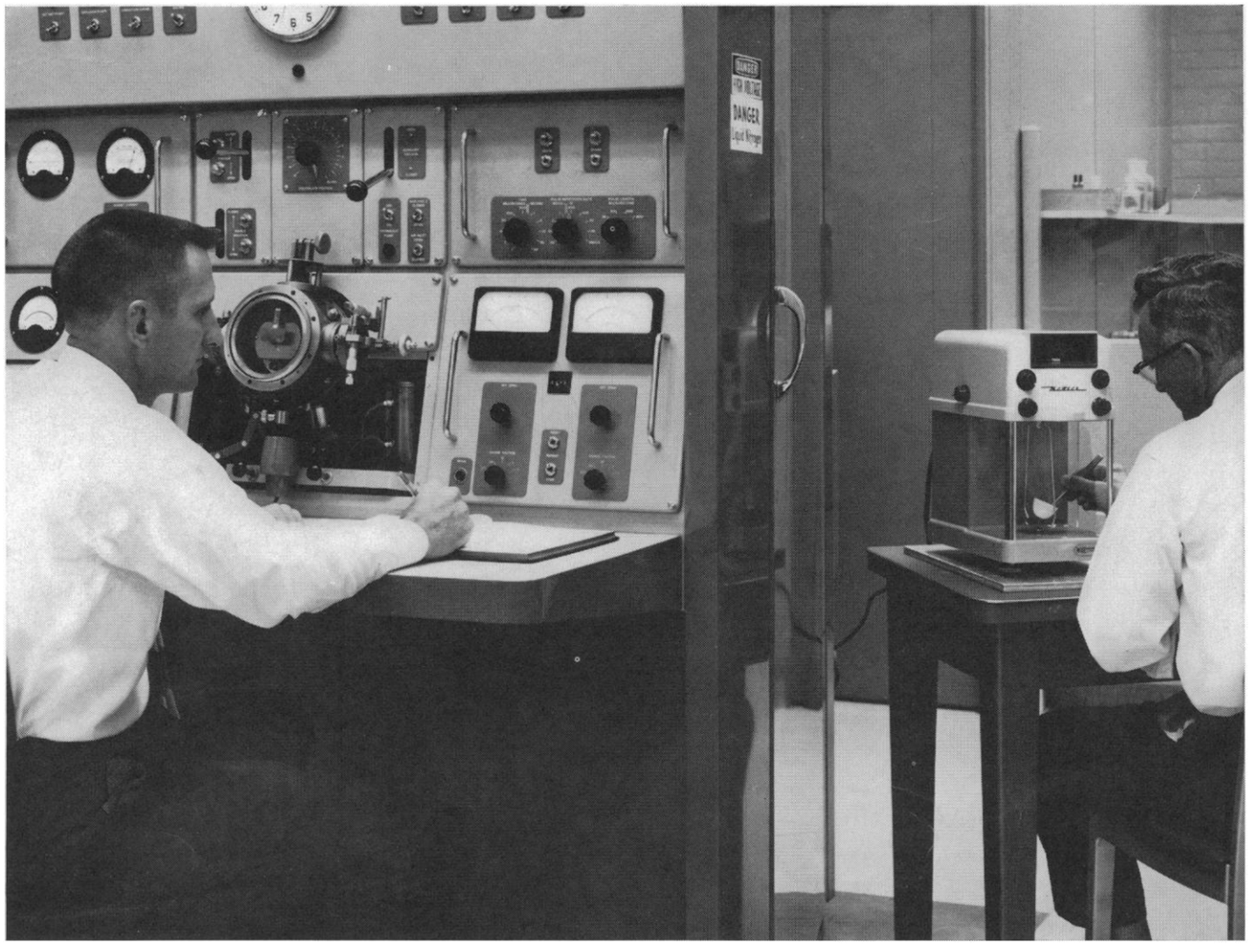
SCIENCE

4 February 1966
Vol. 151, No. 3710

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

PLANT MITOSIS



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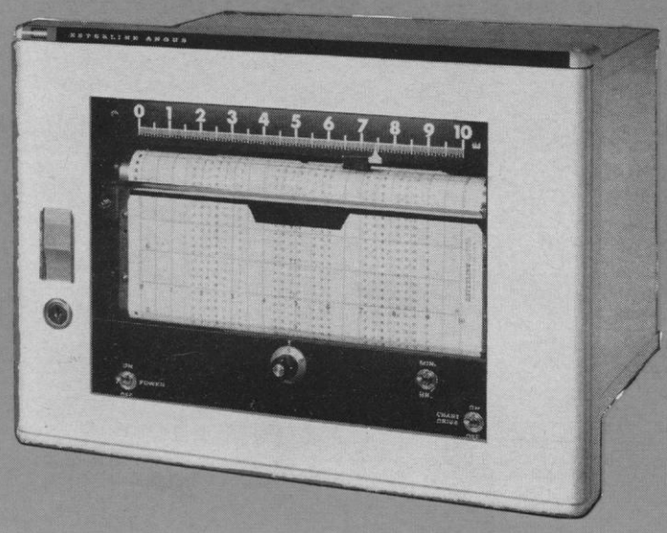

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COVER

Many details of plant mitosis in living cells have been made visible for the first time by differential interference microscopy. For example, spindle fibers appear as bundles of refractile elements extending from the kinetochores to the spindle poles (about × 5000). See page 572. [Andrew Bajer and Robert D. Allen, University of Oregon and Princeton University]

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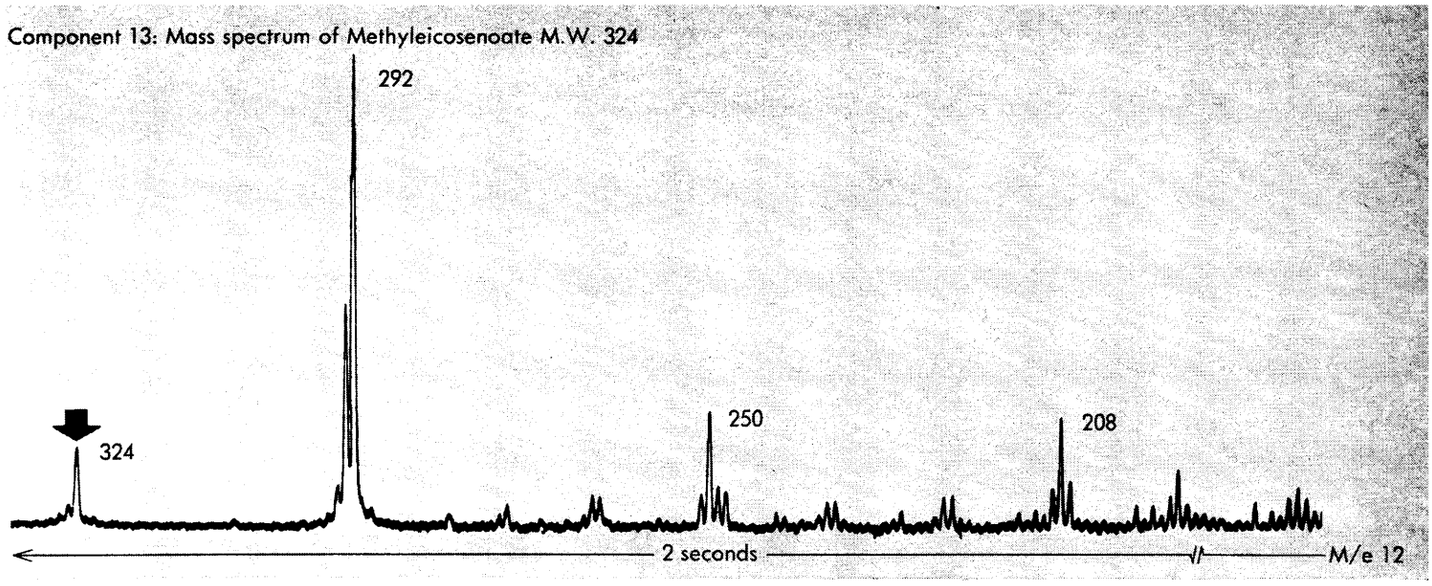

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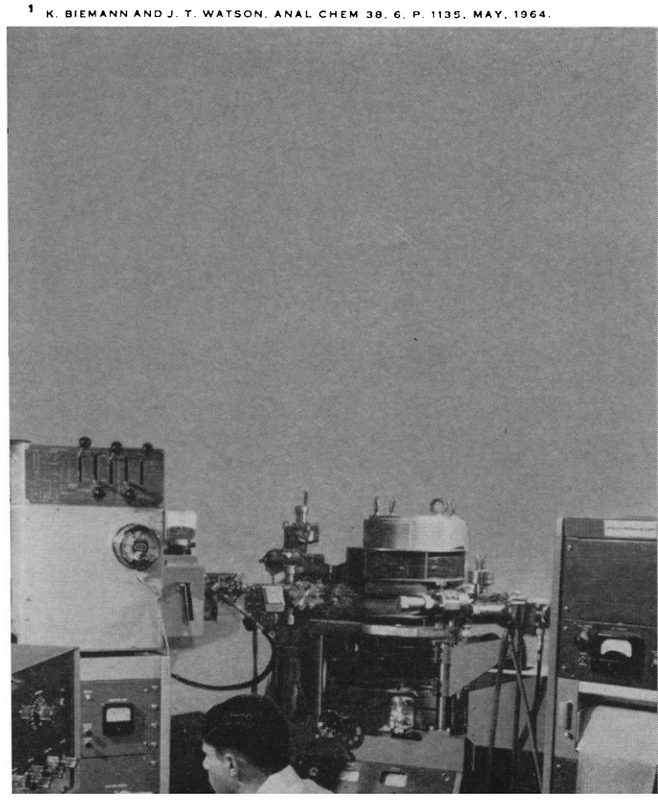
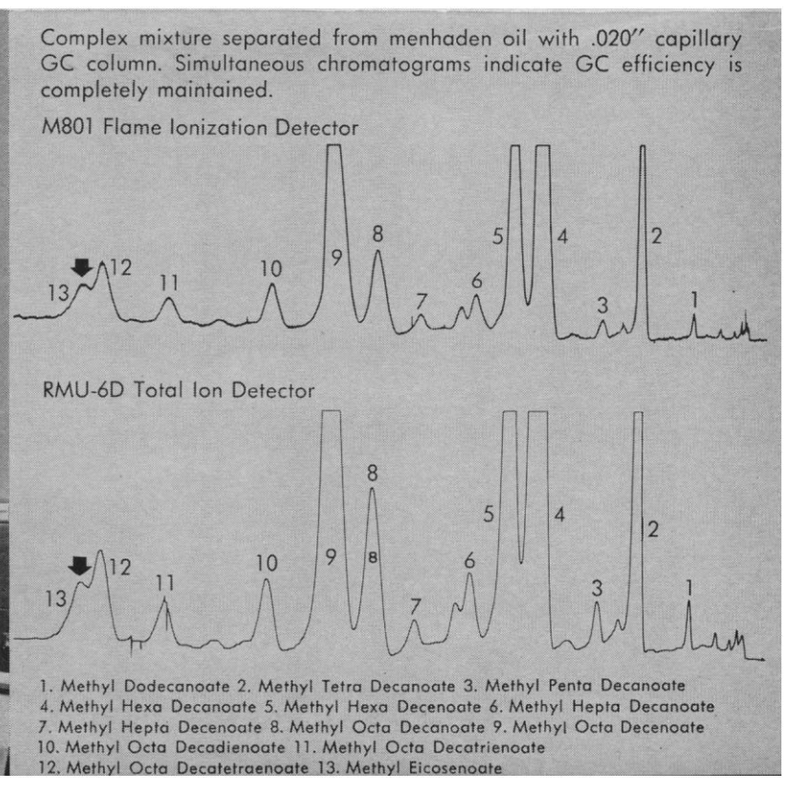
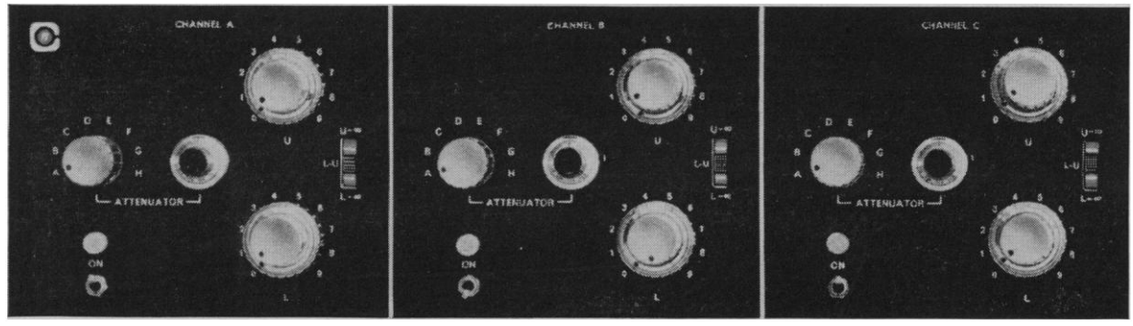
[1] K. BIEMANN AND J. T. WATSON, ANAL CHEM 36, 6, P. 1135, MAY, 1964.



