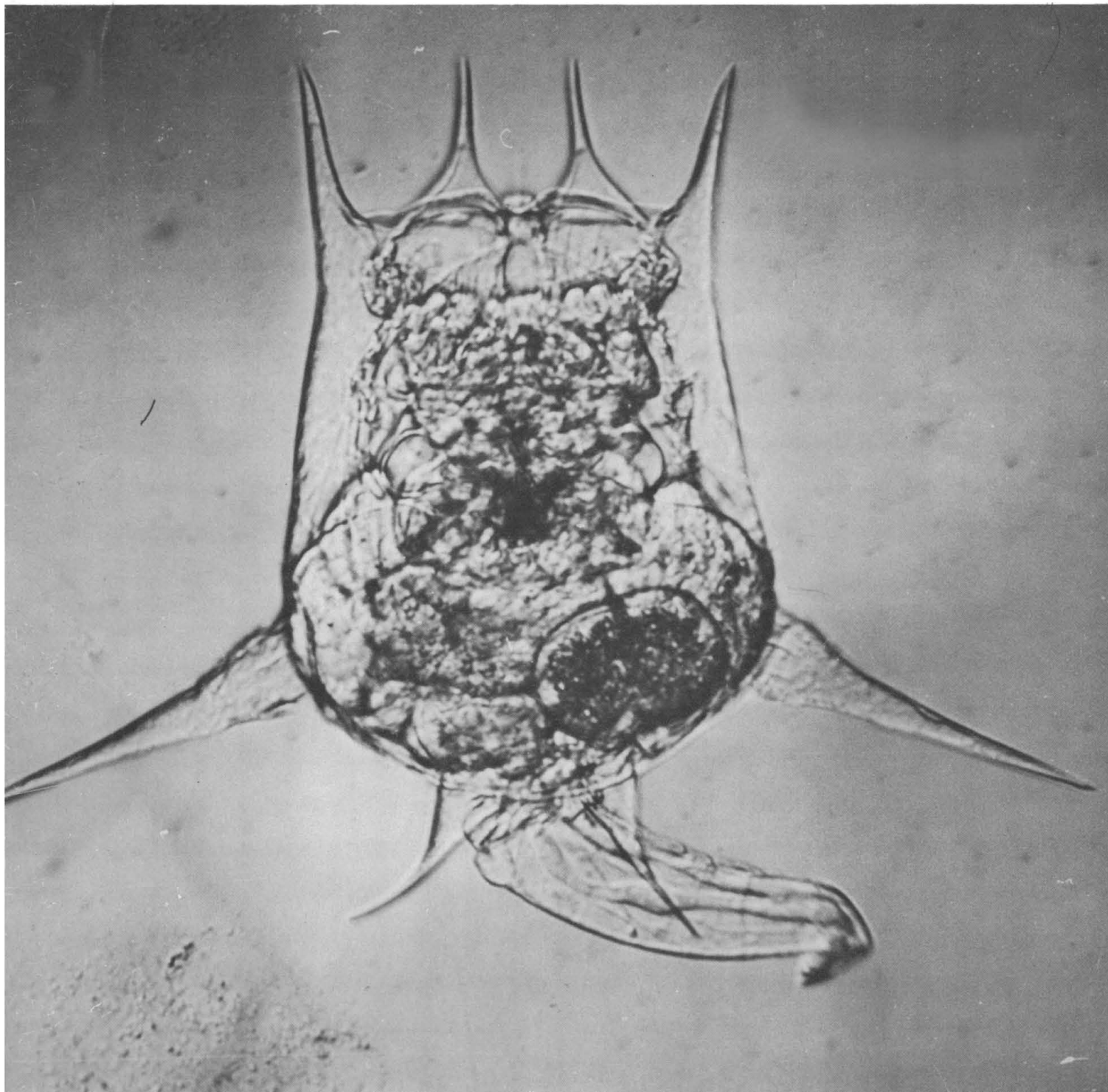


SCIENCE

11 March 1966

Vol. 151, No. 3715

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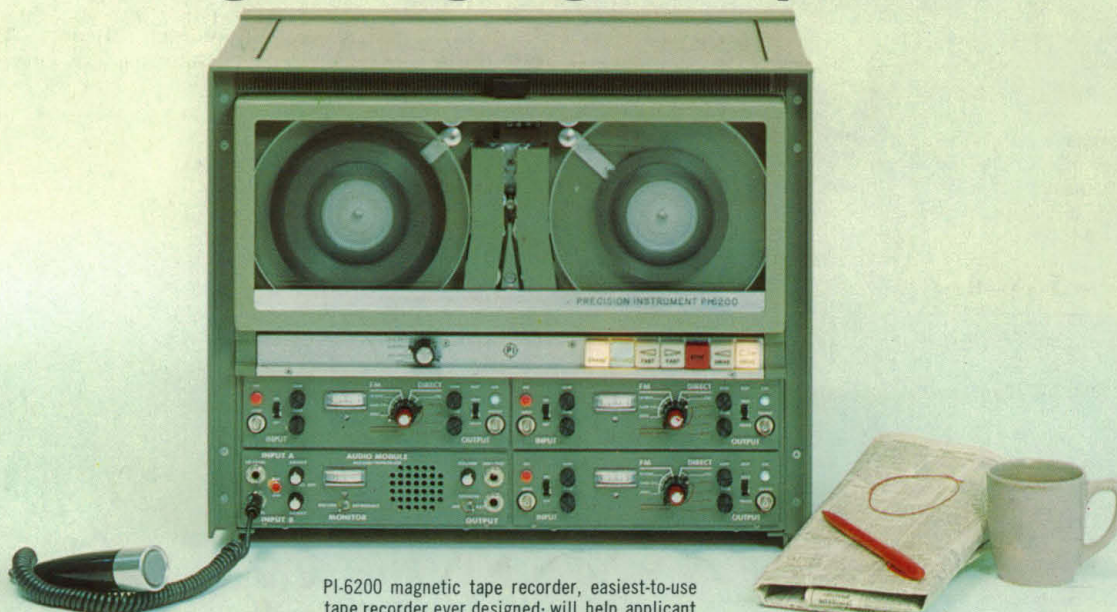
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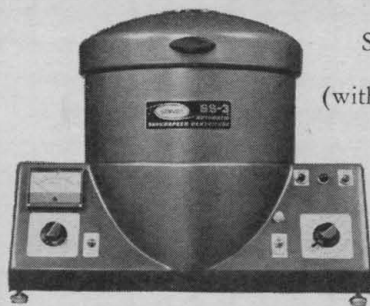
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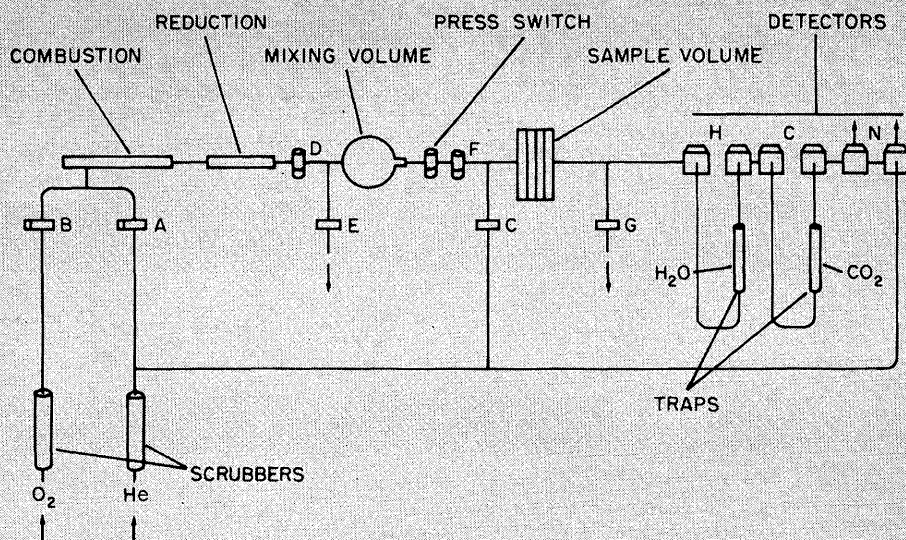


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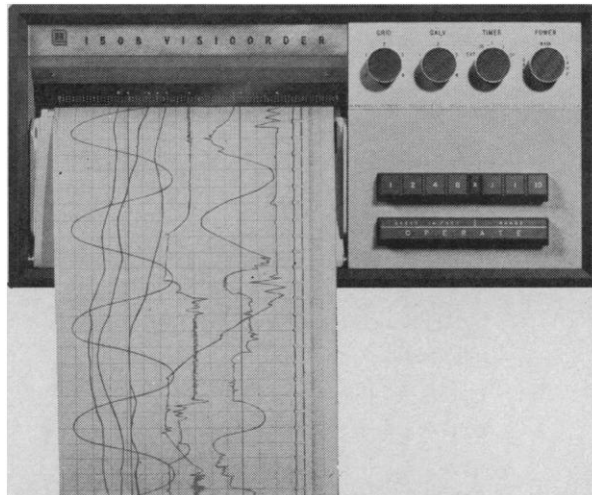
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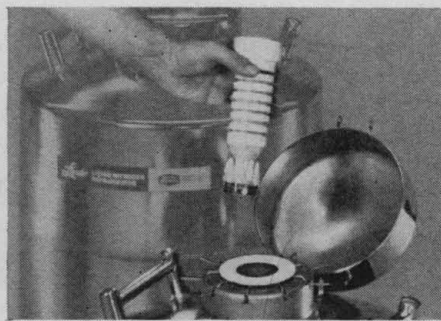
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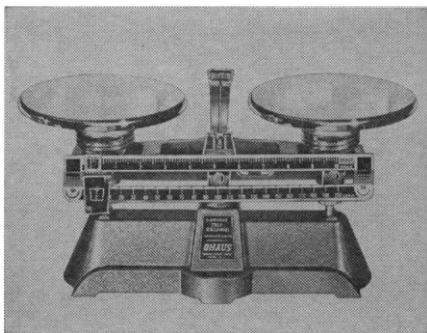
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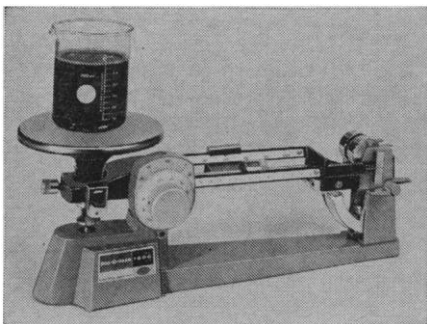
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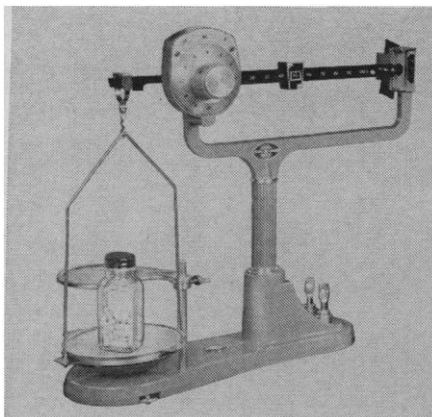
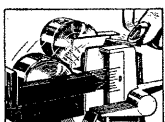
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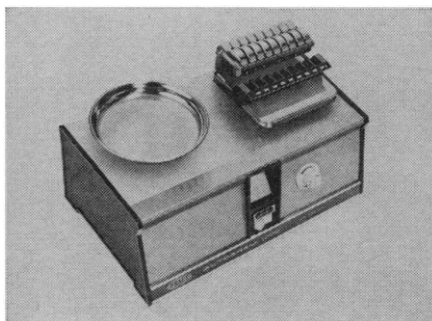
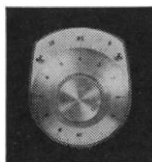


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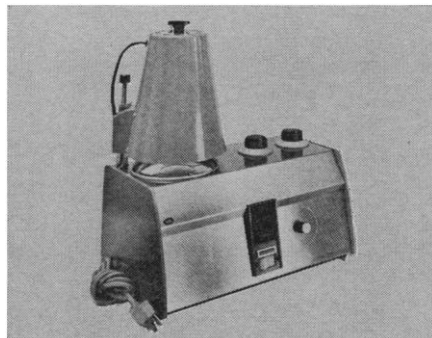
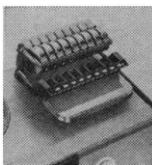
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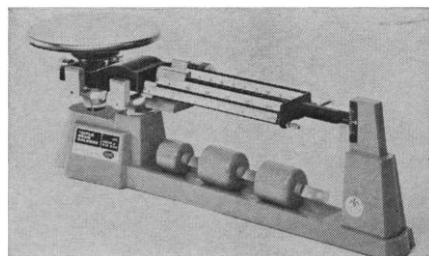
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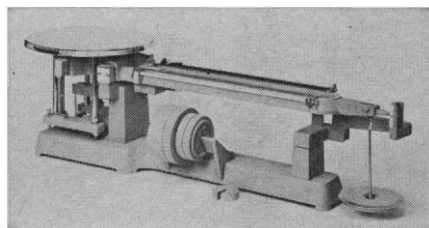
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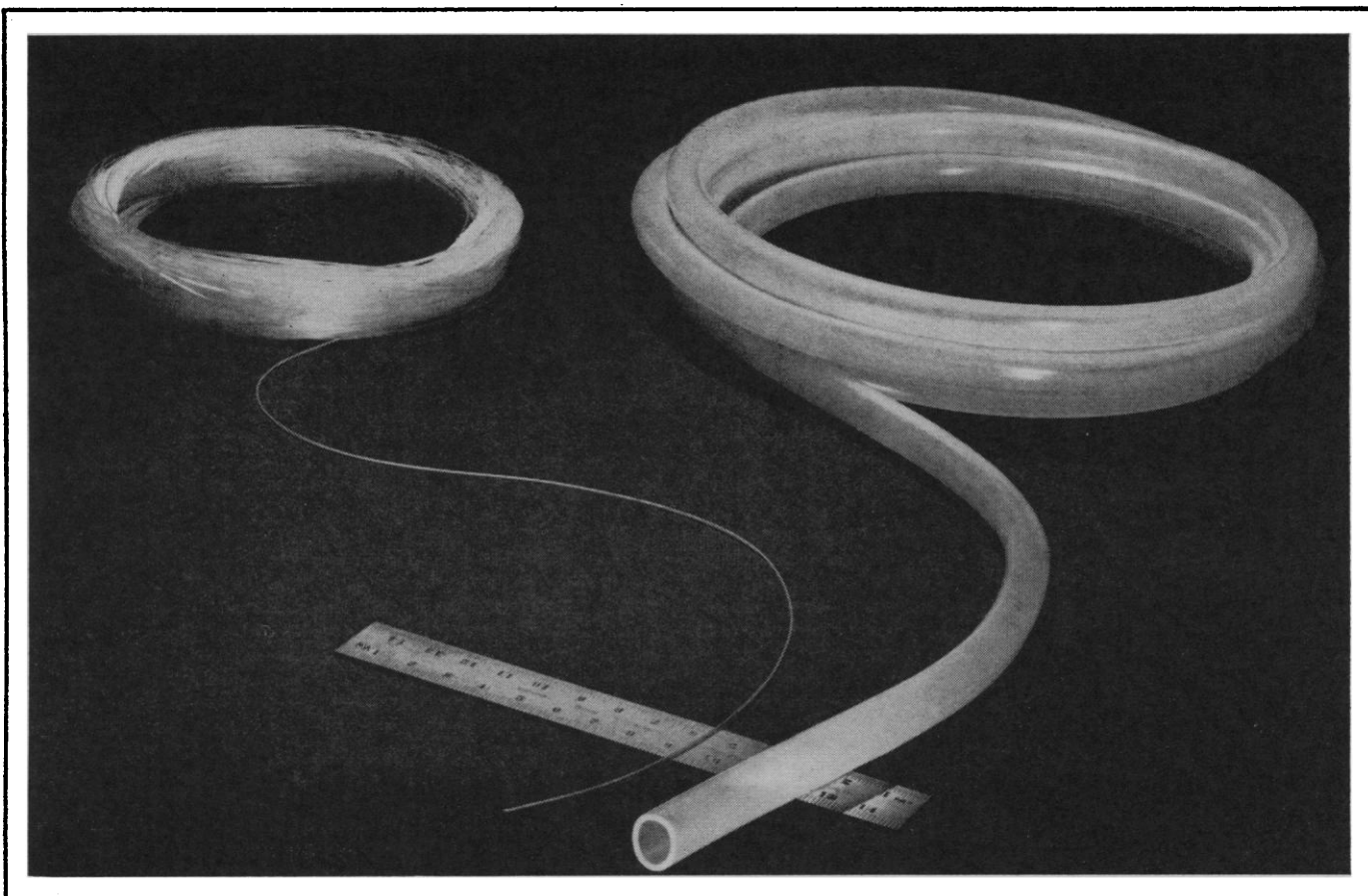
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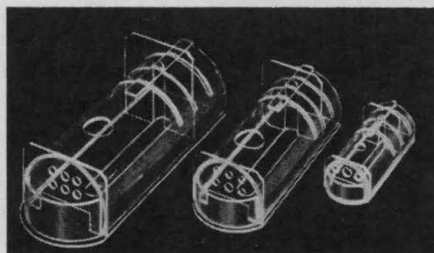
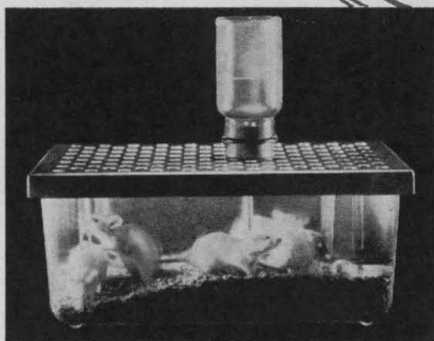
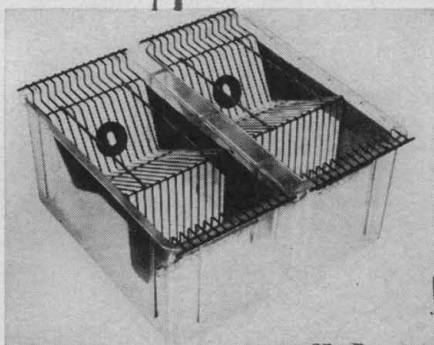
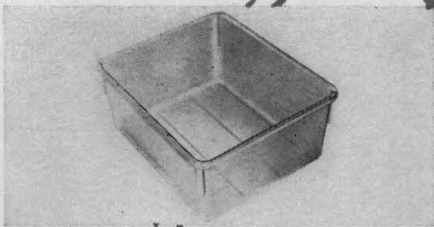
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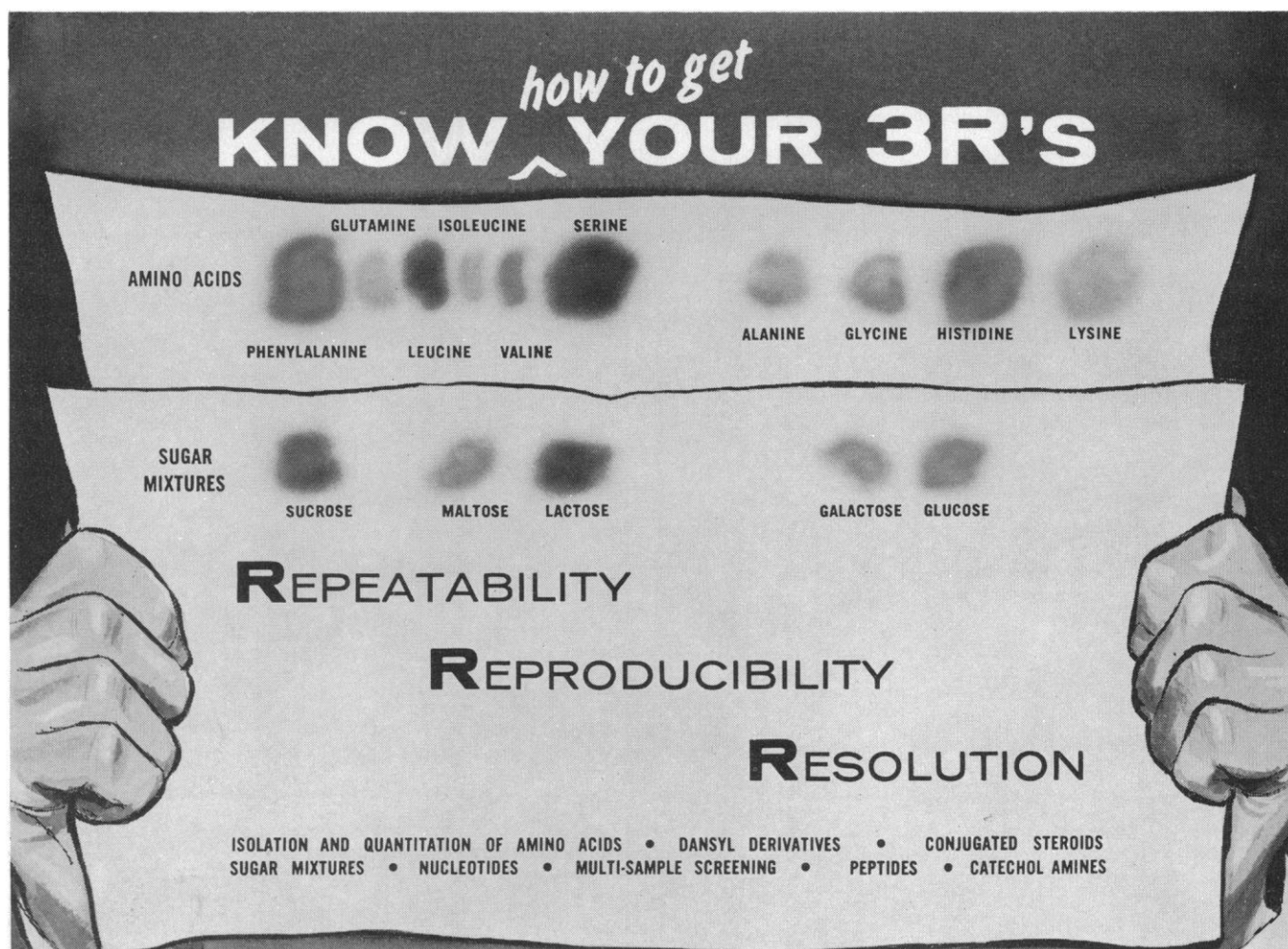
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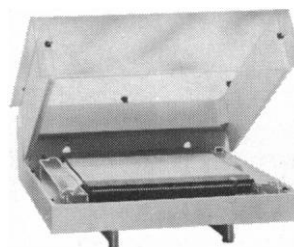


