SCIENCE

13 March 1964

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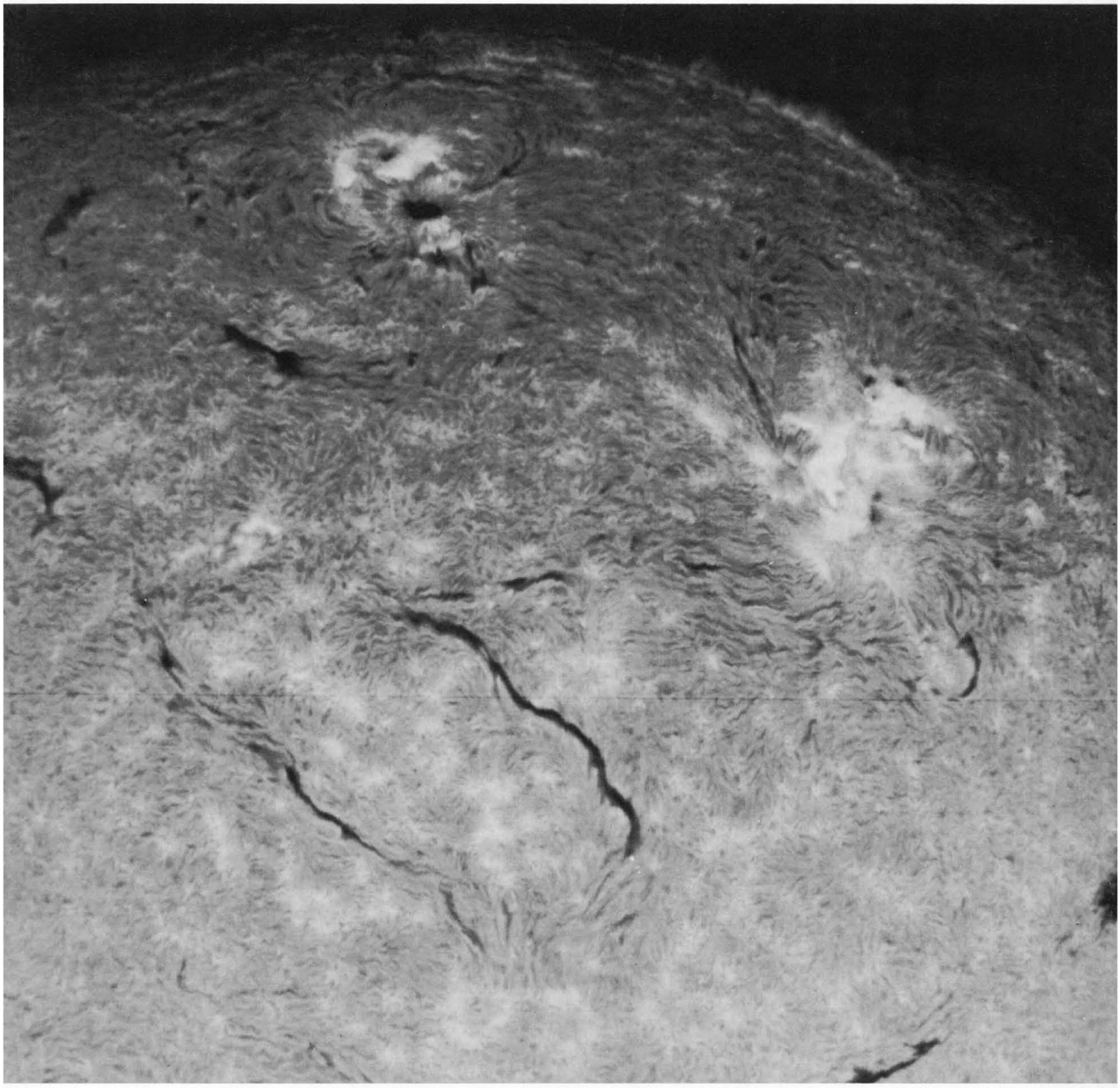
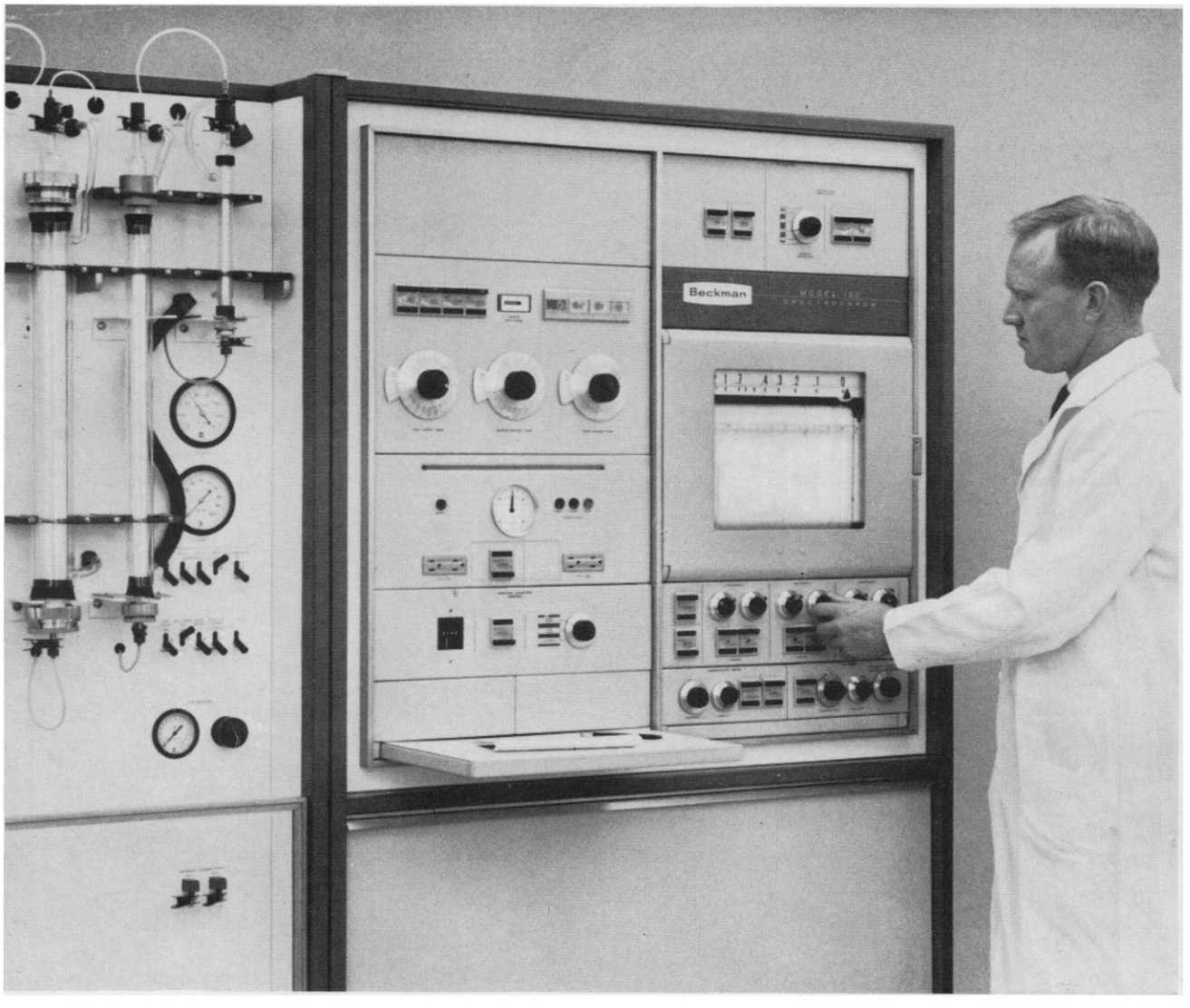
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



SOLAR CHROMOSPHERE



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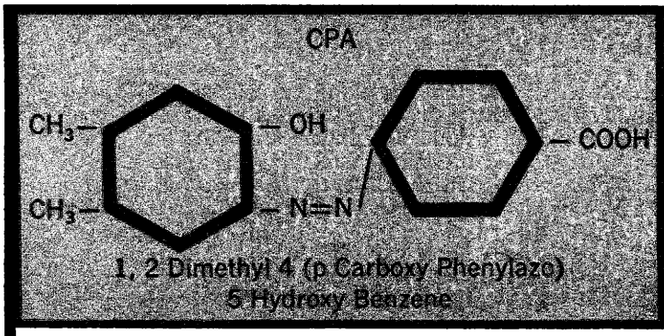
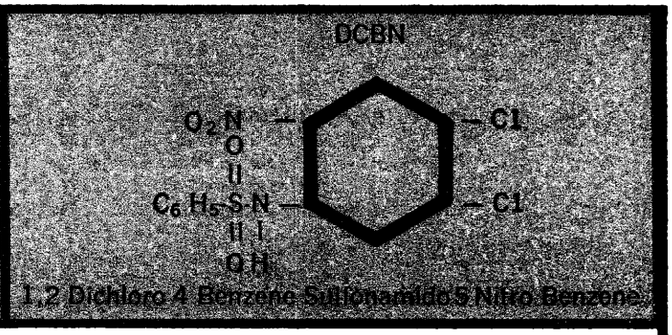
ANTI-CANCER AGENTS





A mixture of 1, 2 Dimethyl 4 (p carboxy phenylazo) 5 Hydroxy Benzene (CPA) and 1, 2 Dichloro 4 Benzene Sulfonamido 5 Nitro Benzene (DCBN) when fed to mice of the SPFS strain bearing spontaneous mammary cancers, cured permanently about one third of the animals.

The investigators adjudged the permanency of the cure of the cancers when the neoplasm decreased in size, disappeared and remained undetectable for at least 5 months.(1).

The maximal number of cures was obtained with 6 grams of CPA and 0.5 grams of DCBN per kilo of ration. This represents the first case of the cure of such cancers by any chemical agent.

These biochemicals were conceived on the basis of a demonstration that spontaneous cancer differed from normal host tissues in that they synthesized vitamin B_{12}.

Previously it was demonstrated that certain spontaneous mammary cancers of mice differed from normal mouse tissues in that cancer cells synthesized Vitamin B_{12} (2) (3). This metabolic difference allowed the prediction and the realization of antimetabolites poisonous to the cancers that are harmless to the host mice (4) (5).

These new anti-cancer agents, (CPA) and (DCBN) are members of a series of antimetabolites which have been shown to inhibit biosynthesis of Vitamin B_{12} in microorganisms. It was reported that these biochemicals demonstrated no detectable harmful effects on the host mice as the dosage used to bring about the desired results.

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All chemicals described are for chemical and investigational use only. They are not offered for clinical or drug use. The literature reference should not be interpreted as either an endorsement or disapproval of the biochemical by the cited investigator.

(1) D. W. Woolley and J. M. Stewart, Biochem. Pharm. 11, 1163, (1962). (2) D. W. Woolley, Proc. Nat. Acad. Sci. Wash. 39, 6, (1953). (3) D. W. Woolley, Ibid, 41, 111, (1955). (4) D. W. Woolley, Cancer Res. 13, 327, (1953). (5) D. W. Woolley and G. Schaffner, Ibid, 14, 802, (1954).

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50 gram bottle, gram $1.03	50 gram bottle, gram $1.35
10 gram bottle, gram $1.10	10 gram bottle, gram $1.45
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Vol. 143, No. 3611

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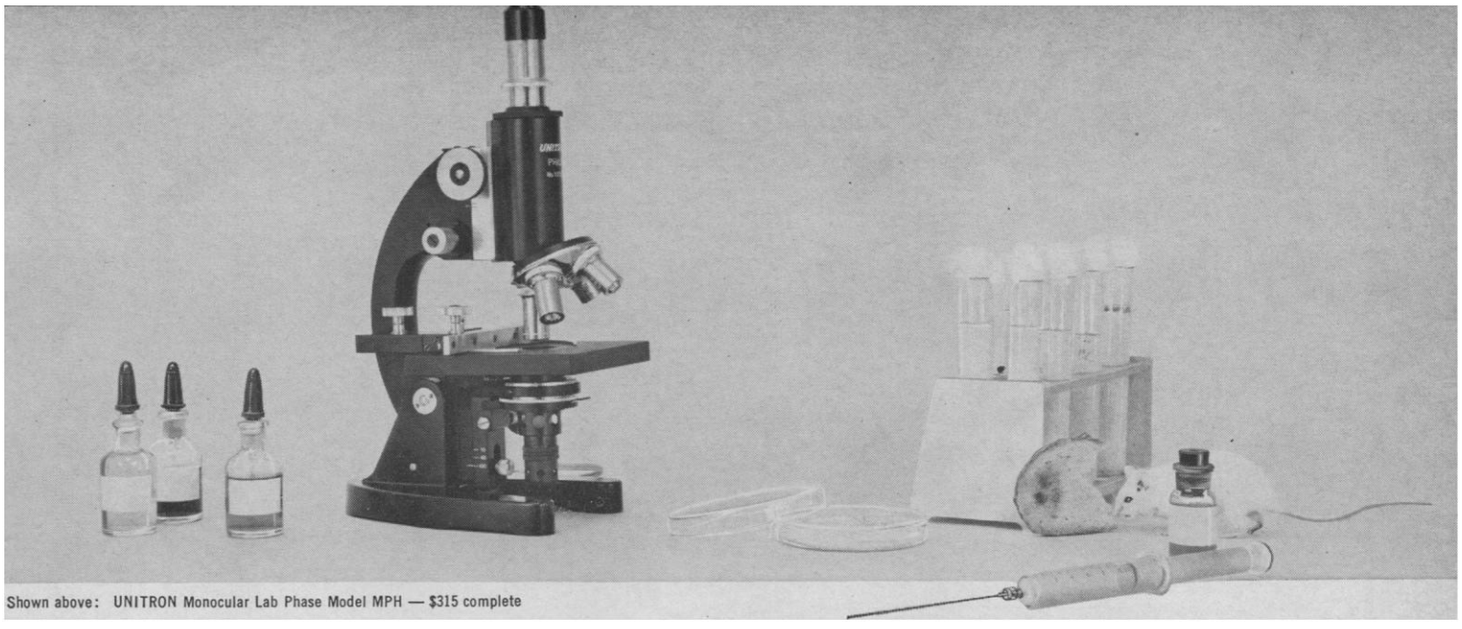
COVER

The solar chromosphere projected against the sun in the monochromatic light of the red hydrogen line at 6563 angstroms. This picture, taken at Mount Wilson Observatory, shows clearly the fine-scale structures of the chromosphere. These stuctures are becoming increasingly important in the interpretation of chromospheric phenomena. The elongated dark filaments and the bright plages near sunspots are familiar features of solar activity. See page 1127. [R. B. Leighton, California Institute of Technology]



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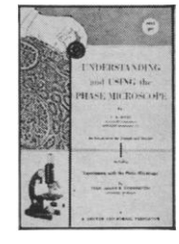

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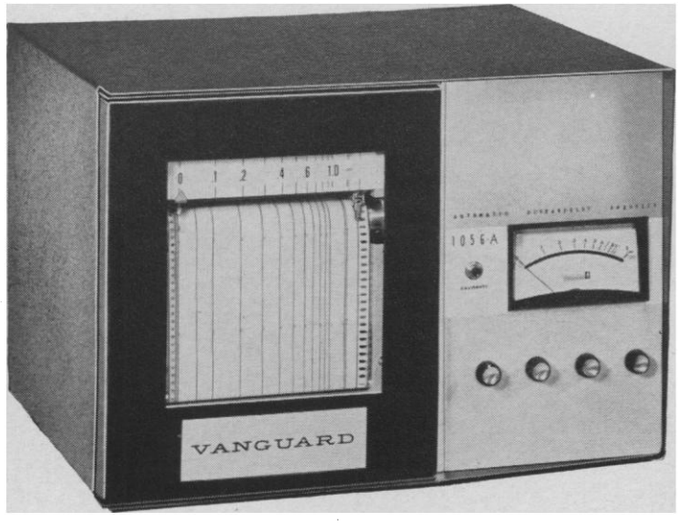

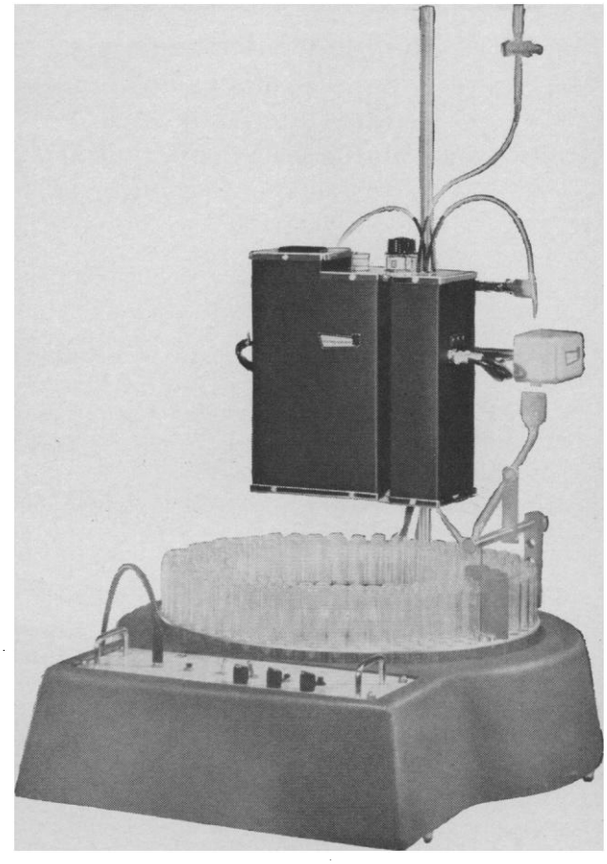

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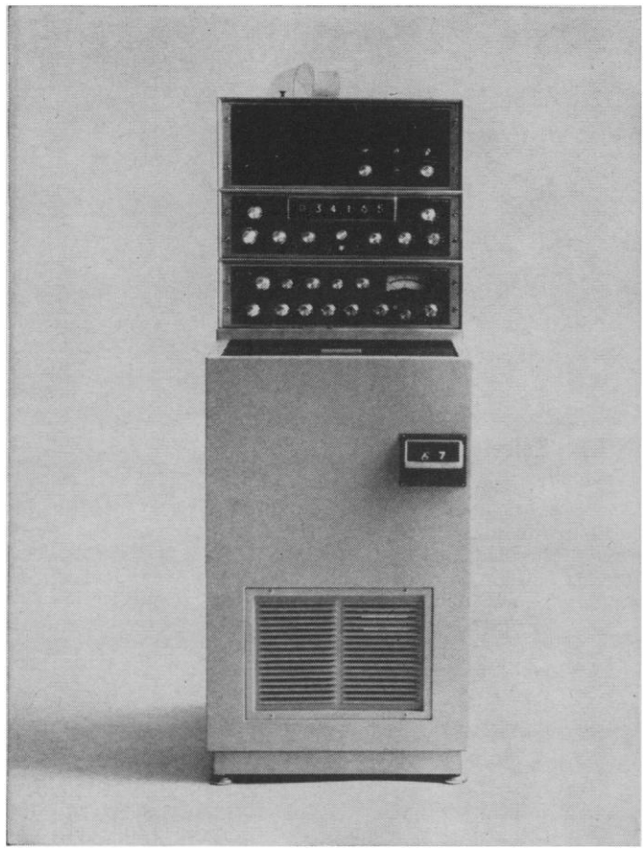

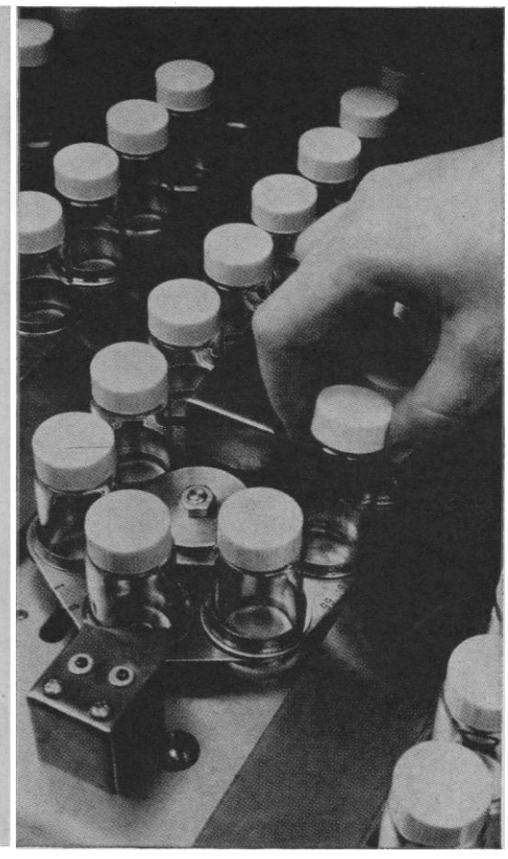

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EDWARD RAPKIN, Ph.D.—as Scientific Director for one of the largest and best known nuclear instrument manufacturers, he had broad experience in liquid scintillation counting; has written many papers on new techniques for liquid scinitillation counting and lectured extensively on the subject all over the United States and in Europe. He first worked with radioisotopes while in service at the Army Medical Nutrition Laboratory and continued as consultant.