Complex mixture separated from menhaden oil with .020″ capillary GC column. Simultaneous chromatograms indicate GC efficiency is completely maintained.



1. Methyl Dodecanoate 2. Methyl Tetra Decanoate 3. Methyl Penta Decanoate
4. Methyl Hexa Decanoate 5. Methyl Hexa Decenoate 6. Methyl Hepta Decanoate
7. Methyl Hepta Decenoate 8. Methyl Octa Decanoate 9. Methyl Octa Decenoate
10. Methyl Octa Decadienoate 11. Methyl Octa Decatrienoate
12. Methyl Octa Decatetraenoate 13. Methyl Eicosenoate



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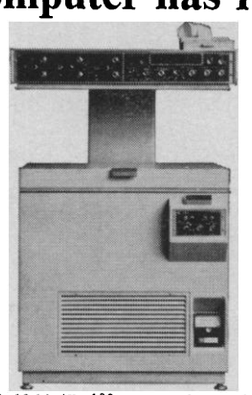

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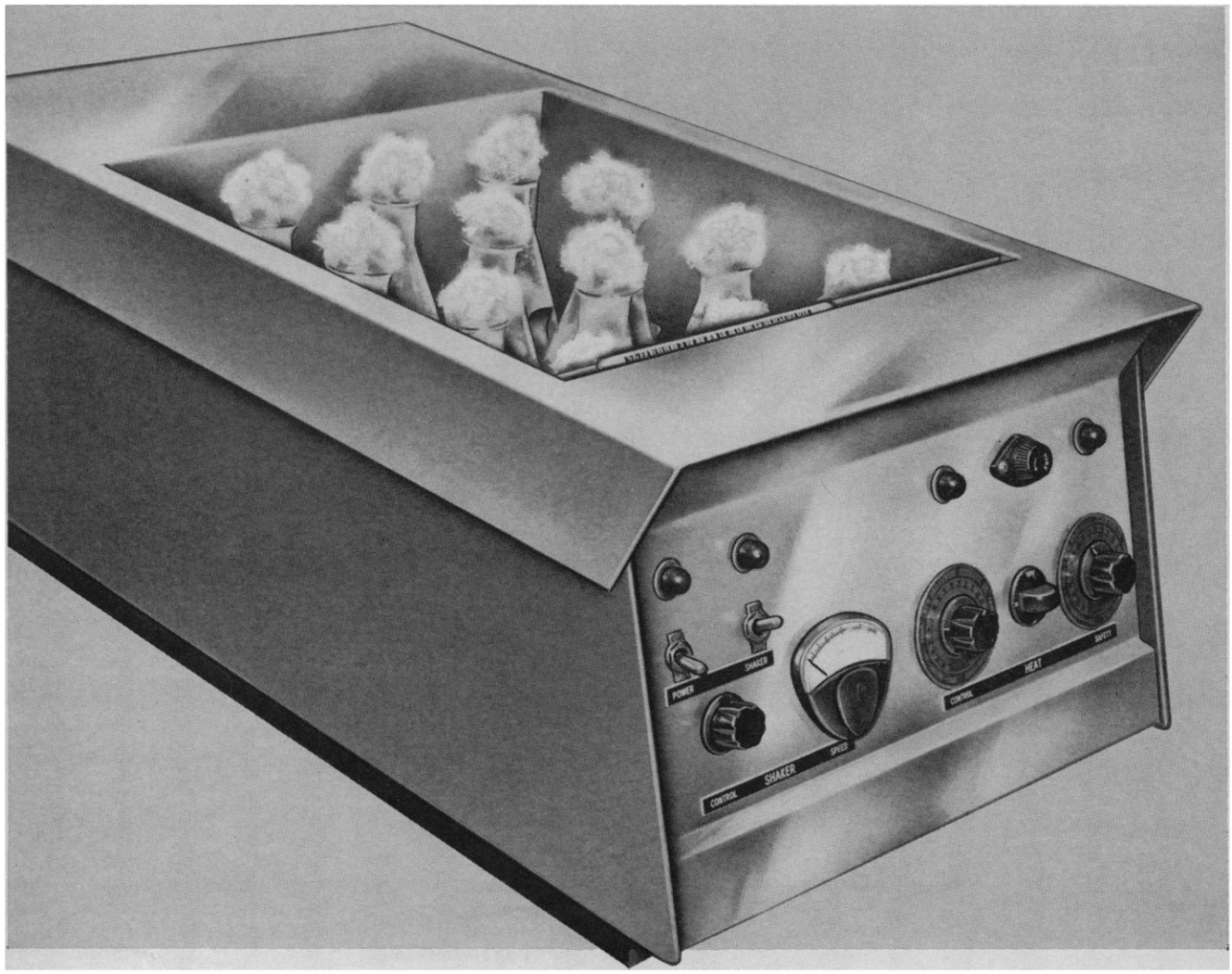

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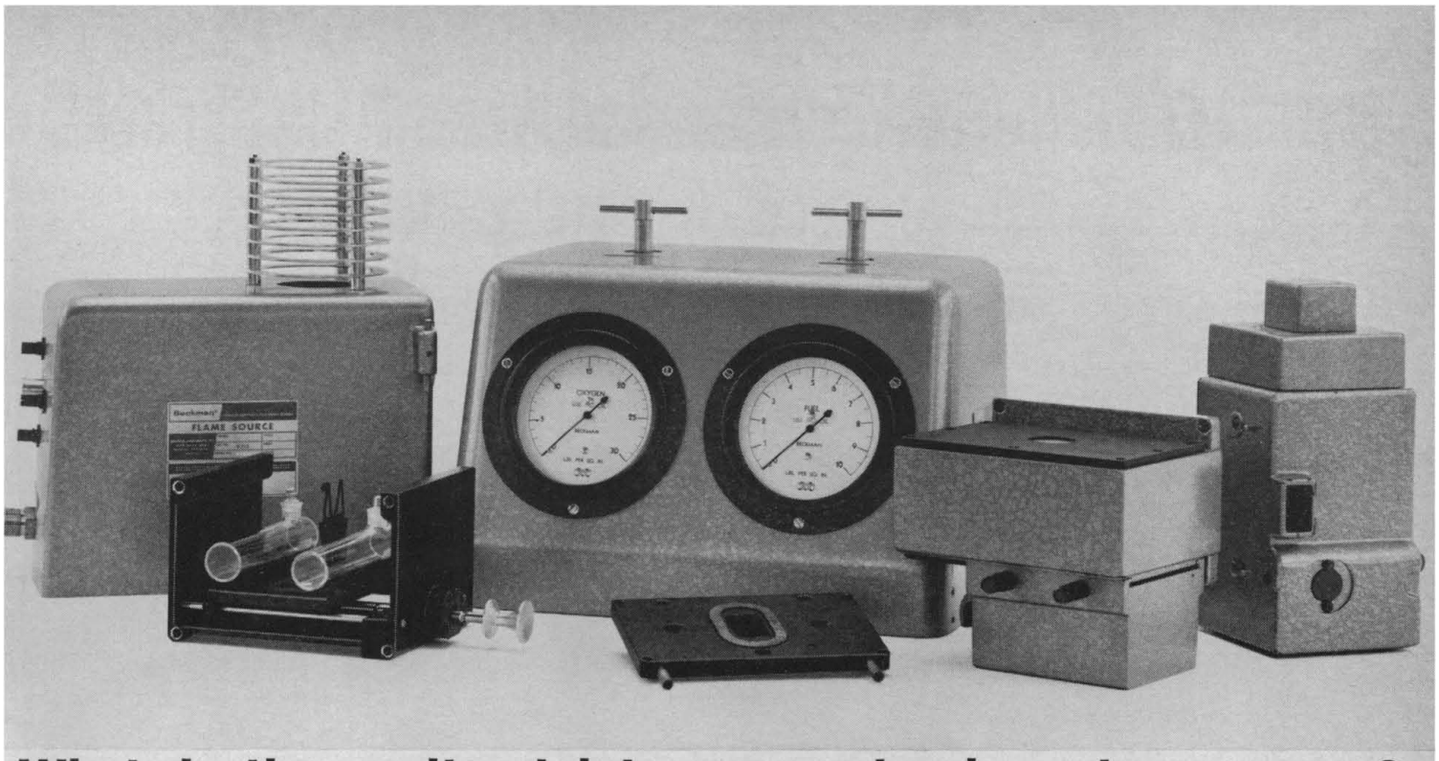

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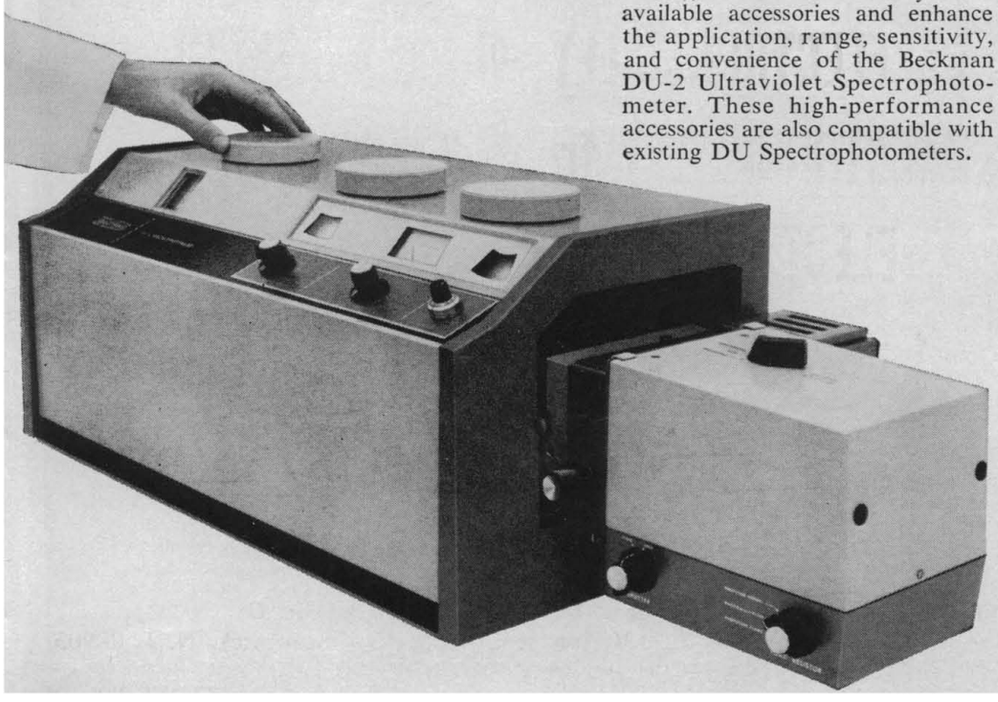

