

SCIENCE

20 November 1964

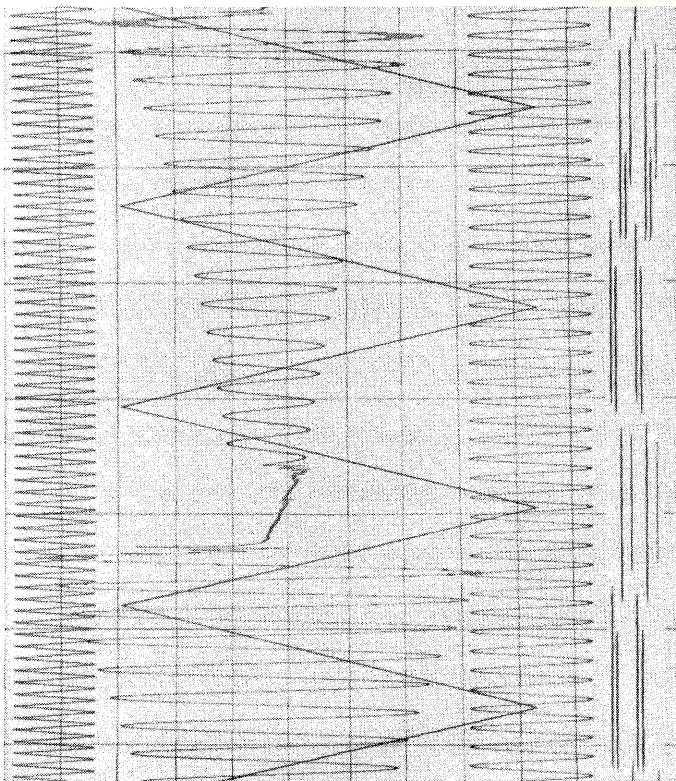
Vol. 146, No. 3647

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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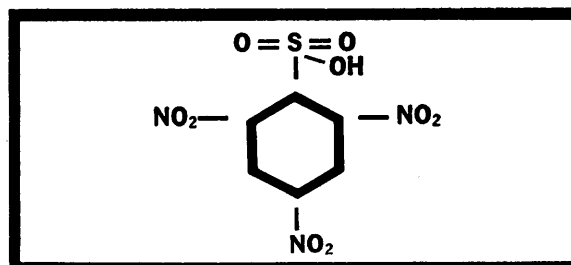
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PRICE SCHEDULE:

100 grams	gm	\$.60
25 grams	gm	.63
10 grams	gm	.70
5 grams	gm	.79

Reference: (1) T. Okuyama, K. Satake, J. of Biochemistry (Japan) 47, 654.

SPECIFIC STAIN FOR SH GROUPS IN TISSUES

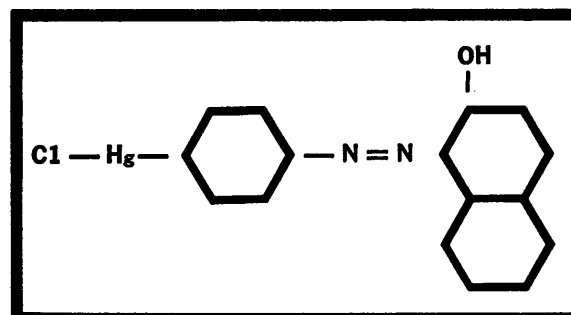
MERCURY ORANGE (1, (4 Chloromercuri Phenylazo) 2 Naphthol Red Sulphydryl Reagent).

Bennett reported that Mercury Orange is specific for attachment solely to SH groups in tissues (1) (2).

The tissue was fixed in trichloroacetic acid, dehydrated in alcohol or prepared by freeze substitution. It was then teased into small fragments. Mercury orange (red sulphydryl reagent) (RSR) was employed as a saturated solution in solvent.

Using this standard, Bennett located SH groups in regions previously not known to contain them, such as nerve cell bodies, in retinal rods and in capillary endothelium.

After testing a number of reagents, Mauri, Vaccari and Kaderavek concluded that only RSR procedure was sufficiently sensitive and specific for thiols in tissues (3).



PRICE SCHEDULE:

1 gram bottle	gram	\$53.50
100 mg. bottle	btl.	7.90

References: (1) H. S. Bennett and P. A. Yphantis, J. Am. Chem. Soc. 70, 3522, (1948). (2) H. S. Bennett, Anat. Rec. 110, 231, (1951). (3) C. E. Mauri, F. Vaccari, and G. P. Kaderavek, Haematologia, 38, 263, (1954).

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20 November 1964

Vol. 146, No. 3647

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COVER

Web of the spider *Argiope florida* Chamberlin & Ivie, photographed near Lake Placid, Florida, at dawn when the web was laden with dew. The threads of a web are covered with tiny droplets of a viscid material to which insects adhere when they fly into the web. Moths, by virtue of the loose scales on their wings and bodies, tend not to adhere, but may simply lose some of their scales to the viscid threads, and fly on. Other insects, covered with detachable hairs or powder, may similarly elude capture by the spider. See page 1058.



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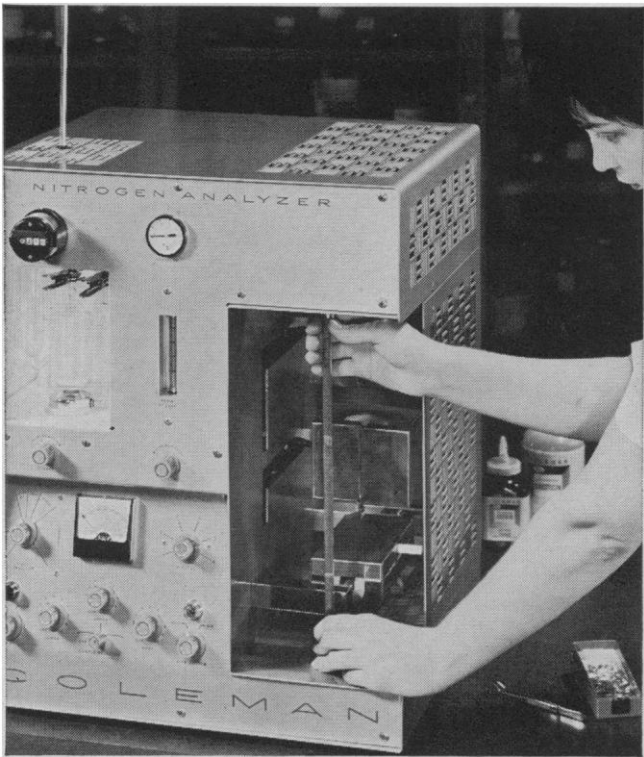
A special extraction technique, announced in a recent issue of ANALYTICAL CHEMISTRY, permits the instrument to be used for trace analysis with materials containing as little as 20 ppm nitrogen.

Operation of the instrument is simple. The operator is required merely to weigh and install the sample, to actuate the instrument, and 8 minutes later, to read and record nitrogen volume from a digital counter.

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Condensed Specifications:
Sample . . . any material that pyrolyzes at temperatures up to 1000° C.
Sample size . . . from 5 to 50 milligrams, generally.
Operating cycle . . . 8 minutes.
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Readout . . . digital counter in microliters.

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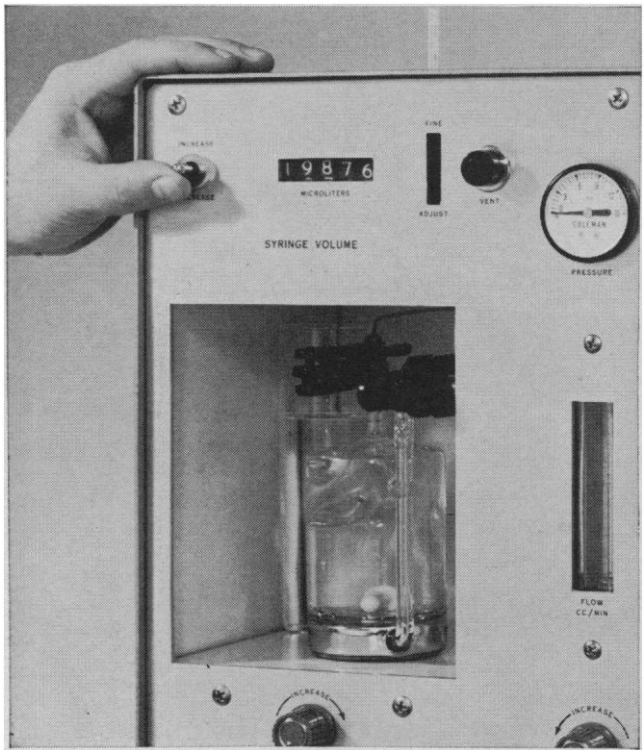
The instrument is finding wide application in laboratories working with such diverse materials as foods, feeds, grains, soils, fertilizers, milk products, and biological materials.

To accept the larger samples, the instrument incorporates an expanded combustion system, extended combustion cycle, and a larger, modified nitrometer for measurement of the greater volumes of nitrogen. The measurement operation is speeded by a reversible electric motor in the precision syringe-and-micrometer screw adjustment.

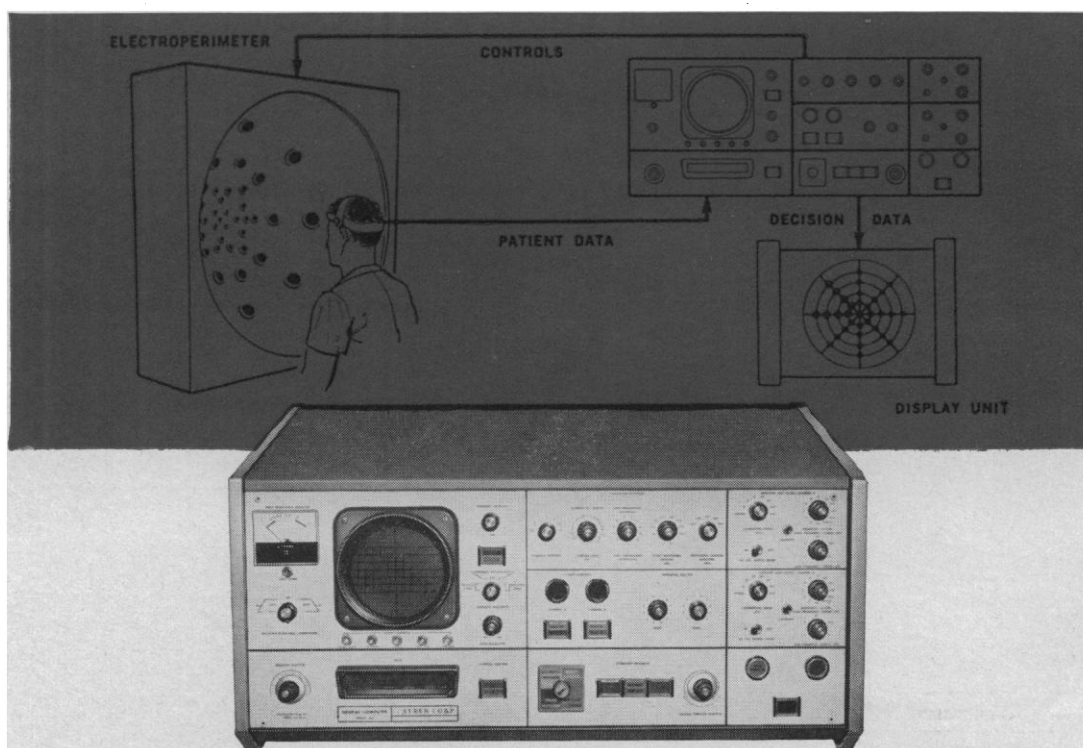
The Model 29A minimizes the work formerly required in preparing samples of non-homogeneous materials for microanalysis.

Condensed Specifications:
Sample . . . any material that pyrolyzes at temperatures up to 1000° C.
Sample size . . . 50 up to 500 milligrams; up to one gram or more for inorganic materials.
Operating cycle . . . 12 minutes.
Accuracy . . . results correspond to theory $\pm 0.2\%$ nitrogen.
Readout . . . motor-driven digital counter.