Senior Electronics Design Engineer

EDWARD W. THOMAS—has done extensive, classified work in nuclear instrumentation; contributed to the design and development of the radiation experiments for the Telstar and Relay satellites, designed circuits and participated in the testing, calibration and integration of the experiments into the satellites. He participated in the design of an experiment for Project SERB (Study of the Enhanced Radiation Belt) and designed the electronics for this experiment, then participated in the launch of the Project SERB satellite, Explorer XV. He has conducted experiments to aid in a more precise understanding of the Telstar and Explorer XV results, as well as in the planning of experiments and instruments for future space radiation studies.

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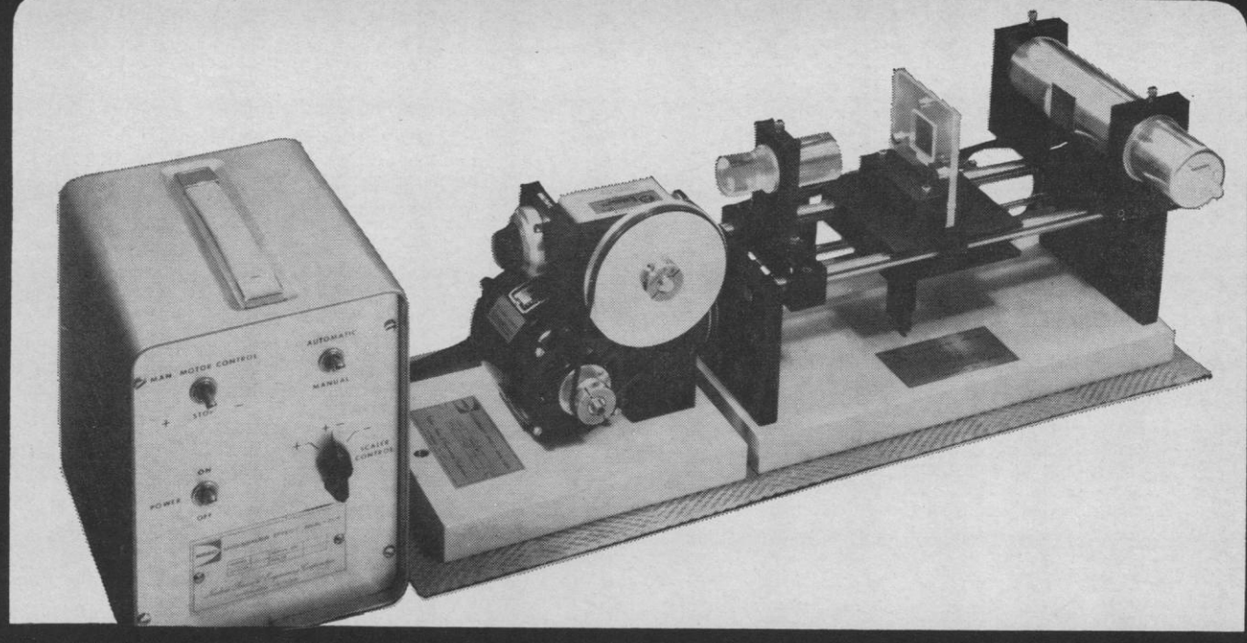

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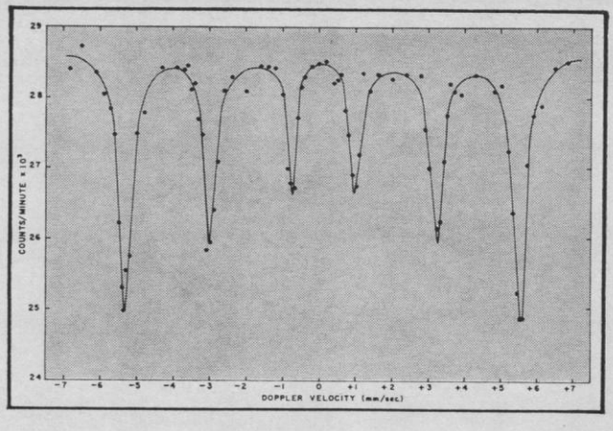

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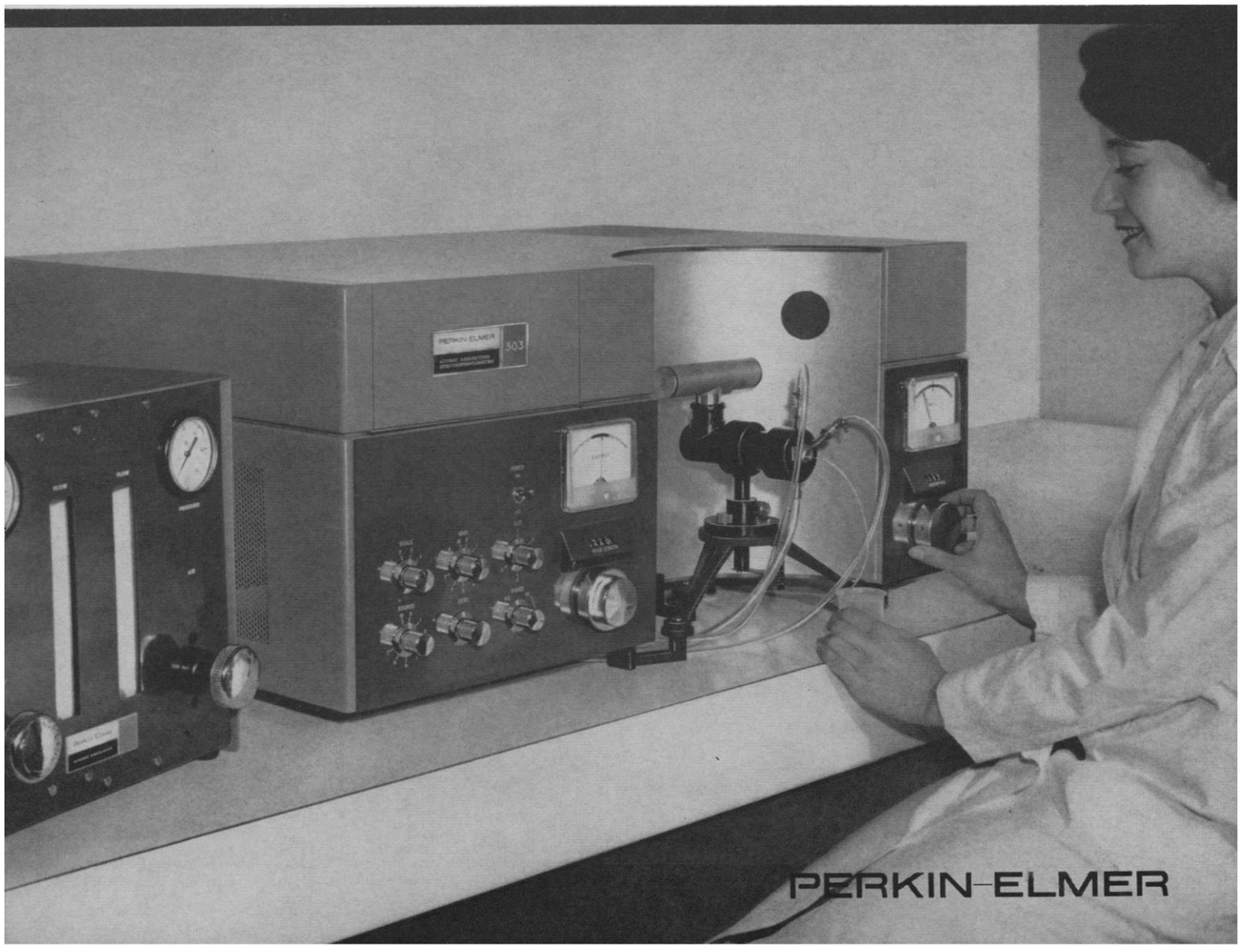
For complete Model 303 specifications write to Instrument Division, Perkin-Elmer Corporation, 910 Main Avenue, Norwalk, Connecticut.



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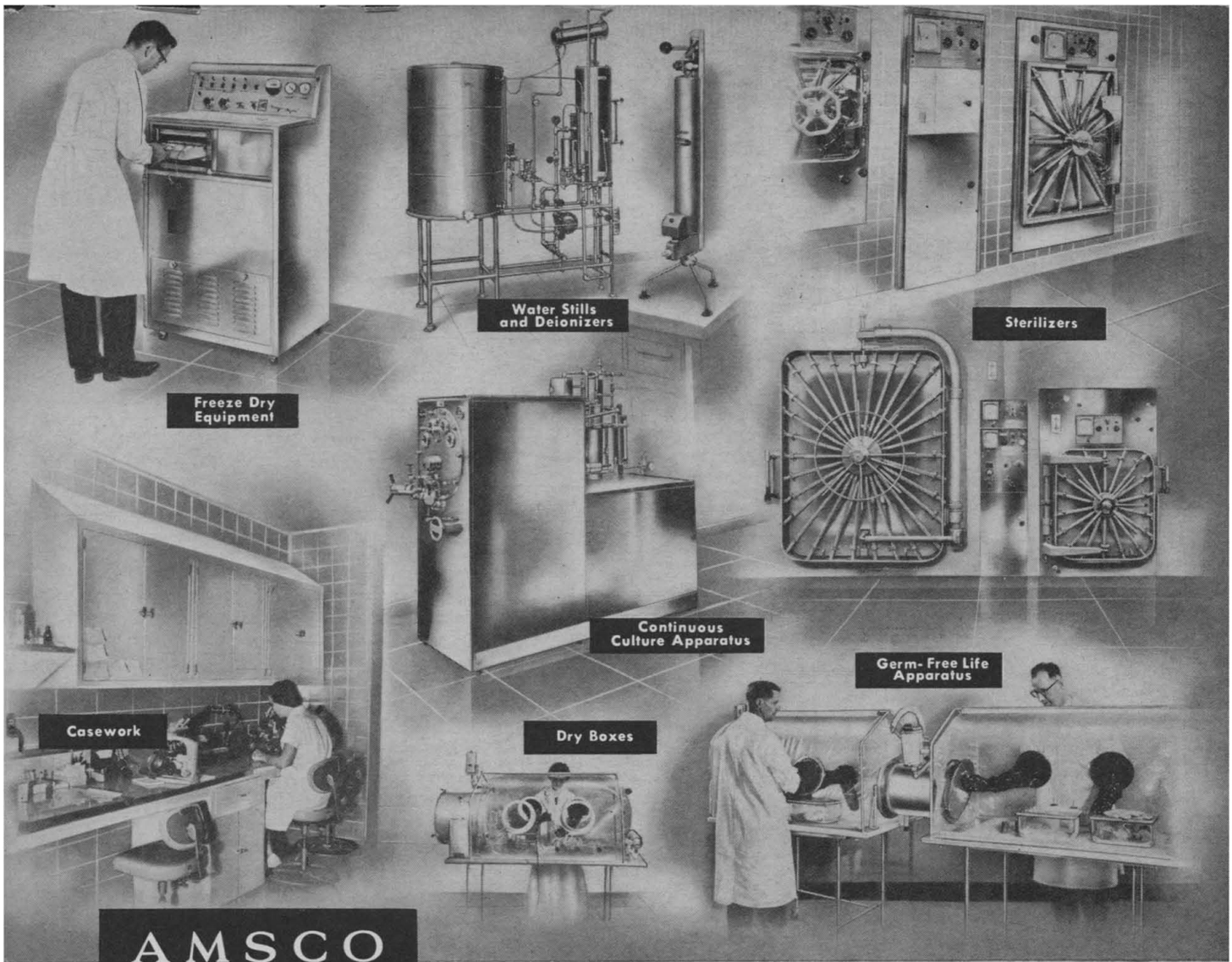

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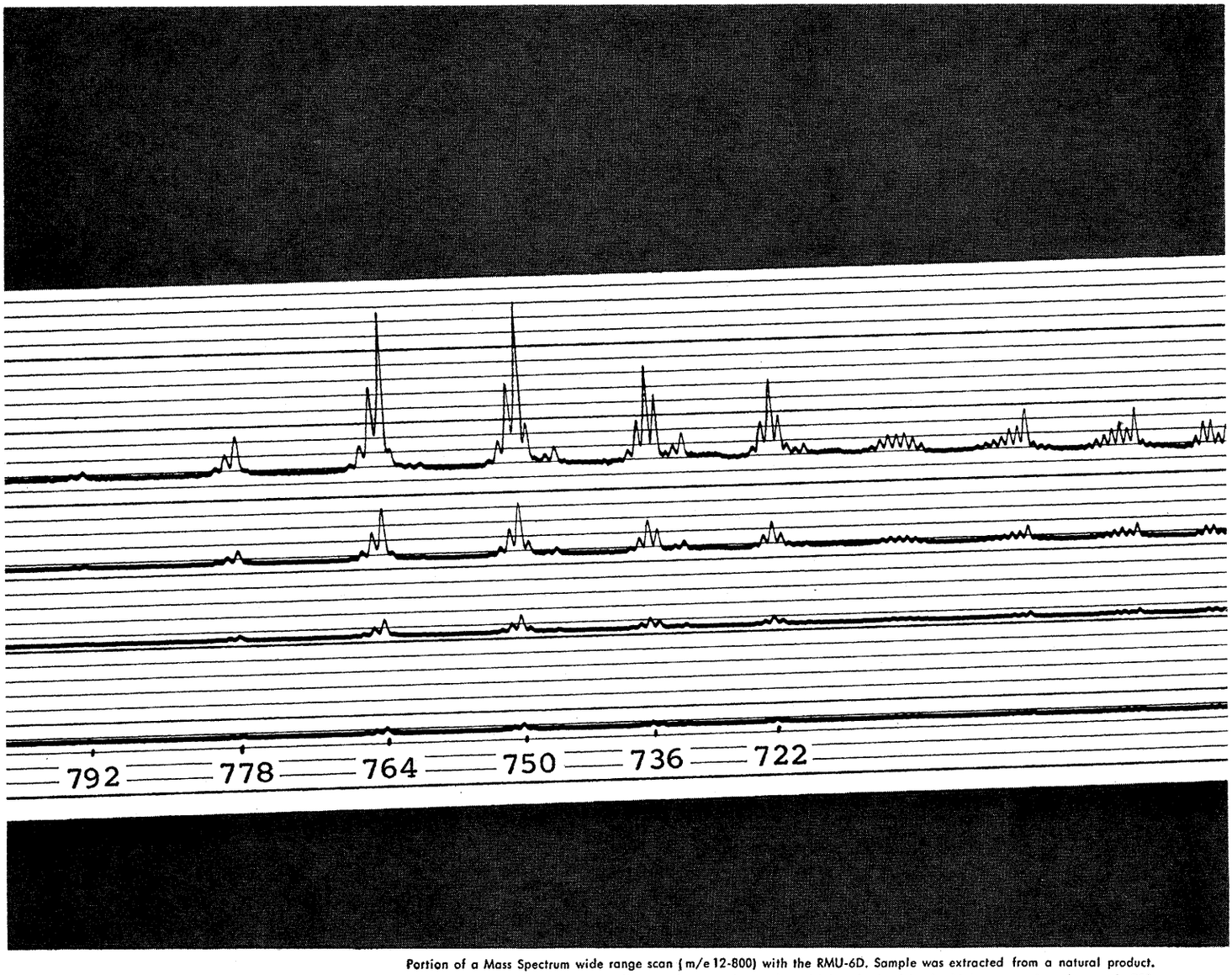

Portion of a Mass Spectrum wide range scan (m/e 12-800) with the RMU-6D. Sample was extracted from a natural product. Note excellent peak separation and sensitivity obtained in the high mass region above m/e 750.

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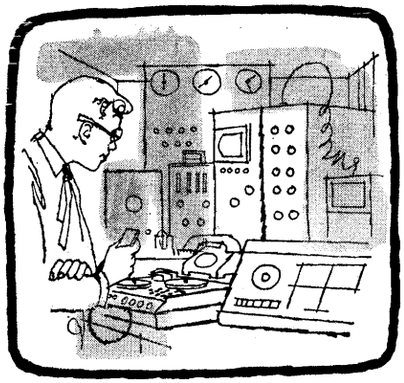

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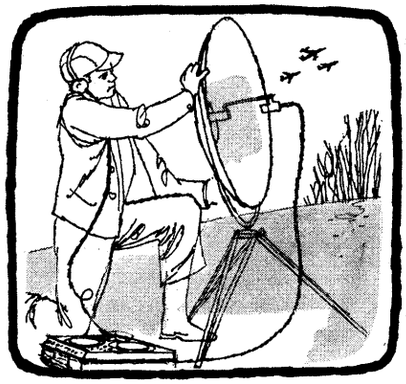

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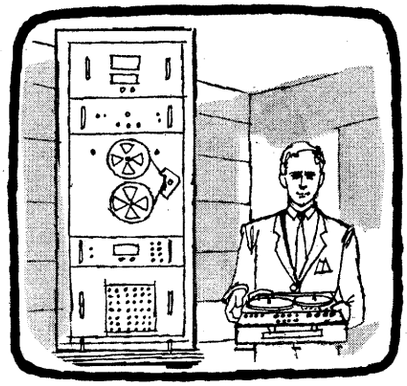

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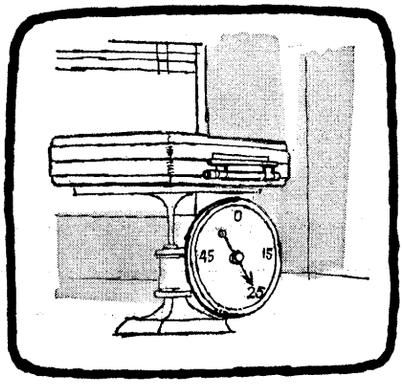

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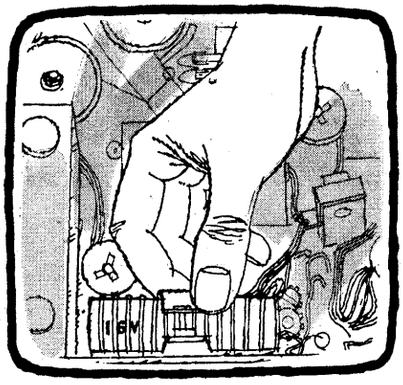

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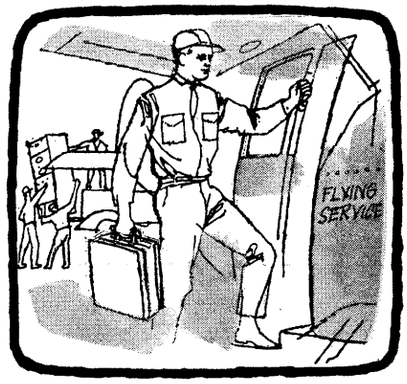

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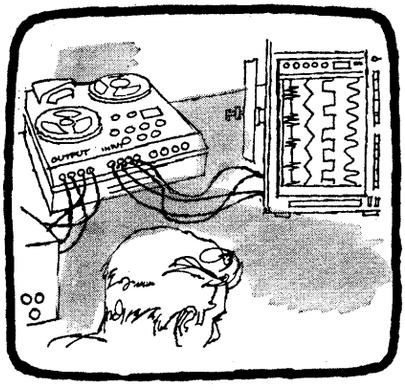

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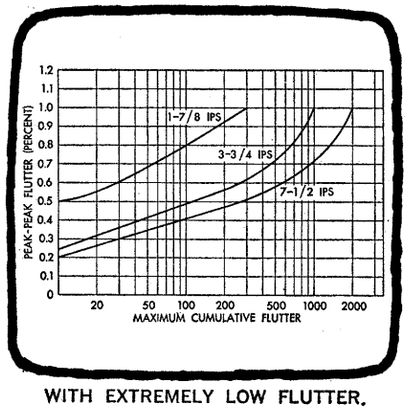