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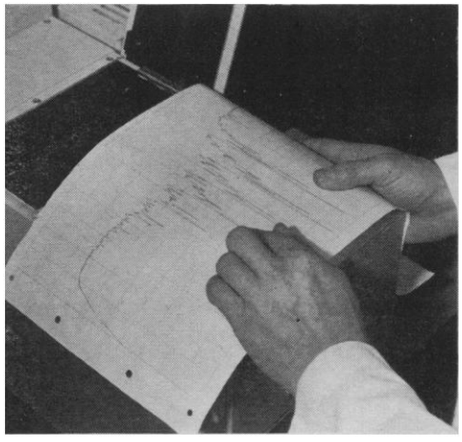
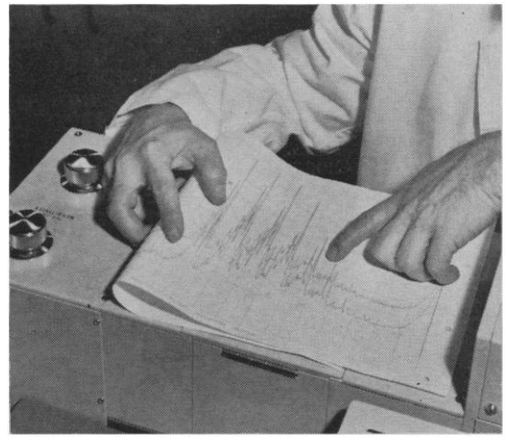
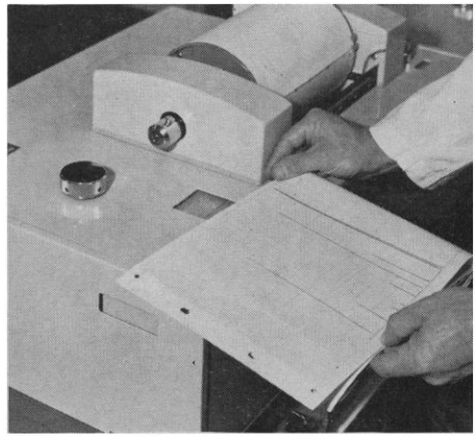


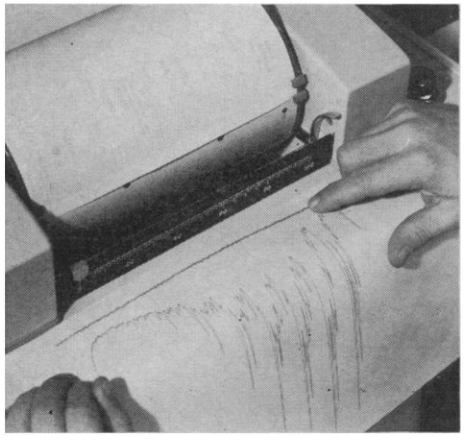
The chart above shows the remarkable resolution of Coleman Model EPS-3T. Critical adjacent peaks on the complex benzene vapor profile are clearly delineated.



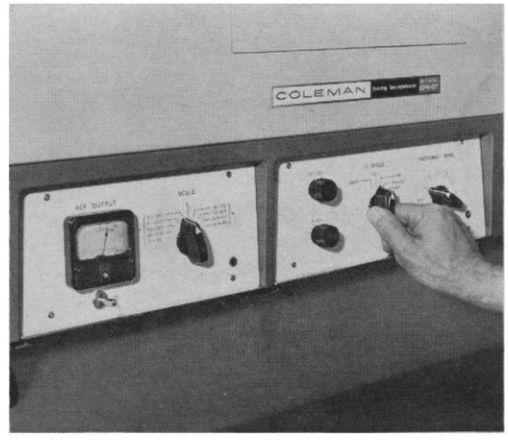
To demonstrate repeatability, the instrument overprints the same chart from the same sample. Note that chart presentations are all linear, not logarithmic.



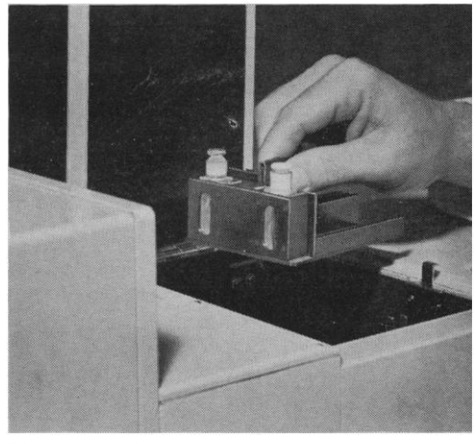
A significant mercury spike, perfectly centered at 253.7 mμ. Wavelength accuracy is not affected by changes in ambient temperature. Photometric accuracy is 0.3%T.



Above, the 100% T line of the Coleman Model EPS-3T at maximum sensitivity. The line is demonstrably flatter than that of any similar spectrophotometer.



Model EPS-3T offers a wide choice of operating parameters. Nine scale modes. Six scanning rates, from 1.5 to 60 minutes. Any member of your staff can easily operate it.



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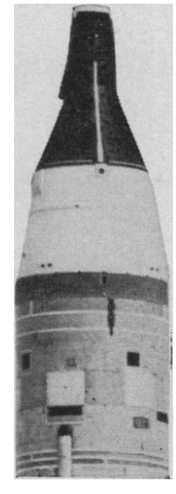
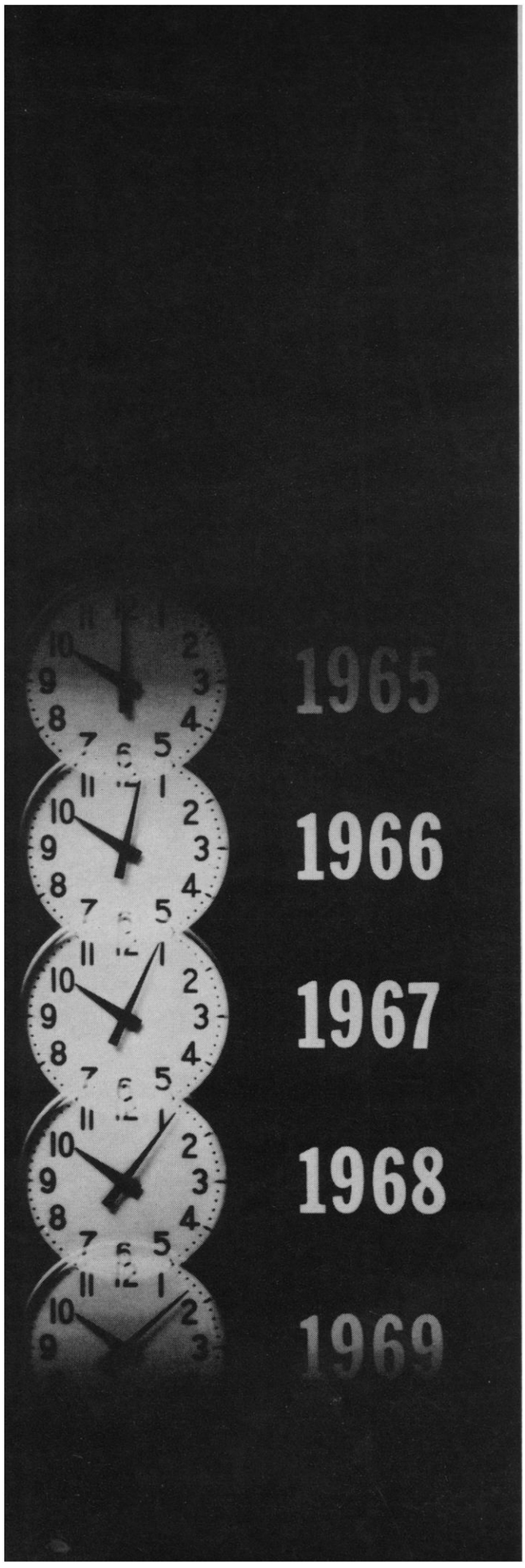




One of a series briefly describing GM's research in depth

How we compressed a year into two minutes

In the creative synthesis of ideas, an end product frequently becomes the point of departure for a fruitful new train of thought. Such was the case when one of our research chemists set out to unriddle the mechanisms of corrosion on chromium plated trim . . . and wound up with a new accelerated corrosion test 1000 times faster than CASS, a widely used standard we helped develop years ago.

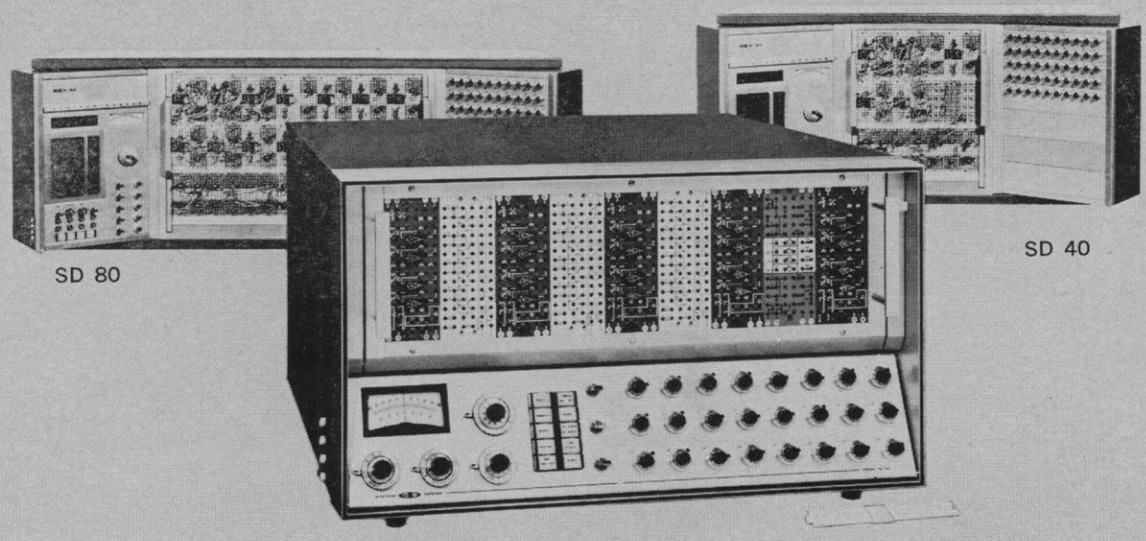
Actually, CASS (copper modified acetic acid salt spray) provided just the tool we needed to demonstrate that corrosion on nickel-chromium plating is a cathodically limited electrochemical process. A paper describing this work won the American Electroplaters' Society's award for ". . . the best contribution to the knowledge and art of chromium plating during the year 1961-1962."*

Then a new thought: Could the reaction be accelerated by somehow overcoming the cathodic limitation? As it turned out, we got around the limitation completely by devising a test that required only the anodic reaction at the specimen surface. The resulting electrolytic corrosion test gives nickel-chromium plating the equivalent of a year's service exposure in just *two minutes*.