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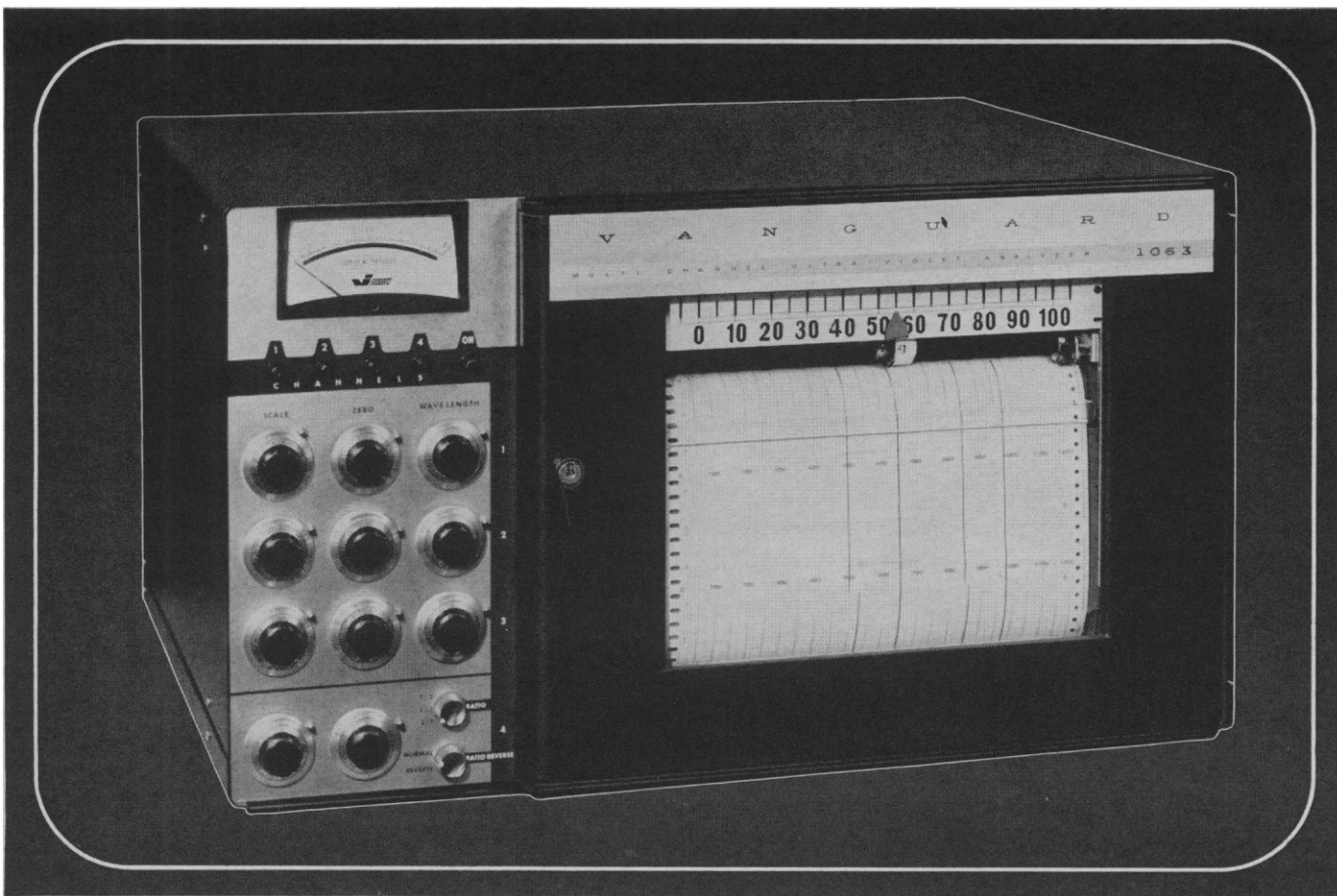
compared to the predetermined "normal" by the Neurac computer which then can give a "yes" or "no" answer. The answers are plotted by the TMC Syber Visual Field Display Unit. As the points of response and no response are plotted over the visual field, the pattern can give evidence as to the existence of lesions of other interruptions in the optic pathways, and also help in determining their location. Electroperimetry with Neurac provides the first commercial system for objective studies of infants, retarded or mentally disturbed persons and otherwise uncommunicative subjects.

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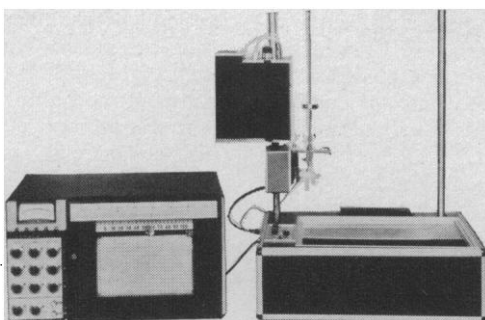


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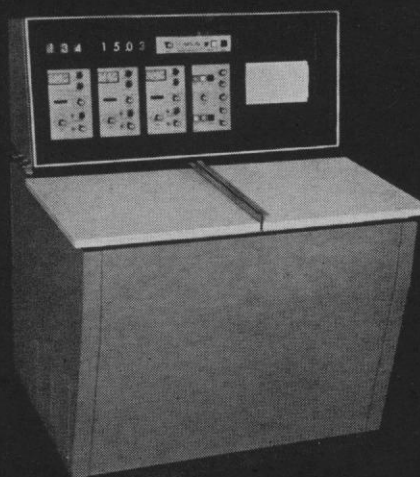
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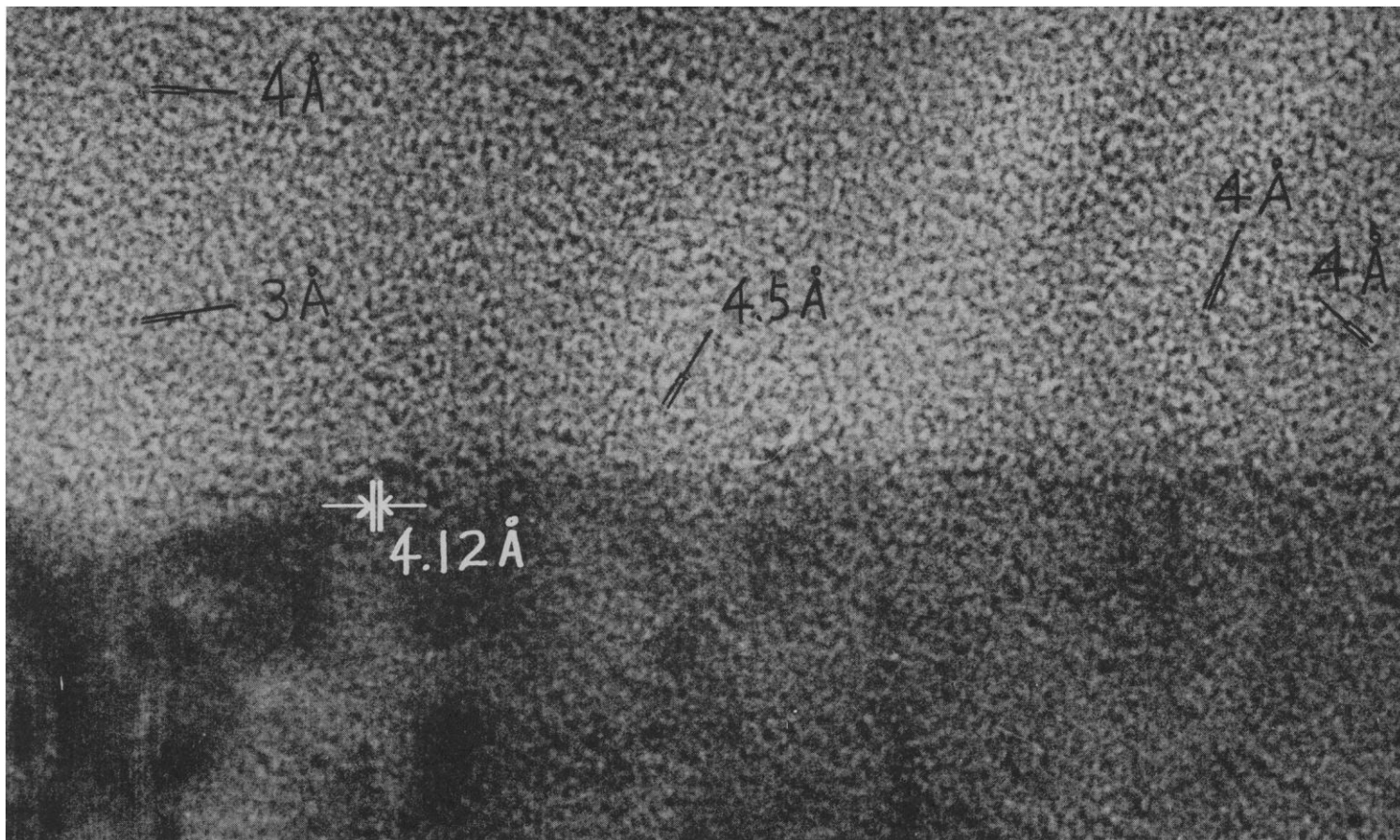
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No. 3 in a Series

ADVANCES IN ELECTRON MICROSCOPY

As research in the life sciences and solid state physics accelerates, ultra high resolution electron microscopy assumes an increasingly important role as a source of fundamental new information. Recently, scientists at the Hitachi Central Research Laboratory have announced new discoveries in electron optics which are being incorporated in their latest designs. The five electron micrographs below of a tiny (0.05 micron) hole in collodion film were taken at equal intervals during a four minute period. They demonstrate the remarkable performance of the new Hitachi HU-11B Electron Microscope.

Careful measurements on the original plates indicated (a) At the direct magnification of 250,000, better than 5 Å resolution was maintained for each exposure (b) Electronic stability was better than 2 in 10^6 for four minutes (c) The specimen contaminated at a rate of less than 0.5 angstroms per minute.

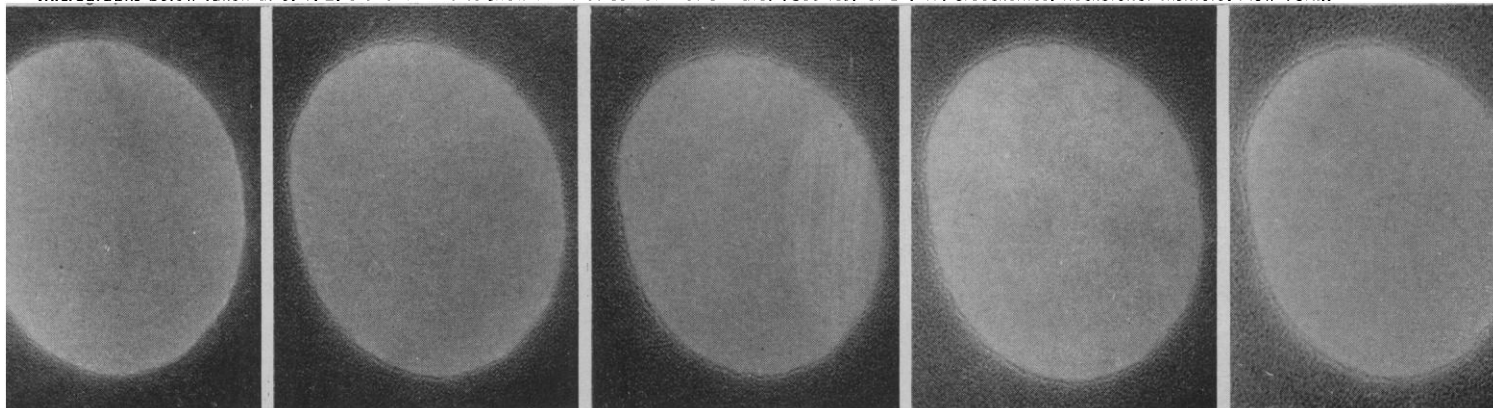
With this constancy of performance, ultra high resolution micrographs can now be obtained similar to that shown above. The (001) lattice image of K_2PtCl_4 Crystal with 4.12 Å spacing is resolved while on the same plate point-to-point resolution of particles as close as 3 Å is ob-

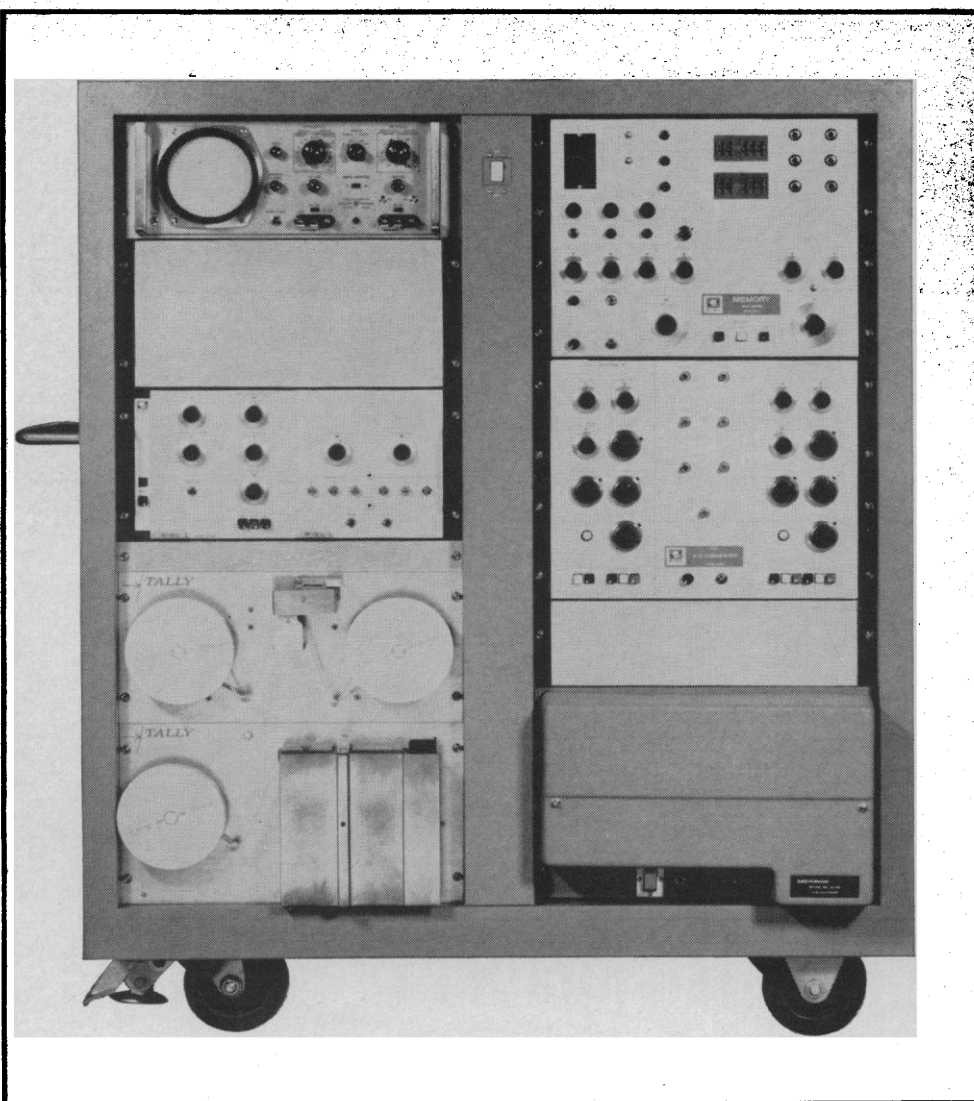
tained. This is the highest point resolution yet demonstrated by any electron microscope, approaching the dimensions of single atoms.

