

# SCIENCE

13 April 1973

Vol. 180, No. 4082

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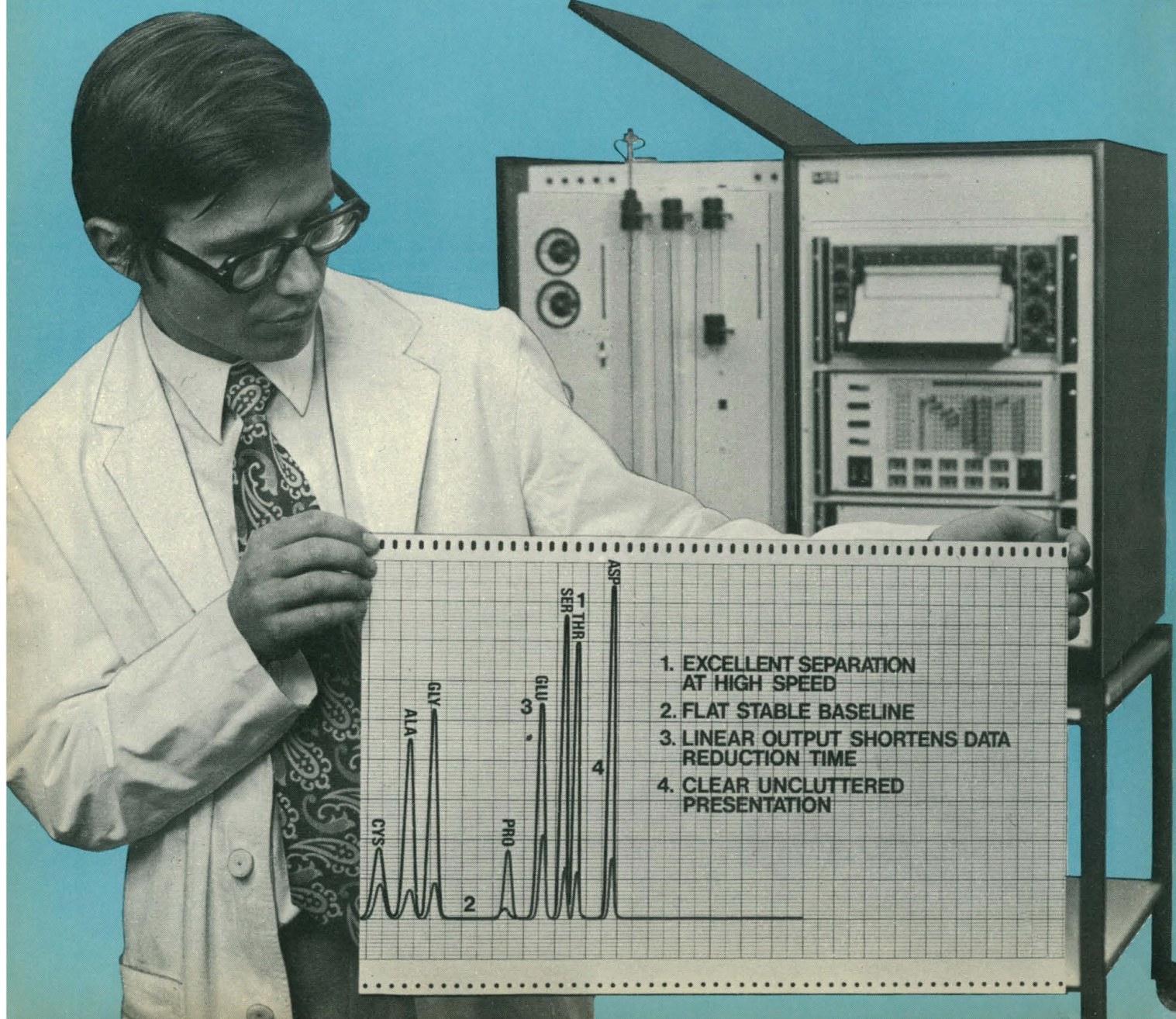
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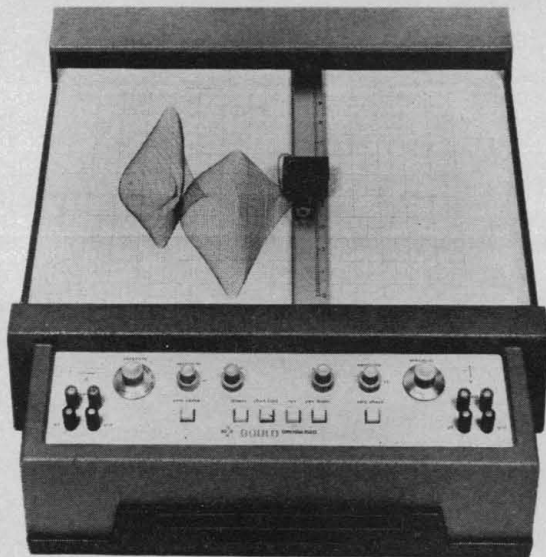
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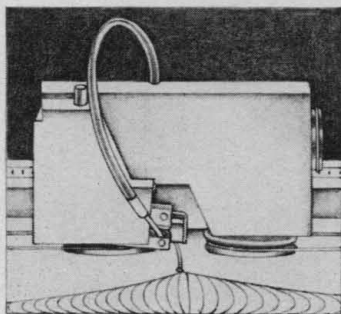


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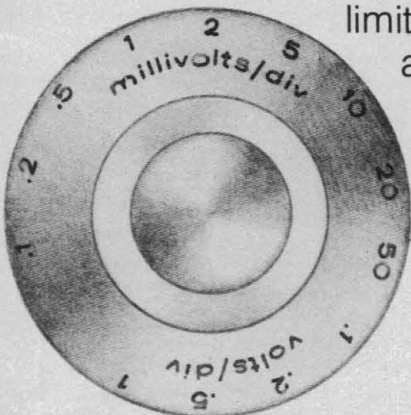


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Enlargements of the reverse sides of the Australian 5¢ and 20¢ coins, illustrating the echidna (*Tachyglossus aculeatus*, top) and the platypus (*Ornithorhynchus anatinus*, bottom). The milk of these egg-laying mammals contains unusual carbohydrates. See page 201. [Jutta Hösel, Melbourne, Australia]