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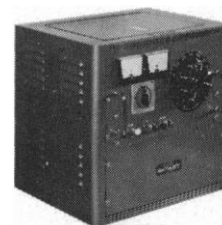
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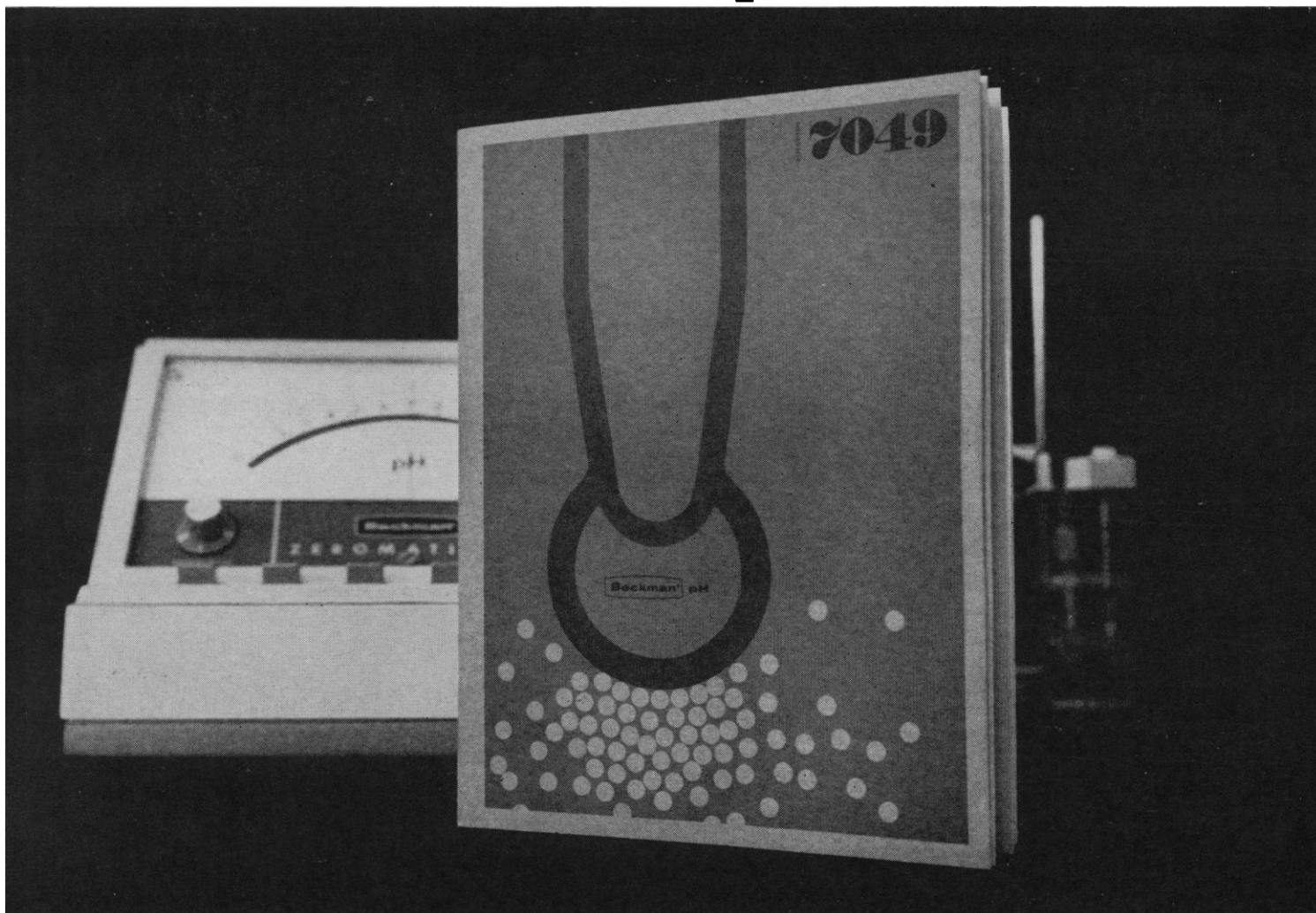
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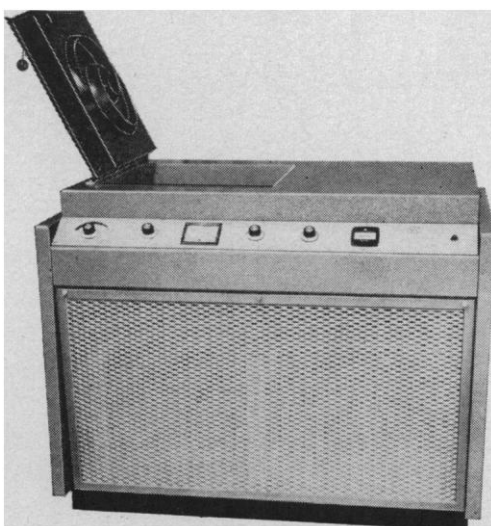
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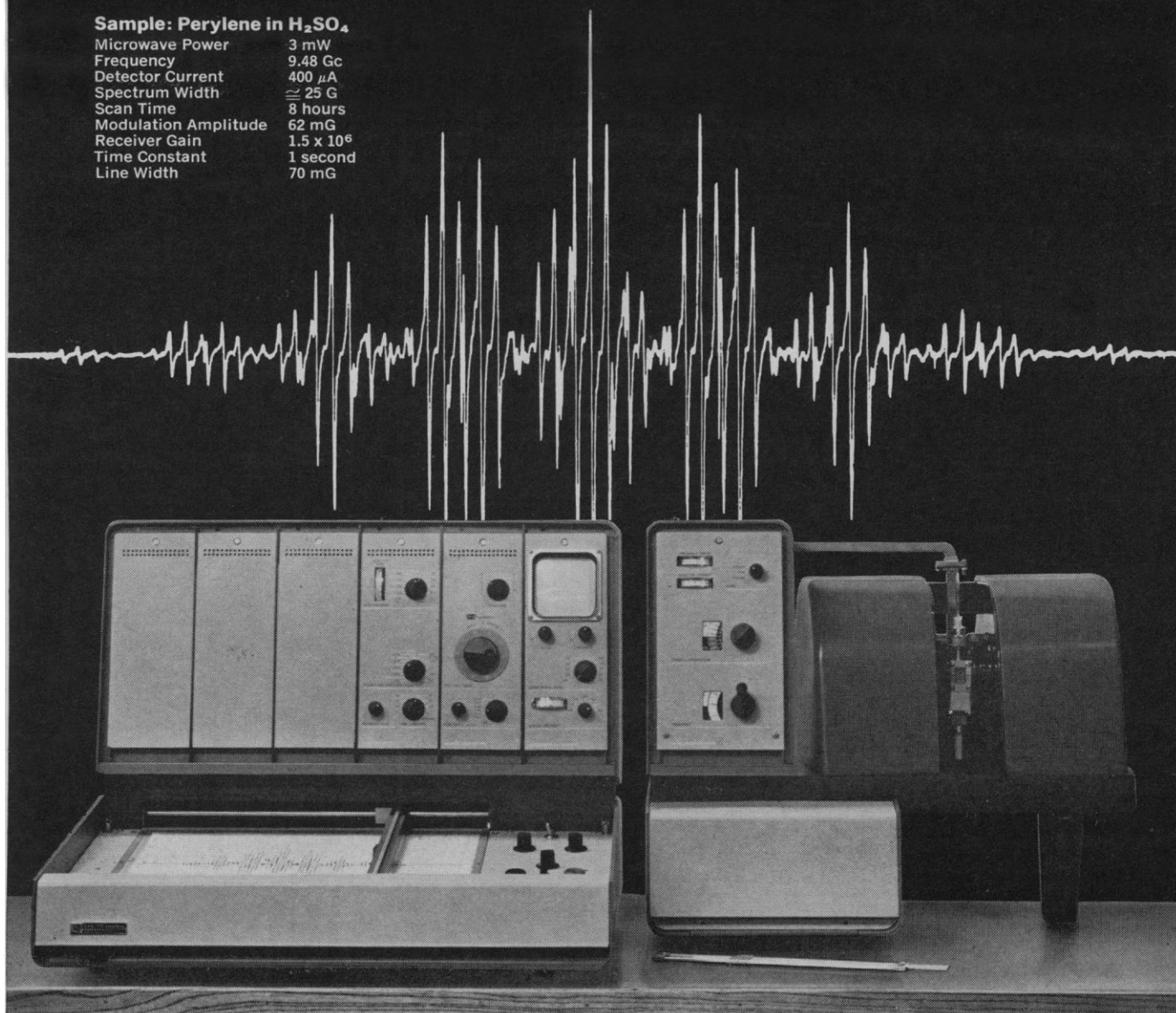
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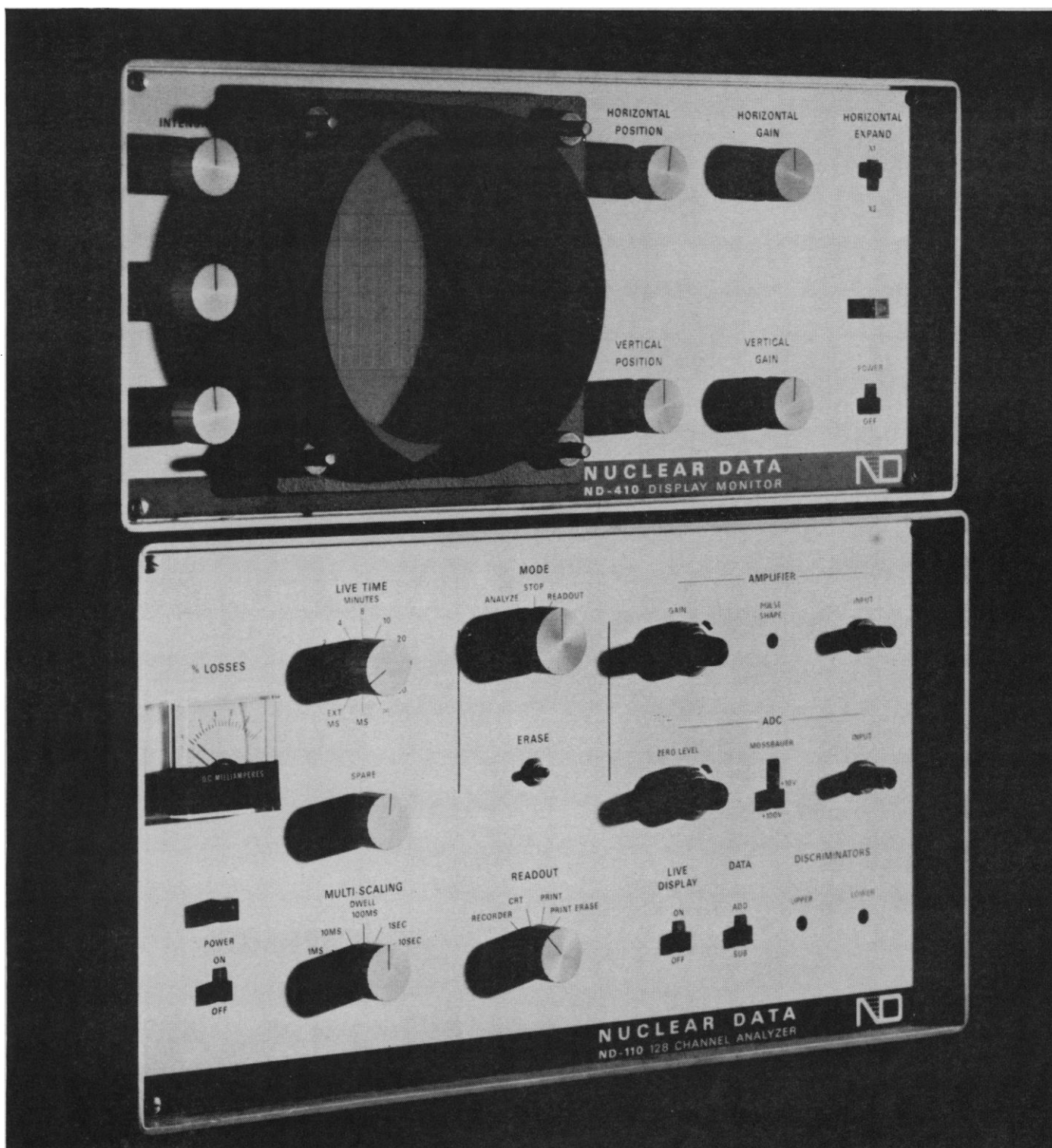
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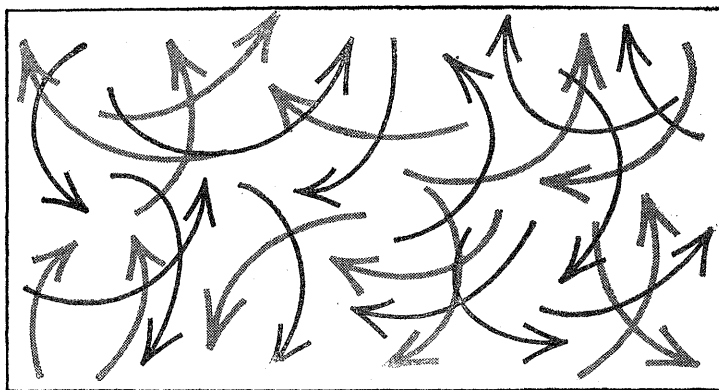
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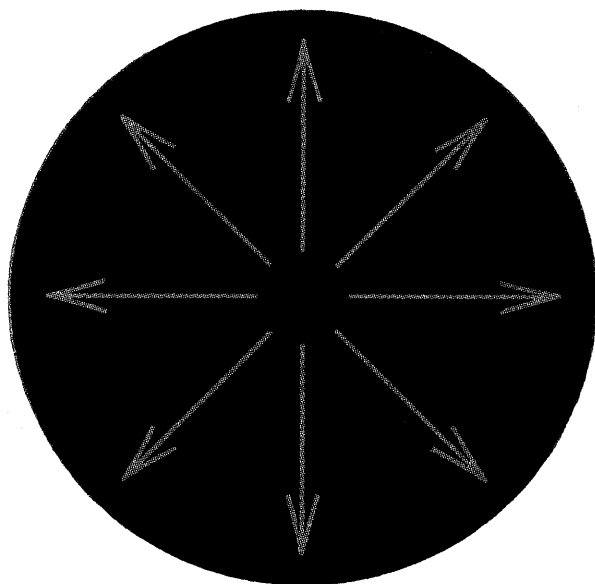
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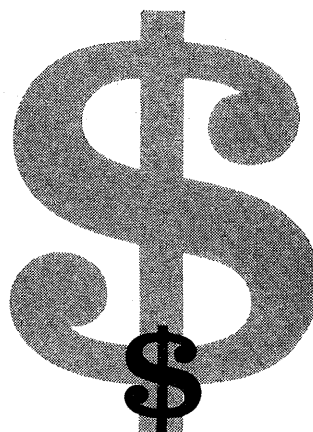
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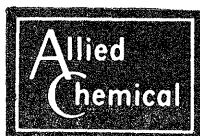
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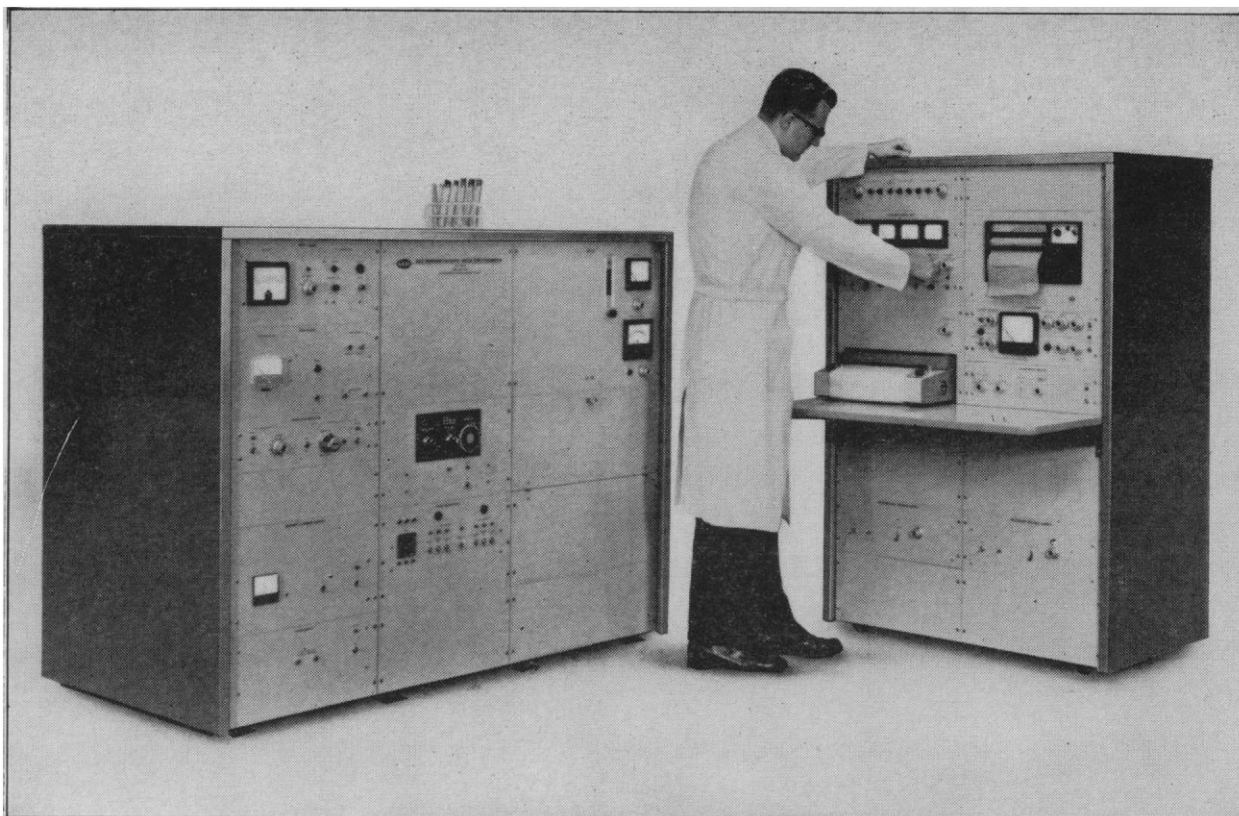
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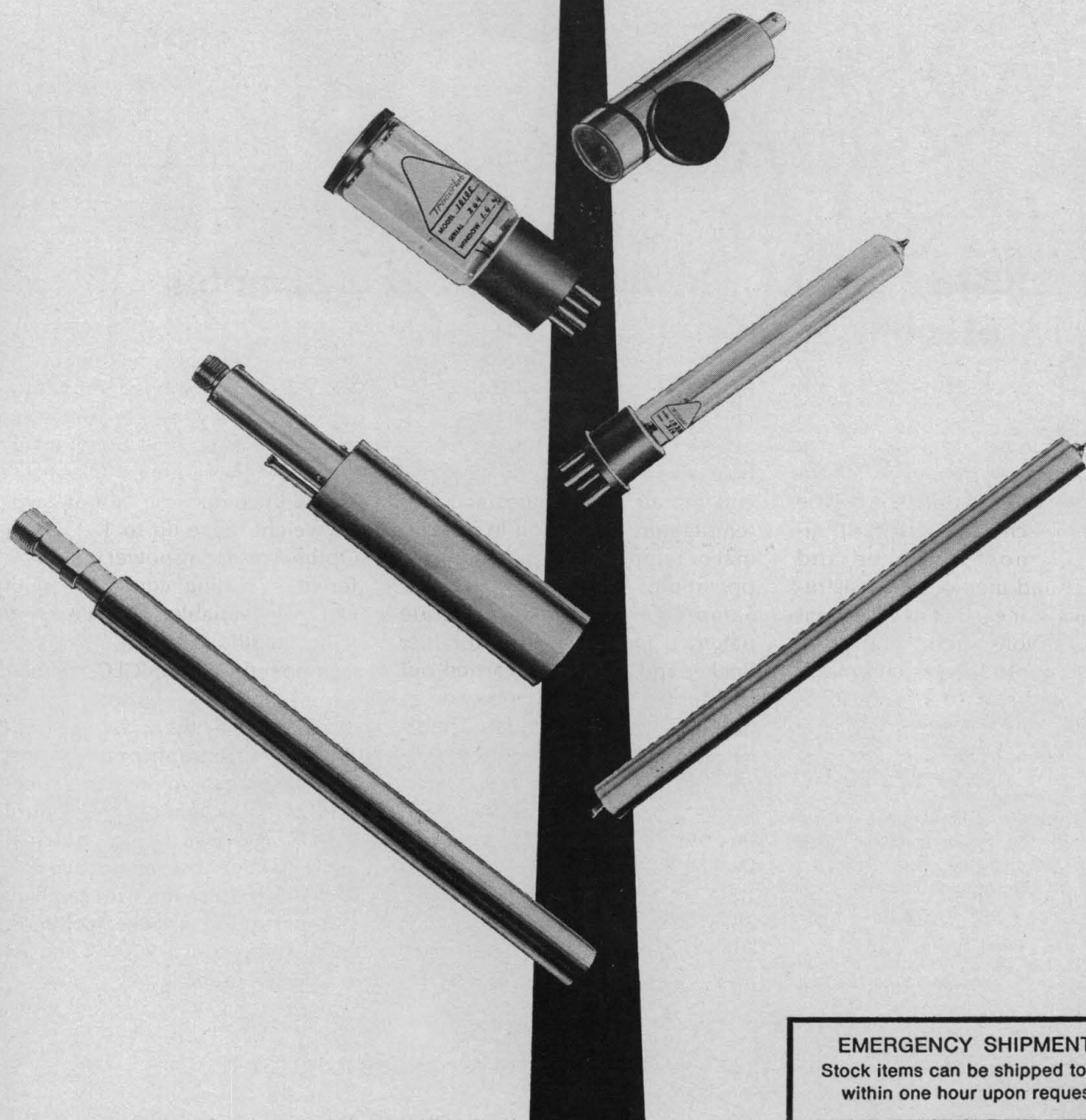
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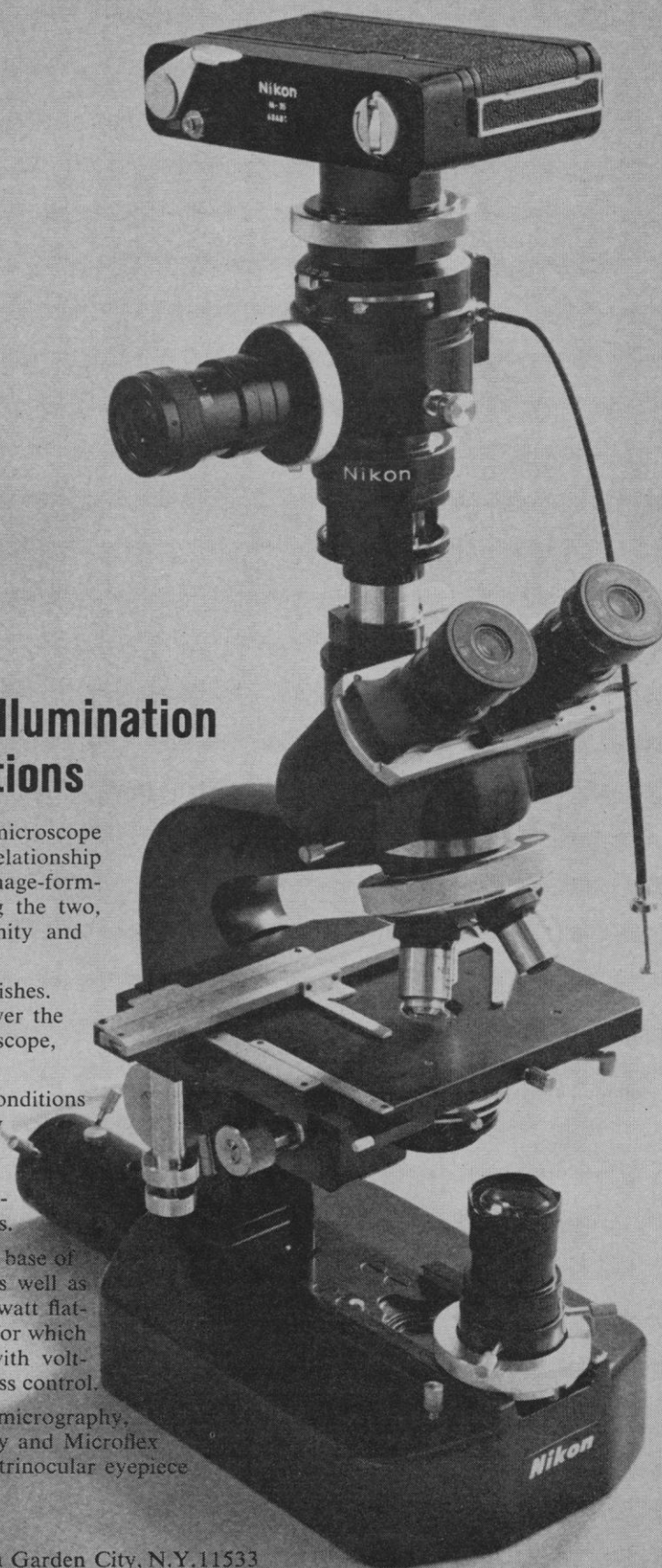
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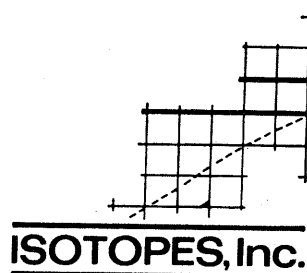
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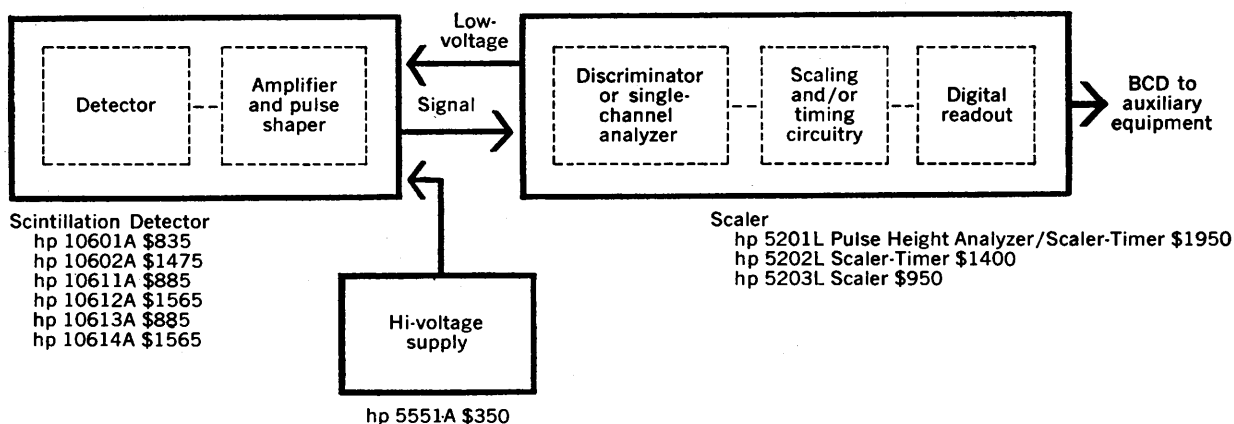
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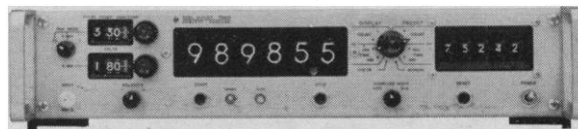


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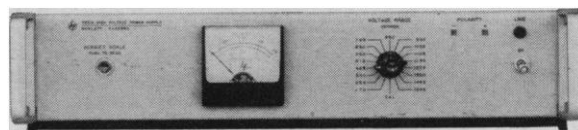
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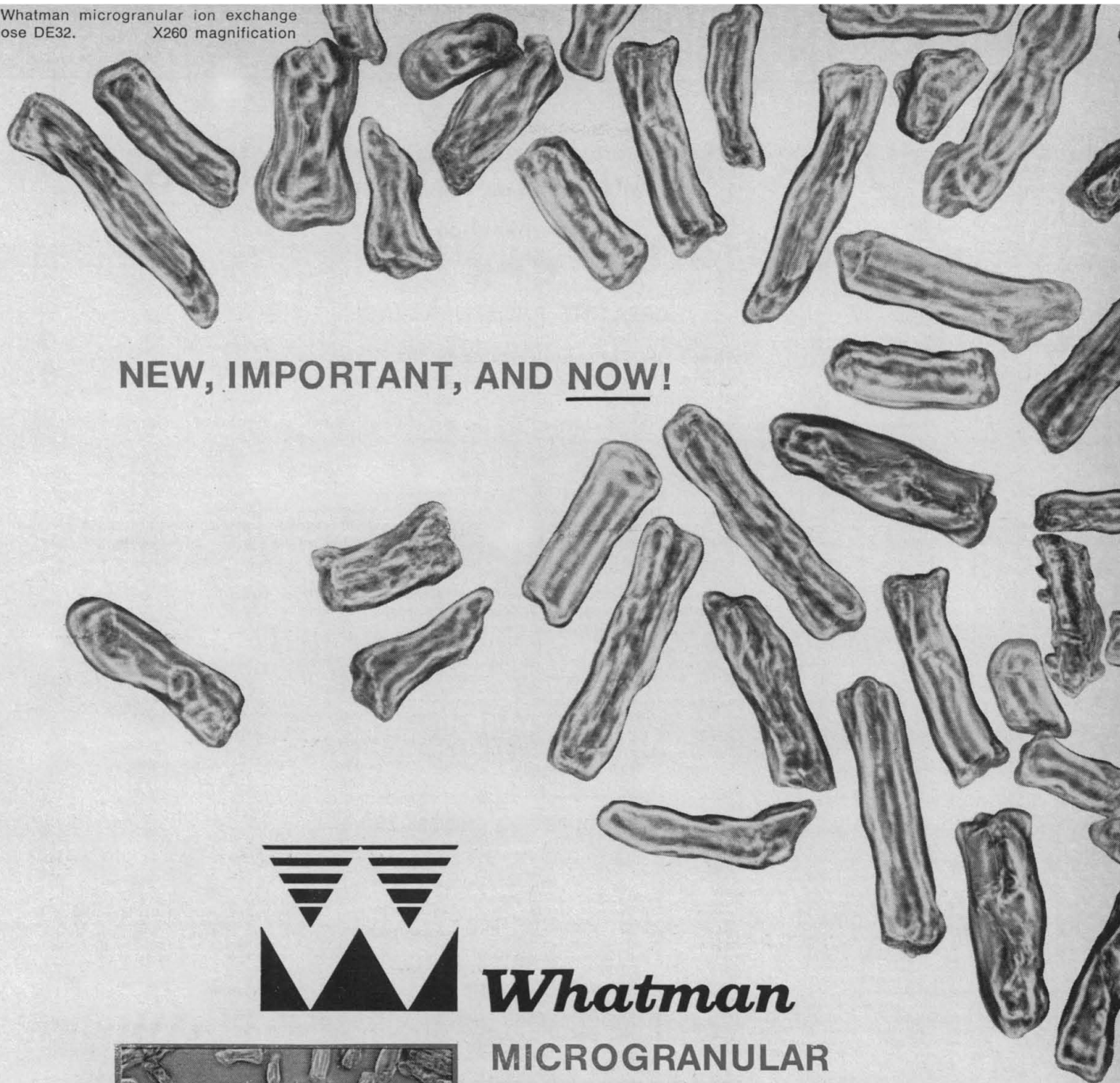
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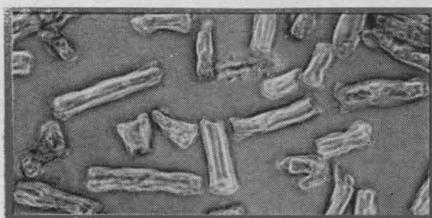


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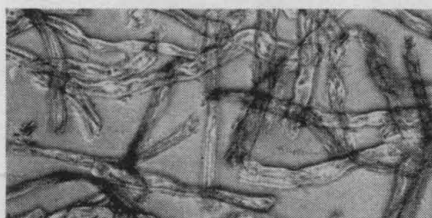


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CPK is an excellent diagnostic aid in Muscular Dystrophy.
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- Ref.: 1. Dreyfus, J. L., Laruelle, P., Schimmel, P., et Michaux, J., "Interet de l'Etude de la Creatine-Kinase du Serum Chez les Meres de Myopathes," Rev. Fr. Et. Biol. V, 990-994, (1960).
2. Hess, J. W., & MacDonald, R. P., J. Mich. State Med. Soc., 62, 1095, (1963).
3. Hess, J. W., MacDonald, R. P., Frederick, R. J., Jones, R. N., Neely, J., & Gross, D., "Serum Creatine Phosphokinase (CPK) Activity in Disorders of Heart and Skeletal Muscle," Annals of Internal Medicine, 61, 1015, (1964).
4. Duma, R. J., & Siegel, A. L., "Serum Creatine Phosphokinase in Acute Myocardial Infarction," Arch. Intern. Med., 115, 443, (1965).
5. Okinaka, S., Kumagai, H., Ebashi, S., Sugita, H., Momoi, H., Toyokura, Y., Fujie, Y., Arch. Neurol., 4, 520, (1961).

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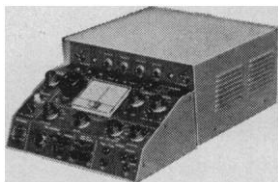
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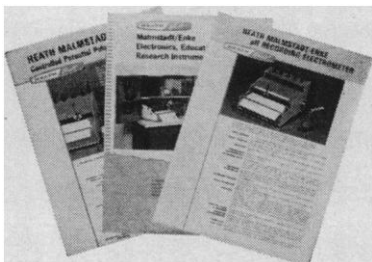
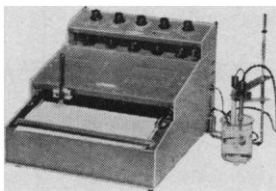


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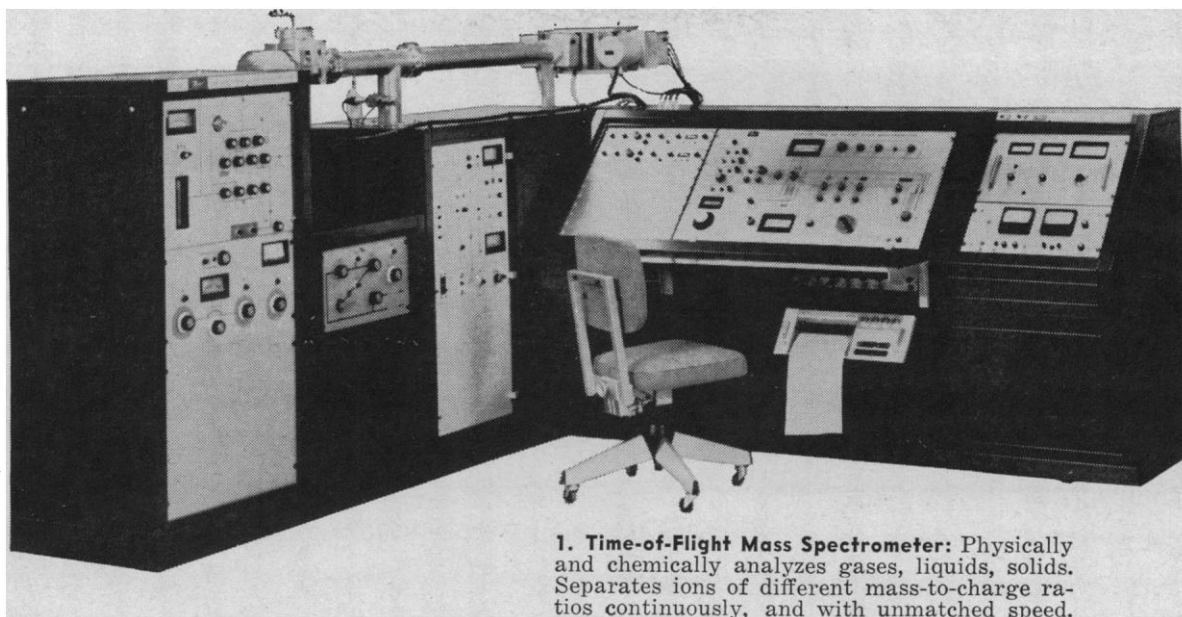
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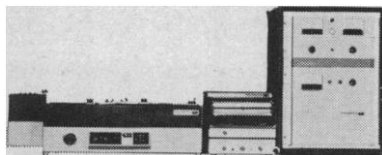
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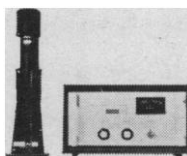


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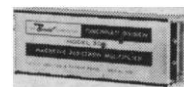
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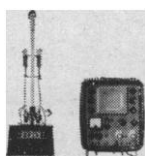
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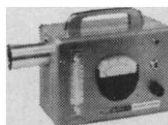
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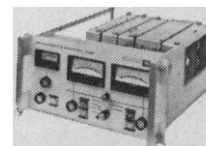
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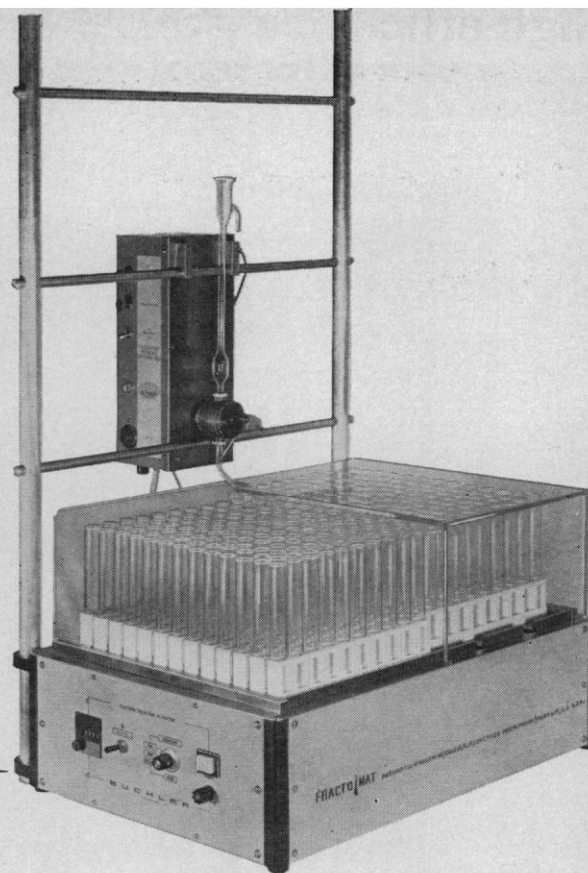
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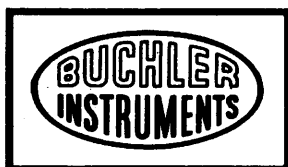
(Tri-Purpose Linear Fraction Collector)