A complete set of these micrographs and details on the Model HU-11B can be obtained from the Perkin-Elmer Corporation, Distributor Products Department, 910 Main Avenue, Norwalk, Conn., exclusive sales and service representative for Hitachi Electron Microscopes in North America.

PERKIN-ELMER

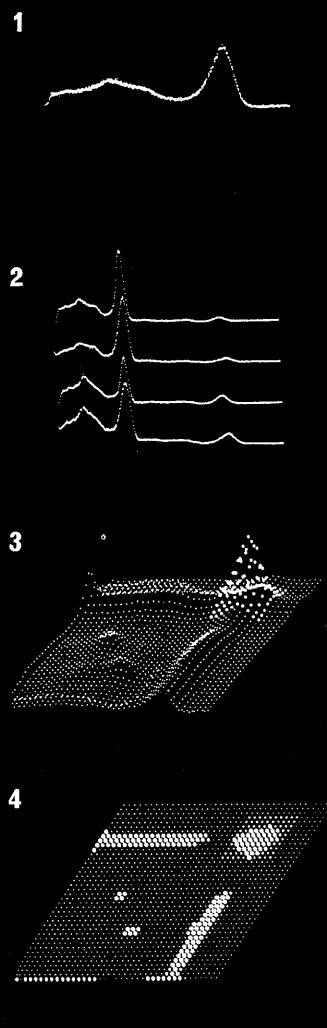
Micrographs below taken at 0, 1, 2, 3 and 4 minutes show minimal contamination rate. (Courtesy of Dr. W. Stoeckenius, Rockefeller Institute, New York.)





RIDL Model 22-102 Nuclear Counter-Computer consists of 22-01 1600-Word Memory, 22-03 Dual ADC, 29-1B Instrument Case and Power Supply, 52-56 5-in. Display Oscilloscope, 52-52 Data Processor, 52-53 Punch/Type/Read Matrix, 44-15 Tally Punch, 44-23 Tally Reader, 44-25 Monroe Printer, and 29-23 Cart.

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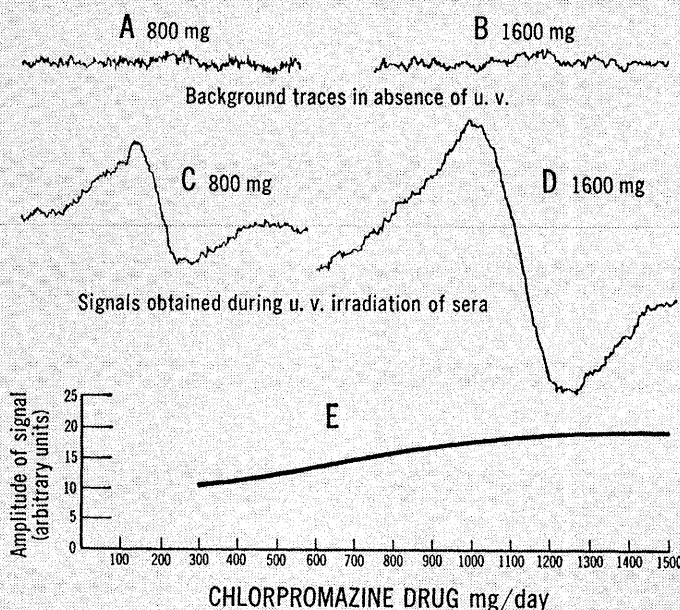
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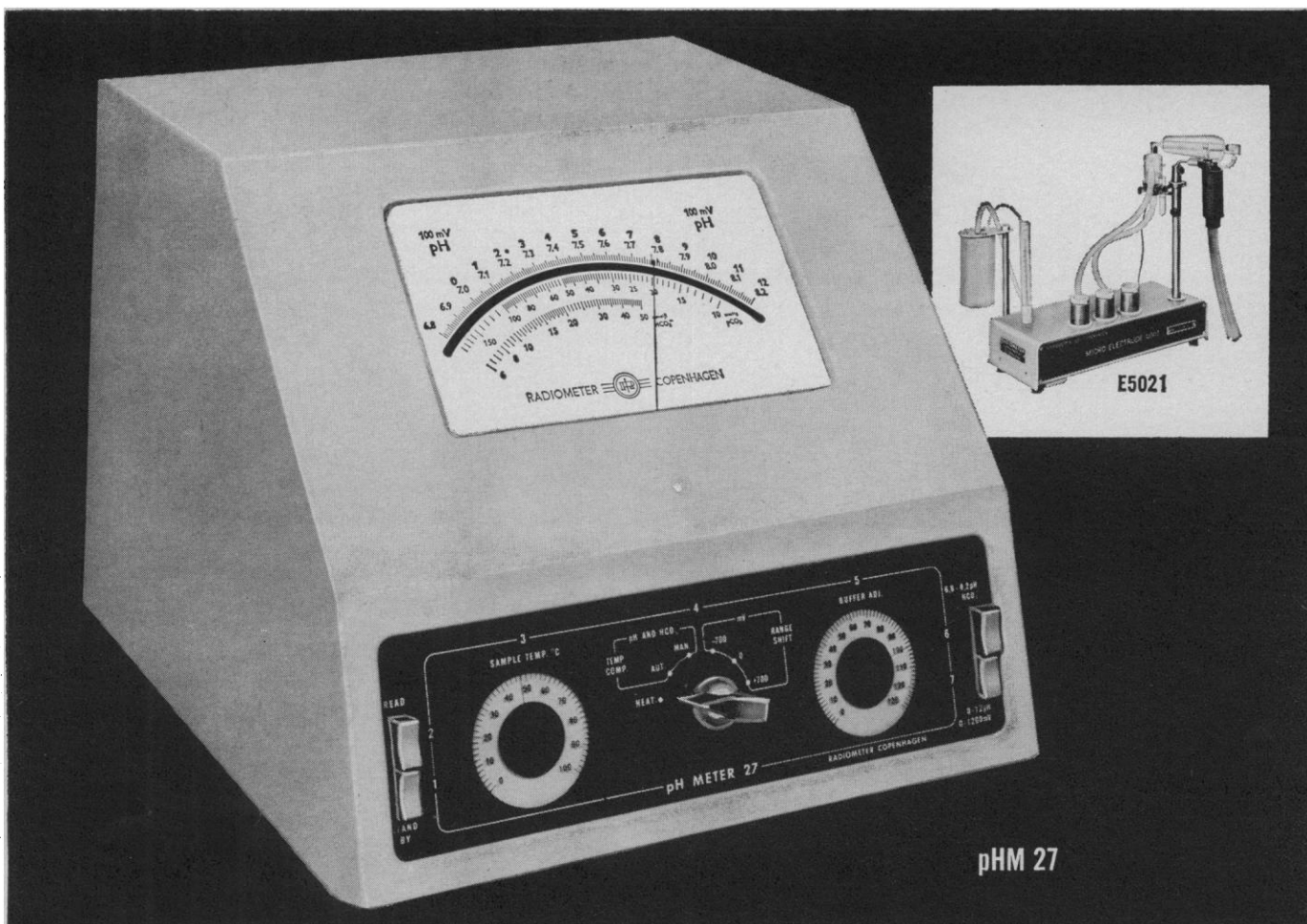
U. V. Source: PEK-107 Mercury arc—100 watt power

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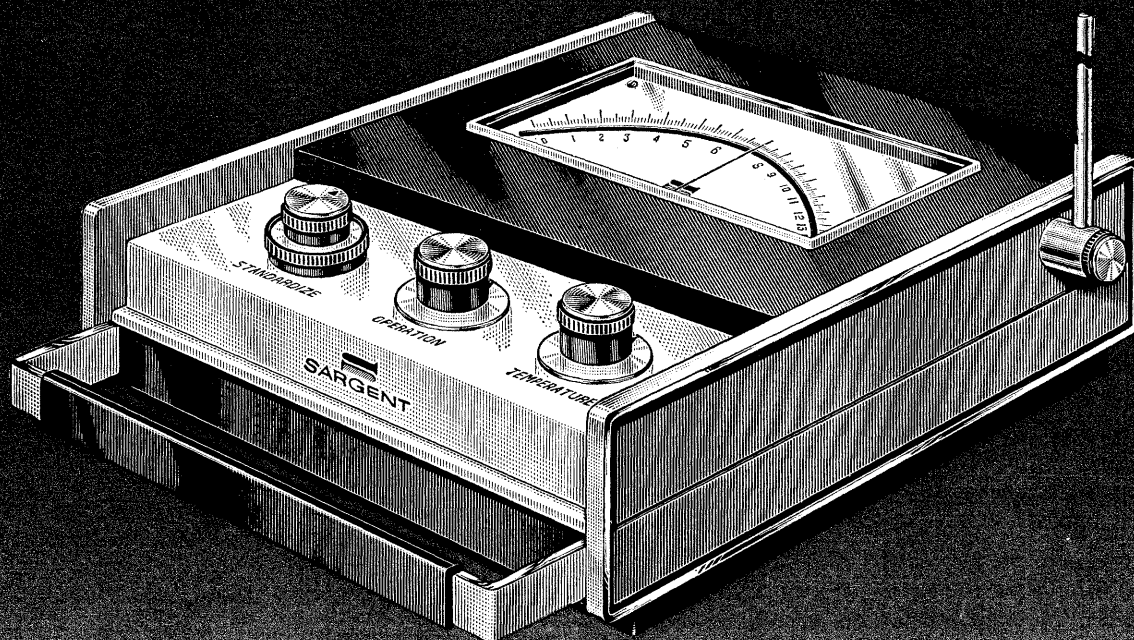
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Interdisciplinary Symposia Possible meteoric or lunar influences on meteorological phenomena; basic concepts of biochemical differentiation; medical geology and geography; history of the popularization of science.

Special Sessions AAAS Presidential Address by Alan T. Waterman; the Joint Address of Sigma Xi and Phi Beta Kappa by René Dubos; the George Sarton Memorial Address by Lloyd G. Stevenson; the National Geographic Society Illustrated Lecture; and the AAAS Distinguished Lecture by Lord Brain, retiring president, British AAS.

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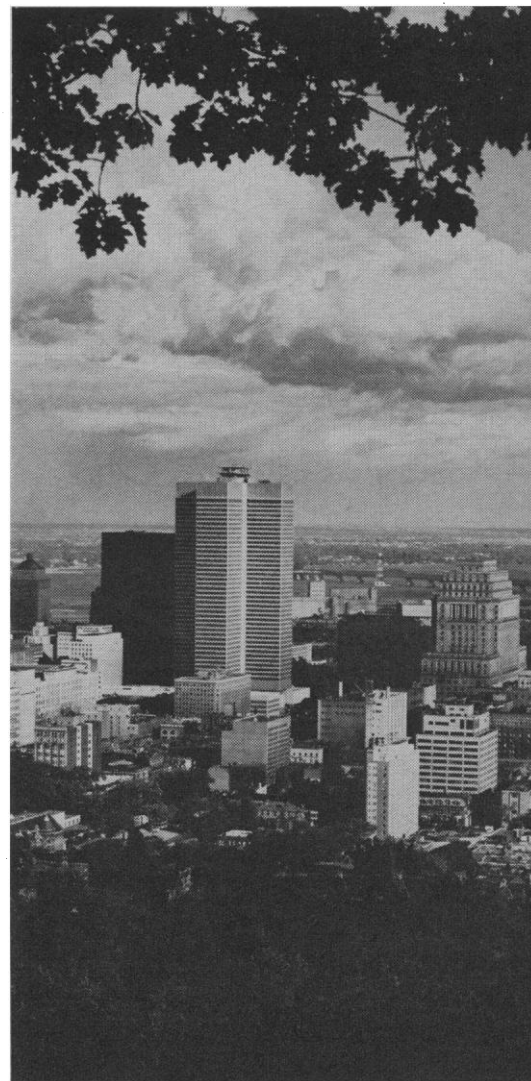
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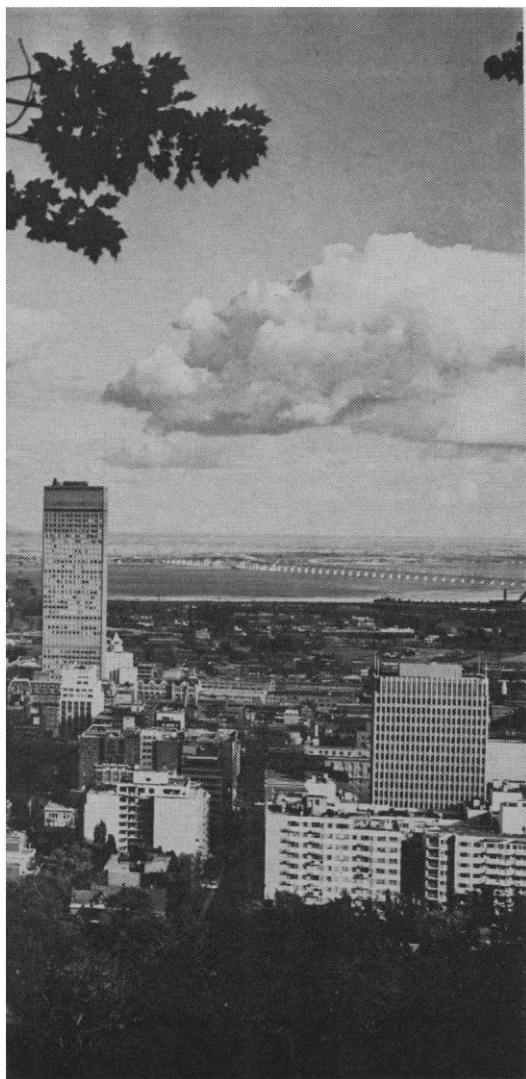
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MEETING • 26-31 DECEMBER

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The hotels for the AAAS Montreal meeting have established special, low rates and have reserved large blocks of rooms for the meeting.