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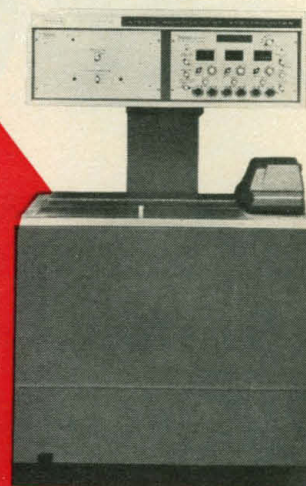
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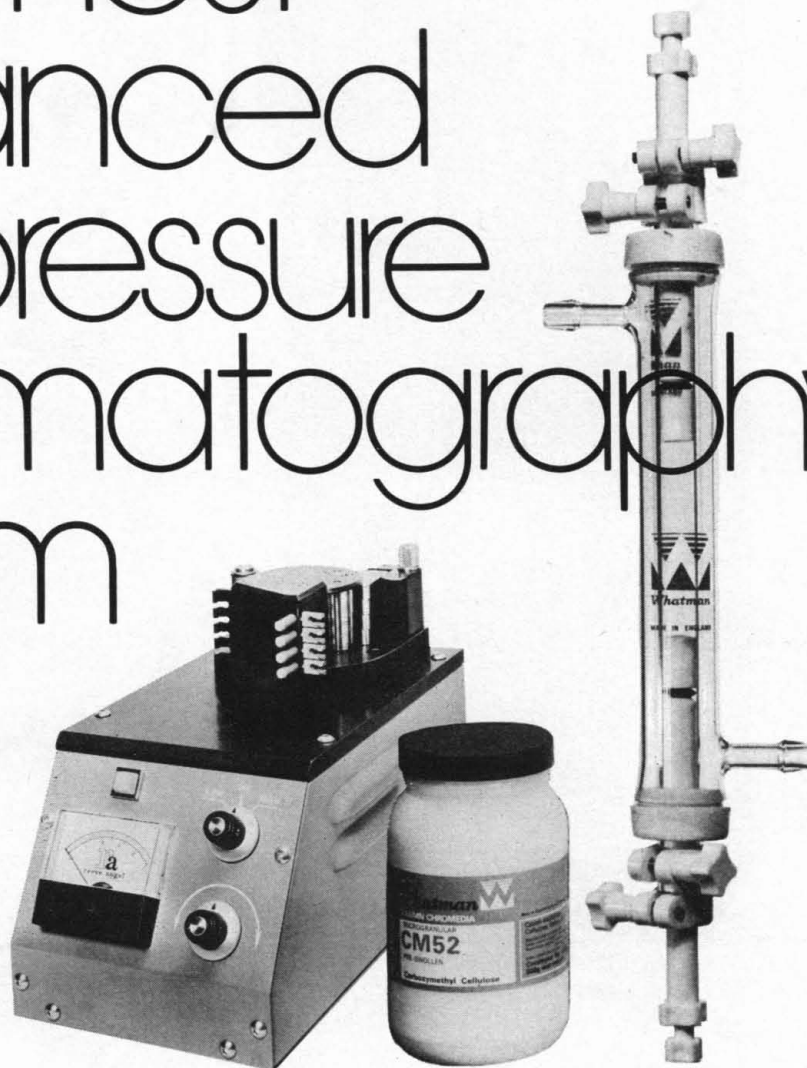
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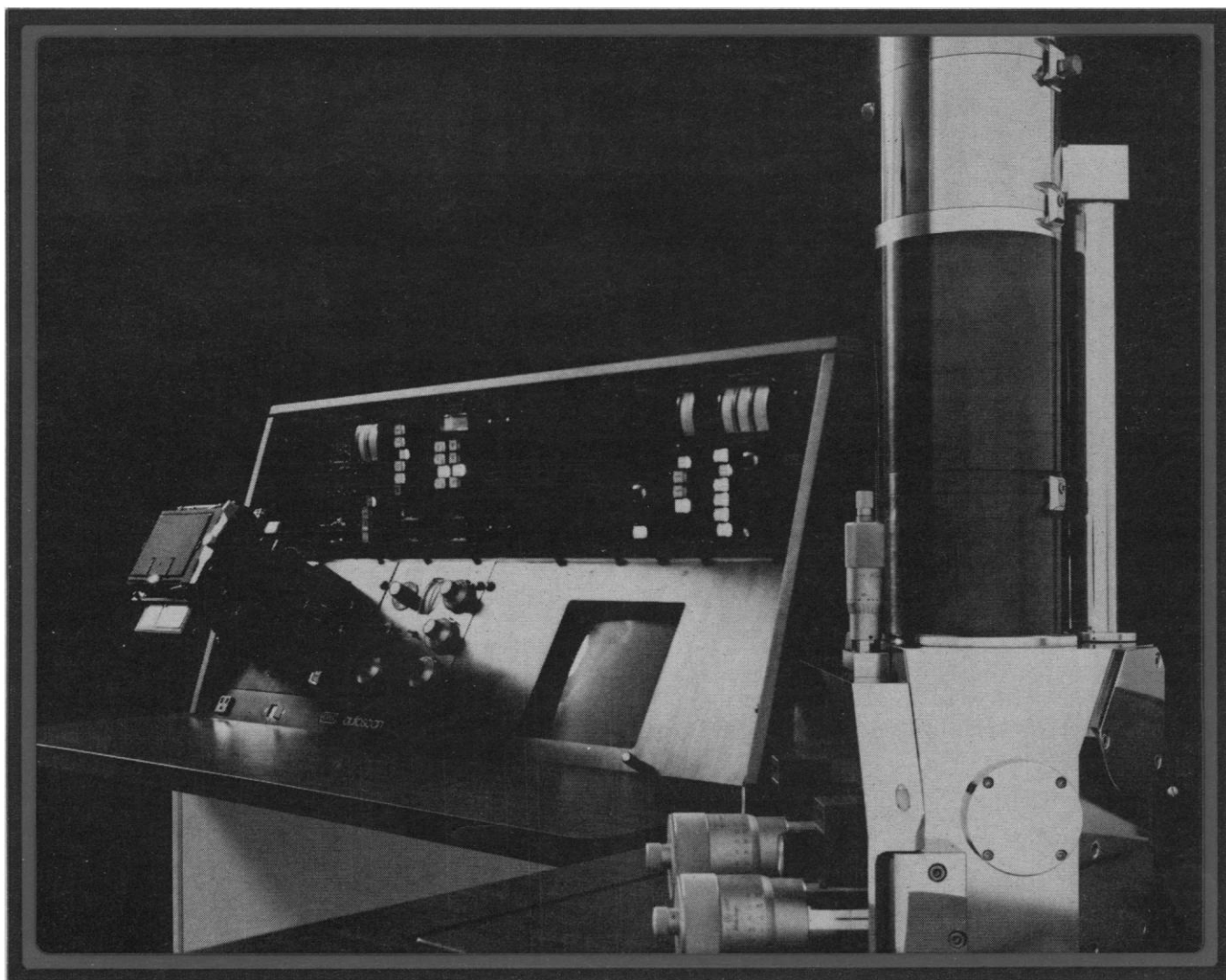
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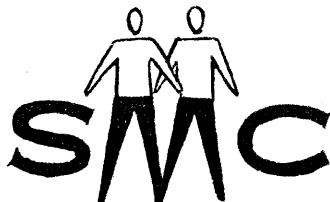
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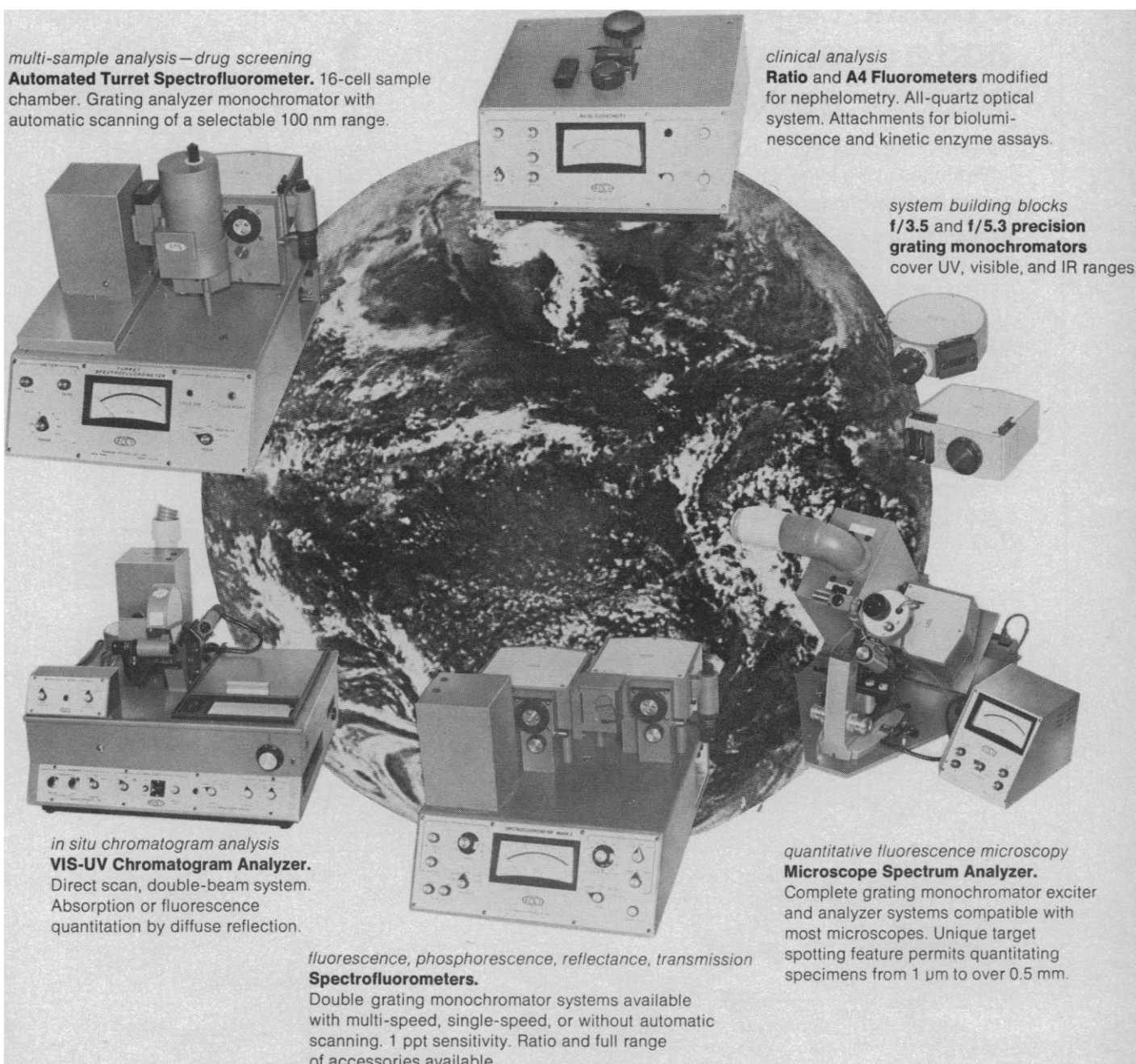
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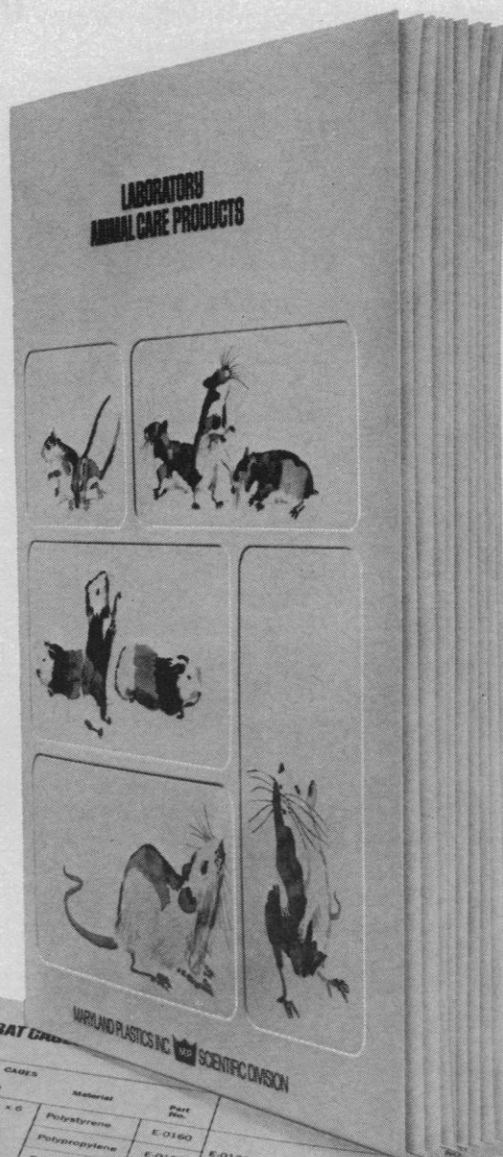
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Age of puberty	Approx. 22 days, vaginal opening on 42nd day	11 x 8 1/2 x 6	Material
Gestation period	21-22 days	14 1/2 x 12 1/2 x 6 1/2	Part No.
Whelping age	22 days, lactating female	19 x 10 1/2 x 6 1/2	Polystyrene E-0160
Temperature, rectal	99.5-100.0 °F	19 x 10 1/2 x 8	Polystyrene E-0150
Respiratory rate	100-120 per minute	20 x 16 x 8 1/2	Polystyrene E-0170
Rate of heartbeat	300-400 per minute	20 x 16 x 8 1/2	Polycarbonate E-0560
Food consumption, daily	15-20 grams	20 x 16 x 8 1/2	Polycarbonate E-0580
Water consumption, daily	10-15 milliliters	20 x 16 x 8 1/2	Polycarbonate E-0570
Urine excretion, daily	1-2 milliliters	20 x 16 x 8 1/2	Polystyrene E-0460
Urine excretion, daily	1-2 milliliters	20 x 16 x 8 1/2	Polystyrene E-0450
Urine excretion, daily	1-2 milliliters	20 x 16 x 8 1/2	Polystyrene E-0470
Urine excretion, daily	1-2 milliliters	20 x 16 x 8 1/2	Polystyrene E-1460
Urine excretion, daily	1-2 milliliters	20 x 16 x 8 1/2	Polystyrene E-1450
Urine excretion, daily	1-2 milliliters	20 x 16 x 8 1/2	Polystyrene E-1470
Urine excretion, daily	1-2 milliliters	20 x 16 x 8 1/2	Polystyrene E-0760
Urine excretion, daily	1-2 milliliters	20 x 16 x 8 1/2	Polystyrene E-0750
Urine excretion, daily	1-2 milliliters	20 x 16 x 8 1/2	Polystyrene E-0770
Urine excretion, daily	1-2 milliliters	20 x 16 x 8 1/2	Polystyrene E-0720
Urine excretion, daily	1-2 milliliters	20 x 16 x 8 1/2	Polystyrene E-0790
Urine excretion, daily	1-2 milliliters	20 x 16 x 8 1/2	Polystyrene E-0730

