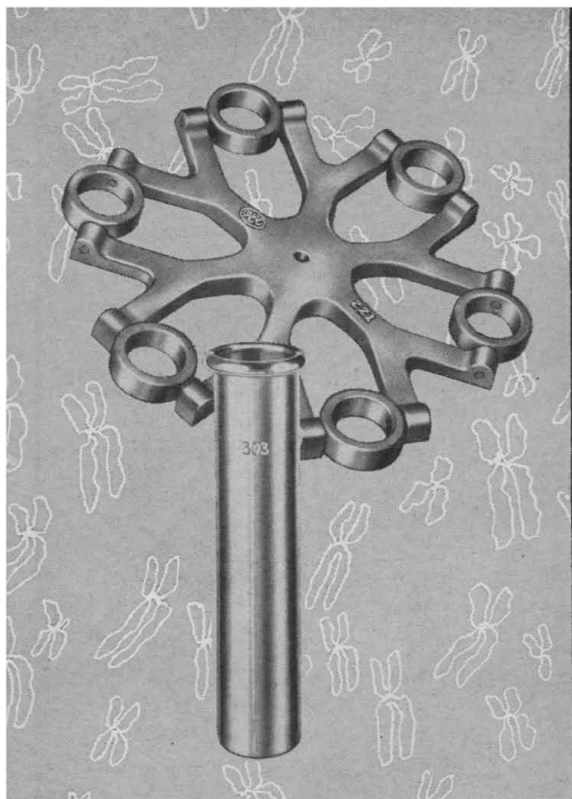
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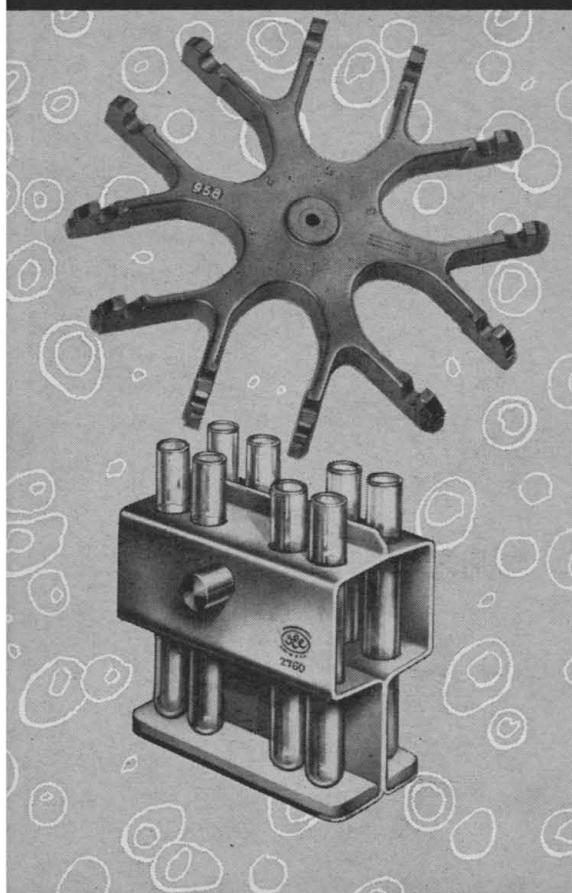
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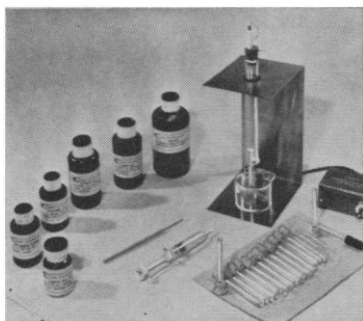
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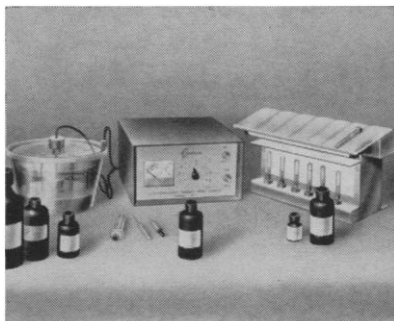
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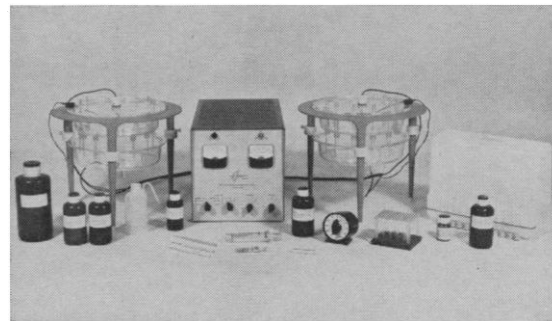
now in **3** sizes to fit each need . . . and budget



Trial Kit, with Power Source 150 for the student or occasional user. Runs one sample at a time. Price in U.S.A. \$69.*



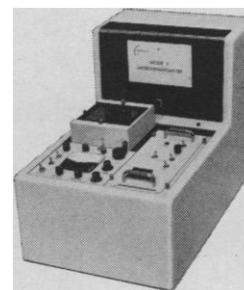
New Model 6, with Power Source 200 for the limited-budget laboratory with regular but modest volume. Runs six samples at a time. Price in U.S.A. \$636.*



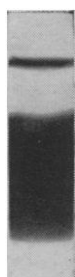
The Model 12, with Power Sources 300 or 1400 (as shown) for the busy researcher or high-volume clinical laboratory. Runs 12-36 samples at a time. Prices in U.S.A. from \$1080.*

All systems include full set of glassware, accessories, and chemicals needed to produce the remarkably sharp and precise separation shown in the normal serum sample above. Resolution is thousands of times more sensitive than paper, agar, cellulose acetate or starch block, and many times finer than starch gel. Fast (30 minute separation) and reproducible. Gels are transparent for quantitation and photography on the Model E Microdensitometer.

Already widely used in animal and plant protein research and in clinical investigation, Disc Electrophoresis now opens the way to sophisticated diagnostic-prognostic indications not previously obtainable. **Some typical separations of clinical significance:**



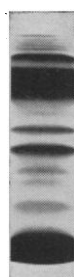
Model E
Microdensitometer



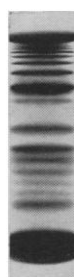
Hb (A-A₂)



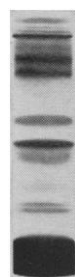
Ser. LDH
(liver path.)



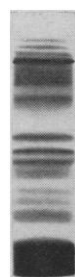
Ser. Prot.
(myeloma)



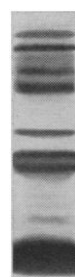
Ser. Prot.
(macroglubulinemia)



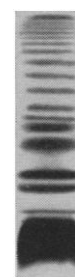
Ser. Prot.
(nephritis)



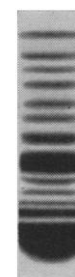
Ser. Prot.
(sarcoid)



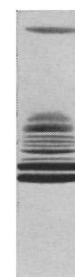
Ser. Prot.
(rheum. fever)



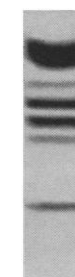
Ser. Muc.
(TB)



Ser. Muc.
(lung cancer)



Ser. Muc.
(schizophr.)



Urine HCG
(pregnancy)

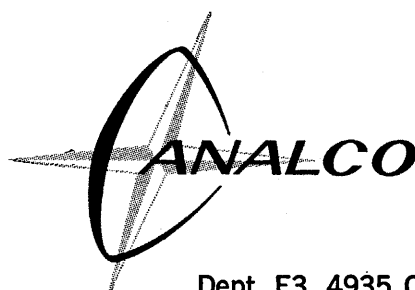
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(Continental Room, Conrad Hilton)

or write to:



*Export prices on request

Dept. E3, 4935 Cordell Avenue, Bethesda, Maryland 20014

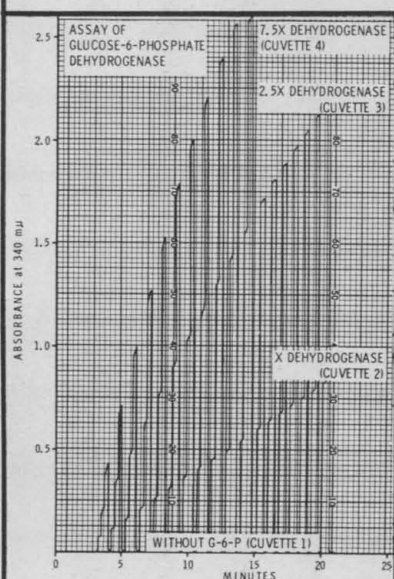
Enzyme Reaction Rates

Liquid Column Chromatography

Sucrose Density Gradients

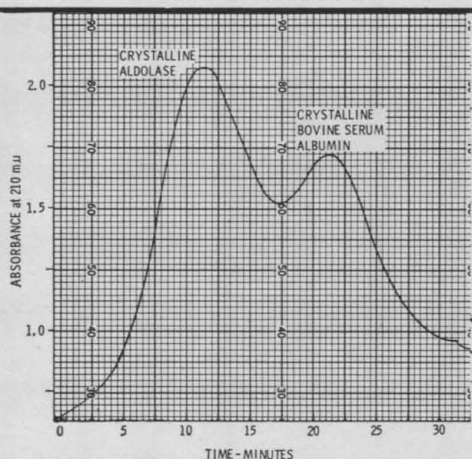
DNA-RNA Thermal Denaturation

All of These and Many Other Possible Applications with One Versatile Research Tool having 4 Channel Recording Capability



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

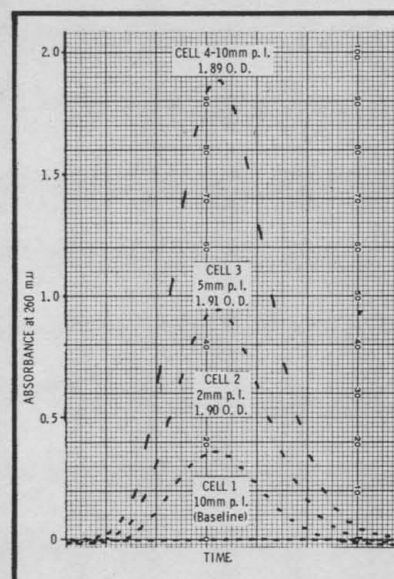
Scanning for protein using the sucrose density gradient method. A 10 mm pathlength Gilford Flow-Through Cuvette was employed with the Gilford Spectrophotometric Recording System to produce the record shown.



The Gilford Model 2000

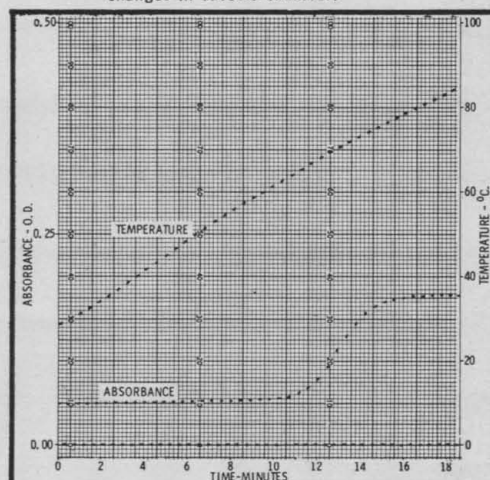
This highly productive spectrophotometric system has the essential flexibility to keep pace with changing directions in research. Based upon a unique photometric system with an output linear with absorbance over a wide range, the Model 2000 system offers exceptional sensitivity and stability together 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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- 3 it will accept the greatest **variety** of detectors — alpha, beta, gamma, low background, windowless flow or windowed flow.

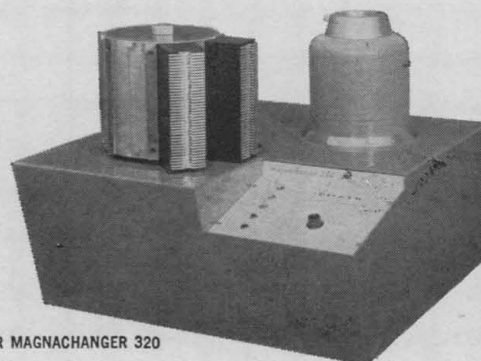
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PICKER MAGNACHANGER 320



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The Perkin-Elmer Model 800 was the first gas chromatograph to incorporate differential flame ionization detection, dual columns and a highly accurate linear tem-

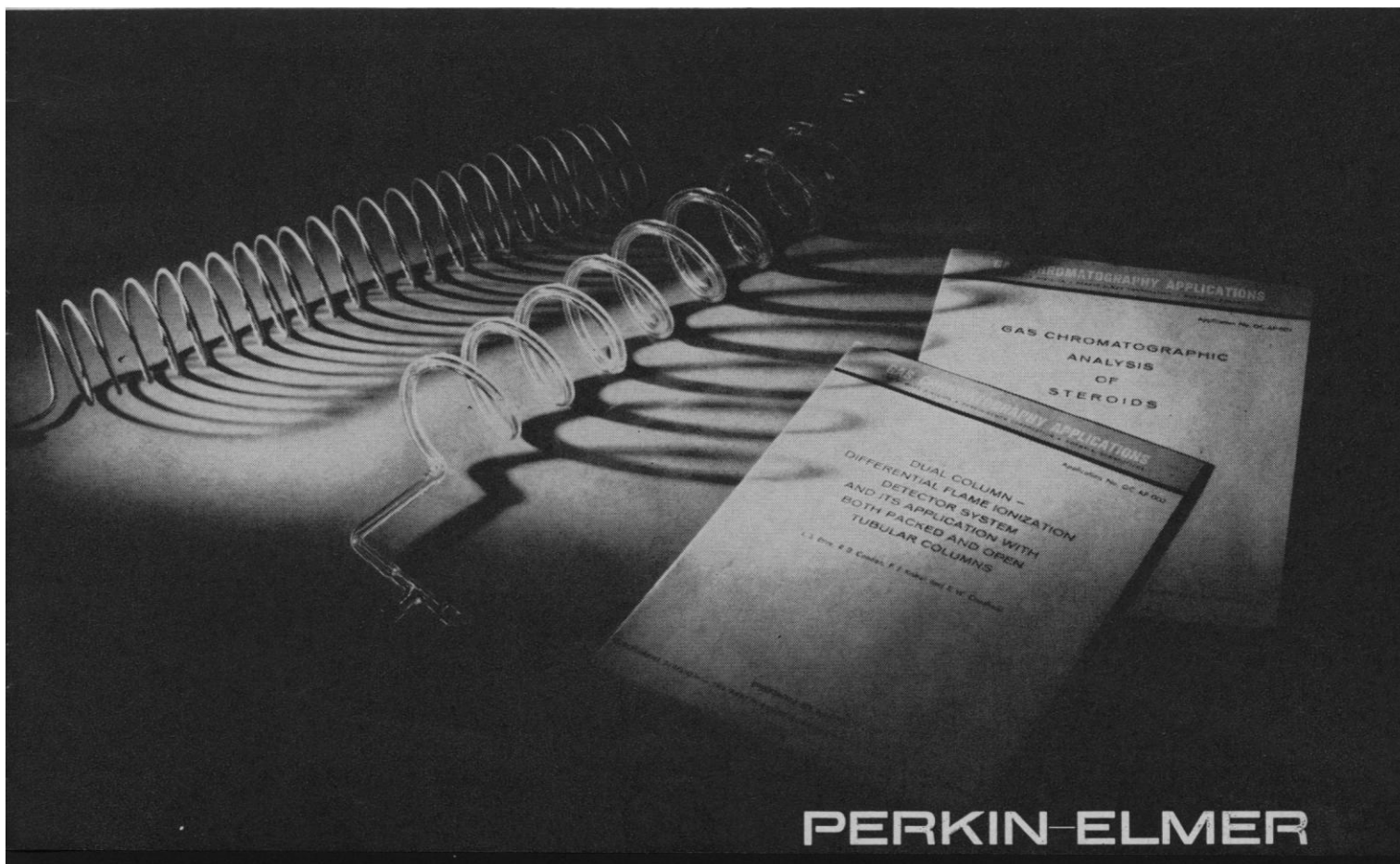
perature programmer. It has set new standards of performance because of its sensitivity, high-temperature baseline stability and Dynathermal oven temperature control.