Use the coupon below to make your hotel reservation in Montreal. Send your application to the AAAS Housing Bureau in Montreal, not to any hotel. Give a definite date and estimated hour of arrival, and also probable date of departure. The Housing Bureau will make the assignment and send you a confirmation promptly.

A rollaway bed can be added to any room at \$3.00 per night. Mail your application now to secure your first choice of accommodations.

Hotels with asterisks have unlimited free parking for guests. The Windsor has overnight free parking for guests, but not between the hours of 9 A.M. and 4 P.M.

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For a list of the headquarters of each participating society and section, see page 299, 17 July, *SCIENCE*.

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Windsor	8.50	15.00	15.00	25.00- 45.00
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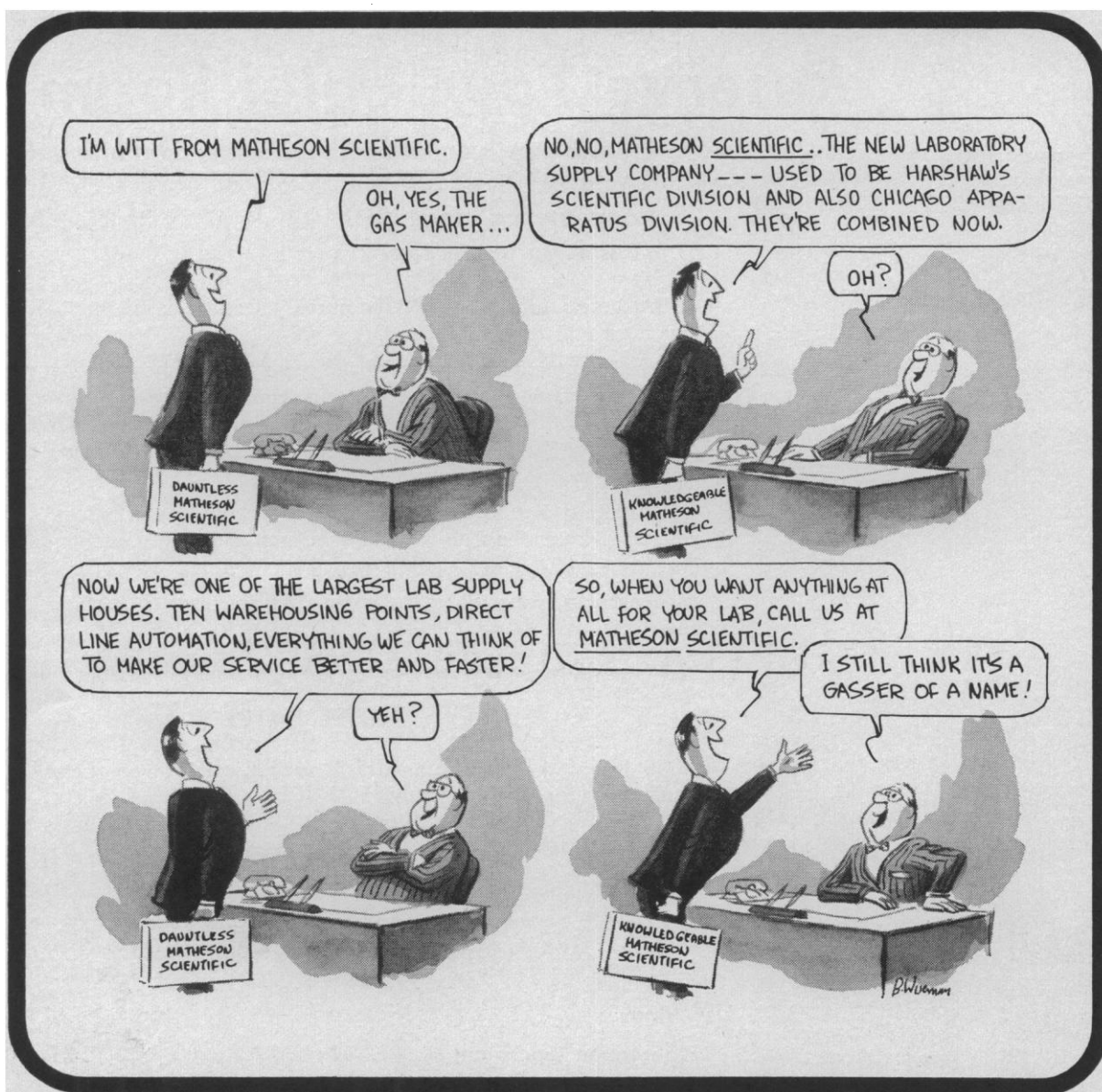
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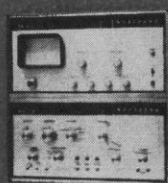
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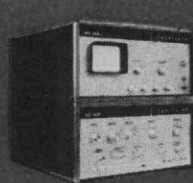
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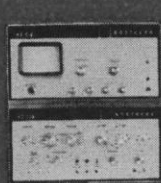
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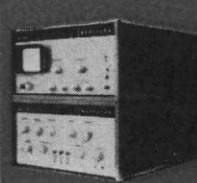
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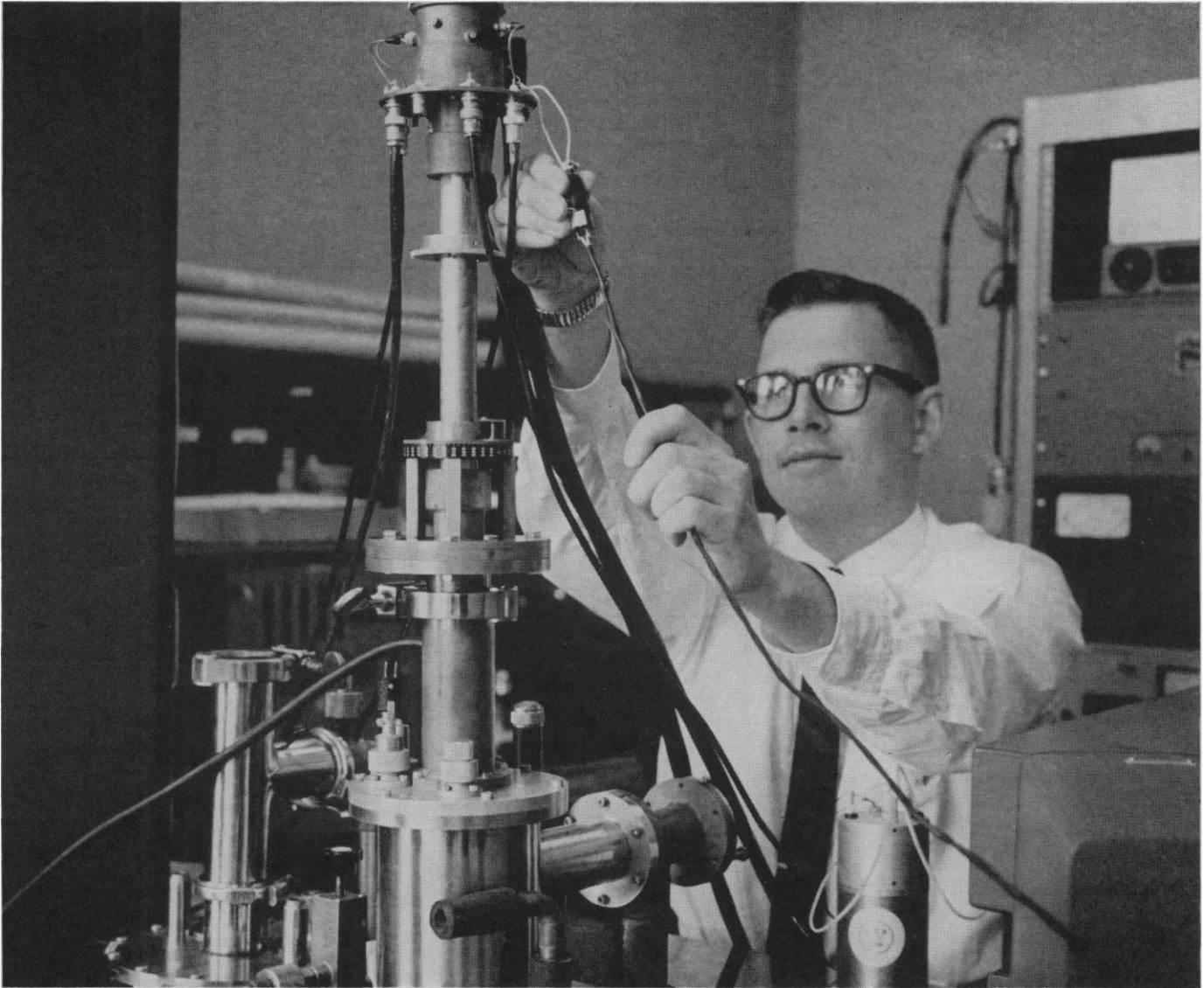
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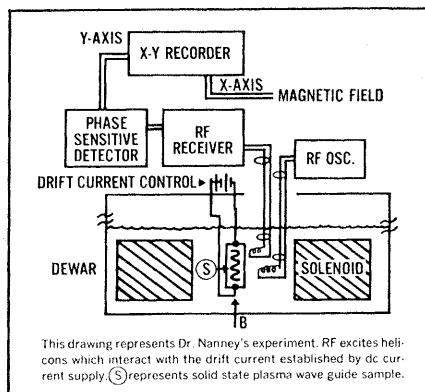
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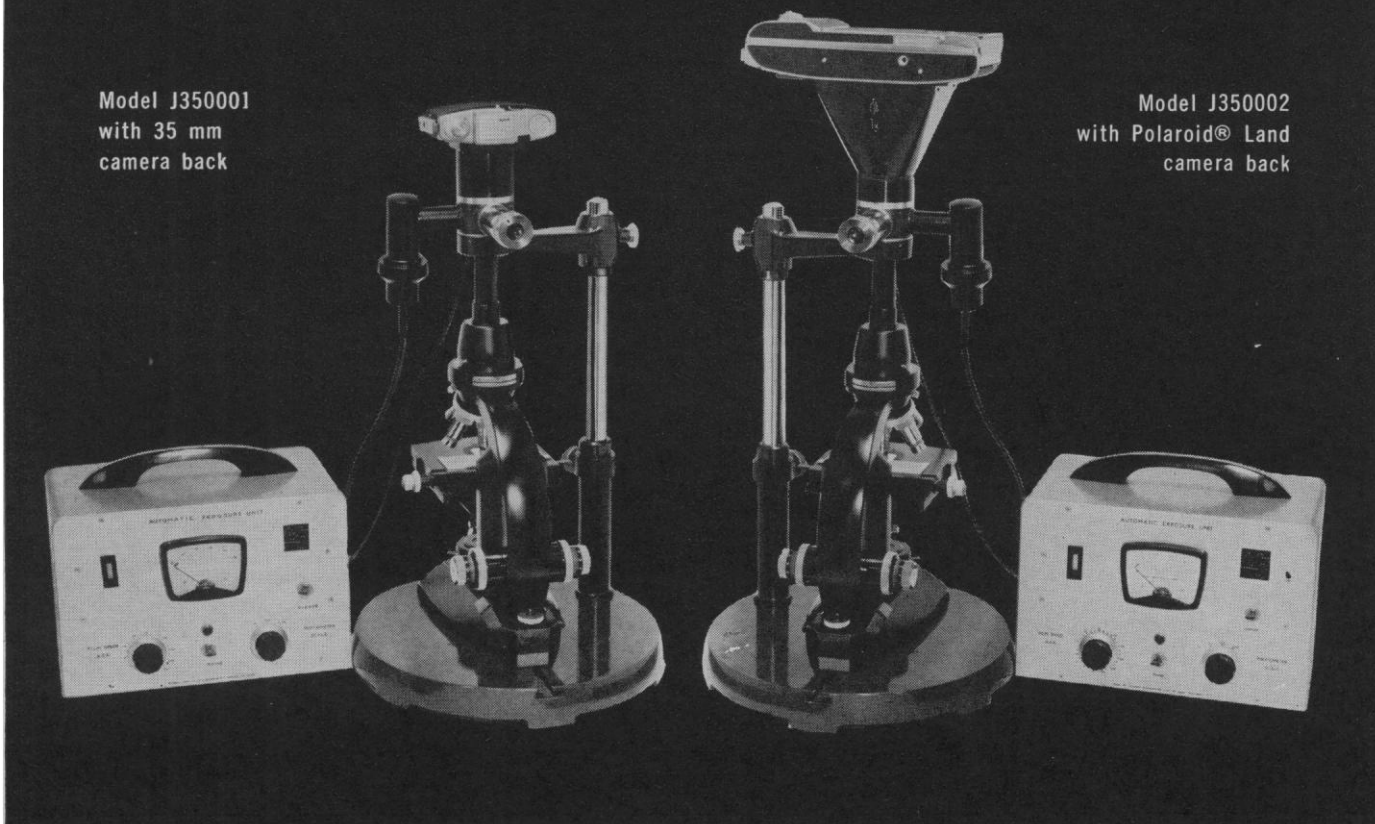
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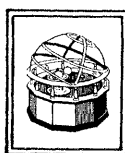
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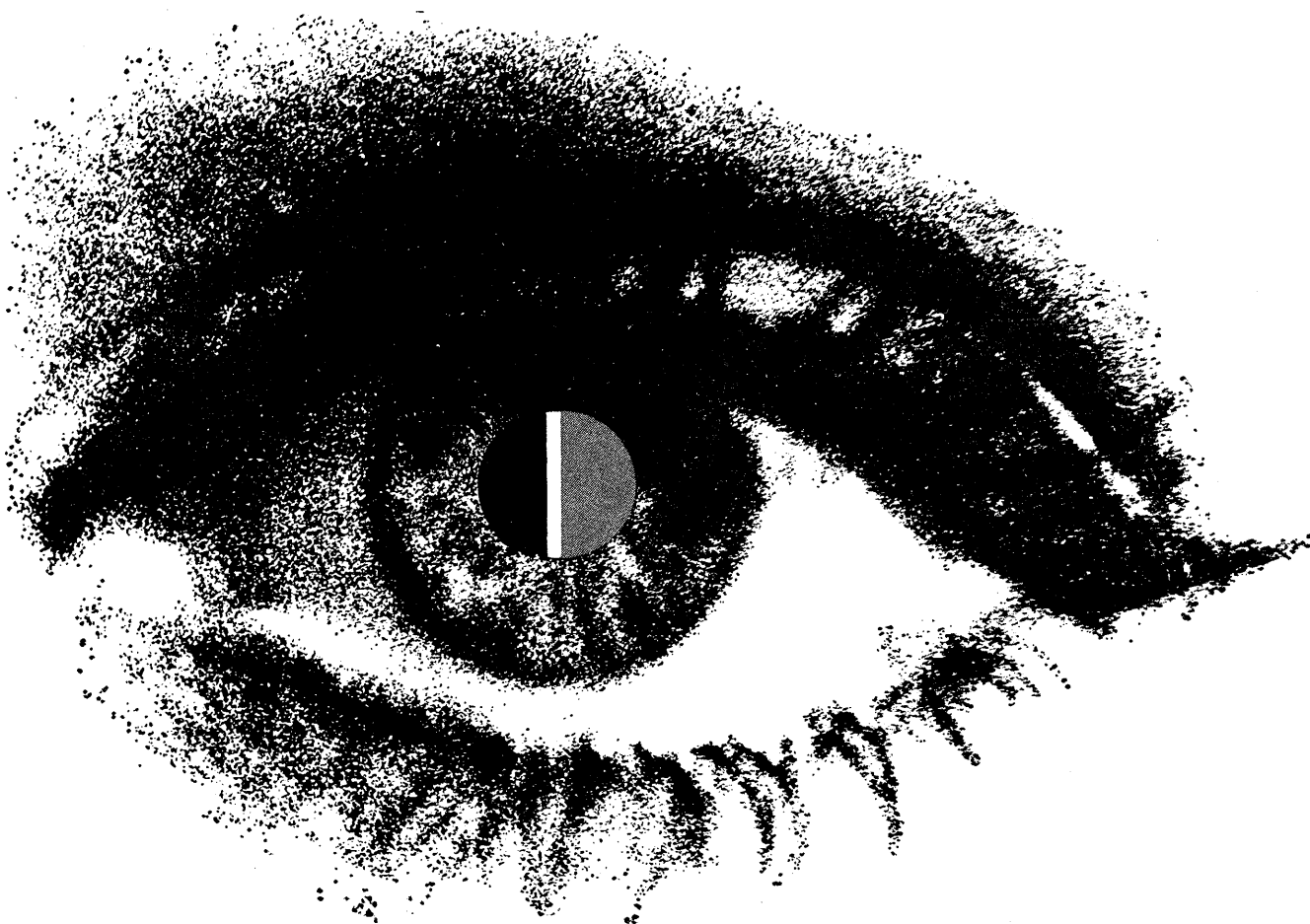