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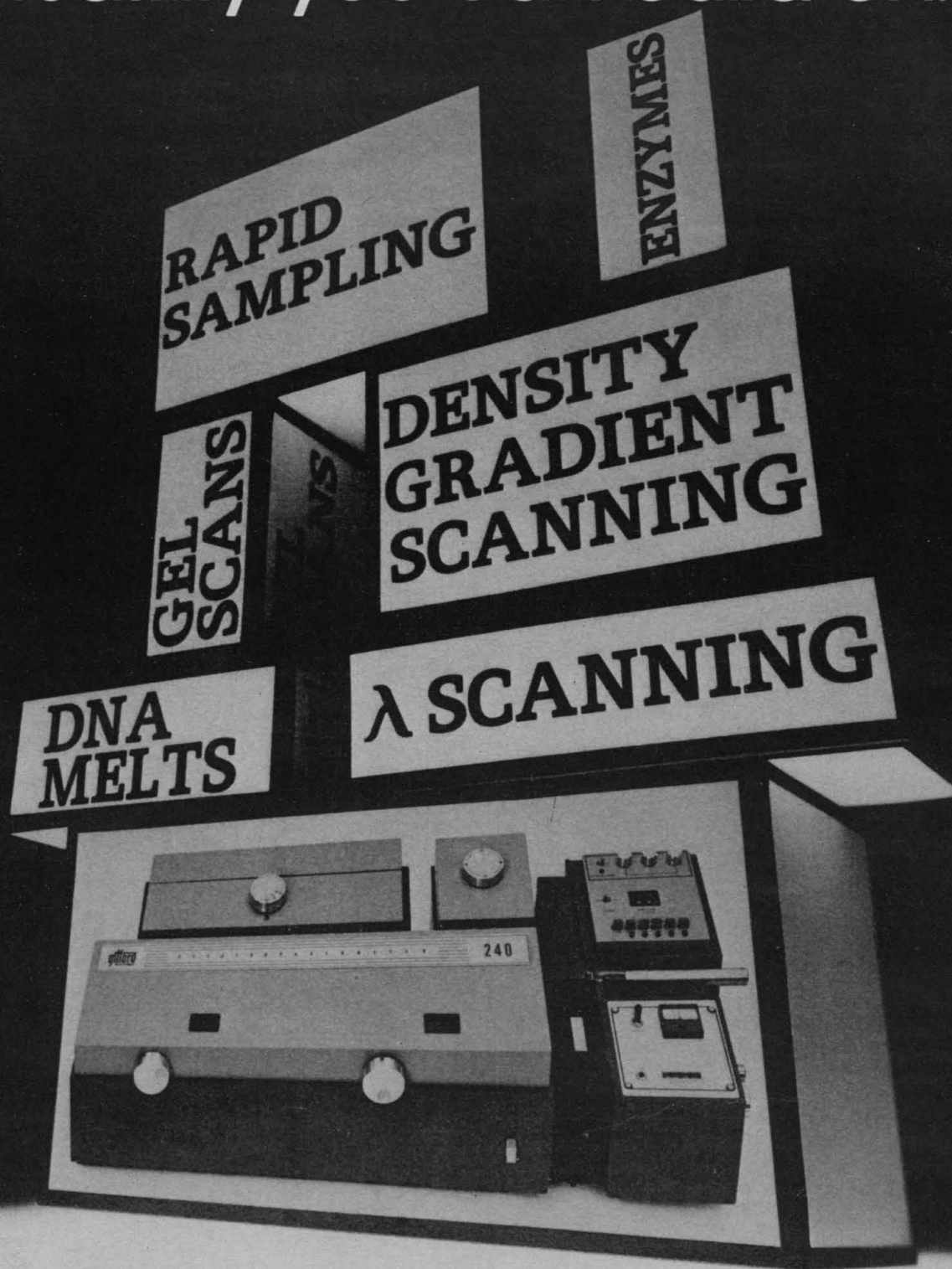
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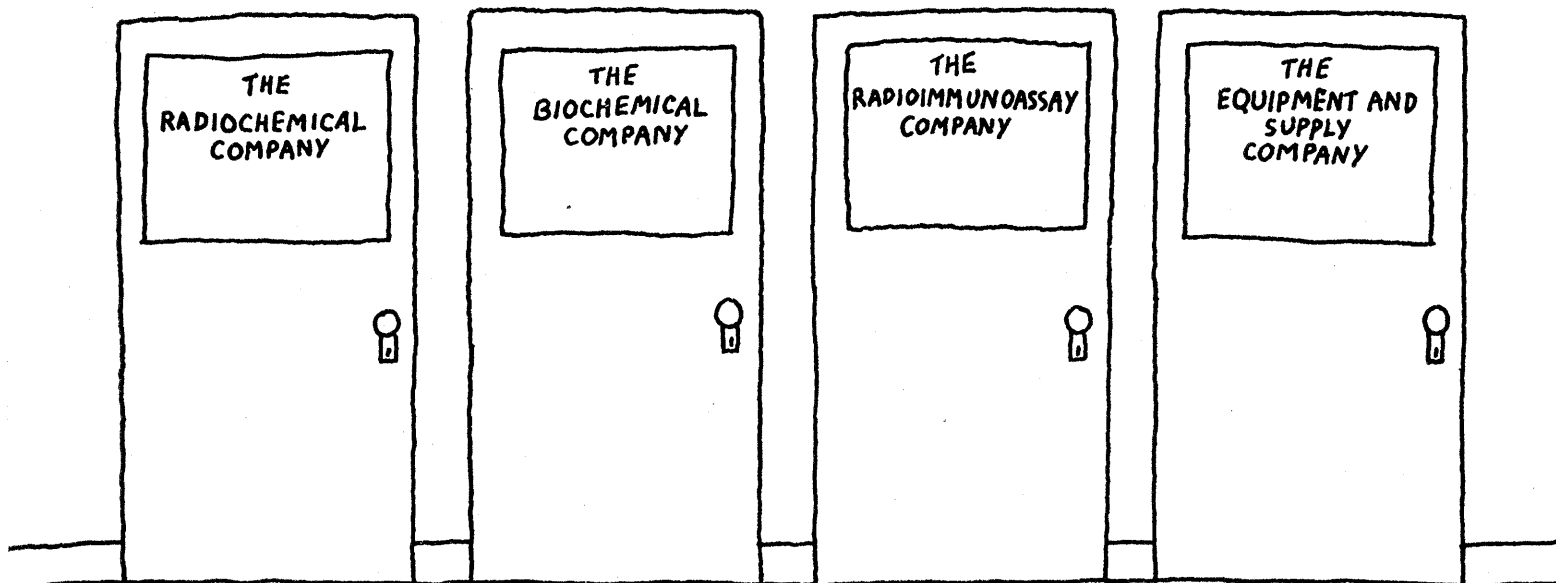
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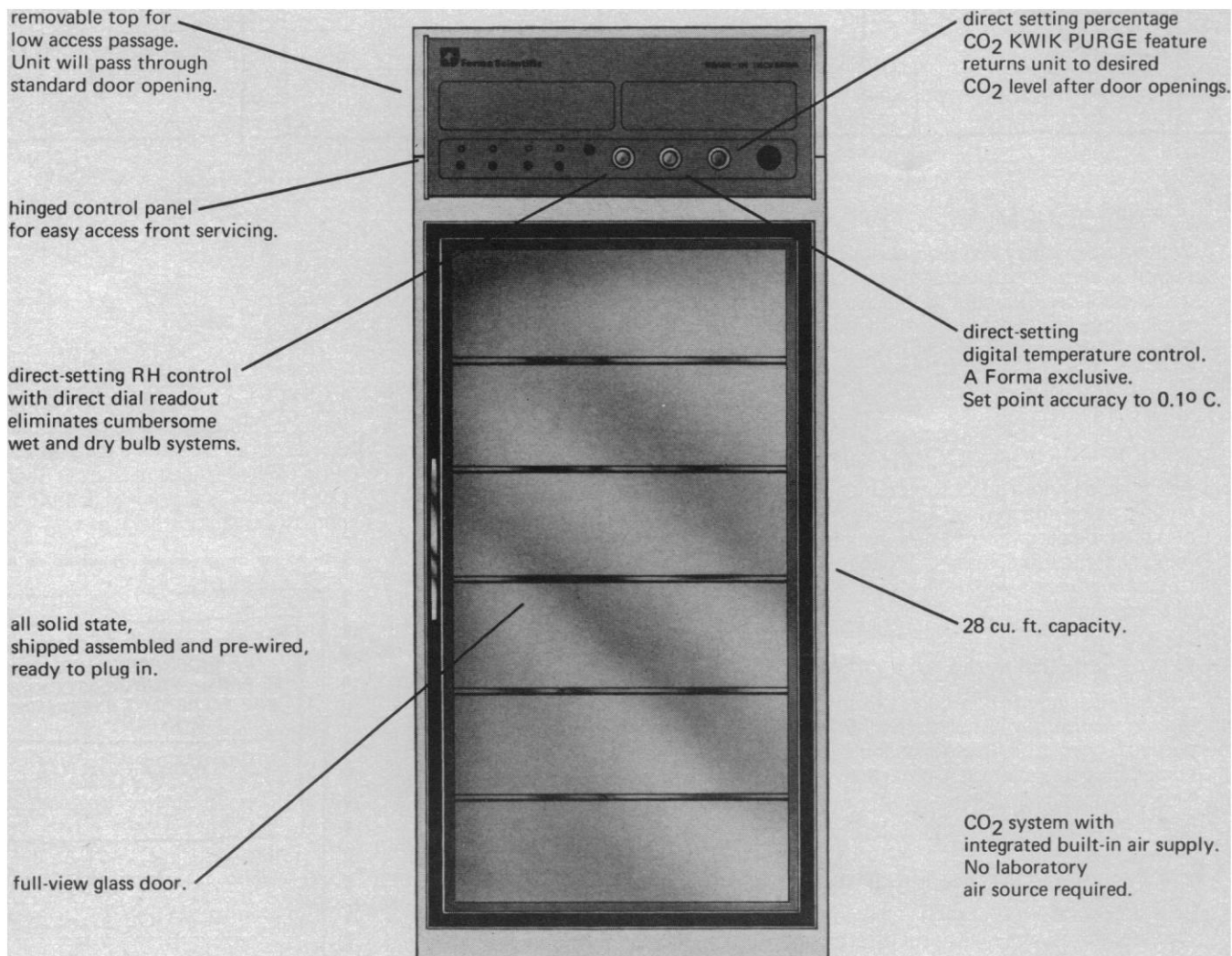
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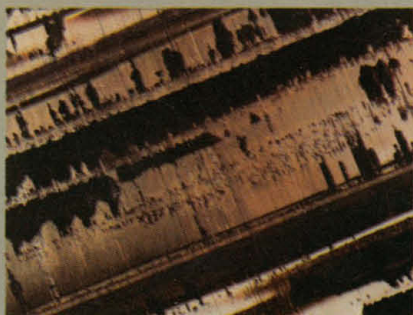
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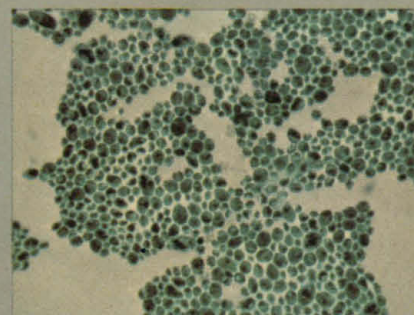
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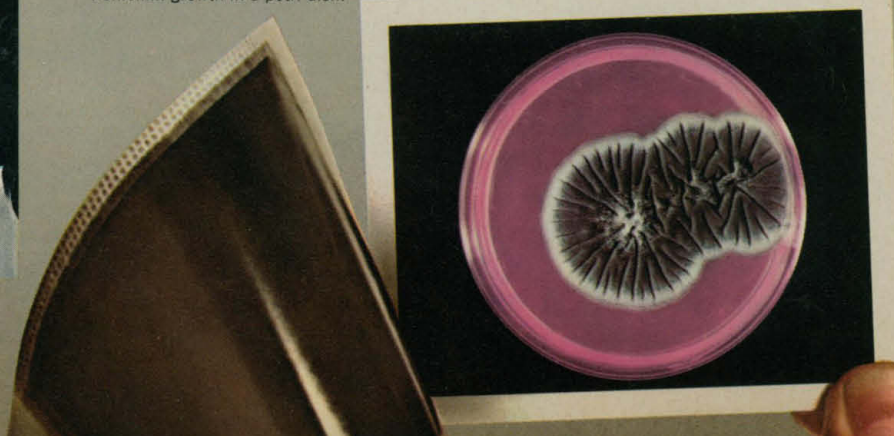


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Penicillin growth in a petri dish.