Perkin-Elmer now makes available the Model 801, with the operating features of the Model 800, except that it has an all-glass column and injector system in place of the Model 800's metal construction. The versatility of these two instruments is pointed up in the brochures illustrated below.

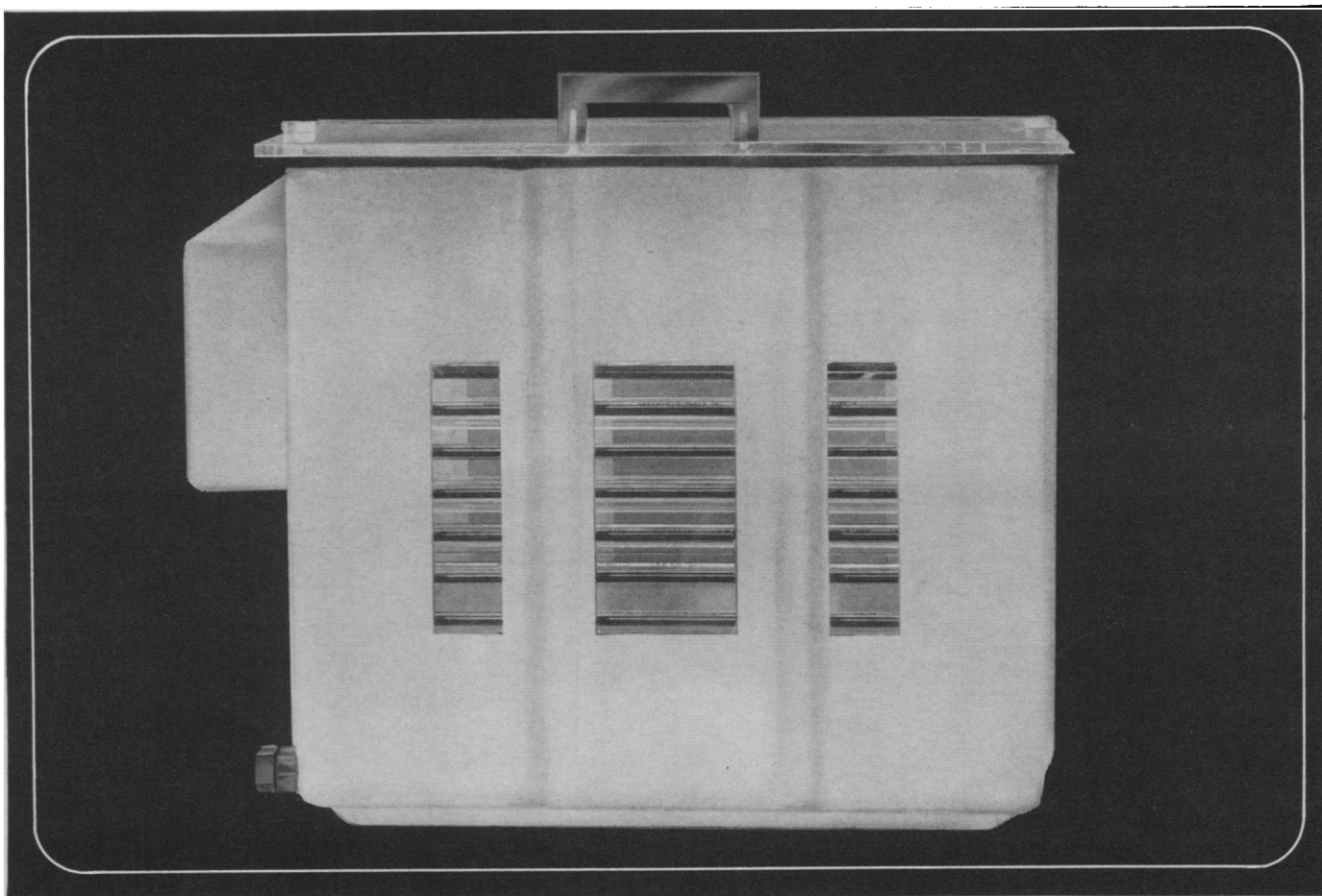
For the analysis of samples containing non-vaporizable residues, or those that might react with metal injectors or columns, the

Model 801's all-glass injector ports are quickly and easily removed, cleaned and replaced. The Model 801, like the Model 800, is a thoroughly unique instrument—unmatched commercially—in accurate control of isothermal conditions, and in speed of response to rapid-rate temperature programs. For such programming, 12 linear heating rates are provided, from 0.5–48°C/min. Maximum oven temperature is 400°C.

Further information, including copies of the brochures illustrated, is available on request. Write to Instrument Marketing Division, Perkin-Elmer Corporation, 910 Main Avenue, Norwalk, Conn.



PERKIN-ELMER



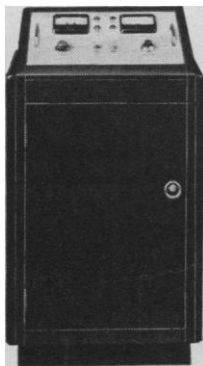
high voltage electrophoresis

Vanguard High Voltage Analytical Electrophoresis offers time-saving separation with unparalleled reliability and versatility. One of the many outstanding features incorporated in this system is the constant temperature control. Temperature gradients on the paper are held to an absolute minimum, resulting in maximum reproducibility of separations. Vanguard High Voltage Electrophoresis is available with 5,000 or 10,000 Volt power supplies and single or double compartment tanks. ■ Leakproof molded fiberglass tank—shockproof and breakage-resistant—no contamination ■ Large lucite observation windows—three on each side of tank ■ Clear, acid-resistant, acrylic plastic paper rack

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■ Use multiple strips or large sheets for two-dimensional electrophoresis ■ Voltage regulated for constant migration rates ■ Current regulation optional ■ Built-in timer automatically turns system off ■ Single or double tanks available ■ Entire system completely interlocked for maximum safety. Write or phone for complete specifications.

Model 910
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RADIOMETER Model TTT-1

Accessories Available:

ELS12: A master switch unit permitting the use of several titration stands for large volume routine titrations.

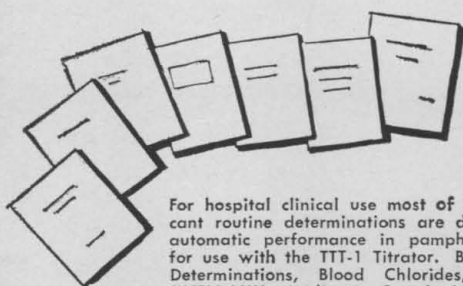
PHA622: External meter expanding to full scale the biological range of 6-8 pH.

PHA630T: External Scale Expander providing reading accuracy of .003 pH over the entire range 0-14 pH.

SBR2/SBU1: Recorder for use as a Titrigraph and pH Stat.

TTA1: Titration stands for automatic or manual titrations.

Electrodes: A complete catalogue of standard and special electrodes for all applications.



For hospital clinical use most of the significant routine determinations are detailed for automatic performance in pamphlet form — for use with the TTT-1 Titrator. Blood Sugar Determinations, Blood Chlorides, Nitrogen (KJELDAHL), Acidity in Gastric Juices, Titratable Acid in Urine, and many others are available. Both the determination of Acetylcholine Esterase in Serum, and the automatic recording of Choline Esterase activities are fully detailed.

The most,
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- As a highly stable pH Meter — the Radiometer TTT-1 features a large 160 mm. mirror scale with reading accuracies down to $\pm .02$ pH; and a high degree of zero and amplifier stability. As an Automatic Titrator, complete and automatic control of the end point is assured for either up or down scale titrations, with control over the rate at which the end point is approached and shut off delay after the last addition of titrant.

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Special output terminals provide for the use of recorders, relays for process control, and a wide variety of useful accessories.

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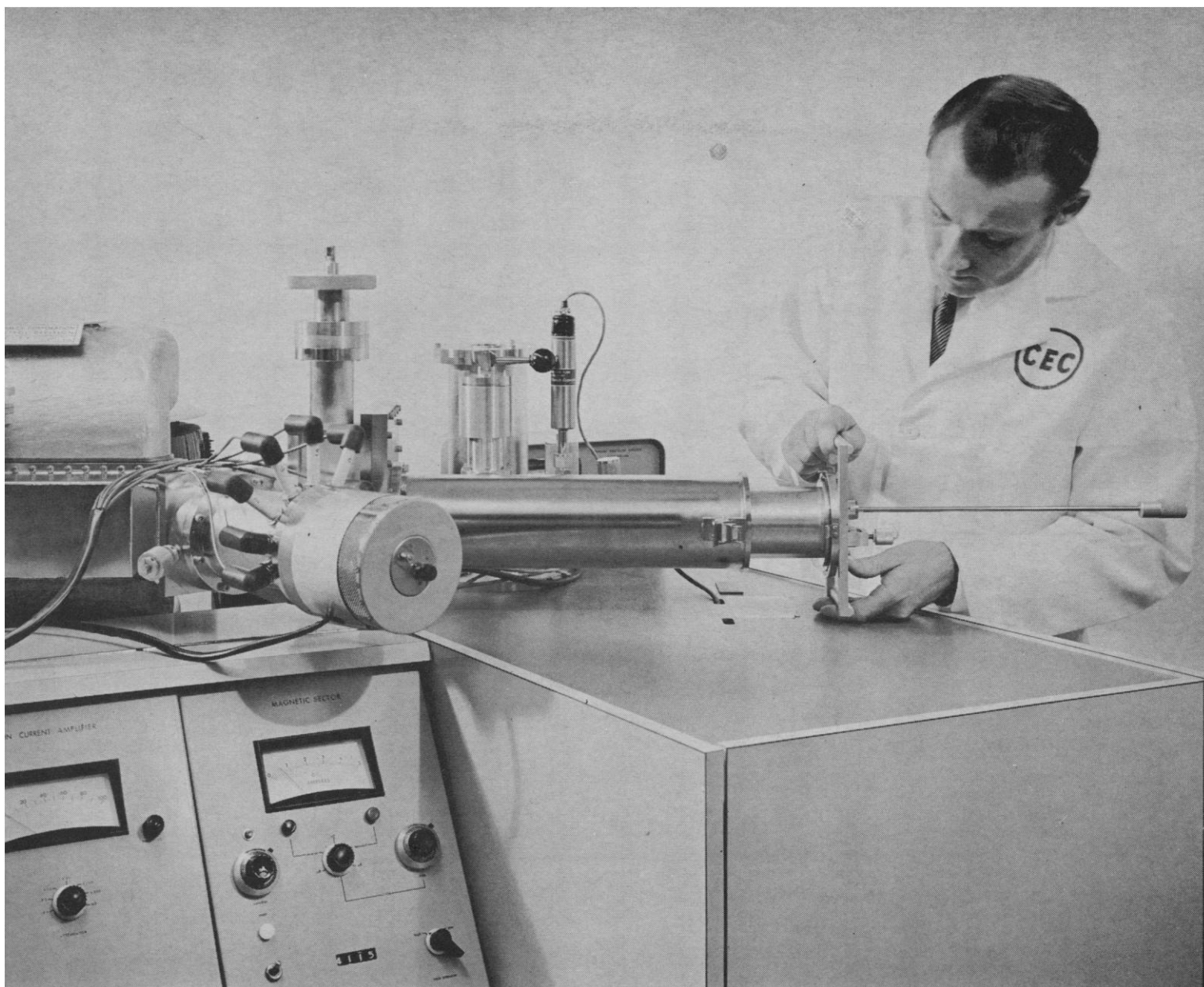
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CEC's 21-110A Mass Spectrometer reveals secrets of molecular structure.

Organic chemists, for example, prefer CEC's 21-110A Mass Spectrometer for performing structural identification and quantitative analysis of organic material, natural or synthetic. The 21-110A provides exceptionally high resolution, is capable of separating masses differing as little as one part in 20,000. And it features a combination photoplate/electrical detector system.

High resolution allows "mass defect" determination. The combination detector permits instantaneous accumulation of all data and analysis of extremely small samples using the photoplate; quick-look and quantitative determinations are provided by the electrical detector.

Being the most versatile high-performance mass spectrometer, the 21-110A

accepts ion sources and ion detectors for all types of research problems.

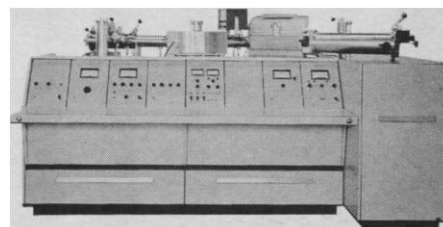
Gas Source with combination detector is used for organic chemistry, molecular structure studies in foods, bio-chemicals, pharmaceuticals, flavors & fragrances, and chemicals & petrochemicals.

RF Spark Source with photoplate detector locates trace impurities (less than 1 part in 10,000,000) in metals, semiconductors and other solids.

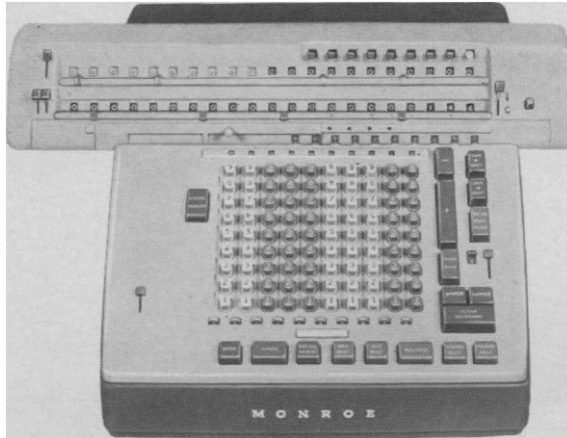
Knudsen Cell Source with electrical detector makes thermo-dynamic equilibrium studies, heat of vaporization determinations and appearance potential measurements.

Surface Ionization Source performs isotopic assay of uranium oxide and other similar materials.

The 21-110A is the result of CEC's quarter-century of leadership in mass spectrometry. For complete information on this advanced instrument, call your CEC office. Or write for Bulletin CEC 21110A-X16.