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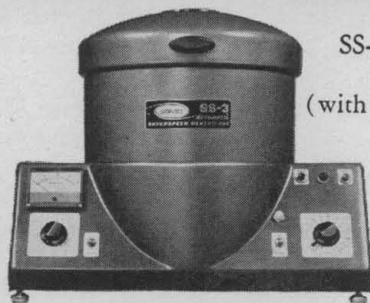
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Beam Surface Interactions in Ultra High Vacuum Systems

In high vacuums the quantity of gases adsorbed on the surfaces in the vacuum is much greater than that contained in the volume. New studies of the interactions of beams with surfaces are making possible further understanding of the reactions that occur at the interface of a solid and a gas in a high vacuum environment.

Within an ultra high vacuum system, the reactions that take place at the surface may have an appreciable effect on the surrounding vacuum and on the properties of the solid itself. Continued progress in the fields of semiconductors, thin films, the vacuum phenomena related to space exploration and others have pressed the state of the art of vacuum physics. This field has long been of interest but many tools were lacking. The explosion in vacuum technology since the early 1950's, however, has resulted in considerable basic progress.

Recently lower pressures have been achieved and gauges and other instrumentation improved. We are now able to probe some fundamental questions:

1. What is the surface of a substrate like? What are the surface atom layers like? Is there an oxidized layer?
2. What is sitting down or adsorbed on the surface? With what energy is it bound to the surface?
3. Beams of photons, electrons, ions or atoms may strike the surface. When they do, what happens? What are the interactions?

If we could answer all these questions we could develop a model with specific constants.

Honeywell scientists have chosen a research technique whereby particle beams are used to probe a surface in an ultra high vacuum environment. Components leaving the surface (that is, neutral atoms, neutral molecules and positive or negative ions) are analyzed with a mass spectrometer.

A series of studies is being made to see what effect varying parameters have on the components leaving the surface. The kind

of beam used, the kind of substrate and the temperature of the substrate as well as the content of the vacuum environment are varied.

Honeywell scientists use an evacuated system pumped by cryogenic and ion means resulting in a background pressure of about 10^{-10} Torr.

A target with surface temperatures controlled by heaters is mounted in an inter-

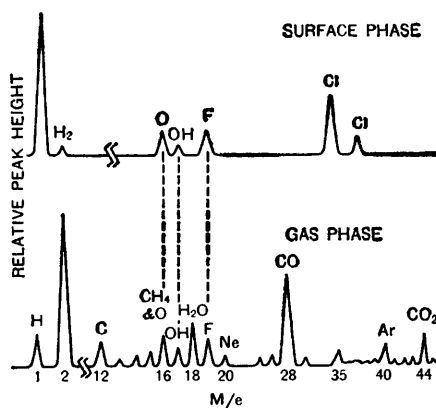


FIG. 1 MASS SPECTRUM

Lower Plot—gas phase components in the system at a total pressure of about 1×10^{-9} Torr.
Upper Plot—spectrum of surface phase obtained by bombarding single crystal nickel with electrons and analyzing the desorbed ion components.

action chamber and bombarded. All particles leaving the target pass through a mass spectrometer analyzer. Probing is done with very low density beams since the detection system permits recording of single ions or partial pressures as low as 10^{-16} Torr.

These experiments have produced several unexpected observations:

1. Electron bombardment will desorb neutral molecules, suggesting an interaction between the electron and the adsorbed molecule.
2. Ions are desorbed at the same time and appear to be fragments of the parent adsorbed molecule, suggesting ion fragment desorption.
3. No parent molecule ion desorption was observed.

These studies indicate the existence of a whole spectrum of electron-induced ion desorbed species, permitting the analysis of surface phase components in a manner similar to that used for gas phase components. The technique also permits continuous observation of surface components as parameters are varied.

Bombardment with U.V. photons has also desorbed neutral molecules. This suggests that photon interaction might be used to clean surfaces in a vacuum without any heating effects.

Work is continuing at Honeywell's Research Center and as more parameters are introduced even more understanding seems possible. As an example, a ruby laser was used to bombard the target causing thermal desorption and permanent degassing of an extremely small area of the target. This technique will permit further exploration and comparisons of the degassed spot and surrounding surfaces.

Although a long way from a final theory, the new techniques already have provided information of value in programs as diverse as electrical contacts, U.V. detectors and space instrumentation.

If you are engaged in vacuum surface physics and wish to know more about Honeywell's work in this area you are invited to write Mr. David Lichtman, Honeywell Research Center, Hopkins, Minnesota. If you are interested in a career at Honeywell's Research Center and hold an advanced degree, write Dr. John Dempsey, Director of Research at this same address.

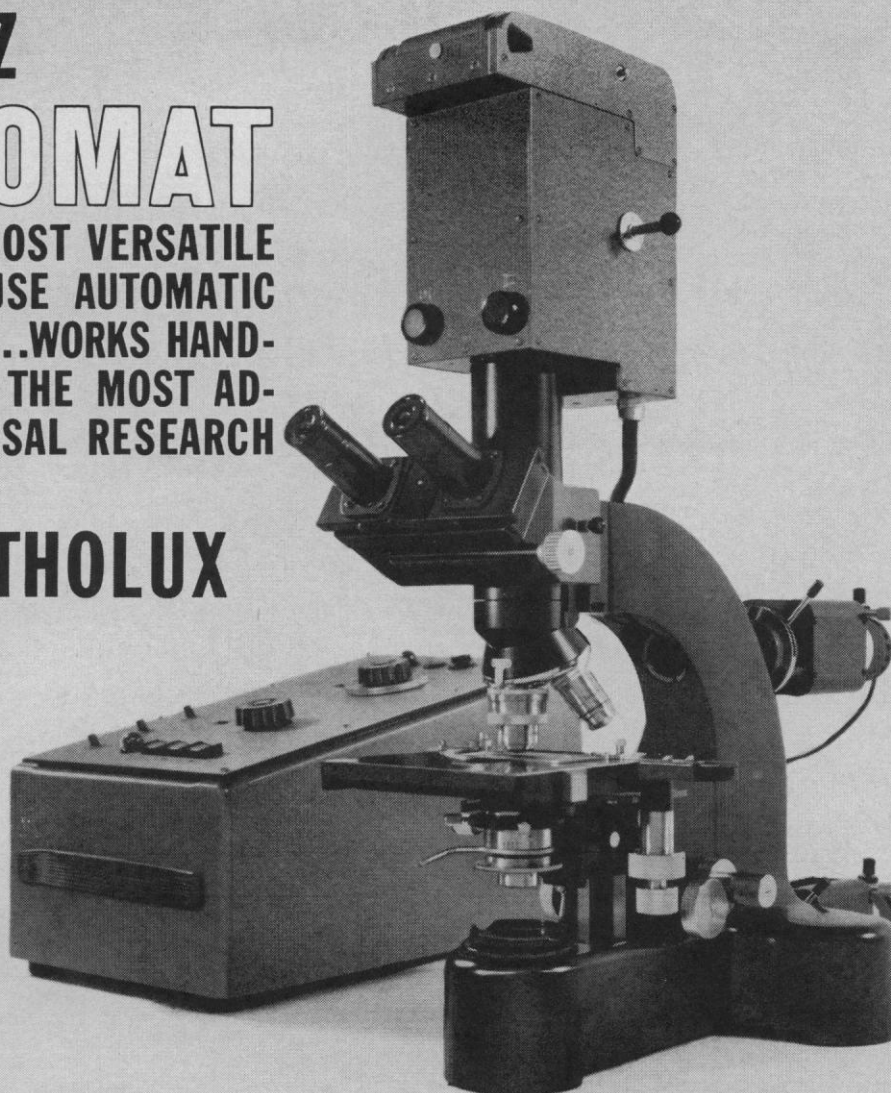


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The Globe Trotters

It is clear enough to most of us that we have gone from famine to feast in attempts to educate and "cross-fertilize" the medical and scientific public. Time was when an international congress was a big event, to be looked forward to as the money was saved for it, and not to be missed at any price. Contrast this with what is going on today. Wolstenholme [*Science* 145, 1337 (1964)] calls it "obese degeneration of scientific congresses," indicating rigidity of national societies, haphazard expansion of regional meetings, and the cynical extravagance of huge congresses from which both science and friendship are squeezed out. The time has certainly come to reexamine our motives and our needs when we talk of communication on an international level.

Obviously, most international congresses have become so large that the objective of exchanging scientific information has been lost. Who could have any worthwhile idea of what goes on when 20 or more papers of 10 minutes each are being read concurrently, day in and day out, especially when the translators are both overworked and often ineffective? The social gatherings, where one might have a chance to meet new friends, have lost the quality that makes people reach out to one another.

Since the big meetings are satisfying neither the educational nor the social needs of the participants, I suggest it is time we do some experimenting. First, small international clubs could be formed, or dissolved, according to the particular needs of various special groups. The important thing is that they be kept small, so that science rather than politics reigns. Whether these clubs should be on a regional basis or worldwide may be left to the discretion of the participants, but their meetings should be correlated and announced by some central worldwide agency.

Second, symposia could be arranged as the need arose, in which the speakers would be invited and the audience would be free to come or not as it liked. The content of the program could reflect specialized knowledge or, even better, interdisciplinary instruction. Such meetings would have far greater pedagogic value than the more usual symposium, with its 10-minute talks by speakers both good and bad. Meetings of this sort would draw relatively small audiences because of their specialized or interdisciplinary nature and their wide geographical representation.

Third, the enormous meetings currently in vogue might be greatly improved by having selected speakers in the morning sessions present their own work when it had matured to the point of having broad significance. In contrast to the morning sessions, the afternoons could be used for individual discussion of submitted abstracts covering much more specific and limited topics, and instead of sitting in a noisy lecture room, with people coming and going, the participants might meet in the speaker's own hotel room. A daily bulletin would indicate where he could be found. Wouldn't it be nice to know that your friend Joe could be consulted in room X of hotel Z between 2:00 and 5:00 p.m., instead of only at the cocktail hour? Wouldn't it be good to meet face to face with the investigator and discuss mutual interests? This arrangement would satisfy the needs of both science and friendship, the two sought-after ingredients of a congress.

Surely there are international secretariats willing to organize new ways of conducting meetings. Equally surely, many of us would understand if a particular experiment failed. And we would welcome the opportunity to applaud if it would get all of us out of the formalistic and generally arid international Brownian movement.