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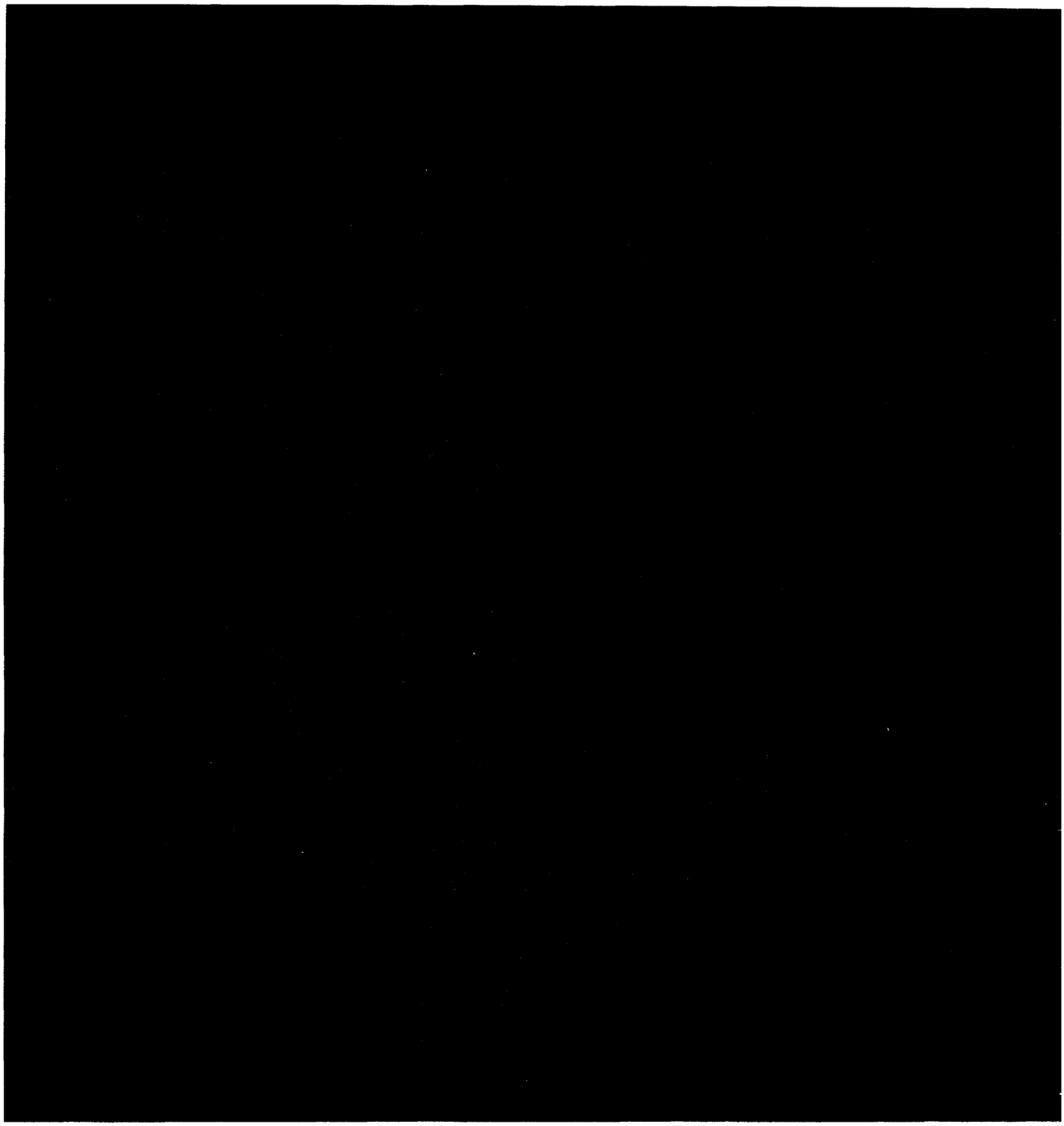

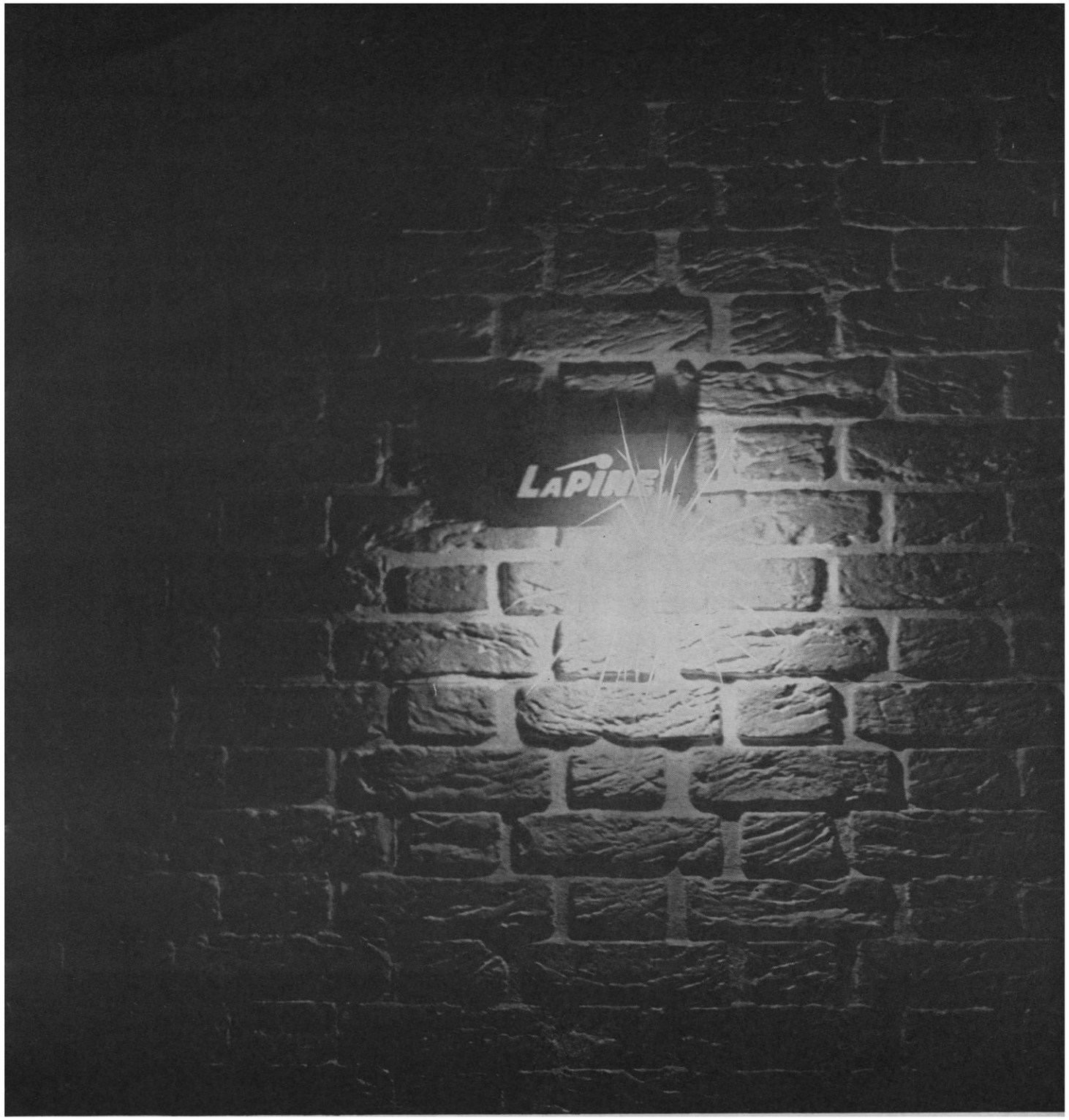

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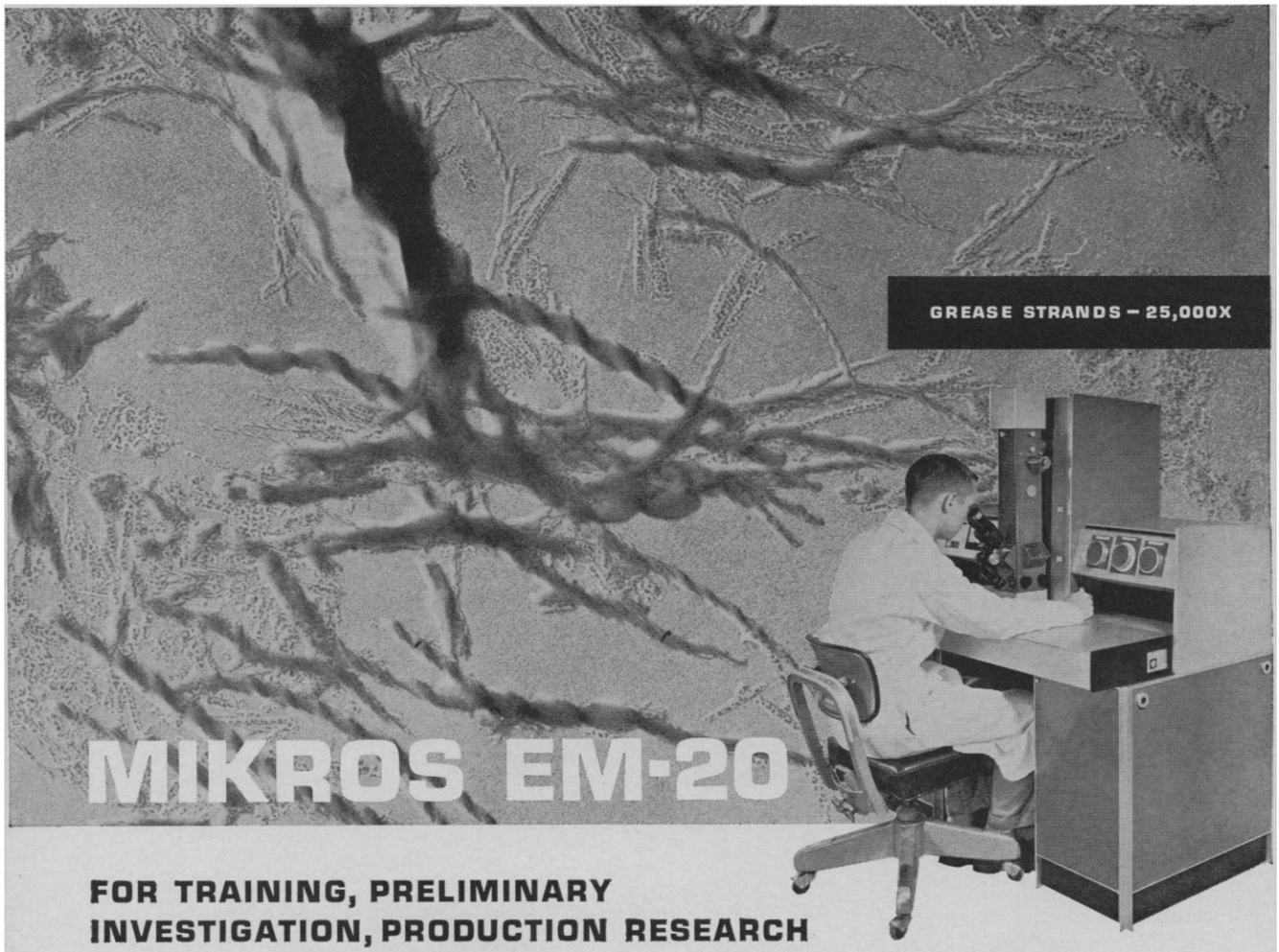

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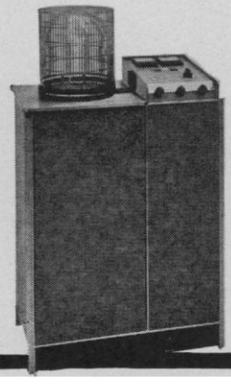

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enlarged view of agglutinates being separated by decantation from the analytic stream. Reaction-produced agglutinated cells travel along with the stream: being heavier they drop to the bottom. On arriving at the "T" junction, the heavy agglutinates are drawn off: unreacted cells move on to hemolysis and colorimetry. Where hemolysis is to be measured the cells are decanted off and the hemolyzed material read out.

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Technicon Bulletin H-1 gives details of the technique, with diagrams of instrumentation and flow, examples of the definite recording. Write us at the below address for a copy.

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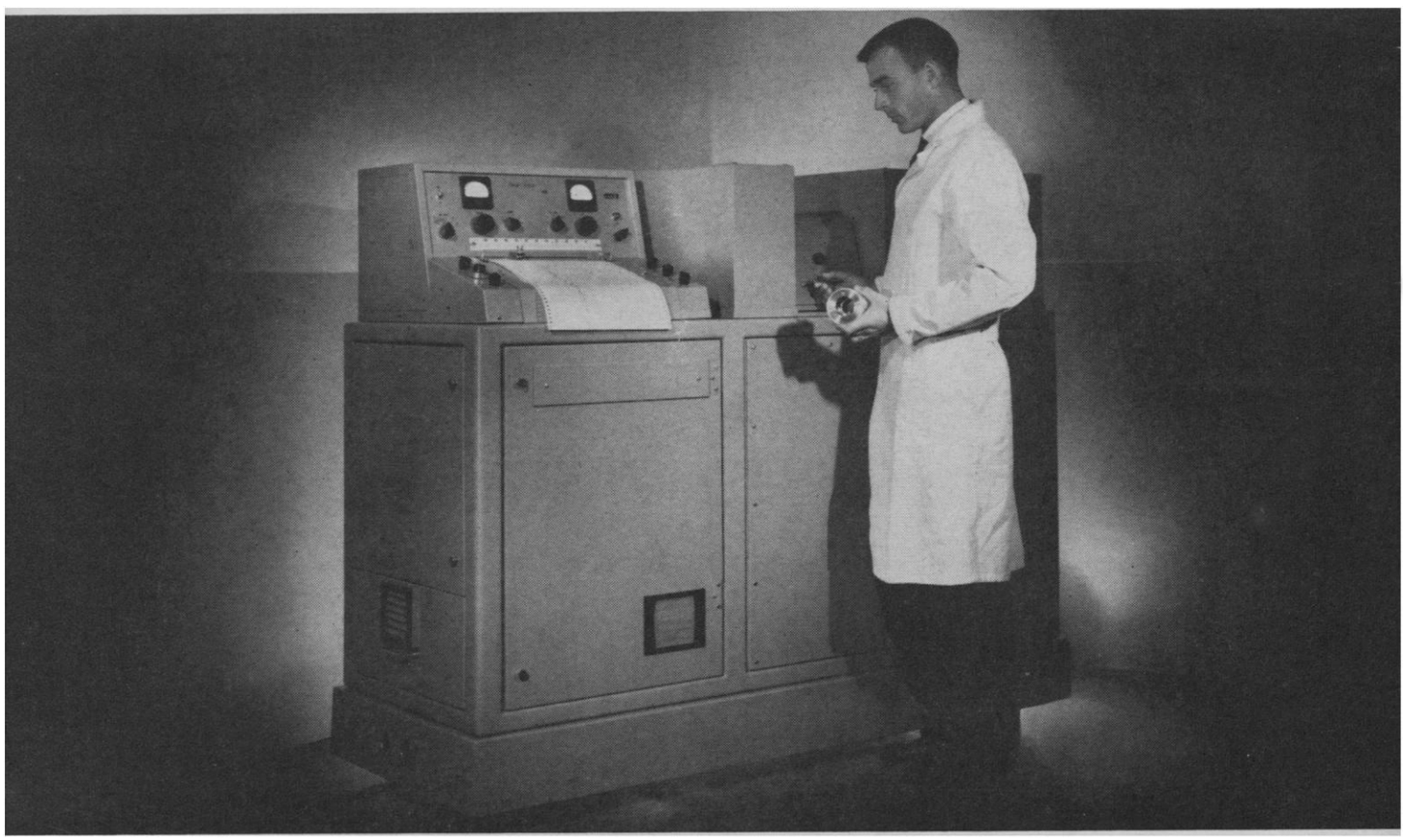

For detailed specifications and descriptions, send for data file E238-34

Cary 'dynamic' specifications define Model 90 performance while scanning—not just in static operation. For instance a double-beam 18-minute scan can be run on the ratio-recording Model 90 with photometric accuracy of 0.2% on 0-100% T scale, or 0.1% on expanded scale, with resolution better than 1 cm^{-1} and S/N between 30/1 and 100/1. For longer scans resolution is up to 0.25 cm^{-1}.

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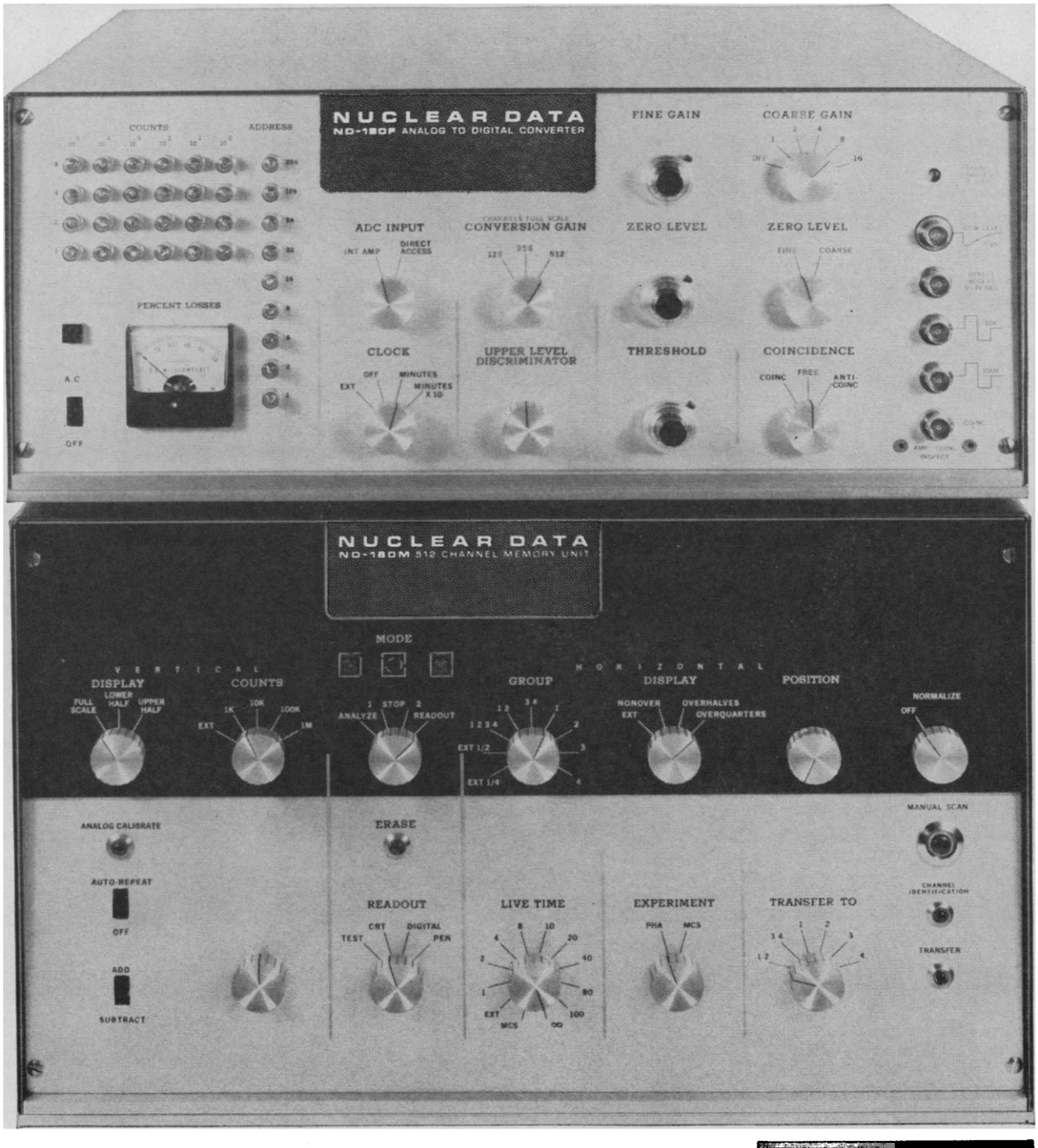