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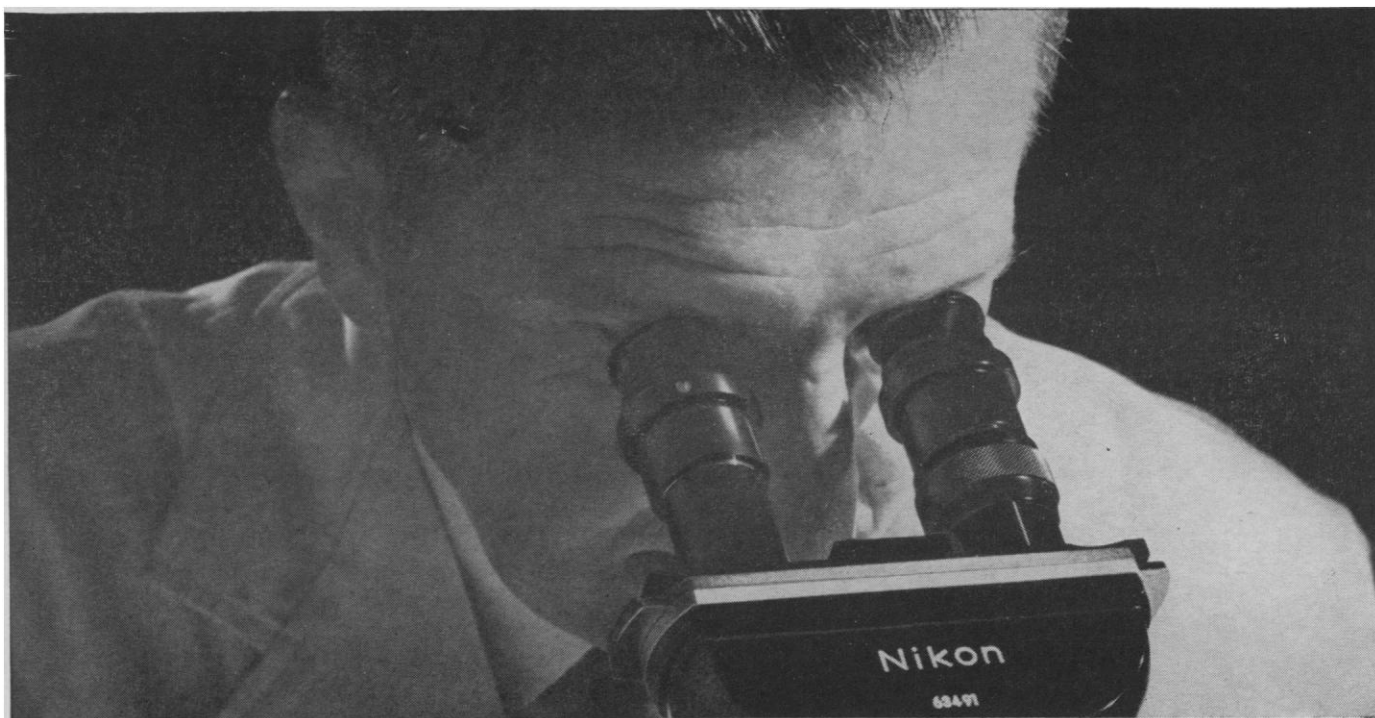


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The most automatic calculator ever produced—the Monro-Matic® IQ-213—reduces computational activity to mere push-button procedures. Touch the memory recall button, for instance, and a ten digit constant sets itself on the keyboard automatically. And don't worry about clearing the keyboard—that's all done automatically, too. As is positioning of the carriage, setting zeros, as well as other tasks normally associated with changing from one arithmetic sequence to another. The IQ-213 features a single keyboard, too, for both regular and three-factor multiplication—and all answers are displayed. What's more, it has the largest display capacity of any calculator on the market. In short, it will do your figurework faster, simpler, and more accurately than any calculator ever devised. And it's easier to operate. For details, call your local Monroe representative. Or write us. Monroe Calculating Machine Company, Inc., Orange, N.J.

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NIKON SBR laboratory microscope



The Nikon SBR is a solidly built, yet incredibly flexible laboratory instrument. A veritable workhorse for routine applications, its ready adaptability, whenever special problems arise, is no less astonishing.

Essentially, the SBR consists of the basic Series S microscope body equipped with dust-proof, quadruple nose-piece, mounted in ball bearings; rotating binocular head; and rotating, rectangular graduated mechanical stage whose coaxial controls can be operated with either hand. Tension-adjustable, focusing controls are located on both sides of the instrument. And a stage-stop lever can be preset to prevent accidental contact between the slide and objective. All controls are low-positioned.

Whether focusing, or manipulating other controls, the one thing that impresses you about the SBR is its rock-steady mechanical stability. There's nothing finicky about any of the adjustments. Once set, they stay put. There's

no loss of time or temper having constantly to reset and readjust them.

But, apart from the ruggedness, versatility and smooth mechanical responsiveness of the Nikon SBR, the quality that commends it above all else is its optics. You will find it difficult to duplicate its performance with any other microscope — for uniformity and brightness of field, image resolution, and for the visual comfort and ease you enjoy even with prolonged use.

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For complete details, write to Dept. S-3

NIKON Instrument Division of Ehrenreich Photo-Optical Industries, Inc. 111 Fifth Avenue New York 3, New York

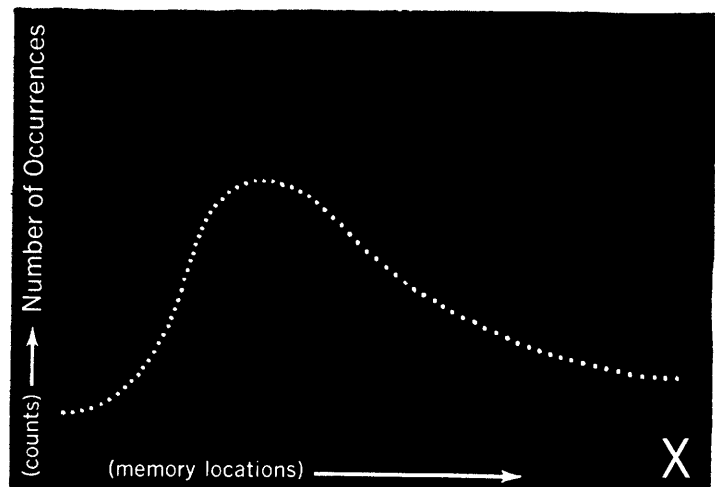
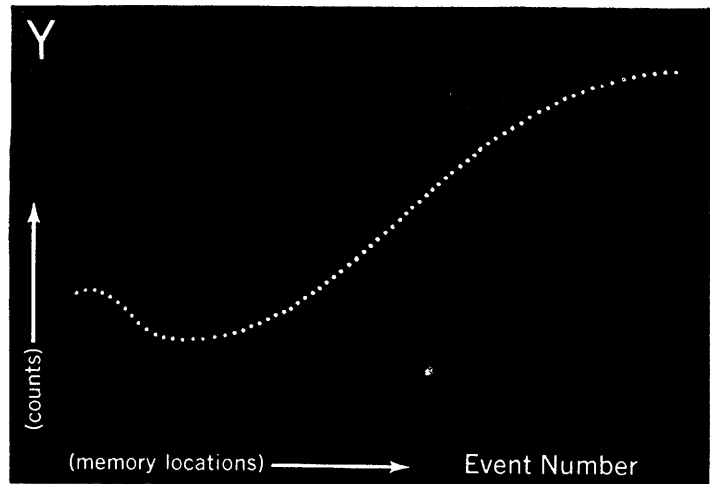
AUTOMATED STATISTICAL ANALYSES OF BIOELECTRIC POTENTIALS

HISTOGRAMS—

A technique for determining the statistical variability of input data. Now accomplished with integrated MNEMOTRON digital computer systems.

Variables reflected by X or Y may be:

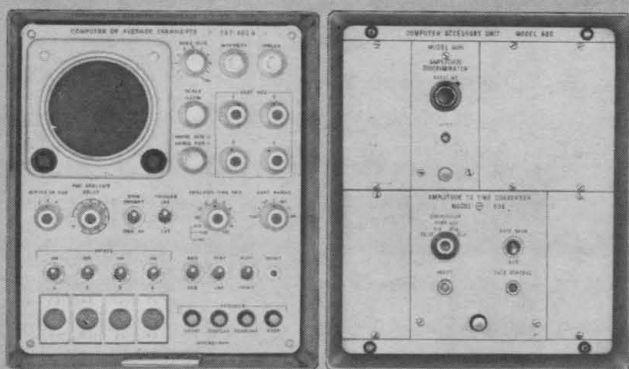
- Time interval between successive events.
- Time latency of stimulated responses.
- Time that a signal dwells above a preset level.
- Time of occurrence of specific events after stimulation.
- Time duration of an event.
- Amplitude of successive events.
- Amplitude of signal at specific points in time.
- Amplitude of signal peaks.
- Amplitude of signal after fixed delay from stimulation.



Automated histograms permit detection and quantification of pattern changes over a complete range of information. The investigator need no longer limit himself to confined, and therefore biased, samples in order to be able to effectively interpret his data. Previously, interpretation required tedious, time-consuming manual processing of strip-chart or film records. However, recent advances in digital computer techniques now provide for on-line data reduction and immediate analysis of bioelectric phenomena. Thus, the researcher can quickly obtain statistical information in a condensed and easily comprehensible form. Results may be represented in diverse forms of

amplitude or time interval histograms. In the case of amplitude histograms, counts proportional to the amplitude of the input signal are deposited in a memory location—or, a count is deposited in a memory location whose number is proportional to the amplitude of the signal. In the case of time interval histograms, counts proportional to the time interval of the input signal are deposited in a memory location—or, a count is deposited in a memory location whose number is proportional to the signal time interval. Hence, the investigator is supplied with a distribution curve of the signal source and can easily determine preferential amplitudes or time intervals.

— ON-LINE



TYPICAL FIELDS OF APPLICATION

■ NEUROPHYSIOLOGY

Interspike intervals, action potential firing rates, amplitudes of nerve firings, etc.

■ CARDIOLOGY

R-R intervals, P-R-T amplitude distributions, etc.

■ ELECTROENCEPHALOGRAPHY

Amplitude distributions of evoked responses, latency distributions, wave intervals, etc.

■ BEHAVIORAL PSYCHOLOGY

Reaction time distributions, learning time curves, etc.

■ CELL BIOLOGY

Spontaneous firing rates, action potential amplitude distributions, etc.

MNEMOTRON, world leader in the design of multi-purpose on-line digital computer instrumentation, now makes available its new custom designed Series 600 modules. Incorporation of many plus features made possible by these units forms the firm basis of a unique and completely effective biomedical data reduction system.

The Series 600 modules have been specifically designed to be compatible with the Series 400 Computer of Average Transients (CAT). MNEMOTRON has provided, for histogram implementation, the Model 605 Amplitude discriminator, the Model 606 Amplitude-to-Time Converter, and the Model 607 Peak Detector. All modules are housed in a single cabinet which is mated with the CAT to form one operational unit.

MODEL 605 AMPLITUDE DISCRIMINATOR — This module consists of adjustable baseline voltage selector which permits CAT operation to be related to specific voltage amplitude inputs. The Model 605 Amplitude Discriminator transmits a pulse to the CAT when the preselected baseline amplitude is exceeded, and another pulse when the voltage drops below the preset amplitude. These pulses control the CAT.

MODEL 606 AMPLITUDE-TO-TIME CONVERTER — This module allows for the analysis of input signals on the basis of their amplitudes. The Model 606 Amplitude-to-Time Converter transmits a start pulse to the CAT when an event occurs, and a stop pulse when a period of time has elapsed proportional to the amplitude of the input signal. In addition, a train of pulses is transmitted to the CAT between the start and stop pulses.

MODEL 607 PEAK DETECTOR — This module transmits a pulse when the first derivative of the input signal goes through zero volts per second, i.e., when a peak of the input signal occurs.

Our application engineers are available for consultation concerning specific applications.

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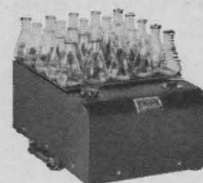
IN EUROPE: Technical Measurement Corp., GmbH,
Mainzer Landstrasse 51, Frankfurt/Main, Germany
Other offices in principal cities throughout the world

Model R7 Recipro-Glide Shaker

Variable speed range: 65-200 strokes per min. Uniform 1½" reciprocal stroke. Available with box carrier (illustrated), as well as with a variety of shaker platforms. Larger capacity model also offered. Holds 40/250-ml flasks*.

**Model S-3 Gyrotory Shaker**

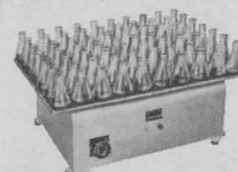
Variable speed range: 85-285 rpm or 140-400 rpm. Uniform ¾" stroke. Holds 25/250-ml flasks*.

**Model G76 Gyrotory Water Bath Shaker**

Speed ranges: 85-285 rpm or 140-400 rpm. ½" stroke. Temperature adjustable to 100° C ± 0.5 C. Cooling coil and gassing hood optional. Models available with reciprocal agitation. Holds 9/250-ml flasks*.

**Model G10 Gyrotory Shaker**

Variable speed range: 140-400 rpm or 50-150 rpm. Uniform 1" stroke. Holds 40/250-ml flasks*. Larger platform holds 70/250-ml flasks*.

**Model G25 Gyrotory Incubator-Shaker**

Variable speed range: 140-400 rpm or 50-150 rpm. Uniform 1" stroke. Thermostatic temperature control to 60° C ± 0.5° C. Optional connections for gassing. Larger refrigerated models also available. Holds 40/250-ml flasks*.

**Model R82 Reciprocating Tier Shaker**

Speed range: 35-200 strokes per min. Continuously adjustable stroke from 0-4". Holds 192/250-ml flasks on 6 removable trays*.

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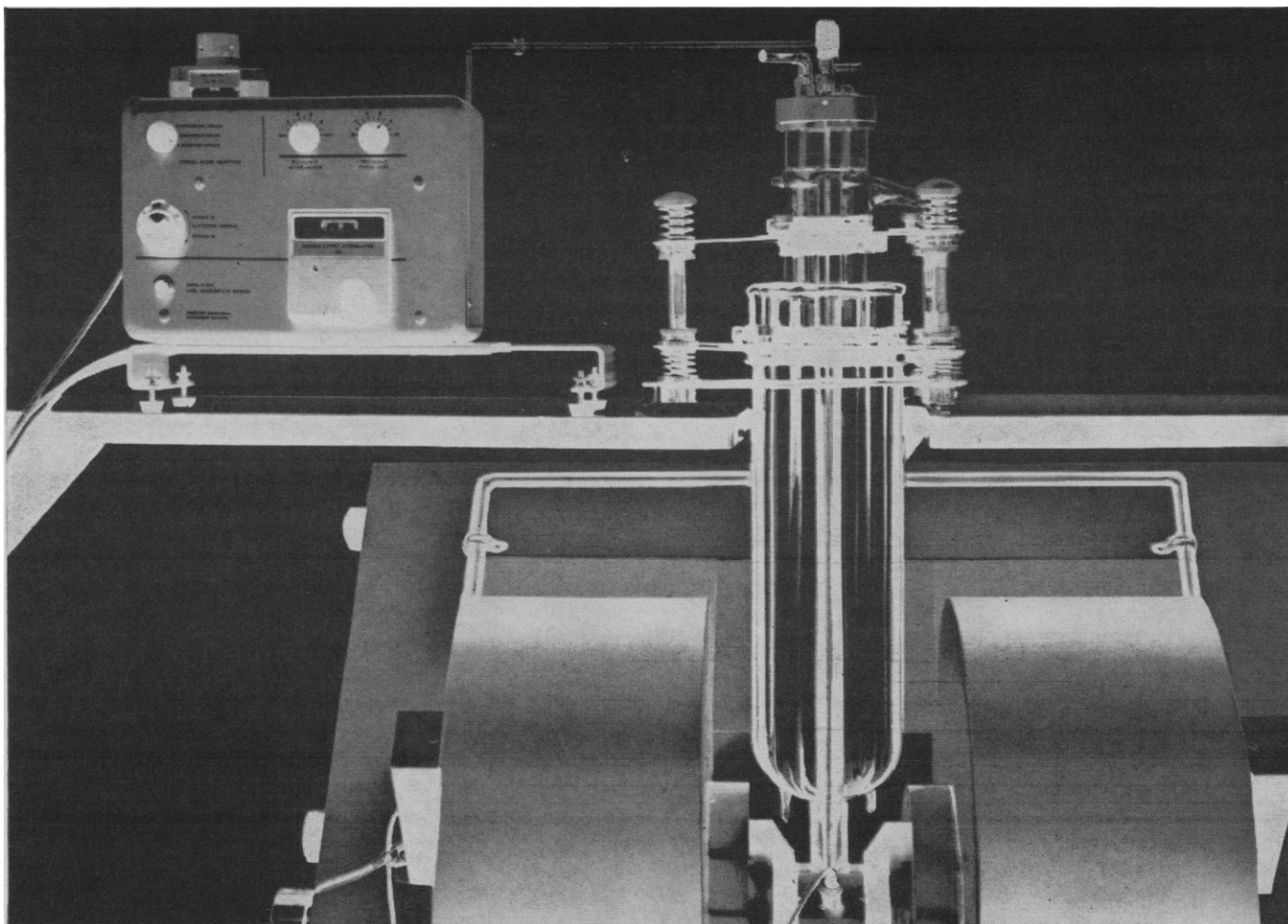