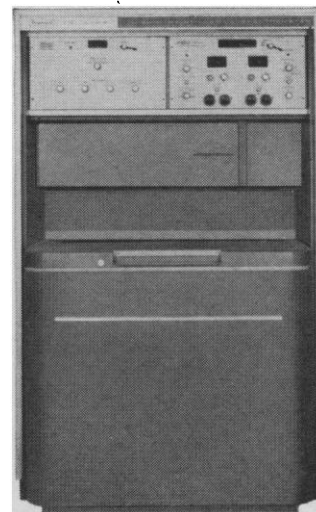
—IRVINE H. PAGE, *Research Division, Cleveland Clinic Foundation, Cleveland, Ohio*

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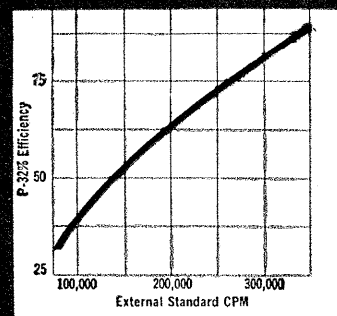
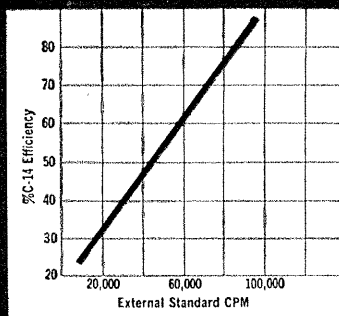
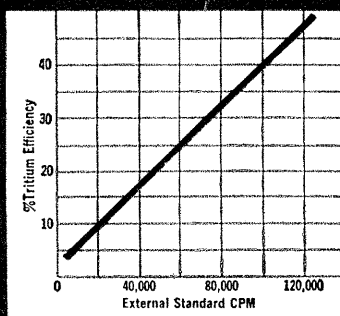
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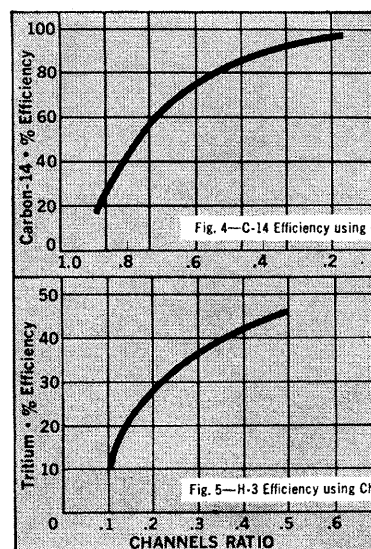


Fig. 4—C-14 Efficiency using Channels Ratio

Fig. 5—H-3 Efficiency using Channels Ratio



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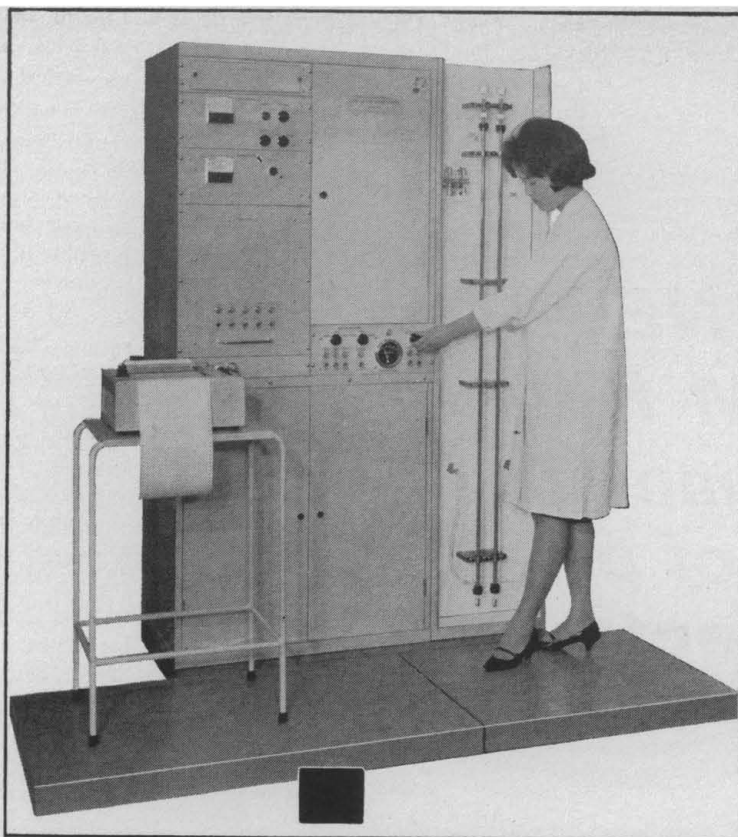
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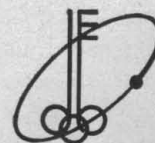
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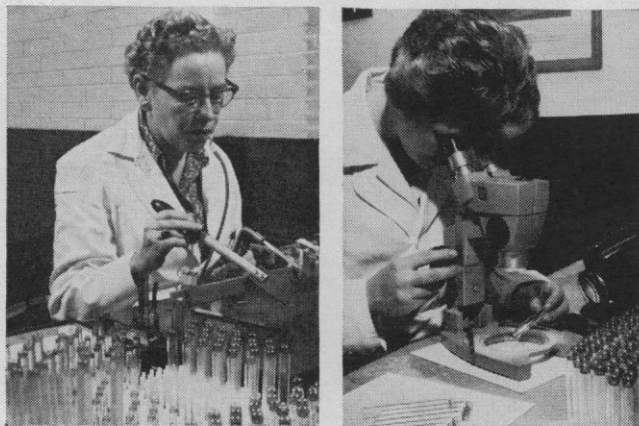


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On the third day Jonathan Lanman (State University of New York, Downstate Medical Center) traced the ontogeny and phylogeny of immunologic responsiveness. The results of his grafting experiments in pregnant animals were discussed in terms of prevalent theories to explain the lack of rejection of the physiologic placental "homograft." The work of Kalmutz on production of antibody by the embryonic opossum was described by Sharman. Suggestions for newer immunologic approaches to the prevention of erythroblastosis were made, based on the differential permeability of the placenta to various γ -globulins. Most of the data indicated that a physical break in the placental "barrier" was required to initiate the events culminating in clinical erythroblastosis. On the final afternoon, Jack Pritchard (Southwestern Medical School) outlined the major topics covered during the preceding three days.

The conference was supported by a grant from the National Institute of Child Health and Human Development. A complete transcript of the proceedings is scheduled for publication prior to next year's meeting. The goals of this series of conferences over the next four years include discussion of the placental phase of intrauterine development, the birth process, and environmental and social factors concerned with fetal homeostasis.

RALPH M. WYNN

Department of Obstetrics and Gynecology, State University of New York, Downstate Medical Center, Brooklyn

Forthcoming Events

November

30-2. New Horizons in Solid State Electronics, seminar, Rochester, N.Y. (A. DeWinter, Rochester Inst. of Technology, Extended Services Division, Rochester 8)

30-2. Pacific Air Force Medical conf., Fuchu Air Station, Tokyo, Japan. (Lt. Col. R. J. Carter, USAF Hospital Tachikawa, APO 323, San Francisco, Calif.)

30-2. Thalamic Regulation of Sensorimotor Activities, symp., New York, N.Y. (M. D. Yahr, New York Neurological Inst., 710 W. 168 St., New York 10032)

30-3. Atomic Industrial Forum, annual, San Francisco, Calif. (Atomic Industrial Forum, 850 Third Ave., New York, N.Y.)

30-3. Entomological Soc. of America, annual, Philadelphia, Pa. (ES, 4603 Calvert Rd., College Park, Md.)

30-3. American Nuclear Soc., winter meeting, San Francisco, Calif. (W. H. Nutting, Pacific Gas and Electric Co., 245 Market St., San Francisco)

1. **Food Standards**, symp., Washington, D.C. (Food Law Inst., Inc., 205 E. 42 St., New York 10017)

1. **New Polyolefin Copolymer Plastics**, regional technical conf., Philadelphia, Pa. (E. A. Jeffreys, Registration Chairman, c/o Allied Chemical Corp., 901 Catalapa Rd., Warminster, Pa.)

2-4. **Communication Wires and Cables**, 13th annual symp., Atlantic City, N.J. (J. Spergel, WCS, U.S. Army Electronics R&D Laboratories, Fort Monmouth, N.J. 07703. Attn: SELRA/PEE)

2-5. **Crystalline Lens**, symp., Minneapolis, Minn. (J. E. Harris, Dept. of Ophthalmology, Univ. of Minnesota Medical School, Minneapolis 55455)

3-5. **American Chemical Soc.**, 20th annual southwestern regional meeting, Shreveport, La. (ACS, 1155 16th St, NW, Washington, D.C. 20036)

3-5. **Sociological Questions Pertaining to the Medical Field**, East German Hygiene Soc., symp., Berlin, East Germany. (German Acad. of Sciences, Mohrenstrasse 39, Berlin W.8.)

3-5. **Texas Acad. of Science**, annual, Dallas. (S. O. Brown, Texas A&M Univ., Box 33, College Station)

4. **Central States Society of Industrial Medicine and Surgery**, Iowa City, Iowa. (Dean, State Univ. of Iowa College of Medicine, Iowa City 52241)

4-5. **American Rheumatism Assoc.**, annual, Washington, D.C. (J. A. Coss, Jr., 20 E. 76 St., New York 10021)

4-5. **American Rheumatism Assoc.**, 11th interim scientific session, National Institutes of Health, Bethesda, Md. (G. W. Speyer, ARA, 10 Columbus Circle, New York 10019)

4-5. **Association for Research in Nervous and Mental Diseases**, New York, N.Y. (R. J. Masselink, ARNMD, 700 W. 168 St., New York 10022)

4-5. **Oxygen in Biosystems**, basic science symp., New York, N.Y. (Miss J. Newkirk, New York Heart Assoc., 10 Columbus Circle, New York 10019)

4-5. **Oxygen**, symp., New York, N.Y. (A. P. Fishman, New York Heart Assoc., 10 Columbus Circle, New York 10019)

4-5. **Southern Soc. for Pediatric Research**, Houston, Tex. (F. K. Edwards, Emory Univ. School of Medicine, Thomas K. Glenn Memorial Bldg., 69 Butler St., Atlanta, Ga. 30303)

4-6. **American Psychoanalytic Assoc.**, fall meeting, New York, N.Y. (APA, 1 E. 57 St., New York 10022)

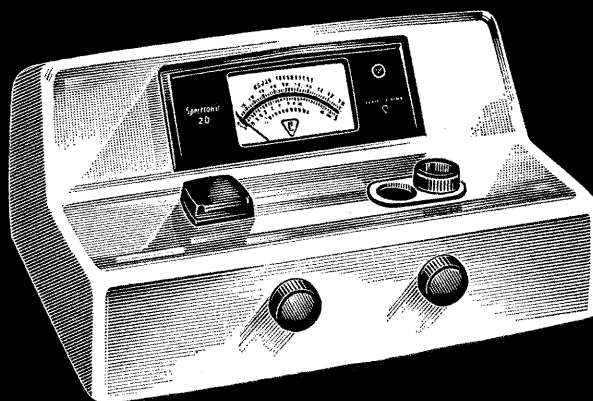
4-9. **American Acad. of Dermatology**, Chicago, Ill. (S. E. Huff, AAD, 636 Church St., Evanston, Ill.)

5-6. **Academy of Psychoanalysis**, mid-winter meeting, New York, N.Y. (A. H. Rifkin, AP, 125 E. 65 St., New York)

6. **American Acad. of Dental Medicine**, mid-annual meeting, New York, N.Y. (S. C. Conrad, 133-28 228th Street, Laurelton, Long Island, N.Y.)

6-10. **American Inst. of Chemical Engineers**, annual, Boston, Mass. (J. Henry, AIChE, 345 E. 47 St., New York 10017)

6-12. **Latin American Congr. on Microbiology**, 3rd, Bogota, Columbia. (O. Juliao, Instituto Nacional de Salud, Aptdo, Aereo 3495, Bogota)



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7. American Institute of Mining, Metallurgical and Petroleum Engineers, annual, Tucson, Ariz. (H. N. Appleton, AIME, 345 E. 47 St., New York 10017)

7-9. Performance of High Temperature Systems, Pasadena, Calif. (G. S. Bahn, 16902 Bollinger Dr., Pacific Palisades, Calif. 90272)

7-9. Southern Surgical Assoc., meeting, Hot Springs, Va. (G. H. Yeager, University Hospital, Baltimore 1, Md.)

7-11. Chemical Effects Associated with Nuclear Reactions and Radioactive Transformations, symp., Vienna, Austria. (P. Ghelardoni, Div. of Scientific and Technical Information, International Atomic Energy Agency, Karntnerring 11, Vienna 1)

8-9. Ciba Foundation Guest Symposium on Measurement of Oxygen Tension, London, England. (Ciba Foundation, 41 Portland Pl., London, W.1)

8-11. American Soc. of Agricultural Engineers, New Orleans, La. (J. L. Butt, ASAE, 420 Main St., St. Joseph, Mich.)

9. Space Astronomy, Washington, D.C. (S. Koslov, Nuclear Test Detection, Advanced Research Projects Agency, Washington, D.C. 20301)

9-11. Antiviral Substances, conf., New York Acad. of Sciences, New York, N.Y. (B. K. Forscher, Publications Section, Mayo Clinic, Rochester, Minn.)

11-12. Cell Replication, symp., New York Univ. School of Medicine, New York, N.Y. (Dean, New York Univ. School of Medicine, New York 10016)

12-15. American Acad. of Optometry, annual, Columbus, Ohio. (C. C. Koch, AAO, 1506-08 Foshay Tower, Minneapolis 2, Minn.)

14-16. Hahnemann Medical College, 13th symp., Philadelphia, Pa. (J. H. Moyer, Dept. of Medicine, Hahnemann Medical College, Philadelphia)

14-16. Reticuloendothelial Soc., meeting, New York, N.Y. (N. R. Di Luzio, Univ. of Tennessee Medical Units, Memphis)

14-17. Adipose Tissue Metabolism and Obesity, conf., New York, N.Y. (B. N. Brodoff, New York Acad. of Sciences, 2 E. 63 St., New York)

14-18. Conference on Nuclear Electronics, Bombay, India. (International Atomic Energy Agency, Karntnerring 11, Vienna 1, Austria)

14-22. International Geological Congr., 22nd, New Delhi, India. (Secretary-General of the Congress, c/o Geological Survey of India, 27, Chowringhee, Calcutta 13)

14-22. International Mineralogical Assoc., 4th general, New Delhi, India. (J. V. Smith, c/o Dept. of Geophysical Sciences, University of Chicago, Chicago, Ill.)