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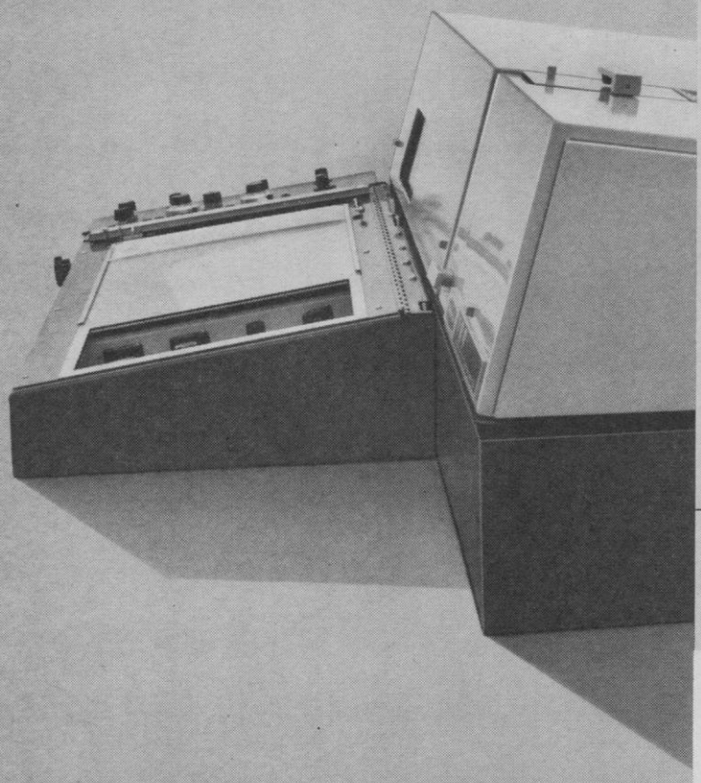
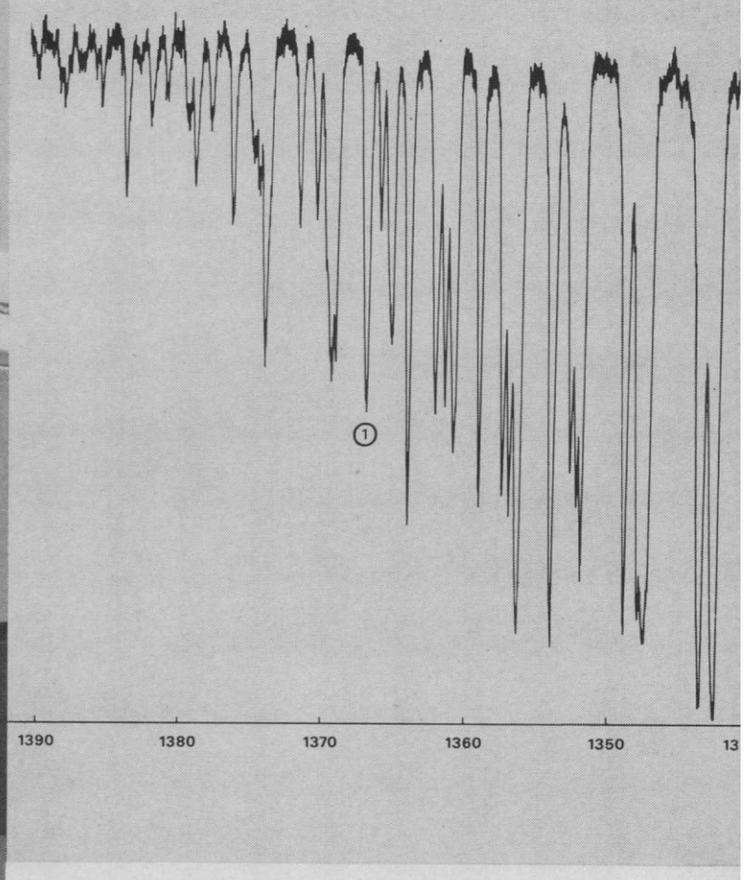
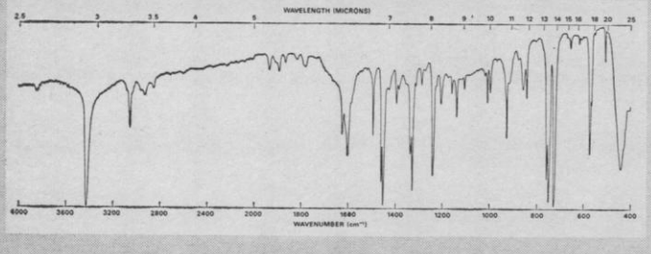


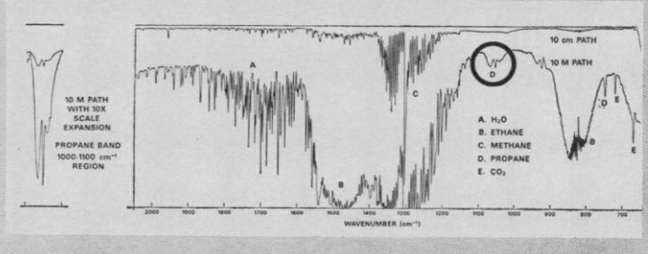


YIELDING THE HIGHEST RESOLUTION of any commercial infrared spectrophotometer, the IR-9 recorded this scan of 60 mm of methane in a 10 cm cell in the region 1220 to 1390 cm^{-1}. Spectral

that you can convert to energy for studies like these

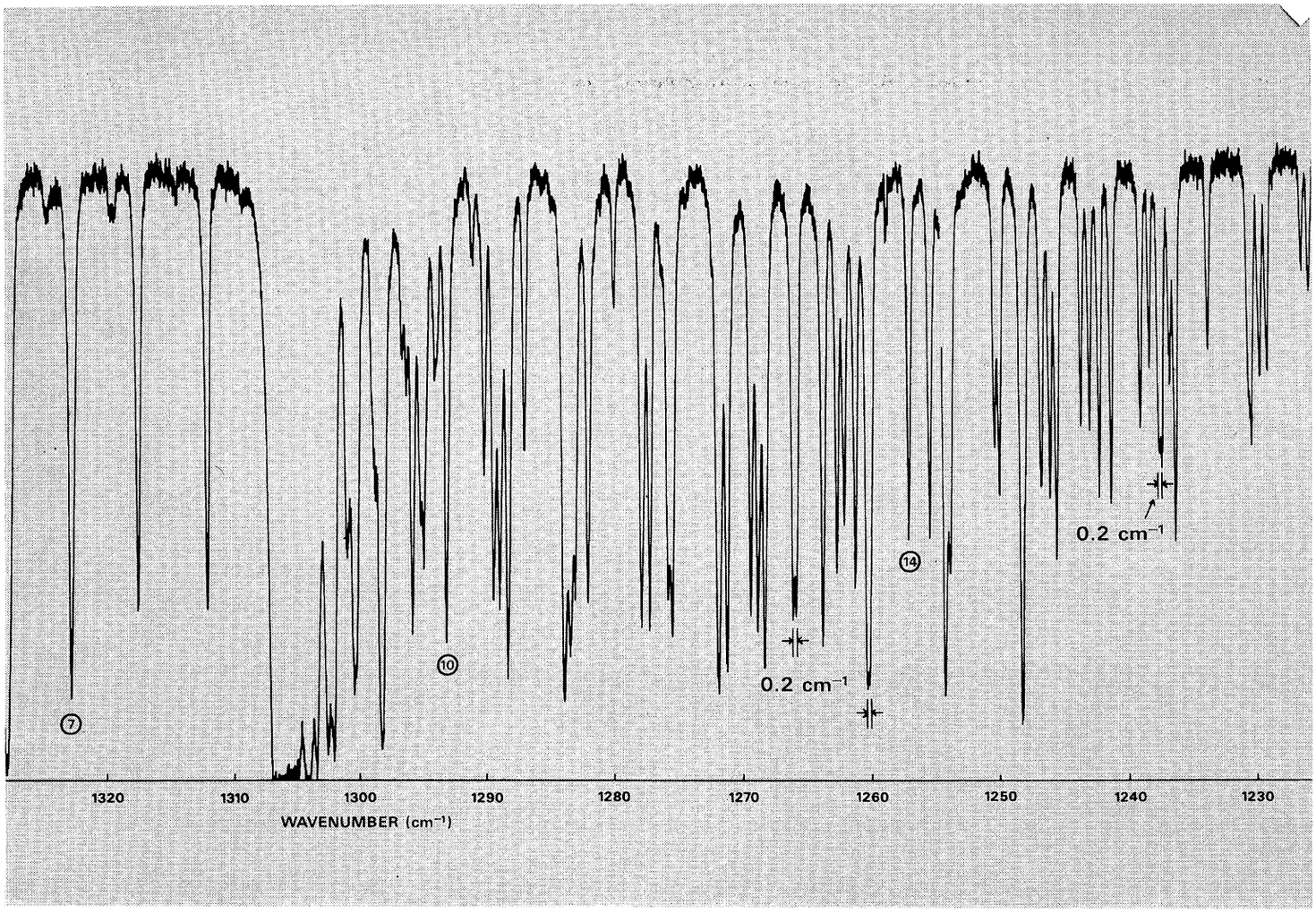


MICRO STUDY of 9 micrograms of carbazole was obtained in routine fashion on a 1 x 1 mm KBr pellet utilizing the Beckman Beam Condenser and Micro Pellet Holder. The energy lost because of the use of beam condensing optics and sample beam masking is readily regained at only a slight loss in resolution by operating the instrument at a slightly wider slit program. Even greater sensitivity can be obtained with the use of ordinate scale expansion; samples as small as 0.4 micrograms are examined in this manner.

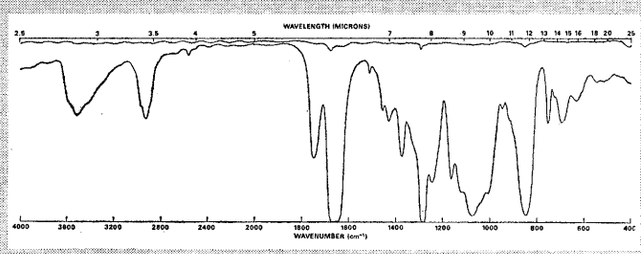


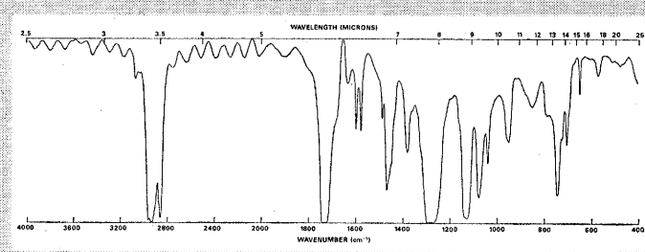
TRACE GAS STUDY of 40 mm of natural gas utilizes the Variable Path Gas Cell. Only methane is observed at a path length of 10 cm (top curve). Lower concentration components appear when path length is increased to 10 meters (bottom curve). One band of propane near 1050 cm^{-1} is shown at the left, scale expanded 10 times at a high signal-to-noise ratio allowing even more precise measurement. Often, in strongly absorbing trace gases, sensitivity in the hundredths of a part per million range is realized.

The Beckman IR-9 offers you the highest resolution of any commercial infrared spectrophotometer. However, many analyses do not require full utilization of this capability. Sample characteristics or the method of investigation may dictate the need for a higher level of energy. That is when you can trade the IR-9's exceptionally high resolution for increased energy. The IR-9 provides the best possible compromise between resolution and energy for any study. For information, contact your Beckman Sales Engineer or write for Data File LIR-38-164.



slit width is estimated to be 0.2 cm^{-1} or less as judged from the spacing of the doublets at 1237, 1260 and 1266 cm^{-1}. This run also illustrates the high frequency accuracy capabilities of the IR-9. Bands labelled 1, 7, 10 and 14 on this scan agree without prior instrument calibration to within 0.4 cm^{-1} of the accepted values similarly identified and published by IUPAC(1).





DIFFERENTIAL STUDY illustrates the ability of the IR-9 infrared spectrophotometer to compensate for tremendous variations in reference beam energy. A sample of di-octyl phthalate deposited on a cellulose nitrate-acetate membrane filter is examined by compensating for the filter material's absorption spectrum. This is accomplished by placing a matching thickness of filter in the reference beam (2). The bottom curve on the scan at the left is that of a 25 micron thickness of the filter. The top curve is the background obtained when matching filters are placed in both sample and reference beams. The filters are retained in both beams to obtain the actual differential scan at the right, showing the spectra of 3 microliters of ester deposited on filter in the sample beam. Differential work is done simply and conveniently with the use of Automatic Slit Control, an exclusive Beckman feature providing an automatic means for obtaining an optimum preset compromise between resolution and energy throughout the entire scan.

(1) International Union of Pure and Applied Chemistry, Commission on Molecular Structure and Spectroscopy, "Tables of Wavenumbers for the Calibration of Infrared Spectrometers," pp. 586, 587, Butterworth, Inc., Washington, 1961.

(2) Sloane, H.J., *Anal. Chem.*, **35**, 1556 (1963).

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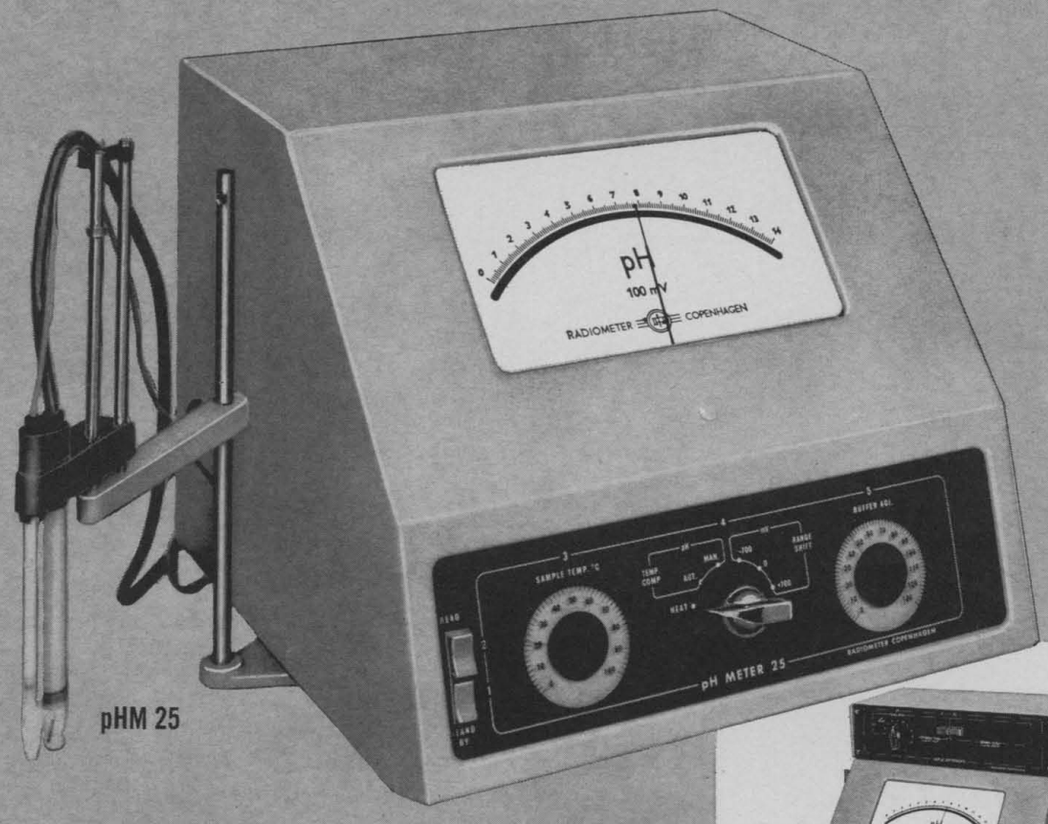

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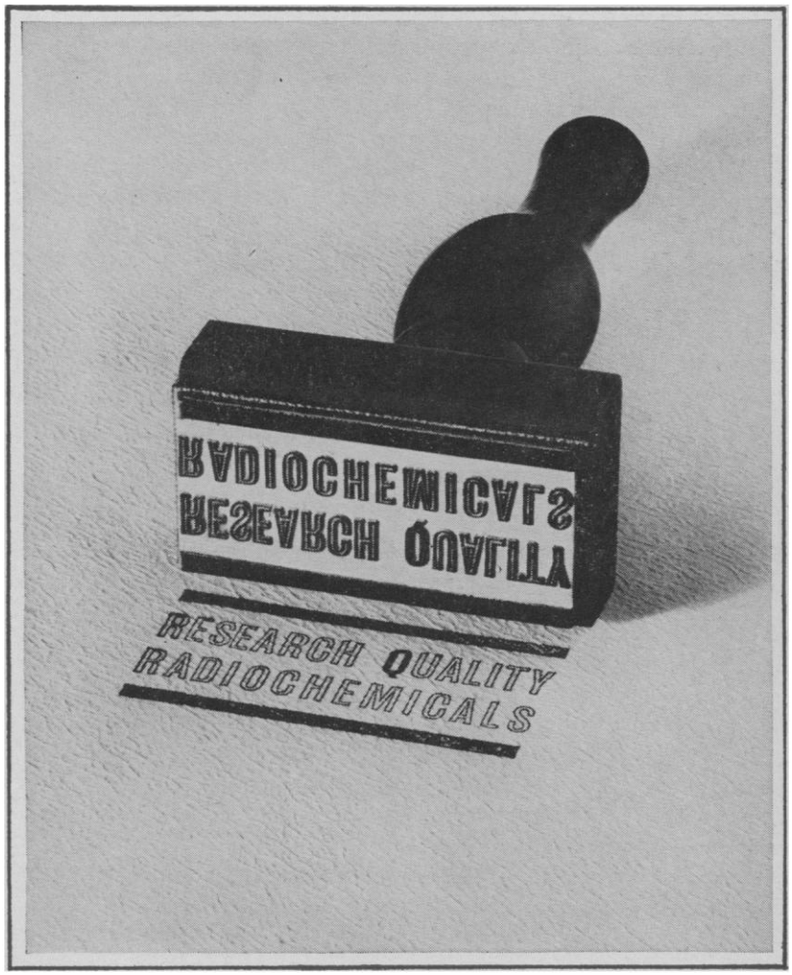

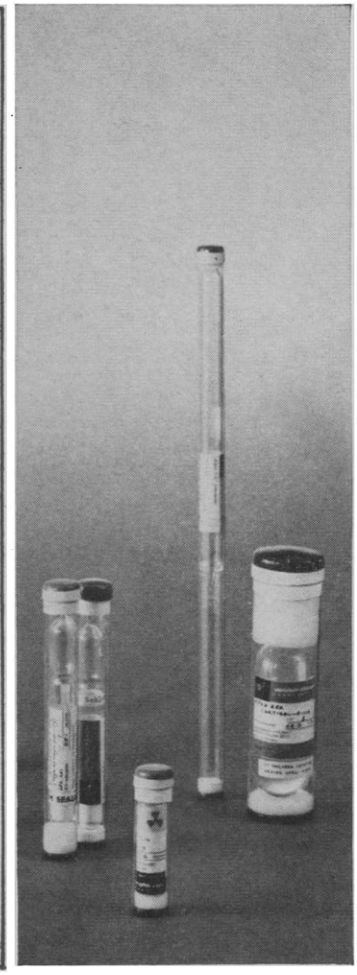

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Take, for example, the remarkably versatile cryostat and test system developed by one research group for investigating mechanical properties of various materials at temperatures as low as 4°K. Designed specifically for use with their Instron Universal Test Instrument, this special device is essentially a "universal" cryostat. It has been utilized for such diverse tests as the determination of the flexural strength and modulus, and compressive strength and modulus of plastic laminates; shrinkage of plastic films; peel strength, butt tensile strength and lap shear strength of adhesives; and compressive deflection characteristics and sealing pressure requirements of cryogenic gasket materials.

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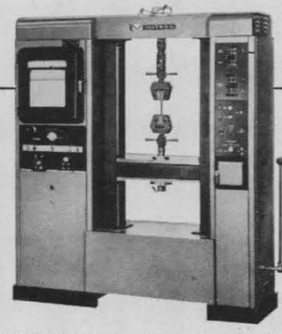
A report on the technique cited above is available on request. In addition technical articles covering many other areas of materials testing may be obtained without charge. Tell us your area of interest and we will send you appropriate literature. Write: DEPT. 21-C, INSTRON ENGINEERING CORPORATION, 2500 Washington Street, Canton, Massachusetts.