Such tests have led to major improvements in the service life of automotive trim . . . another example of the way research in depth leads to a better way.

*R. L. Saur, "Toward Protective-Decorative Chromium Plating," *Plating*, Vol. 48 (Dec. 1961) 1310-1319.

General Motors Research Laboratories
Warren, Michigan 48090



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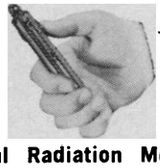

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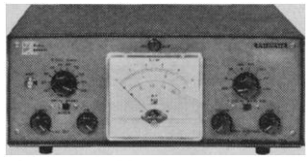

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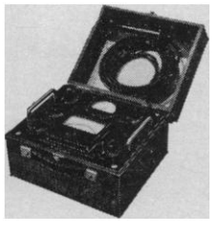

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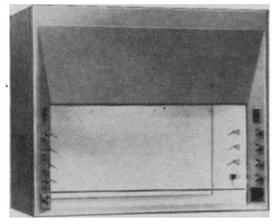

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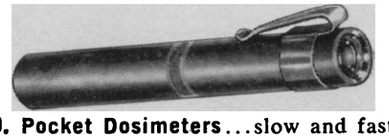

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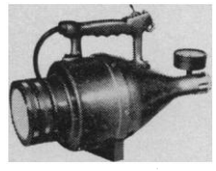

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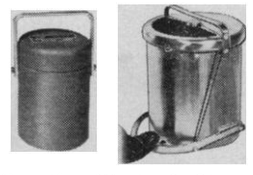

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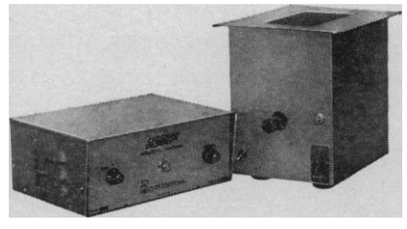

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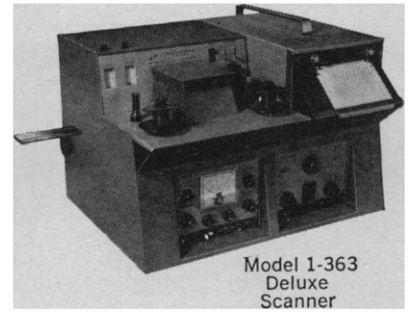

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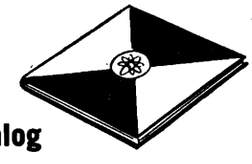

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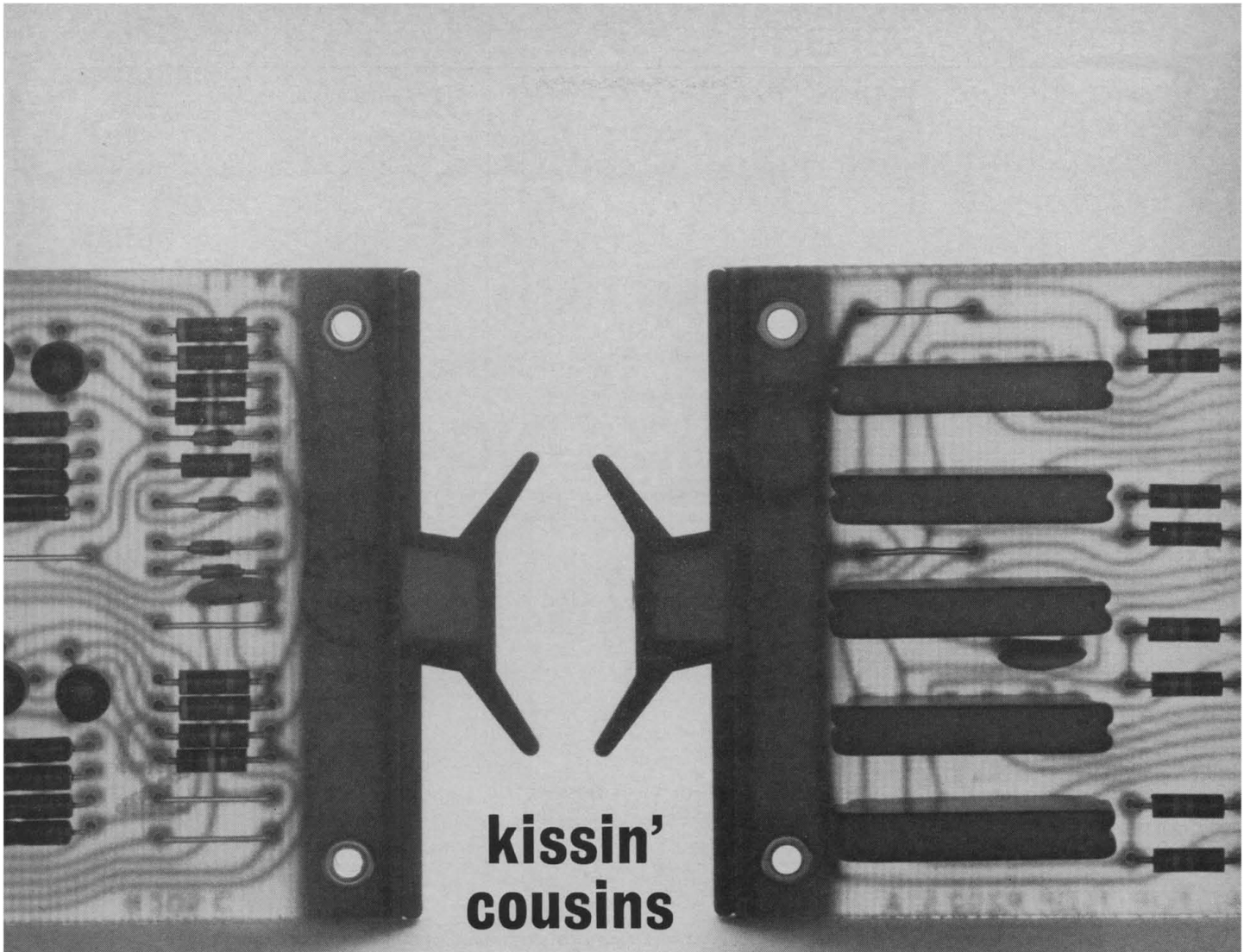

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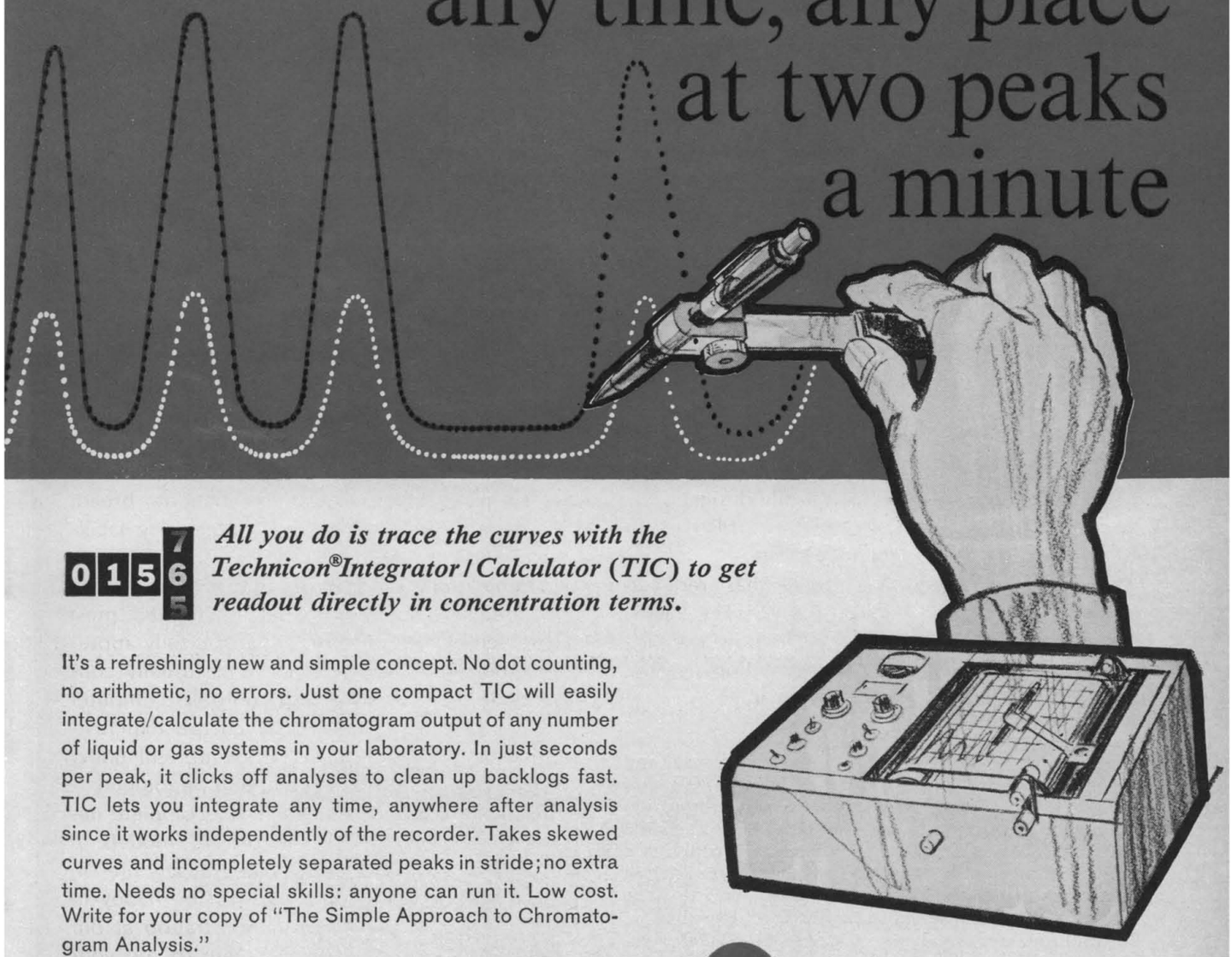

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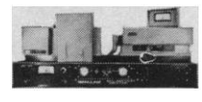
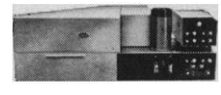