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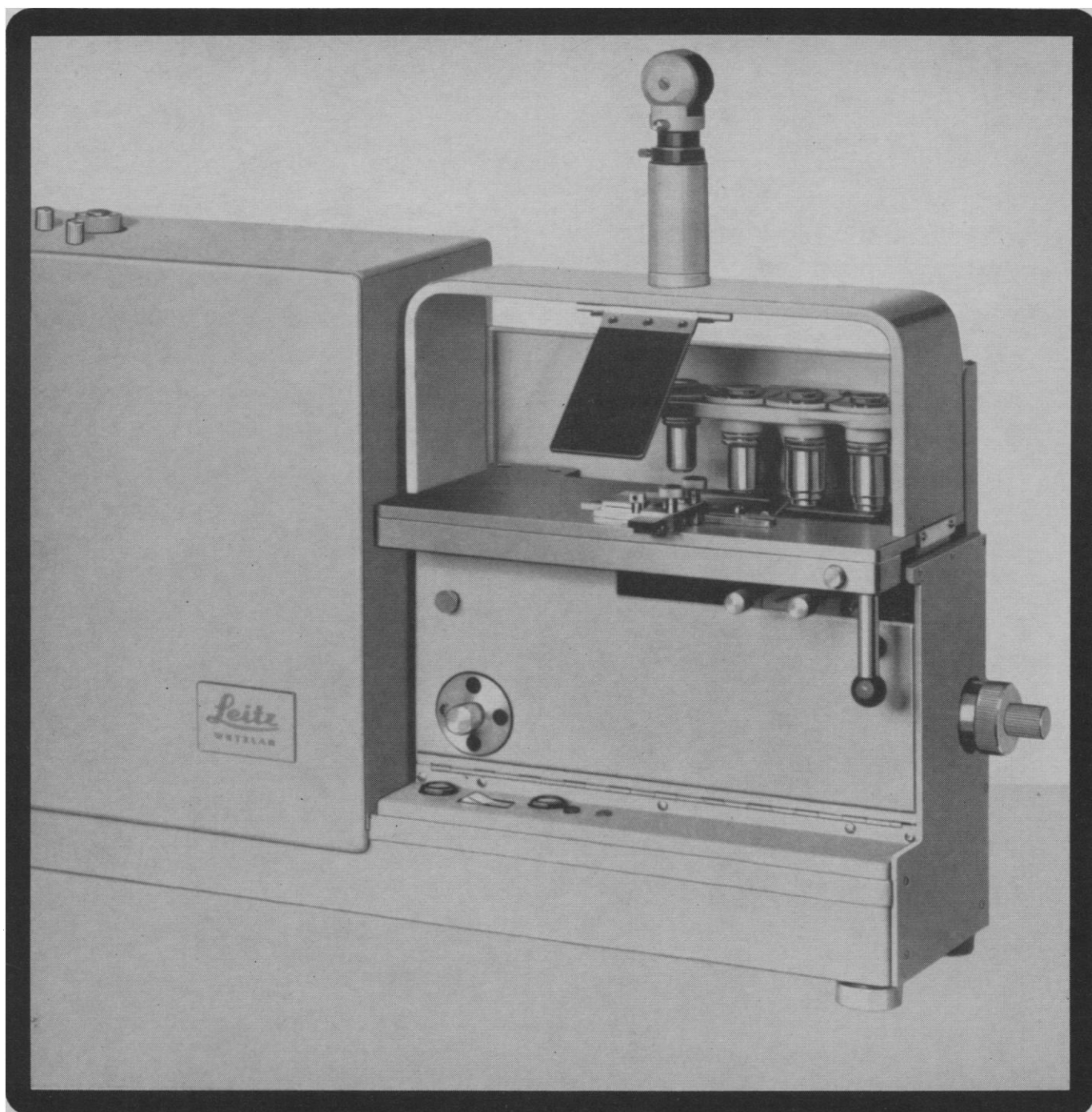
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Federal Support of Basic Research

The report of the Committee on Science and Public Policy of the National Academy of Sciences is an important document prepared by a distinguished group. The committee (COSPUP) obviously worked hard, and the result is highly readable. The essence of the report is contained in the conclusions, which were printed in last week's issue of *Science*.

In view of the quality of COSPUP's membership it is not surprising that portions of the report are so excellent. On the other hand, it is not remarkable that the report leaves something to be desired, for there was much to be covered. At its worst, the 98-page document reminds one of the camel, "a horse designed by a committee." One suspects that the group never made up its mind toward whom the report was aimed. The first eight pages, which present the conclusions, seem designed primarily for scientists. A second chapter of six pages, entitled "Introduction," seems to be intended to educate congressmen concerning basic research and the importance of supporting it. Then follow five chapters on the history of government support of science, starting with the early days of the republic. This history is fairly detailed up to 1957 and occupies 41 pages. These chapters are scholarly, well written, and of special interest to historians and other students of government, but their relevance to the remainder of the report is slight. There follow 14 pages of statistics on the distribution of research and development funds which serve little purpose. The last 23 pages are of particular interest to scientists and include an excellent discussion of the project system and of the role of universities in the operation of the system. It is this part which provides most of the conclusions of the document.

In view of the length of the report there are some curious omissions. Perhaps the most glaring occurs in the historical part, which barely mentions crucial events of the period from 1957 to the present. There is only a veiled allusion to the activities of the Fountain Committee. Yet this committee forced the National Institutes of Health to change some of its policies on grants. These changes in turn caused the American Society of Biological Chemists, in April 1963, to request the National Academy of Sciences "to enunciate the principles and philosophy which could serve as a basic policy in the future conduct and administration of federal programs in support of fundamental research." This request led to the COSPUP study.

Other significant recent indications of changes in the attitude of Congress toward basic research are also missing. For instance, creation of the Elliott Committee is not mentioned. Thus, the historical treatment fails to provide an adequate sense of urgency for implementation of the report.

Actions of Congress indicate that we are entering an era in which support for science will no longer increase as fast as it has in the recent past. Accordingly, the committee might well have dealt with the major topic of responsible scientific choice. A matter which it treated only partially is the geographical distribution of funds. The strong institutions are more likely to preserve excellence as the basic criterion on which grants are made if they will try to see to it that the less favored institutions also receive help.

The report of the Committee on Science and Public Policy is an important and welcome beginning. It indicates that the scientific community may be able to put its house in order, and that the National Academy of Sciences can lead in bringing this about.

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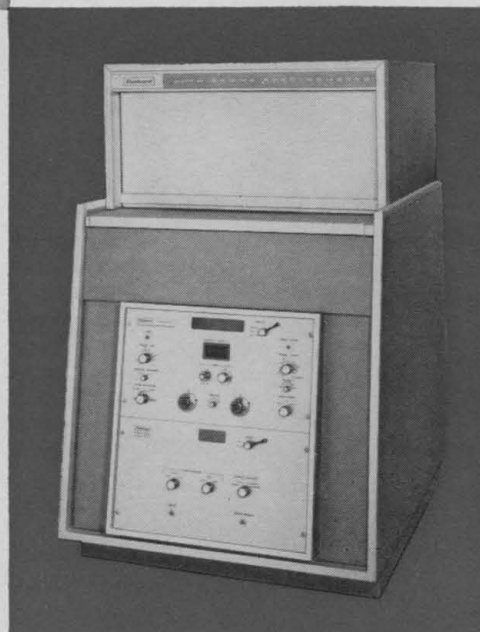
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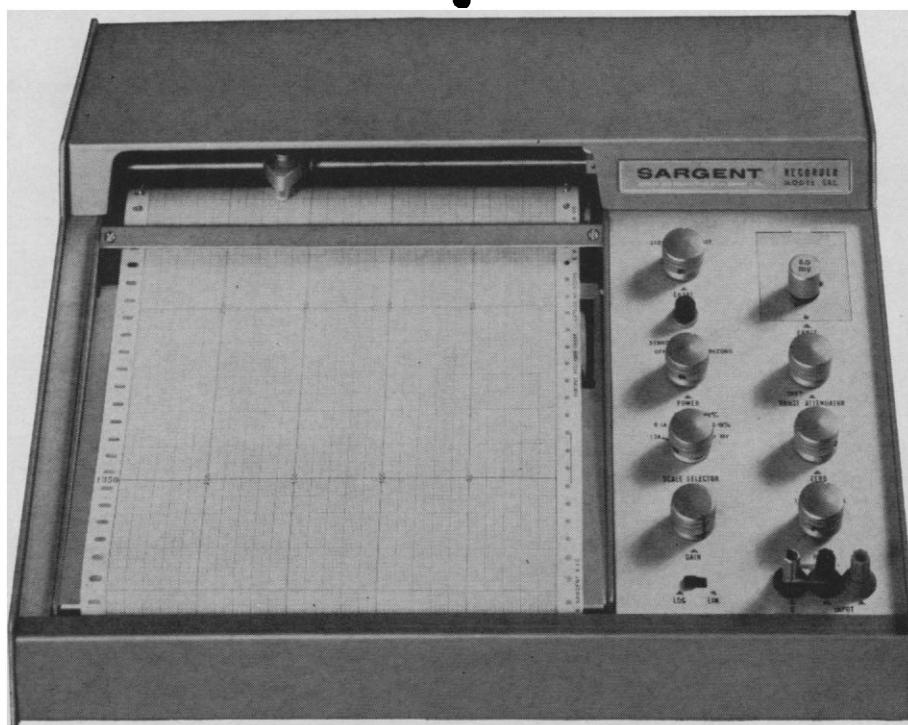
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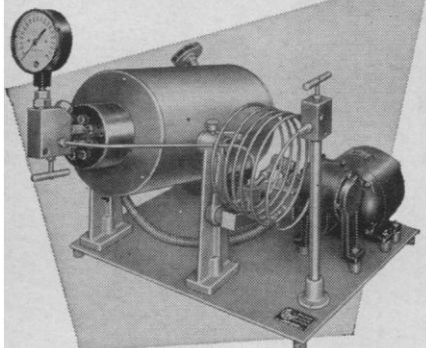
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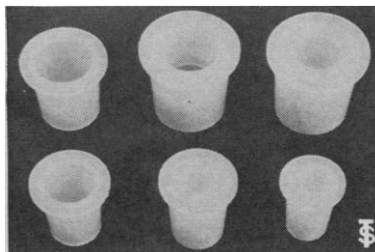


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730-Mev protons were used in doses ranging from 125 to 2000 rads. Loss of hair was the most constant symptom and no simple clinical signs could be used as reliable biodosimeters, particularly at the lower proton energies.

Neutron irradiation presents special problems in dosimetry. D. Hightower and H. M. Swartz (Walter Reed Army Institute) have developed a technique for measuring neutron penetration by tissue activation based on determining the amount of sodium-24 in tissue samples. It is expected that this technique will eventually permit a better experimental determination of depth dose. Russian investigators proposed a universal radiation dose unit, described a method of determining the contribution of cascade neutrons to the proton flux by using activation detectors, and also discussed Russian equipment for measuring the flux and tissue dose rate of intermediate-energy neutrons.

The pathological effects of neutron irradiation were considered under three main topics: acute effects, delayed effects, and possible applications in radiotherapy. Acute radiation mortality as a function of dose rate was explored over the exceptionally wide range of from 23 rads/min to 10^5 to 10^6 rads/min by E. J. Ainsworth and co-workers (U.S. Naval Radiological Defense Laboratory). They inferred from their results that, in terms of acute radiation responses to fission neutrons, radiation at high intensities was not significantly more or less injurious than at low dose rates. F. Hirose (Hiroshima University) found that 14.1-Mev acute neutron irradiation produced about 20 percent greater tissue damage than x-rays and that injuries in the hematopoietic bone marrow may play a significant role as a cause of acute death of mice from fast neutron irradiation.

The relation between aging and chromosome aberrations produced in mice by acute and chronic neutron and γ -irradiation was shown by H. J. Curtis (Brookhaven National Laboratory). The results strongly supported the concept that natural and radiation-induced aging are caused by spontaneous and radiation-induced chromosomal aberrations (mutations), respectively, in the somatic cells of animals. J. F. Fowler concluded the sessions on pathology by giving a comprehensive review of the use in radiotherapy of slow neutron capture, fast neutrons, and beams of protons, deuterons, alpha particles, and negative π mesons. Slow neutron capture therapy lacks promise



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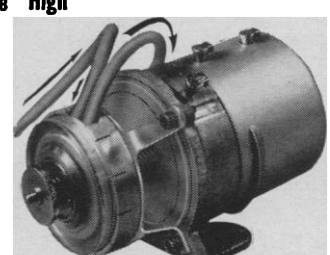
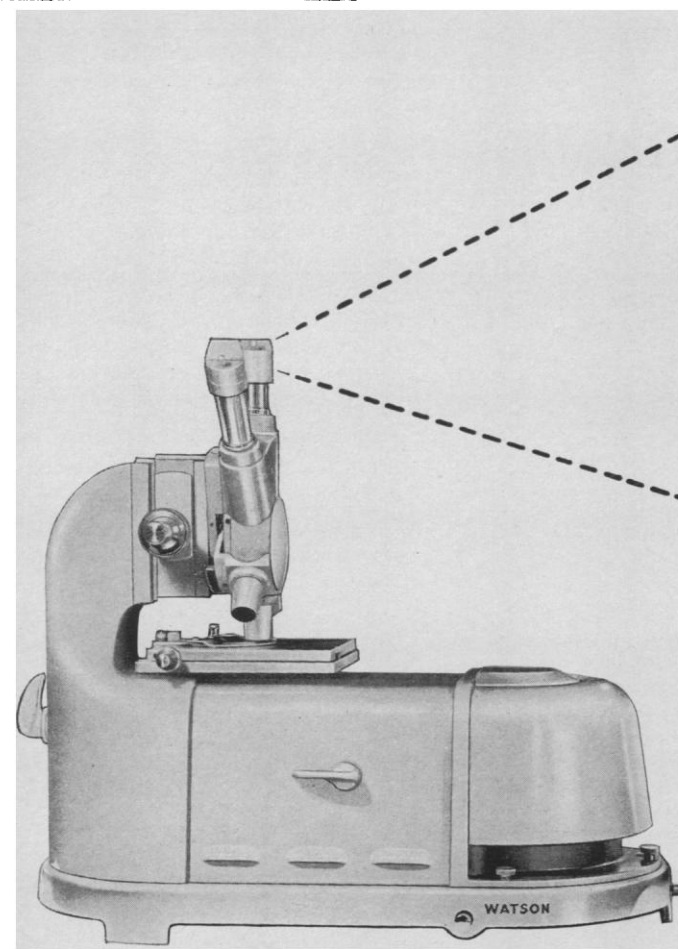
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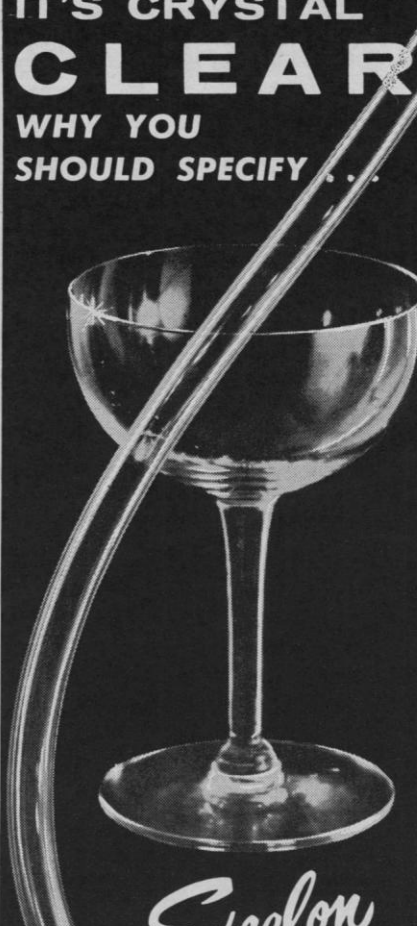