The FRACTOMAT is just 17½" wide and the only thing big about it is the kind of job it does. The most compact fraction collector available, the FRACTOMAT will save you valuable bench space while offering many features that other, larger units do not possess:

- Only 17½" wide • 260 Standard Tube Capacity with Adapters for Micro-collection • Drop, Time and Volume (Syphon or Photoelectric) Collection • Collection is Directly Into Test Tubes Preventing Cross-contamination • Safety Feature Prevents Loss of Samples • Racks Can Be Added or Removed As Often As Required • All Stainless Steel and Anodized Aluminum Construction • Added Flexibility in Mounting Columns • Dust Cover Included at No Extra Cost

(Available for 220 Volt Lines)

Find Out More: Request Bulletin #S3-4200



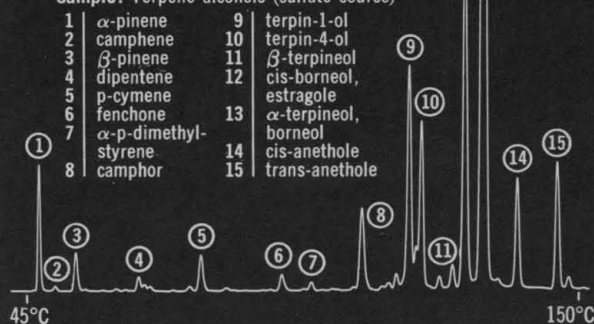
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SEE IT AT THE FEDERATION MEETING—BOOTHS W 1-2-3

High-efficiency gas chromatograph

1—EFFICIENCY

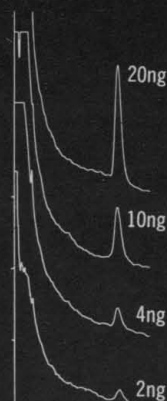
Detector: Flame Ionization
Column: 12 ft. x 3 mm glass; 4% Chrom. W
20M on 80/100 Diatoport S
Sensitivity: Range 100 Atten 16
Sample: Terpene alcohols (sulfate source)



2—COMPONENT LOSS

Detector: Flame Ionization
Column: 2 ft. x 1/4 in glass;
3.8% SE-30 on 80/
100 Diatoport S
Sensitivity: Range 1 Atten 4
Sample: 20, 10, 4 and 2
nanograms of free
progesterone in
CS₂

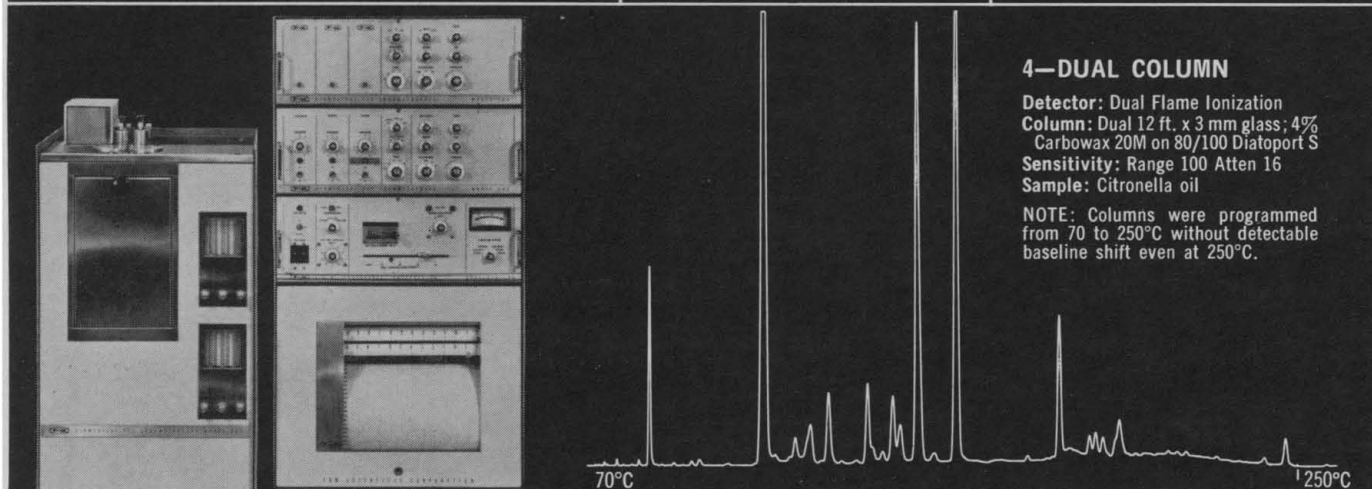
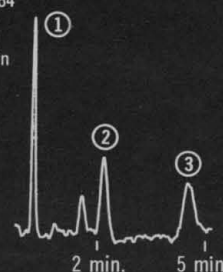
NOTE: Each peak
yields correct pro-
portionate
response



3—SENSITIVITY

Detector: Electron Capture
Column: 4 ft. x 3 mm glass;
3.8% SE-30 on
80/100 Diatoport S
Sensitivity: Range 1 Atten 64
Sample: 9 picograms of
each pesticide in
n-hexane

1 lindane
2 telodrin
3 dieldrin



4—DUAL COLUMN

Detector: Dual Flame Ionization
Column: Dual 12 ft. x 3 mm glass; 4%
Carbowax 20M on 80/100 Diatoport S
Sensitivity: Range 100 Atten 16
Sample: Citronella oil

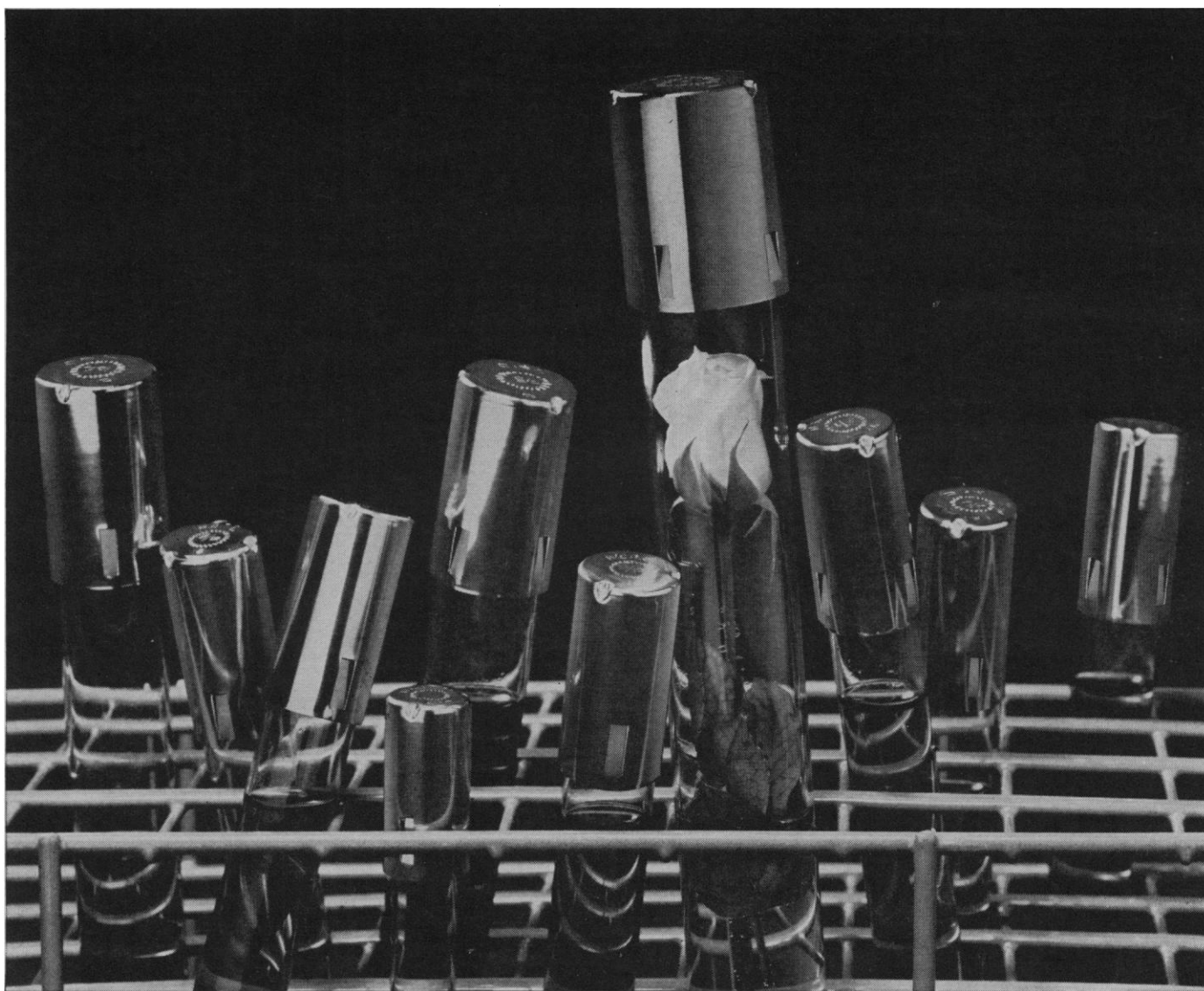
NOTE: Columns were programmed
from 70 to 250°C without detectable
baseline shift even at 250°C.

PROTECTS SENSITIVE MATERIALS

There's a long list of sensitive materials that have always given the chromatographer a rough time, among which are counted pesticides, steroids, vitamins, organo metallics and poly-functional industrial organic chemicals. The reason: they are all thermally or catalytically unstable or have polar functional groups that, in the environment of an ordinary gas chromatograph, cause them to decompose, react or get "lost" in the gc system. ■ It's precisely for these materials that the F & M Model 402 High-Efficiency Gas Chromatograph was designed. No matter what kind of sensitive material you want to analyze, the 402 will respect its chemical integrity and produce a chromatogram with all the characteristics that mark the output of a high-efficiency instrument: ■ *peak symmetry* so fine that you'll see virtually no trace of tailing in any of the chromatograms above, even at picogram levels of detection; ■ *column efficiency* so high (often exceeding 700 theoretical plates per foot) that even the most difficult separations are completed on as little as 12 feet of column; ■ *elimination of component loss* so complete that even steroids give accurate quantitative response, and even at the nanogram level; ■ *sensitivity* so high that picogram quantities of material are detected without even extending the detector; ■ *dual column operation* so versatile that it permits baseline compensation or concurrent analytical runs on two different columns, or simultaneous operation of up to four detectors, or combined analytical/preparative runs. ■ Why? Because the 402 is practically without dead space . . . has a unique on-column injection port which eliminates the harmful effects of thermal down-gradients or dead volume . . . lets the sample material "see" virtually nothing but glass . . . and for many other reasons, too. ■ Prices start at \$4,595.00 including recorder (f.o.b. Avondale, Pa., U.S.A.) For more information, call the Chemical Instrumentation Sales Representative at one of the 41 Hewlett-Packard sales offices in the U. S. ■ F & M Scientific, Division of Hewlett-Packard, Route 41 and Starr Road, Avondale, Pennsylvania 19311. In Europe: F & M Scientific Europa N. V., Basisweg (Sloterdijk), Amsterdam, The Netherlands.



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Morton® Culture Tube Closures

meet all the microbiologist's needs

We're not seriously recommending that you keep a rose under a Morton Closure, but this highly efficient replacement for cotton plugs *does* meet a host of needs in microbiological activities. *The well-known Morton Closure which has been in use for over ten years was designed by Dr. Harry E. Morton, Department of Microbiology, School of Medicine, The University of Pennsylvania.* The unique indentations and pressure fingers grip and center the tube, and the closure won't come off when tube is tilted or shaken. Because it's made of stainless steel, the closure resists corrosion; because it can be used repeatedly, it's economical. Its length permits easy manipulation. The Morton Closure

reliably prevents contamination from the air. Rate of evaporation is approximately half of that with cotton plugs and there is no lint-fouling. Closures can be color coded by placing a drop of permanent marking ink on top.

Morton Stainless Steel Culture Tube Closures, with fingers.

No.	Tube Size, O.D.	Qty/Pkg.	Package
T1390-13	13 mm	144	\$17.85
T1390-16	16 mm	144	18.35
T1390-18	18 mm	144	18.85
T1390-20	20 mm	144	23.85
T1390-25	25 mm	72	11.60
T1390-38	38 mm	36	15.26



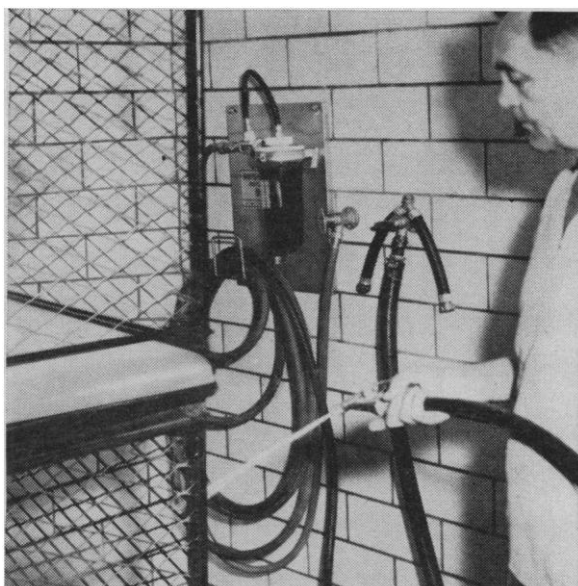
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Disinfect, Deodorize and Clean animal cages with MİKRO-Spray as easily as you now hose them down!

A unique device for the in-place cleaning of animal cages and animal rooms, the MİKRO-SPRAY system injects detergent germicides into your waterline at a rate exactly proportional to the flow of water.

Any surface or object that can be washed with water can be cleaned, disinfected and deodorized with the MİKRO-SPRAY just as easily and far more effectively. In fact, MİKRO-SPRAY hooks right into your existing waterline system. It is available in both wall-hung and portable models, which dispense one of two powerful detergent germicides (whichever one is best suited for your needs) in a rate exactly proportional to your flow of water. And gives you your safest, most sanitary, in-place cage cleaning ever, with no mopping or rinsing needed!

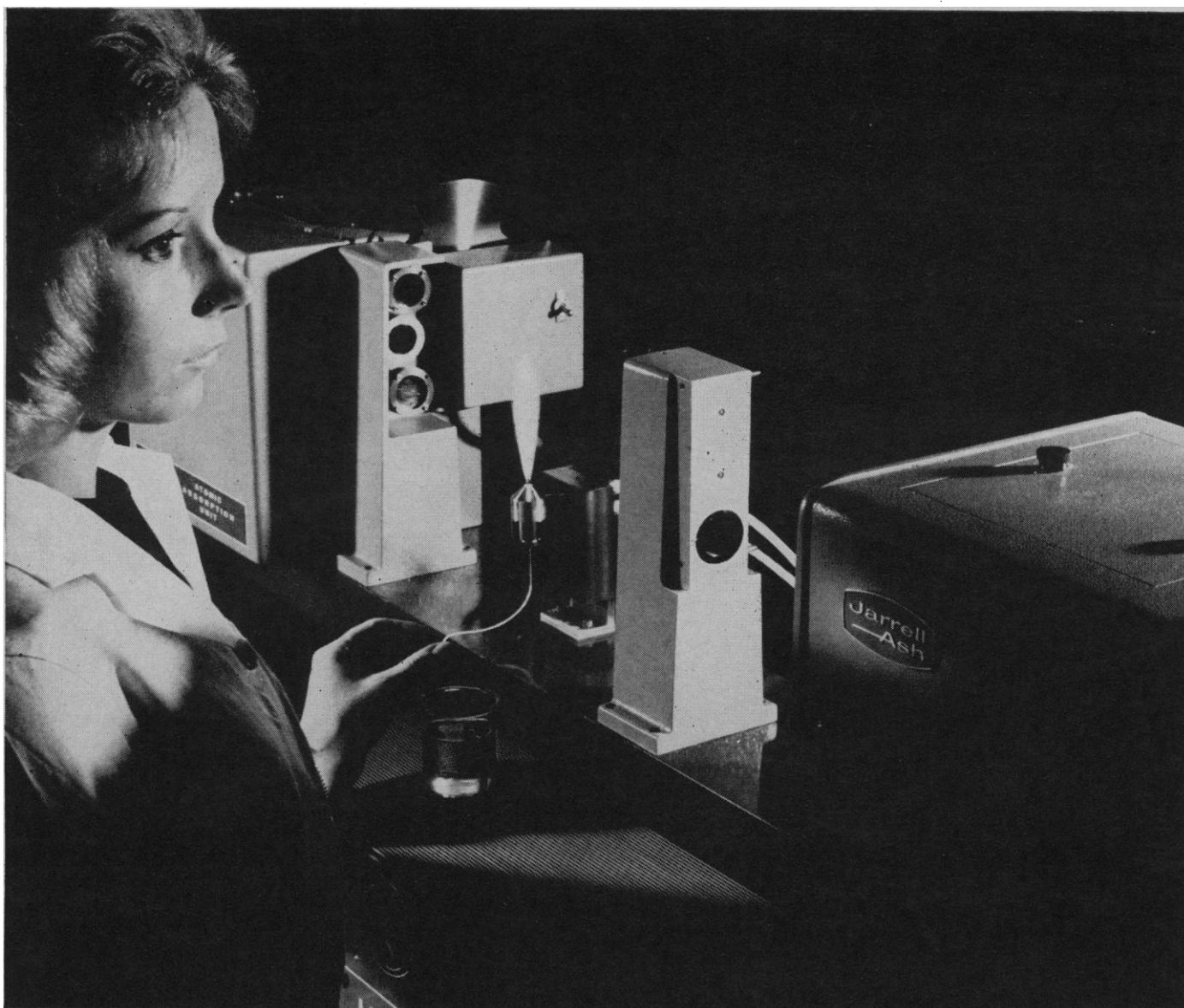
The first of these two detergent germicides, MİKRO-QUAT, is a quaternary ammonium detergent germicide. Completely harmless to animals, it disinfects and deodorizes for a full twenty-four hours. It is recommended for normal in-place cage cleaning requirements.

The second, MİKRO KLENE, is an iodophor detergent germicide that gives you the ultimate in disinfection results. It is recommended for use in cages where ani-

mals are being used for experimentation with dangerous infectious diseases and a fast, positive bacterial kill is required. Like MİKRO-QUAT, it is completely harmless to animals.

Use of the MİKRO-SPRAY system, of course, is not limited to just in-place cage cleaning. It is equally effective in disinfecting and deodorizing cage racks, walls and floors of the cage room and for general clean-up duties in the incinerator and waste disposal room. Send coupon today for new manual on environmental sanitation, including complete details on application of MİKRO-SPRAY system.

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Economics Laboratory, Inc., Dept. 142-N 250 Park Avenue, N. Y., N. Y. 10017	
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CITY _____	STATE _____ ZIP _____



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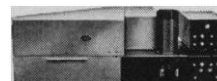
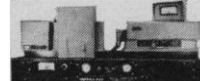
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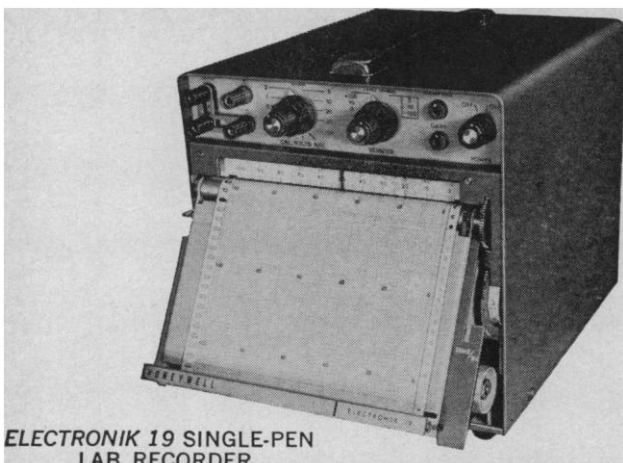
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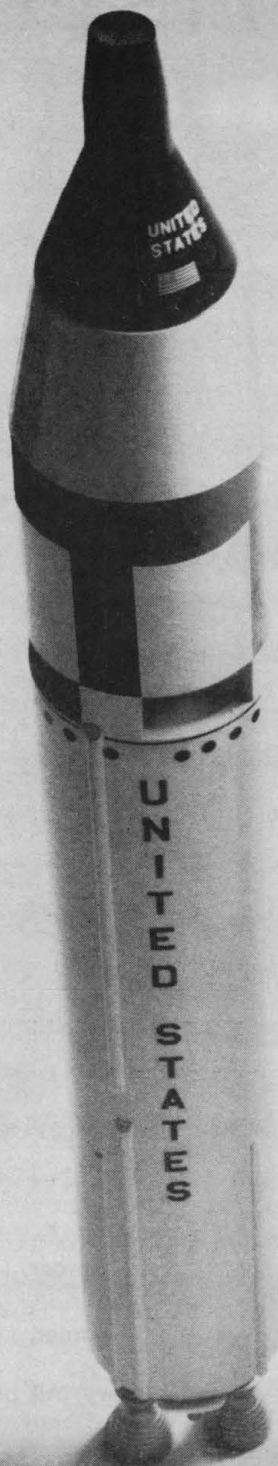
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Mercury Sigma 7, Oct., 1962

Mercury Faith 7, May, 1963

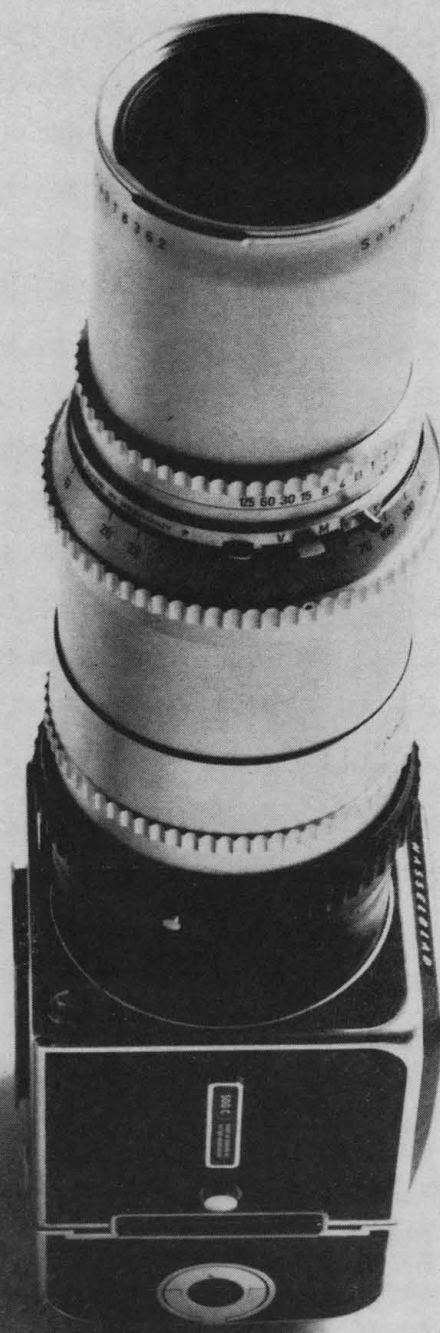
Gemini Molly Brown, March, 1965

Gemini 4, June, 1965

Gemini 5, Aug., 1965

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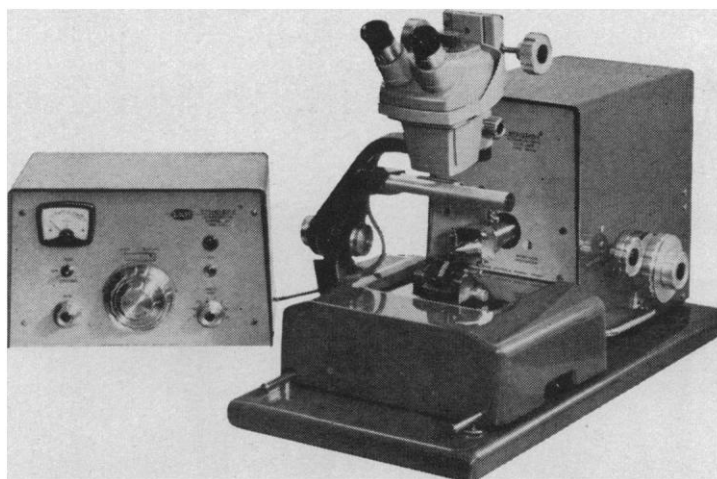
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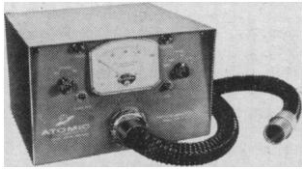
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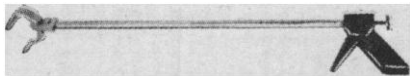
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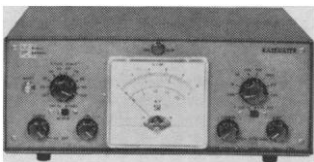
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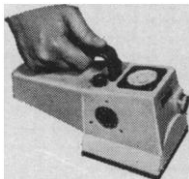
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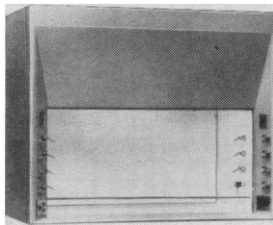
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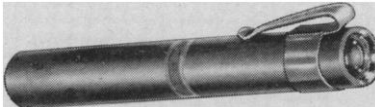
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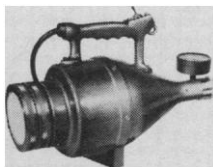
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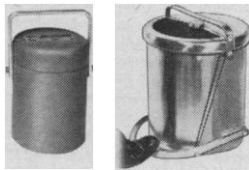
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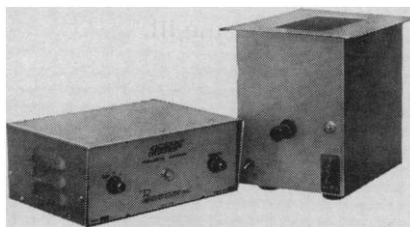


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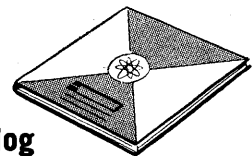
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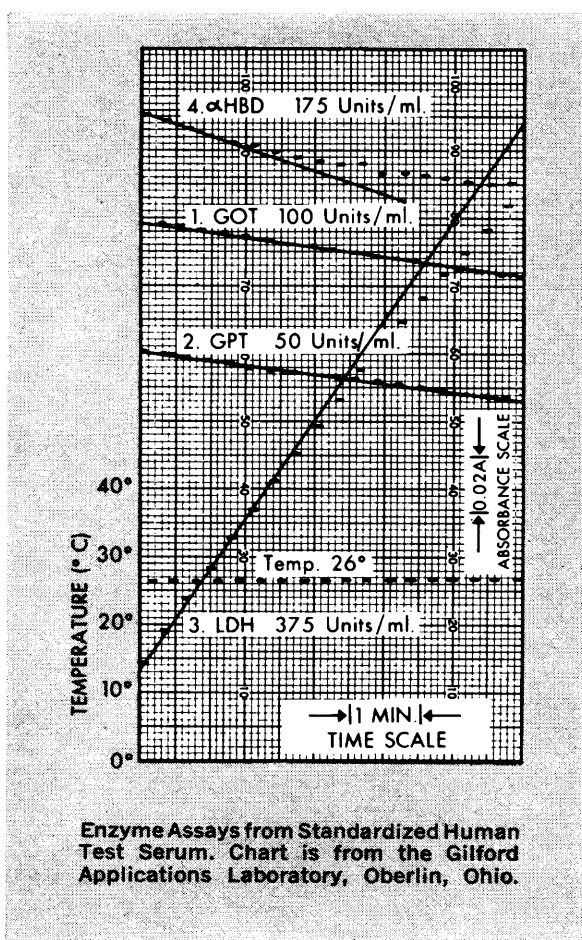
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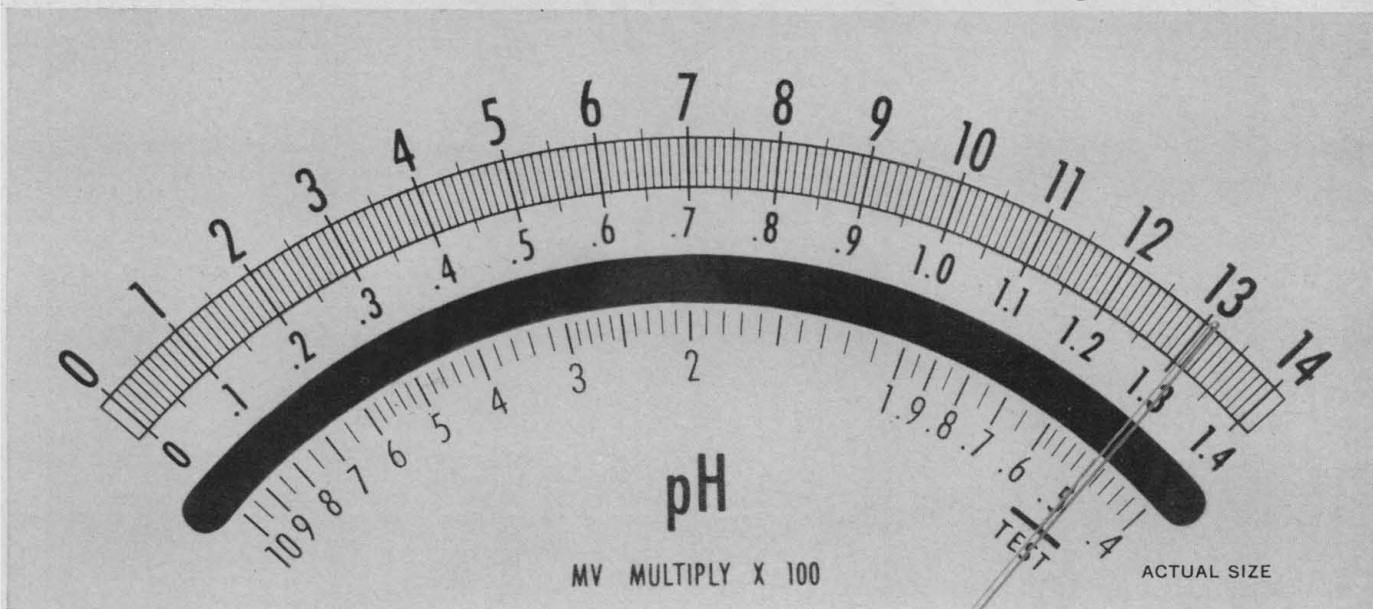