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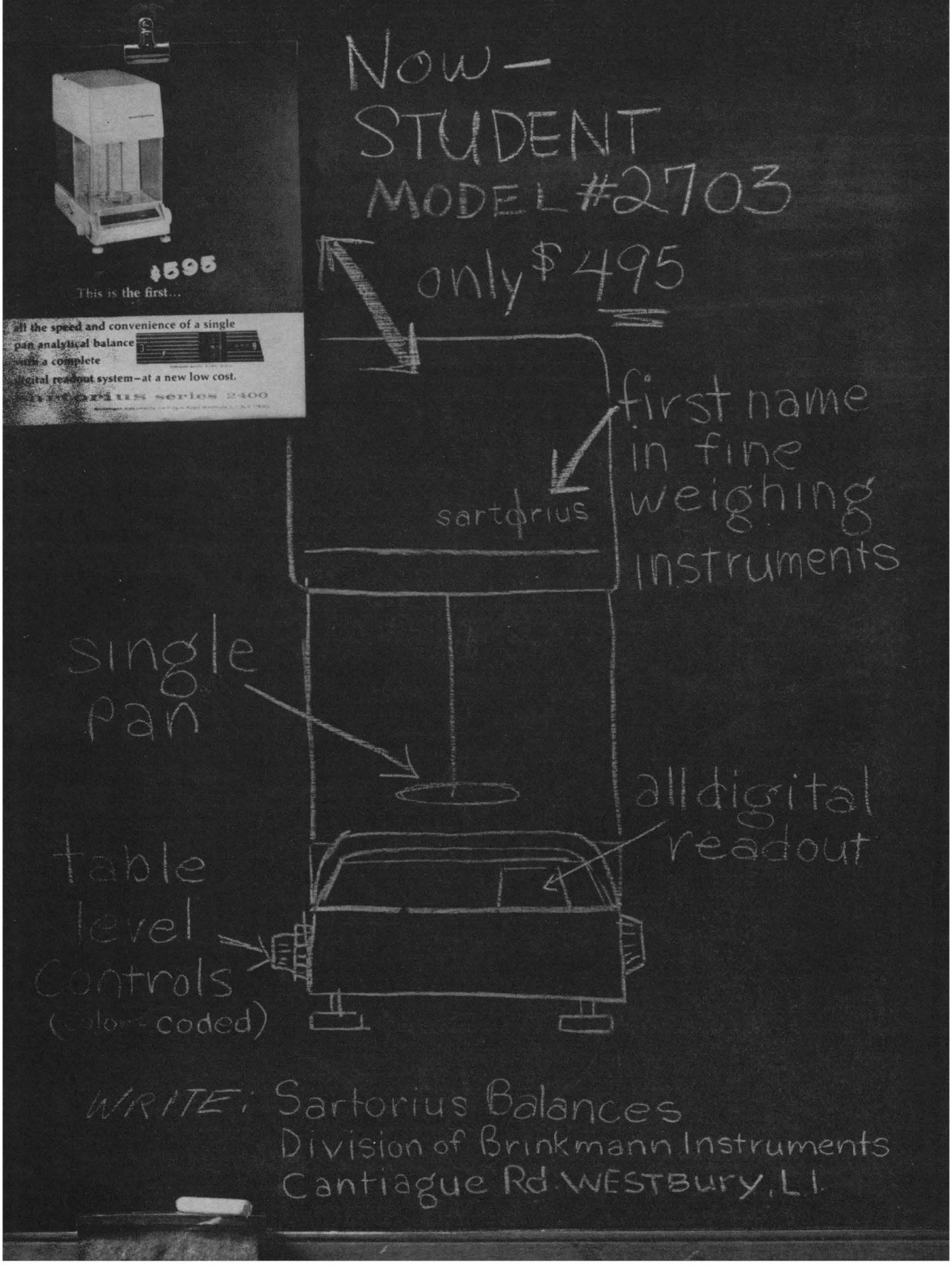
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tion when such classification seems not to be in accord with policy and procedure.

The commission also believes that many highly trained individuals can serve more effectively in a civilian status than in uniform. It does not advocate the blanket deferment of all students, or of all scientists and engineers without regard to their individual effectiveness in their roles.

Langer speaks of a "somewhat unwitting alliance between the student protestors . . . and the manpower specialists." She says that both groups "have a concept of what amounts to an extended definition of 'alternative service'." What she neglects to stress is that the SMC is concerned with maintaining the supply of highly trained manpower essential to the nation in both war and peace. This is basic in the SMC's policy, whereas it is a matter of no concern to the "student activists."

Langer says, "The activist students and the Scientific Manpower Commission have another thing in common, and that is their methods." The leadership of Students for a Democratic Society, she then reports, proposed an "overt antidraft campaign" which was vetoed by the members, with the result that "the majority of students will continue trying to avoid the draft by methods that run from simply staying in school, to developing asthma, to hinting darkly about suicidal or homosexual tendencies." Some readers have taken this listing to represent the methods that the student activists and the SMC have "in common." It needs to be made perfectly clear, therefore, that the SMC has never proposed any antidraft campaign, overt or otherwise, and does not approve draft dodging in any form.

Draft dodgers, like citizens who fail to pay their taxes, are asking for the rights of citizenship without assuming its concomitant responsibilities. SMC does advocate a fully informed citizenry; a selective (rather than a lottery) process of choosing men to serve in the armed forces when all males are not needed within specified age groups; and those policies of the Selective Service which recognize that without the consistent addition of highly trained manpower to an army of skilled professionals already at work, the nation's army in uniform cannot function effectively.

Local boards and appeal boards of the Selective Service system must make the final decision regarding how each individual registrant should be asked to serve, but they should not be forced to make this decision with incomplete information; nor should individual registrants be refused opportunity to request further consideration of the action of their local boards when they believe their classification does not implement this policy.

Appeal boards and state advisory boards for scientists, engineers, and other technical personnel have been set up to provide registrants, universities, and employers with an opportunity to appeal a classification. If this machinery is to be effective, every citizen should understand the reason behind the deferment policies; and every registrant should be aware both of his obligations and his rights.

BETTY M. VETTER
Scientific Manpower Commission, 2101 Constitution Avenue, NW, Washington, D.C. 20418

Junior Astronomy Club

The Schools Lectures at the Royal Institution described by Lawrence Bragg (10 Dec. 1965, p. 1420) are similar in a general way to many excellent out-of-school science activities now well established in the United States, such as the programs for young people at the New York Academy of Sciences, the American Museum of Natural History, Columbia University, and the Franklin Institute, to mention only a few.

For 36 years the Junior Astronomy Club, currently at New York University, has sponsored a monthly lecture series during the academic year, with outstanding speakers from the fields of astronomy, physics, and space sciences. Tickets are distributed to junior high schools in New York City, and admission is free to the general public. The free lecture series is only a part of the club's program, which includes Saturday classes in astronomy, observing sessions, publication of the *Junior Astronomy News*, and field trips throughout the academic year.

The one unique feature of our club is that its entire program is conceived, organized, and carried out by the members (ages 12 to 20) without adult direction.

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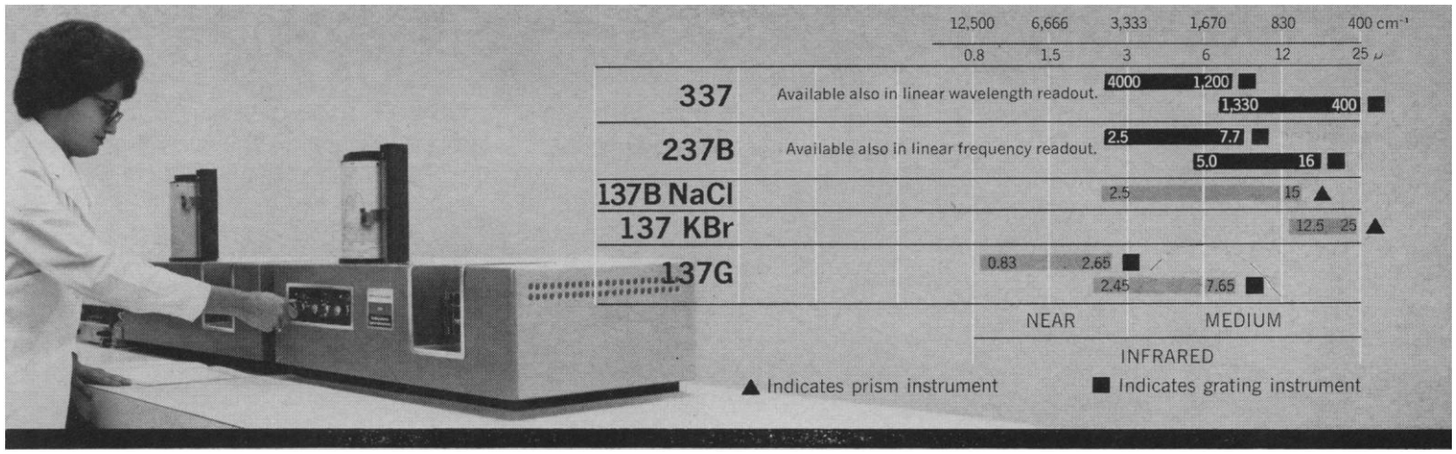

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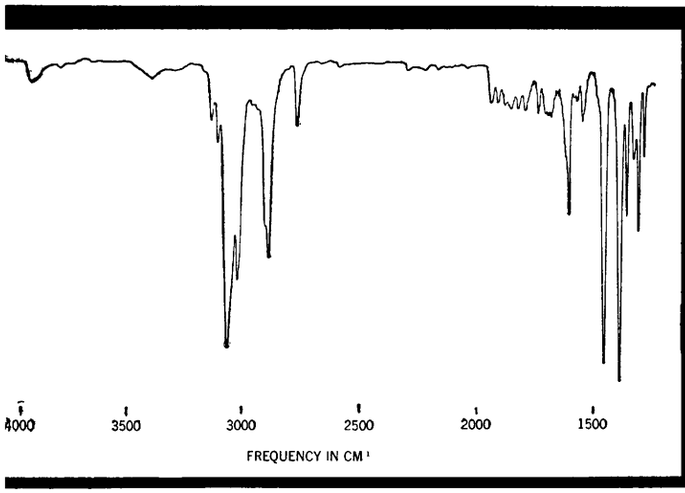
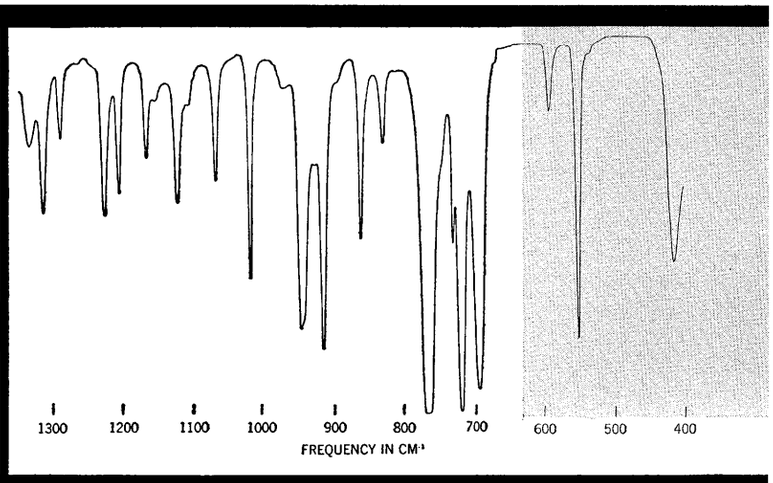
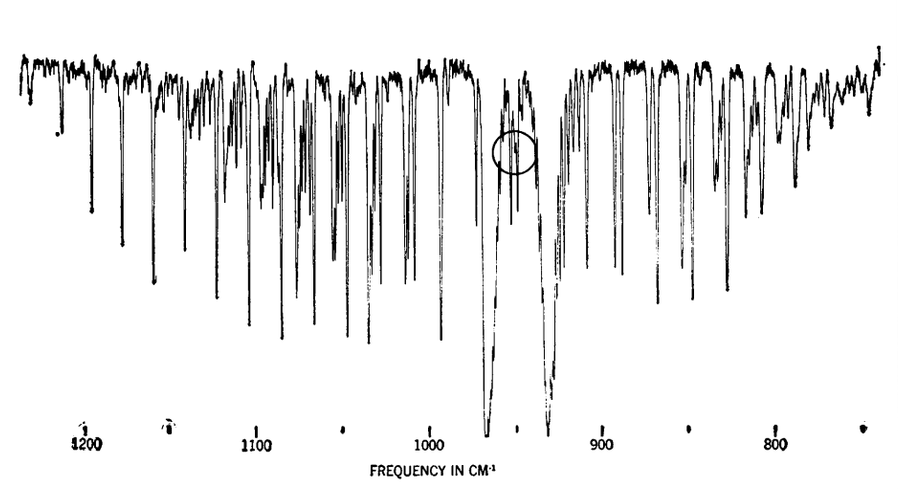
The Model 237B covers the range from 4000 to 625 cm^{-1}, with a version available in linear wavelength. It is ideal if you normally operate in this fundamental region. The Model 337, also available in either linear frequency, or linear wavelength, scans from 4000 to 400 cm^{-1}. Both instruments cover their individual ranges in two serial scans, on convenient 8½" x 11" charts.