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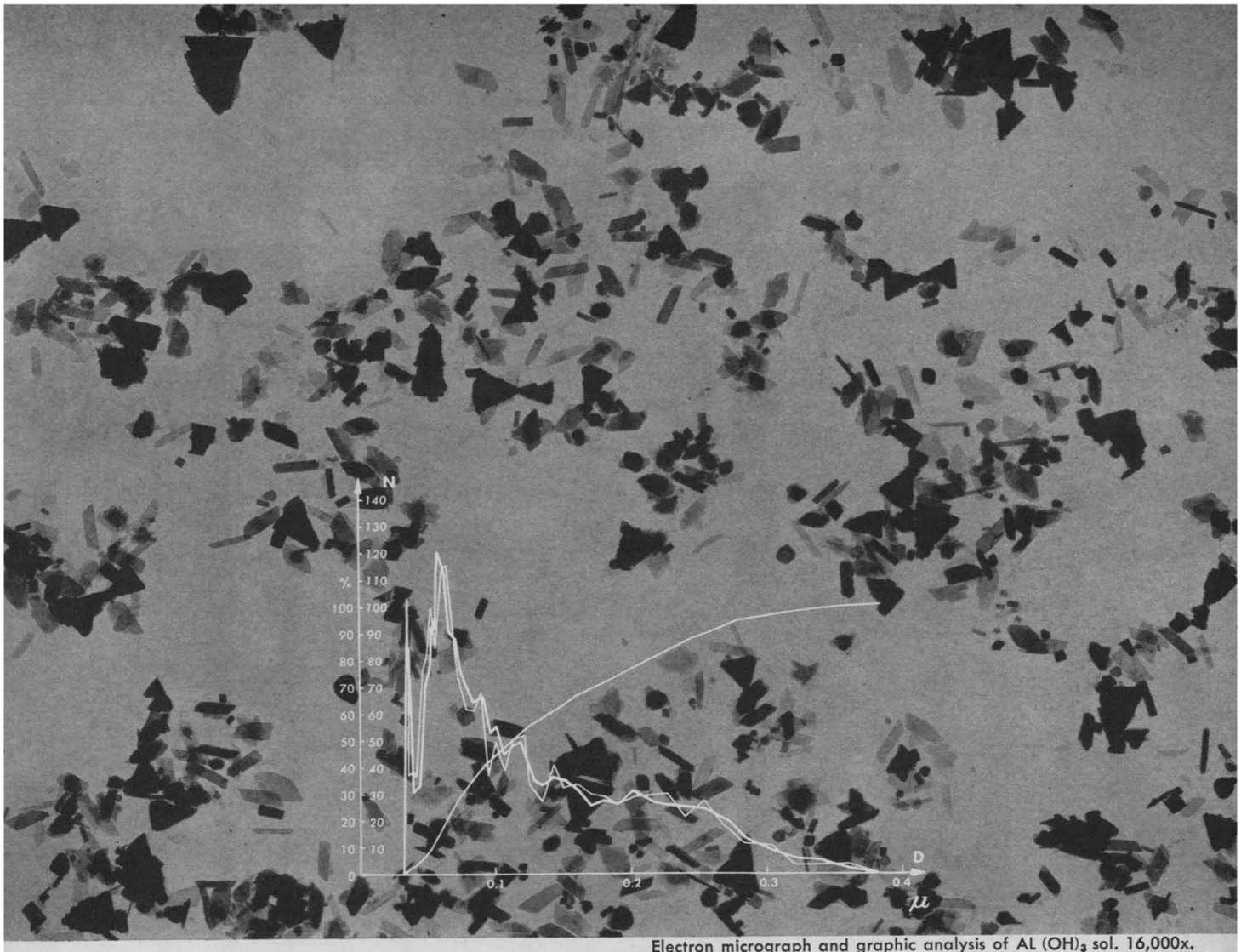


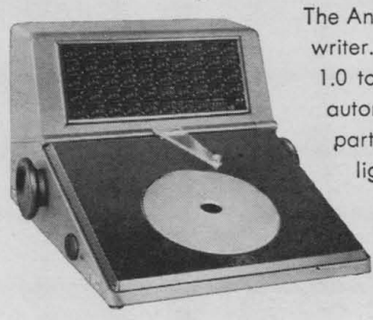
Electron micrograph and graphic analysis of AL $(OH)_3$ sol. 16,000x.

How to get an accurate picture of particle size distribution quickly

The Carl Zeiss Particle Size Analyzer TGZ3 is basically a combination projector and electrical counting device. It is easy to operate: Place the enlarged photomicrograph or electron micrograph on the stage of the instrument. Turn a knob until the round, bright spot of light has the same area as the selected particle. Then press a foot pedal. A signal pulses to one of the 48 counters, determined by the size of the image of the iris diaphragm forming the spot. At the same time a punch descends and puts a minute hole in the counted particle to prevent repetition of a count.

With this instrument you can count and classify approximately 1000 particles in less than 15 minutes. Fatigue is reduced and accuracy improved.

The circular shape of the bright spot makes it easy to estimate sizes, also length and width of rod-shaped particles. Step widths can be recorded as absolutely constant or exponentially increasing and as either a distribution or summation curve.



The Analyzer is about the size and weight of a typewriter. It offers two particle-image measuring ranges: 1.0 to 9.2mm and 1.2 to 27.7mm. Since it is semi-automatic you can also count agglomerations of particles. A knob allows you to adjust background light for comfortable contrast. Fields in which this instrument is successfully used are: rubber, pigments, films, abrasives, etc. Write Dept. SC for further details. **Complete service facilities available.**

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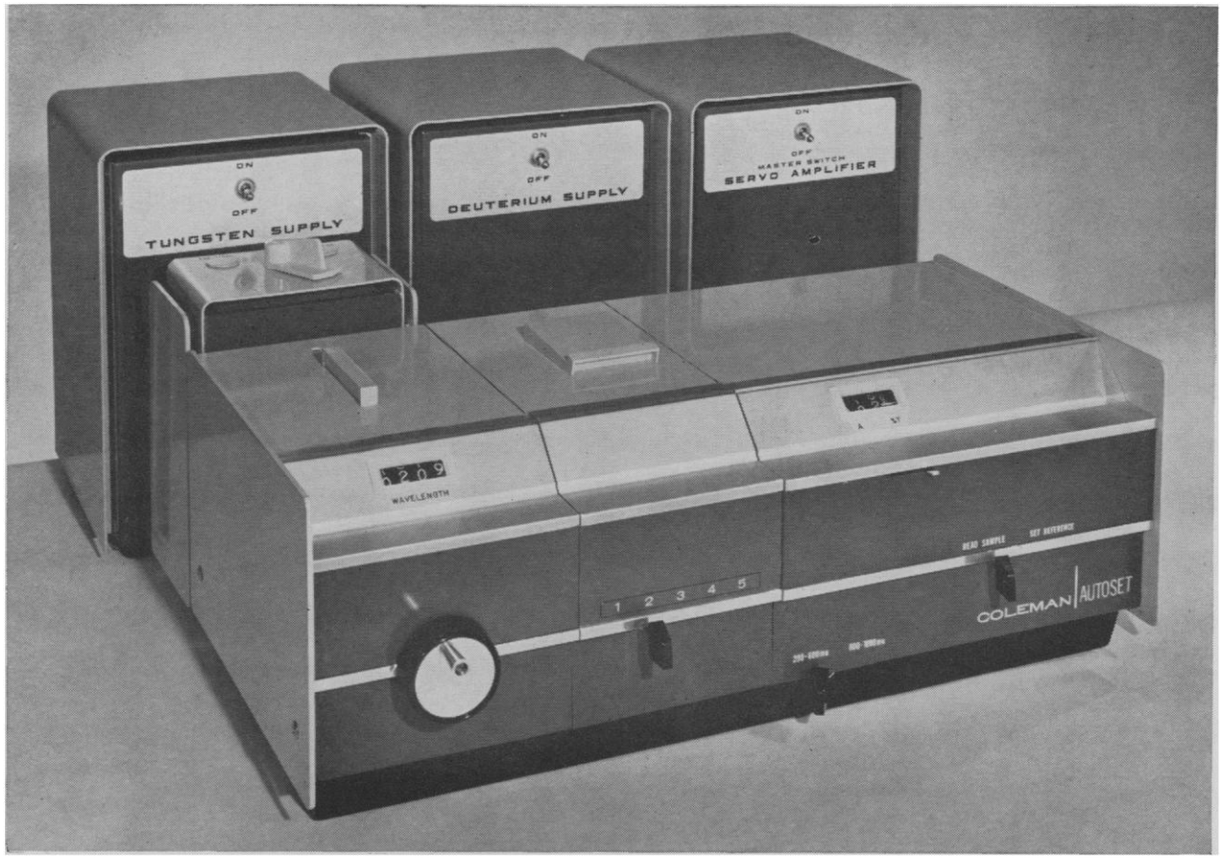

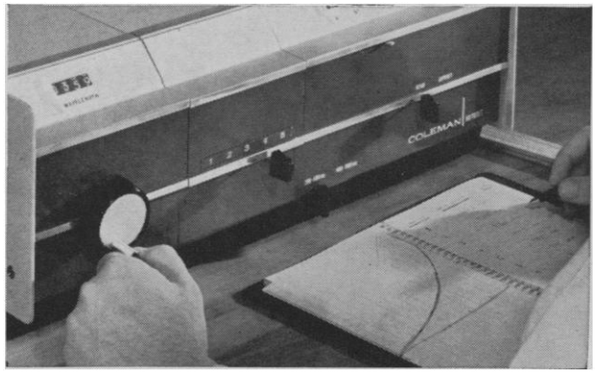

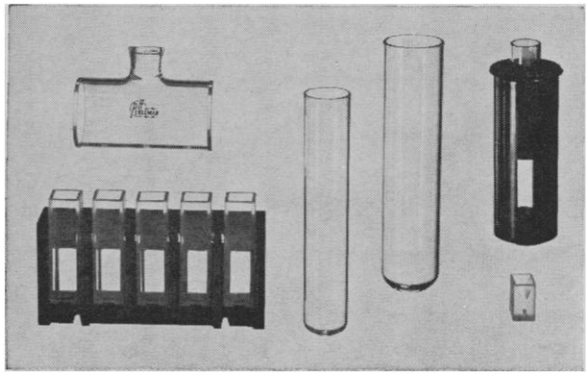

Unequalled speed and convenience

Automated reference setting, the AUTOSET provision, ends the need for multiple manipulations ordinarily required for making a spectrophotometer reference setting. With AUTOSET, the value is achieved in seconds—*automatically*—by positioning a single control.

For sample analysis, the operator merely repositions the control and selects the sample . . . the sample value is quickly and clearly displayed in the instrument's readout window. The entire operation takes but a few seconds.

Simplified controls and AUTOSET eliminate critical, time-consuming adjustments and the need for nulling meters.

Sample versatility

General purpose and special cuvettes extend the scope of the instrument to meet widely-varying sample requirements. The instrument's sample compartment is designed for efficient use of a full range of cuvettes—ultramicro, long light path, and round test tube types as well as the highly-accurate standard square cuvettes with parallel optical faces.

The sample compartment provides adequate room for such special equipment as magnetic mixers, thermostatted components, and special cells with 100 mm light path.

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★ ***automated reference setting***

★ ***direct reading, numerical data display***

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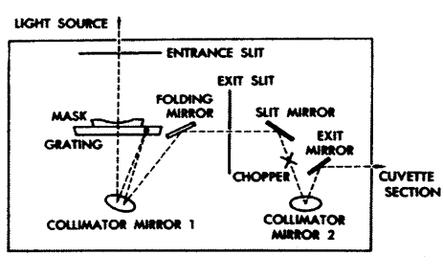
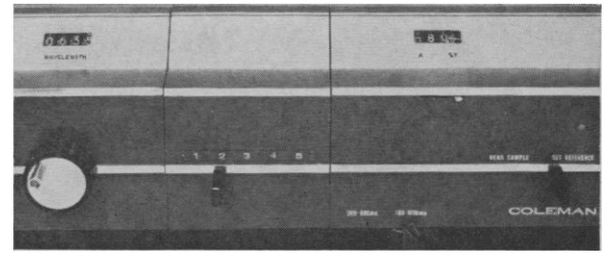
Self-balancing null system.
Photometric accuracy: ±0.5%T, ±0.005A at 0.4A.

Sample range
120 microliters to 25 milliliters.
1 to 100 millimeter light path.



Bipartite diffraction grating optics
The Coleman AUTOSET Spectrophotometer provides the laboratory with the practical advantage of a working instrument with the analytical range of a specialized research equipment. A bipartite diffraction grating, dual light source, and dual phototubes provide high levels of energy throughout the 200-1000mμ spectrum. The bipartite grating produces a straight and linear spectrum which provides constant band width at all wavelengths, with fixed optical slits. Constant band width insures maximum reproducibility.



Error elimination
Reading information in numerical form is twice as fast and three times as accurate as reading the same information from dials. In the AUTOSET Spectrophotometer, all data is presented in unmistakable numerical form.

Wavelength data is presented directly in millimicrons—there are no non-linear scales to interpolate or micrometer screws to adjust.

Terms of readout—either in transmittance or absorbance—are selectable. This ends confusion of simultaneous presentations.

Sample identification is quick, positive and accurate.

For full details write for Bulletin SB-286

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Double-element laboratory type Glas-Col heating tapes

This heating tape is especially designed for laboratory use . . where the tape must be applied and removed frequently. BOTH of the parallel leads of heating elements terminate at the SAME end of the tape so that a heater cord can be attached easily.

The heating elements in these tapes consist of two Nichrome ribbons running parallel to each other with an insulated space between them . . each ribbon is covered with glass braid and then with a tough, pliable silicone rubber. The tape can be attached to steel pipe by small magnets, or tied to glass tubes.

Waterproof: If water is spilled on Glas-Col heating tapes, the possibility of shorts and electrical shock to laboratory personnel is eliminated.

Flexible: Glas-Col heating tapes are extremely flexible. They're only 1/16" thick, yet are very tough and durable.

Uniform heating: Glas-Col laboratory type double-element heating tapes* produce a uniform heating pattern.

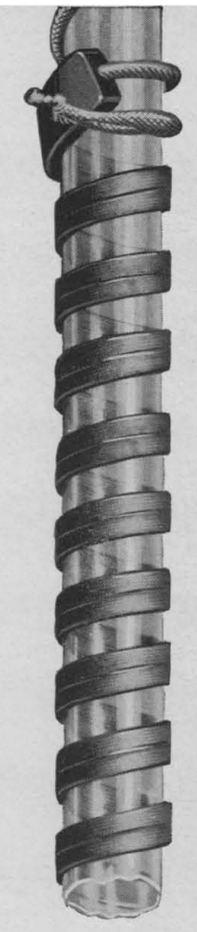
No burnouts: Nichrome heating elements will not burn out even when used far beyond assigned wattages. Glas-Col tapes are tested at 1000 volts for electrical breakthrough. They'll give years of service when used below 480°F which is the temperature limit of the tape's silicone rubber covering.

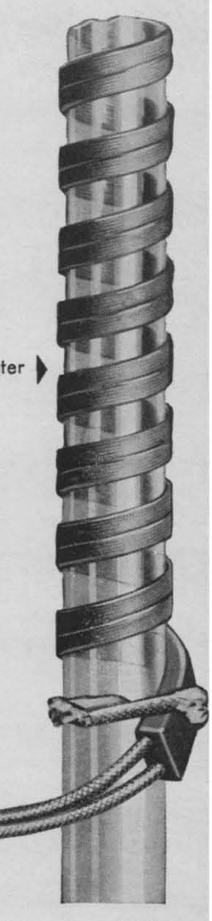
Available in ½" and 1" widths, in standard lengths from 4 to 40 ft with plug and cord, or in any special length.

Single-element tapes for production applications.

Single-element tapes are ideal for installations requiring extremely long lengths . . . 300 feet or more. Example: for heating pipe lines, or large production, or pilot plant receptacles.

*Patents Pending





Heater tape ½" wide with twistlock and heater cord, shown on 1" glass tube.

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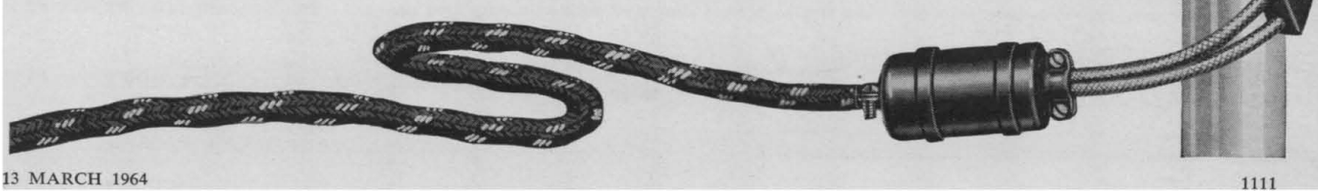

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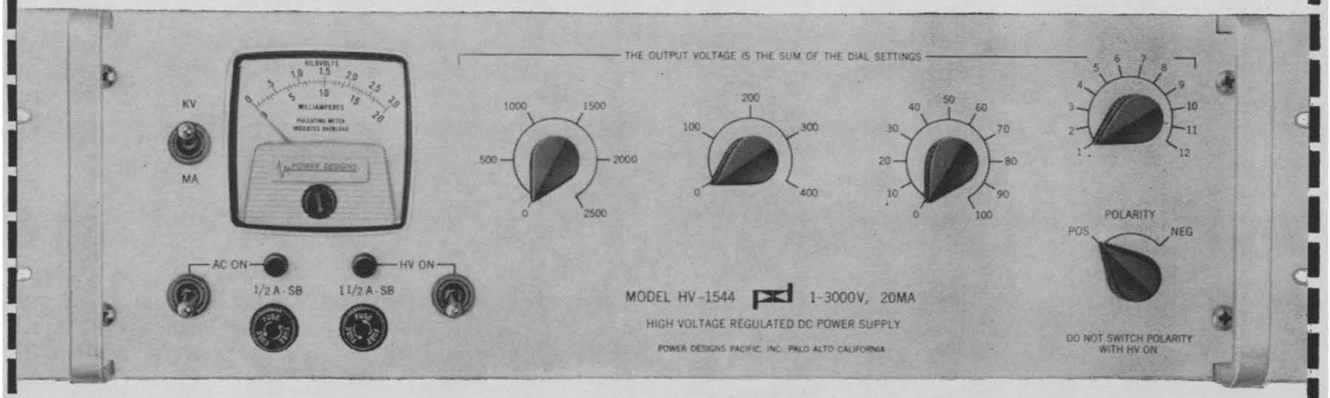

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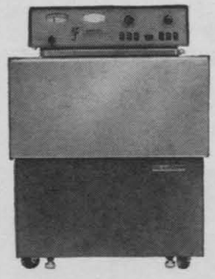

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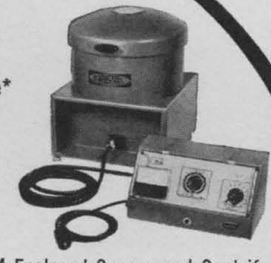

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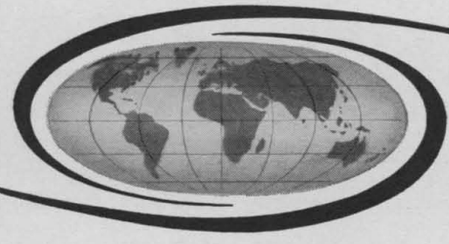
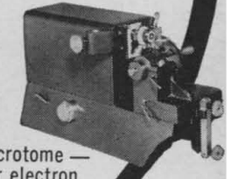
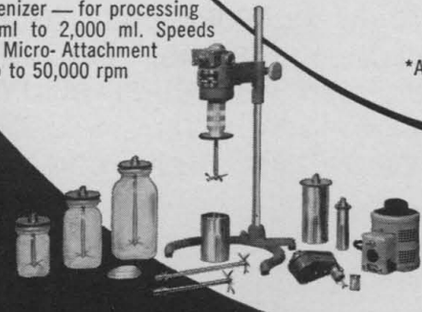




"Porter-Blum" MT-1 Ultra-Microtome — 1/40μ to 1/2μ — for electron and light microscopy

Omni-Mixer Micro-Macro Homogenizer — for processing 0.5 ml to 2,000 ml. Speeds with Micro- Attachment up to 50,000 rpm



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Centrifuges offering a full range of forces up to 37,000 x G, and a wide selection of angle, horizontal and special purpose rotors, provide the researcher with the utmost in versatility. Models include refrigerated, non-refrigerated, automatic, manual, remote control, continuous flow. We also stock the widest variety of tubes and adapters of any centrifuge manufacturer.