March, 1966

FISHER PRODUCT REPORT

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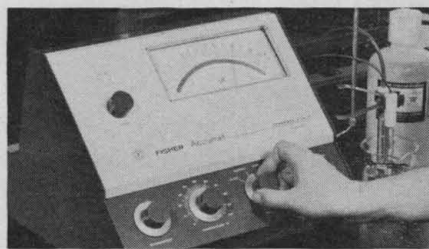
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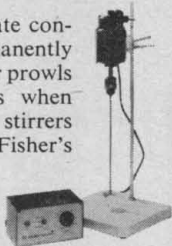
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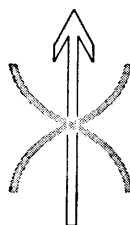


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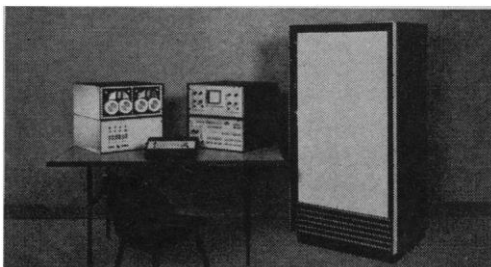
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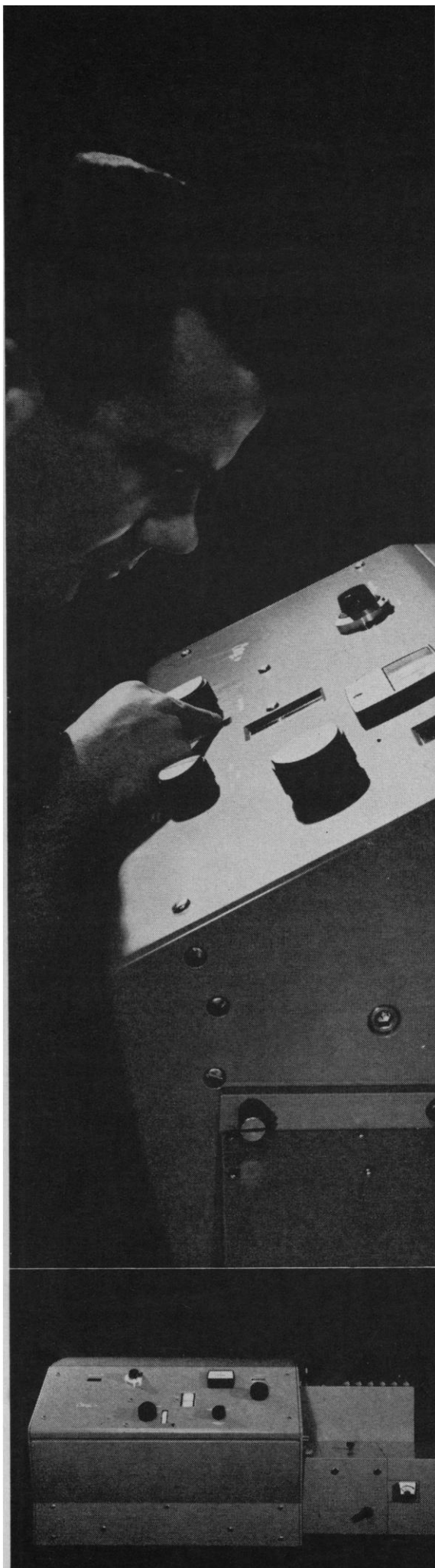
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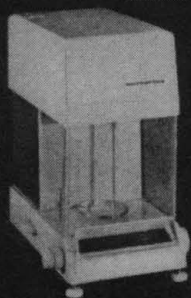
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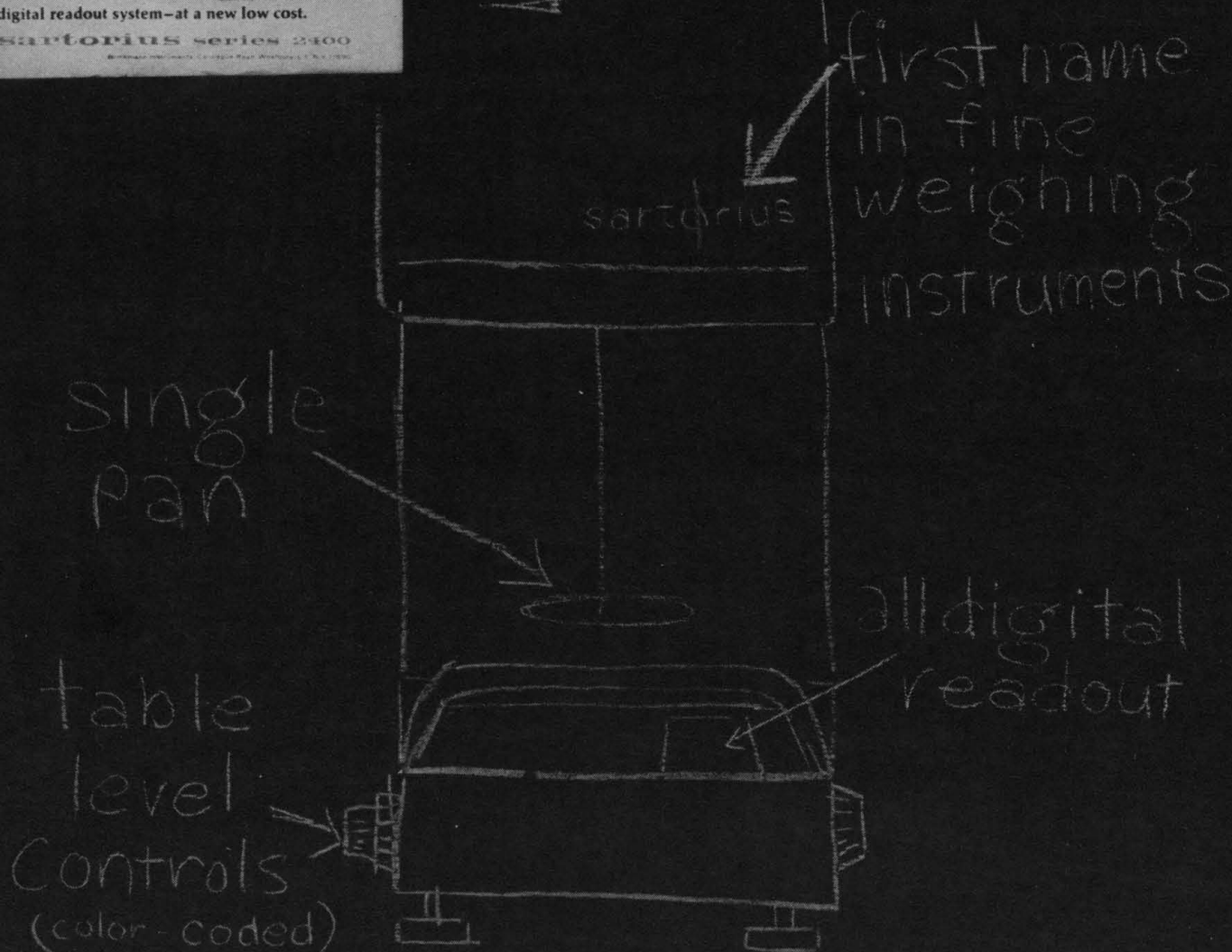
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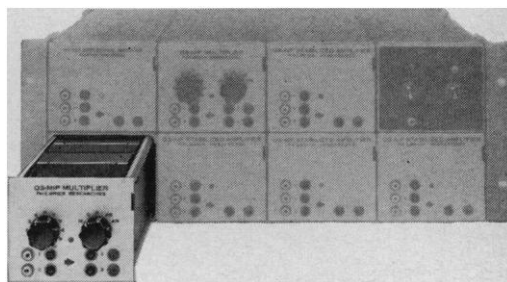
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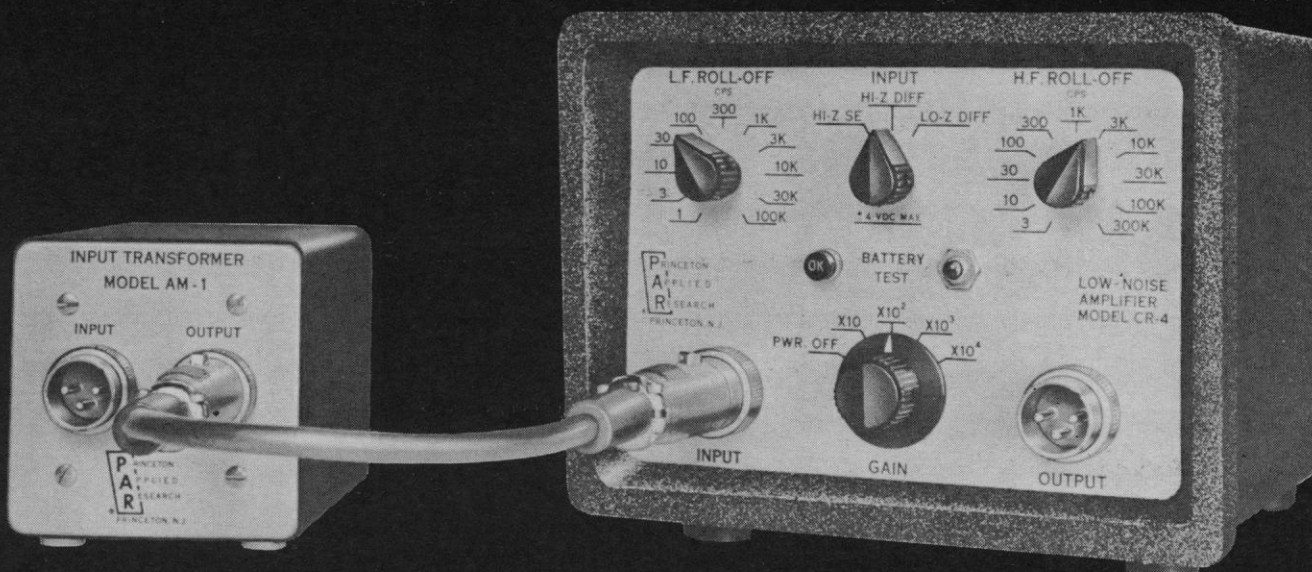
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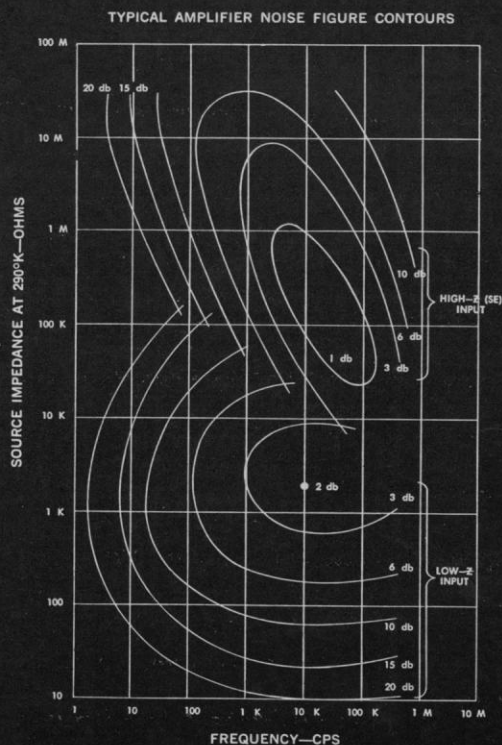
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NOISE FIGURE CONTOURS

Experiments in general are performed at some definite source impedance level and over some definite frequency bandwidth. Noise referred to shorted input as frequently specified does not provide meaningful information for actual experimental applications. It is instead essential to know the noise characteristics of an amplifier not only at the particular operating frequencies but also with the particular source impedances actually encountered. Noise figure contours are the loci of points of constant noise figure (F) plotted as a function of source impedance and operating frequency, and, therefore, provide this complete information. They indicate the degradation in signal-to-noise ratio obtained with the pre-amplifier at a particular frequency with a particular source impedance, input noise being the Johnson noise generated by that source impedance at 290 degrees Kelvin. The contours are obtained from the following equation:

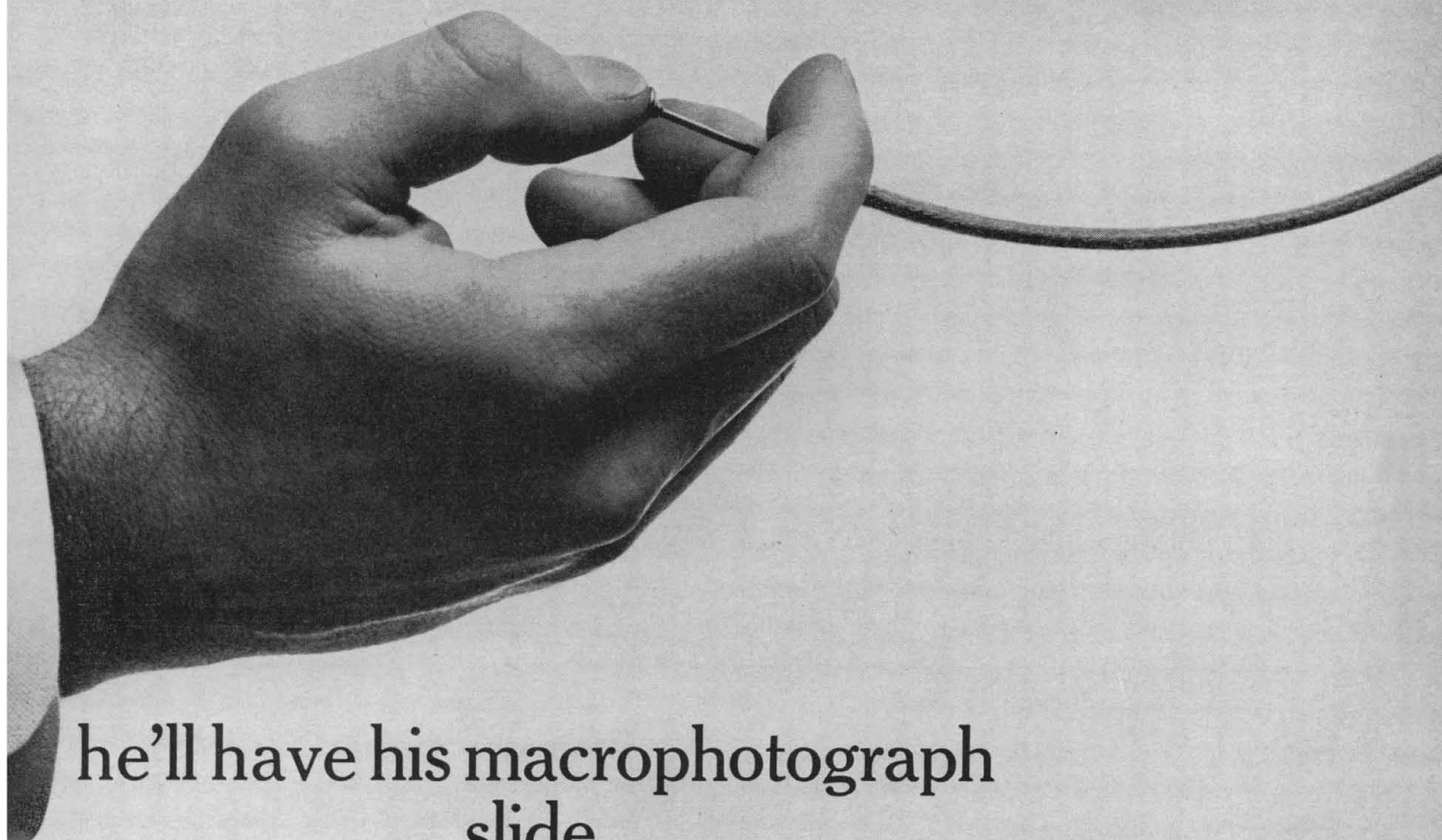
$$F = 20 \log_{10} \frac{\text{total measured amplifier noise (including Johnson noise)}}{\text{calculated Johnson noise}} \text{ dB}$$

Write for Bulletin No. 117

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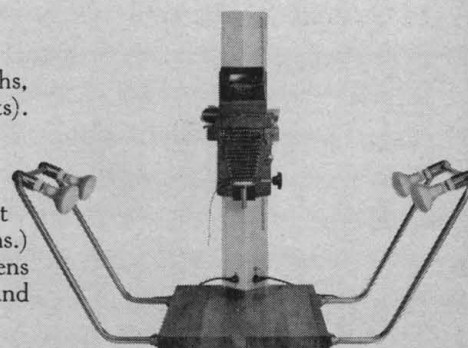
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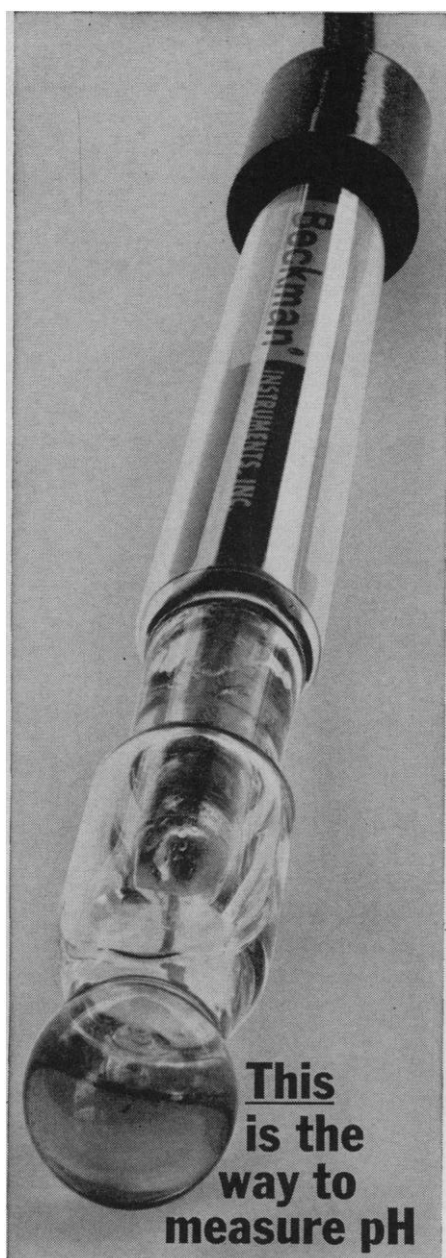
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ing to similar but individual action. Rather, united action tends to degrade scientists in the minds of those to whom we have entrusted our political and military activity and does harm to the cause and to science. I strongly believe that all persons, individually or collectively, should make such protests if they so desire, but they should not do so in ways that imply that they are beings having superior views because of their training or background. I am sure that our country is as safe in the hands of our duly elected and appointed representatives as it would be in the hands of scientists, engineers, physicians, or persons of any special discipline. If any scientist wants to participate in the administration of this country, let him get himself elected or appointed to an appropriate government office.

LOUIS LYKKEN

2932 Oxford Avenue,
Richmond, California

As a member of AAAS I was not pleased to read the resolution on Vietnam of the AAAS Council (7 Jan., p. 55). I believe the Council has misused the prestige of scientists to promote a point of view on a matter unrelated to the interests, responsibilities, and competence of scientists as a special group. Bakers, plumbers, ballet dancers, dentists, and scientists, as citizens, are all entitled to an opinion on the conduct of the war in Vietnam, but despite the Council's embarrassing effort to make it seem otherwise I fail to see why there is a scientist's position any more than a dentist's position or a plumber's position. . . .

DONALD S. DEAN

Department of Biology,
Baldwin-Wallace College,
Berea, Ohio

Preservation of Privacy in Testing

In line with Wolfe's editorial, "Psychological testing and the invasion of privacy" (31 Dec. 1965), I would like to suggest that a solution to the dilemma might be possible through "on-line testing" by a computer. Two approaches are possible now.

1) The test questions could be stored in a computer and presented to the subject privately, one question at a time, via a typewriter printer or a visual display. The subject would key in his response and be presented with the next question. After the subject has

answered all questions, the computer would be programmed to score the tests, present the results in proper form, and erase the subject's responses to the individual questions from its storage unit.

2) Another approach would be to use an answer sheet for the subject's responses. The subject himself would insert the sheet into an optical scanner for direct input to a computer or scoring machine programmed to score the test. The summary scores (not the individual responses) would then be supplied in the appropriate format for interpretation, and the subject would destroy his answer sheet.

In both of these approaches the responses of the subject would be known only to the subject. This, I believe, would minimize one of the main objections to psychological tests and would probably lead to more accurate responses by the subject.

JOHN W. HAMBLÉN

Computer Sciences Project,
Southern Regional Education
Board, Atlanta, Georgia

Metric System: Congressional Study

Joseph Mayer ("Where does the metric system prevail?"—Letters, 22 Oct.), disputing a claim that 90 percent of the world's population operates under the metric system, tallies the dominant systems country by country. But it is beside the point to estimate the prevalence of the metric system in terms of geography. On the one hand, metric countries must use English measures in order to do business with us. On the other hand, even in the U.S. certain industries use metric measures as much as they can, and the metric system is used by all scientists, by the medical profession, and by many agencies of government. The metric system is used worldwide. It prevails wherever the need for scientific communication prevails. As shown by England's recent commitment to metric, it has finally won out in the area of economic interdependence. India, contrary to what Mayer implies, has almost completed her conversion and will benefit greatly as an infant industrial nation by going to the recognized international system; the change will enable India to eliminate her many regional weights and measures and with them the English system.

Does this presage a metric world? This is one of the questions that Senate bill S. 774 is intended to answer. Senator Pell's committee has stated the case simply and well: "The committee is convinced that it is timely and desirable to undertake a comprehensive study of the advantages and disadvantages of increased use of the metric system in the U.S., so that any future decision in this area can be based on a full knowledge of the facts." George Miller, Chairman of the House Committee on Science and Astronautics, first suggested this rational approach to the problem three Congresses ago. Recent hearings on both House and Senate bills brought forth overwhelming support for a study and very little opposition. Even opponents of metric conversion could be well served by a fact-finding study.

DOUGLAS V. FROST

*Abbott Laboratories,
North Chicago, Illinois 60064*

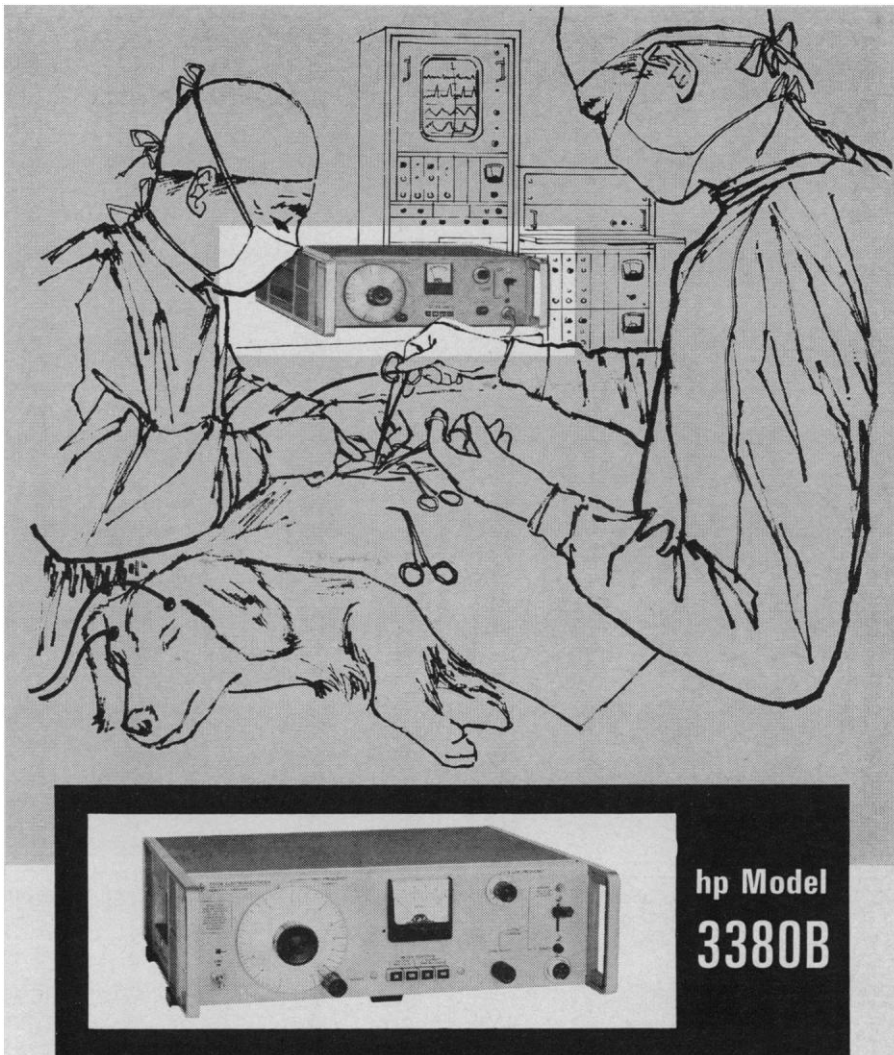
... Now before Congress is a series of bills to study "the practicability of the adoption by the U.S. of the metric system of weights and measures." Although such can hardly be construed as "compulsion," the move toward consideration was almost certain to elicit a response such as Mayer's. In 1926, Mayer was a prominent member of a group which persuaded Congress to defeat the Britten-Ladd bill, a bill to adopt the metric system for certain uses. It has taken Congress 40 years to take another close look at the issue, this time on a much more conservative basis.

It is, of course, too much to expect that people will welcome any change from their customary thought patterns. The need for Americans to convert to metric measures must first be recognized and fully appreciated. This all takes time and must be debated over and over again. . . . Much would be accomplished by a thoroughly objective study and public airing of the issue. A national committee selected by the Department of Commerce should work with counterpart committees from other English-speaking countries. Obviously we can benefit from the prior experience of other countries of the world, 80 of which have adopted the metric system in the last 160 years. . . .

R. W. ENGEL

*College of Agriculture,
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11 MARCH 1966



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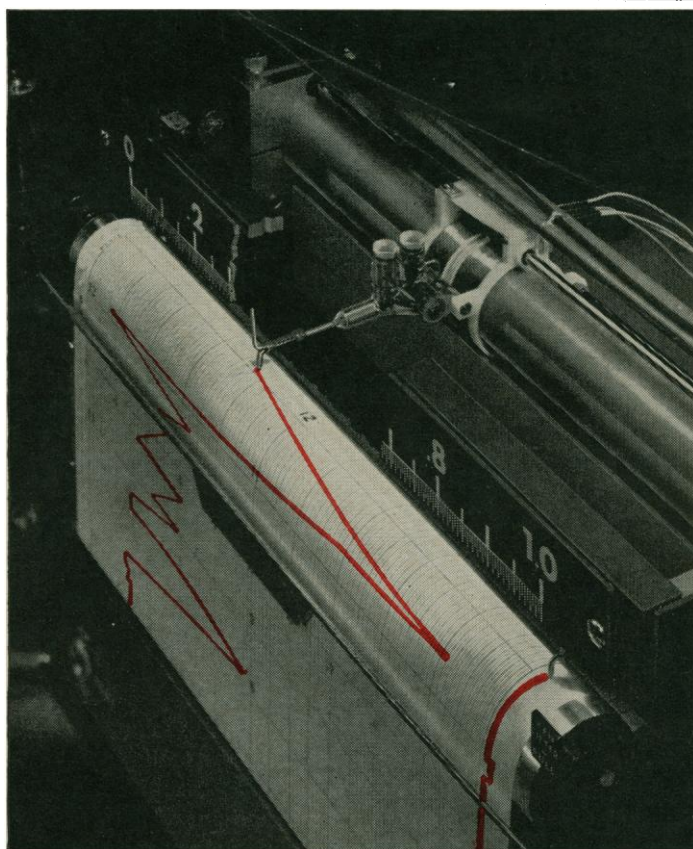
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Social Problems and Social Science

A call for large-scale support of the social sciences was a recurring theme of the 25-27 January meeting of the House of Representatives' Committee on Science and Astronautics and its Panel on Science and Technology. Lord Snow, Joint Parliamentary Secretary of the British Ministry of Technology, warned: "There was some excuse for our ancestors' not foreseeing the effects of the first industrial revolution. There is no excuse this time . . . we should be investing more . . . in the social sciences . . . we are more ignorant than is wise, or safe, or human" (*Science*, 11 February). Thomas Malone added that the problems of economic growth require "the productive interaction of many disciplines—natural scientists, social scientists, life scientists, engineers, managers." Charles Price agreed and commented that 5 years ago he would not have included the social sciences. Roger Revelle announced, "My purpose today is to urge as strongly as I can that this Committee take the lead in stimulating and fostering those sciences that deal with human beings and their behavior."

Occasionally there comes a time when a research area seems ripe for special support. Three decades ago the Rockefeller Foundation and others began to give special support to molecular biology, and thus laid the groundwork for the magnificent achievements in that area. Shortly after World War II, Congress became convinced that biomedical research would repay special support. Are the social sciences ready for similar treatment?

Of major social problems there is no lack: the upheavals that accompany rapid industrialization; juvenile delinquency; mass violence; too rapid population growth; the need to improve education. It is much more difficult to capture the essence of such problems in the laboratory or under controlled conditions than it is to capture the essence of a physical or biological problem. Some of the fundamental work needed to gain greater understanding of human and social processes can be conducted under controlled or laboratory conditions. But much must be studied where things are happening, under conditions of frustratingly complicated reality.

Yet there are some hopeful signs. The computer is a great aid in simulating complex social systems. The number of social scientists with a command of quantitative and experimental methodology is growing. Problem-centered studies have taught psychologists to work with engineers, managers with mathematicians, sociologists and economists with government officials. The Russell Sage Foundation has been providing fellowships to enable social scientists and members of the professions to work together to understand each other's problems and methods.

One congressman remarked during the meeting that it will be difficult to get large government support for the social sciences until they have their sputnik. Perhaps so, yet philanthropy and government have both been willing to increase support when it seemed that the investment might be a good one. The basic judgment to make, therefore, is whether the ideas, the tools, and the methods now available or developing in the social sciences make it seem likely that, within a reasonable time, these disciplines can offer substantially increased help in meeting pressing social problems. If a strong case can be made that the social sciences have reached this stage, providing the support called for at the Committee sessions would surely make good scientific, social, and political sense.