No matter what your choice, either the Model 237B or the Model 337 will provide all the performance you want at the lowest price available. For more information, write Instrument Marketing Division, Perkin-Elmer Corporation, 723 Main Avenue, Norwalk, Conn.







▲ Typical dual scan of indene, run in six minutes in the three-minute scan mode of the Model 337, demonstrates excellent definition possible even at this recording rate. Slit program was 6. Shaded area shows range added by the Model 337 to that of the Model 237B. In this region you gain access to carbon-bromine, carbon-iodine and carbon-chlorine vibrations, out-of-plane aromatic carbon-hydrogen bonds, and data on inorganic and metal-oxygen or metal-nitrogen bonds in complexes. Recent work also points to characteristic vibrations of ketones, aldehydes, acids and esters occurring in the 500 cm^{-1} region.

◀ Ammonia scan from 1200 to 800 cm^{-1} points out one wavenumber resolving power of Model 337, with abscissa expanded on auxiliary recorder.

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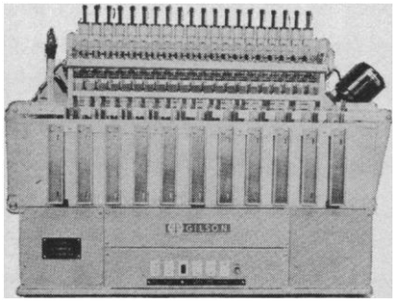

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A severalfold increase in accuracy and reproducibility of results is provided in comparison with a nondifferential method.

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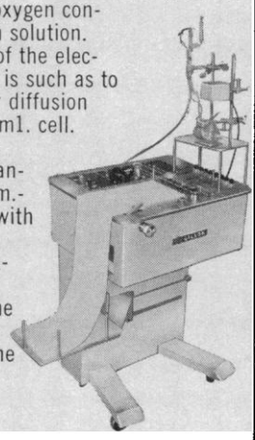
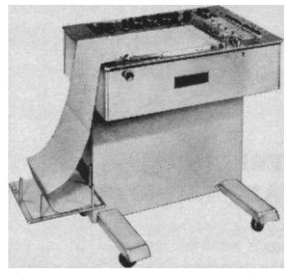
Recording is done on fan-folded, 20-cm.-wide paper with millimeter square markings. The response time is about one second for the full span of 200 mm.





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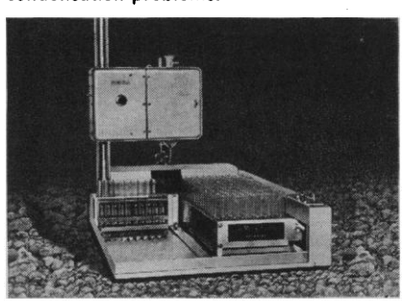

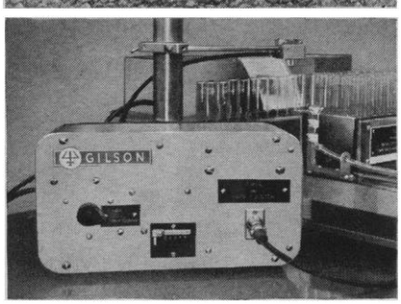

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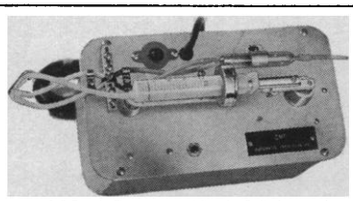

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SCIENCE

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Science Policy and National Goals

Recently the Daddario subcommittee has raised anew the questions of national science policy and has recommended that the Board of the National Science Foundation provide guidance (*Science*, 14 January). The problem is complex. Even if specific answers could be given about optimum science policy, they would be subject to change as events unfolded. Decisions taken in other countries frequently alter the basis on which our policies should be made. Perhaps more crucial are developments in our own nation.

National goals have an important influence on science policies. Science and technology are often the means by which such goals can be attained. When a President announces that placing a man on the moon is a national goal, all the components of science are to a degree affected, and many must respond. National goals are subject to change, often suddenly. Peace or intensified war in Vietnam could bring a sudden shift in goals, as well as a rearrangement of priorities among them. Peace in Vietnam would lead to renewed emphasis on the Great Society and on problems such as air and water pollution.

Politicians, and especially the President, establish national goals and, at least implicitly, set the relative priorities. In part, the priorities are established by speeches. More concretely, priorities are established by appropriation of funds. Money has a way of influencing decisions, both governmental and individual. Recently the Reuss subcommittee has complained that we spent $3 billion in one year on our program to place a man on the moon, and $560 million to improve nuclear reactors, while spending only $1 million for developing better methods of sewage treatment. Thus, Congress made an estimate of the relative desirability of making a new and imaginative approach to the problem of pollution.

A second major problem in establishing science policy is the mismatch in response times of the politicians and the scientists. Politicians respond to the mood of the moment. Often they react to one day's headlines. The characteristic response time of scientists to a serious problem is more like a year or two, or even five. Meeting the challenges of Sputnik required the training and retraining of many scientists, a process which still continues. Tomorrow the Great Society and its needs may become paramount. However, years could pass before science and technology made their optimum contributions.

The meshing of science policy to national goals is difficult, but we have evidence that the effort can be rewarding. World War II provided an example. At that time the nation had one overriding goal, that of winning the war. This goal was maintained for a number of years, so the time constants of the politicians and the scientists coincided. Moreover, the goal was clear to all. Science policy makers could employ fairly simple criteria, and they knew that well-thought-out plans would be implemented. Accomplishments during the war were unprecedented, and they have not been matched since, in rate or quality.

Science policy cannot be made without reference to national goals. If politicians wish to have a sharper formulation of policy they must provide a more clear-cut description of the goals and of the relative priorities.—PHILIP H. ABELSON

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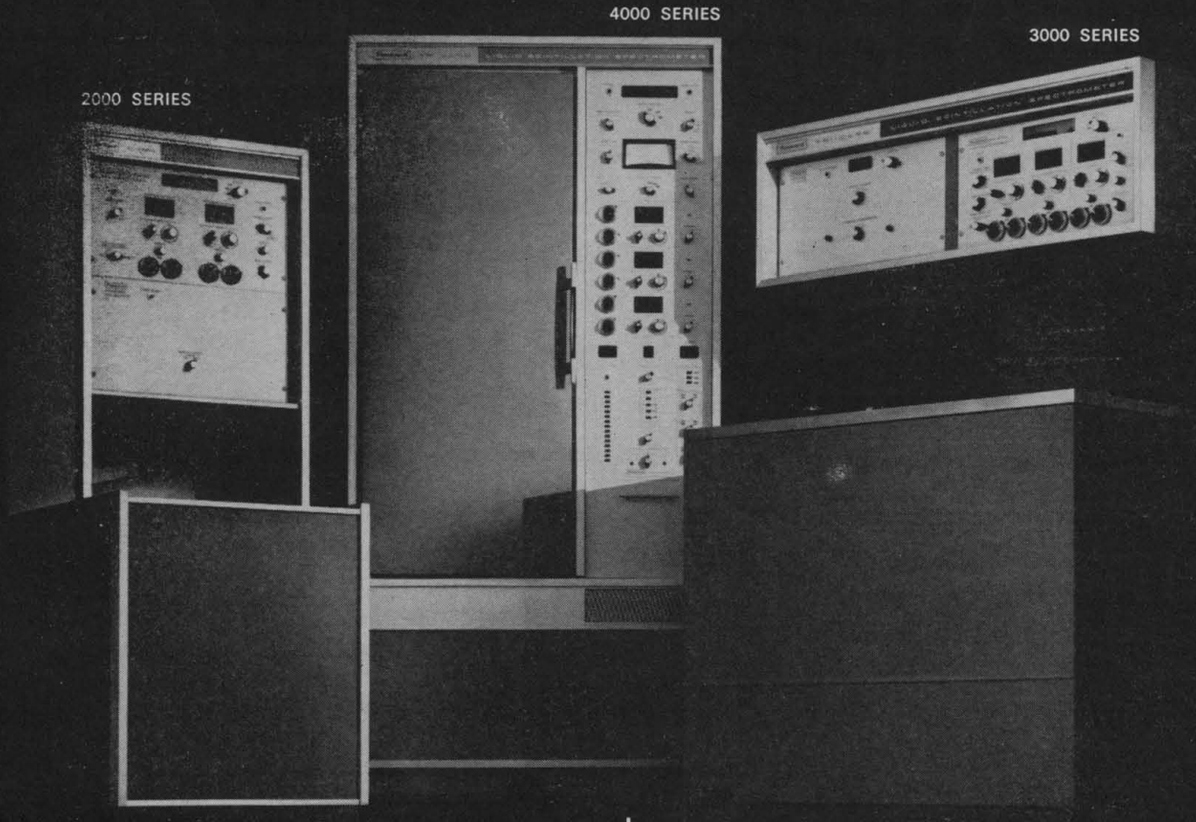

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Ranzi (Milan) discussed his results on specific induction by nucleic acid preparations from different organs.

Two special systems were then taken up in greater detail—the embryo of the sea urchin and the hemoglobin-synthesizing system. S. Spiegelman showed some new approaches using both in vitro systems and hybridization techniques. P. R. Gross (Providence) dealt mainly with early protein synthesis in the embyos and its activation. This latter problem, especially from the point of view of activation and controls, was discussed by A. Monroy (Palermo), M. Nemer (Philadelphia), J. Runnström (Stockholm and Naples), and A. S. Spirin (Moscow). The last session was devoted to the synthesis of hemoglobin, a subject which has recently contributed much to the progress of our knowledge of the mechanism of protein synthesis; the discussion was led by P. A. Marks (New York) and C. Baglioni (Naples).

The sponsoring institutions were the Italian National Research Council, the International Union of Biological Sciences, and NATO. It is hoped that this type of interdisciplinary discussion can be resumed at a second international workshop, planned for the spring of 1967 in northern Italy.

G. L. CANTONI
National Institutes of Health, Bethesda, Maryland

A. MONROY
University of Palermo, Palermo, Italy

Forthcoming Events

February

15–17. **Radioisotope Applications in Aerospace**, symp., Dayton, Ohio. (P. Polishuk, Flight Dynamics Laboratory, Wright-Patterson AFB, Ohio)

15–18. Treatment and Storage of Highly **Radioactive Waste**, symp., Richland, Wash. (W. H. Regan, Jr., U.S. Atomic Energy Commission, Washington, D.C. 20545)

16–17. **Voluntary Health**, 2nd natl. conf., Chicago, Ill. (Dept. of Community Health and Health Education, American Medical Assoc., 535 N. Dearborn St., Chicago)

16–18. Practical **Space Applications**, symp., San Diego, Calif. (C. Tross, Box 931, Rancho Santa Fe, Calif.)