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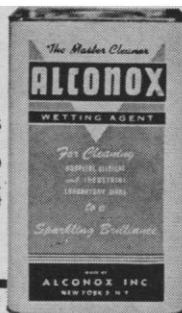
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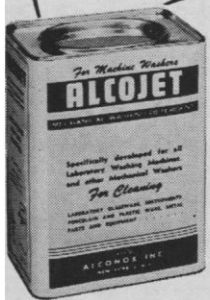
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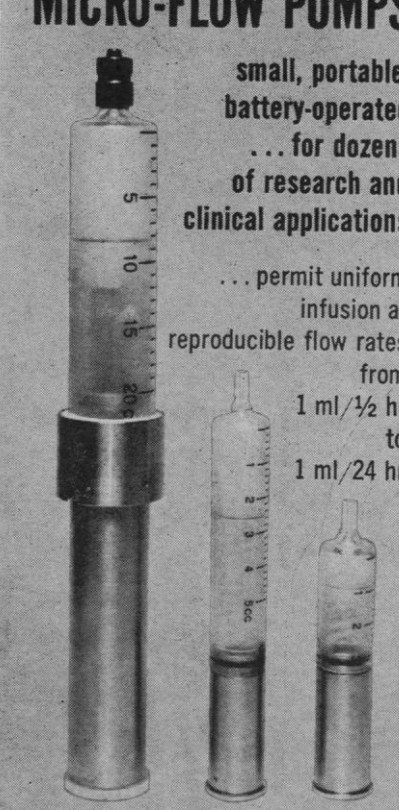
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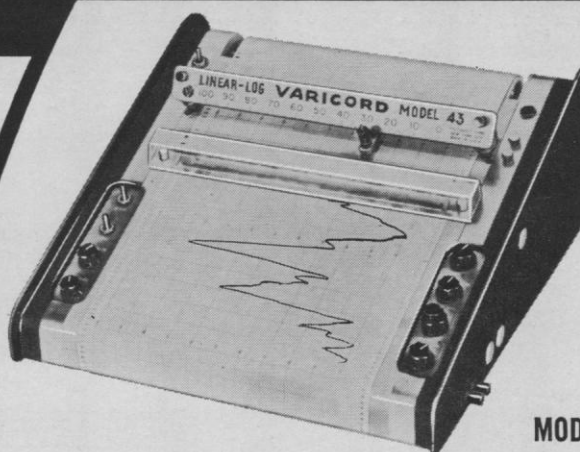
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primarily because of the very poor depth doses. This may be overcome, at least in part, by surgically removing the bulk of the tumor before irradiation or by use of epithermal neutrons when these become available with sufficient flux. Fast neutron therapy combines the advantages of greater depth dose and lack of a reduced effect under anoxic conditions, which are characteristic of x- and γ -irradiation. Proton, deuteron, and alpha particle beams are not high LET (linear energy transfer) particles, except in the terminal fraction of a millimeter of their track, and hence do not give the oxygen advantage obtainable with fast neutron beams. Negative π meson beams are particularly promising for radiotherapy, because they combine an improved physical dose distribution with tissue interactions which give alpha particles of high LET (6 Mev, 50 kev/ μ) so that they would yield nearly the maximum effect with anoxic tumor cells.

A major portion of the symposium was devoted to studies on cellular and genetic effects of neutron irradiation, particularly with reference to their relative biological effectiveness compared to x- and γ -irradiation. J. J. Broerse and G. W. Barendsen (Netherlands) reported on the damage to reproductive capacity of cultures of human kidney cells when irradiated with monoenergetic neutrons. Within the energy range of from 3 to 15 Mev there was a shift from an exponential to an accumulative survival curve, indicating a shift from predominantly "1-hit" events to a "multiple-event" dose response. Most of the papers in this symposium, and in the literature in general, report values of relative biological effectiveness of below 10 for fission spectrum neutron versus x- or γ -ray effects. These are based mostly on mortality or certain pathological symptoms.

Three of the papers reported higher values of relative biological effectiveness; each was based on more specific genetic criteria. T. Fujii (National Institute of Genetics, Japan) found that 14-Mev neutrons were about 13 times more effective than γ -rays in producing chlorina mutants in wheat. A. G. Searle and R. J. S. Philips (Harwell) observed that with specific locus (point) mutations in mice the relative biological effectiveness of fast neutrons versus γ -rays at low intensity is about 26, and possibly as high as 50. H. H. Smith and his co-workers (Brookhaven National Laboratory) re-

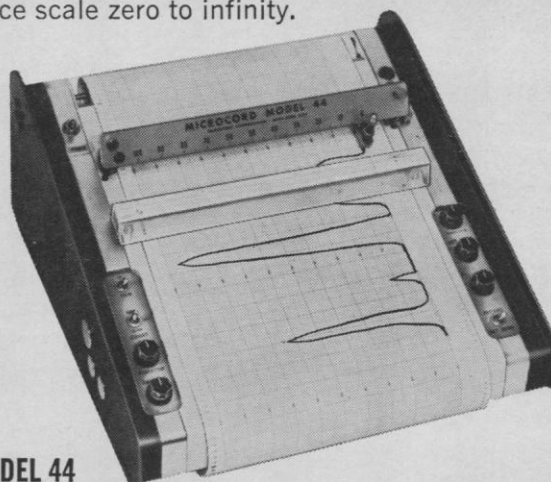
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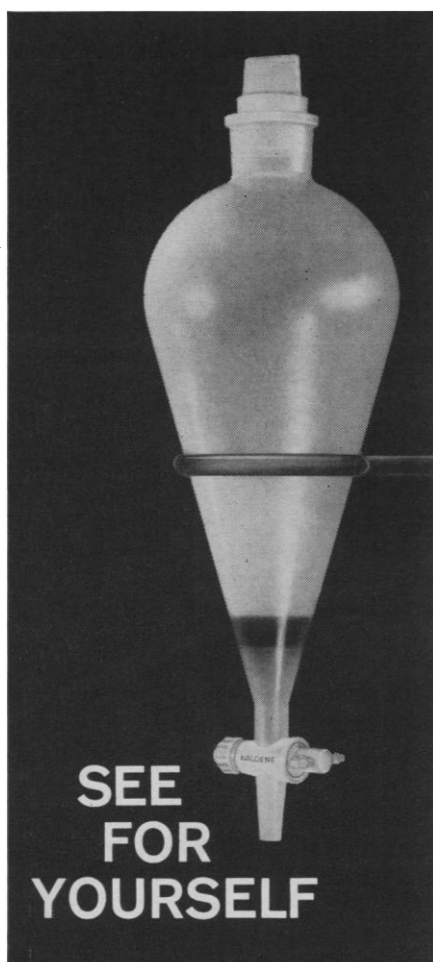
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ported an average relative biological effectiveness of about 70 for loss of a specific chromosome arm in maize due to irradiation with monoenergetic neutrons (0.43 to 1.80 Mev) compared with 250 kvp x-rays. It appears that more studies on relative biological effectiveness based on subtle intracellular events may be needed, particularly with reference to establishing minimum permissible doses of neutron irradiation for man.

In discussing the use of neutron irradiation in agriculture and applied genetics, A. R. Gopal-Ayengar and M. S. Swaminathan concluded that neutrons have an important place in the array of mutagens available by virtue of the relative insensitivity to modification of biological responses they produce, the absence of secondary physiological effects associated with their action, and their high relative biological effectiveness values for induction of chromosome aberrations and mutations.

HAROLD H. SMITH

*Biology Department, Brookhaven
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Forthcoming Events

April

1. **Thermoplastic Materials**, conf., Soc. of Plastics Engineers, Akron, Ohio. (W. H. Nicol, RETEC, Goodyear Tire and Rubber Co., Akron 16)

1-2. **Engineering Aspects of Magneto-hydrodynamics**, symp., Cambridge, Mass. (G. S. Janes, Avco Everett Research Laboratories, Everett 49, Mass.)

1-2. **Methods for Measurement of Weak Beta-Emitters**, Karlsruhe-Leopoldshaven, Germany. (Gesellschaft Deutscher Chemiker, Gesellschaftsstelle, Postfach 9075, Frankfurt/Main, Germany)

1-3. **Structures and Materials**, American Inst. of Aeronautics and Astronautics, 5th annual conf., Palm Springs, Calif. (R. R. Dexter, AIAA, 2 E. 64 St., New York)

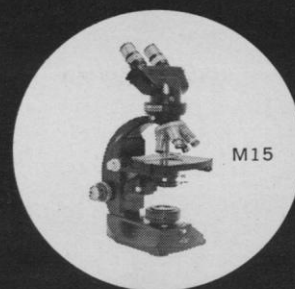
1-3. **Optical Soc. of America**, spring meeting, Washington, D.C. (M. E. Warga, OSA, 1155 16th St., NW, Washington, D.C. 20036)

1-4. **National Soc. for Programmed Instruction**, annual, San Antonio, Tex. (NSPI Program Committee, Trinity Univ., 715 Stadium Dr., San Antonio, Tex.)

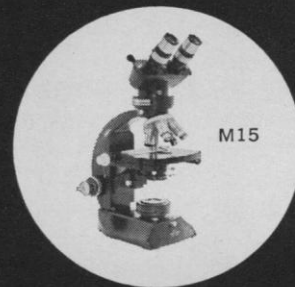
1-5. **Latin Oto-Rhino-Laryngology Soc.**, 15th congr., Bologna, Italy. (G. Motta, Via Modica 6, Milan, Italy)

2-3. **American Soc. of Civil Engineers**, Engineering Mechanics Div., spring conf., Boston, Mass. (ASCE, 33 W. 39 St., New York 18)

2-3. **Alexander Graham Bell Assoc.** for the Deaf, southeastern meeting, New Orleans, La. (R. Tegeder, Utah School for the Deaf, 846 20th St., Ogden)



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2-3. **Obstetrics and Gynecology**, seminar, Gainesville, Fla. (Mrs. D. Miller, Div. of Postgraduate Education, College of Medicine, Univ. of Florida, Gainesville)

2-3. **Industrial Applications of New Technology**, conf., Atlanta, Ga. (Director, Short Courses and Conferences, Georgia Inst. of Technology, Atlanta, Ga. 30332)

2-4. **American Acad. of Oral Pathology**, Bethesda, Md. (R. J. Gorlin, Univ. of Minnesota, Minneapolis)

2-4. **Association of Surgeons of Great Britain and Ireland**, annual, St. Andrews, Scotland (Secretariat, 47 Lincoln's Inn Fields, London, W.C.2, England)

2-5. **British Medical Assoc.**, clinical meeting, Northampton, England. (D. Gullick, Tavistock Sq., London, W.C.1)

3-4. **Biology colloquium**, Corvallis, Ore. (C. M. Gilmour, School of Science, Oregon State Univ., Corvallis)

3-4. **Society for Industrial and Applied Mathematics**, midwest regional meeting, Cedar Rapids, Iowa. (W. J. Jameson, Collins Radio Co., 120-11, Cedar Rapids)

3-5. **Fleming's Lysozyme**, 3rd intern. symp., Milan, Italy. (G. Podio, Museo della Scienza e della Tecnica, Via Modica, 6, Milan)

3-5. **American Soc. of Internal Medicine**, annual, Atlantic City, N.J. (A. V. Whitehall, 3410 Geary Blvd., San Francisco, Calif.)

3-5. **American Assoc. of Pathologists and Bacteriologists**, annual, Chicago, Ill. (E. A. Gall, Dept. of Pathology, Cincinnati General Hospital, Cincinnati 29, Ohio)

4. **Arizona Acad. of Science**, Tempe. (H. B. Whitehurst, Dept. of Chemistry, Arizona State Univ., Tempe)

4-5. **American Psychosomatic Soc.**, San Francisco, Calif. (C. Binger, 265 Nassau Rd., Roosevelt, N.Y.)

4-6. **Neurobiology**, 2nd symp. (by invitation), Phoenix, Ariz. (E. Eidelberg, Barrow Neurological Inst., St. Joseph's Hospital, 350 W. Thomas Rd., Phoenix)

5-8. **International Acad. of Pathology**, annual, Chicago, Ill. (F. K. Mostofi, Armed Forces Inst. of Pathology, Washington, D.C. 20012)

5-10. **American Chemical Soc.**, 147th natl., Philadelphia, Pa. (A. T. Winstead, 1155 16th St. NW, Washington, D.C.)

5-10. **Asia-Pacific Acad. of Ophthalmology**, 2nd congr., Melbourne, Australia. (R. N. Mellor, 82 Collins St., Melbourne)

6-8. **Nonlinear Magnetics Conf.**, Washington, D.C. (R. C. Barker, Dept. of Engineering and Applied Science, Yale Univ., New Haven, Conn.)

6-8. **Association of Schools of Public Health**, annual, Toronto, Ont., Canada. (R. E. Coker, Jr., Drawer 229, Chapel Hill, N.C. 27515)

6-9. **French Soc. of Biological Chemistry**, 50th, Paris. (P. Malangeau, 4 Avenue de l'Observatoire, Paris 6^e)

7-9. **Atomic Energy Soc. of Japan**, Tokyo. (Atomic Energy Research Inst., 1-1, Shiba-tamura-cho, Minato-ku, Tokyo)

7-9. **Chemical Soc.**, Birmingham, England. (General Secretary, Burlington House, London, W.1, England)

7-11. **Applied Mathematics and Mechanics**, Giessen, Germany. (K. Maruhn, Mathematisches Institute, Justus Liebig Univ., Giessen)



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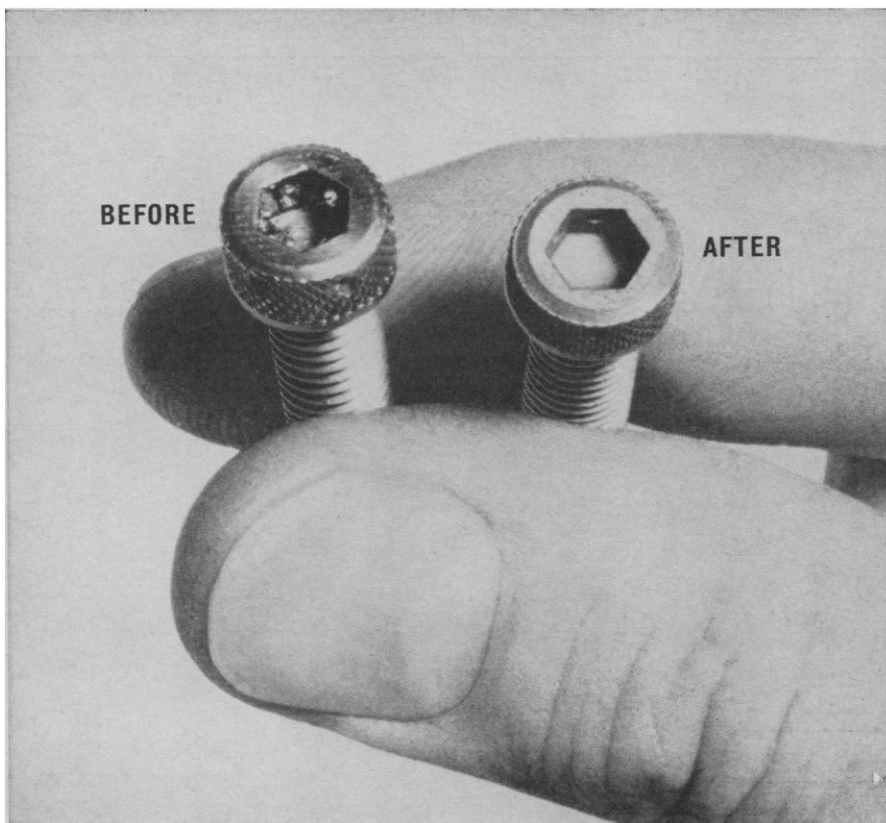
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8-10. Textile Research Inst., 34th, New York, N.Y. (TRI, Princeton, N.J.)