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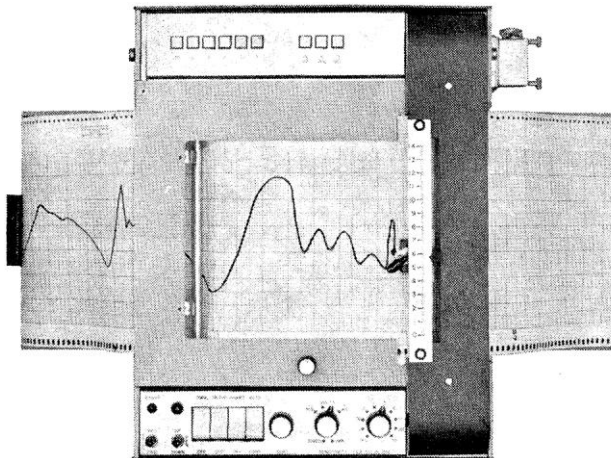
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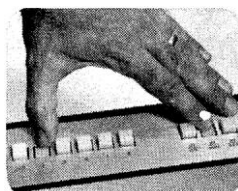
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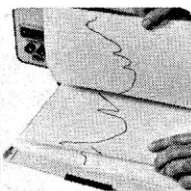
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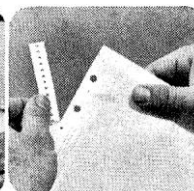
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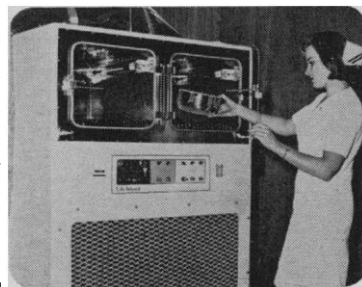
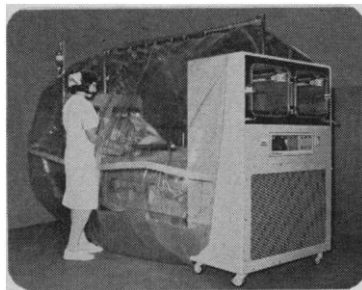
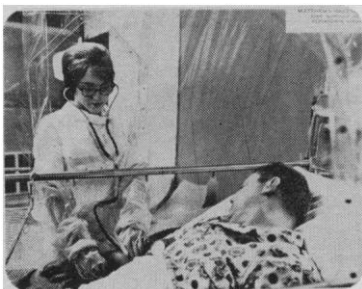
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20 June. *Macroscopic theory I* (R. Schlögl, chairman): J. C. M. Li, "Non-linear systems and the thermokinetic potential"; O. Kedem, "The interpretation of tracer measurements." *Statistical theory I* (V. S. Vaidhyathan, chairman): R. Mazo, "Brownian motion and theories of transport processes"; R. H. Aranow, "A statistical description of porous media."

21 June. *Macroscopic theory II* (K. S. Speigler, chairman): J. L. Ericksen, "Theories of structures continuum"; F. M. Snell, "A macroscopic description of the stress tensor in multi-component systems." *Statistical theory II* (A. Sauer, chairman): R. Bearman, "Statistical thermodynamics of pure fluids and fluid mixtures"; T. Hill, "Theoretical studies on steady state transport across membranes."

22 June. *Theory and models* (T. Teorell, chairman): Y. Kobatake, "Flows through charged membrane; with reference to mass movement"; D. C. Mikulecky, "Theoretical approaches to oscillations in membrane systems." *Multi-component systems* (C. N. Longworth, chairman): L. G. Gosting, "Studies of diffusion with the Gouy interference techniques"; E. N. Lightfoot, "Diffusional interaction in liquids and gels."

23 June. *Physical chemical systems I* (F. G. Helfferich, chairman): I. F. Miller, "Transport processes in porous, fixed-charge membranes"; A. Mauro, "Heterogeneous vs. homogeneous regimens in physical and physiological membranes." *Physical chemical systems II* (R. M. Barrer, chairman): G. Eisenman, "Some novel electrical properties of fixed-charge ion exchange membranes with very tight pores"; H. P. Gregor, "Equilibria and transport in multilayer membrane systems"; T. E. Thompson, "Lipid bilayer membranes."

24 June. *Biological systems* (K. S. Cole, chairman): I. Tasaki, "Electrochemical properties of the squid axon membrane"; W. H. Freygang, "Models of muscle membrane."

Theoretical Chemistry

William T. Simpson and John A. Pople are chairman and vice chairman, respectively.

27 June. (J. O. Hirschfelder, chairman): E. B. Wilson, Jr., "Second-order density matrices"; D. Smith, "Some remarks concerning the N-representability problem." (H. Shull, chairman): W. A. Goddard, "An improvement

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over the Hartree-Fock method"; L. J. Sham, "The inhomogeneous electron gas."

28 June. (M. Karplus, chairman): A. Dalgarno, "Rotational excitations at thermal energies"; J. C. Y. Chen, "Resonances in electron scattering by molecules." (R. Parr, chairman): A. C. Wahl, "Ab initio wave functions and the accurate description of diatomic systems"; H. Conroy, "Accurate solutions to the molecular Schrödinger equation."

29 June. (J. A. Pople, chairman): S. Nagakura, "Electronic states of complex molecules"; Mrs. A. Pullman, "Application of quantum theories to problems of biochemistry." (K. Ruedenberg, chairman): S. Fraga and F. Birss, "General self-consistent field procedure"; J. Koutecky, "The theory of alternate hydrocarbons."

30 June. (D. McClure, chairman): W. Klemperer, "Studies on excited electronic states of molecules"; P. J. Stevens, "Spectroscopic assignments from the dispersion of the Faraday effect." (O. Sinanoglu, chairman): S. T. Epstein, "Potentials, local and otherwise"; M. Newton, "Non-empirical molecular orbital theory for large molecules."

1 July. (R. Mazo, chairman): J. Jortner, "Two-photon processes"; A. Suna, "Some applications of Green's function methods in exciton theory."

Lasers in Medicine and Biology

Gerard Grosf and M. Zaret are chairman and vice chairman, respectively.

4 July. *New laser technology*: (speakers and subjects to be announced). *Biological effects of lasers*: G. Czerlinski, "Fundamental aspects of laser radiation in relation to biological systems"; D. Rounds, R. Olson, and F. Johnson, "Two-photon absorption in biological matter"; W. Hildreth, "Photolysis and photosynthesis by pulsed lasers."

5 July. *Laser cell and tissue irradiation*: M. Bessis, "Laser microbeam irradiation of cells"; S. Inoue, "Microbeam analyses of living cell fine-structure"; J. Daniel, "Applications of lasers to embryology"; E. Klein and S. Fine, "Potential hazards of laser radiation."

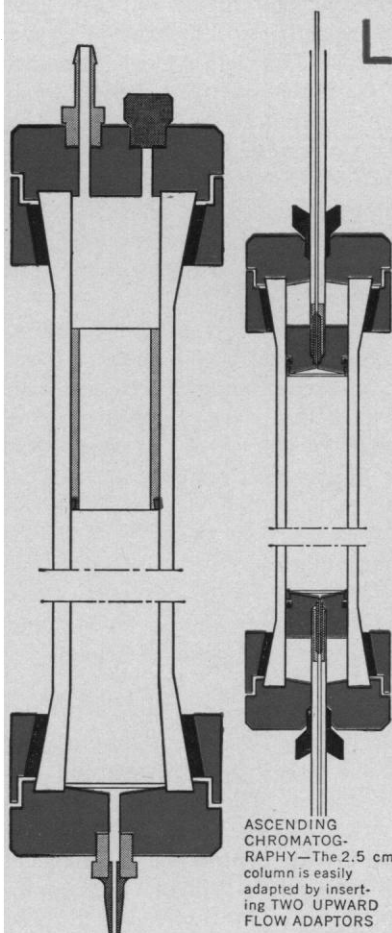
6 July. *Laser surgery*: S. Stellar, "Laser effects on tissue: with special reference to nervous system tissue"; A. Ketcham and R. Hoye, "Laser radiation combined with other anti-tumor

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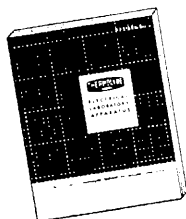
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modalities: and experimental study"; T. Brown, R. McLaurin, and C. True, "Laser neurosurgery—experimental and clinical studies"; E. Ritter and L. Goldman, "Laser investigative studies in vascular dynamics."

7 July. *Ophthalmic effects of laser radiation*: H. Sperling, "The effect of intense monochromatic light on the spectral sensitivity of the eye"; W. Ham, Jr., and W. Geeraets, "Ocular hazards from laser radiation"; G. Grosof, "Analysis of ocular hazards." *Behavioral effects of laser radiation*: H. Taylor and R. Ebbers, "Behavioral effects of laser radiation on macaque mulatta"; J. Kovaric, "Effects on gross performance following visual ablation with the laser."

8 July. *Some other topics*: R. Stern, R. Sognnaes, and F. Goodman, "Laser effect on human enamel"; H. Sperling, "Report of the Laser Committee of the National Academy of Sciences—National Research Council."

Biomathematics

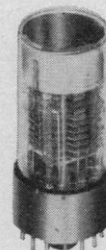
G. Octo Barnett and G. D. McCann are chairman and vice chairman, respectively.

11-15 July. Mones Berman, "In vivo kinetics"; John Milsum, "Optimum biological systems"; Sam Mason and Michael Athans, "The mathematical representation of systems"; Manfred Clynes, "Rein control as a biological design principle"; William Yamamoto, "Respiratory control system"; Eugene Yates, "Adrenal control system"; Jordan Baruch, "The empathic computer"; Joseph Weizenbaum, "Some potential roles for computers in psychiatry and medicine"; William C. Hoffman, "Topology of visual perception"; George Moore, "A survey of spike train genesis models"; Ira Richer, "The integration of neural modeling and data analysis in nervous system research"; Sol Golomb, "Genetics"; Robert Rosen, "Topology"; Douglas Chapman, "Recent developments in animal population dynamics"; Hyman Landau, "Structure as affected by individual interactions"; Nathan Keyfitz, "Themes in mathematical demography"; Anatol Rapoport, "Biological implications of statistical graph theory."

Biological Regulatory Mechanisms

Boris Magasanik is chairman.
18-22 July. A discussion of the con-

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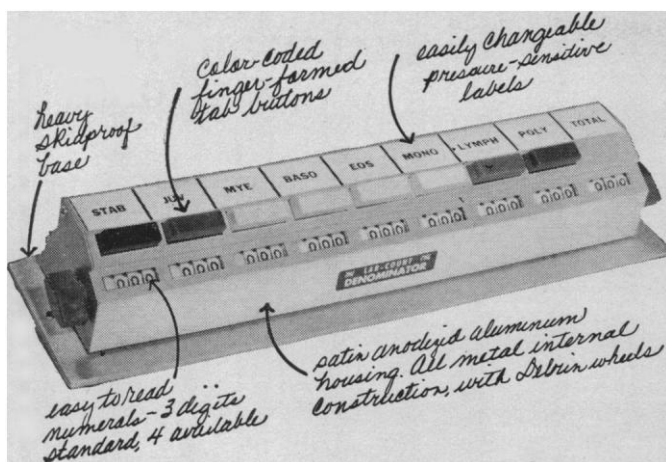
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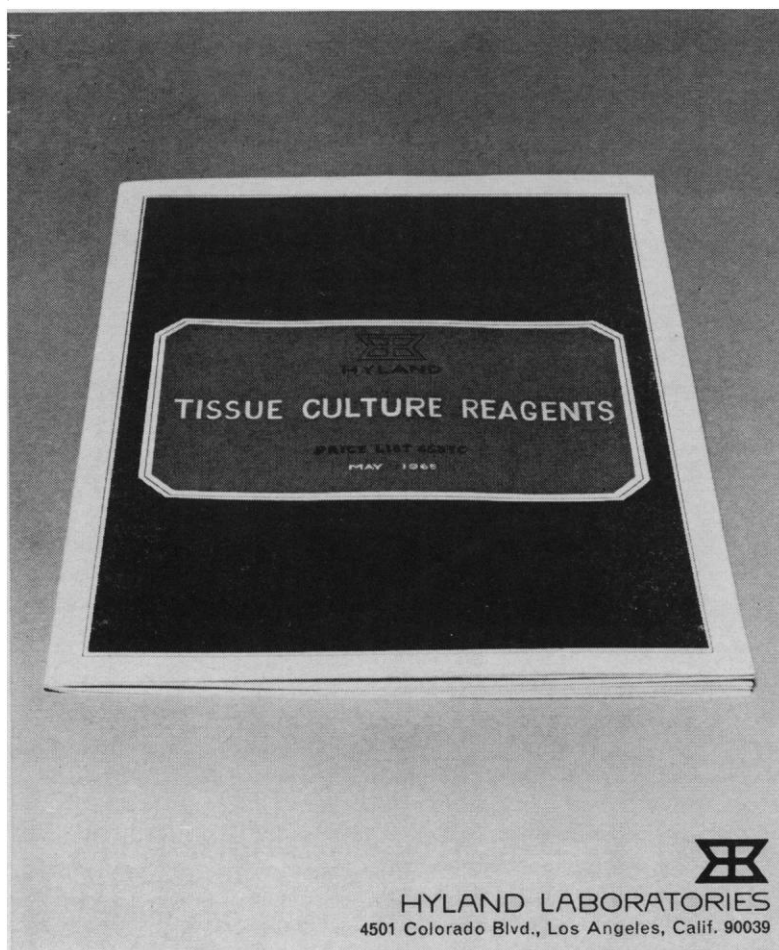
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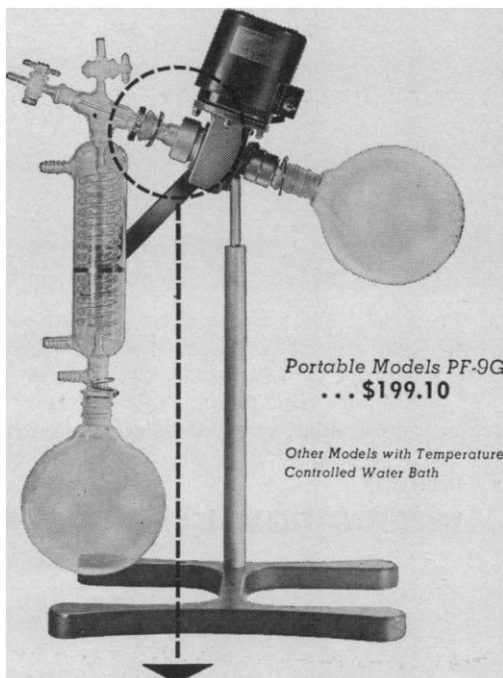
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trol of enzyme synthesis in microorganisms. The following persons have been invited to speak: Jonathan Beckwith, Georges Cohen, Ellis Englesberg, Jonathan Gallant, Luigi Gorini, Herman Kalckar, Adam Kepes, Edward Lin, Werner K. Maas, Frederick C. Neidhardt, Aaron Novick, P. Slonimski, H. Edwin Umbarger, and J. M. Wiame.

Factors Influencing Myocardial Contractility

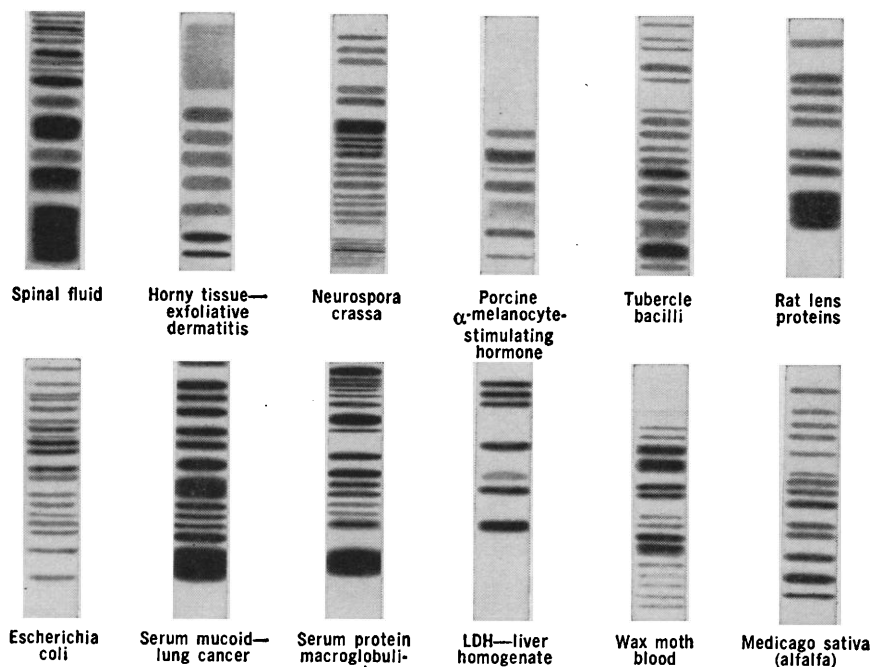
Ralph D. Tanz is chairman.

22-26 August. *The contractile "defect" in heart failure* (Frederick Kavalier, chairman): Panel discussion, Eugene Braunwald, Charles Chidsey, Allan J. Brady, Brian F. Hoffman, and Edmund H. Sonnenblick. *Contractile behavior of cardiac muscle* (Bernard C. Abbott, chairman): Allan J. Brady, "Mechanics of isolated papillary muscle"; Herbert J. Levine, "Muscle mechanics in the in situ heart." Discussants: Eric O. Feigl, "Mechanics in vitro"; Norman R. Alpert, "Mechanics in vitro"; Vincent J. Fisher, "Mechanics in situ"; Edmund Sonnenblick, "Mechanics in vitro." *Contractile behavior of the heart* (Edward Hawthorne, chairman): H. W. Vayo, "Mathematical considerations in evaluating contractile behavior of the in situ heart"; Michael Wilson, "Left ventricular dimension-flow relations in unanesthetized dogs"; Laval Cothran, "Instantaneous changes in left ventricular wall thickness in the unanesthetized horse"; Jere Mitchell, "Dimensional analysis of left ventricular function"; John Ross, Jr., "Contractile state of the intact heart characterized by tension-velocity relations"; Julio Davilla, "Measurement of left ventricular volume." *Behavior of heart cells in tissue culture* (Robert L. DeHaan, chairman): Robert L. DeHaan, "The contractile stimulus—pacemaker activity in cultured heart cells"; Isaac Harary, "Effects of lipids on contractility of cultured heart cells"; Don Lehmkuhl, "Electrical activity of cultured chick heart cells." Discussants: Robert D. Cahn, "Changes in enzyme patterns in functional heart cells in culture"; Billy K. Yeh, "Intercellular conduction in cultured heart muscle cells"; Gerda E. Mark, "Morphology and contractile behavior of cultured heart cells: influence of oxygen concentration." *Excitation—contraction coupling* (Saul Winegrad, chairman): Rolff Niedergerke, "The role of calcium"; Lois W. Tice, "Histology of internal membrane sys-

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tems"; John Gergeley, "Articulate relaxing factor"; Carl Honig, "Soluble relaxing factor"; Werner R. Loewenstein, "Role of calcium in junctional membrane processes." *Energetics* (W. F. Mommaerts, chairman): Colin L. Gibbs and N. Ricchiuti, "Energetics on cardiac contraction on the basis of heat measurement"; William Whalen, "Oxygen availability in muscle." Discussants: Maurice Visscher, "Heat of contraction"; Bernard C. Abbott, "Heat of contraction." *Agents influencing myocardial contraction—catecholamines* (Sidney Ellis, chairman): Theodore Cooper, "Influence of cardiac innervation on the response of the heart to adrenergic agents"; Steven Mayer, "Biochemical mechanisms and catecholamine actions." Discussants: Michael Brody, "Immunological sympathectomy"; Jay Roberts, "Consequences of reserpinization"; Robert Furchgott, "Catecholamine storage and uptake"; Charles Chidsey, "Catecholamine depletion." *Agents influencing myocardial contraction: cardiac glycosides* (Albert Wollenberger, chairman): K. S. Lee, "The effect of cardiac glycosides on sarcoplasmic reticulum fragments from heart muscle"; Ralph Tanz, "Possible relationship between ouabain-induced augmentation and endogenous cardiac catecholamine release"; Neil C. Moran, "The relationship of contractile frequency to the positive inotropic action and binding of cardiac glycosides." Discussants: Alfred Farah, "Metabolic considerations"; James Spann, Jr., "Catecholamines"; Julius B. Kahn, Jr., "Binding." *Agents influencing myocardial contraction—hormonal (agents other than catecholamines)* (Gordon L. Farrell, chairman): Marilyn E. Hess, "Relationship between the thyroid gland and myocardial metabolism and function"; Allan M. Lefer, "Myocardial contractility in experimental adrenal insufficiency and hypercorticalism." Discussants: Neil C. Moran, "Thyroid-catecholamine interactions"; Alvaro L. Gimeno, "Androgens and estrogens"; Jan Koch-Weser, "Angiotensin"; Jiro Nakano, "Oxytocin and vasopressin."

Science and Technology of

Bio-materials

E. I. Salkovitz is chairman.

29 August. *Physical properties of biological materials* (John L. Bethune, chairman): Jerome Wolken and Sidney Galler. *Physical properties of biological materials* (continued) (Jerome

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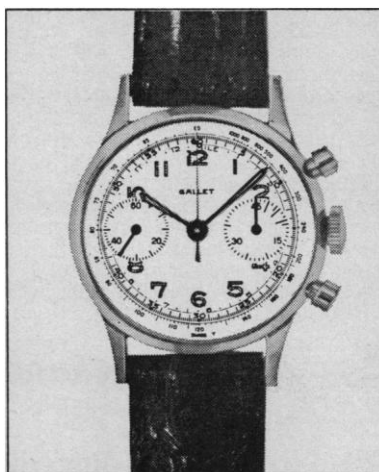
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Cholesterol-T (G)	100-300
Cholesterol-1 α -T	100-500
Cholesterol-1 α -T	>5000
Cholesterol-7 α -T	100-500
Cholesterol-7 α -T	>2000
Cholesteryl-T (G) linoleate	50-350
Cholesteryl-7 α -T linoleate	100-500
Cholesteryl-T (G) oleate	50-350
Cholesteryl-7 α -T oleate	100-500
Cholesteryl oleate- (nominally 9, 10-T)	100-500
Cholesteryl-7 α -T palmitate	500-1000
Cholesteryl palmitate- (nominally 9, 10-T)	100-300
Cholesteryl-T (G) stearate	50-350
Cholesteryl-7 α -T stearate	100-500
Cholesteryl stearate- (nominally 9, 10-T)	100-500
Corticosterone-1, 2-T	250-1000
Corticosterone-1, 2-T	>15,000
Cortisol-1, 2-T	1000-2000
Cortisol-1, 2-T	>15,000
Cortisone-1, 2-T	50-500
Cortisone-1, 2-T	>1000
Dehydroepiandrosterone-7 α -T	250-1000
Dehydroepiandrosterone-7 α -T	>5000
Dehydroepiandrosterone-7 α -T acetate	500-1500
Diethylstilboestrol-T (G)	100-500
Estradiol-T (G)	50-100
Estradiol (nominally 2, 4-T)	500-1000
Estradiol-6, 7-T	100-500
Estradiol-6, 7-T	>5000
Estradiol-6, 7-T 17 β -acetate	500-1000
Estradiol-6, 7-T 17 β -acetate	>3000
Estrone-T (G)	100-200
Estrone-6, 7-T	100-500
Estrone-6, 7-T	>5000
Hexestrol-T [meso-3, 4-bis-p- hydroxyphenyl-n-hexane- (nominally 2, 3, 4, 5-T)]	100-1000
Prednisolone-T (G)	100-500
Δ^5 -Pregnenolone-16-T	500-1500
Δ^5 -Pregnenolone-16-T	>4000
Δ^5 -Pregnenolone-7 α -T	100-500
Δ^5 -Pregnenolone-7 α -T	>2000
Progesterone-T (G)	100-500
Progesterone-7 α -T	100-500
Testosterone-1, 2-T	500-1000
Testosterone-1, 2-T	>15,000
Testosterone-7 α -T	500-1000

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Wolken, chairman): John L. Bethune and Charles Bean.

30 August. *Orthopedic implants* (E. I. Salkovitz chairman): Patrick G. Laing, "Biological environments"; M. H. Shamos, "Physical properties of bone." *Cario-vascular implants* (James A. Bougas, chairman): James A. Bougas and speaker to be announced.

31 August. *Potentialities of new bio-materials* (S. Silverman, chairman): R. Jaffe, "Metals"; J. Hobstetter, "Ceramics"; J. Hoffman, "Polymers." A case study—development of dental materials (Evan Greener, chairman): G. Paffenbarger.

1 September. *Degradation of bio-materials* (Norbert Greene, chairman): Norbert Greene, "Metals"; Fred Leonard, "Polymers." The impact of solid state physics on life sciences (chairman to be announced).

2 September. *Bio-materials engineering* (Heinz Wilsdorf, chairman): Silas Braley, "Soft tissue replacements in subdermal engineering"; (speaker and subject to be announced).

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Immunochemistry and Immunobiology: Antigens

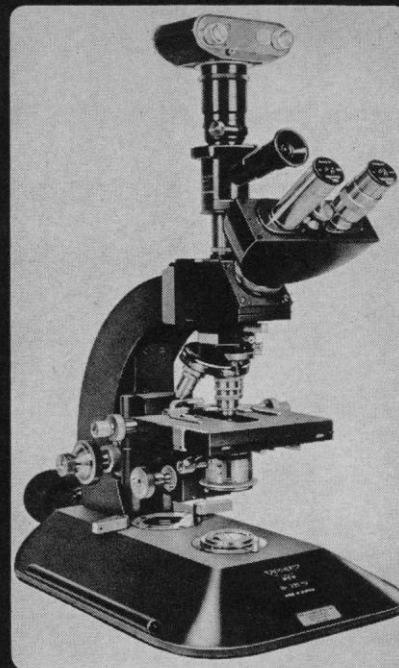
Alec Sehon and Dan H. Campbell are chairman and vice chairman, respectively.

20 June. *Factors involved in immunogenicity* (F. Haurowitz, chairman): M. Sela, "Antibodies to synthetic antigens"; P. H. Maurer and T. J. Gill, III, "Polypeptides as antigens"; S. M. Beiser, "Artificial antigens"; (L. Levine, discussion leader). *Mechanism of adjuvant action* (E. Suter, chairman): F. L. Adler and B. H. Waksman, "Enhancing and depressing factors in immunogenicity"; J. G. Harter "Endotoxins."

21 June. *Specific determinants* (Y. Yagi, chairman): E. A. Kabat, "Antigenic determinants of polysaccharides"; D. Pressman, "Heterogeneity of anti-hapten antibodies"; B. Levine, "Immunochemistry of penicillin hypersensitivity"; T. Webb, "Antigenicity of proteins"; N. J. Crumpton, "Antigenic determinants of sperm whale myoglobin."

22 June. *Fate of the antigen* (D. H. Campbell, chairman): G. Nossal, "Electron microscopic and autoradiographic localization of antigen"; J. S. Garvey, "Role of retained antigen in immune mechanisms"; R. S. Speirs, "Cellular localization of antigen"; J. S. Ingraham,

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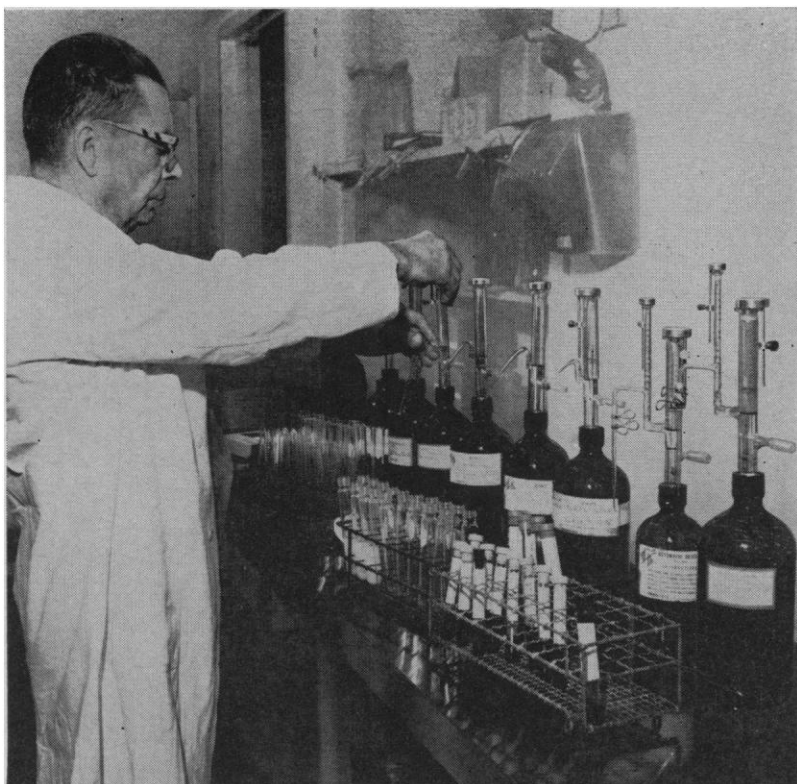
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"Subcellular localization of antigens"; (F. J. Dixon, discussion leader).

23 June. *Cellular antigens* (D. Pressman, chairman): G. Möller, "Allogeneic cells in tissue transplantation"; J. Lindenmann, "Immunogenicity of viral oncolysates"; A. H. Nowotny, "Bacterial endotoxins." Auto-antigens (F. Milgrom, chairman): E. M. Roitt, "Organ specific auto-antigens"; M. Kaplan, "Auto-antigens of heart."

24 June. Purification of antigens and allergens (A. Sehon, chairman): T. P. King, "Ragweed pollen allergen"; W. E. Vannier and A. H. Sehon, "Immunosorbents."

Chemistry and Physics of Cellular Materials

Ralph H. Hansen and K. C. Frisch are chairman and vice chairman, respectively.

27 June-1 July. I. N. Einhorn, "The flammability characteristics of cellular materials"; J. K. Backus, "The thermal decomposition and flammability of selected urethane foam systems"; C. J. Benning, "Foaming polyethylene—theoretical mechanism studies"; F. D. Hartley, "Methods and techniques of studying the kinetics and mechanism of polyurethane foam formation"; K. C. Frisch and S. L. Reegen, "Kinetics and mechanism of catalyzed isocyanate-alcohol reactions"; A. J. Lowe, R. Dyke, M. G. Hardy, and L. M. Molinaro, "The composition and behavior of hydroxyl-containing intermediates for rigid urethane foams"; J. K. Lepper, H. G. Hammon, and P. R. Thompson, "Compressive creep of foams"; J. A. Hartsock, "Creep of a rigid urethane foam in shear"; F. J. McGarry, "Rigid foam as a structural material"; R. L. Hamilton, "Water vapor permeation in foamed plastics"; E. F. Cuddihy, J. Moacanin, and J. Farrar, "Outgassing rates and some electrical properties of rigid closed-cell foams under reduced pressures"; H. A. Ehrenfreund, "Selection of wall thickness and cell size in extruded foamed thermoplastics"; R. J. Boudreau, "Studies relating surface tension and foam stabilization and chemical composition in silicone-polyether surfactants."