15-16. Periodic Functions in Live Matter, Czechoslovak Meteorological Soc., conf., Prague. (J. Novak, First "Prof. Konopik" Dermatology Clinic, Prague 2, Apolinarska 4)

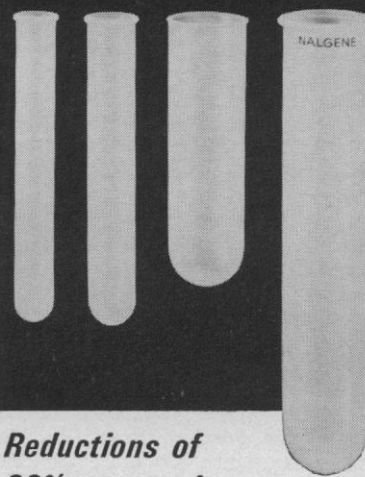
15-18. High Energy Astronomy, symp., Univ. of Texas, Austin. (Office of Aerospace Research, 4th and Independence Avenue, SW, Washington, D.C. 20233)

15-18. Relativistic Astrophysics, symp., Univ. of Texas and Southwestern Center for Advanced Studies, Austin. (Mrs. J. Wardlaw, Dept. of Physics, Physics Bldg. 438, Univ. of Texas, Austin 78712)

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16-21. Inter-American Congr. of **Psychology**, 9th annual, Miami, Fla. (V. D. Sanua, Yeshiva Univ., 110 W. 57 St., New York 10019)

20-24. **Theoretical and Applied Mechanics**, congr., Kanpur, India. (M. K. Jain, Indian Inst. of Technology, Kharagpur, India)

21-23. **American Physical Soc.**, Berkeley, Calif. (W. Whaling, California Inst. of Technology, 1201 East California St., Pasadena)

21-23. **Biology of Marine Microorganisms**, conf., Univ. of California, Berkeley. (R. Newton, Letters and Science Extension, Univ. of California, Berkeley 94720)

26-29. **Society of Systematic Zoology/American Soc. Zoologists/Herpetologists' League**, annual, Univ. of Tennessee, Knoxville. (J. G. Rozen, Jr., Dept. of Entomology, SSZ, American Museum Natural History, Central Park West and 79th St., New York, N.Y.; A. G. Richards, ASZ, Dept. of Entomology, Univ. of Minnesota, St. Paul 55101; J. M. Legler, HL, Dept. of Zoology, Univ. of Utah, Salt Lake City)

26-31. **American Assoc. for the Advancement of Science**, annual, Montreal, Canada. (R. L. Taylor, AAAS, 1515 Massachusetts Ave., NW, Washington, D.C. 20005)

The following 45 organizations will meet in conjunction with the AAAS annual meeting in Montreal, Canada, 26-31 December:

Academy Conference (J. T. Self, Dept. of Zoology, Univ. of Montreal, Montreal)

Academy of Psychoanalysis (M. Ullman, Maimonides Hospital, 4802 Tenth Ave., Brooklyn 19, N.Y.)

Alpha Epsilon Delta (M. L. Moore, 7 Brookside Circle, Bronxville, N.Y. 10708)

AAAS Commission on Science Education (J. R. Mayor, AAAS, 1515 Massachusetts Ave., NW, Washington, D.C. 20005)

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American Economic Association (H. E. English, Private Planning Assoc., 712 Sun Life Bldg., Montreal 2)

American Meteorological Soc. (K. C. Spengler, AMS, 45 Beacon St., Boston, Mass.)

American Nature Study Soc. (V. Rockcastle, Cornell Univ., Ithaca, N.Y.)

American Soc. of Naturalists (S. Granick, Rockefeller Inst., 66th St. and York Ave., New York 10021)

American Political Science Assoc. (E. B. Skolnikoff, Massachusetts Inst. of Technology, Cambridge)

American Soc. of Criminology (W. C. Reckless, Dept. of Sociology, Ohio State Univ., Columbus)

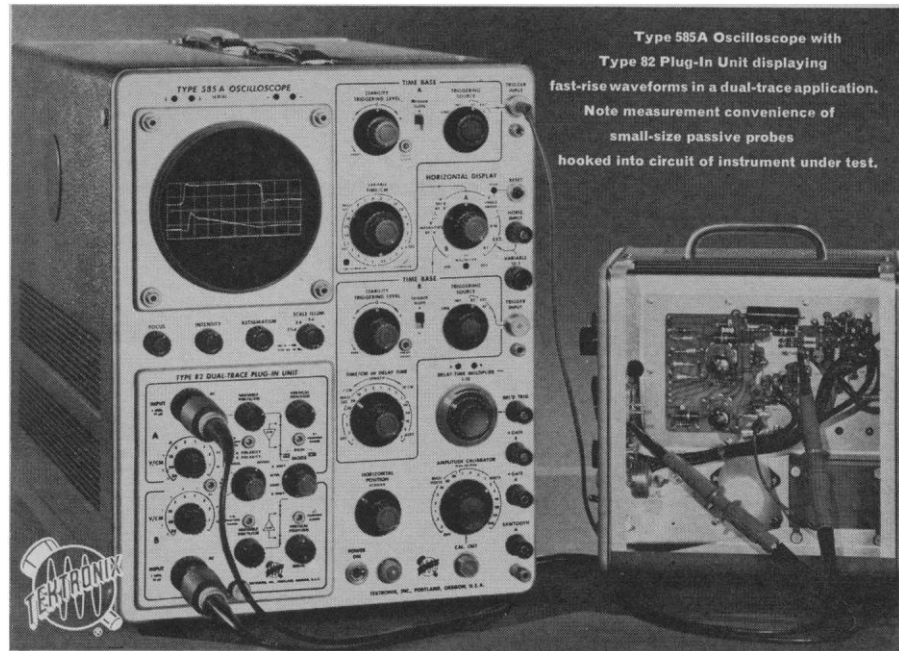
American Soc. for Microbiology (S. J. Ajl, Director of Research, Albert Einstein Medical Center, York and Tabor Rds., Philadelphia 41, Pa.)

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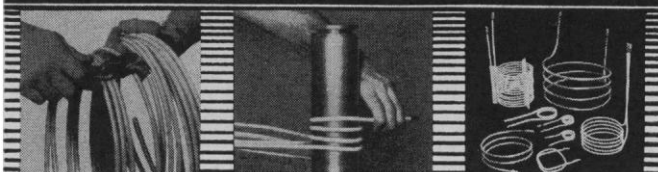
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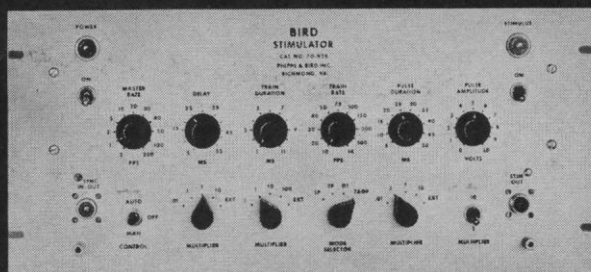
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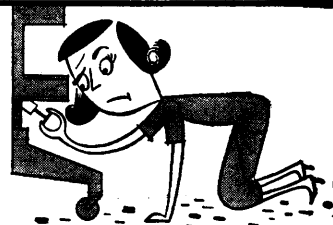
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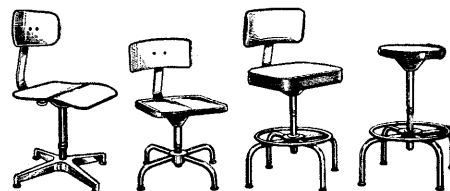
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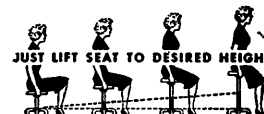
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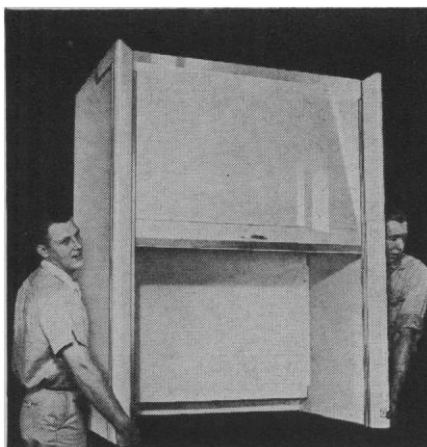
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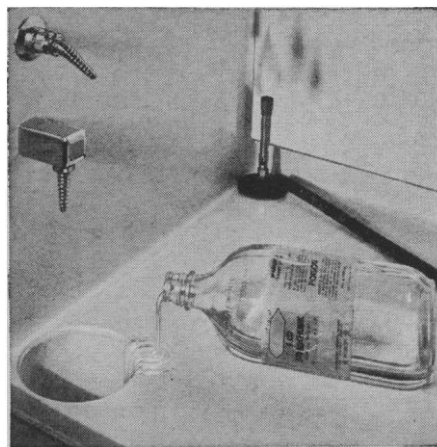


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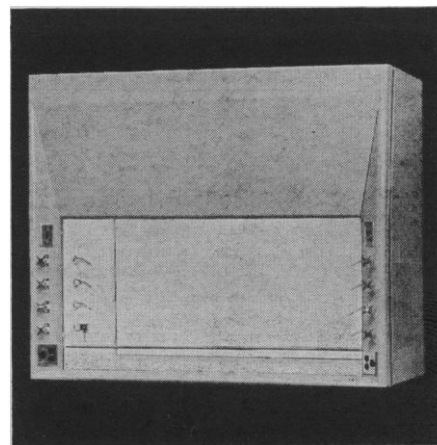
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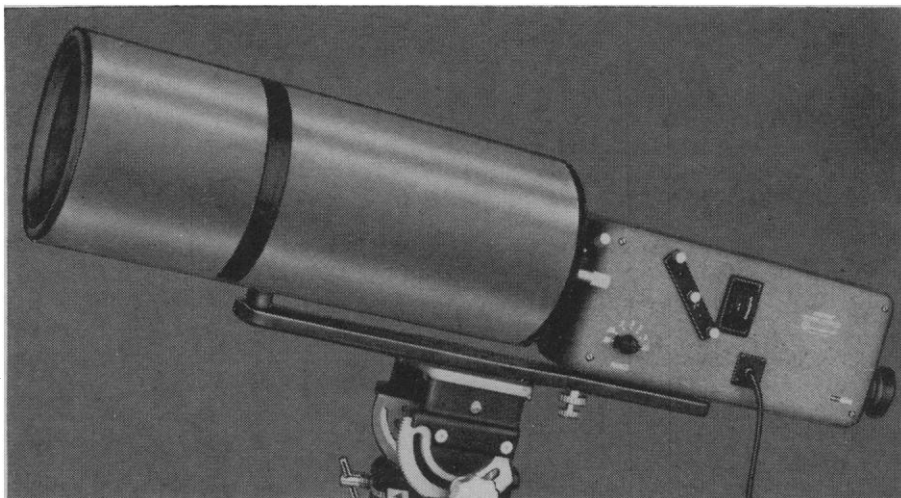
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27-29. American **Philosophical Assoc.**, Boston, Mass. (L. E. Hahn, Dept. of Philosophy, Southern Illinois Univ., Carbondale 62903)

27-30. American **Statistical Assoc.**, Chicago, Ill. (D. C. Riley, ASA, 810 18th St., NW, Washington, D.C. 20006)

28-30. American **Economic Assoc.**, annual, Chicago, Ill. (H. F. Williamson, AEA, 629 Noyes St., Evanston, Ill.)

28-30. American **Geophysical Union**, Seattle, Wash. (W. W. Kellogg, Rand Corporation, 1700 Main St., Santa Monica, Calif.)

28-30. **Linguistic Soc. of America**, New York, N.Y. (A. A. Hill, Post Office Box 8120, University Station, Austin, Tex. 79712)

28-30. Western Soc. of **Naturalists**, Univ. of Washington, Seattle. (I. A. Abbott, Hopkins Marine Station of Stanford Univ., Pacific Grove, Calif.)

30. **Scientific Research Soc. of America**, Cleveland, Ohio. (D. B. Prentice, 51 Prospect St., New Haven 11, Conn.)

January

5-7. **Glass Formation, Phase Equilibria, Nucleation and Crystal Growth**, symp., Sheffield, England. (D. Hawkworth, Soc. of Glass Technology, Thornton, 20 Hallam Gate Rd., Sheffield 10)

5-8. **Solid State Physics**, 2nd annual conf., H. H. Wills Physics Laboratory, University of Bristol, England. (Administrative Assistant, Inst. of Physics and Physical Soc., 47, Belgrave Square, London, S.W.1)

6-8. **Industrial Electronics and Control Instrumentation**, 13th annual conf., Philadelphia, Pa. (E. Weiss, Sun Oil Co., Marcus Hook, Pa.)

6-9. **Psychopharmacological Conf.**, Czechoslovak Medical Soc., Psychiatry Section, Jeseník Spa. (M. Vojtechovsky, Budejovicka 800, Pavilion A1, Prague, Czechoslovakia)

8-9. **Orthopaedic Research Society**, New York, N.Y. (R. A. Calandruccio, 869 Madison Ave., Memphis, Tenn.)

9-14. American Acad. of **Orthopedic Surgeons**, annual, New York, N.Y. (H. K. Hart, AAOS, 29 E. Madison, Chicago 2, Ill.)