9. British Cardiac Soc., annual, London, England. (J. Shillingford, Postgraduate Medical School, Ducane Rd., London, W. 12)

9-11. American Assoc. for Cancer Research, annual, Chicago, Ill. (H. J. Creech, AACR, Institute for Cancer Research, Fox Chase, Philadelphia 11, Pa.)

9-11. Association of Clinical Pathologists, spring meeting, London, England. (G. Cunningham, Dept. of Pathology, 47 Lincoln's Inn Fields, London, W.C.2)

9-11. Geological Soc. of America, southeastern section, Baton Rouge, La. (R. J. Martin, 1426 Harvard Rd., NE, Atlanta, Ga.)

9-11. Southwestern Psychological Assoc., annual, San Antonio, Tex. (C. C. Cleland, 2104 Meadowbrook Dr., Austin, Tex. 78703)

9-13. Roentgen Congr., German, Wiesbaden, Germany. (H. Lossen, Deutscher Röntgenkongress, Fichterplatz 20 III, Mainz, Germany)

10. Natural Phenolic Compounds, symp., Tokyo, Japan. (M. Shimokoriyama, Dept. of Botany, Univ. of Tokyo, Hongo, Tokyo)

10-11. American Laryngological Assoc., San Francisco, Calif. (L. G. Richards, 12 Clovelly Rd., Wellesley Hills 82, Mass.)

10-11. Association of Physicians of Great Britain and Ireland, annual, Oxford, England. (G. de J. Lee, Dept. of Medicine, Radcliffe Infirmary, Oxford)

11. Paleontological Research Inst., Ithaca, N.Y. (R. S. Harris, 109 Dearborn Place, Ithaca)

11-12. Histochemical Soc., 15th annual, Chicago, Ill. (A. D. Deitch, Dept. of Microbiology, Columbia Univ., 630 W. 168 St., New York 32)

12. Industrial Fibers, European inst., Milan, Italy. (F. Tommy-Martin, 40 rue du Stand, Geneva, Switzerland)

12-13. American Soc. for Artificial Internal Organs, Chicago, Ill. (B. K. Kusserow, Dept. of Pathology, Univ. of Vermont College of Medicine, Burlington)

12-17. Federation of American Societies for Experimental Biology, Chicago, Ill. (H. B. Lemp, The Federation, 9650 Wisconsin Ave., NW, Washington, D.C. 20014)

12-17. Society of Motion Picture and Television Engineers, semiannual technical conf., Los Angeles, Calif. (J. M. Waner, Eastman Kodak Co., 6706 Santa Monica Blvd., Hollywood 38, Calif.)

12-18. Chemistry of Natural Products, intern. symp., Kyoto, Japan. (Science Council of Japan, Ueno Park, Tokyo, Japan)

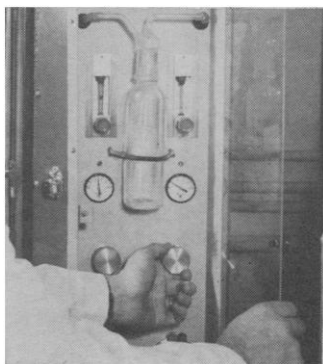
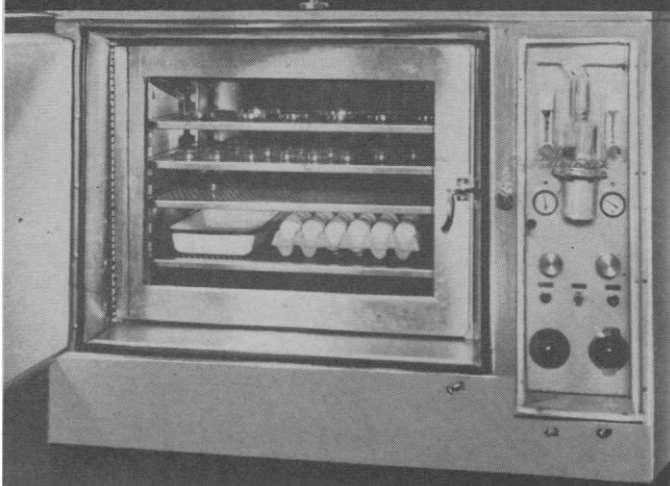
13-15. Institute of Environmental Sciences, annual, Philadelphia, Pa. (J. Breen, RCA Bldg., 10-1-2, Camden 2, N.J.)

13-15. Microelectronics, 3rd annual symp., St. Louis, Mo. (T. F. Murtha, P.O. Box 4104, St. Louis, Mo. 63136)

13-16. American Acad. of General Practice, Atlantic City, N.J. (M. F. Cahal, Volker Blvd. at Brookside, Kansas City 12, Mo.)

13-16. Industrial Health, conf., Pittsburgh, Pa. (American Industrial Health Conf., 55 E. Washington St., Chicago, Ill. 60602)

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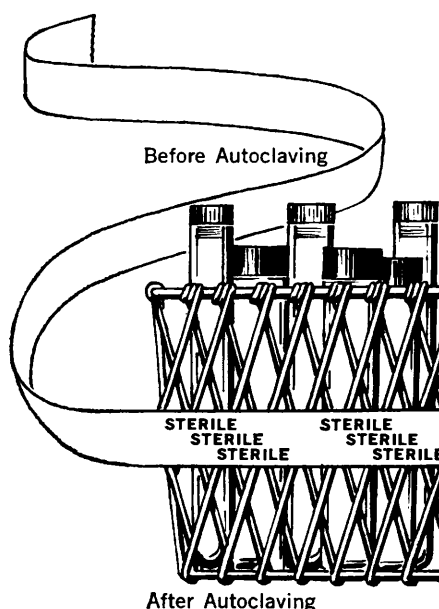
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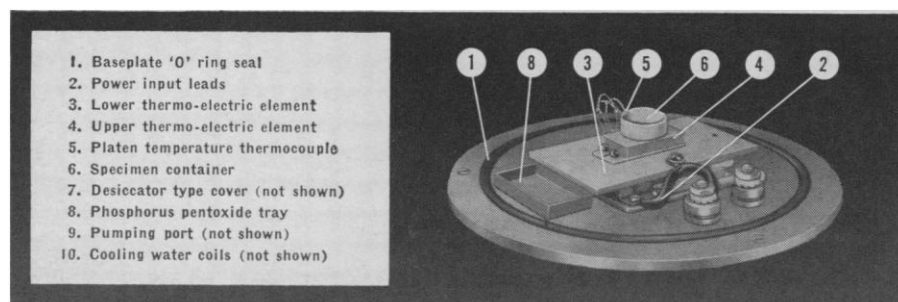
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13-16. **Industrial Medical Assoc.** and American Assoc. of **Industrial Nurses**, Pittsburgh, Pa. (C. D. Bridges, 55 E. Washington St., Chicago, Ill. 60602)

13-16. **American Radium Soc.**, White Sulphur Springs, W. Va. (J. J. Stein, U.C.L.A. Medical Center, Los Angeles 24, Calif.)

13-17. **Fluid Power**, intern. conf. and exhibition, London, England. (Secretary of the Conference, The Tower, 229-243 Shepherds Bush Rd., Hammersmith, London, W.6)

14-16. **Power Conf.**, Chicago, Ill. (W. A. Lewis, Illinois Inst. of Technology, Chicago)

14-18. **Primary Disorders of Heart Muscle** (by invitation), CIBA Foundation symp., London, England (CIBA, 41 Portland Pl., London, W.1)

14-18. **Mathematical Logic**, conf., Oberwolfach, Germany. (M. Barner, Mathematisches Forschungs-institut, Hebelstr. 29, 78 Freiburg im Breisgau, Germany)

15-17. **High Energy Physics**, conf., Chilton, England. (Inst. of Physics and the Physical Soc., 47 Belgrave Sq., London S.W.1, England)

15-17. **Ophthalmological Soc.** of the United Kingdom, annual, Dublin, Ireland. (Secretariat, 47 Lincoln's Inn Fields, London, W.C.2, England)

15-18. **British Paediatric Assoc.**, annual, Scarborough, England. (E. W. Hart, Inst. of Child Health, Hospital for Sick Children, Great Ormond St., London, W.C.1)

15-18. **American Soc. for Public Administration**, natl. conf., New York, N.Y. (ASPA, 6042 Kimbark Ave., Chicago, Ill.)

15-18. **International Scientific Radio Union (URSI)**, spring meeting, Washington, D.C. (M. G. Morgan, U.S. Natl. Committee, URSI, Dartmouth College, Hanover, N.H.)

16-17. **Fiber Soc.**, spring meeting, Charlotte, N.C. (I. Rebenfeld, P.O. Box 625, Princeton, N.J.)

16-17. **Textile Inst.**, annual conf., Leeds, England (D. B. Moore, 10 Blackfriars St., Manchester 3, England)

16-18. **Eastern Psychological Assoc.**, Philadelphia, Pa. (M. A. Iverson, Queens College, Flushing 67, N.Y.)

16-18. **Teaching of Foreign Languages**, 1964 northeastern conf., Washington, D.C. (S. Isaacs, 1110 Patterson Plank Rd., North Bergen, N.J.)

16-18. **Western Psychological Assoc.**, annual, Portland, Ore. (J. Matarazzo, Univ. of Oregon Medical School, Portland)

16-19. **Cooper Ornithological Soc.**, annual, San Diego, Calif. (C. V. Duff, 2911 Antelo View Dr., Los Angeles 24, Calif.)

17-18. **Arkansas Acad. of Science**, Conway. (R. R. Corey, Dept. of Botany and Bacteriology, Univ. of Arkansas, Fayetteville)

17-18. **Iowa Acad. of Science**, Decorah. (D. C. Foley, Iowa State Univ., Ames)

17-18. **Resonance Physics**, New York State section, American Physical Soc., Corning, N.Y. (J. T. Kerr, Corning Glass Works, Corning)

17-19. **Association of Southeastern Biologists**, 25th annual, Atlanta, Ga. (W. D. Burbank, Dept. of Biology, Emory Univ., Atlanta)

18-23. **American Ceramic Soc.**, 66th

annual, Chicago, Ill. (ACeS, 4055 N. High St., Columbus 14, Ohio)

19-22. Association for **Educational Data Systems**, natl. conv., Santa Barbara, Calif. (J. Caffrey, System Development Corp., Santa Monica)

19-22. American **Oil Chemists' Soc.**, 55th spring meeting, New Orleans, La. (AOCS, 35 E. Wacker Dr., Chicago 1, Ill.)

19-25. **Aerospace Electrotechnology**, intern. conf., Phoenix, Ariz. (A. A. Sorensen, Mail 3016, The Martin Co., Baltimore 3, Md.)

20-21. **Solar-Terrestrial Relationships**, symp. of Intern. Scientific Radio Union, American Geophysical Union, American Astronomical Soc., Washington, D.C. (M. G. Morgan, U.S. Natl. Committee, URSI, Dartmouth College, Hanover, N.H.)

20-22. **Radioisotope Conf.**, 2nd annual, Gatlinburg, Tenn. (R. T. Overman, Special Training Div., Oak Ridge Inst. of Nuclear Studies, P.O. Box 117, Oak Ridge, Tenn.)

20-23. American **Mathematical Soc.**, New York, N.Y. (G. L. Walker AMS, 190 Hope St., Providence, R.I.)

20-24. **Medical Radioisotope Scanning**, symp., Athens, Greece. (E. H. Belcher, Div. of Isotopes, IAEA, Kärntnerring 11, Vienna 1, Austria)

20-24. **Research Administration Inst.**, American Univ., Washington, D.C. (American Univ., 1901 F St., NW, Washington 6, D.C.)

20-24. **Fluid Dynamic Aspects of Space Flight**, Marseilles, France. (Fluid Dynamics Panel, NATO, 64, rue de Varenne, Paris 7^e, France)

20-24. American Soc. of **Tool and Manufacturing Engineers**, annual, Detroit, Mich. (L. S. Fletcher, ASTM, 10700 Puritan Ave., Detroit 38)

20-25. American Acad. of **Neurology**, 16th annual, Denver, Colo. (AAN, 4307 E. 50 St., Minneapolis 17, Minn.)

21. Association for **Symbolic Logic**, New York, N.Y. (Mrs. R. Drew-Bear, Special Projects Dept., American Mathematical Soc., 190 Hope St., Providence, R.I.)

21-23. **Joint Computer conf.**, Washington, D.C. (C. S. Jones, 8227 Woodmont Ave., Bethesda 14, Md.)

21-23. **Engineering with Nuclear Explosives**, 3rd "Plowshare" symp., Davis, Calif. (Plowshare Symp. Committee, Lawrence Radiation Laboratory, Bldg. T-105, P.O. Box 808, Livermore, Calif.)

21-24. American **Geophysical Union**, Washington, D.C. (AGU, 1515 Massachusetts Ave., NW, Washington, D.C.)

21-30. **Seismology**, intergovernmental meeting, Paris, France. (UNESCO, Pl. de Fontenoy, Paris 7^e)

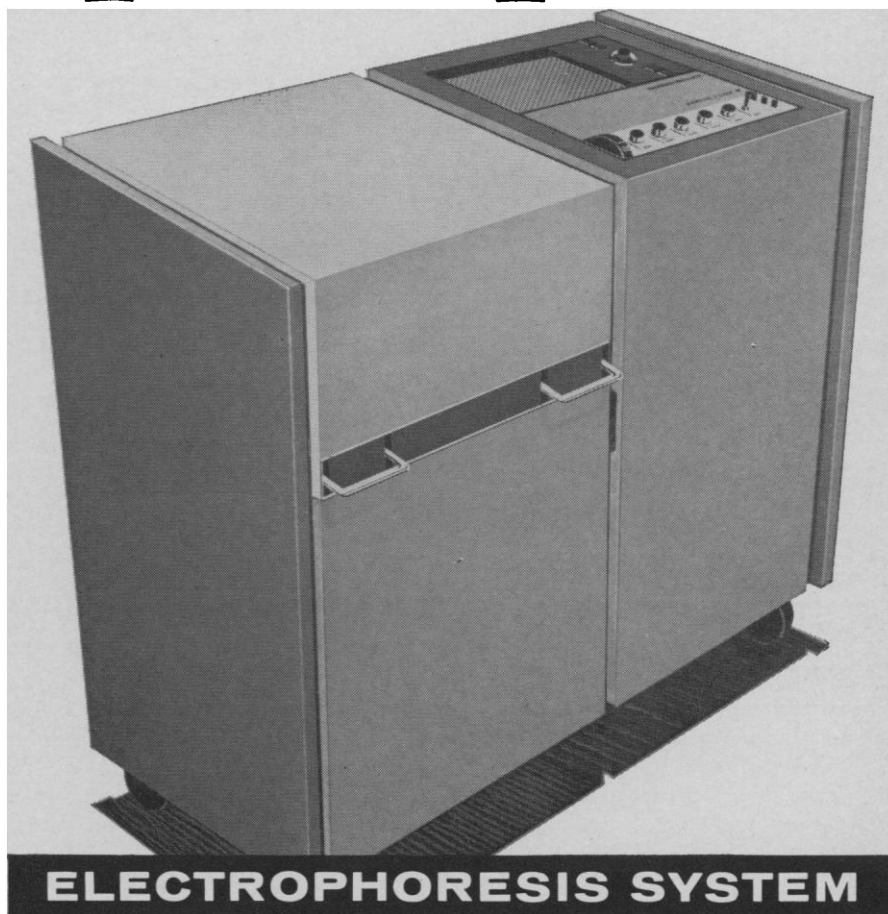
22-24. Institute of **Electrical and Electronics Engineers**, 16th annual southwestern conf., Dallas, Tex. (F. E. Brooks, Jr., Military Electronics Div., Ling Temco Vought, P.O. Box 6118, Dallas 75222)