Resonance Phenomena in Metals

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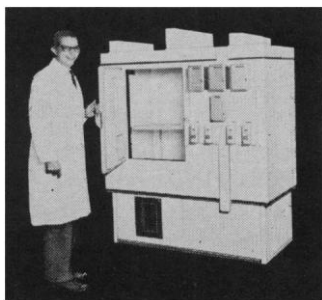
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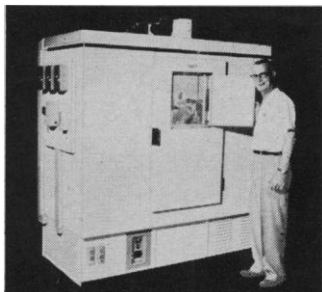


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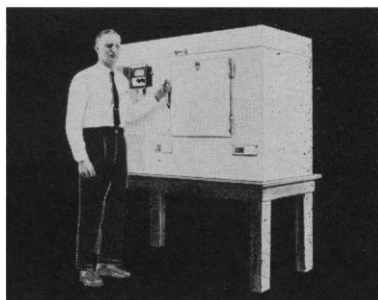
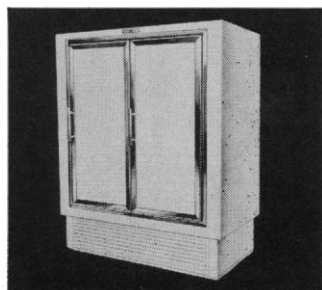
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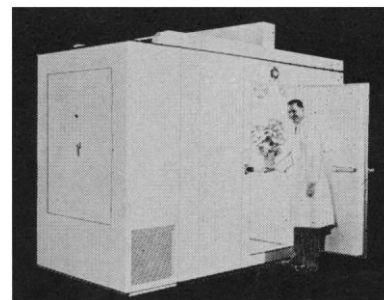
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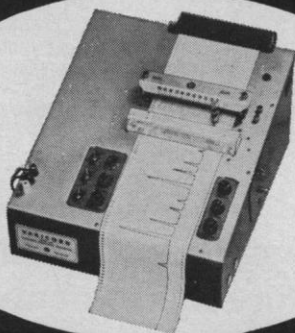
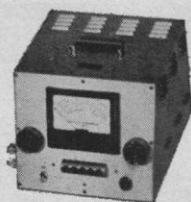
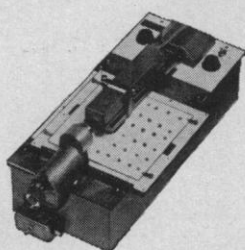


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11-15 July. Y. Yafet and S. Shultz, "Theoretical and experimental aspects of conduction electron spin resonance"; R. G. Chambers and A. Kip, "Theoretical and experimental aspects of cyclotron resonance"; P. E. Wigen, "Ferromagnetic resonance in thin films"; M. Peter, "Electron paramagnetic resonance of impurities in metals"; R. J. Elliott, "Theory of rare earth metals"; R. Bowers, C. Grimes, and W. Walsh, Jr., "Relation between resonance and plasma phenomena in metals"; T. Moriya and A. Narath, "Nuclear magnetic resonance and relaxation"; M. Weger and A. C. Gossard, "Nuclear magnetic resonance in superconductors."

Molecular Pathology

Earl P. Benditt and Wilbur Thomas are chairman and vice chairman, respectively.

18-19 July. "The smooth endoplasmic reticulum and detoxification."

20-21 July. "Mitochondria and their oxidative systems in response to injury."

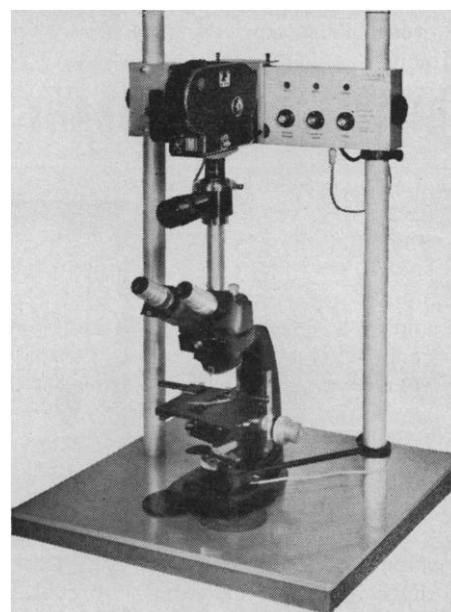
21-22 July. "Lysosomes."

Chemistry and Psychophysiology of Odor and Flavor

William L. Sulzbacher and Dean Foster are co-chairmen.

25-29 July. *Chemical and physical properties of odor and taste compounds*: "A consideration of those properties common to all stimulating agents not shared by any non-stimulating compounds"; "Review of the sources of energy and such other critical physical dimensions as volatility, solubility, particle or molecular size, etc."; "Key chemical attributes such as reactivity, class and structure"; "Simple and complex systems or the effect of mixtures and impurities on properties of a compound." *The basic biochemical structure and mechanisms composing smell and taste receptors*: "Histology and chemistry of the receptor and supporting cell systems"; "The relation between smell, taste and the other receptor systems"; "Comparative (lower animal vs. human) studies of the microstructure of receptors"; "Effects of special (inadequate) stimulation by intravenous injection and electrical currents on odor and taste." *Instrumentation and methodology applied to the chemical and physical investigation of odor and flavor*: "Impact of GLC on

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flavor research"; "Comparison of detectors; mass spectroscopy; use of infrared and other spectrophotometric methods"; "Detecting instruments other than GLC"; "Methods of sampling and transferring components; other methods of separation, thin layer, column, etc." *Absolute and differential sensitivity to the total range of odorous and sapid compounds:* "Olfactometry and thresholds by classical psychophysical methods, magnitude estimation and ratio scaling"; "Speed of reaction to single, to mixed, and to a succession or series of stimuli"; "Environmental and experiential influences on sensitivity including adaptation or fatigue (other instrumentation and methodology)"; "Mucous, saliva and thresholds"; "Genetic variations in sensitivity"; "Directional or stereosmic and stereogustatory sensations." *Taste and odor qualities:* "Psychometric methods, words and similarities analysis of qualities"; "Phenomenological analysis by flavor chemists and perfumers"; "Learning accurately to characterize response by our chemical senses"; "Familiarity, pleasantness, preference and other psychologic dimensions of odors and tastes"; "Odor opposites, masking, or cancellation"; "Single vs. mixed stimuli." *The electrophysiology of the chemical senses:* "Neuroanatomical considerations as they affect quantitative and qualitative studies"; "Recording techniques and special advantages of position, type and animal"; "Stimulus-response sensitivity and accuracy with different compounds, concentrations, purities and the like"; "Peripheral-central implications for identification"; "Adaptation." *Endocrine, metabolic and pathologic influences on odor and taste responses:* "Definitions of anosmia, parosmia, hyperosmia, ageusia as to frequency and dimensions of response"; "Metabolic determinants of reaction"; "Partial vs. 'true' vs. absolute insensibility"; "Hormones and the manipulation of sensitivity"; "Disease states of special research interest." *Natural product chemistry and applications to flavor science:* "Role of fats, proteins, carbonyls, carbohydrates and other organic groups"; "Review of the effects of inhibitors"; "Studies involving potentiators, precursors and enzymes"; "The value of ambiguous stimulus materials"; "Natural and radiation-induced flavor deterioration"; "Flavors in fermented products"; "Perfume and flavor design." *The elements and postulates essential to a theory which can adequately explain taste (gustation):* "Sum-

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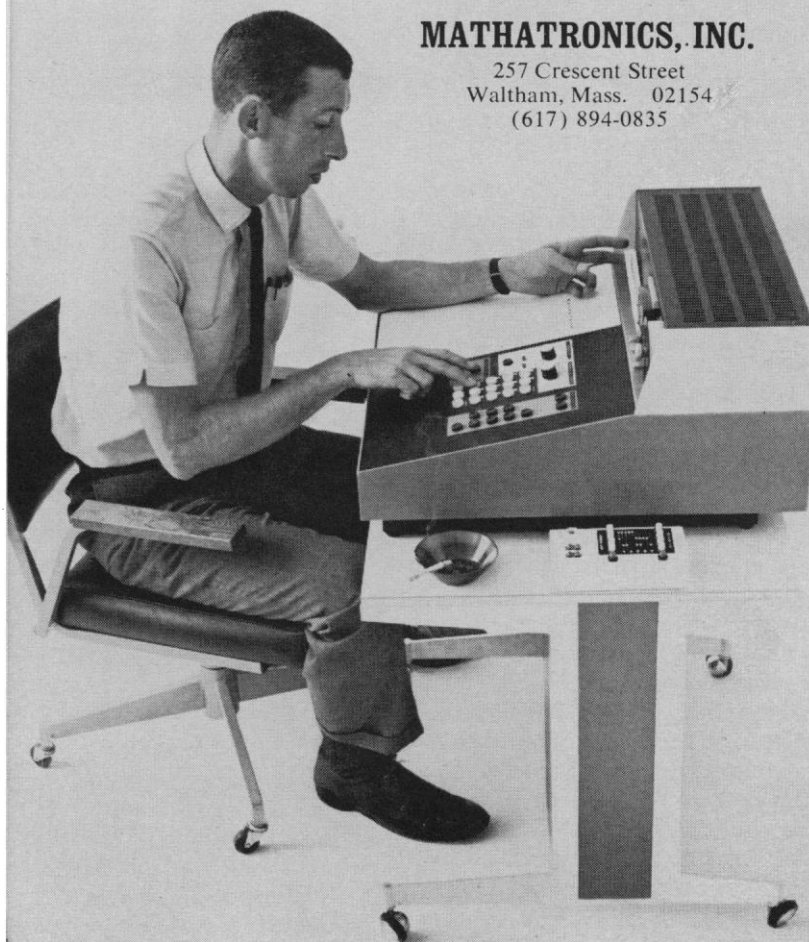
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mary description of known taste mechanisms, the basic attributes"; "The meaning and importance of 'primary' qualities"; "The differences between stimulus qualities"; "Data or evidence which is missing"; "A summary and evaluation of current theories." (Chairmen and speakers to be announced.)

Tetrapyrrole Biosynthesis

Robert F. Labbe and Donald T. Tschudy are chairman and vice chairman, respectively.

1 August. Porphyrin and heme chemistry (S. F. McDonald, chairman): J. E. Falk, "Chemistry of porphyrins and metalloporphyrins." (E. Margoliash, chairman): R. Lemberg, "Structure-function relationships of hemes."

2 August. Enzymic mechanisms (June Lascelles, chairman): David Shemin, "Heme biosynthesis." (J. E. Falk, chairman): Bruce Burnham, "Chlorophyll and vitamin B₁₂ biosynthesis."

3 August. Regulatory mechanisms (Samuel P. Bessman, chairman): June Lascelles, "Regulation of porphyrin biosynthesis." (David Shemin, chairman): Samuel P. Bessman and Arthur Grayzel, "Regulation of heme-protein biosynthesis."

4 August. Abnormalities in heme biosynthesis (Samuel Schwartz, chairman): Allan G. Redeker and Donald T. Tschudy, "Clinical and experimental porphyrias." *Bile pigments* (Nathaniel I. Berlin, chairman): Cecil J. Watson, "Occurrence and chemistry of bile pigments."

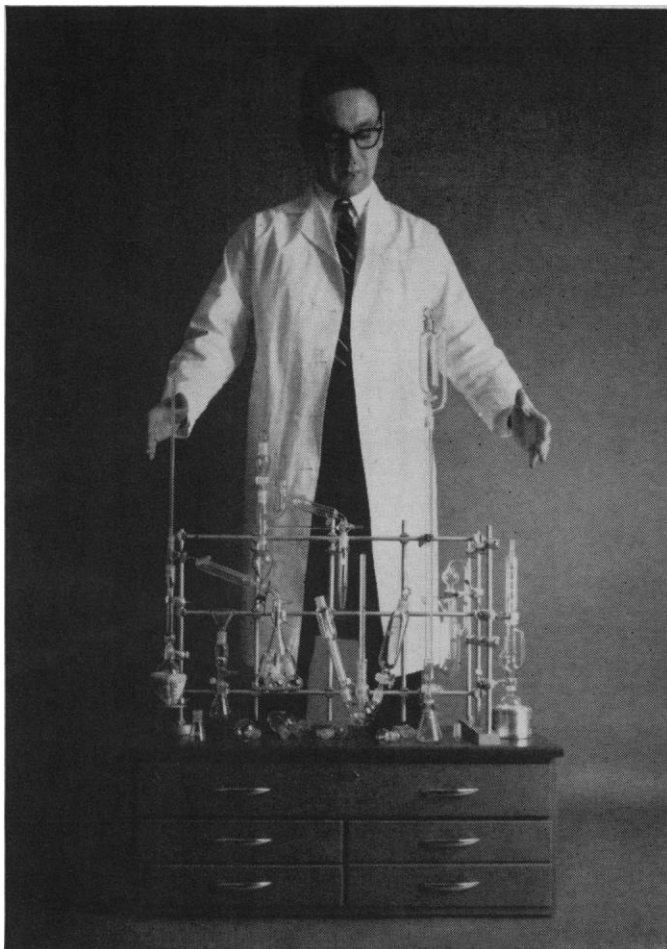
5 August. (Robert A. Aldrich, chairman): David L. Drabkin and Rudi Schmid, "Enzymic formation of bile pigments."

Plasma Physics

Betsy Ancker-Johnson and James E. Drummond are chairman and vice chairman, respectively.

8 August. Natural plasmas (chairman to be announced): (speaker to be announced), "In space"; A. Ron, "In solids." *Production of plasmas, their heating and cooling* (John Marshall, chairman): (speaker to be announced), "Turbulent heating"; T. K. Allen, "Injection."

9 August. Production of plasmas, their heating and cooling (continued) (Russell Kulsrud, chairman): Murray Lampert, "Solids"; Alan F. Haught,



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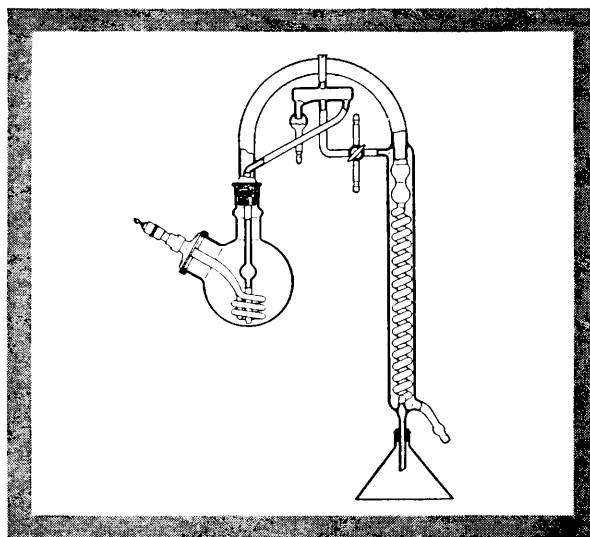
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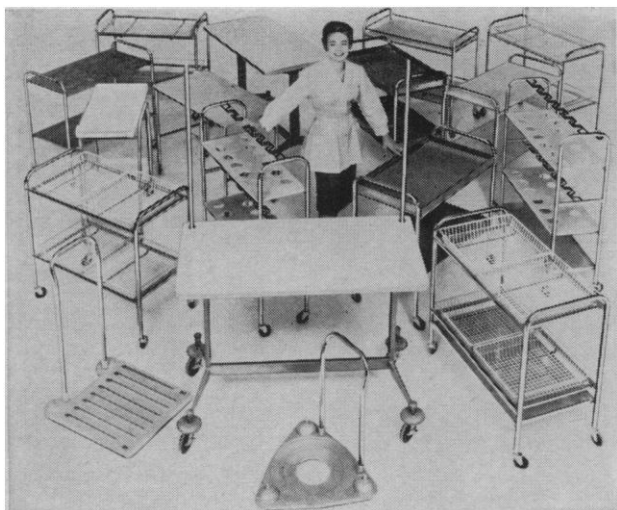
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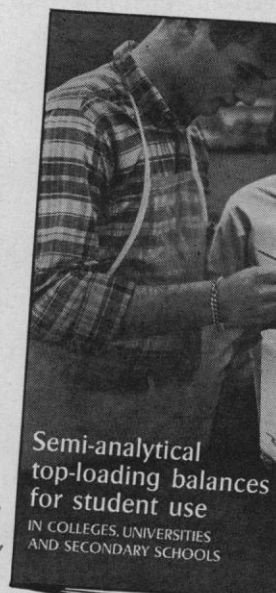
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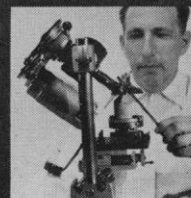
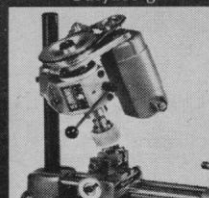
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"Laser production." *Instabilities* (William E. Drummond, chairman): (speaker to be announced), "Classification"; (speaker to be announced), "Turbulence."

10 August. *Instabilities (continued)* (Maurice Glicksman, chairman): B. Lehnert, "Experimental evidence—gases." *Instabilities (continued)* (H. S. Robertson, chairman): Betsy Ancker-Johnson, "Experimental evidence and evaluation—solids."

11 August. *Confinement* (E. G. Harris, chairman): T. K. Fowler, "Limitations"; (speaker to be announced), "Perspectives"; J. B. Taylor, "Confinement." *Emission* (Gordon S. Kino, chairman): J. L. Hirschfield, "Gases"; Abraham Bers, "Solids—theory."

12 August. *Waves and other diagnostics* (C. B. Wharton, chairman): George Bekefi, "Gases"; S. J. Bucksbaum, "Solids."

Chemistry and Physics of Paper

J. Kenneth Craver is chairman.

15 August. R. D. Preston, "The biosynthesis of cellulose"; H. I. Bolker, "Evidence for acid-labile bonds between lignin and carbohydrates."

16 August. R. St. John Manley, "The fine structure of native and regenerated cellulose"; G. Jacquelin, "The streaming potential at cellulose-fiber surfaces."

17 August. Bengt Rånby and Erik Forslind, "On cellulose-hemicellulose-water interactions in paper-pulp fibers"; Heribert Meyer, "Hydrodynamics of web formation"; Derek Page, "The physical effects of high consistency refining."

18 August. J. A. Van den Akker, "The optics of paper"; Lyle C. Jenness, "Enzymatic refining"; E. G. Bobalek, "Cellulose pulp-polymer composites"; V. T. Stannet, "The chemistry of cellulose graft polymerizations."

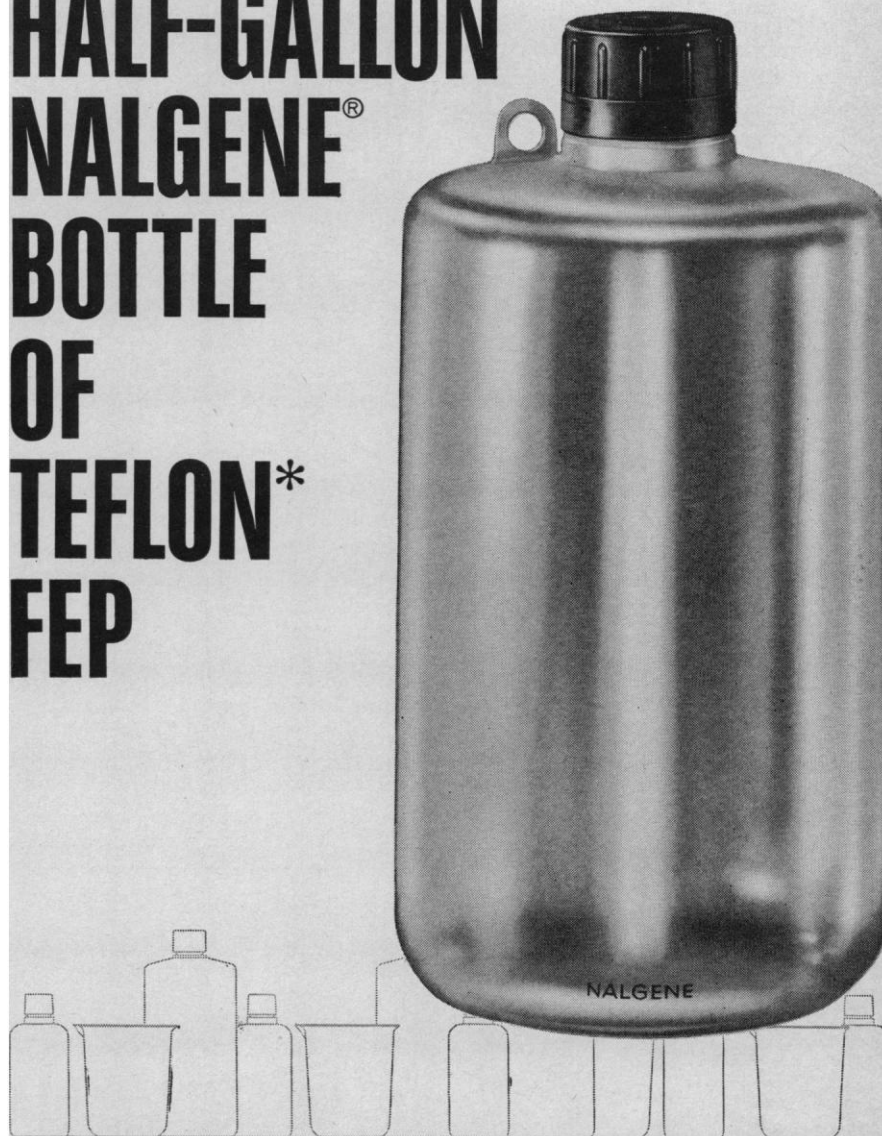
19 August. Otto Kallmes, "New views on the mechanical properties of paper."

Numerical Data of Science and Technology: Generation and Critical Evaluation

Y. S. Touloukian and N. B. Gove are chairman and vice chairman, respectively.

22 August. *National standard reference data programs* (F. D. Rossini, chairman): M. Kotani and R. M. S.

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Hall. G. Waddington, "An assessment of the international picture of standard reference data programs." (Chairman to be announced): W. H. Evans, and H. J. Hoge, "Problems encountered in the generation of standard reference data in the physical sciences—general considerations"; J. R. Rice, "On tools and philosophy of data analysis"; J. Hilsenrath, "New horizons in numerical analysis of experimental data."

23 August. *Status reports on major continuing reference data programs with emphasis on technical problems* (Everett R. Johnson, chairman): B. J. Zwolinski, "Selected values of physical properties of organic substances"; D. R. Stull, "JANAF thermochemical data"; R. R. Hultgren, "Thermodynamic data on metals." (C. W. Beckett, chairman): R. B. Stewart and J. G. Hust, "Thermodynamic data for cryogenic fluids"; (speaker to be announced), "Thermodynamic and transport data compilations in the USSR"; R. Duff, "High pressure data."

24 August. *Status reports on major continuing reference data programs with emphasis on technical problems* (continued) (N. B. Gove, chairman): (speaker to be announced), "Neutron cross section data"; (speaker to be an-

nounced), "Nuclear level data"; C. F. Barnett, "Atomic collision cross section data." (F. Schulman, chairman): L. E. Kuentzel, "Infrared spectral data"; (speaker to be announced), "Crystallographic data"; (speaker to be announced), "Diffusion data in fluids"; (speaker to be announced), "Chemical kinetics data."

25 August. (H. Wooster, chairman): (speaker to be announced), "An assessment of the national picture of physical constants analysis and information centers"; E. L. Brady, "The coordination of U.S. reference data programs and the formulation of new projects." (Y. S. Touloukian, chairman): (speaker to be announced), *Special lecture*.

26 August. (Chairman to be announced): E. R. Cohen, "Fundamental constants"; Hojgaard Jensen, "Units and conversions"; *Special problems*: Panel.

Spectral Line Shapes and Neutral Atom Interactions

S. Y. Ch'en and Gordon L. Hammond are chairman and vice chairman, respectively.

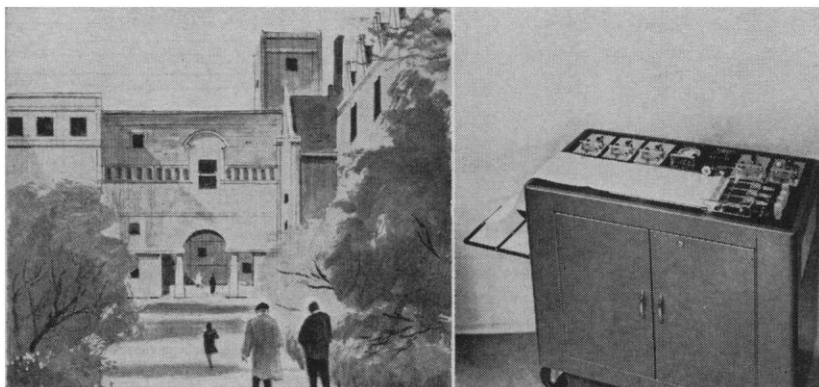
29 August. R. G. Breene, Jr., "The current status of line shape theories, with emphasis on the limitations of the approximations." (M. Takeo, discussion leader). H. R. Griem, "Recent developments in resonance broadening"; (H. Kuhn, discussion leader).

30 August. M. Takeo, "Fine structure broadening theory"; S. Y. Ch'en, "Alkali fine structure observations"; F. Schuller, "An improved impact theory"; R. Granier, "Experimental comparison with Schuller's theory." (B. Vodar, discussion leader.)

31 August. O. Jefimenko, "Satellite band theories and observations"; R. O. Garrett, "The influence of satellites on line shapes." (L. Klein, discussion leader.) G. T. Lalos, "High temperature line shapes and satellites." (H. Jacobson, discussion leader.)

1 September. R. Bernstein, "Atomic beam measurements of interatomic forces"; C. B. Meyer, "Frozen matrix line shapes"; W. R. Hindmarsh, "Force constants from spectral line shapes." (E. Rothe, discussion leader.) R. A. Bell, "Neutral atom broadening in stellar atmospheres." (L. Aller, discussion leader.)

2 September. H. Margenau, "Summing up and prognosis."



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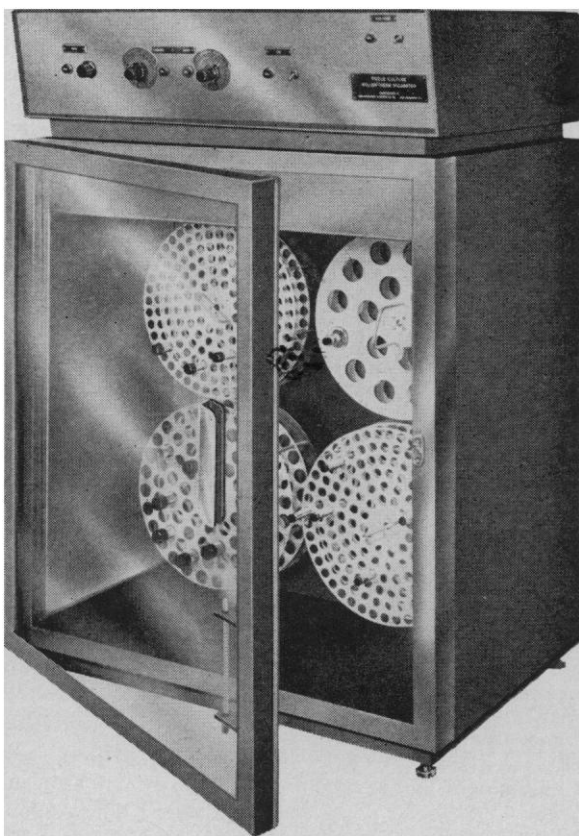
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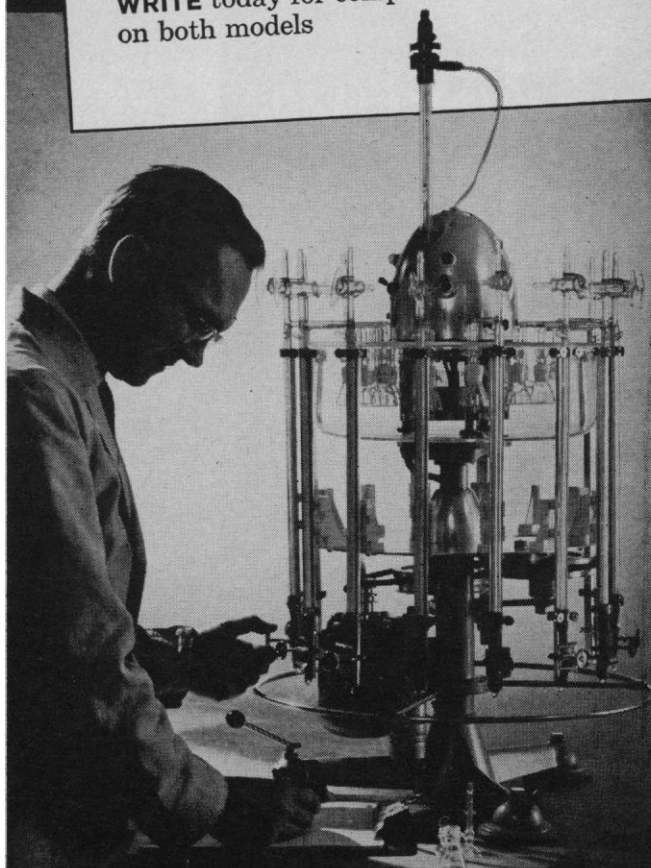
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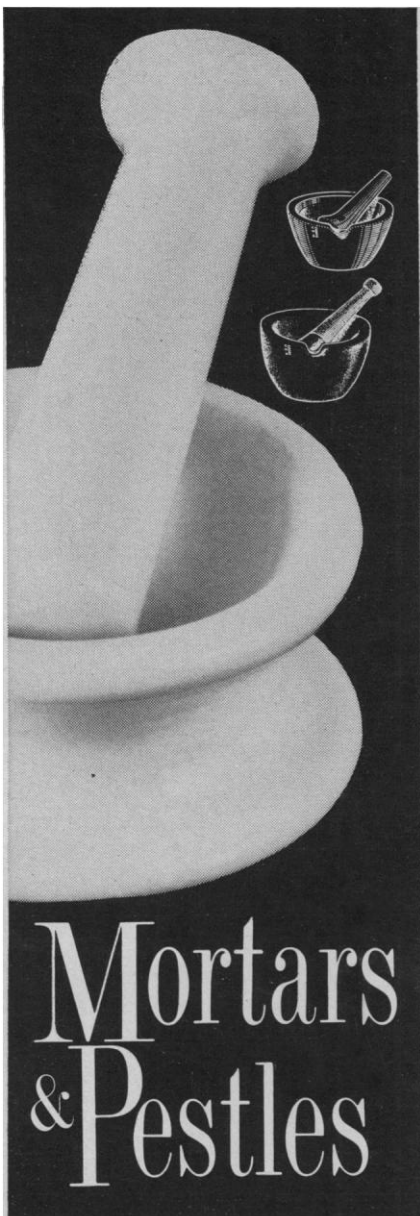
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Forthcoming Events

March

21-25. Institute of **Electrical and Electronics Engineers**, intern. conv., New York, N.Y. (IEEE, 345 E. 47 St., New York)

22-23. **Biomagnetics**, 3rd intern. symp., Univ. of Illinois, Chicago. (M. F. Bar-nothy, Univ. of Illinois, 833 S. Wood St., Chicago)

22-23. Modern Concepts of **Cardiovascular Diseases**, conf. and workshop, Reno, Nev. (G. T. Smith, Laboratory of Patho-Physiology, Univ. of Nevada, Reno 89507)

22-24. Measurement and Applications of **Neutron Cross Sections**, conf., Wash-ington, D.C. (W. W. Havens, Dept. of Physics, Columbia Univ., 538 W. 120 St., New York 10027)

22-31. American **Chemical Soc.**, spring mtg., Pittsburgh, Pa. (ACS, 1155 16th St., NW, Washington, D.C.)