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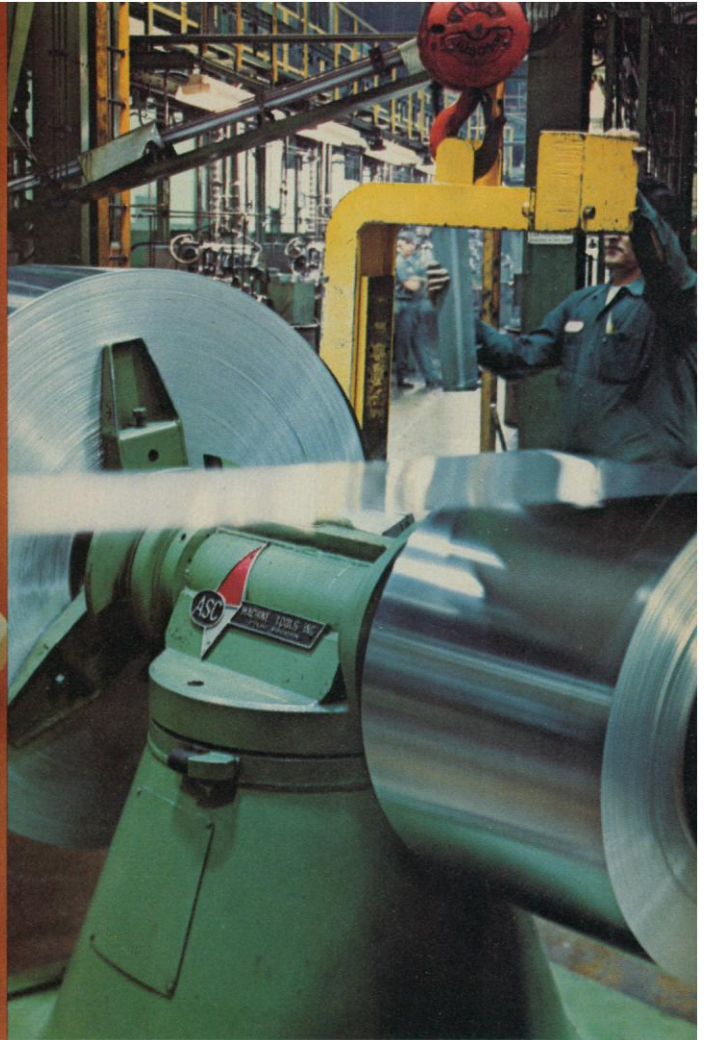
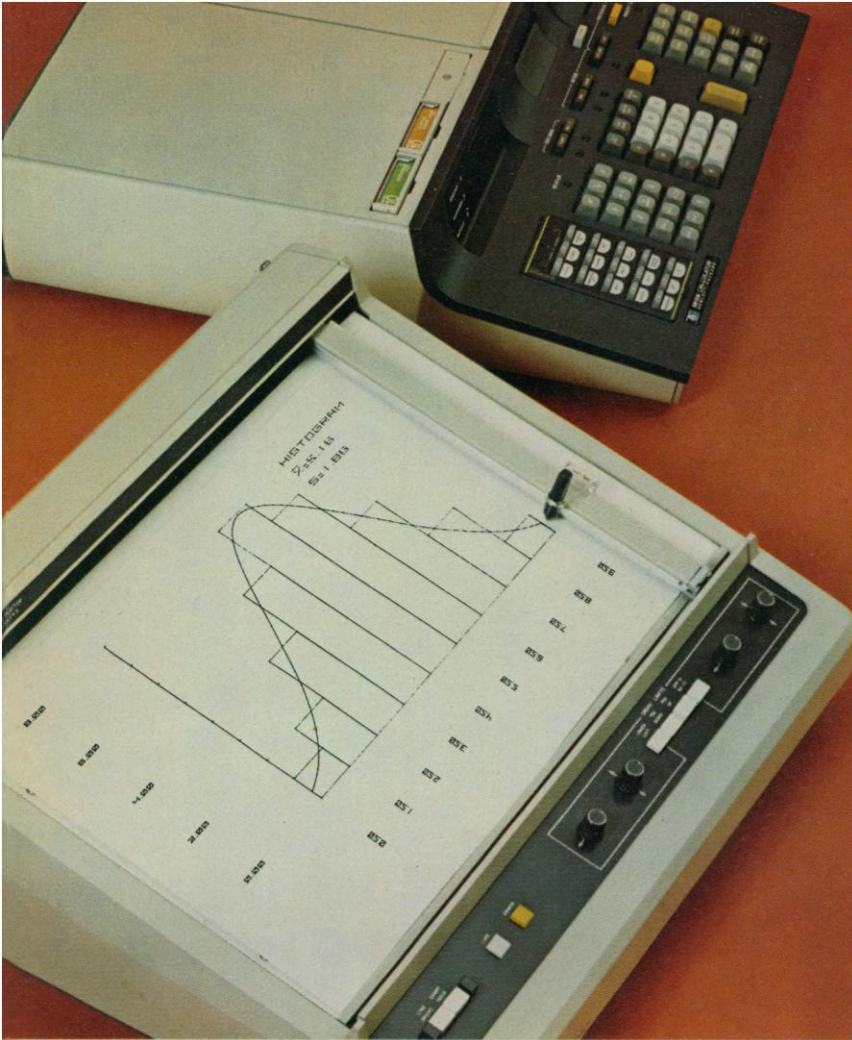
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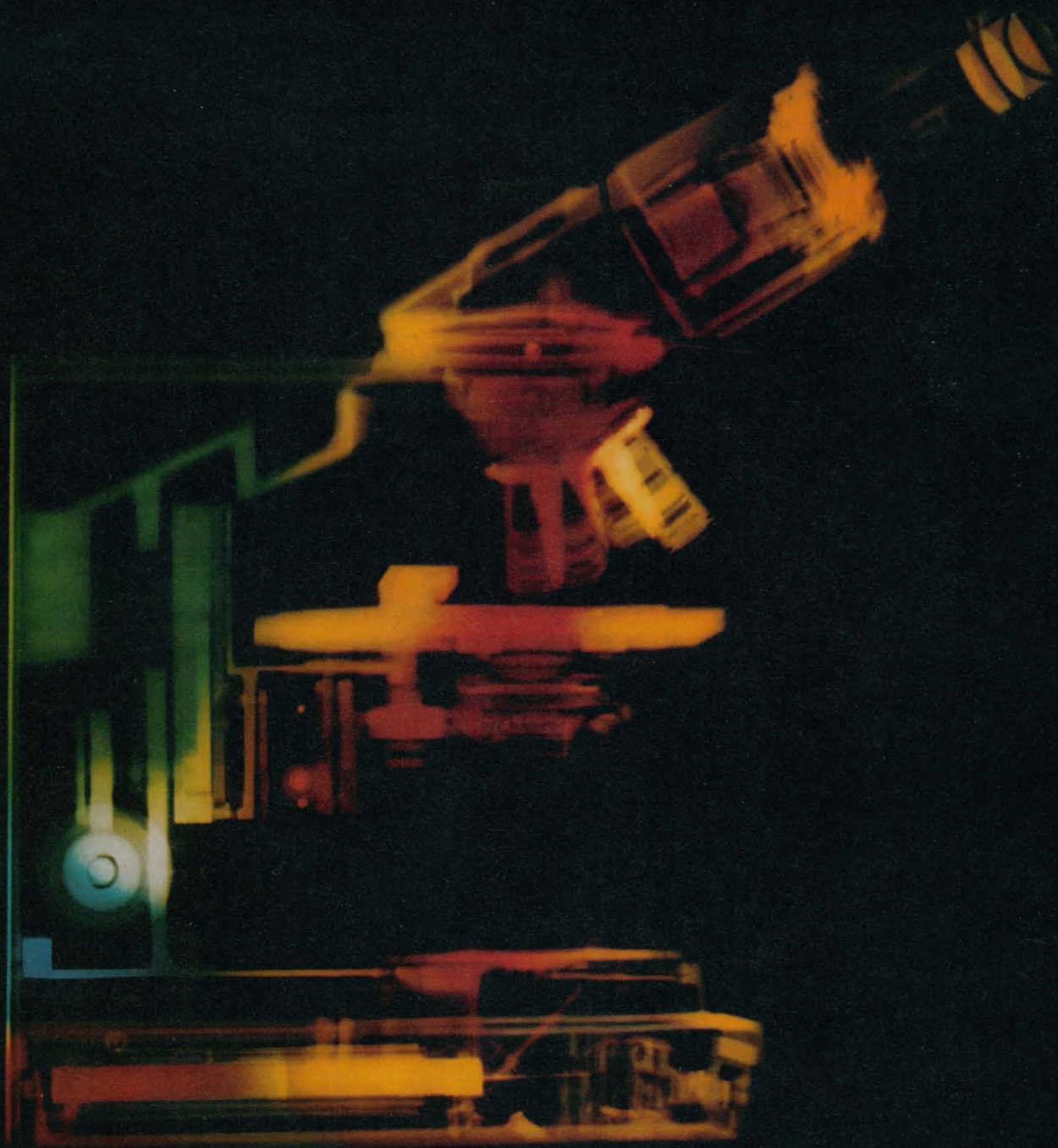
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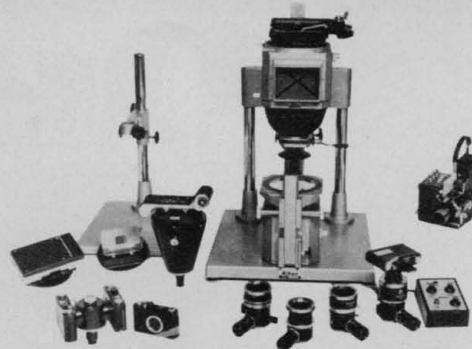
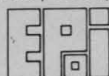
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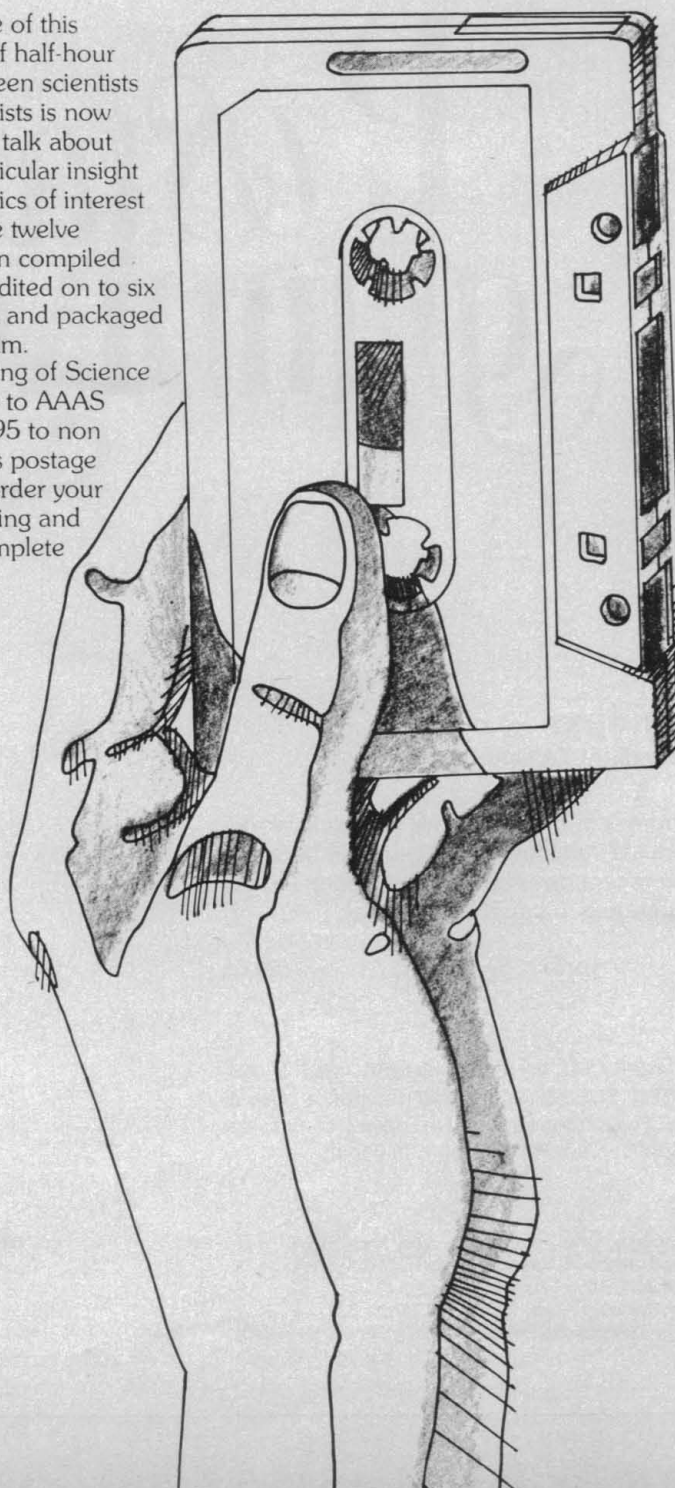
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Here are some of the kinds of problems in which Varian instruments can help the life science lab. There are others. Ask us about them.

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With difference spectroscopy the life scientist has a valuable probe for investigating the structure of protein macromolecules. It is a very sensitive method for detecting small, discrete

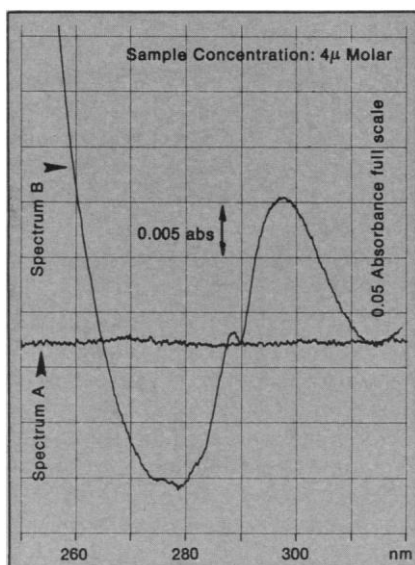
changes in a sample which could not be observed with standard absorption procedures, where strong overlapping bands obscure many weaker peaks. To measure these small absorbance changes, the scientist must have a good spectrophotometer.

Because of its unmatched photometric accuracy, the Cary 118 Spectrophotometer is the ideal instrument for difference measurements (at 0.1 abs the accuracy is 0.00035 abs). Such performance is necessary, since even



very small errors can sometimes lead to incorrect interpretation of the spectrum.

In practical terms the 118's exceptional performance frees the scientist from concern about the quality of the data. He knows that any peaks recorded on the spectrum result from sample absorption, and not from an instrument artifact.



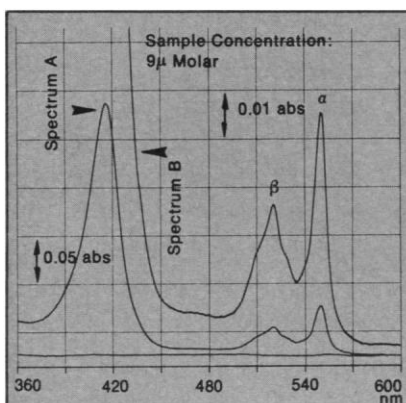
These spectra of oxidized cytochrome C, recorded on the Cary 118, illustrate one effect of pH on this protein. Spectrum A was recorded with identical sample and reference solutions (both pH 7). For Spectrum B the sample was increased to pH 11, while the reference was unchanged. Perturbation of the tyrosine residues becomes readily apparent.

To obtain further information about the Cary 118's capabilities for difference spectroscopy, kinetics, determining concentration in small-volume samples, quantitative analyses, or even recording derivative spectra, circle Reader Service No. 116



## With the Cary 17 changing absorbance ranges makes a mountain out of a mole hill

Often when recording a UV-Vis spectrum, a particular wavelength region of interest may produce only a small hump on the spectrum, because



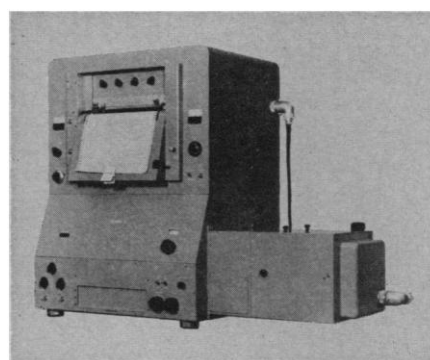
To demonstrate the advantages of changing absorbance ranges, these spectra of cytochrome C reduced with ascorbic acid were recorded on the Cary 17. Spectrum A (0-0.5 abs range) fully resolves the Soret band at 415 nm, but shows little detail on the peaks at the longer wavelengths. The expanded presentation in Spectrum B (0-0.1 abs range) gives better detail of the  $\alpha$  and  $\beta$  bands at 550 and 520 nm.

the sample's absorption is not very great in that area. In such a situation, changing the absorbance range expands the chart scale and makes it possible to see more spectral detail.

With the Cary 17 Spectrophotometer, switching absorbance ranges is convenient and rapid. The instrument is equipped with a universal absorbance/%T slidewire so that any of eight absorbance ranges or a 0-100 %T range may be selected. This feature, along with the coupled wavelength scan and chart drive, makes it easy to back up the chart and rescan a particular area using expanded scale to increase the sensitivity of the recording. A small, smooth hump becomes a detailed peak.

A second advantage of the range change capability is that absorbance bands with widely divergent molar absorptivities can be recorded on the same chart, a more convenient presentation for most purposes. Too,

it requires less sample preparation because no sample dilution is necessary to bring absorbance values on scale.



Circle Reader Service No. 117 for more information on the Cary 17.

## The Techtron 635 Spectrophotometer simplifies kinetics

Enzyme kinetics involve a lot of sample handling problems. They're a major concern in this type of measurement. With the Varian Techtron 635K Spectrophotometer we've solved many of them.

To do this we designed the instrument on a modular concept so the scientist can select the system best suited to his work, and purchase it at a moderate cost.

For analyzing numerous samples, for instance, an Auto-5 cell programmer with dual sample/reference turrets can be included in the system. Also, there are thermostatable cell holders, a temperature readout module, wavelength programmer, and other accessories, all designed to make kinetics studies easier.

Another step we've taken to simplify kinetics is to incorporate push-button controls on the instrument. You just punch a button to set operating parameters.

To obtain more information, circle Reader Service No. 118





## Spin labeling biological membranes: What For and What With

### First, the What For.

Here's a list of literature references, all of which deal with the use of nitroxide spin labels and EPR (ESR) to study biological membranes:

Biosynthetically spin labeled mitochondria subjected to EPR analysis contained at least two incorporated spin labels with different degrees of constraint.

A. Kieth, A. Waggoner, and O. Griffith, *Proc. Nat'l Acad. Sci.*, **61**, 819 (1968).

Incorporation of spin-labeled compounds into membranes by using a protein carrier or, for experiments with micelles or liposomes, by agitation or sonication of the aqueous suspension should prove to be more valuable in the future as a probe of the membranes of living cells.

A. Waggoner, T. Kingzett, S. Rottschaefer, and O. Griffith, *Chem. Phys. Lipids*, **3**, 245 (1969).

M. Barratt, D. Green, and D. Chapman, *Chem. Phys. Lipids*, **3**, 140 (1969).

The orientation properties of spin labels were used to show that the phospholipid regions of both nerve and erythrocyte membranes strongly resemble lipid bilayers with phospholipids being more tightly packed in erythrocytes than in nerve fibers. W. Hubbell and H. McConnell, *Proc. Nat'l Acad. Sci.*, **63**, 16 (1969).