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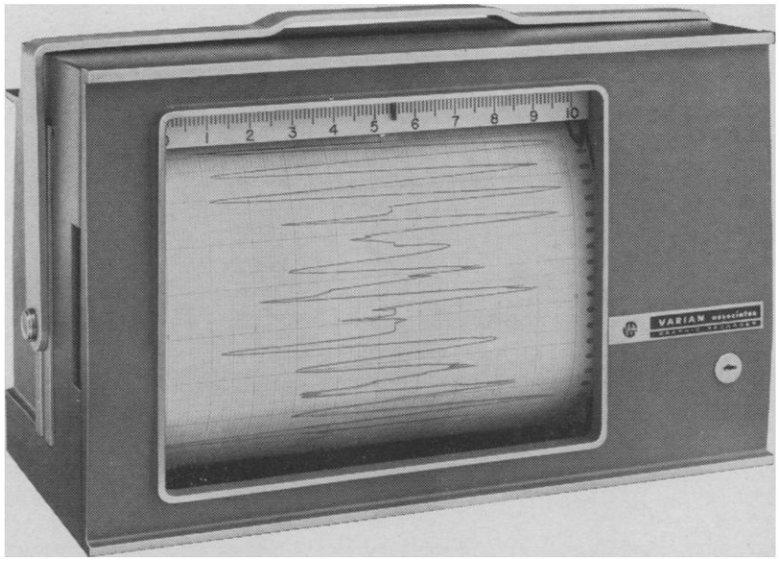

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It isn't a better recorder simply because it's new. But it is new, and it is better. It's one of Varian's new G-40 series ten-inch potentiometer recorders. And here are five reasons why you should buy one.

1. THEY'RE COMPACT. Die-cast aluminum case, door, and chassis make Varian's G-40 series of ten-inch recorders rugged and easy to service, yet these recorders weigh only 30 pounds. Solid-state design cuts needless flab off them, too.

2. TRUE DIFFERENTIAL INPUT CIRCUIT. That means you get both high input impedance and high common mode rejection. You can operate them with unbalanced inputs.

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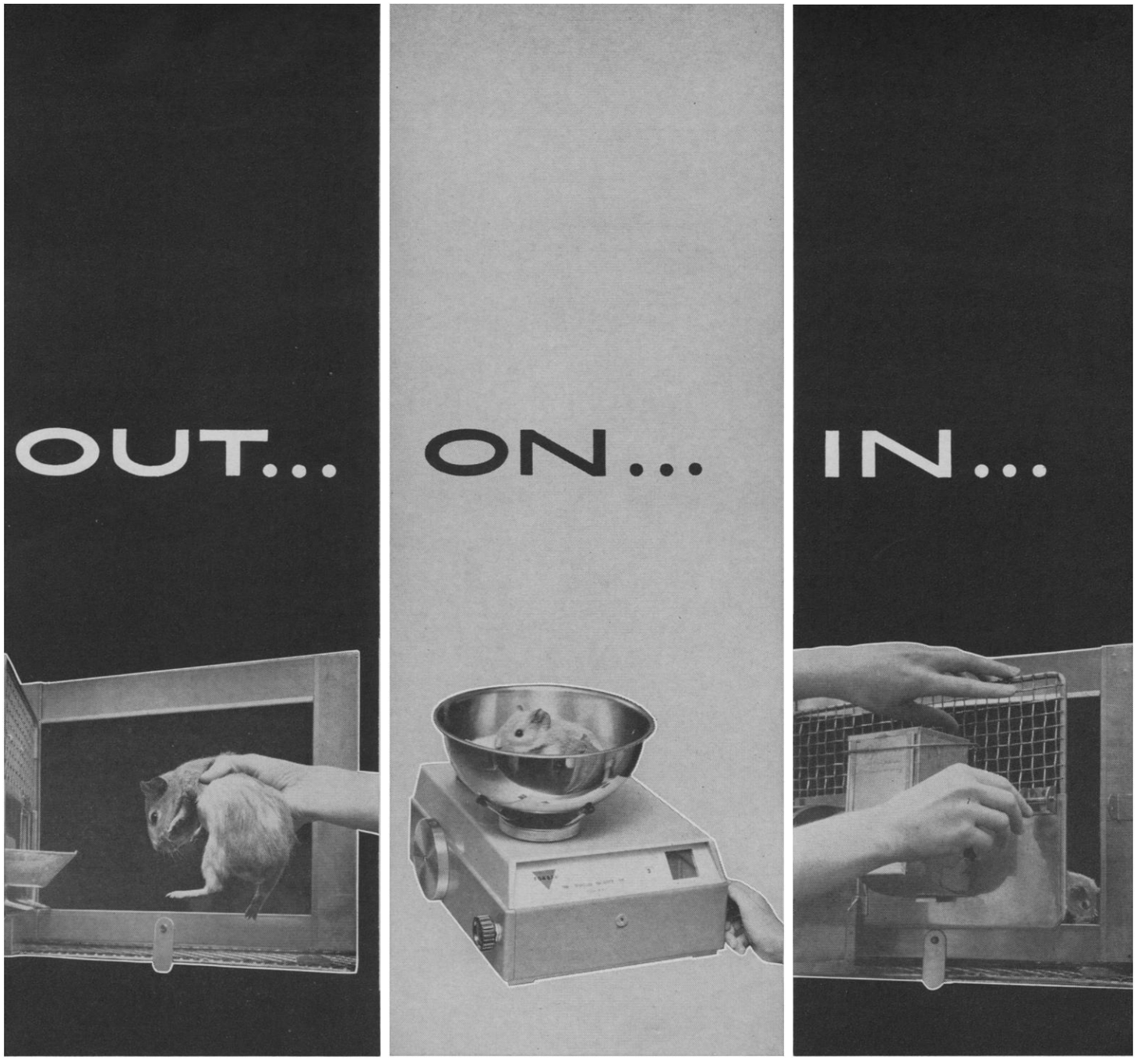

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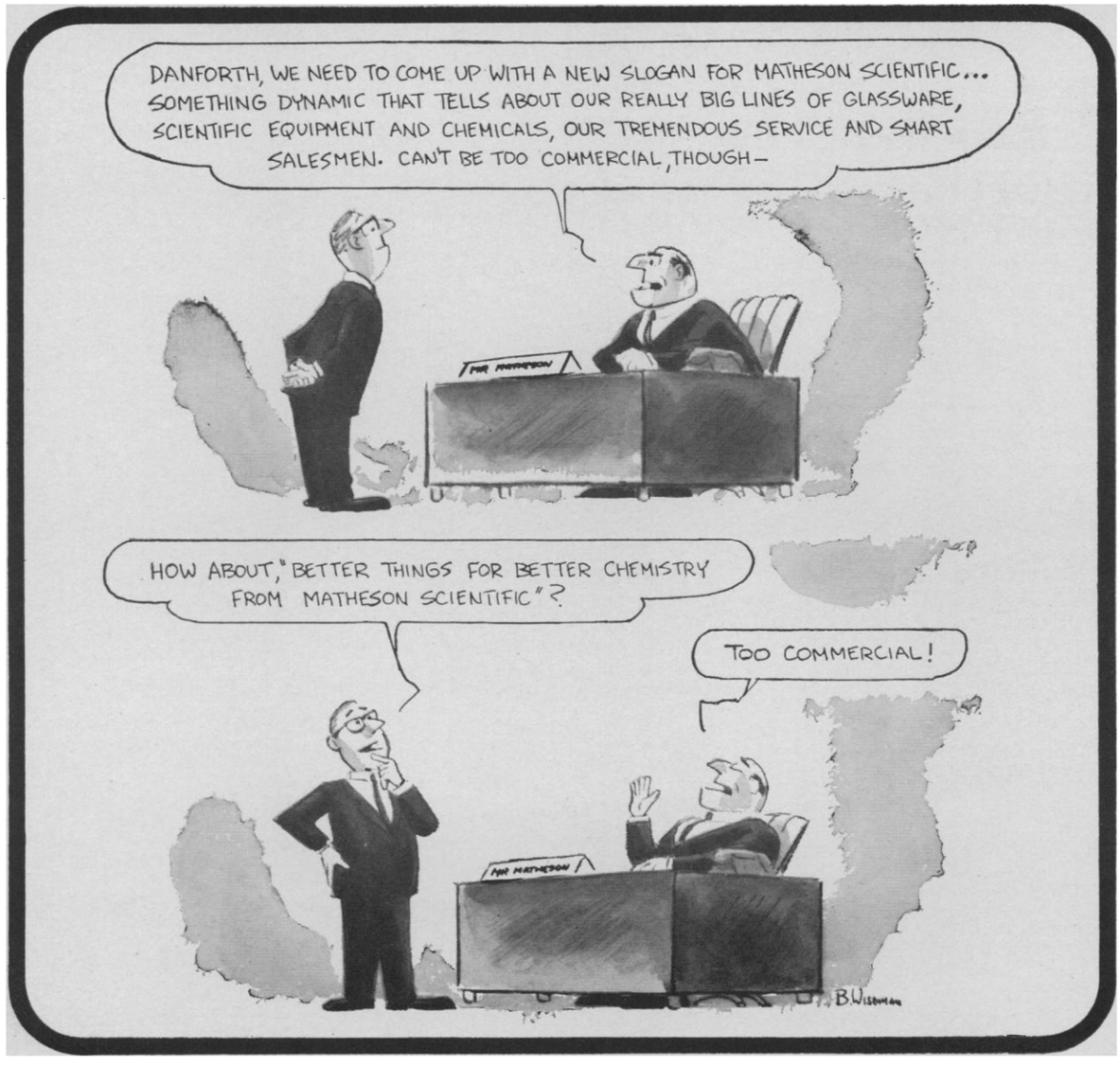

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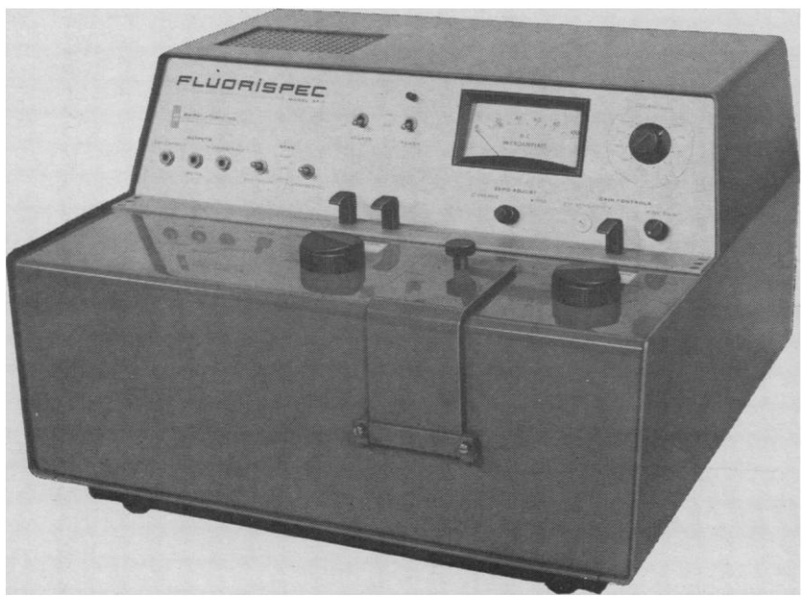

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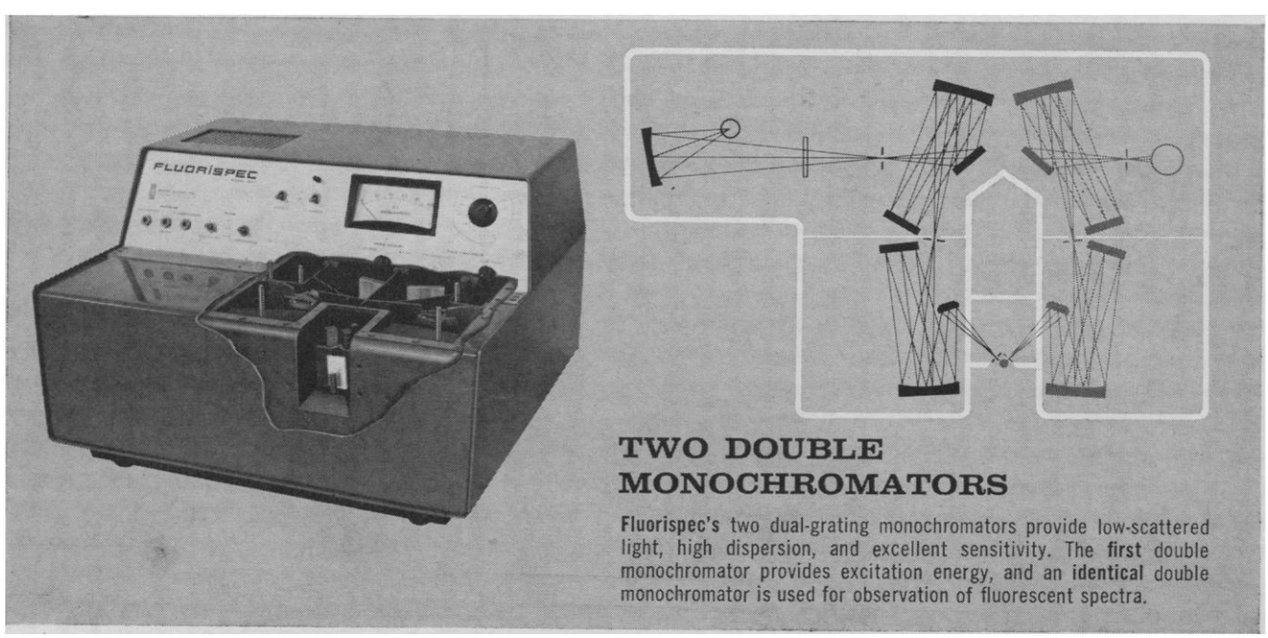

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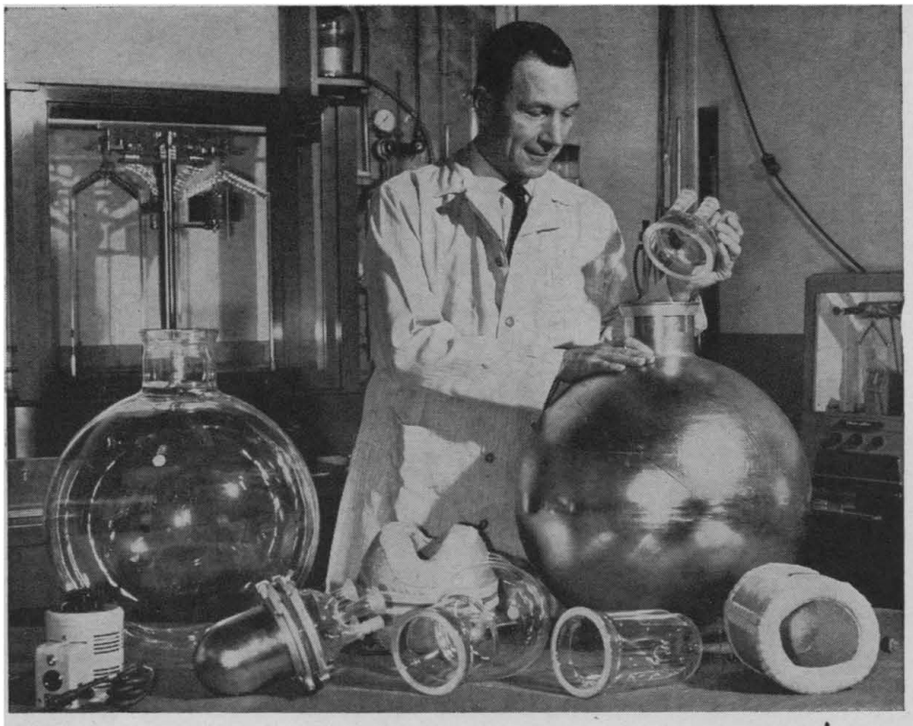

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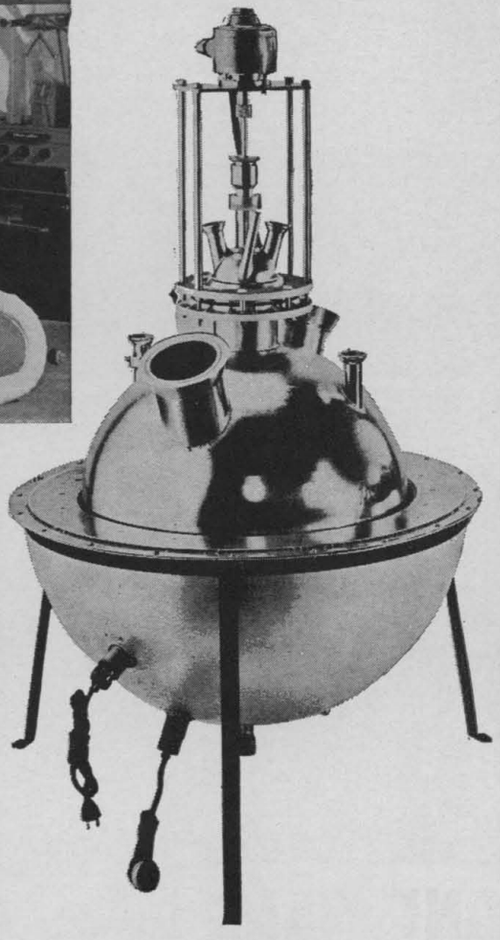

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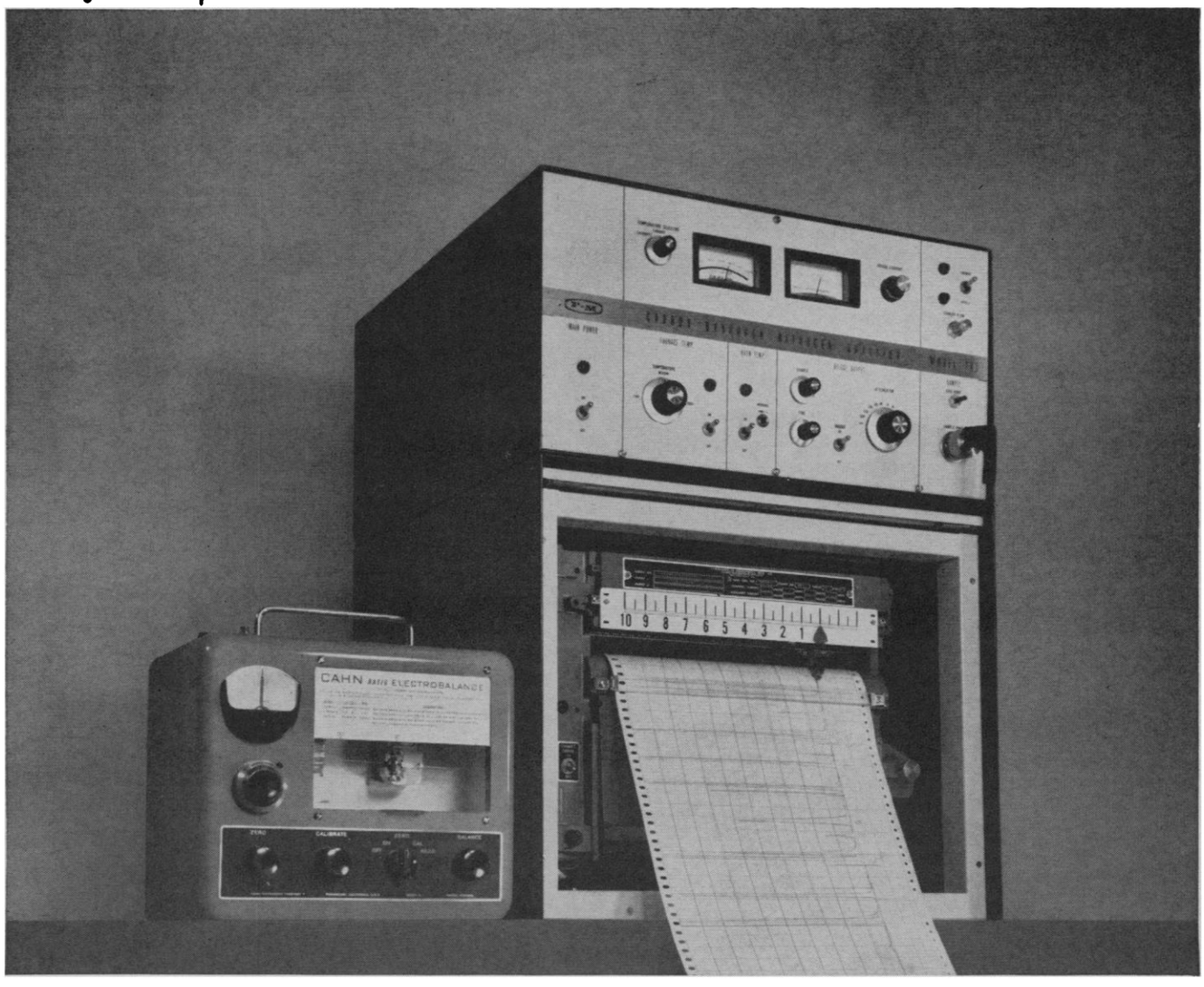