16–19. National Soc. of **College Teachers of Education**, Chicago, Ill. (E. H. Goldenstein, Administration Bldg., 413, Univ. of Nebraska, Lincoln 68508)

16–19. Institute of **Management Sciences**, annual mtg., Dallas, Tex. (W. M. Campbell, Atlantic Refining Co., P.O. Box 2819, Dallas 75221)

17–19. American **Educational Research**

Assoc., Chicago, Ill. (R. A. Dershimer, The Association, 1201 16th St., NW, Washington, D.C. 20036)

18–20. American **Psychopathological** Assoc., symp., New York, N.Y. (F. A. Freyhan, The Association, Natl. Inst. of Mental Health, c/o St. Elizabeths Hospital, Washington, D.C. 20032)

19. **Pleistocene of Ohio**, interdisciplinary conf., Ohio Acad. of Science, Columbus. (J. L. Forsyth, Dept. of Geology, Bowling Green State Univ., Bowling Green, Ohio)

21–25. **Analytical Chemistry and Applied Spectroscopy**, Pittsburgh, Pa. (R. E. Hein, Mellon Inst., 4400 Fifth Ave., Pittsburgh 15213)

21–25. Society for **Nondestructive Testing**, spring natl. conv., Los Angeles, Calif. (E. L. Criscuolo, U.S. Naval Ordnance Laboratory, White Oak, Silver Spring, Md.)

21–25. **Non-Elastic Processes in the Upper Mantle**, symp., Upper Mantle Committee, Intern. Union of Geodesy and Geophysics, Newcastle, England. (D. C. Tozer, School of Physics, The University, Newcastle-upon-Tyne, 1, England)

22–24. **Offshore Exploration**, 1st conf., Long Beach, Calif. (P.O. Box 88, 2550 Via Tejon, Palos Verdes Estates, Calif.)

22–26. Canadian Assoc. of **Radiologists**, 29th annual, Montreal, Quebec. (The Association, 1555 Summerhill Ave., Montreal)

23–25. **Biophysical** Soc., 10th annual mtg., Boston, Mass. (J. Baruch, Bolt, Beranek and Newman Inc., 50 Moulton St., Cambridge, Mass. 02138)

24–26. American Acad. of **Forensic Sciences**, Chicago, Ill. (S. R. Gerber, Law-Medicine Center, Western Reserve Univ., Cleveland, Ohio 44106)

24–26. Interdisciplinary Aspects of **Radiative Energy Transfer**, Philadelphia, Pa. (J. J. Welsh, Space Sciences Laboratory, General Electric Co., Box 8555, Valley Forge, Pa.)

25–26. **Thoracic** Soc., spring mtg., London, England. (H. M. Foreman, Sully Hospital, Sully, Glamorganshire, England)

27–3. American Inst. of **Mining, Metallurgical, and Petroleum Engineers**, annual mtg., New York, N.Y. (The Institute, 345 E. 47 St., New York 10017)

27–4. International **Anesthesia Research** Soc., Bal Harbour, Fla. (A. W. Friend, 227 Wade Park Manor, Cleveland, Ohio)

28–4. **Aerial Triangulation**, symp., Urbana, Ill. (M. B. Scher, Intern. Soc. for Photogrammetry, Commission 3, 9701 East Light Dr., Falls Church, Va.)

28–4. American **Crystallographic** Assoc., mtg., Univ. of Texas, Austin. (W. L. Kehl, Gulf Research and Development Co., P.O. Drawer 2038, Pittsburgh, Pa. 15230)

28–4. American Assoc. of **Junior Colleges**, 46th annual conv., St. Louis, Mo. (The Association, 1315 16th St., NW, Washington, D.C. 20036)

March

1–2. **Dairy Engineering**, natl. conf., Michigan State Univ., East Lansing. (C. W. Hall, Agricultural Engineering Dept., Michigan State Univ., East Lansing)

1–3. **Space Maintenance** and Extra-Vehicular Activities, natl. conf., Orlando, Fla. (M. B. Goldman, Mail No. 302, Martin Co., Baltimore, Md. 21203)

1–10. **Industrial Development** in the Arab Countries, regional symp., Kuwait. (Intern. Agency Liaison Branch, Office of the Director General, Food and Agriculture Organization, Via delle terme di Caracalla, Rome, Italy)

2–4. **Air Pollution** Medical Research, AMA conf., Los Angeles, Calif. (Dept. of Environmental Health, American Medical Assoc., 535 N. Dearborn St., Chicago, Ill. 60610)

2–4. **Plasmadynamics**, conf., Monterey, Calif. (American Inst. of Aeronautics and Astronautics, 1290 Sixth Ave., New York 10019)

2–4. **Scintillation and Semiconductor Counters**, 10th symp., Washington, D.C. (W. A. Higinbotham, Brookhaven Natl. Laboratory, Upton, L.I., N.Y.)

3–4. Louisiana Soc. for **Electron Microscopy**, 3rd annual symp., New Orleans. (W. R. Goynes, Southern Regional Research Laboratory, Box 19687, New Orleans)

3–5. Central **Surgical** Assoc., Chicago, Ill. (C. E. Lischer, 457 N. Kingshighway, St. Louis 8, Mo.)

4–5. **Cineradiology**, 5th symp., Rochester, N.Y. (R. Gramiak, Div. of Diagnostic Radiology, Univ. of Rochester Medical Center, Rochester 14620)

4–6. American Assoc. of **Pathologists and Bacteriologists**, 63rd annual mtg., Cleveland, Ohio. (P. Fitzgerald, Downstate Medical Center, 450 Clarkson Ave., Brooklyn 3, N.Y.)

5–7. Society for American **Archaeology**, 31st annual mtg., Univ. of Nevada, Reno. (D. D. Fowler, Dept. of Anthropology, Univ. of Nevada, Reno 89507)

5–10. International Acad. of **Proctology**, 18th annual conv., Miami Beach, Fla. (A. F. Cantor, 147-41 Sanford Ave., Flushing, N.Y. 11355)

6–11. American Soc. of **Photogrammetry**, Washington, D.C. (C. E. Palmer, 5917 Brookview Dr., Brookland Estates, Alexandria, Va.)

7–9. Fundamental **Cancer Research**, 20th annual symp., Univ. of Texas, Houston. (M. Mandel, Dept. of Biology, M. D. Anderson Hospital and Tumor Inst., Univ. of Texas, Houston 77025)

7–9. **Electric Propulsion**, 5th conf., American Inst. of Aeronautics and Astronautics, San Diego, Calif. (A. T. Forrester, Electro-Optical Systems, Inc., 300 N. Halstead St., Pasadena, Calif. 91107)

7–9. **Space**, 3rd congr., Cocoa Beach, Fla. (R. M. Barnes, PAA-Guided Missiles Range Div., Bldg. 423, MU 111, Patrick Air Force Base, Fla.)

7–11. American Soc. for **Metals**, western metal and tool exposition and conf., Los Angeles, Calif. (The Society, Metals Park, Ohio)

7–11. Society of **Plastics Engineers**, 22nd annual technical conf., Montreal, P.Q., Canada. (G. L. Bata, Union Carbide Canada, Ltd., P.O. Box 700, Pointe-aux-Trembles, P.Q.)

7–12. Inter-American **Nuclear Energy** Commission, 6th mtg., Washington, D.C. (J. D. Perkinson, Jr., Pan American Union, Washington 20006)

8–3. World **Meteorological** Organization, commission for synoptic meteorology, 4th session, Wiesbaden, Germany. (WMO, 41, avenue Giuseppe Motta, Geneva, Switzerland)

9–11. **Ethics in Medical Progress,** Ciba Foundation symp., London, England. (Ciba Foundation, 41 Portland Pl., London W.1)

9–13. Teaching Machines and **Programmed Instruction**, intern. symp., Nürtingen, Germany. (Arbeitsgemeinschaft Programmierte Instruktion, Inst. für Kybernetik, Pädagogische Hochschule Berlin, Malteserstr. 74-100, 1 Berlin 46)

10–11. **Heat Transfer** to Non-Newtonian Fluids, 12th annual heat transfer conf., Oklahoma State Univ., Stillwater. (J. D. Parker, Dept. of Mechanical Engineering, Oklahoma State Univ., Stillwater 74075)

11–13. National Council of **Teachers of Mathematics**, San Diego, Calif. (J. D. Gates, 1201 16th St., NW, Washington, D.C. 20036)

11–13. National **Wildlife** Federation, annual mtg., Pittsburgh, Pa. (T. L. Kimball, 1412 16th St., NW, Washington, D.C. 20036)

12–13. **Linguistics,** 11th natl. conf., Linguistic Circle of New York, N.Y. (L. Pap, State Univ. College, New Paltz, N.Y. 12561)

14–16. Society of **Toxicology**, annual scientific mtg., Williamsburg, Va. (C. S. Weil, Mellon Inst., 4400 Fifth Ave., Pittsburgh, Pa. 15213)

14–16. **Wildlife and Natural Resources,** 31st North American conf., Pittsburgh, Pa. (C. R. Gutermuth, Wildlife Management Inst., Wire Bldg., Washington, D.C. 20005)

14–20. **Obstetrics and Gynecology**, 8th Australian congr., Hobart. (J. F. Correy, 173 Macquaire St., Hobart)

14–6 May. Extraordinary Administrative **Aeronautical Radio** Conf., 2nd session, Geneva, Switzerland. (Intern. Telecommunication Union, Place des Nations, Geneva)

15–16. **Flame Resistant Polymers**, conf., London, England. (Secretary, Plastics Inst., 6 Mandeville Pl., London, W.1)

15–18. **Optical Soc.** of America, spring mtg., Washington, D.C. (M. E. Warga, 1155 16th St., NW, Washington, D.C. 20006)

17–19. **Isobaric Spin in Nuclear Physics,** intern. conf., Florida State Univ., Tallahassee. (D. Robson, Dept. of Physics, Florida State Univ., Tallahassee)

18–19. **Rural Health**, conf., Colorado Springs, Colo. (B. L. Bible, 535 N. Dearborn St., Chicago, Ill. 60610)

18–20. American **Psychosomatic** Soc. annual mtg., Chicago, Ill. (W. A. Greene, The Society, 265 Nassau Rd., Roosevelt, N.Y. 11575)

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

21–24. **Aerospace Instrumentation,** 4th intern. symp., College of Aeronautics, Cranfield, England. (E. K. Merewether, ISA Aerospace Industry Div., 4515 Canoga Ave., Woodland Hills, Calif.)

21–25. Institute of **Electrical and Electronics Engineers**, intern. conv., New York, N.Y. (IEEE, 345 E. 47 St., New York 10017)

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

22–23. Modern Concepts of **Cardiovas-**

cular Diseases, conf. and workshop, Reno, Nev. (G. T. Smith, Laboratory of Patho-Physiology, Univ. of Nevada, Reno 89507)

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

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

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

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

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

24–26. Pediatric and Adolescent **Gynecology**, conf., New York Acad. of Sciences, New York. (W. R. Lang, Jefferson Medical College of Philadelphia, 1025 Walnut St., Philadelphia, Pa.)