The spin label attached to cytochrome C in submitochondrial membranes underwent reversible changes in mobility when the metabolic state of the submitochondrial particles was altered.

C. Lee, H. Drott, B. Johansson, T. Yonetani, and B. Chance in *Probes of Structure and Function of Macromolecules and Membranes*, B. Chance, C.-P. Lee, and T. Yonetani, Eds., Academic, New York (1971).

They're all available in your local technical library.

### Now, the What With.

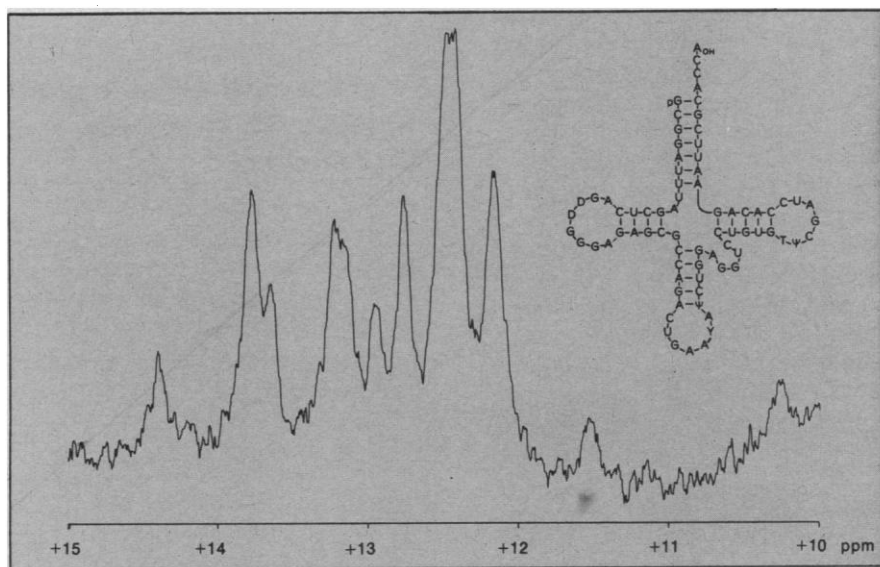
Varian EPR systems, of course. The EM-500, E-4, E-Line—the finest EPR systems available anywhere. For literature, write on your letterhead indicating the systems of interest.

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## The high field NMR analysis of living cell components

Transfer RNA plays a vital role in protein synthesis in the living cell, selecting a specific amino acid and attaching it to the growing protein amino acid sequence at the point

In this 300-MHz spectrum, obtained using the most powerful NMR spectrometer available, Varian's HR-300, the region between +15 and +10 ppm from DSS<sup>2</sup> shows a number of peaks



specified by the genetic code of the cellular DNA. Now, high field NMR, by helping to provide detailed knowledge about t-RNA's conformation in aqueous solution, offers a promise of better understanding the exact way in which t-RNA accomplishes its function.

Recent work<sup>1</sup> involving a Varian superconducting NMR system has shown that high field proton NMR studies in H<sub>2</sub>O allow observation of the number and type of hydrogen bonds involved in Watson-Crick base pairing in yeast phenylalanine t-RNA.

whose integrated intensity can be interpreted in terms of the number of base pairs, and whose shift values reflect the type of bases paired. These data have now been used to confirm the clover-leaf model for the secondary structure of t-RNA and may even throw additional light on the tertiary structure believed to be responsible for the specificity of action of these vitally important molecules.

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For more detailed information, circle Reader Service No. 120

### REFERENCES:

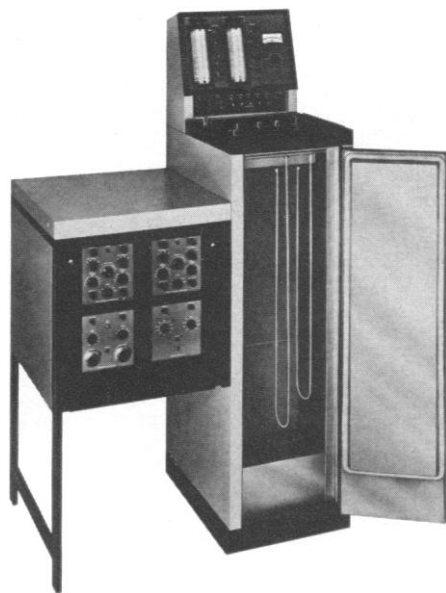
1. Y. P. Wong, D. R. Kearns, B. R. Reid and R. G. Shulman, *M. Mol. Biol.*, in press.  
D. R. Lightfoot, K. L. Wong, D. R. Kearns, B. R. Reid, R. G. Shulman and L. Cary, *Ann. N.Y. Acad. Sci.*, in press.
2. 2,2-dimethyl-2-silapentane-5-sulfonate.

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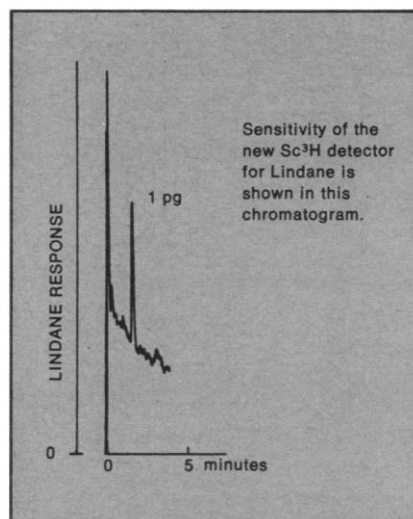


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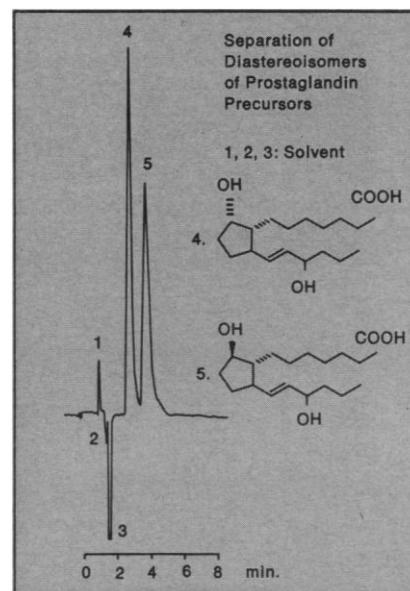


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May 16-18, 1973: Springfield, N.J.

### Liquid Chromatography Courses

February 14-16, 1973: Chicago, Illinois

April 9-11, 1973: San Francisco, Calif.

May 9-11, 1973: Houston, Texas

### Mass Spectrometer Meetings

May 15-16, 1973: Varian MAT Instrument Owners Meeting, Springfield, New Jersey

May 18-19, 1973: Varian MAT Instrument Owners Meeting, Palo Alto, California

May 20-25, 1973: American Society for Mass Spectrometry Meeting, San Francisco, California

### NMR Workshops

April 4-6, 1973: One-day T-60A Workshops, Springfield, New Jersey

### Exhibits/Scientific Meetings

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March 5-8, 1973: Pittsburgh Conference, Cleveland, Ohio, USA

March 6-10, 1973: Medex 73, Basel, Switzerland

March 11-20, 1973: Leipzig Spring Fair, Leipzig, Germany

March 27-30, 1973: Labex International 73, London, England

April 4-15, 1973: Electro Mash 73, Moscow, USSR

April 11-18, 1973: Mesucora/Exp. de Physique, Paris, France

April 16-20, 1973: FASEB, Atlantic City, New Jersey, USA

May 7-12, 1973: Interlabor, Zagreb, Yugoslavia

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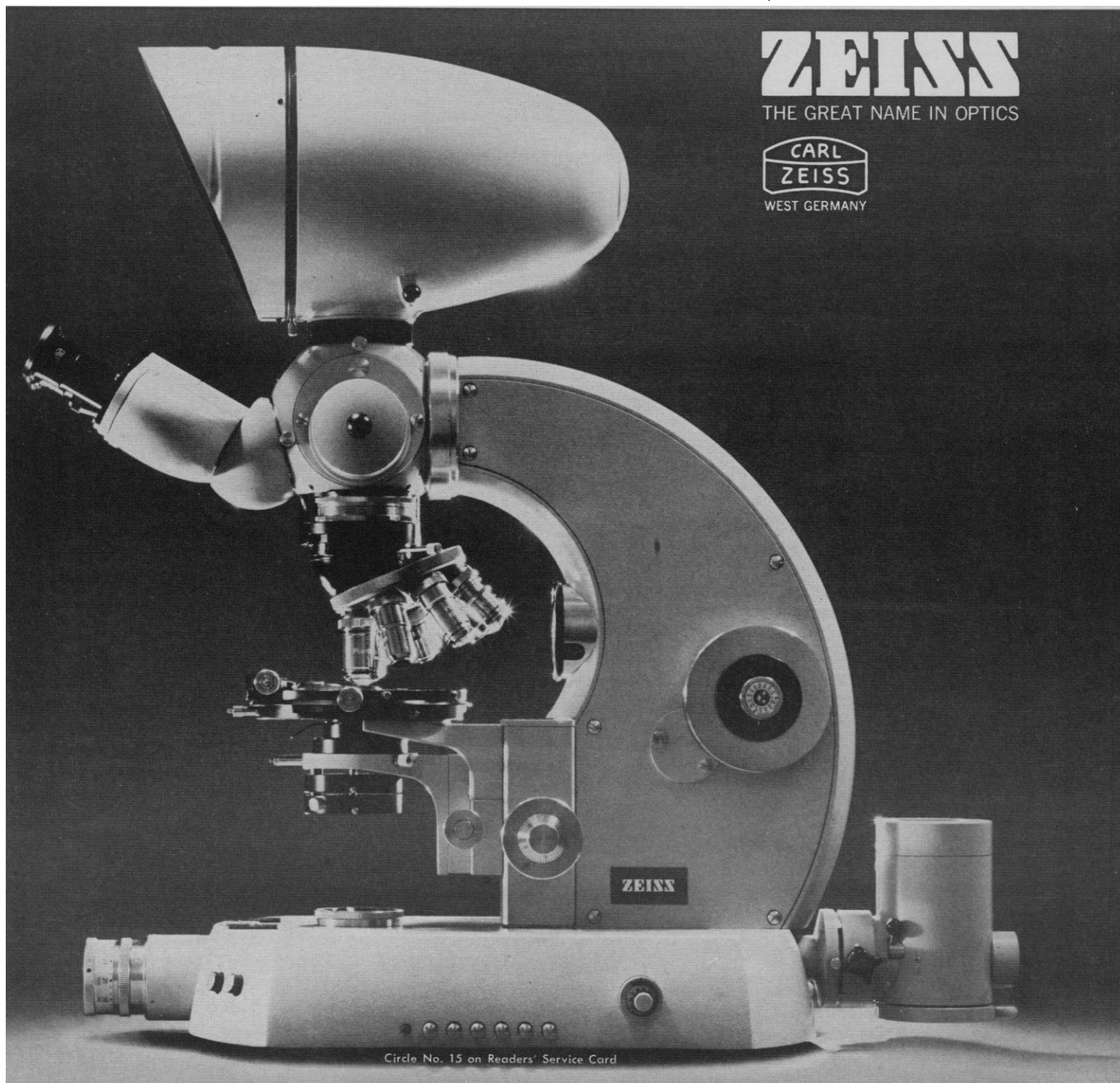
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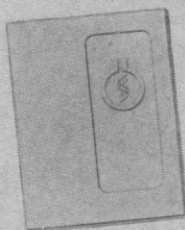