23-25. Institute of **Mathematical Sta-tistics**, Purdue Univ., Lafayette, Ind. (G. E. Nicholson, Jr., Univ. of North Carolina, Chapel Hill)

23-25. Modern Methods of **Weather Forecasting and Analysis**, Chicago, Ill. (J. R. Fulks, U.S. Weather Bureau, 5730 S. Woodlawn Ave., Chicago)

24-26. **Biomathematics and Computer Science** in the Life Sciences, symp., Hous-ton, Tex. (Dean, Div. of Continuing Edu-cation, Univ. of Texas Graduate School of Biomedical Sciences, Texas Medical Center, Houston 77025)

24-26. Pediatric and Adolescent **Gyne-cology**, conf., New York Acad. of Sci-ences, New York. (W. R. Lang, Jefferson Medical College of Philadelphia, 1025 Walnut St., Philadelphia, Pa.)

24-26. **Pollution and Marine Ecology**, conf., Galveston, Tex. (S. M. Ray, Texas A&M Univ. Marine Laboratory, Galves-ton 77550)

24-27. International Assoc. for **Dental Research**, 44th general mtg., Miami, Fla. (G. H. Rovelstad, U.S. Navy Dental School, Natl. Naval Medical Center, Bethesda, Md. 20014)

25-26. National Assoc. of **Biology Teachers**, western regional conv., Los An-geles, Calif. (The Association, Professional Building, Great Falls, Mont.)

26-2. **Stress Analysis**, 3rd intern. conf., Berlin, Germany. (H. Kothaus, Verein Deutscher Ingenieure, Prinz-Georg Str. 77/79, 4 Düsseldorf 10)

26-27. Arizona **Chest Disease Symp.**, Tucson. (E. A. Oppenheimer, P.O. Box 6067, Tucson 85716)

27-30. American Assoc. of **Dental Schools**, Miami Beach, Fla. (R. Sullens, 840 N. Lake Shore Dr., Chicago, Ill.)

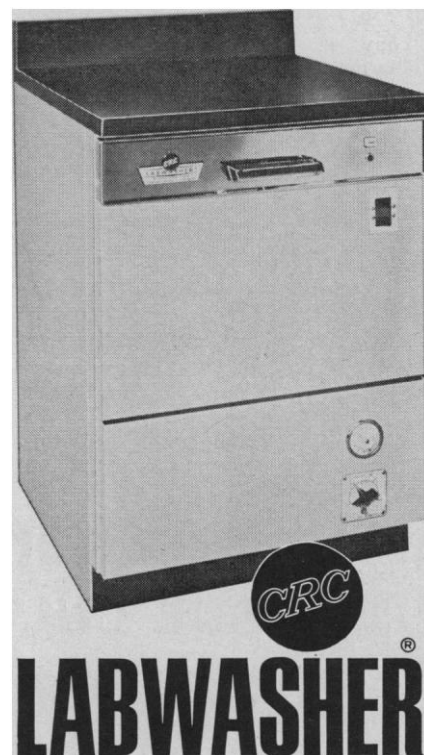
28-30. **Great Lakes Research**, 9th conf., Chicago, Ill. (B. M. McCormac, IIT Re-search Inst., 10 W. 35 St., Chicago 60616)

28-31. Collegium Intern. **Neuro-Psycho-pharmacologicum**, 5th biennial mtg., Washington, D.C. (M. K. Taylor, 3636 16th St., NW, Washington 20010)

29-31. **Airborne Infection**, 2nd intern. conf., Illinois Inst. of Technology, Chicago. (E. K. Wolfe, U.S. Army Biological Lab-oratories, Fort Detrick, Frederick, Md.)

29-31. **Applied Meteorology**, 6th natl. conf., Los Angeles, Calif. (B. N. Charles,

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29-31. **Chemical Soc.**, anniversary mtgs., Oxford, England. (General Secretary, Burlington House, London W.1)

29-31. **Surface-Active Substances**, intern. conf., Berlin, East Germany. (Inst. für Fettchemie, Deutsche Akademie der Wissenschaften zu Berlin, Rudower Chaussee 5, 1199 Berlin-Adlershof)

29-31. **Symbolic and Algebraic Manipulation**, symp., Assoc. for Computing Machinery, Washington, D.C. (J. E. Sammet, I.B.M. Corp., 545 Technology Sq., Cambridge, Mass. 02139)

29-1. American Assoc. for **Contamination Control**, 5th annual technical mtg., Houston, Tex. (W. T. Maloney, The Association, 6 Beacon St., Boston, Mass.)

29-1. **Ultraviolet and X-ray Spectroscopy of Laboratory and Astrophysical Plasma**, conf., Abingdon, England. (Inst. of Physics and the Physics Soc., 47 Belgrave Sq., London, S.W.1, England)

30. **Oral Cancer**, 4th symp., St. Francis Hospital, Poughkeepsie, N.Y. (M. A. Engelman, 1 E. Academy St., Wappingers Falls, N.Y.)

30-1. **Magnetohydrodynamics**, 7th symp., Princeton, N.J. (R. G. Jahn, Guggenheim Laboratories, Forrestal Research Center, Princeton, N.J. 08540)

31-2. **Michigan Acad. of Science, Arts, and Letters**, Wayne State Univ., Detroit. (E. A. Wunsch, Dept. of English, Univ. of Michigan, Ann Arbor)

April

1-2. **Alabama Acad. of Science**, Birmingham-Southern College, Birmingham. (W. B. DeVall, Dept. of Forestry, Auburn Univ., Auburn, Ala.)

1-2. **Arkansas Acad. of Science**, Little Rock. (G. E. Templeton, Univ. of Arkansas, Fayetteville)

1-5. **National Science Teachers Assoc.**, New York, N.Y. (R. H. Carleton, 1201 16th St., NW, Washington, D.C. 20036)

1-7. **American Acad. of General Practice**, Boston, Mass. (M. F. Cahal, Volker Blvd. at Brookside, Kansas City 12, Mo.)

4-6. **Atomic Energy Soc. of Japan**, annual mtg., Tokyo. (M. Masamoto, Japan Atomic Energy Research Inst., 1-1, Shibamura-cho, Minato-ku, Tokyo)

4-6. **Exobiology**, conf., Ames Research Center, Moffett Field, Calif. (Letters and Science Extension, Univ. of California, Berkeley 94720)

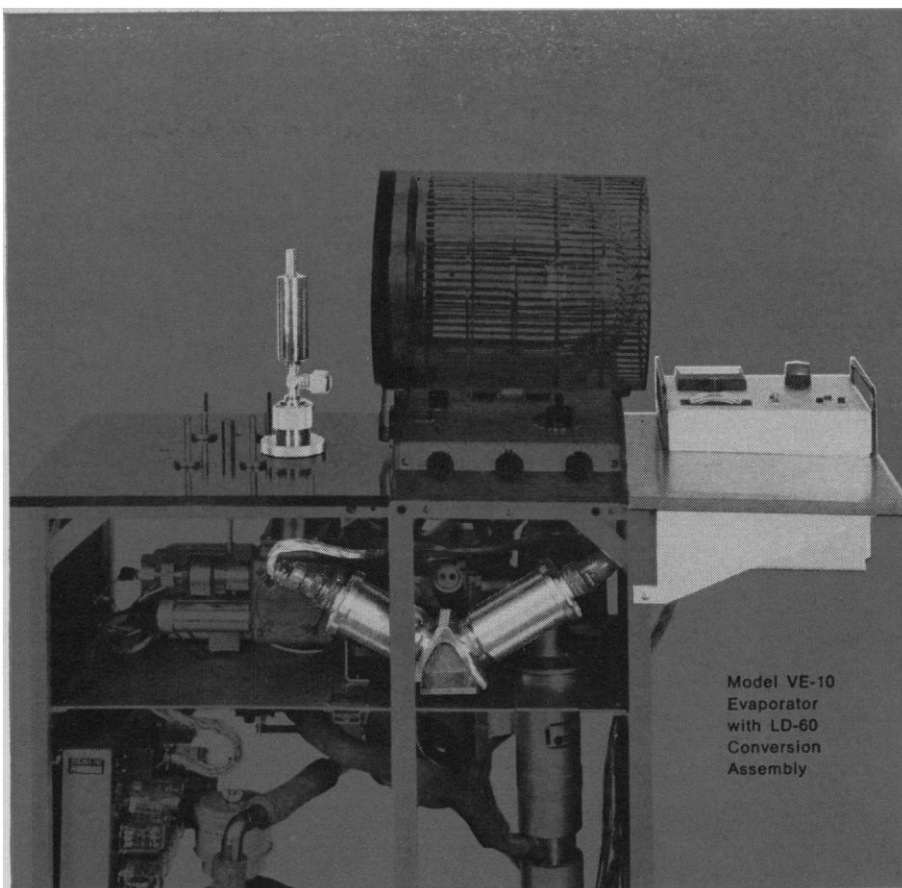
4-6. **American Assoc. of Physical Anthropologists**, Berkeley, Calif. (F. E. Johnston, Dept. of Anthropology, Univ. of Pennsylvania, Philadelphia 19104)

4-6. **Biomedical Communication**, conf., New York, N.Y. (J. Lieberman, Public Health Service Audiovisual Facility, Atlanta, Ga. 30333)

4-7. **Federation of European Biochemical Soc.**, 3rd mtg., Warsaw, Poland. (T. Klopotoski, Polish Biochemical Soc., Freta 16, Warsaw)

4-7. **Advances in Water Quality Improvement**, conf., Univ. of Texas, Austin. (Special Lecture Series, Engineering Laboratories Bldg. 305, Univ. of Texas, Austin)

4-8. **International Biological Program**, 2nd general assembly, Paris, France. (F. W. G. Baker, 2 via Sebenico, Rome, Italy)



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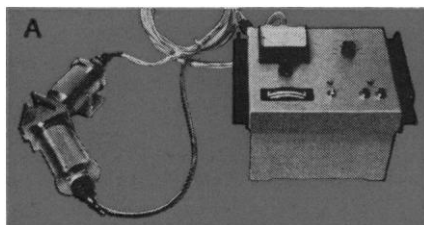
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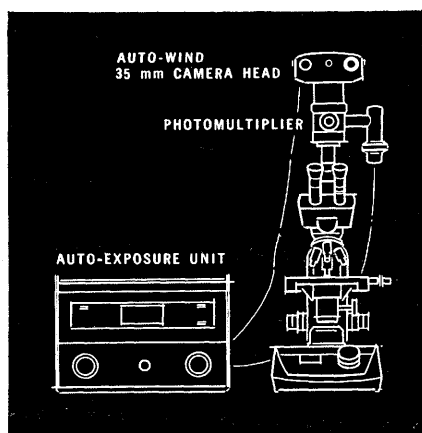


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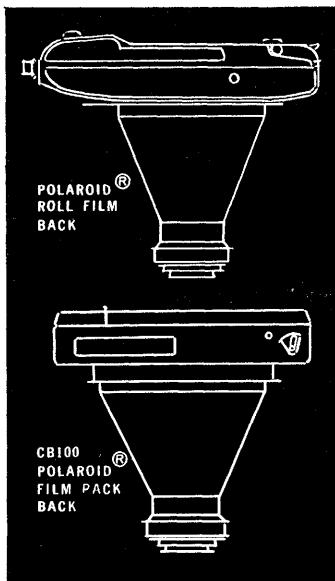
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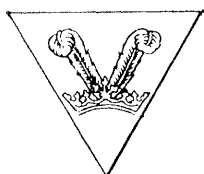
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4-10. **Psychology**, 10th inter-American congr., Lima, Peru. (Intern. Soc. of Psychology, 2104 Meadowbrook Dr., Austin, Tex.)

5-7. Middle East **Neurosurgical Soc.**, mtg., Jerusalem, Jordan. (F. S. Haddad, Orient Hospital, Beirut, Lebanon)

5-8. American Assoc. of **Anatomists**, San Francisco, Calif. (R. T. Woodburne, Dept. of Anatomy, Univ. of Michigan, Ann Arbor 48104)

6-7. **Phlebology**, 6th intern. mtg., Aix-en-Provence, France. (F. Beurier, 94, cours Sextius, Aix-en-Provence)

6-8. **Electron and Laser Beam Technology**, Univ. of Michigan, Ann Arbor. (G. I. Haddad, Electrical Engineering Dept., Univ. of Michigan, Ann Arbor)

6-8. Recent Advances in **Phytochemistry**, intern. symp., Univ. of Texas, Austin. (T. J. Mabry, Dept. of Botany, Univ. of Texas, Austin 78712)

6-8. **Plant Phenolic Group** of North America, 6th annual mtg., Austin, Tex. (V. C. Runeckles, Imperial Tobacco Co., Montreal, P.Q., Canada)

7-8. **Histochemical Soc.**, 17th annual mtg., Atlantic City, N.J. (J. Y. Turner, College of Physicians and Surgeons, Columbia Univ., New York, N.Y. 10032)

7-8. Southern **Sociological Soc.**, annual mtg., New Orleans, La. (J. J. Honigmann, Dept. of Anthropology, Univ. of North Carolina, Chapel Hill)

7-9. Southern Soc. for **Philosophy and Psychology**, New Orleans, La. (G. R. Hawkes, U.S. Army Medical R&D Command, Washington, D.C. 20315)

8-9. American Soc. for **Artificial Internal Organs**, Atlantic City, N.J. (B. K. Kusserow, Dept. of Pathology, Univ. of Vermont College of Medicine, Burlington)

8-11. **Animal Toxins**, intern. symp., Atlantic City, N.J. (F. E. Russell, Box 323, Los Angeles County General Hospital, 1200 N. State St., Los Angeles, Calif. 90033)

9. **Paleontological Research Inst.**, semi-annual mtg., Ithaca, N.Y. (The Institution, 109 Dearborn Pl., Ithaca, N.Y. 14850)

11-13. Institute of **Electrical and Electronics Engineers**, Region 3, conv., Atlanta, Ga. (M. D. Price, Dept. 72-14, Zone 400, Lockheed-Georgia Co., Marietta, Ga.)

11-13. Comparative **Hemoglobin Structure**, intern. symp., Salonika, Greece. (Secretary, P.O. Box 201, Salonika)

11-15. **Aeronomic Studies of Lower Ionosphere**, conf., Ottawa, Ont., Canada. (W. Pfister, Air Force Cambridge Research Laboratories, Upper Atmosphere Physics Laboratory, L. G. Hanscom Field, Bedford, Mass.)

11-15. American Assoc. of **Cereal Chemists**, New York, N.Y. (R. J. Tarleton, The Association, 1955 University Ave., St. Paul, Minn. 55104)

11-16. Federation of American Societies for **Experimental Biology**, 50th annual mtg., Atlantic City, N.J. The following societies will meet in conjunction with the FASEB; information may be obtained from FASEB, 9650 Rockville Pike, Bethesda, Maryland 20014:

American Physiological Society

American Soc. of Biological Chemists

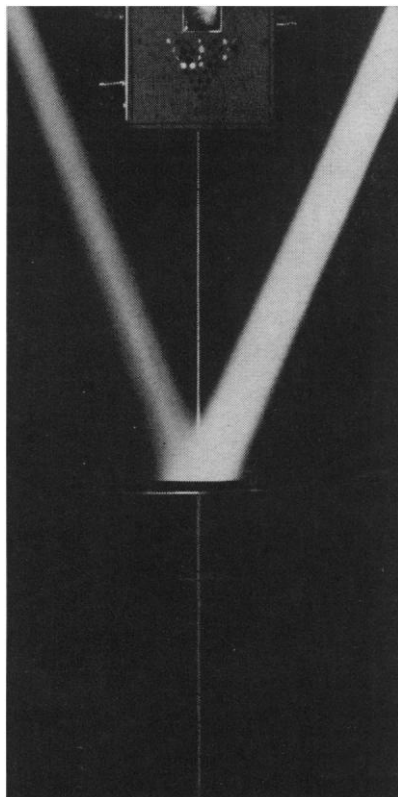
American Soc. for Pharmacology and Experimental Therapeutics

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American Soc. for Experimental Pathology

American Inst. of Nutrition

American Assoc. of Immunologists

12-13. **Frontiers in Food Research**, symp., Cornell Univ., Ithaca, N.Y. (W. F. Shipe, Dept. of Dairy and Food Science, Cornell Univ., Ithaca)

12-14. **Generalized Networks**, intern. symp., New York, N.Y. (H. J. Carlin, Polytechnic Inst. of Brooklyn, 333 Jay St., Brooklyn, N.Y. 11201)

12-14. **Remote Sensing of Environment**, 4th symp., Univ. of Michigan, Ann Arbor. (Extension Service, Conference Dept., Univ. of Michigan, Ann Arbor 48104)

12-15. **Quantum Electronics**, intern. conf., Phoenix, Ariz. (J. P. Gordon, Bell Telephone Laboratories, Murray Hill, N.J.)

12-16. **Society for Applied Mathematics and Mechanics**, annual scientific mtg., Darmstadt, Germany. (F. Reutter, Gesellschaft für Angewandte Mathematik und Mechanik, Templergraben 55, 51, Aachen, Germany)

12-29. **Soil Conservation**, 1st Pan American congr., São Paulo, Brazil. (J. Abramides Neto, avda. Francisco Matarazzo 455, Caixa Postal 8366, São Paulo)

13-15. **Institute of Environmental Sciences**, 12th annual tech. mtg. and equipment exp., San Diego, Calif. (The Institute, 34 S. Main St., Mount Prospect, Ill.)

13-16. **Geological Soc. of America**, southeast section, Univ. of Georgia, Athens. (L. D. Ramspott, Dept. of Geology, Univ. of Georgia, Athens 30601)

13-16. **American Orthopsychiatric Assoc.**, 43rd annual mtg., San Francisco, Calif. (M. F. Langer, The Association, 1790 Broadway, New York 10019)

13-16. **National Soc. for Programmed Instruction**, natl. conv., St. Louis, Mo. (M. Arky, 714 Kingsland, University City, Mo. 63130)

13-16. **American Radium Soc.**, annual mtg., Phoenix, Ariz. (J. L. Pool, Memorial Soc., 444 E. 68 St., New York 10021)

13-16. **National Council of Teachers of Mathematics**, 44th annual mtg., New York, N.Y. (J. D. Gates, 1201 16th St., NW, Washington, D.C. 20036)

14-15. **British Biophysical Soc.**, spring mtg., Oxford, England. (D. Noble, Balliol College, Oxford)

14-15. **Molecular Interactions and the Crystallography of Ceramics**, Univ. of Nottingham, Nottingham, England. (S. C. Wallwork, Dept. of Chemistry, Univ. of Nottingham, University Park, Nottingham)

14-16. **Association of Southeastern Biologists**, Raleigh, N.C. (M. Y. Menzel, Dept. of Biological Sciences, Florida State Univ., Tallahassee)

14-16. **American Cleft Palate Assoc.**, Mexico City, Mexico. (C. G. Wells, Parker Hall, Univ. of Missouri, Columbia)

14-16. **Eastern Psychological Assoc.**, New York, N.Y. (M. A. Iverson, Queens College, Flushing, N.Y. 11367)

14-17. **American Assoc. of Endodontists**, 23rd annual mtg., San Francisco, Calif. (J. F. Bucher, 6828 Winterberry Lane, Bethesda, Md. 20034)

14-19. **American Dermatological Assoc.**, Hot Springs, Va. (R. R. Kierland, Mayo Clinic, Rochester, Minn.)

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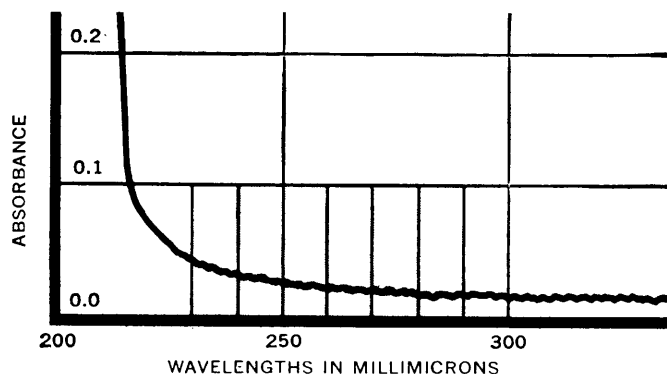
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14-20. **Geodetical Measuring Technique and Instruments**, conf., Budapest, Hungary. (F. Raum, Preparatory Committee of the Conference, Technika Hazza, Szabadsag ter 17, Budapest 5)

15-16. Iowa Acad. of Science, Pella. (G. W. Peglar, Dept. of Mathematics, Iowa State Univ., Ames)

15-16. Montana Acad. of Sciences, Missoula. (L. H. Harvey, Univ. of Montana, Missoula 59801)

15-17. American Soc. of Internal Medicine, New York, N.Y. (A. O. Whitehall, 3410 Geary Blvd., San Francisco, Calif. 95118)

16-18. **Lateral Line Detectors**, intern. conf., New York, N.Y. (P. H. Cahn, Stern College, Yeshiva Univ., 253 Lexington Ave., New York 10016)

17-20. **Electron and Ion Beam Science and Technology**, 2nd intern. conf., American Inst. of Mining, Metallurgical, and Petroleum Engineers, New York, N.Y. (H. N. Appleton, 345 E. 47 St., New York 10017)

18-19. American Otological Soc., San Juan, P.R. (W. H. Bradley, 1100 E. Genessee St., Syracuse, N.Y.)

18-20. **Thermodynamics of Ceramic Systems**, mtg., London, England. (J. P. Roberts, British Ceramics Soc., Houldsworth School of Applied Science, Univ. of Leeds, Leeds 2, England)

18-20. **Technical Microbiology**, symp., Berlin, Germany. (S. Windisch, Inst. für Gärungsgewerbe, Seestrass, 13, 1 Berlin 65)

18-20. **Structures and Materials**, 7th conf., Cocoa Beach, Fla. (R. W. Leonard, NASA-Langley Research Center, Mail Stop 188C, Langley Station, Hampton, Va. 23365)

18-21. **Aerospace Medical Assoc.**, 37th annual scientific mtg., Las Vegas, Nev. (C. A. Berry, Chief of Center Medical Programs, NASA-Manned Spacecraft Center, Houston, Tex. 77058)

18-21. **International Scientific Radio Union**, U.S. natl. committee, mtg., Washington, D.C. (USNC-URSI, 2101 Constitution Ave, NW, Washington, D.C.)

18-21. **Tectonic Levels in the Earth's Crust**, intern. symp., Neuchatel, Switzerland. (J.-P. Schaer, Dept. of Geology, University, 11 rue Emile Argand, 200 Neuchatel)

18-22. **American Assoc. of Corrosion Engineers**, 22nd annual mtg., Miami Beach, Fla. (N. E. Hamner, The Association, 980 M&M Bldg., Houston, Tex.)

18-22. **Applications of Liquid Fuels**, conf., Torquay, England. (Inst. of Fuel, 18 Devonshire St., Portland Pl., London, W.1, England)

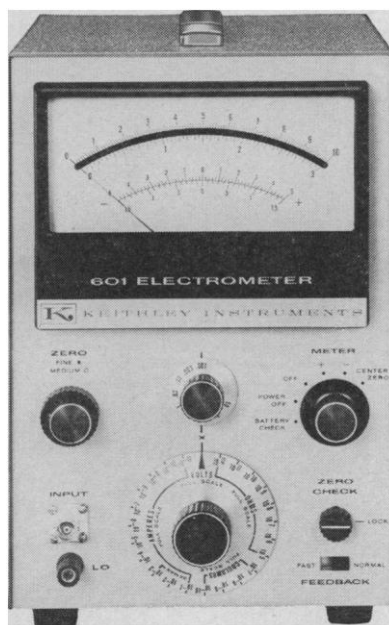
18-22. **American College of Physicians**, New York, N.Y. (E. C. Rosenow, Jr., 4200 Pine St., Philadelphia 4, Pa.)

19-22. **American Geophysical Union**, 47th annual mtg., Washington, D.C. (W. E. Smith, AGU, 1145 19th St., NW, Washington, 20036)

18-23. **International Soc. for Photogrammetry**, technical commissions, Munich, Germany. (G. Krauss, Deutsche Gesellschaft für Photogrammetrie, Waasemstr. 19-21, Bad Godesberg, Germany)

19-21. **Frequency Control**, 20th annual symp., U.S. Army Electronics Command, Atlantic City, N.J. [Director, Electronics

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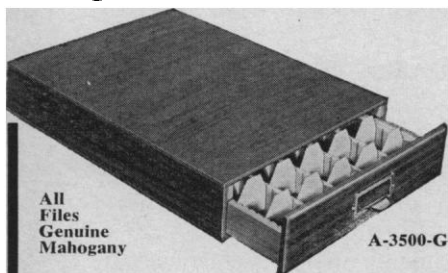


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19-22. **Microwave Communications**, 3rd
colloquium, Budapest, Hungary. (Valko
Peterne, Szabadsag ter 17, Budapest)

19-23. **Scientific and Technical Books
and Journals**, 2nd intern. exhibition, Paris,
France. (F. Retailiau, Intern. Exhibition
of Scientific and Technical Books and
Journals, 117 Blvd. St. Germain, Paris 6)

20-22. **Institute of Electrical and Elec-
tronics Engineers**, southwestern conf., Dal-
las, Tex. (R. Carrel, Collins Radio Co.,
Dallas 75207)

20-22. **American Laryngological, Rhino-
logical, and Otological Assoc.**, San Juan,
P.R. (V. R. Alfaro, 917 20th St., NW,
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20-22. **Magnetics**, 4th intern. conf.
(INTERMAG), Stuttgart, Germany. (E. W.
Pugh, I.B.M. Corp., 1000 Westchester
Ave., White Plains, N.Y.)

20-23. **Application of Physicochemical
Methods in Chemical Analysis**, conf.,
Budapest, Hungary. (M. K. Egyesülete,
Szabadsag ter 17, Budapest 5)

20-23. **Solar Energy Soc.**, 2nd annual
mtg., Boston, Mass. (F. Edlin, The So-
ciety, Arizona State Univ., Tempe 85281)

21-22. **Space Navigation**, natl. mtg.,
Boston, Mass. (E. S. Keats, Westinghouse
Electric Corp., Box 1897, Baltimore, Md.
21203)

21-23. **Ohio Acad. of Science**, 75th an-
nual mtg., Columbus. (J. H. Melvin, 505
King Ave., Columbus 43201)

21-23. **Southwestern Psychological As-
soc.**, 13th annual conv., Arlington, Tex.
(C. Cleland, 2104 Meadowbrook Dr.,
Austin, Tex.)

21-23. **West Virginia Acad. of Science**,
Institute. (J. B. Hickman, West Virginia
Univ., Morgantown 26506)

22. **Computer Aided Basic Research**,
symp., Hoboken, N.J. (I. Flores, Elec-
trical Engineering Dept., Stevens Inst.,
Hoboken 07030)

22. **Illinois Acad. of Science**, Illinois
State Univ., Normal. (N. D. Levine, Univ.
of Illinois, Urbana)

22-23. **National Council of Teachers of
Mathematics**, Greeley, Colo. (J. D. Gates,
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23-24. **American Laryngological Assoc.**,
San Juan, P.R. (L. Richards, 12 Clovelly
Rd., Wellesley Hills, Mass.)

24-26. **American Assoc. of Colleges of
Pharmacy**, Dallas, Tex. (C. W. Bliven,
1507 M St., NW, Washington, D.C.
20005)

24-27. **American Soc. of Abdominal
Surgeons**, Chicago, Ill. (B. F. Alfano,
663 Main St., Melrose 76, Mass.)

24-27. **American Oil Chemists' Soc.**,
Los Angeles, Calif. (C. H. Hauber, The
Society, 35 E. Wacker Dr., Chicago, Ill.
60601)

24-28. **Infectious Pathology**, 4th intern.
congr., Stuttgart, Germany. (G. Hoffman,
Hugstetterstr. 55, 78 Frieberg im Bries-
gau, Germany)

24-29. **American College of Allergists**,
22nd annual congr., Chicago, Ill. (J. D.
Gillespie, 2141 14th St., Boulder, Colo.)