22-24. British Inst. of **Radiology**, 25th congr., London, England (BIR, 32 Welbeck St., London, W.1)

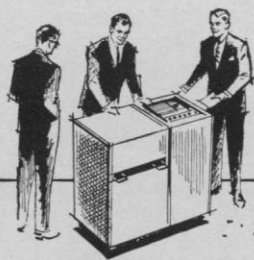
22-25. National Council of **Teachers of Mathematics**, Miami Beach, Fla. (H. T. Karnes, Dept. of Mathematics, Louisiana State Univ., Baton Rouge 3)

23-25. American **Gastroenterological**

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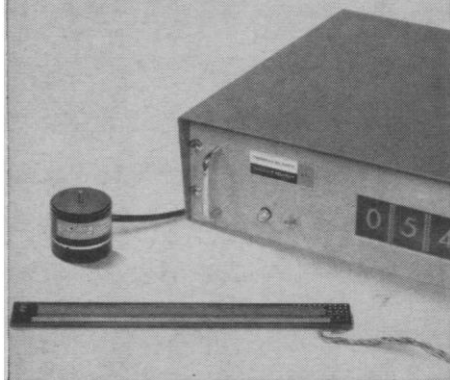
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23-25. **Illinois State Acad. of Science**, Bloomington. (A. A. Paloumpis, Illinois State Normal Univ., Normal)

23-25. **Medical Women's Federation**, annual, Keswick, England. (MWF, Tavistock House North, Tavistock Sq., London, W.C.1, England)

23-25. **Ohio Acad. of Science**, Cleveland. (J. H. Melvin, 505 King Ave., Columbus 1, Ohio)

23-25. **West Virginia Acad. of Science**, Wheeling. (J. A. Duke, S.J., Wheeling College, Wheeling)

24. **Mississippi Acad. of Sciences**, Columbus. (C. Q. Sheely, Mississippi State Univ., State College)

24. **Parenteral Drug Assoc.**, Chicago, Ill. (PDA, Broad and Chestnut Sts., Philadelphia, Pa.)

24-25. **Chemistry of Microbial Products**, symp., Tokyo, Japan. (H. Umezawa, Inst. of Applied Microbiology, University of Tokyo, Hongo, Tokyo)

24-25. **South Carolina Acad. of Science**, Aiken. (R. W. Rutledge, Clemson College, Clemson, S.C.)

24-25. **South Dakota Acad. of Science**, Sioux Falls. (T. Van Bruggen, Dept. of Botany, Univ. of South Dakota, Vermillion)

26. **Georgia Acad. of Science**, Athens. (T. W. Kethley, Georgia Inst. of Technology, Engineering Experiment Station, Atlanta 13)

26-27. **Water and Geology**, conf., Bloomington, Ind. (A. F. Agnew, Dept. of Geology, Indiana Univ., Bloomington)

26-30. **Cereal Chemists**, 49th annual, Toronto, Ont., Canada. (N. G. Irvine, Grain Research Laboratory, 190 Grain Exchange Bldg., Winnipeg 2, Canada)

26-30. **AAAS, Southwestern and Rocky Mountain Div.**, Lubbock, Tex. (M. G. Anderson, P.O. Box 97, University Park, New Mexico 88070)

26-30. **American Industrial Hygiene Assoc.**, Philadelphia, Pa. (G. D. Clayton, 14125 Prevost, Detroit 27, Mich.)

27. **Tooth Transplant in Humans**, intern. seminar, New York, N.Y. (S. J. Behrman, New York Inst. of Clinical Oral Pathology, 101 E. 79 St., New York 21)

27-28. **Molecules of Life**, colloquium, Yeshiva Univ., New York, N.Y. (B. Horcker, Dept. of Molecular Biology, Yeshiva Univ., 1300 Morris Park Ave., New York 61)

27-29. **American Assoc. for Thoracic Surgery**, Montreal, Quebec, Canada. (AATS, 311 Carondelet West, 7730 Carondelet Ave., St. Louis, Mo. 63105)

27-29. **National Acad. of Sciences**, annual, Washington, D.C. (Office of the Home Secretary, NAS, 2101 Constitution Ave., NW, Washington, D.C.)

27-29. **National Watershed Congr.**, 11th, Little Rock, Ark. (G. K. Zimmerman, 1424 K St., NW, Washington, D.C.)

27-30. **American Physical Soc.**, Washington, D.C. (K. K. Darrow, APS, Columbia Univ., New York 27)

27-1. **Photographic Science and Engineering**, intern. conf., New York, N.Y. (H. F. Nitka, General Aniline and Film Corp., Bldg. 44, Charles St., Binghamton, N.Y.)

28-30. **Micrographic Congr.**, intern.

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conv., Philadelphia, Pa. (C. E. Nelson, 313 N. First St., Ann Arbor, Mich.)

28-1. Dallas-Southwest **Industrial Trade Fair**, Dallas, Tex. (C. L. Wells, P.O. Box 26010, Dallas 26)

29-1. **Acoustical Fatigue**, 2nd intern. conf., Dayton, Ohio (D. M. Forney, Research and Technology Div., U.S. Air Force Systems Command, Wright-Patterson Air Force Base, Dayton)

29-2. **Peaceful Uses of Space**, 4th natl. conf., Boston, Mass. (G. A. Rogovin, 501 Boylston St., Boston 16)

29-2. American **Thyroid Assoc.**, annual, Rochester, Minn. (T. Winship, ATA, 110 Irving St., NW, Washington, D.C. 20010)

30-1. Institute of **Hospital Administrators**, annual, Edinburgh, Scotland. (IHA, 75 Portland Place, London, W.C.1, England)

30-1. **Zonal Centrifugation Systems**, Oak Ridge, Tenn. (F. C. Von der Lage, Office of Industrial Cooperation, Oak Ridge Natl. Laboratory, P.O. Box X, Oak Ridge, Tenn. 37831)

30-2. **Agricultural History Soc.**, annual, Cleveland, Ohio (A. G. Bogue, History Dept., Univ. of Iowa, Iowa City)

30-2. American **Cleft Palate Assoc.**, 22nd annual, Los Angeles, Calif. (ACPA, Parker Hall, Univ. of Missouri, Columbia 65202)

30-2. **Midwestern Psychological Assoc.**, 36th annual, St. Louis, Mo. (F. A. Mote, Psychology Dept., Univ. of Wisconsin, Madison 53706)

30-3. **Wilson Ornithological Soc.**, Kalamazoo, Mich. (P. B. Hofslund, Biology Dept., Univ. of Minnesota, Duluth)

30-6. Mexican Natl. Acad. of **Medicine**, Mexico City. (A. Lavarez-Bravo, Unidad de Congresos del Centro Mexico, Bloque "B", Av. Chauhtenoc 330, Mexico, D.F.)

May

1. Chemical Inst. of Canada, **Rubber Chemistry Div.**, annual, Niagara Falls, Ont. (CIC, 48 Rideau St., Ottawa, Ont.)

1-2. Association of **Clinical Scientists**, Philadelphia, Pa., (R. P. MacFate, 54 W. Hubbard St., Chicago, Ill. 60610)

1-2. **Minnesota Acad. of Science**, Moorhead. (M. R. Boudrye, 3100 38th Ave. S., Minneapolis 6, Minn.)

1-2. **Nebraska Acad. of Sciences**, Lincoln. (C. B. Schultz, 101 Morrill Hall, Univ. of Nebraska, Lincoln 8)

1-2. **North Dakota Acad. of Science**, Fargo. (B. G. Gustafson, Univ. of North Dakota, Extension Div., Grand Forks)

1-3. Society of **Biological Psychiatry**, Los Angeles, Calif. (H. E. Himwich, SBP, Galesburg State Research Hospital, Galesburg, Ill.)

1-4. American **Psychoanalytic Assoc.**, annual, Los Angeles, Calif. (Mrs. H. Fischer, APA, 1 E. 57 St., New York N.Y.)

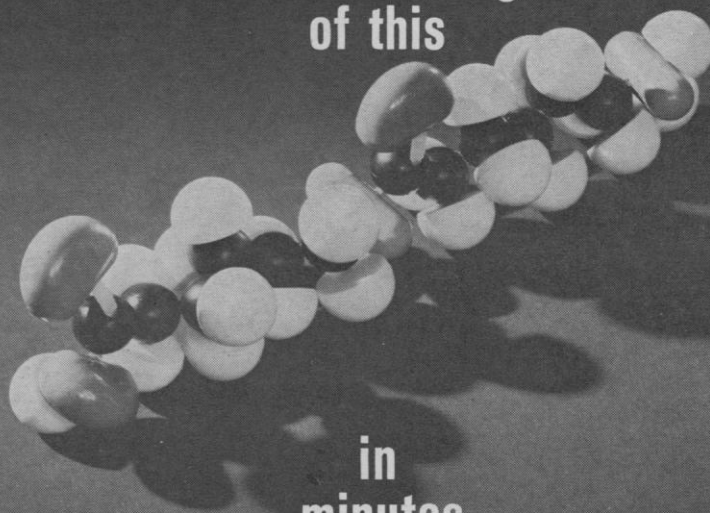
2-3. Academy of **Psychoanalysis**, annual, Los Angeles, Calif. (J. R. Royce, The Academy, 125 E. 65 St., New York, N.Y. 10021)

3-7. **Electrochemical Society**, spring meeting, Toronto, Ont., Canada. (ES, 30 E. 42 St., New York, N.Y. 10017)

3-7. American Soc. for **Microbiology**, annual, Washington, D.C. (American Inst. of Microbiology, 115 Huron View Blvd., Ann Arbor, Mich.)

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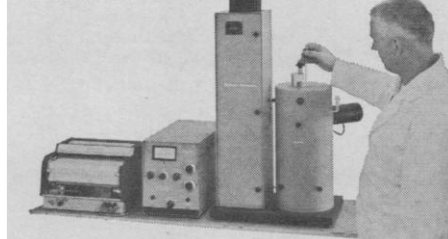
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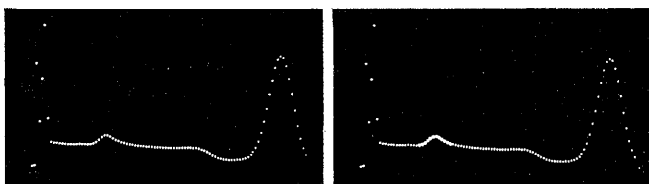
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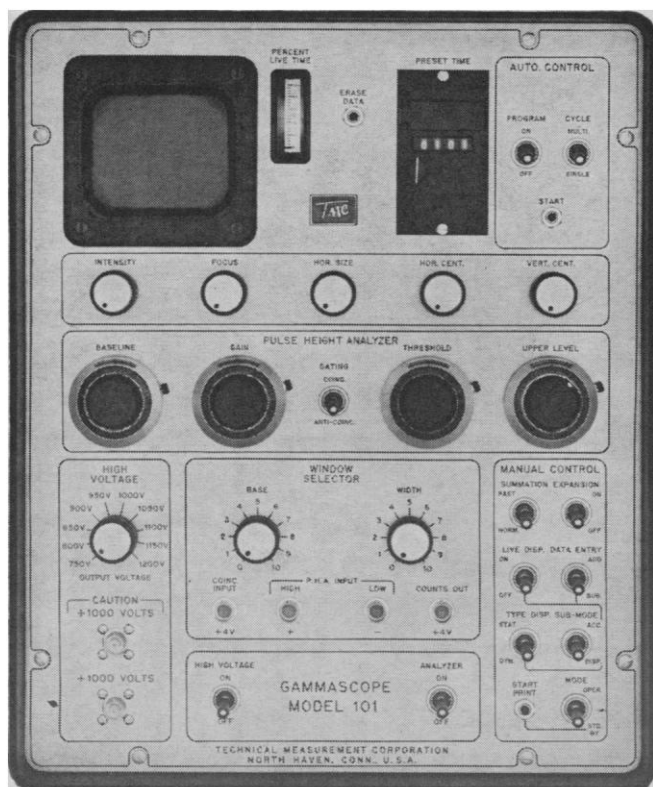
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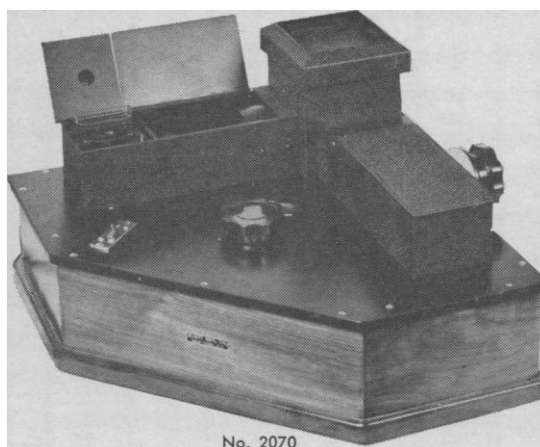
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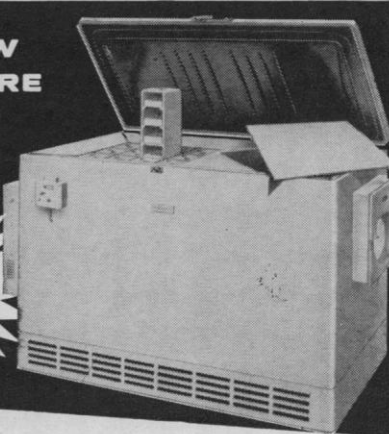
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3-9. **Medical Biological Congr.**, Mutters, Austria. (P. Newhäuser, Abilindastr. 52a, München-Gräfelfing, Germany)

4-5. **Chemical and Petroleum Instrumentation**, 5th natl. symp., Instrument Soc. of America, Wilmington, Del. (G. H. Robinson, Engineering Dept., E. I. duPont de Nemours Co., Wilmington)

4-6. Instrument Soc. of America, **Bio-medical Sciences Div.**, 2nd natl. symp., Albuquerque, N.M. (R. F. Rust, Brooks, Feeger Assoc., 1238 Ortiz S.E., Albuquerque)

4-6. American Inst. of Aeronautics and Astronautics, **Aerospace Propulsion** meeting, Cleveland, Ohio. (AIAA, 500 Fifth Ave., New York, N.Y. 10036)

4-6. Aerospace **Instrumentation**, 10th natl. symp., Instrument Soc. of America, New York, N.Y. (ISA, 530 William Penn Pl., Pittsburgh 19, Pa.)

4-6. Asymptotic Solutions of **Differential Equations** and Their Applications, symp., Madison, Wis. (C. Wilcox, Mathematics Research Center, Univ. of Wisconsin, Madison 53706)

4-6. American Soc. for **Quality Control**, 18th annual conv., Buffalo, N.Y. (ASQC, 161 West Wisconsin Ave., Milwaukee 3, Wis.)

4-6. Inhaled **Radioactive Particles and Gases**, symp., Richland, Wash. (W. J. Bair, Biology Laboratory, Hanford Laboratories, Richland, Wash.)

4-7. **Biomedical Sciences Instrumentation**, 2nd natl. symp., Instrument Soc. of America, Univ. of New Mexico, Albuquerque. (P. F. Salisbury, St. Joseph Hospital, 501 S. Buena Vista St., Burbank, Calif.)

4-8. American **Psychiatric Assoc.**, 120th annual, Los Angeles, Calif. (W. E. Barton, 1700 18th St., NW, Washington, D.C.)