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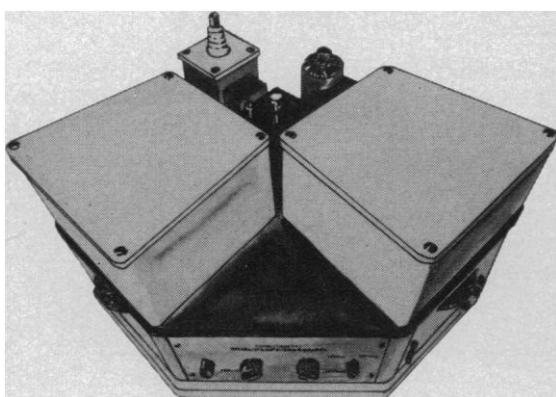
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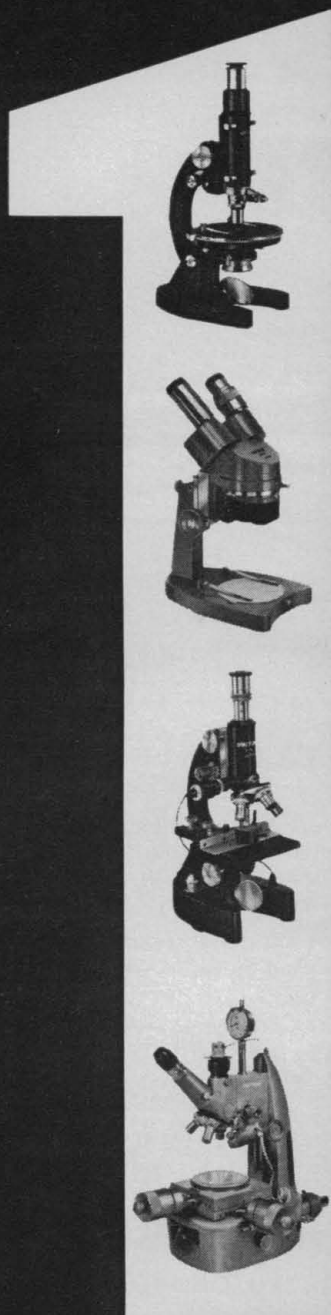
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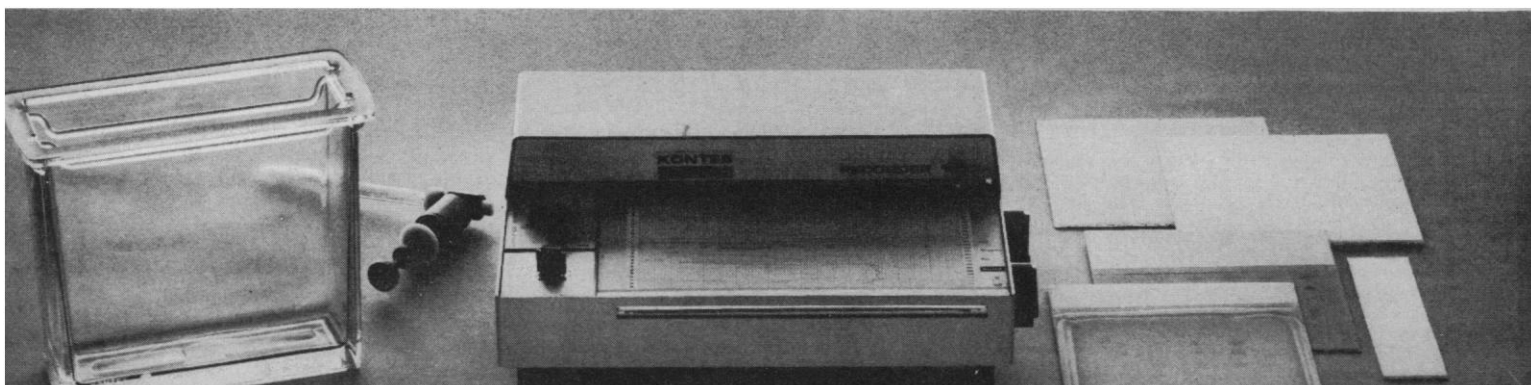
\*\*\*"Determination of Reflectance of Pesticide Spots on Thin-Layer Chromatograms Using Fiber Optics", Morton Beroza, K. R. Hill, Karl H. Norris, ANALYTICAL CHEMISTRY, September 1968, U.S. Patent 3,562,539. Other patents pending.

\*\*\*"An automatic spotter for quantitative thin layer and paper chromatographic analysis by optical scanning." Melvin E. Getz, Journal of the AOAC, Volume 54, No. 4, 1971. Patent Pending.

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"... the burden of proof has now swung to the other side. It lies upon the back of the scientific establishment to prove Velikovsky wrong. Much of what he has predicted is turning out to be right."

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Chairman, Department of Geology  
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Pensée Magazine

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### Issue #I

**How Stable is the Solar System** — Dr. C.J. Ransom, plasma physicist, General Dynamics (Fort Worth)  
**Lunar Rocks and Velikovsky's Claims** — Dr. Derek York, geophysics division, University of Toronto  
**A Record of Success** — 37 documented confirmations of Velikovsky's scientific and historical claims — Thomas Ferte, department of humanities, Oregon College of Education  
**Shapley, Velikovsky, and the Scientific Spirit** — Dr. Horace Kallen, co-founder, New School for Social Research  
**On Decoding Hawkins' "Stonehenge Decoded"** — Dr. Immanuel Velikovsky  
Also, Lynn Trainor (professor of physics, University of Toronto); Lynn Rose (professor of philosophy, State University of New York-Buffalo); David Stove (senior lecturer in philosophy, University of Sydney); and many others.

### Issue #II

**Oedipus and Akhnaton** — Dr. Cyrus Gordon, department of Mediterranean studies, Brandeis University  
**Notes on Velikovsky** — Dr. P.P.M. Meincke, associate dean and professor of physics, University of Toronto  
**Velikovsky at NASA Ames Research Center** — Dr. Richard Haines, research scientist, Ames Research Center  
**Reconciling Celestial Mechanics and Velikovskian Catastrophism** — Ralph Juergens, civil engineer, Flagstaff, Arizona  
**Science vs. Anti-Science** — an exchange between Velikovsky and W.C. Straka, department of astronomy, Boston University  
Also, "Velikovsky on the Formation of Coal," by Wilfrid Francis; a report on the "Velikovsky Symposium" at Lewis and Clark College; "H.H. Hess and My Memoranda," by Immanuel Velikovsky; and many other articles.

### Issue #III

**A Quantitative Test for the Catastrophic Hypothesis** — Dr. Euan MacKie, assistant keeper, Hunterian Museum, University of Glasgow  
**Babylonian Observations of Venus** — Dr. Lynn Rose, department of philosophy, State University of New York (Buffalo)  
**A Reading of the Pyramid Texts** — Dr. William Mullen, department of classics, University of California (Berkeley)  
**Earth Without a Moon** — Dr. Immanuel Velikovsky  
**A Discussion Concerning Celestial Mechanics** — Dr. Martin Kruskal, applied mathematics program, Princeton University, and Ralph Juergens  
Also, "The Orbits of Venus," by Dr. C.J. Ransom and L.H. Hoffee; "Velikovsky's Challenge to the Scientific Establishment," by Professor Sidney Willhelm; "The Lion Gate at Mycenae," by Immanuel Velikovsky; and many other articles.

### In Coming Issues

- An extensive analysis of radiocarbon dating and its applicability to historical catastrophism. Contributors include Nobel Laureate W.F. LIBBY (full-length paper).
- An updated look at Velikovsky's contention that Venus is a youthful planet, by Cornell University Astronomer, CARL SAGAN (full-length paper).
- In each issue, the unpublished writings of IMMANUEL VELIKOVSKY.
- A continuing review of current developments regarding Velikovsky's work. Will there be a symposium on Velikovsky sponsored by the American Association for the Advancement of Science? What kinds of scientific censorship are still being directed at Velikovsky and other independent thinkers? What is now being said about him in the scholarly journals?

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of the offspring is affected? Second, was the average nutritional intake of the affected population below this threshold? Third, was the nutritional intake of the pregnant mothers within the affected population below this threshold?

Another way of viewing these questions is to consider normal protective family behavior toward a pregnant woman in such a crisis situation. Certainly it is reasonable to expect that the husband might tend to offer a portion of his meager ration to his wife, and in larger family groups the proportionate reduction in share for each family member to support the woman's nutritional needs becomes less. Thus, it is possible (even probable) that the actual nutritional intake of these women may have been considerably higher than might be inferred from the averages given in Table 1 of the article.

The authors touch upon this question when they consider the reservations in "Ecological fallacies," but their thrust seems aimed at "variations in performance within groups." I am suggesting the possible existence of a

large systematic bias that would tend to mask the true famine effect. The existence of such a bias might, even at this late date, be revealed by a sampling survey of the parents of the famine-affected youths.

M. N. BRADLEY

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We have concluded from our Netherlands data that there were indeed caloric values above which the growth of the fetus was little affected by nutritional deprivation of the mother. The average food intake of the population certainly fell below this threshold for fetal growth, and so too did the intake of pregnant women, since the growth of their infants was retarded. No threshold below which mental performance is affected could be detected in our data, however. If there is such a threshold, it must be very close to that below which reproduction cannot be maintained.

In our quantitative analyses of the effect of nutritional deficiency on intra-uterine growth (in preparation), we

found nonlinear and conditional relations between caloric rations and fetal dimensions. There were values of caloric rations above which growth was little affected and below which it was markedly affected. Among the fetal dimensions analyzed by us, the threshold value was highest for birth weight (around an average daily caloric ration of 1500 calories), probably lower for length at birth, and lowest for head size. Thus length was affected by the famine relatively less than birth weight, and head size less than length.

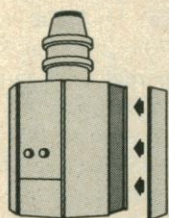
The average daily ration was reduced to 565 calories in the worst month, and for five consecutive months did not rise above 725 calories. In this period fertility fell to one-third of the prefamine norm. Clinical reports and our further quantitative analyses support the view that among the causes of this decline in fertility, loss of fecundity was important. The experience of the famine during the Leningrad siege of World War II suggests that, where famine is any more prolonged and severe than it was in the Netherlands, reproduction can hardly be sustained at all.

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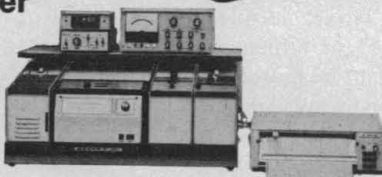
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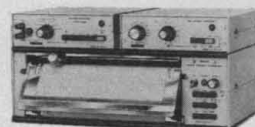
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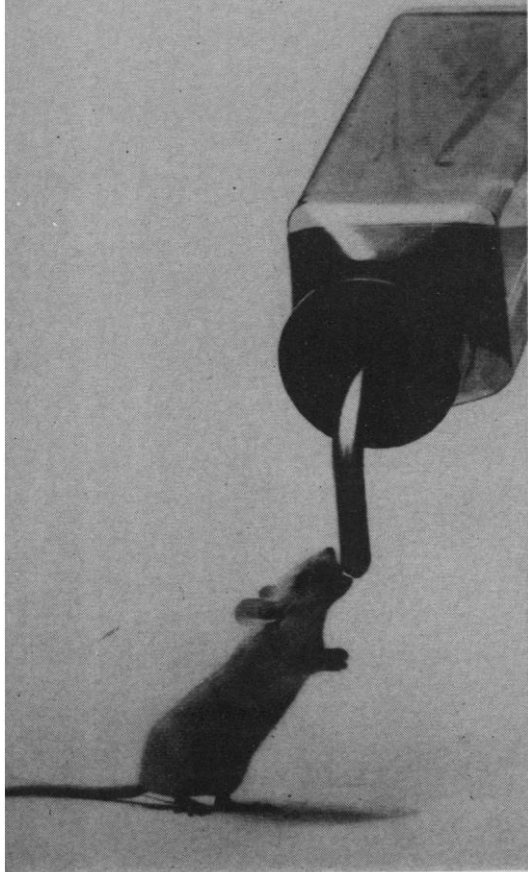
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We cannot argue that pregnant women were not sheltered from the worst of the famine by their families, although we have no evidence of this; during the famine, pregnant women did not get preferential rations officially. Rations were certainly supplemented from extra-legal sources, and the caloric thresholds for fetal growth should be assessed with these supplements in mind. Bradley's idea of a sample survey to test for such systematic bias might therefore be an attractive one, but we do not judge it necessary in the light of our recent work. Even if pregnant women were sheltered, they and their infants experienced severe effects of the famine. Maternal weight immediately after birth was depressed to 4 standard deviation units below the postfamine norm. Their infants experienced, in addition to intrauterine growth retardation, an excessive mortality that persisted through the first 90 days of life.

ZENA STEIN  
MERVYN SUSSEX

62 Regents Park Road,  
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### Lobster Flavor

As a native of the Greek northwest coast, I have attempted to titillate my palate with the essence of the indigenous crustaceans, commercially available in sizes considerably larger than those of their New England cousins, only to discover, alas, that length and warm waters do not a tasty lobster make.

Hughes, Sullivan, and Shleser (22 Sept. 1972, p. 1110) should have also determined the environmental effect on taste by consuming some of their gargantuan arthropods.

G. N. TSANDOULAS

Lincoln Laboratory,  
Massachusetts Institute of Technology.  
Lexington 02173

The New England lobster, *Homarus americanus*, reaches a size of up to 40 pounds. Most lobsters caught in conventional wooden pots weigh less than 5 pounds, and these are the lobsters commonly served in restaurants. However, more than 1 million pounds of large lobsters (ranging from 5 to 40 pounds) are landed each year from New England deep waters. Most people who have cooked and eaten these large lobsters prefer them to the smaller ones for two reasons: (i) they cost less per pound and (ii) the texture and flavor

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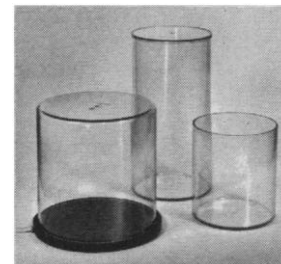


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of the meat is equal to that of the smaller lobsters. One large lobster, instead of several small ones, is often bought for family meals. Many of these lobsters are used by restaurants for salad meat.

It has been thought by most lobster fanciers that lobsters only come from the cold waters of Maine and Canada, where the temperatures range from 40° to 50°F. This is not true. Many thousands of pounds of lobsters are caught from Cape Cod to the Carolinas, in the bays and sounds where the temperature reaches 70°F. These lobsters are indistinguishable in appearance, texture, and flavor from those of the "colder" waters. This is also true of the lobsters we ate that were raised in warm waters. We do not know if the same applies to species of the lobster in the Mediterranean Sea or in other tropical waters.