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

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

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

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

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

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

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

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

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

29–31. **Applied Meteorology**, 6th natl. conf., Los Angeles, Calif. (B. N. Charles, Booz-Allen Applied Research, 6151 W. Century Blvd., Los Angeles 90045)

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

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

29–31. **Symbolic and Algebraic Manipulation**, symp., Assoc. for Computing Machinery, Washington, D.C. (J. E. Sammet,

I.B.M. Corp., 545 Technology Sq., Cambridge, Mass. 02139)

29–1. American Assoc. for **Contamination Control**, 5th annual technical mtg., Houston, Tex. (W. T. Maloney, The Association, 6 Beacon St., Boston, Mass. 02108)

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

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

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

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

April

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

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

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

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

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

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

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

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

4–7. Advances in **Water Quality Improvement**, conf., Univ. of Texas, Austin. (Special Lecture Series, Engineering Laboratories Bldg. 305, Univ. of Texas, Austin 78712)

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

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

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

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

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

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

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

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

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

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

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

11–12. American Soc. for **Artificial Internal Organs**, Atlantic City, N.J. (B. K. Kusserow, Dept. of Pathology, Univ. of Vermont College of Medicine, Burlington)

11–13. Institute of **Electrical and Electronics Engineers**, Region 3, conv., Atlanta, Ga. (M. D. Price, Dept. 72-14, Zone 400, Lockheed-Georgia Co., Marietta, Ga. 30061)

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

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

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

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

American Physiological Society

American Soc. of Biological Chemists

American Soc. for Pharmacology and Experimental Therapeutics

American Soc. for Experimental Pathology

American Inst. of Nutrition

American Assoc. of Immunologists

11–20. **Oceanography**, intern. conf., Moscow, U.S.S.R. (R. C. Vetter, Committee on Oceanography, Natl. Acad. of Sciences, 2101 Constitution Ave., NW, Washington, D.C. 20418)

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

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

12–14. **Remote Sensing of Environment**, 4th symp., Univ. of Michigan, Ann Arbor.

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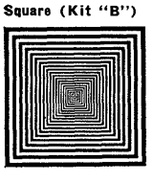

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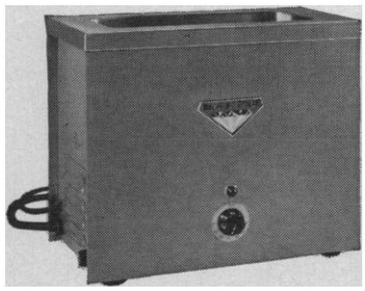

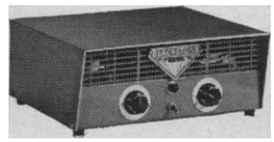

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12–16. Society for Applied **Mathematics and Mechanics**, annual scientific mtg., Darmstadt, Germany. (F. Reutter, Gesellschaft für Angewandte Mathematik und Mechanik, Templergraben 55, 51, Aachen, Germany)

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

13–15. Institute of **Environmental Sciences**, 12th annual tech. mtg. and equipment exp., San Diego, Calif. (The Institute, 34 S. Main St., Mount Prospect, Ill. 60057)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(Continued from page 561)

Robert G. Brown; "Microbial amylases" by Walter W. Windish and Nagesh S. Mhatre; "The microbiology of freeze-dried foods" by Gerald J. Silverman and Samuel A. Goldblith; and "Low-temperature microbiology" by Judith Farrell and A. H. Rose.

Advances in Chemotherapy. vol. 2. Abraham Goldin, F. Hawking, and Robert J. Schnitzer, Eds. Academic Press, New York, 1965. 342 pp. Illus. $13. Six papers: "Systemic control of plant nematodes" by F. C. Peacock and J. E. Peachey; "The cephalosporins" by E. P. Abraham and G. G. F. Newton; "Metabolic basis for the actions of analogs of purines and pyrimidines" by Gertrude B. Elion and George H. Hitchings; "Olivomycin, mithramycin, chromomycin: Three related cancerostatic antibiotics" by G. F. Gause; "Recent advances in the chemotherapy of tuberculosis" by Wallace Fox; and "Progress and perspectives in the chemotherapy of acute leukemia" by Emil Frei, III, and Emil J. Freireich.

Basic Physiology and Anatomy. Norman Burke Taylor. Putnam, New York, 1965. 666 pp. Illus. $6.95 (*Text-Aid*™, for use with *Basic Physiology and Anatomy*, by Richard H. Miller, 182 pp. $4.95).

Biochemical Approaches to Cancer. Eric Reid. Pergamon, New York, 1965. 210 pp. Illus. Paper, $3.95. The Commonwealth and International Library.

Biomedical Telemetry. Cesar A. Caceres. Ed. Academic Press, New York, 1965. 410 pp. Illus. $15. Fifteen papers.

Cancer Chemotherapy. L. F. Larionov. Translated from the Russian edition (Moscow, 1962) by A. Crozy. W. J. P. Neish, Translation Ed. Pergamon, New York, 1965. 564 pp. Illus. $22.50.

Computers and the Life Sciences. Theodor D. Sterling and Seymour V. Pollack. Columbia Univ. Press, New York, 1965. 352 pp. Illus. $12.50. This book was reviewed by J. Lederberg in *Science* **150**, 1576 (1965).

Contributions to the Psychobiology of Aging. Robert Kastenbaum, Ed. Springer, New York, 1965. 127 pp. Illus. Paper, $3. Nine papers: "Engrossment and perspective in later life: A developmental-field approach" by Robert Kastenbaum; "Engagement and disengagement: Toward a theory of adult development" by William E. Henry; "The interpersonal theory of adjustment" by Walter G. Klopfer; "The import of learning theory for gerontology" by John E. Anderson, Jr.; "Aging theory: Cellular and extracellular modalities" by Harry Sobel; "The somatic mutation theory of aging" by Howard J. Curtis; "Immunology and aging" by Roy L. Walford; "Chromosomal changes and aging" by Lissy F. Jarvik; and "On longevity regarded as an organized behavior: The role of brain structure" by George A. Sacher.

Evolution and Systematics. Otto T. Solbrig. Macmillan, New York, 1966. 128 pp. Illus. Paper, $1.95. Current Concepts in Biology Series, edited by Norman H. Giles, Walter Kenworthy, and John G. Torrey.

General Pathology: The Biological Aspects of Disease. J. F. A. McManus.

Year Book Medical Publishers, Chicago, 1966. 755 pp. Illus. $16.

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International Review of Neurobiology. vol. 8. Carl C. Pfeiffer and John R. Smythies, Eds. Academic Press, New York, 1965. 346 pp. Illus. $12.50. Seven papers: "A morphologic concept of the limbic lobe" by Lowell E. White, Jr.; "The anatomophysiological basis of somatosensory discrimination" by David Bowsher, with Denise Albe-Fessard; "Drug action on the electrical activity of the hippocampus" by Charles Stumpf; "Effects of drugs on learning and memory" by James L. McGaugh and Lewis F. Petrinovich; "Biogenic amines in mental illness" by Günter G. Brune; "The evolution of the butyrophenones, haloperidol, and trifluperidol, from meperidine-like 4-phenylpiperidines" by Paul A. J. Janssen; and "Amplitude analysis of the electroencephalogram (review of the information obtained with the integrative method)" by Leonide Goldstein and Raymond A. Beck.

Kurzes Lehrbuch der Pharmakologie. G. Kuschinsky and H. Lüllmann. Thieme, Stuttgart, Germany, ed. 2, 1966. 353 pp. Illus. DM. 33.

Living Tissues: An Introduction to Functional Histology. R. L. Holmes. Pergamon, New York, 1965. 154 pp. Illus. Paper, $2.95. Commonwealth and International Library.

An Outline of Radiographic Findings in Multiple-System Disease. John H. Simonton and Robert C. Jamison. Thomas, Springfield, Ill., 1965. 275 pp. $11.75.

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Traité de Zoologie: Anatomie, Systématique, Biologie. vol. 4, pts. 2 and 3. pt. 2, Némathelminthes (Nematodes) (740 pp.); pt. 3, Némathelminthes (Nématodes, Gordiacés) Rotifères, Gastrotriches, Kinorhynques (774 pp.). Pierre-P. Grassé. Masson, Paris, 1965. Illus. Paper, F. 320; cloth, F. 344 set.

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The Application of Neuroleptanalgesia in Anaesthetic and Other Practice. Proceedings, First British Symposium (Edinburgh), June 1964. N. W. Shephard, Ed. Pergamon, New York, 1965. 106 pp. Illus. $8.50. Six papers: "The chemistry and pharmacology of droperidol, phenoperidine, and fentanyl" by N. W. Shephard; "The use of neuroleptanalgesia in neurosurgery" by A. S. Brown; "Some experiences with phenoperidine and droperidol in general anaesthesia" by G. Lavery Evans and B. A. Poley; "The use of droperidol and fentanyl for anaesthesia during operation for ultrasonic destruction of the labyrinth in Meniere's disease" by M. C. Holderness and P. J. F. Baskett; "Droperidol in obstetric practice" by S. W. McGowan; and "Neuroleptanalgesia during and after open-heart surgery" by C. Prys Roberts.

Autoimmunity. A symposium, 5th Congress, International Academy of Pathology (London), 1964. R. W. Baldwin and J. H. Humphrey, Eds. Davis, Philadelphia, 1965. 108 pp. Illus. Paper, $4.50. Eleven papers: "Methods used in the investigation of autoimmune diseases" by I. M. Roitt and D. Doniach; "Studies in rheumatic fever: IV, Concepts of the pathognominic tissue responses" by Bernard M. Wagner; "Autoimmunity and rheumatoid arthritis" by L. E. Glynn; "Autoimmunity in Sjögren's syndrome" by J. R. Anderson, J. S. Beck, K. Bloch, W. W. Buchanan, and J. J. Bunim; "Immunological aspects of systemic lupus erythematosus" by E. J. Holborow; "Autoimmune thyroid disease" by D. Doniach and I. M. Roitt; "Serological aspects of the autoimmune haemolytic anaemia" by Sheila M. Worlledge; "Some clinical aspects of autoimmune liver disease" by A. E. A. Read; "Immunological aspects of pernicious anaemia" by W. J. Irvine; "Autoantibodies in ulcerative colitis and their production in rabbits by the injection of foreign gut or bacteria" by Geoffrey L. Asherson; and "The thymus and autoimmunity" by Delphine M. V. Parrott and June East.

Forms of Water in Biologic Systems (*Ann. N.Y. Acad. Sci.* **125**). Harold E. Whipple, Ed. New York Academy of Sciences, New York, 1965. 524 pp. Illus. Paper, $10. Twenty-eight papers presented at a conference held in October 1964.

Microbiology and Soil Fertility. A symposium (Corvallis, Ore.). C. M. Gilmour and O. N. Allen, Eds. Oregon State Univ. Press, Corvallis, 1965. 176 pp. Illus. $4.50. Seven papers presented at the 25th annual biology colloquium: "Sites of nutrient exchange in soils" by C. D. Moodie; "Mineralization and immobilization of soil nutrients" by Howard Lees; "The cycling of carbon and nitrogen in the biosphere" by C. C. Delwiche; "The characterization of soil humus" by F. E. Broadbent; "Nonleguminous plant symbiosis" by Ethel K. Allen and O. N. Allen; "The rhizobium-legume association" by J. C. Burton; and "Interaction of higher plants and soil microorganisms" by M. I. Timonin.

Mineral Processing. Proceedings, Sixth International Congress (Cannes), 1963. A Roberts, Ed. Pergamon, New York, 1965. 752 pp. Illus. $45. Fifty papers.