4-8. **Strata Control and Rock Mechanics** intern. conf., New York, N.Y. (S. Boshkov, School of Mines, Columbia Univ., New York, N.Y.)

4-22. United Nations Commission on **Narcotic Drugs**, 19th session, Geneva, Switzerland. (UN, Palais des Nations, Geneva)

5-6. **Human Factors in Electronics**, 5th natl. symp., San Diego, Calif. (M. Freitag, 1910 Shire Dr., El Cajon, Calif.)

5-7. **Electronic Components Conf.**, Washington D.C. (J. Bohrer, 401 N. Broad St., Philadelphia, Pa.)

5-9. **Nuclear Radiation Hazards**, intern. symp., Intern. Civil Defence Organization, Monaco. (ICDO, 28 avenue Pictet-de-Rochemont, Geneva, Switzerland)

5-9. **Virginia Acad. of Science**, Charlottesville. (R. C. Berry, P.O. Box 8315, Richmond, Va.)

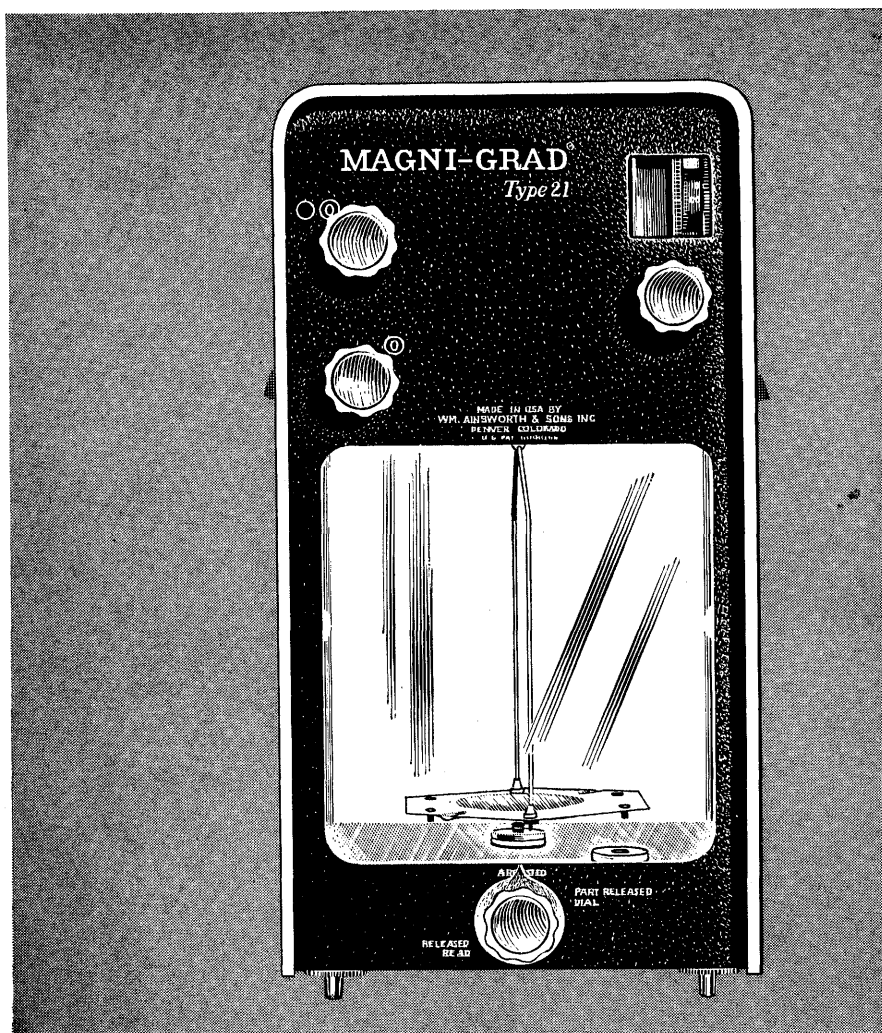
6-7. **Laser/Electron Beam**, seminar, Chicago, Ill. (R. Aptekar, Information Services Dept., American Soc. of Tool and Manufacturing Engineers, 10700 Puritan Ave., Detroit, Mich. 48238)

6-7. **Optical Masers Symp.**, Toronto, Ont., Canada. (R. N. Hall, General Electric Research Laboratory, P.O. Box 1088, Schenectady, N.Y.)

6-8. American Assoc. of **Genito-urinary Surgeons**, Rye, N.Y. (2020 93rd St., Cleveland 6, Ohio)

6-8. **Psychosomatic Research**, European conf., Athens, Greece. [G. S. Philippopoulos, 4 Monis Petraki St., Athens (140)]

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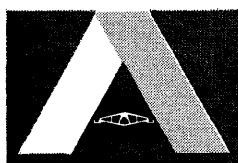


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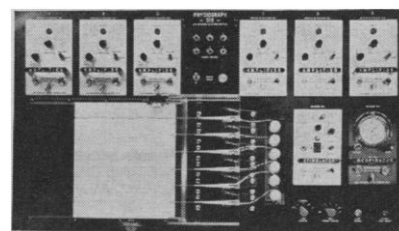
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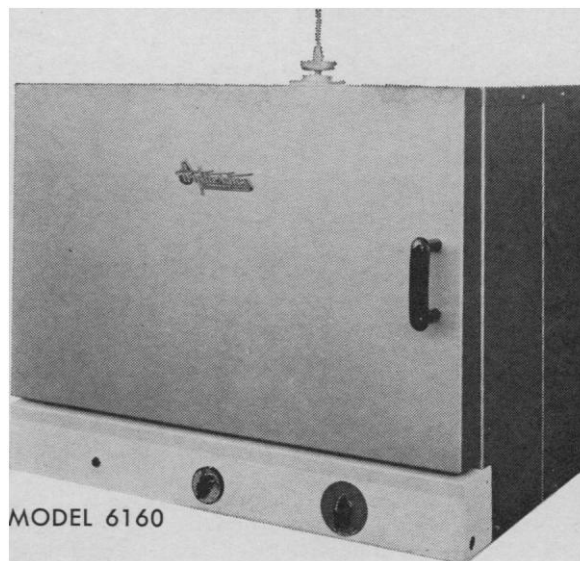
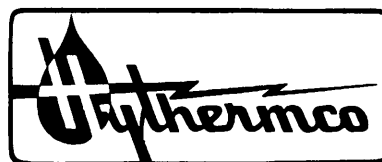
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6-8. Society for **Experimental Stress Analysis**, spring meeting, Salt Lake City, Utah. (B. E. Bossi, 21 Bridge Sq. Westport, Conn.)

6-9. **Acoustical Soc. of America**, 66th spring meeting, New York, N.Y. (W. Waterfall, 335 E. 45 St., New York, N.Y.)

7-8. **Vacuum Microbalance Techniques**, 4th conf., Pittsburgh, Pa. (F. A. Brassart, Westinghouse Research and Development Center, Beulah Rd., Pittsburgh 35)

7-8. **International College of Surgeons**, British section, summer meeting, London. (Secretariat, 1516 Lake Shore Dr., Chicago, Ill. 60610)

7-9. **Society for American Archaeology**, 30th annual, Chapel Hill, N.C. (W. H. Sears, Florida State Museum, Gainesville)

7-9. **Society of Neurological Surgeons**, Rochester, Minn. (SNS, Duke Univ. Medical Center, Durham, N.C.)

7-10. **International Assoc. for Bronchology**, 14th congr., Vienna, Austria. (Secretariat, Vienna Acad. of Medicine, 4, Alserstr., Vienna 9)

8-9. **Colorado-Wyoming Acad. of Science**, Denver, Colo. (Mrs. C. Norton, Dept. of Botany, Colorado State Univ., Fort Collins)

8-9. **North Carolina Acad. of Science**, Davidson. (J. A. Yarbrough, Meredith College, Raleigh, N.C.)

8-9. **Surgical Research Soc.**, Sheffield, England. (A. P. M. Forrest, Surgical Unit, Cardiff Royal Infirmary, Newport Rd., Cardiff, South Wales)

8-9. **Surface Physics**, Washington State Univ. Pullman. (E. E. Donaldson, Physics Dept., Washington State Univ., Pullman)

8-20. **Space Research**, 7th plenary meeting, ICSU committee, Florence, Italy. (E. R. Dyer, Jr., National Acad. of Sciences-National Research Council, 2101 Constitution Ave., Washington, D.C.)

10-14. **Cardiology**, 3rd Asian-Pacific congr., Kyoto, Japan. (S. Hayase, Medical Clinic, Kyoto Univ. Hospital, Sakyo-ku, Kyoto)

10-14. **French Soc. of Ophthalmology**, 71st congr., Paris. (M. A. Dollfus, Société Française d'Ophthalmologie, 27, rue du Faubourg-Saint-Jacques, Paris 16^e)

10-14. **American Proctologic Soc.**, Philadelphia, Pa. (APS, 7815 East Jefferson, Detroit 14, Mich.)

10-15. **Photographic Science and Engineering**, intern. conf., Palisades Park, N.J. (Executive Secretary, Soc. of Photographic Scientists and Engineers, Box 1609, Main Post Office, Washington, D.C.)

11-13. **Aerospace Electronics**, 16th natl. conf., Dayton, Ohio. (Y. Jacobs, 1917 Burbank Dr., Dayton 45406)

11-14. **Society for Industrial and Applied Mathematics**, spring meeting, Washington, D.C. (SIAM, Box 7541, Philadelphia 1, Pa.)

11-14. **American Urological Assoc.**, annual, Pittsburgh, Pa., (AUA, 1120 North Charles St., Baltimore, Md.)

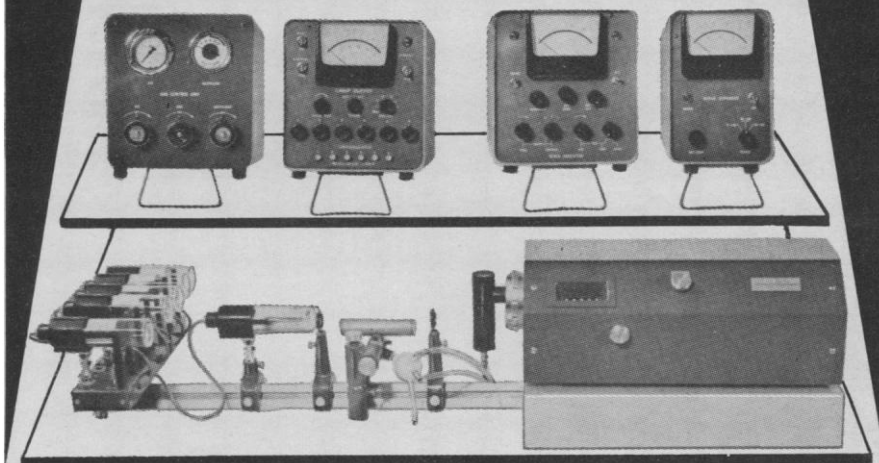
11-16. **Assessment of Radioactive Body Burdens in Man**, symp., IAEA, Heidelberg, Germany. (IAEA, Div. of Public Information Kärntnering 11, Vienna, Austria.)

11-14. **Aerospace Medical Assoc.**, 35th annual, Bal Harbour, Fla. (W. J. Ken-

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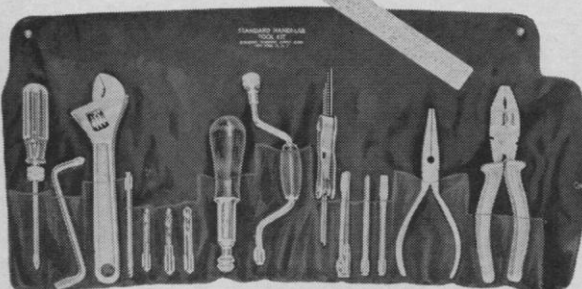
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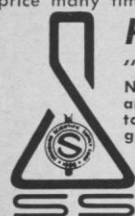
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11-14. **Biological Editors**, conf., Ann Arbor, Mich. (R. L. Zwemer, Committee on European Editors, c/o American Physiological Soc., 9650 Wisconsin Ave., Bethesda, Md. 20014)

11-16. International College of Surgeons, 14th intern. congr., Vienna, Austria. (S. E. Henwood, 1516 Lake Shore Dr., Chicago, Ill. 60610)

12. American Inst. of Chemical Engineers, tri-sectional symp., Newark, N.J. (R. H. Dodds, Gibbs & Hill, Inc., 393 Seventh Ave., New York, N.Y.)

13-14. Society of Plastics Engineers, plastics in space, conf., Garden City, N.J. (D. Hassel, Grumman Aircraft Engineering Corp., Bethpage, L.I., N.Y.)

13-15. **Biomathematics and Computer Science** in the Life Sciences, 2nd annual symp., Houston, Tex. (Univ. of Texas Graduate School of Biomedical Sciences, 102 Jesse Jones Bldg., Texas Medical Center, Houston 77025)

13-15. Society of Professional Well Log Analysts, 5th intern. symp., Midland, Tex. (F. Wheeler, SPWLA, P.O. Box 4713, Tulsa 14, Okla.)

14-15. **Radiochemical Processing Symp.**, Buffalo, N.Y. (R. F. Lumb, Western New York Nuclear Research Center, Power Drive, Buffalo 14214)

14-15. **Scandinavian Biochemistry Meeting**, Stockholm, Sweden. (Sveriges Biokemiska Körenig, Karolinska Inst., Stockholm 60)

14-16. Central States **Anthropological Soc.**, annual, Milwaukee, Wis. (N. O. Lurie, Dept. of Anthropology, Univ. of Wisconsin, Milwaukee 11)

14-16. Society of **Technical Writers and Publishers**, 11th annual conv., San Diego, Calif. (C. M. Johnson, U.S. Navy Electronics Laboratory, San Diego 92132)

16-2. **European Energy Conf.**, Paris, France. (H. Perdon, Institut Français des Combustibles et de l'Energie, 3, rue Henri-Heine, Paris 16°)

17-20. American Inst. of **Chemical Engineers**, natl. meeting, Pittsburgh, Pa. (F. J. Van Antwerpen, 345 E. 47 St., New York, N.Y. 10017)

18-20. **Radiation Research Soc.**, 12th annual, Miami Beach, Fla. (G. D. Adams, Radiological Laboratory, Univ. of California Medical Center, San Francisco 22)

18-20. **Water**, 2nd conf., Technical Assoc. of the Pulp and Paper Industry, Green Bay, Wis. (H. O. Teeple, TAPPI, 360 Lexington Ave., New York, N.Y. 10017)

18-21. Society of **Economic Paleontologists and Mineralogists**, Toronto, Ont., Canada. (R. H. Dott, Box 979, Tulsa 1, Okla.)

18-21. American Assoc. of **Petroleum Geologists**, 49th annual conv., Toronto, Ont., Canada. (R. E. King, American Overseas Petroleum, Ltd., 485 Lexington Ave., New York, N.Y. 10017)

19-20. Council on **Medical Television**, 6th annual, Atlanta, Ga. (S. A. Agnello, Box 3163, Duke Univ. Medical Center, Durham, N.C. 27706)

19-21. **Microwave Theory and Techniques**, intern. symp., New York, N.Y. (H. L. Browman, Airborne Instruments Laboratory, Deer Park, N.Y. 11729)

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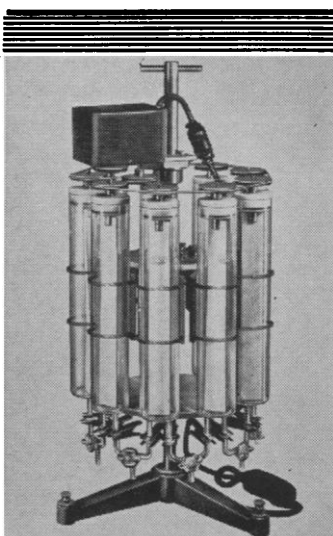
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