JOHN T. HUGHES  
*Massachusetts Department of Natural Resources, Division of Marine Fisheries, Lobster Hatchery and Research Station, Vineyard Haven 02568*

ROBERT SHLESER  
*Institute of Marine Resources, University of California, Davis 95616*

John J. Sullivan is deceased.—EDITOR

### Conservation of Gasoline

In Philip Abelson's editorial "Energy conservation" (27 Oct. 1972, p. 355), I was particularly pleased with the recommendations that the automobile industry make cars which are smaller and use less gasoline per mile. It is unfortunate that the government has not made any efforts in this respect. The excessive use of gasoline by large cars is compounded by the installation of air conditioning, which further reduces gasoline mileage. I understand that large cars with air conditioning operating will only run 7 miles on a gallon of gasoline.

European governments have been much wiser in this respect, taxing automobiles according to horsepower and not on the basis of size. This has forced European manufacturers to build small cars which use considerably less gasoline per mile than American cars. In addition, there is a very heavy tax on gasoline in Europe.

PAUL DE HAEN

11 West 42 Street,  
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13 APRIL 1973

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## Scientist Congressional Fellows

This week, the AAAS has initiated a Congressional Fellow Program designed to place scientists and engineers with congressional staffs for approximately 1 year.\* Limited funds place the possible number of fellows between three and six this year, but additional funds are being sought. The scientists who serve as congressional fellows will be assisting Congress, while deepening their understanding of the nation's technological and political problems. Their experience should be helpful to them personally and to the profession as a whole, whether they remain in government work or return to positions in teaching and research.

The AAAS is not alone in seeking to implement such a program. The American Society of Mechanical Engineers placed one fellow last January with the Senate Commerce Committee. The American Physical Society (APS) has approved in principle an APS congressional fellow program, and a committee is preparing a full proposal in cooperation with AAAS. At least four other scientist-interns have recently found their way into effective working relationships with Congress. One, an ecologist from Cornell, became involved with the Senate Air and Water Pollution subcommittee through the American Political Science Association's (APSA) long-established Congressional Fellow Program; another, a former APSA fellow and a physicist, is now a permanent staff member of the House Committee on Science and Astronautics; another, a biologist, worked part-time with the House Public Works Committee; and the fourth, a physicist, volunteered to work for a congressman concerned with the energy question and has now become that representative's administrative assistant.

In no way does the active involvement described above mean that the scientific and engineering societies are promulgating the erroneous philosophy that "only science can save the world." However, science and technology are crucial elements in the consideration of many problems facing decision-makers. The congressional staff includes a few people with strong scientific or engineering backgrounds, but the resources available to congressmen for informing themselves about the technical components of national issues and effectively utilizing existing scientific information are considerably less than those available to the Executive Branch. The reorganized Congressional Research Service and the emerging Office of Technology Assessment will provide greater informational resources, but the utilization of these by individual congressmen often requires an in-office capability.

Representative Mike McCormack (D-Wash.)—one of the very few trained natural scientists in Congress—stated in a talk presented during the 1972 AAAS Annual Meeting that a scientist-intern program would be immensely valuable to Congress and the scientific community. He observed that "there is a tremendous gulf of ignorance on both sides, and this sort of program would do a great deal to bridge that gulf." Regarding the kind of person who could make significant contributions in such a program, he noted: "We need young men and women [scientists and engineers] who have a social consciousness, who are interested in government; they must be flexible enough to become involved in the office work and then to make their contribution through expertise in this manner rather than coming in as scientific experts. . . ." McCormack commented that Congress would have no difficulty in using 50 to 100 such individuals today, if they were readily available.

It is hoped that the AAAS Congressional Fellow Program and the events described here will encourage other scientific and engineering societies to initiate similar activities, thus putting forth an effort to match the need and the opportunity.—RICHARD A. SCRIBNER, *Director, Science and Society Programs*

\* A fuller description of the AAAS Congressional Fellow Program appears in the April AAAS Bulletin. Further information can be obtained from the author.



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flushing and with no significant cross contamination. Optional configurations include cuvettes with thermostatic control and equipment to provide readout of concentration as determined by reaction rate. Micromedic Systems, Inc. Circle No. 149 on Readers' Service Card.

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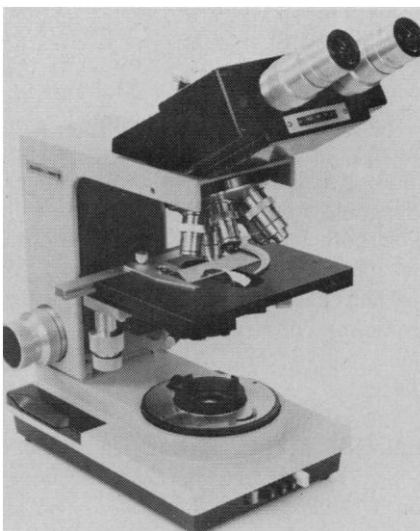


Fig. 1. The Bausch and Lomb Balplan laboratory microscope features interpupillary distance adjustment located beneath the wide-field eyepieces. The model also shows an ungraduated mechanical stage with a rack and pinion substage, coarse and fine adjustment, and four-step push-button high-intensity illuminator controls.

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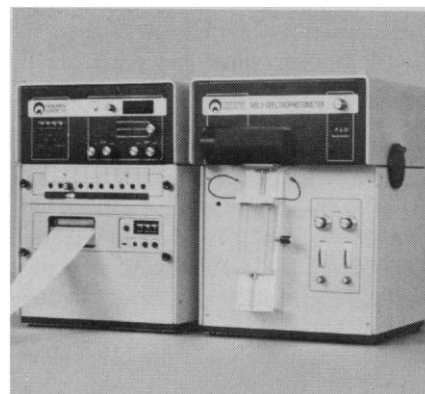


Fig. 2. Micromedic Systems' ultraviolet-visible spectrophotometer has a unique pressure feed sample input that permits rapid introduction of samples from a variety of tubes.

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Fred Wolfgram (University of California at Los Angeles) reviewed his studies of a factor that is found in the serum of patients with amyotrophic lateral sclerosis and causes the destruction of anterior horn cells in tissue culture (1). In these studies, slices from the ventral quadrant of the spinal cord in the mouse are cultured for 18 to 21 days, during which the neuronal processes grow out quite luxuriously. The cultures are then exposed to 30 percent serum from patients with amyotrophic lateral sclerosis or from patients with other neurological disease. Neurons die within 3 to 5 days in cultures treated with serum from patients with amyotrophic lateral sclerosis. Wolfgram has not obtained similar results with serum from patients with other neurological diseases. He is now working on further characterization of this cytolytic factor with the hope of devising a simpler assay system for the factor.

A discussion of therapy was initiated by Daniel Drachman (Johns Hopkins), Forbes Norris (Pacific Medical Center), and King Engel (National Institute of Neurological Diseases and Stroke). The many agents which have been tried unsuccessfully in amyotrophic lateral sclerosis were reviewed. Norris reviewed his studies with guanidine which suggest that the percentage of patients in whom the disease progression is slowed or temporarily halted is greater than previously reported for this agent. No claims were made that guanidine is a cure for the disease but only that it may slow the rapid progression. There was considerable discussion about the need for a double-blind study to evaluate guanidine.

The conference ended with a general discussion of potential approaches to therapy. These ranged from antiviral drugs, such as intrathecal interferon, to immune enhancement by means of transfer factor on the one hand and intensive immunosuppression on the other. These antithetic suggestions for therapy indicated to all the pressing need to develop further insight into the possible mechanisms of the disease by exploiting the recent virological and immunological clues.

GUY M. MCKHANN

RICHARD T. JOHNSON

*Department of Neurology,  
Johns Hopkins University School of  
Medicine, Baltimore, Maryland 21205*

#### References

1. F. Wolfgram and L. Myers, *Science* **179**, 579 (1973).

## Forthcoming Events

### April

11-14. **Beta Kappa Chi**, scientific honor society with chapters in Black colleges and universities, 50th annual, Lincoln Univ., Oxford, Pa. (R. J. Bonner, Hampton Inst., Hampton, Va. 23368)

14-18. **American Psychiatric Assoc.**, Montreal, P.Q., Canada. (B. W. Hogan, APA, 1700 18th St., NW, Washington, D.C. 20009)

15-20. **American Physiological Soc.**, Atlantic City, N.J. (O. E. Reynolds, APS, 9650 Rockville Pike, Bethesda, Md. 20014)

23-25. **East Coast Offshore Symp.**, 2nd, American Assoc. of Petroleum Geologists, Atlantic City, N.J. (G. C. Grow, Jr., Transcontinental Gas Pipeline Corp., Suite 500, Gateway 1, Newark, N.J. 07102)

26-28. **American Philosophical Assoc.**, Western Div., Chicago, Ill. (N. E. Bowie, Hamilton College, Clinton, N.Y. 13323)

26-28. **Sickle Cell Anemia Symp.**, Baton Rouge, La. (J. M. Martin, Dept. of Chemistry, Southern Univ., Baton Rouge 70813)

### May

1-3. **Industrial Waste**, 28th annual conf., West Lafayette, Ind. (D. W. Hawkins, Room 308, Civil Engineering Bldg., Purdue Univ., West Lafayette 47907)

3-4. **National Information Retrieval Colloquium**, 10th annual, Philadelphia, Pa. (M. Nussbaum, Computation, 2955 Kensington Ave., Philadelphia 19134)

3-5. **Society for American Archaeology**, San Francisco, Calif. (R. E. W. Adams, Univ. of Texas, Suite 250, 4242 Piedras Dr., San Antonio 78228)

3-5. **American Assoc. for the History of Medicine**, Cincinnati, Ohio. (G. Miller, Howard Dittick Museum of Historical Medicine, 11,000 Euclid Ave., Cleveland, Ohio 44106)

3-6. **Association of Clinical Scientists**, Tampa, Fla. (F. W. Sunderman, Jr., Univ. of Connecticut, School of Medicine, Box G, Farmington 06032)

3-6. **National Assoc. of Social Workers**, Atlanta, Ga. (C. A. Alexander, NASW, 600 Southern Bldg., 15th and H Sts., NW, Washington, D.C. 20005)

3-7. **American Psychoanalytic Assoc.**, Honolulu, Hawaii. (S. Goodman, 3021 Telegraph Ave., Berkeley, Calif. 94705)

3-7. **Association for Research in Vision and Ophthalmology**, Sarasota, Fla. (R. D. Reinecke, Albany Medical College, Albany, N.Y. 12208)

4-6. **American College of Apothecaries**, St. Louis, Mo. (D. C. Huffman, Jr., 5291 Rock Ridge Rd., Memphis, Tenn. 38128)

4-6. **Drosophila Research Conf.**, De Kalb, Ill. (S. Mittler, Dept. of Biological Science, Northern Illinois Univ., De Kalb 60115)

4-6. **American Acad. of Psychoanalysis**, Honolulu, Hawaii. (J. Barnett, AAP, 40 Gramercy Park North, New York 10024)

6-11. **American Soc. for Microbiology**, Miami Beach, Fla. (R. W. Sarber, ASM, 1913 I St., NW, Washington, D.C. 20006)

7-9. **Rocky Mountain Bioengineering**



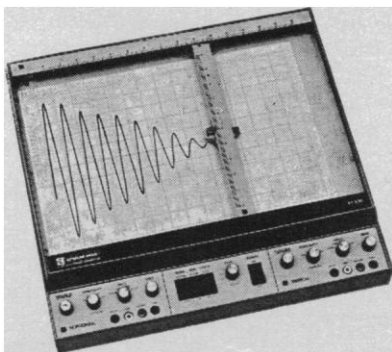
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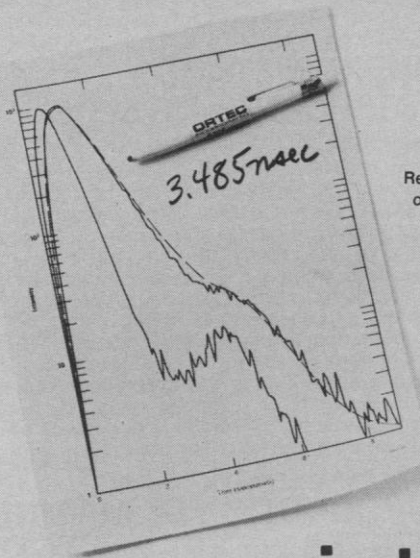
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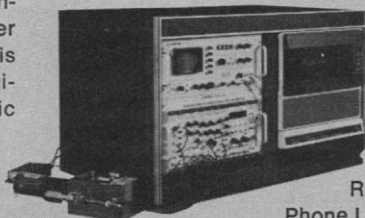
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Symp., 10th annual, Boulder, Colo. (N. B. Kindig, Dept. of Electrical Engineering, Univ. of Colorado, Boulder 80302)

7-9. Society of Economic Paleontologists and Mineralogists, Anaheim, Calif. (Mrs. R. Tener, SEPM, Box 979, Tulsa, Okla. 74101)

7-10. Aerospace Medical Assoc., Las Vegas, Nev. (M. H. Goodwin, AMA, Washington National Airport, Washington, D.C. 20001)

7-11. Society of Manufacturing Engineers, Detroit, Mich. (R. W. Taylor, SME, 20501 Ford Rd., Dearborn, Mich. 48128)

7-11. Society of Plastics Engineers, Montreal, P.Q., Canada. (C. C. Campbell, SPE, 656 W. Putnam Ave., Greenwich, Conn. 06830)