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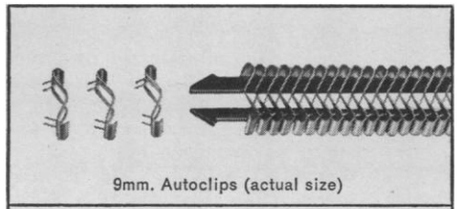
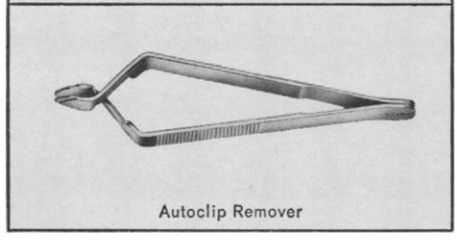

9mm. Autoclips (actual size)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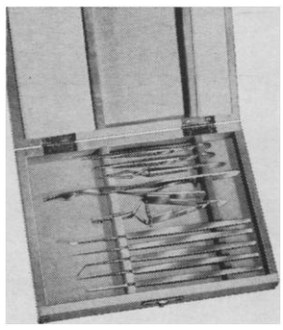

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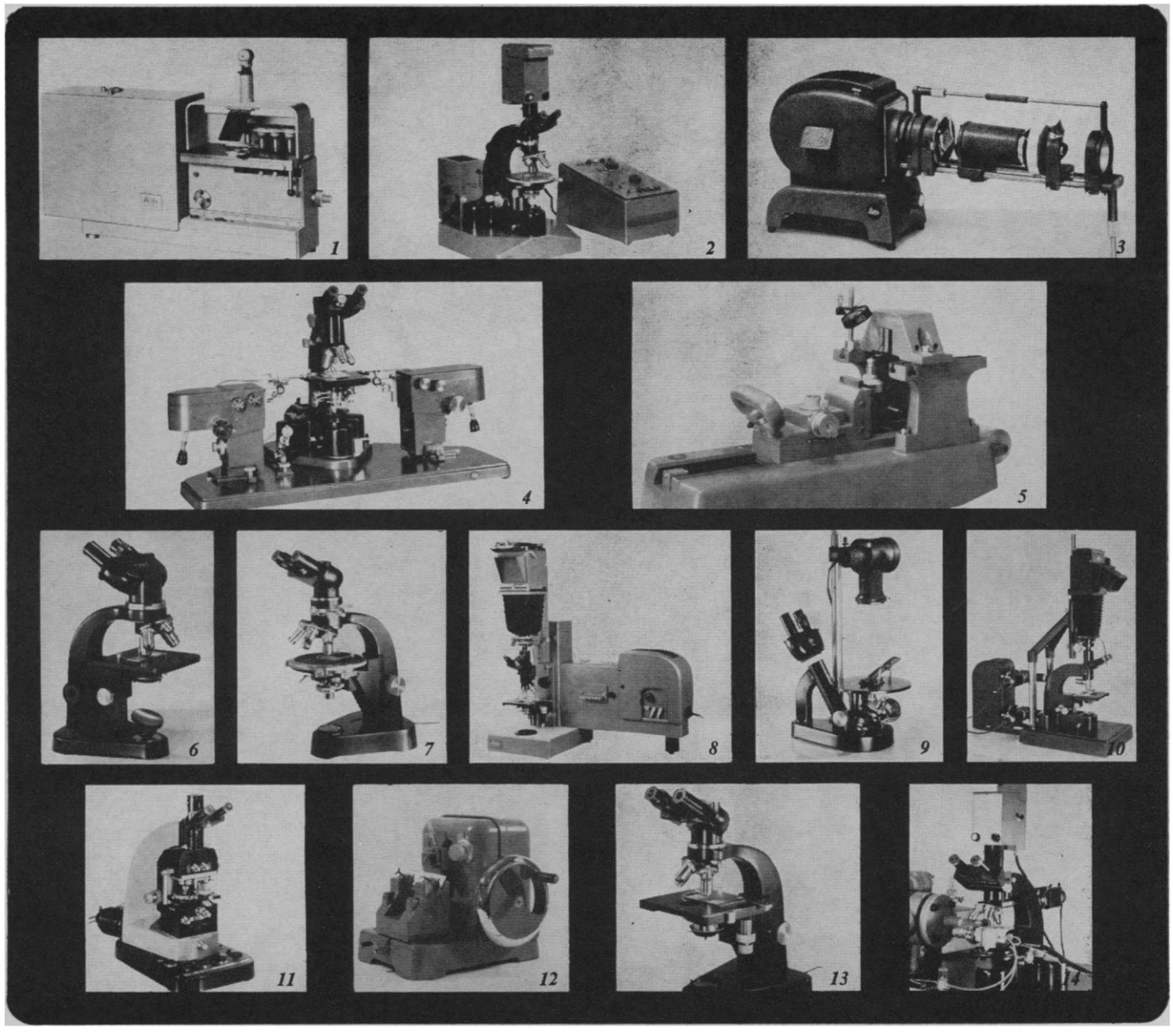

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13 March 1964, Volume 143, Number 3611

SCIENCE

A Prodigious Inventory-Taking

The Select Committee on Government Research headed by Representative Elliott issued its first progress report on 17 February. This initial document came about 5 months after authorization of the study. During this period a substantial staff has been assembled, and hearings have been held involving some 75 expert witnesses. As a result, the committee has authorized its staff to begin work on ten separate studies.

The overall attitudes expressed in the progress report are relatively judicious and neutral. The following statements are indicative:

> . . . the unparalleled wealth, the advanced state of health, and the myriad technological comforts we . . . enjoy . . . have been made possible by a . . . combination of encouragement and exploitation of research . . . The Federal Government's marriage to research and development has been marked by an amazingly long and luxurious honeymoon. . . . Noting the recently slackening annual increase of Federal funds . . . some say the honeymoon is over. Be that as it may, it is certain the marriage will endure.

There is one aspect of the report about which I have reservations. The progress report indicates that the principal effort of the committee will be devoted to a prodigious inventory-taking. This is revealed in the titles of the ten proposed studies and in their descriptions. The magnitude of the proposed endeavor is indicated in an outline for a statistical review of government research and development. The committee has instructed the staff to include in this study five major goals. One of these is "to survey the subject matter of all projects undertaken or supported by departments and agencies as well as the type of research or development undertaken." The number of grants issued each year by the National Institutes of Health is about 15,000, and this agency is only one of many.

If the staff attains all the goals set out for it, the committee will be swamped with information. So vast will be this collection that it will be difficult to digest and analyze it in any reasonable length of time; surely it cannot be digested before December 1964, when the committee is scheduled to make its report. Indeed, to gather all the information outlined may take far more staff than is available. The only way this monstrous task could be accomplished is by requiring extensive cooperation by executive agencies of the government and other institutions.

Apparently the universities will not escape. Under the heading "Student Assistance in Higher Education," we read:

> Our staff has begun a study to determine the extent and direction of the Government's financial assistance programs for students in American degree-granting colleges and universities. . . . Concomitant to this inquiry, an exhaustive questionnaire to some 1,500 colleges and universities is contemplated which will be followed by selective personal staff contact.

There are at least three grounds for hope that the Elliott Committee will come up with a more reasonable set of objectives. One is the basic wisdom of the members. A second is the flexibility of the staff. A third is the recent appointment of a Science-Engineering Advisory Committee. This group includes, among others, George W. Beadle, J. W. Beams, Lloyd Berkner, Henry T. Heald, Albert B. Sabin, Max Tishler, and Charles H. Townes. The advice of this committee will have a constructive influence on the studies.—P.H.A.

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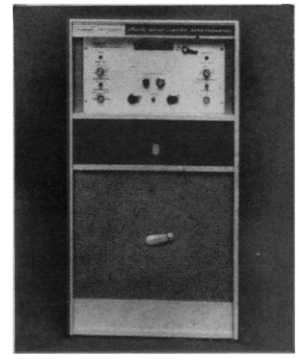

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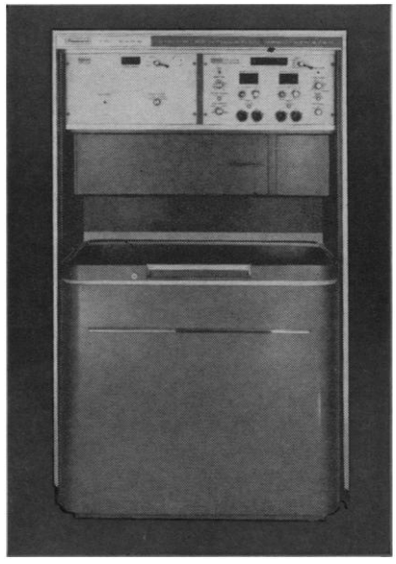

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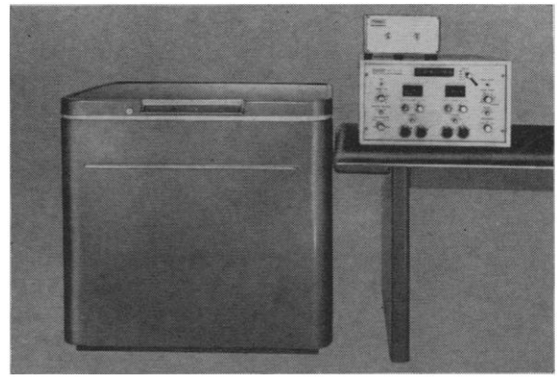

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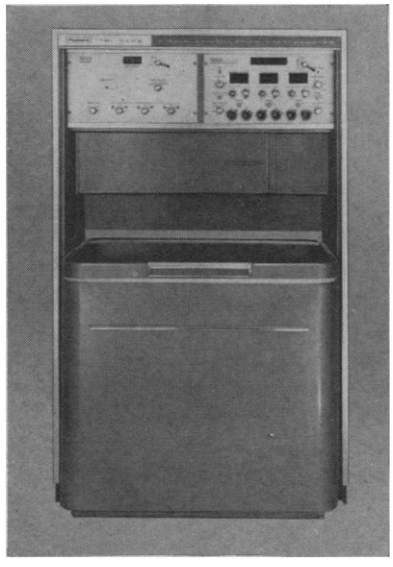

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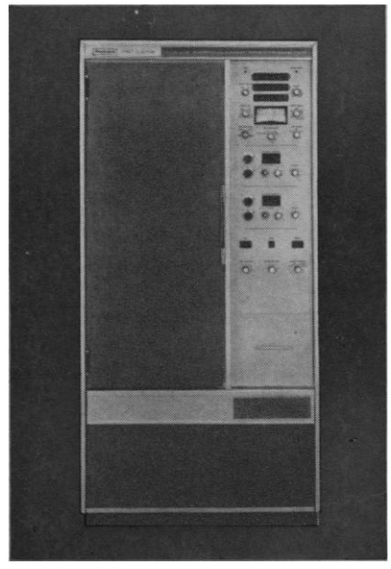

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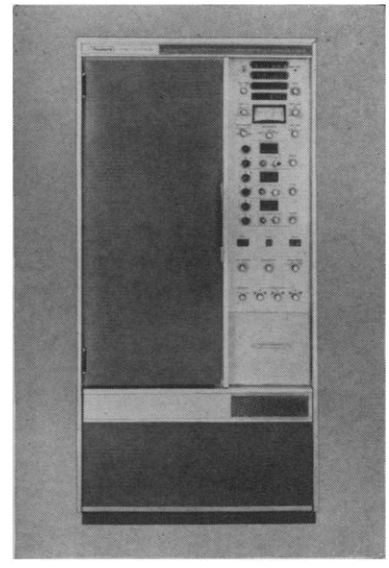

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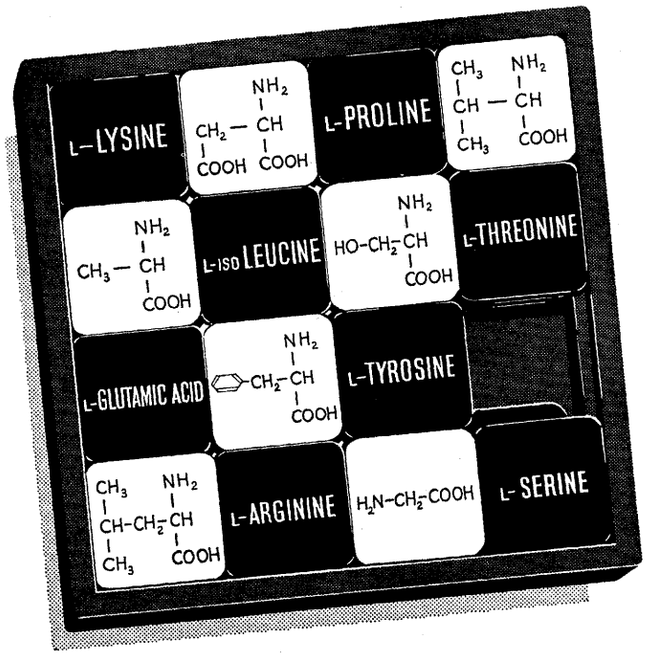

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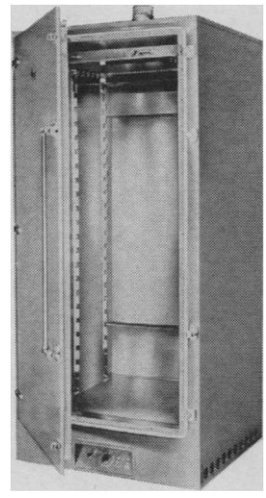

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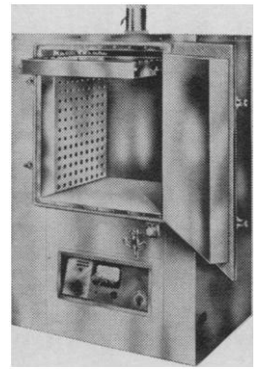

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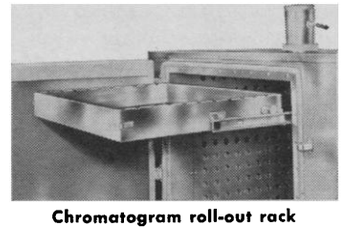

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Cell Structure and Metabolism

J. H. Taylor and Walther Stoeckenius are *cochairmen.*

The organization of the cell nucleus

29 June. The molecular structure of nucleoproteins (W. Stoeckenius, *chairman*): M. F. Wilkins; V. Luzzati. *Physico-chemical properties of nucleoproteins* (W. J. Kauzmann, *chairman*): E. Frédéricque; A. R. Peacocke.

30 June. Fine structure in the nucleus (M. L. Watson, *chairman*): V. Marinozzi; H. Swift; J. Kaye. *Fine structure of the nucleus* (H. Ris, *chairman*): J. G. Lafontaine; M. J. Moses; W. Beerman, O. Hess, and G. F. Meyer.

1 July. Chromosome structure (J. G. Gall, *chairman*): H. G. Callan; S. Inoué. *Biochemistry of isolated nuclei* (G. E. Palade, *chairman*): L. B. Zbarskii; J. P. Zalta; G. Siebert.

2 July. Basic problems in nuclear metabolism, I (chairman to be announced): S. Spiegelman; P. Geiduschek; E. Reich. *Thoughts about control of chromosomal function* (chairman to be announced): J. Bonner.

3 July. Basic problems in nuclear metabolism, II (J. H. Taylor, *chairman*): V. G. Allfrey; H. Stern.

Coenzymes and Metabolic Pathways

Arnold D. Welch and Bernard R. Baker are *chairman* and *vice chairman*, respectively.

6 July. (A. D. Welch, *chairman*): E. E. Snell, "Some aspects of the metabolism and metabolic role of pyridoxal in bacteria"; T. C. Bruice, "Model studies of transamination reactions"; G. Hammes, "The mechanism of action of aspartic amino transferase." (G. B. Elion, *chairman*): J. L. Strominger, "Structure and biosynthesis of bacterial cell walls"; J. J. Saukkonen, "Studies on the properties of teichoic acids."

7 July. (B. R. Baker, *chairman*): J. J. Burchall, "Differential binding to dihydrofolic reductases as a basis for selective inhibition by antimetabolites"; E. P. Kennedy, "The role of pteridine cofactors in the oxidation of glyceryl ether"; G. W. Kidder, "Pteridines in crithidia." (T. H. Jukes, *chairman*): H. Weissbach, "The role of vitamin B_{12} in the biosynthesis of methionine"; H. L. Elford, "Transfer of the methyl group of methyl-tetrahydrofolic acid to a cobamide."

8 July. (G. W. Kidder, *chairman*): G. B. Elion, "Inhibition of xanthine oxidases from different species"; G. V. R. Born, "Effects of adenine nucleotides and of related substances on the aggregation of blood platelets *in vitro* and *in vivo*"; H. G. Mautner, "Selenocoenzyme A and related compounds; biological and kinetic studies of sulfur and selenium analogs." (E. E. Snell, *chairman*): P. D. Boyer, "Phosphohistidine—chemistry and metabolic relationships"; E. Racker, "Coupling factors in oxidative phosphorylation."

9 July. (H. G. Wood, *chairman*): S. Wakil, "The mechanism of action of enzyme-bound biotin"; J. Knappe, "Studies on the mechanism of CO_2 transfer by biotinenzymes"; H. J. Schaeffer, "Chemical reactivity of models related to a proposed CO_2-biotin-enzyme complex"; H. G. Wood, "General discussion of biotin and CO_2 fixation." (J. L. Strominger, *chairman*): L. E. Hokin, "Role of phosphatides in secretion"; A. S. Weisberger, "Inhibition of induced ribosomal protein synthesis by chloramphenicol."

10 July. (H. P. Broquist, *chairman*): J. P. Changeux, "Reversible structural alterations and allosteric transitions of threonine deaminase"; R. A. Yates, "Biochemical changes at the cellular level associated with learning."

Chemistry, Physiology, Structure of Bones and Teeth

Philip H. Henneman and I. Zipkin are *chairman* and *vice chairman*, respectively.

13 July. Short communications selected from submitted abstracts (to be sent to Isadore Zipkin, *chairman*, before 15 May). *Immunoassay of parathyroid hormone* (A. D. Kenny, *chairman*): A. H. Tashjian, Jr., "Studies of parathyroid hormone by quantitative complement fixation"; J. T. Potts, Jr., G. D. Aurbach, S. A. Berson, R. S. Yalow, "Radioimmunoassay of parathyroid hormone."

14 July. The determination of bone mineral content in vivo (H. Schraer, *chairman*): R. A. Hunt and H. Schraer, "Quantitative radiography of bone mineral: effects of hypoxia, estrogens and calcium administration"; C. J. Maletskos, "Bone calcium determination by neutron activation"; J. R. Cameron, "Measurement of bone mineral using a monochromatic low energy photon beam"; P. D. Saville, "Determination of bone mineral content by iliac crest biopsy." *Resorption of collagen and bone* (P. Goldhaber, *chairman*): J. Gross, "Collagen remodelling"; G. Martin, "Alterations in bone metabolism induced by parathyroid extract."

15 July. Magnesium metabolism (I. MacIntyre, *chairman*): J. A. F. Rook, "Hypomagnesemia in ruminants"; L. G. Welt, "Magnesium deficiency: experimental and clinical"; M. Walser, "The renal handling of divalent cations"; L. V. Avioli, "Studies with Mg^{28}"; M. A. Kumar, "Magnesium, calcium and the parathyroids." *Vitamin D metabolism* (R. H. Wasserman, *chairman*): R. H. Wasserman, "Introduction: on the mode of action of vitamin D"; D. Schachter, "Studies on the metabolism of radioactive vitamin D and its mechanism of action in the small intestine."

16 July. Fluoride and bone (L. Singer, *chairman*): W. D. Armstrong, "The chemistry and physiology of fluoride"; M. J. Purves, "The application of fluoride treatment in demineralizing diseases"; A. Singh, "Endemic fluorosis." *Tetracyclines and bone* (I. Clark, *chairman*); G. Bevelander, "The effect of tetracycline on growth and mineralization"; R. A. Milch, "Binding of tetracycline to demineralized tissues."