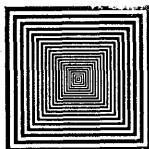
24-29. **American Soc. of Hospital
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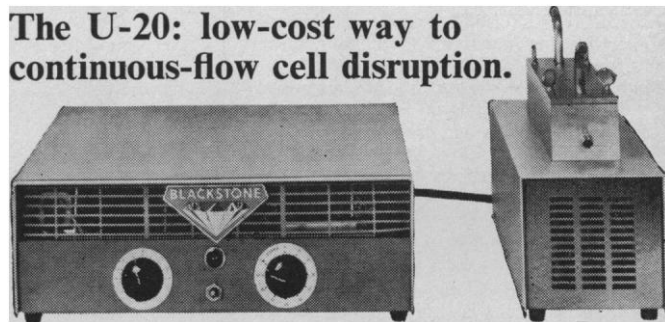
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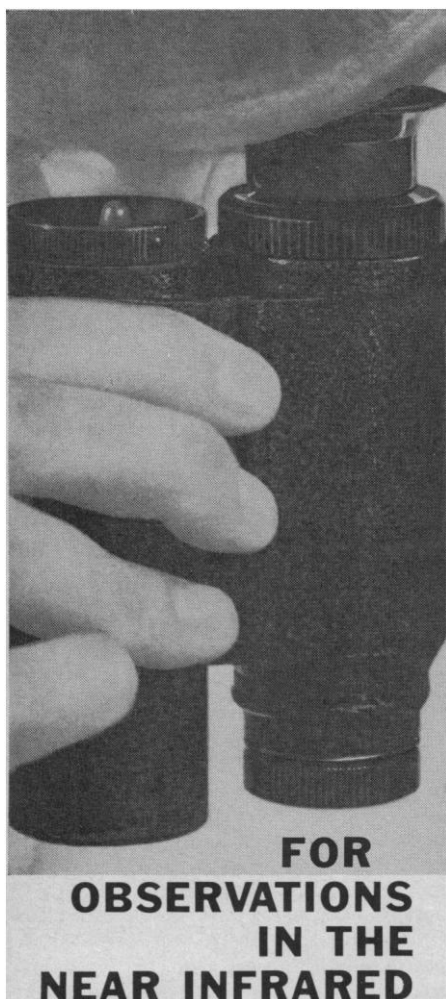
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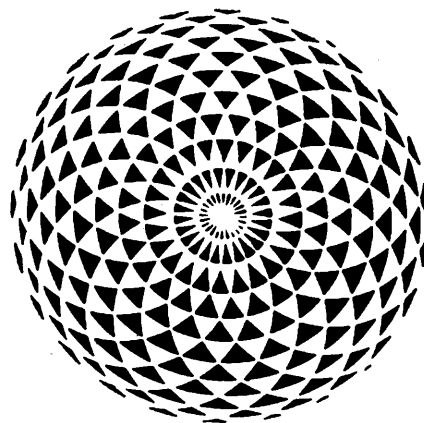
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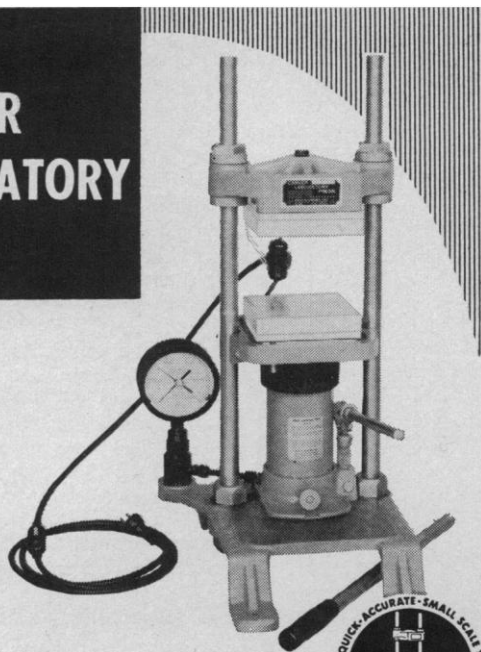


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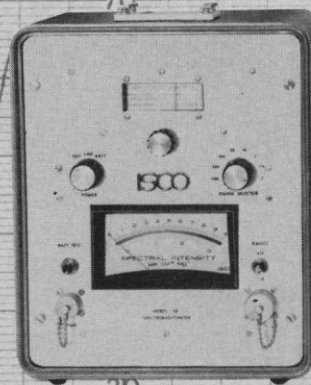


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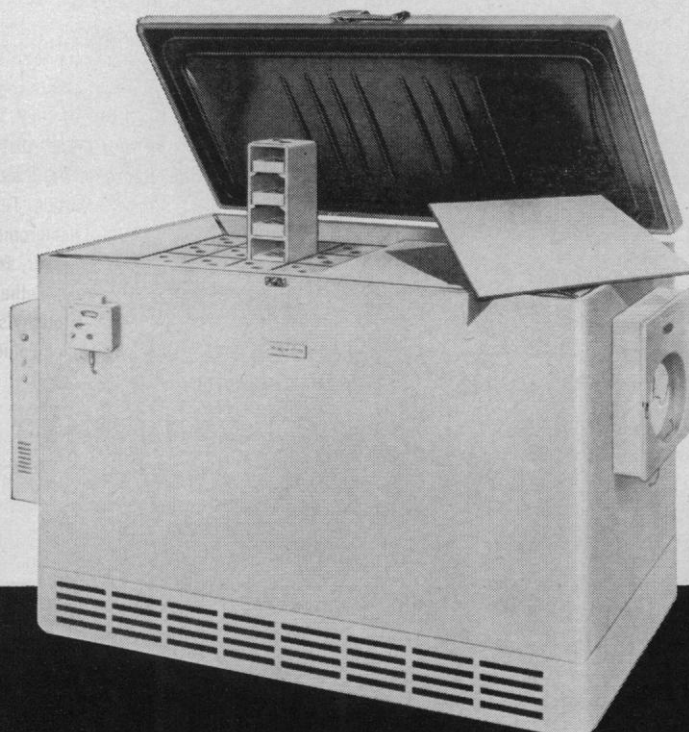
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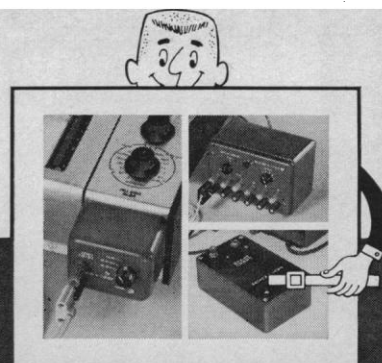
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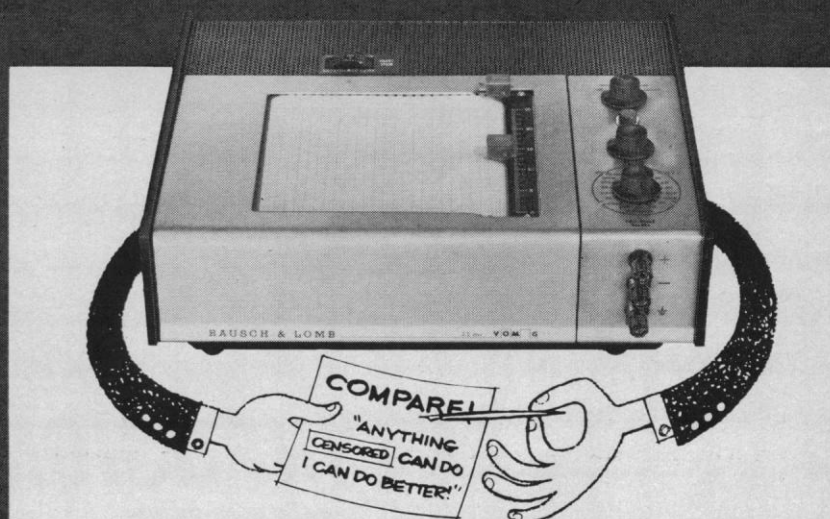
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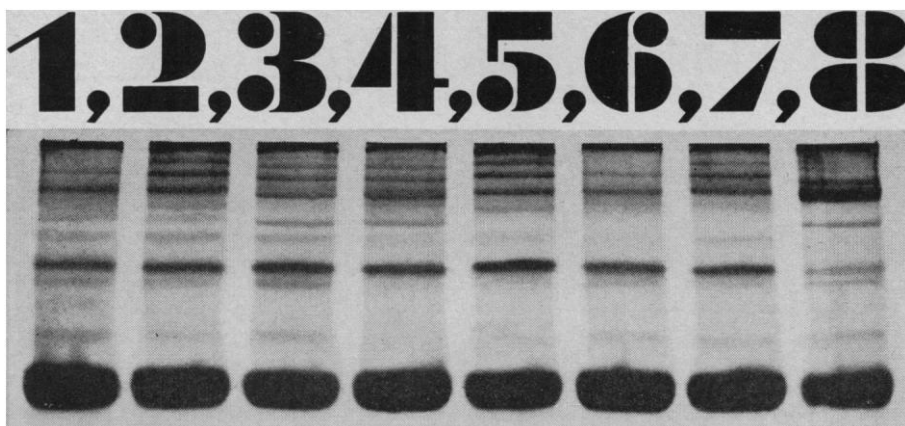


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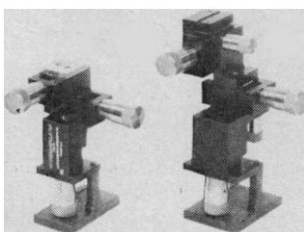
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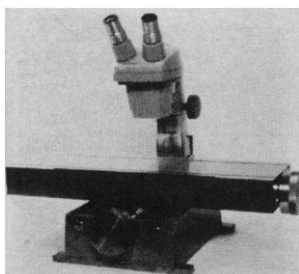
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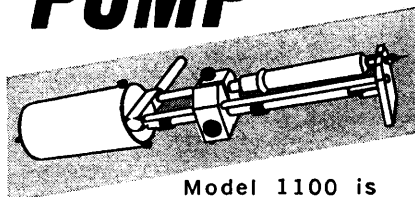
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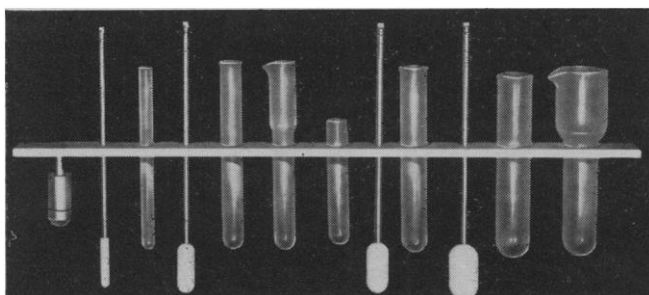


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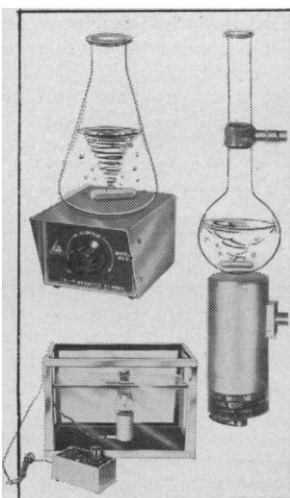
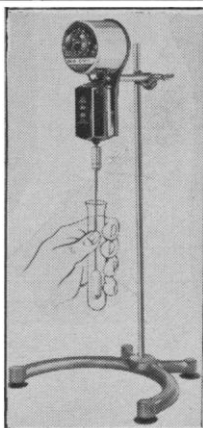
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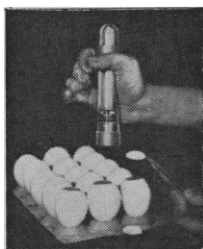
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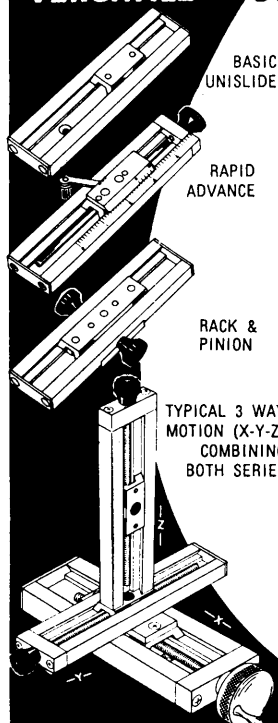
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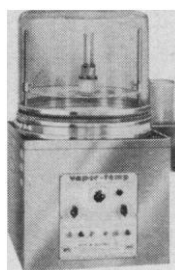
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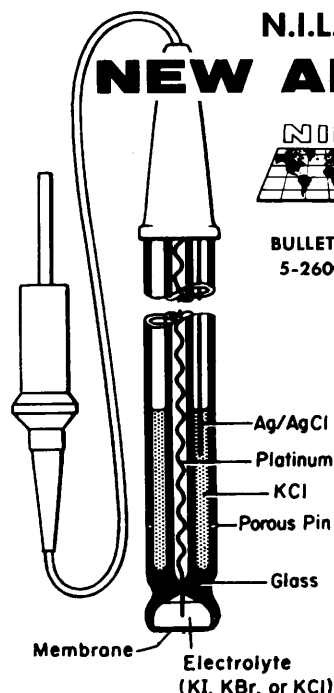
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CHARACTERISTICS OF THREE TYPICAL N.I.L.-PUNGOR DIRECT-READING ELECTRODES

INPUT IMPEDANCE	REFERENCE ELECTRODE	TEMPERATURE RANGE
1-10 megohms	AG/AgCl or calomel	5-90°C.



COMBINATION ELECTRODE
(Direct-Reading plus reference electrode)

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PHONE: 933-1144 AREA CODE: 301

CAT. NO.	MEASURING RANGE	SPECIFICITY AND INTERFERENCES
5-2621 (Chloride)	Pre-calibrated: 10^{-1} — 10^{-3}M Cl^- Individual calibration: 10^{-3} — 10^{-4}M Cl^- For Ag^+ : 10^{-1} — 10^{-3}M Ag^+	No NO_3^- interference. No SO_4^{2-} and OH^- interference at concentrations $<10^{-2}\text{M}$. Cl^- activity in HCl measured by calibration curve of known HCl concentrations. Interference of I^- and Br^- .
5-2623 (Bromide)	Pre-calibrated: 10^{-1} — 10^{-3}M Br^- Individual calibration: 10^{-3} — 10^{-4}M Br^- For Ag^+ : 10^{-1} — 10^{-3}M Ag^+	No NO_3^- interference. No OH^- interference at concentrations $<10^{-2}\text{M}$. No Cl^- interference at concentrations $<10^{-3}\text{M}$. Interference of I^- .
5-2601 (Iodide)	Pre-calibrated: 10^{-1} — 10^{-3}M I^- Individual calibration: 10^{-3} — 10^{-4}M I^-	Measures 0.1 ppm I^- in 3500 pp Cl^- or 0.1 ppm I^- in 10,000 ppm SO_4^{2-} .

ELECTRODE FEATURES

TYPE OF MEMBRANE:
Silicone rubber.

THEORY OF OPERATION:
Based on concentration differences between the sample and the membrane surface bearing the ion to be measured.

OTHER ELEMENTS FOR WHICH ELECTRODES ARE AVAILABLE:
Sulfate, phosphate, bismuth, sulfide, nickel, fluoride, potassium, aluminum, silver, barium, copper, and antimony.

SENSITIVITY:
For example, iodine can be reproducibly measured to 10^{-7} in 0.1 N chloride solutions. (See table.)

MEASURING INSTRUMENT:
Any modern direct-reading pH meter with millivolt scale.

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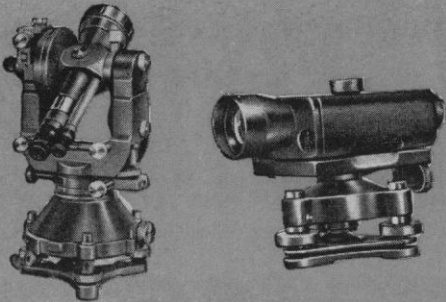
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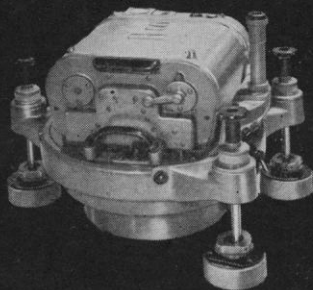
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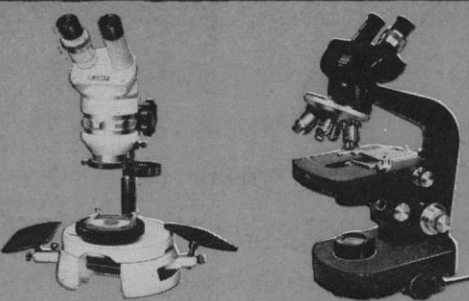
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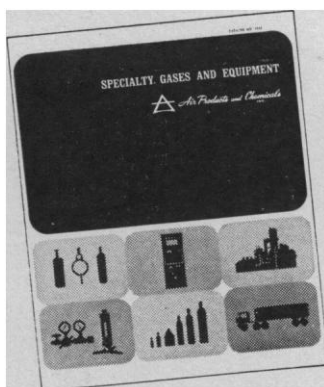
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Butane	Fluorine	2-Methylbutene-2	Silicon Tetrafluoride
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cis-2-Butene	12, 13, 13B1, 14,	Methyl Chloride	Sulfur Hexafluoride
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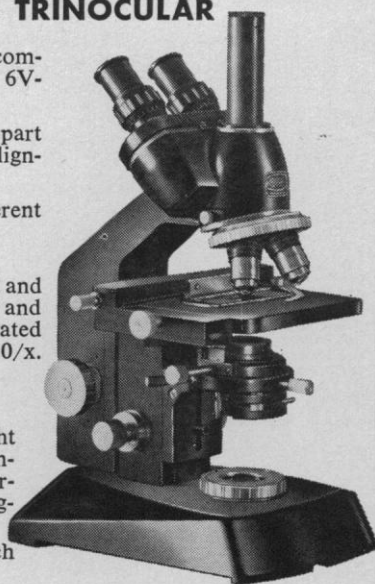
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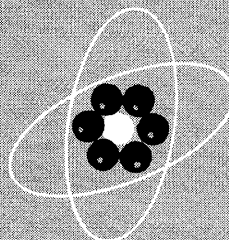


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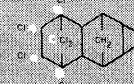
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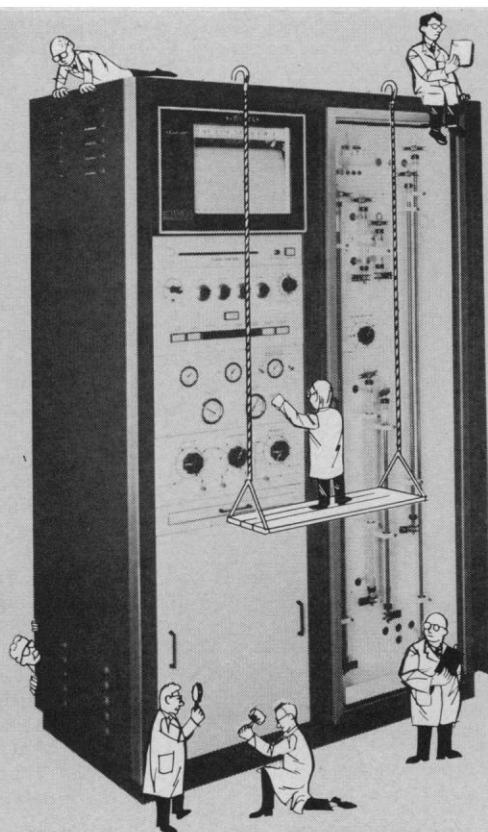
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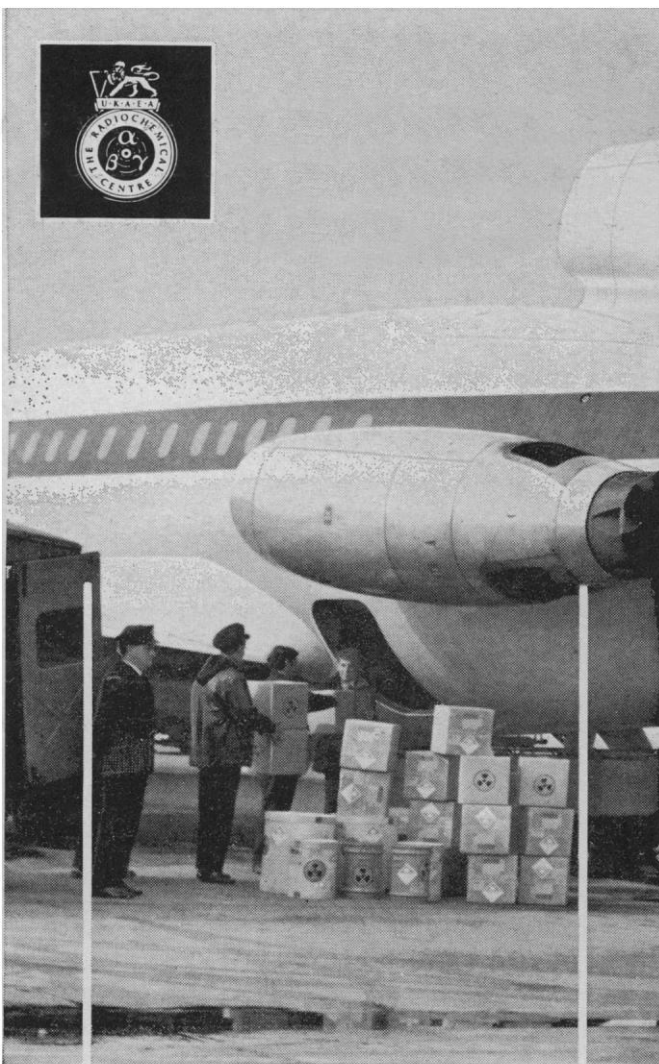
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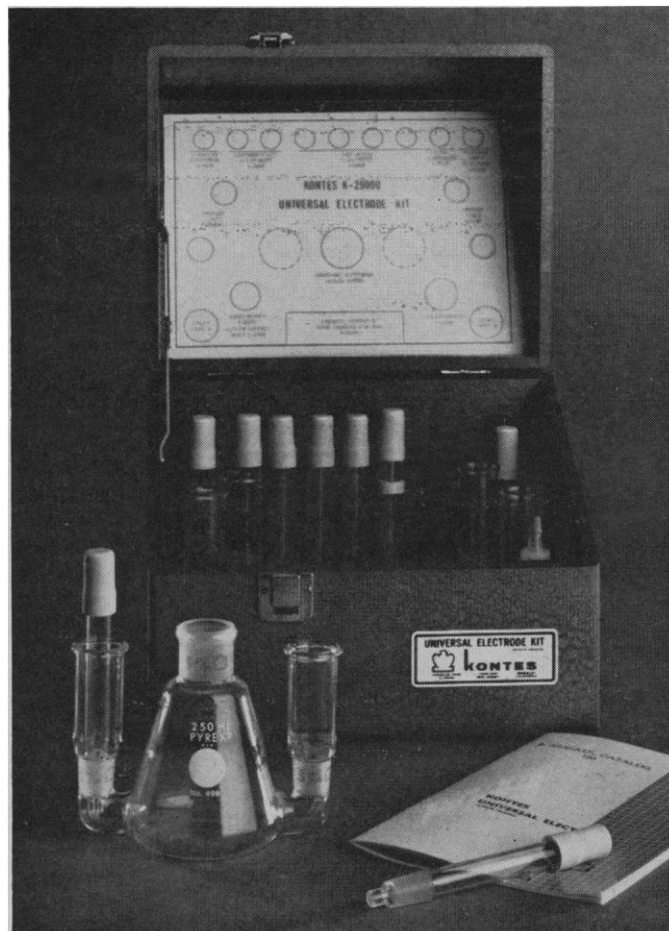
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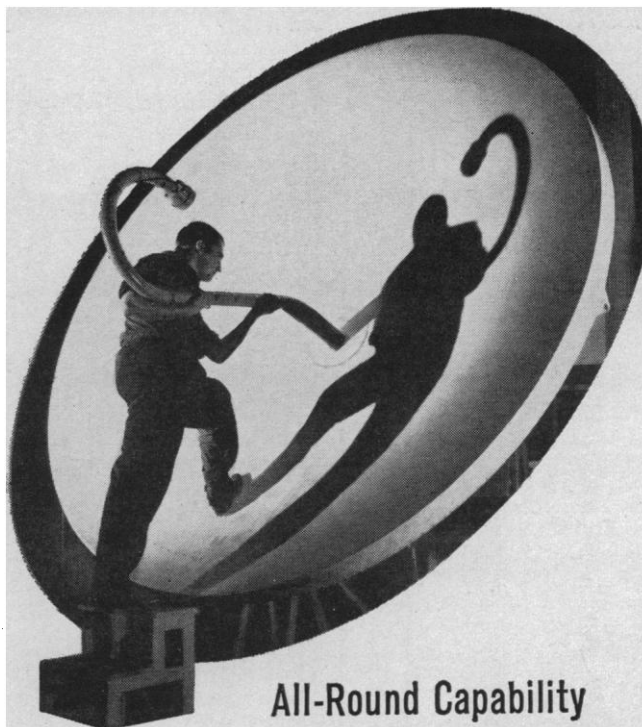
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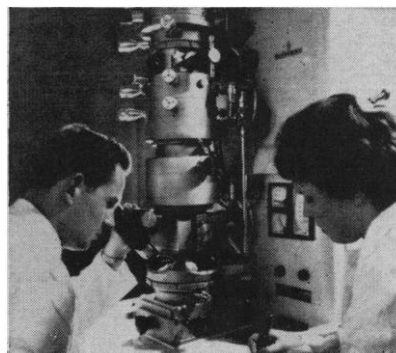


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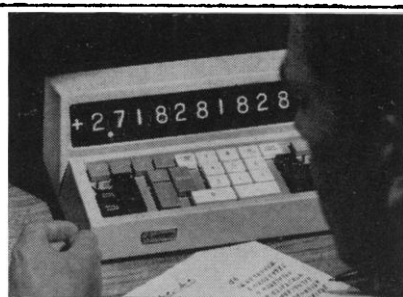
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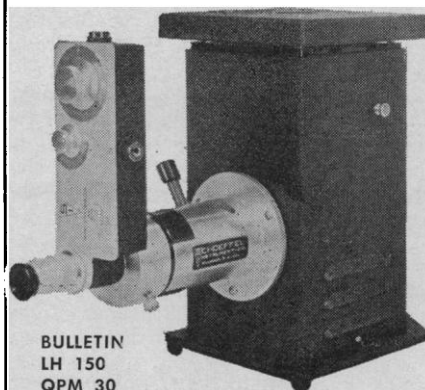
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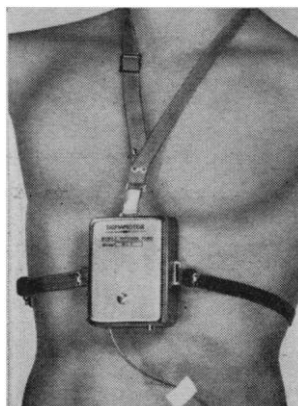
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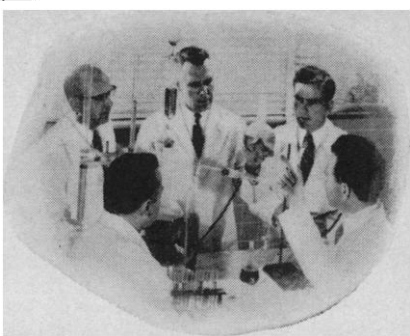
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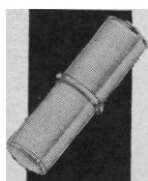


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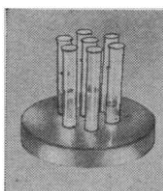
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The World of Coral. Robert Silverberg. Duell, Sloan, and Pearce, New York, 1965. 158 pp. Illus. \$3.95.

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Analytical Techniques for Hydraulic Cements and Concrete. A symposium (Lafayette, Ind.), June 1965. American Soc. for Testing and Materials, Philadelphia, 1966. 99 pp. Illus. Paper, \$4.75; members, \$3.30. Six papers: "Methods used in petrographic studies of concrete" by B. Erlin; "Use of infrared spectrophotometry for the detection and identification of organic additions in cement and admixtures in hardened concrete" by W. G. Hime, W. F. Mivelaz, and J. D. Connolly; "Quantitative x-ray diffraction measurements by fast scanning" by R. L. Handy; "Substitution of alkali oxides in tricalcium aluminate" by D. E. Day; "Determination of acetate additions in cement by gas chromatography" by A. S. Wexler; and "Application of spectrophotometric and EDTA methods for rapid analysis of cement and raw materials" by Z. T. Jugovic.

Bernoulli (1713), Bayes (1763), [and] Laplace (1813): Anniversary Volume. Proceedings, International Research Seminar, Statistical Laboratory, University of California (Berkeley), 1963. Jerzy Neyman and Lucien M. Le Cam, Eds. Springer-Verlag, New York, 1965. 274 pp. Illus. Paper, \$9. Fifteen papers: "Contribution to the theory of epidemics" by R. Bartoszyński, J. Łoś, and M. Wycech-Łoś; "Study of some statistical models introduced by problems of physics" by A. Blanc-Lapierre, P. Dumontet, and B. Picinbono; "Stationary and isotropic random functions" by A. Blanc-Lapierre and P. Faure; "On the estimation of a multivariate location parameter with squared error loss" by R. Cogburn; "Some notes on Laplace" by F. N. David; "Extension of the Kolmogorov-Smirnov test to regression alternatives" by J. Hájek; "First-passage percolation, subadditive processes, stochastic networks, and generalized renewal theory" by J. M. Hammersley and D. J. A. Welsh; "Direct product branching processes and related induced Markoff chains: 1, calculations of rates of approach to homozygosity" by S. Karlin and J. McGregor; "Automatically controlled sequence of statistical procedures" by T. Kitagawa; "On the distribution of sums of independent random variables" by L. Le Cam; "Limit solutions of sequences of statistical games" by J. Łoś; "Some remarks on statistical inference" by E. J. G. Pitman; "Approximation of improper prior measures by prior probability measures" by C. M. Stein; "Stationary Gaussian processes satisfying the strong mixing condition and best predictable functionals" by A. M. Yaglom; and "Strong limit theorems for stochastic processes and orthogonality conditions for probability measures" by A. M. Yaglom.

Biological Effects of Asbestos (*Ann. N.Y. Acad. Sci.* 132). Harold E. Whipple, Ed. New York Acad. of Sciences, New York, 1965. 765 pp. Illus. Paper, . . . Fifty-three papers presented at a conference held in Oct. 1964: Asbestos Materials in Modern Technology (3 papers); Lung Tissue and Mineral Matter: Problems of Pathogenesis (6 papers); Human Exposure to Asbestos: Industrial Populations (4 papers); Human Exposure to Asbestos: Community Studies (5 papers); Human Exposure to Asbestos: Dust Controls and Standards (7 papers); Clinical Studies of Pulmonary Asbestosis (7 papers); Asbestos and Neoplasia: Experimental (5 papers); Asbestos and Neoplasia: Epidemiology (8 papers); Asbestos and Neoplasia: Diffuse Mesothelial Tumors (5 papers); and Problems and Perspectives (3 papers).

Chemical Reaction Engineering. Proceedings, Third European Symposium (Amsterdam), September 1964. C. van Heerden, Ed. Pergamon, New York, 1965. 332 pp. Illus. \$20. Twenty-seven papers: Commercial processes (2 papers); Laboratory and pilot plant studies (4 papers); Reactors (5 papers); Chemical and physical phenomena (6 papers); Commercial processes (5 papers); and Mathematical models and process optimization (5 papers). The papers are in English or German.

Controls of Metamorphism. A symposium (Liverpool, England), January 1964. Wallace S. Pitcher and Glenys W. Flinn, Eds. Wiley, New York, 1965. 368 pp. Illus. \$13.50. Twenty papers presented at a symposium held under the auspices of the Liverpool Geological Society.

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