11-14. **Civilian and Military Uses of Aerospace**, conf., New York, N.Y. (I. B. Laskowitz, New York Acad. of Sciences, 2 E. 63 St., New York)

12-14. **Reliability and Quality Control**, symp., Miami, Fla. (H. D. Hulme, Westinghouse R&D Center, Bldg. 601-1346, Churchill Boro, Pittsburgh, Pa.)

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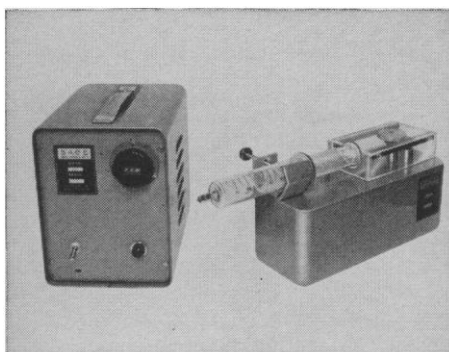
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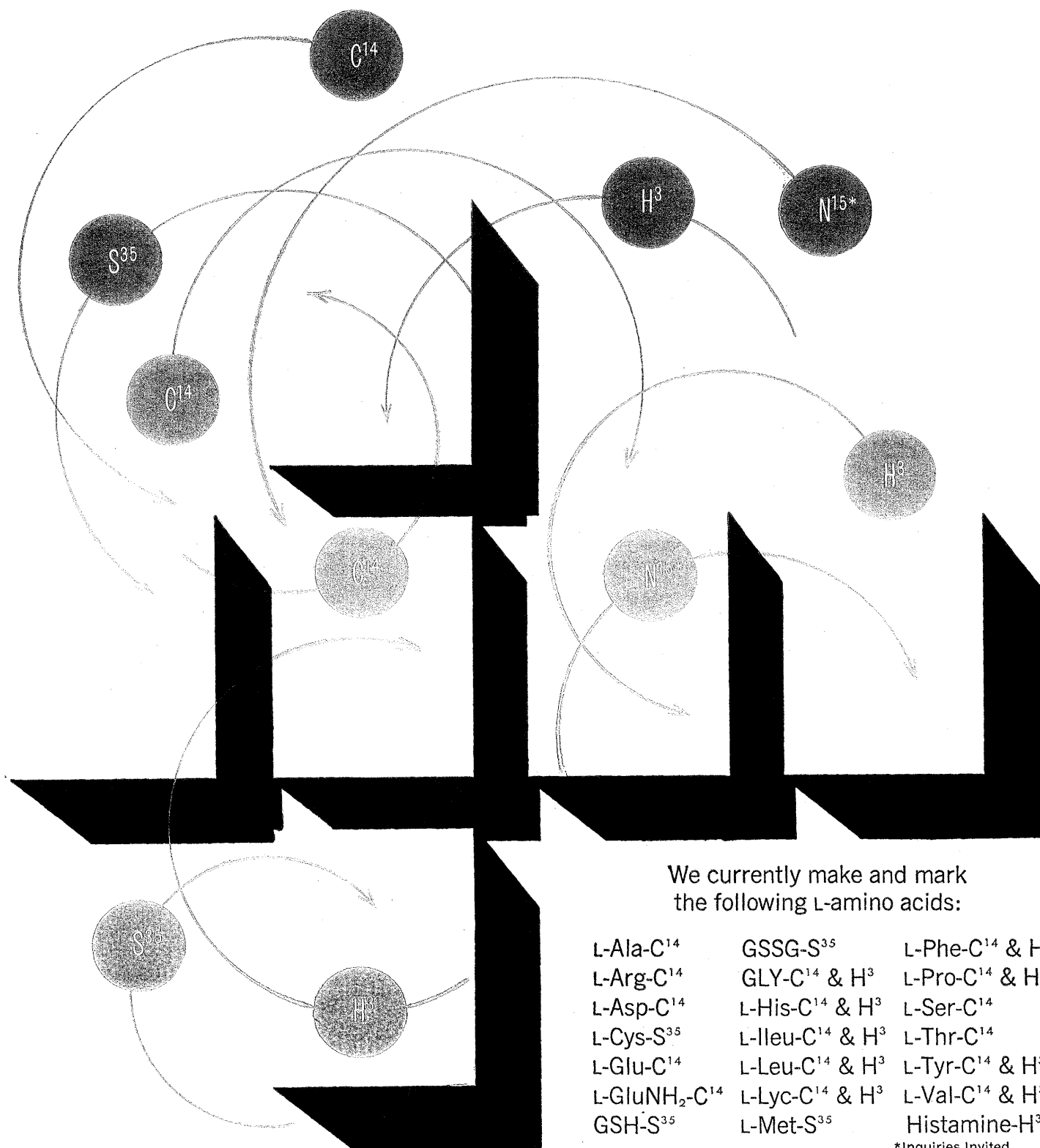
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The material in this section is prepared by the following contributing writers:

Denis J. Prager (D.J.P.), Laboratory of Technical Development, National Heart Institute, Bethesda 14, Md. (medical electronics and biomedical laboratory equipment).

Joshua Stern (J.S.), Basic Instrumentation Section, National Bureau of Standards, Washington 25, D.C. (physics, computing, electronics, and nuclear equipment).

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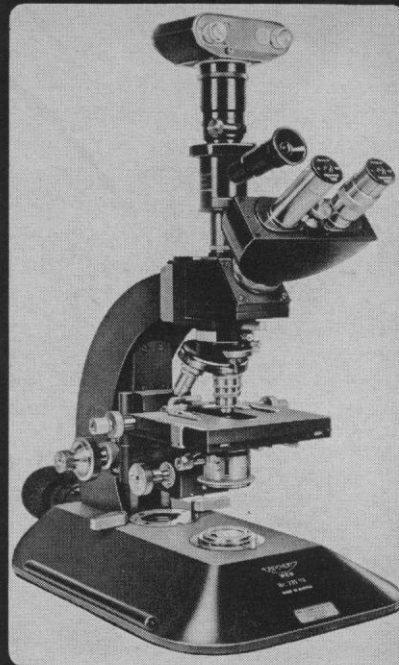
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Collected Papers of P. L. Kapitza. vol. 1, 1916-1934. D. ter Haar, Ed. Pergamon, London; Macmillan, New York, 1964. 519 pp. Illus. \$20.

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Elementary Dynamics of Particles. H. W. Harkness. Academic Press, New York, 1964. 229 pp. Illus. Paper, \$2.95; cloth, \$6.

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Geometry of Manifolds. Richard L. Bishop and Richard J. Crittenden. Academic Press, New York, 1964. 285 pp. Illus. \$10.50.

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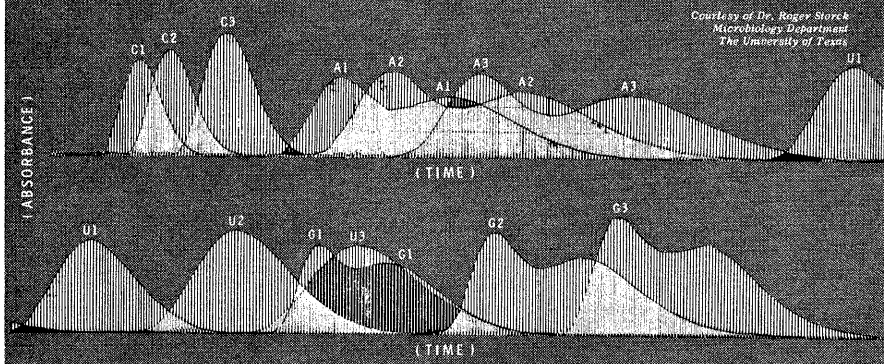
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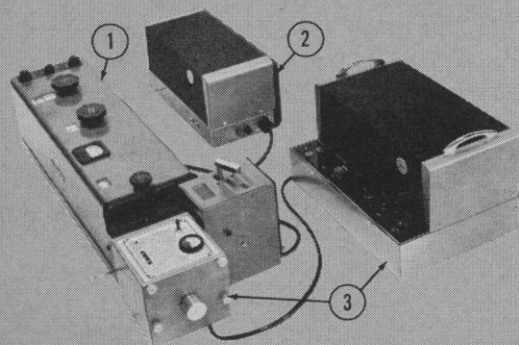


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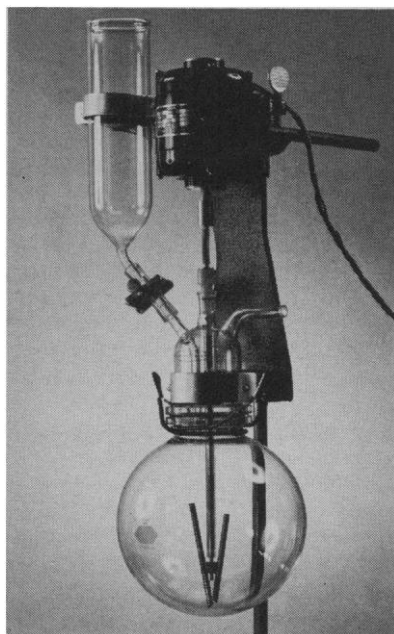
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Strong-Interaction Physics. A lecture note volume. Maurice Jacob and Geoffrey F. Chew. Benjamin, New York, 1964. 166 pp. Illus. Paper, \$4.95; cloth, \$9.

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Topics in Phosphorus Chemistry. vol. 1. Martin Grayson and Edward J. Griffith, Eds. Interscience (Wiley), New York, 1964. 270 pp. Illus. \$12. Five topics: "Synthesis of organophosphorus compounds from elemental phosphorus" by M. M. Rauhut; "Nucleophilic displacement reactions on phosphorus halides and esters by Grignard and Lithium reagents" by K. Darrell Berlin, T. Howard Austin, Melbert Peterson, and M. Nagabhushanam; "The Michaelis-Arbuzov and related reactions" by Ronald G. Harvey and Eugene R. DeSombre; "Lower oxo acids of phosphorus and their salts" and "Condensed phosphates containing other oxo acid anions" by Shigeru Ohashi.

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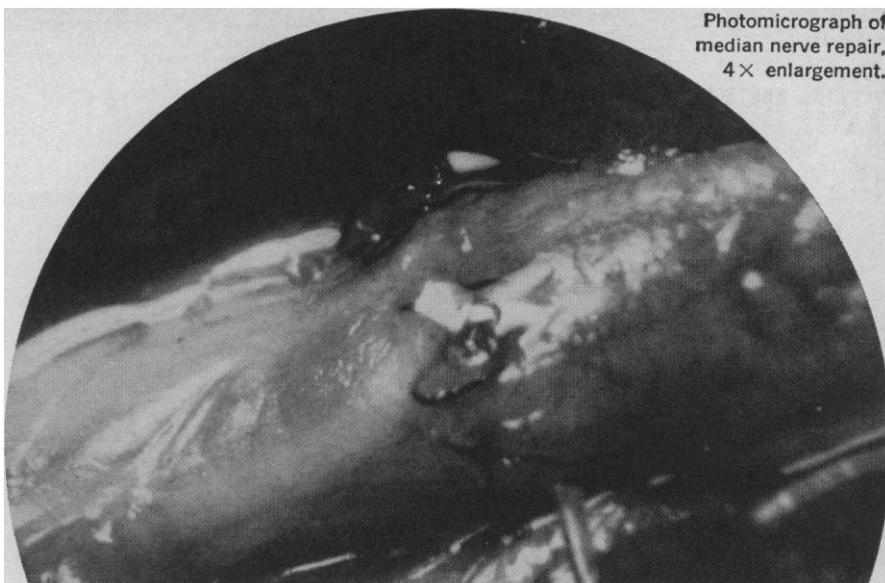
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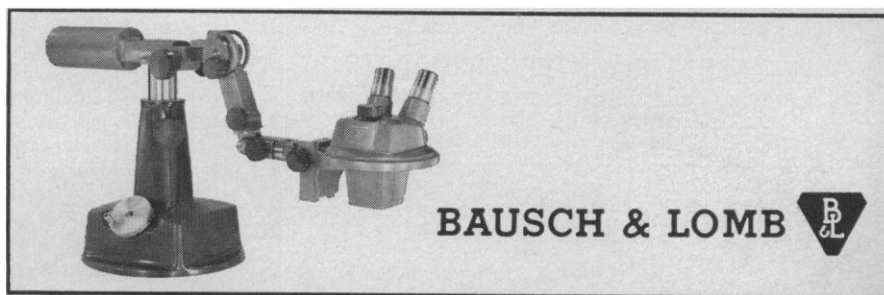
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Photomicrograph courtesy James W. Smith, M.D., F.A.C.S., Assistant Attending Surgeon (Plastic Surgery), The New York Hospital, Assistant Professor of Clinical Surgery, Cornell University Medical Center. Author "Microsurgery of Peripheral Nerves," Plastic and Reconstructive Surgery, Vol. 33, No. 4, April 1964.



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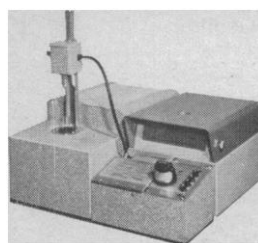


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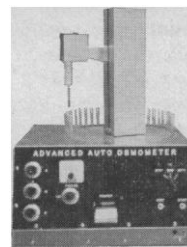
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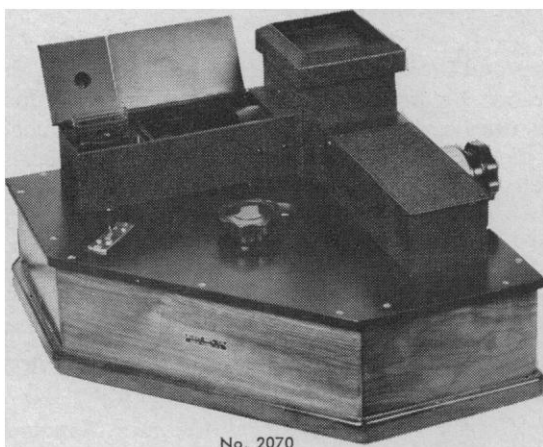


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