17 July. Selected topics (G. C. H. Bauer, *chairman*): M. Pope, "Charge motion in organic solids"; D. McPherson, "Stable calcium isotopes as tracers"; A. V. Montgomery, "Calcium loss during weightlessness"; M. Berman, "Computer analysis of tracer kinetics."

Physical Metallurgy

John W. Cahn and Daniel N. Beshers are *chairman* and *vice chairman*, respectively.

Kinetics

20 July. W. W. Mullins, "The diffusional stability of growth forms and the evolution of morphology"; I. M. Lifshits, "Kinteics of diffusive decomposition of supersaturated solid solutions"; M. Kahlweit, "Ostwald-ripening in solid solutions."

21 July. (M. Hillert, *discussion leader*): J. E. Hilliard, "Current problems in spinodal decomposition"; Rob-

24 August. J. Hornstra, D. G. Thomas, S. Amelinckx, "Defects in semiconductors."

25 August. N. Holonyak, Jr., and R. H. Rediker, "Injection luminescence in semiconductors"; J. P. Suchet, "The crystallochemical model."

26 August. O. H. LeBlanc, Jr., R. G. Kepler, M. Silver, "Conduction phenomena in molecular crystals."

27 August. H. C. Gatos, "Semiconductor surfaces"; B. J. Kolomiyets (subject to be announced); A. R. Regel (subject to be announced).

28 August. W. Paul and M. Banus, "Semiconductors at high pressure."

Ionic Movements and Interactions in Biological, Chemical, and Physical Phenomena

George Eisenman is *chairman.*

31 August. (F. Helfferich, *discussion leader*): T. Teorell, "Transport processes in ionic membranes and excitability phenomena"; P. Meares, "The interactions of ionic fluxes across a cation-selective membrane." (A. K. Solomon, *discussion leader*): C. Bean, "Diffusion and potentials in membranes with small pores"; H. Passow, "Interactions between convection and diffusion in tubes."

1 September. (F. Snell, discussion *leader*): R. Schlögl (subject to be announced); R. H. Doremus, "Interdiffusion of ions in glass." (O. Kedem, *discussion leader*): R. M. Barrer, "Cation migration in porous crystals", R. J. Charles, "Filimentary diffusion pads in glass."

2 September. (R. M. Garrels, *discussion leader*): G. Eisenman, "Some atomic interactions underlying ionic specificity"; D. Reichenberg, "Interactions underlying ion-exchange selectivity." (J. Moore, *discussion leader*): K. S. Cole, "Electrodiffusion in cell membranes"; P. Horowicz, "Movement of ions across muscle membranes."

3 September. (J. Tobias, *discussion leader*): J. L. Kavanau, "A theory of biological membrane transformations regulated by cation displacements"; I. Tasaki, "Electrochemical behavior of intracellularly perfused squid axons." (A. M. Monnier, *discussion leader*): D. C. Tosteson, "Structural and functional components of the red cell membrane"; A. Rothstein, "Cation specificity in transport systems of yeast."

4 September. (L. J. Mullins, *discussion leader*): D. Goldman, "Membrane structure, phospholipids, and electrical characteristics"; F. Conti, "The role of membrane structure on electrical potentials and ionic fluxes."

Proctor Academy

Biomathematics

Otto Schmitt is *chairman.*

13–17 July. (Speakers to be announced.) "Strategies for automated analysis of cardiovascular data"; "Generalization of transfer function theory applicable to biomedical studies"; "Models of bioperiodicity"; "Patterns discovering and recognizing systems"; "Phase spaces and generalized vectorial representation for biomedical problems"; "Mathematical models for tissue impedance and its measurement"; "The problem of automated medical diagnosis"; "Theoretical studies of information retrieval systems."

Biological Regulatory Mechanisms

Werner K. Maas and Bernard Horacker are *co-chairmen.*

20 July. B. Ames, P. Slonimski, B. Magasanik, N. Otsuji, "Regulation of enzyme synthesis in microorganisms."

21 July. H. Kornberg and J. Mandelstam, "Control of metabolism in microorganisms"; R. Shimke, H. C. Pitot, "Control of metabolism in cells of higher organisms."

22 July. O. Maaløe and S. Hnilica, "Replication of the genetic material"; G. Stent, F. Neidhardt, R. Lavalle, "Regulation of RNA synthesis in microorganisms."

23 July. A. Campbell and R. Thomas, "Control mechanisms in phage formation"; M. Sussman, "Differentiation in lower forms."

24 July. J. Tata and W. Beerman, "Hormones in growth and development."

Forthcoming Events

The scheduled sessions of the 15th International Astronautical Congress (7–12 September, Warsaw, Poland and their chairmen are:

Problems of Manned Lunar Exploration

Flight Programs (trajectory studies and rendezvous problems for a lunar mission):

P. Contensou, ONERA, 25–29 Avenue de la Division Leclerc, Chatillon-sous-Bagneux (Seine), France.

Propulsion Techniques: (i) Spacecraft propulsion for a lunar misssion: M. Summerfield, Dept. of Aeronautical Engineering, James Forrestal Research Center, Princeton University, Princeton, N.J. (ii) Propulsion for lunar descent and ascent: M. Barrère, Research Division, ONERA, 25–29 Avenue de la Division Leclerc, Chatillon-sous-Bagneux (Seine), France.

Navigation: (i) Guidance problems of a lunar mission: A. Dauguet, SEREB, 55 rue Victor-Hugo, Courbevoie (Seine), France. (ii) Manned versus unmanned spacecraft control: C. S. Draper, Instrumentation Laboratory, Massachusetts Inst. of Technology, Cambridge 39.

General Sessions

Bioastronautics (problems relative to man in space): N. M. Sissakian, Presidium, Acad. of Sciences of the U.S.S.R., Leninski Prospect 14, Moscow.

Power Systems for Space Vehicles (power supplies for auxiliaries and altitude control): L. R. Shepherd, 2 Charborough Rd., Broadstone, Dorset, Great Britain.

Celestial Mechanics and Astrodynamics (orbits and trajectories of space vehicles): G. N. Duboshin, State Inst. of Astronomy, Universitetski Prospect 13, Moscow, U.S.S.R.

Physical Problems of Re-entry into Planetary Atmosphere (excluding trajectory problems): M. Lunc, Marszalkowska 45/49 m20, Warsaw, Poland.

Meteorological Satellite Systems (characteristics of various systems in relation with data collection and interpretation): K. Kondratyev, Commission for Exploration and Utilization of Outer Space, ul. Vavilova 18, Moscow V-312, U.S.S.R.

Communication Satellite Systems (satellites and ground stations): G. K. C. Pardoe, British Space Development Co., Ltd., Welkin House, 10–11 Charterhouse Sq., London E.C.1.

Geodetic Satellite Systems (including triangulation, navigation, etc.): P. Tardi, Institut Géographique National, 136 bis, rue de Grenelle, Paris 7e, France.

Ground Installations (problems of site location, types of equipment, etc.): J. Gandihon, SARST, 5 rue du 4 Septembre, Paris 2e, France.

Special Sessions

Education in Astronautics. (i) Demonstration methods and visual aids in secondary level education; (ii) Effect of astronautics on higher level education: H. Moureu, Laboratoire Municipal de Paris, 39b rue de Dantzig, Paris 15e, France.

March

19–22. International Assoc. for **Dental Research**, 42nd meeting, Los Angeles, Calif. (J. C. Muhler, 1120 W. Michigan St., Indianapolis, Ind. 46202)

20–24. National Assoc. for **Research in Science Teaching**, Chicago, Ill. (G. G. Mallinson, Western Michigan Univ., Kalamazoo)

20–24. National **Science Teachers**

Assoc., Chicago, Ill. (R. H. Carleton, 1201 16th St., NW, Washington, D.C.)

21–3. British **Computer** Soc., conf., Edinburgh, Scotland. (Secretariat, I.E.E., Savoy Pl., London, W.C.2, England)

21–23. Asian-Pacific **Dental** Federation, 4th congr., Singapore and Malaya. (B. B. Eraña, Manila Doctors Hospital, Isaac Peral St., P.O. Box 373, Manila, Philippines)

21–24. **Cybernetic Medicine**, 3rd intern. congr., Naples, Italy. (A. DeChiara, 348, Via Roma, Naples)

22–25. American Assoc. of **Dental Schools**, 41st annual, Los Angeles, Calif. (AADS, 840 Lake Shore Dr., Chicago 11, Ill.)

23–24. Society for **Economic Botany**, 5th annual, Chapel Hill, N.C. (D. J. Rogers, New York Botanical Garden, Bronx Park, N.Y.)

23–25. Federation of European **Biochemical** Societies, 1st, London, England. (FEBS, Lister Inst., Chelsea Bridge Rd., London, S.W.1)

23–26. Institute of **Electrical and Electronics Engineers**, intern. conv., New York, N.Y. (IEEE, Box A, Lenox Hill Station, New York 21)

23–26. **Gas Chromatography**, 2nd intern. symp., Houston, Tex. (A. Zlatkis, Dept. of Chemistry, Univ. of Houston, Houston)

23–26. American **Physical** Soc., Philadelphia, Pa. (K. K. Darrow, Columbia Univ., New York 27)

24–26. Physics and Dynamics of **Clouds**, conf., American Meteorological Soc., Chicago, Ill. (Miss D. L. Bradbury, Dept. of Geophysical Sciences, Univ. of Chicago, Chicago)

25–27. **Aerospace Bearings**, USAF-Southwest Research Inst. conf., unclassified, San Antonio, Tex. (P. M. Ku, SwRI, 8500 Culebra Rd., San Antonio)

25–27. **Entomological** Soc. of America, Northcentral branch, Omaha, Neb. (G. E. Guyer, Dept. of Entomology, Michigan State Univ., East Lansing)

26–28. **Michigan Acad.** of Science, Arts and Letters, East Lansing (G. G. Mallinson, Western Michigan Univ., Kalamazoo)

26–28. Southern Soc. for **Philosophy and Psychology**, 56th annual, Lexington, Ky. (D. Calvin, Psychology Dept., Univ. of Kentucky, Lexington)

27–28. American **Ethnological** Soc., Pittsburgh, Pa., (N. F. S. Woodbury, U.S. National Museum, Smithsonian Institution, Washington, D.C.)

27–28. **Seismological** Soc. of America, annual, Seattle, Wash. (K. V. Steinbrugge, SSA, 465 California St., San Francisco 4, Calif.)

27–28. **Pennsylvania Acad. of Science**, University Park, Pa. (P. C. Martin, Point Park Junior College, Pittsburgh, Pa.)

27–29. Society for the Study of **Evolution**, annual, Chapel Hill, N.C. (H. H. Ross, Illinois Natural History Survey, Urbana)

28–30. American Assoc. of Colleges of **Pharmacy**, Detroit, Mich. (C. W. Bliven, 1507 M St., NW, Washington, D.C. 20005)

29–2. Association of American **Geographers**, annual, Syracuse, N.Y. (AAG 1201 16th St., NW, Washington, D.C.)

30–2. American Assoc. of **Junior Colleges**, Bal Harbour, Fla. (W. G. Shannon, AAJC, 1777 Massachusetts Ave., NW, Washington, D.C. 20036)

31–3. American Assoc. of **Anatomists**, Denver, Colo. (L. B. Flexner, Dept. of Anatomy, Univ. of Pennsylvania, Philadelphia 4)

31–3. **Calcified Tissues**, European symp., Liége, Belgium. (L. J. Richelle, 32, Boulevard de la Constitution, Liége)

April

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

5–10. Asia-Pacific Acad. of **Opthalmology**, 2nd congr., Melbourne, Australia. (R. N. Mellor, 82 Collins St., Melbourne C1)

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

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

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

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

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

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

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

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

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

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

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

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

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

10. **Natural Phenolic Compounds**, symp., Tokyo, Japan. (M. Shimokoriyama, Dept.

of Botany, Univ. of Tokyo, Hongo, Tokyo)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

15–17. **Ophthalmological** Soc. of the United Kingdom, annual, Dublin, Ire-

land. (Secretariat, 47 Lincoln's Inn Fields, London, W.C.2, England)

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

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

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

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

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

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

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

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

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

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

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

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

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

18–23. American **Ceramic** Soc., 66th annual, Chicago, Ill. (ACeS, 4055 N. High St., Columbus 14, Ohio)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

21–30. **Seismology**, intergovernmental meeting, Paris, France. (UNESCO, Pl. de Fontenoy, Paris 7°)

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

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

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

23–25. American **Gastroenterological** Assoc., Dallas, Tex. (D. Cayer, 2240 Cloverdale Ave. Winston-Salem, N.C.)

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

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

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

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

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

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

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

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

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

ASSOCIATION AFFAIRS—

NEW AAAS AFFILIATES

Division of Chemical Literature of the American Chemical Society

One of the four societies elected at the 130th AAAS annual meeting in December 1963, as an affiliate of the Association, was the Division of Chemical Literature of the American Chemical Society.

The Division was officially established in 1948 as the outgrowth of programs and activities conducted by the chemical literature group of the ACS Division of Chemical Education. These early programs were developed by a number of chemists who felt that the American Chemical Society should take the lead in an organized effort to improve the utilization of the chemical literature. Now, the Division has over 1000 members and affiliates.

The objectives of the Division of Chemical Literature are those of the American Chemical Society as they apply to the chemical literature, and include the study, preparation, collection, recording, processing, conserving, reproduction, organization, exchange, dissemination, and assembly for use of chemical information. The Division is thus concerned with the primary, secondary, and tertiary publication of information—with original papers, books, and reports; with abstracts, indexes, and machine documentation; and with techniques and ideas for facilitating the use of chemical literature. It conceives as its task both the provision of assistance to the laboratory chemist in his own work with the literature and the interchange of knowledge and techniques among professional literature chemists.

To further these objectives, the ACS Division of Chemical Literature presents extensive programs of individual papers and symposia at the spring and fall national meetings of the American Chemical Society and at occasional separate meetings. It sponsors the publication of a quarterly bulletin, *Chemical Literature*, which reports the activities and membership of the Division, mentions happenings in the technical documentation field, publishes abstracts of papers presented before the Division, and includes a comprehensive annotated bibliography on chemical documentation.

The Division played a leading role in the creation of the American Chemi-

cal Society's *Journal of Chemical Documentation*. Most of the Division papers are now published in this journal, for which the Division's executive committee serves informally as an advisory committee.

The Division has many active committees. Among these, a chemical documentation committee concerns itself with determining the ever changing documentation needs of chemists and suggesting appropriate solutions for the more pressing ones. A translations committee keeps abreast of foreign language aspects of the chemical literature. Another committee is concerned with instruction in chemical literature, as regards both college courses on chemical literature and the development of science-information and information-science curricula. Division representatives also serve on appropriate committees of other societies, such as the American Documentation Institute's committee on information retrieval terminology.

Officers of the Division are: chairman, Carleton C. Conrad, supervisor of special studies in the records division of E. I. duPont de Nemours & Company's secretary's department at Wilmington, Delaware; chairman-elect, Harriet Geer, head of chemical biological records for Parke, Davis & Company, Ann Arbor, Michigan; secretary, Barbara M. Davis, research librarian for Cabot Corporation's new products research department at Billerica, Massachusetts; assistant secretary, Nellie M. Payne, literature chemist of the Velsicol Chemical Corporation, Chicago, Illinois; and treasurer, Eugene Garfield, director of the Institute for Scientific Information at Philadelphia, Pennsylvania. AAAS Council representative is Ben H. Weil, head of the information processing section of Esso Research and Engineering Company's technical information division, Linden, New Jersey.

B. H. HEIL
Esso Research and Engineering Company, Linden, New Jersey

American Fisheries Society

The American Fisheries Society was founded in New York City on 20 December 1870, under the name "American Fish Culturists' Association." The primary objective was to promote the cause of fish culture. On 28 February 1878 the organization modified its name

to "American Fish Cultural Association" and broadened its scope to include all questions of a scientific and economic character that pertained to fish. On 14 May 1884 the name was changed to "The American Fisheries Society," and on 16 December 1910 the Society was incorporated under that name in the District of Columbia. The Society antedates practically all of the specialized groups interested in some particular aspect of natural science, conservation, or fisheries.

The present-day objectives of the Society, which have broadened from time to time, are as follows: (i) to promote the conservation, development, and wise utilization of the fisheries, both recreational and commercial; (ii) to promote and advance the development and application of all branches of fishery science and practice, including aquatic and fishery biology, engineering, economics, fish culture, limnology, oceanography, fish parasitology, ichthyology, and related fields, such as nutrition; (iii) to gather and disseminate technical and other information on fishes, fisheries, fishing, and all phases of fishery biology and practice; (iv) to hold meetings for the presentation, exchange, and discussion of information, findings, and experience on all subjects and techniques related to fisheries, and all phases of fishery science and practice; and (v) by such other means as may be appropriate, to unite and encourage those interested in fisheries, and all other phases of fishery science and practice.

Although there were many outstanding scientists active in Society affairs in early years, names that stand out as representing leaders who influenced the thinking in the field of fisheries include: George C. Embody, H. S. Davis, E. A. Birge, James A. Henshall, Barton W. Evermann, Jacob Reighard, R. W. Eschmeyer, Thaddeus Surber, Hugh M. Smith, J. G. Needham, Raymond C. Osborn, A. G. Huntsman, Percy Viosca, and E. C. Fearnow.

The American Fisheries Society has long filled the role of leading public thought in the field of fisheries since the day it first influenced the Congress of the United States to establish the first federal fish hatcheries. The Society has acted in many ways as both the national and international coordinator on various fisheries programs and policies.

The American Fisheries Society has expanded into an international associa-

tion which draws its membership from the United States, Canada, Mexico, and 37 other countries throughout the world.

Its scope now covers every interest and activity related to fish and fisheries. Although membership is not limited to professional biologists and the allied fields associated with the field of fisheries, 80 percent of the membership is of professional level. Lay conservationists interested in maintaining an adequate knowledge of the field also hold membership.

The Society meets once a year, usually in September in conjunction with the International Association of Game, Fish, and Conservation Commissioners. Annual meetings usually consist of an opening keynote address coupled with a plenary session, three half-days of technical sessions, and one evening open-discussion assembly. Frequently, a technical session involves a symposium on some subject in the field of fisheries.

Meeting locations rotate among the different sections of the North American continent. Seven annual meetings have been held in Canada, one in Mexico, and the remainder have been in the United States. The Society is an affiliate member of the American Association for the Advancement of Science and is a member of the Natural Resources Council of America. It also supports in various ways the Watershed Congress and Boy Scouts of America.

Four regional meetings of the Society are held each year, namely the Northeastern, the Southern, the North Central, and the Western divisions. Several "chapters" of the Society meet throughout the year, principally on a local and state level. The divisions include the Canadian Provinces.

At its annual meeting, the Society elects a president, a first vice president, a second vice president, a secretary-treasurer, and a finance committee. The editor of the Society is appointed by the president. Major decisions of the American Fisheries Society are made by an executive committee.

The official scientific journal of the American Fisheries Society, the *Transactions*, has been published without interruption since 1870. It is one of the oldest scientific publications in the nation, indeed the oldest in the field of conservation. Now in its 93rd volume, this quarterly is the principal reference source for scientific reports on

various subjects in fisheries and aquatic resources of North America and other global regions. A wide range of subjects is covered, such as pollution, limnology, ichthyology, fish culture, fishery management, fish nutrition, fish parasitology, and so forth.

Two index issues of the *Transactions* are available, one covering 1872–1928, the other from 1929–1952. Special Publication No. 2, "A List of Common and Scientific Names of Fishes from the United States and Canada," is published by the Society. This reference is the only publication of its kind available and is in wide demand.

A *Newsletter* for the membership is published six times a year. The Society also has available a brochure entitled "Fisheries as a Profession" which serves as a career guide for students interested in entering the field of fisheries. This publication is made available to all high schools or to individuals who are seeking information on this career field.

The Society issues professional certificates to its members who are qualified by academic standing or experience in the field of fishery biology.

ELWOOD A. SEAMAN,
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Medical Library Association

The Medical Library Association came into being with a meeting of eight persons—four physicians and four librarians—in the editorial offices of the *Philadelphia Medical Journal* on 2 May 1898. At first the organization was called "Association of Medical Librarians" but at the 10th annual meeting (1907) the name was changed to its present form.

The objectives of the Association are the fostering of medical and allied scientific libraries, the exchange of medical literature among its members, and the improvement of the professional qualifications and status of medical librarians.

Membership may be on an institutional basis, provided that the medical or allied scientific library concerned meets standards of size, organization, and maintenance. Membership is also open to individuals engaged in professional medical library work, and in an associate status to persons in-