8-9. Fluvial Processes and Sedimentation, 9th Canadian Hydrology Symp., Edmonton, Alta., Canada. (C. R. Neill, Research Council of Alberta, 303 Civil-Electrical Engineering Bldg., Univ. of Alberta, Edmonton T6G 2E1)

9-11. Operations Research Soc. of America, Milwaukee, Wis. (J. R. Borsting, Dept. of Operations Research and Administrative Science, Naval Postgraduate School, Monterey, Calif. 93940)

9-11. Midwestern Psychological Assoc., Chicago, Ill. (W. F. Hill, Dept. of Psychology, Northwestern Univ., Evanston, Ill. 60201)

9-11. International Symp. on Thrombosis and the Molecular Biology of the Platelet and Other Interacting Cells. Chicago, Ill. (F. M. Booyse, Dept. of Biochemistry, Rush Medical College, 1753 W. Congress Pkwy., Chicago 60612)

9-12. Society for Technical Communication, Houston, Tex. (C. T. Youngblood, STC, Suite 421, 1010 Vermont Ave., NW, Washington, D.C. 20005)

10-11. Polymer and Fiber Microscopy, 12th symp., Textile Research Inst., Raleigh, N.C. (D. C. Felty, Chemstrand Research Center, Research Triangle Park, Durham, N.C. 27702)

11-12. American Assoc. of Clinical Urologists, New York, N.Y. (R. B. Carson, AACU, 708 E. Broward Blvd., Fort Lauderdale, Fla. 33301)

13-17. Radiation Research Soc., St. Louis, Mo. (R. J. Burk, Jr., RRS, 4211 39th St., NW, Washington, D.C. 20016)

13-18. Electrochemical Soc., Chicago, Ill. (E. G. Enck, ES, P.O. Box 2071, Princeton, N.J. 08540)

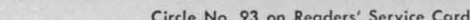
13-18. Electronics Div., Electrochemical Soc., Chicago, Ill. (H. R. Huff, Texas Instruments, Inc., Mail Station 202, Dallas, Tex. 75222)

13-18. Society for Experimental Stress Analysis, Los Angeles, Calif. (B. E. Rossi, SESA, 21 Bridge Sq., Westport, Conn. 06880)

14-16. American Assoc. of Petroleum Geologists, Anaheim, Calif. (T. L. Bear, Bear & Kistler, 1052 W. 6 St., Los Angeles, Calif. 90017)

14-17. Irregularities in the Equatorial Ionosphere, American Geophysical Union, Dallas, Tex. (A. F. Spilhaus, Jr., AGU, 1717 L St., NW, Washington, D.C. 20036)

14-18. Symposium on Environmental Behavior of Radionuclides Released in the Nuclear Industry, Intern. Atomic Energy Agency, Aix-en-Provence, France.



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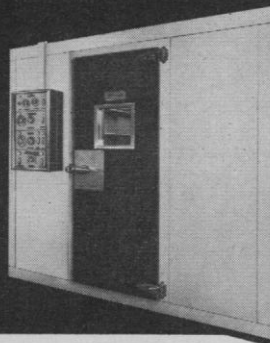
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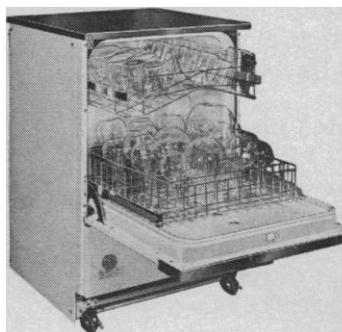
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15-17. American Inst. of Chemists, Houston, Tex. (P. B. Slawter, Jr., AIC, 79 Madison Ave., New York 10016)

15-17. Electrical and Electronic Measurement and Test Instrument Conf., Ottawa, Ont., Canada. (G. R. Symonds, 4-261 Fifth Ave., Ottawa K1S 2N4)

15-20. American Physiological Soc., Atlantic City, N.J. (R. G. Daggs, APS, 9650 Rockville Pike, Bethesda, Md. 20014)

16-18. National Soc. for the Prevention of Blindness, New York, N.Y. (W. D. David, NSPB, 79 Madison Ave., New York 10016)

16-19. Society of Technical Writers and Publishers, Houston, Tex. C. T. Youngblood, STWP, Suite 421, 1010 Vermont Ave., NW, Washington, D.C. 20005)

16-20. American Pediatric Soc., San Francisco, Calif. (C. D. Cook, 333 Cedar St., New Haven, Conn. 06510)

17-19. Radioimmunoassay Symp., American Assoc. Clinical Chemists (Texas section), San Antonio. (P. K. Besch, Dept. of Obstetrics and Gynecology, Baylor College of Medicine, Houston, Tex. 77025)

20-22. Council of Biology Editors, Bethesda, Md. (K. F. Heumann, Federation of American Socs. for Experimental Biology, 9650 Rockville Pike, Bethesda, Md. 20014)

20-23. American Thoracic Soc., New York, N.Y. (R. G. Weymueller, ATS, 1740 Broadway, New York 10019)

20-23. National Tuberculosis and Respiratory Disease Assoc., New York, N.Y. (R. J. Anderson, NTRDA, 1740 Broadway, New York 10019)

20-24. Dental Training Project in Mental Retardation and Related Developmental Disorders, 3rd mtg., New Hyde Park, N.Y. (S. Kamen, Dept. of Dentistry, Long Island Jewish Hillside Medical Center, New Hyde Park 11040)

20-25. Conference on Mass Spectrometry and Allied Topics, 21st, San Francisco, Calif. (F. E. Saalfeld, Naval Research Lab., Code 6110, Washington, D.C. 20390)

20-26. American Gastroenterological Assoc., New York, N.Y. (J. A. Benson, Jr., 3181 SW Sam Jackson Park Rd., Portland, Ore. 97201)

20-26. American Soc. for Gastrointestinal Endoscopy, New York, N.Y. (J. A. Rinaldo, Jr., ASGE, 16001 W. Nine Mile Rd., Southfield, Mich. 48075)

21-23. Biomedical Perspectives of Agglutinins of Invertebrate and Plant Origins, New York Acad. of Sciences, New York, N.Y. (E. Cohen, Roswell Park Memorial Inst., Buffalo, N.Y.)

21-23. American Soc. for Quality Control, Cleveland, Ohio. (R. W. Shearman, ASQC, 161 W. Wisconsin Ave., Milwaukee, Wis. 53203)

21-24. American College of Obstetricians and Gynecologists, Bal Harbour, Fla. (M. Newton, ACOG, 79 W. Monroe St., Chicago, Ill. 60603)

21-25. American Industrial Hygiene Assoc., Boston, Mass. (G. D. Clayton, AIHA, 25711 Southfield Rd., Southfield, Mich., 48075)

21-26. World Congr. of Otorhinolaryngology, 10th Venice, Italy. (M. Arslan,

Clinica ORL, Policlinico, Univ. of Padua, Padua, Italy)

23-25. American Inst. of Industrial Engineers, Chicago, Ill. (J. F. Jericho, AIIE, 345 E. 47 St., New York 10017)

24-25. Fluorescence: Microscopy, Measurements and Photochemistry, intern. symp., Lisbon, Portugal. (A. de Lemos Bastos, Instituto Portugues de Oncologia de Francisco Gentil, Palhava-Lisboa 4)

25-26. New Developments in Diagnosis and Treatment of Cancer, Pittsburgh, Pa. (J. M. Sacuto, Community Relations and Development, Allegheny General Hospital, 320 E. North Ave., Pittsburgh 15212)

27-30. International Congr. of Bronchoesophagology, 14th, Lausanne, Switzerland. (J. P. Taillen, Clinique ORL, Hopital Cantonal, 1011 Lausanne)

28-30. American Ophthalmological Soc., Hot Springs, Va. (R. W. Hollenhorst, AOS, 200 First St., SW, Rochester, Minn. 55901)

29-1. American Orthopsychiatric Assoc., 50th annual, New York, N.Y. (M. F. Langer, AOA, 1790 Broadway, New York 10019)

30-1. Biometric Soc., Eastern North American Region, Ithaca, N.Y. (F. B. Cady, Biometric Unit, 337 Warren Hall, Cornell Univ., Ithaca 14850)

30-1. Canadian Meteorological Soc., 7th annual congr., Halifax, N.S. (Miss N. Waller, Maritime Command Headquarters, FMO Halifax, N.S.)

30-1. Laser Engineering and Applications, 4th biennial joint sponsorship of the Inst. of Electrical and Electronics Engineers and the Optical Soc. of America, Washington, D.C. (D. Edgar, Courtesy Associates, Suite 700, 1629 K St., NW, Washington, D.C. 20006)

30-1. European Conf. on the Use of Low Energy Accelerators, Polytechnic of the South Bank and Inst. of Physics, London, England. (A. H. Jiggins, Dept. of Physics, PSB, London, S.E.1 OAA)

## June

2-3. Focus on the Future: The Challenges and the Opportunities, 100th women graduates mtg., sponsored by the Assoc. of Massachusetts Inst. of Technology Alumnae, Cambridge. (S. E. Schur, 1 Emerson Pl., Boston, Mass. 02114)

3-5. Royal Soc. of Canada, Kingston, Ont. (Public Relations Dept., RSC, Queen's Univ., Kingston)

3-7. Special Libraries Assoc., Pittsburgh, Pa. (F. E. McKenna, SLA, 235 Park Ave. S., New York 10003)

3-7. Asian Pacific Congr. of Plastic Surgery, Jerusalem, Israel. (N. Ben-Hur, P.O. Box 16271, Tel-Aviv, Israel)

4-6. Brookhaven Symp. in Biology, 25th, Upton, N.Y. (P. S. Carlson, Biology Dept., Brookhaven Natl. Lab., Upton 11973)

4-8. Carbon, 11th biennial conf., American Carbon Committee, Oak Ridge Natl. Lab., Gatlinburg, Tenn. (W. P. Eartherly, Oak Ridge Natl. Lab., P.O. Box X, Oak Ridge 37830)

4-8. International Ergonomics Assoc., 5th intern. congr., Amsterdam, Netherlands. (Information Organisatie Bureau Amsterdam NV, Postbus 7205, Amsterdam)

4-8. American Federation of Informa-

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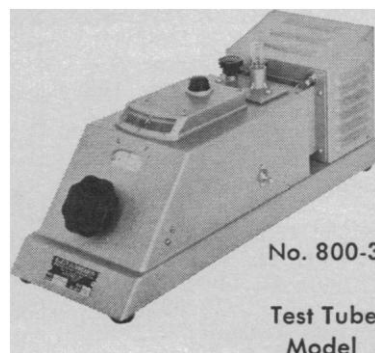
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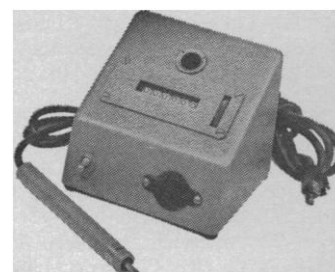
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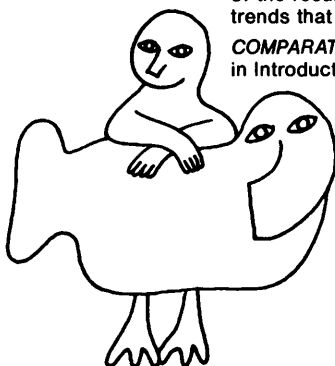
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tion Processing Soc., New York, N.Y. (T. C. White, AFIPS, 210 Summit Ave., Montvale, N.J. 07645)

4-8. Symposium on **Rapid Methods and Automation in Microbiology**, Stockholm, Sweden. (Miss S. Olsen, Dept. of Applied Microbiology, Karolinska Institutet, S-104 01 Stockholm 60)

4-8. American Assoc. for the **Study of Neoplastic Diseases**, Heidelberg, Germany. (R. H. Jackson, 10607 Miles Ave., Cleveland, Ohio 44105)

4-9. International Assoc. of **Hydrological Sciences**, Madrid, Spain. (D. R. Dawdy, Engineering Research Center, U.S. Geological Survey, Colorado State Univ., Fort Collins 80521)

6-7. Government Data Systems Conf. on **New Systems in Law Enforcement and Criminal Justice**, 2nd natl., New York, N.Y. (W. A. Kulok, Div. of Business and Management, New York Univ., 600 Third Ave., New York 10016)

6-8. **Alaska State Medical Assoc.**, Fairbanks. (R. G. Ogden, ASMA, 1135 W. 8 Ave., Anchorage 99501)

6-8. **Mode of Action of Microbial Walls and Membranes**, New York Acad. of Sciences, New York, N.Y. (M. R. J. Salton, New York Univ., New York)

7-9. International Congr. on **Immunology in Obstetrics and Gynaecology**, Padua, Italy. (N. Carretti, Obstetrics and Gynaecology Clinic, Univ. of Padua, Via Giustiniani No. 3, Padua 35100)

7-9. American **Rheumatism Assoc.**, Los Angeles, Calif. (Miss L. Bonfiglio, ARA, 1212 Avenue of the Americas, New York 10036)

7-9. **Mass Spectrometry in Biochemistry and Medicine**, intern. symp., Milan Italy. (A. Frigerio, Istituto di Ricerche Farmacologiche "Mario Negri," 20157 Milan-Via Eritrea, 62 Italy)

8-10. Society of **Biological Psychiatry**, Montreal, P.Q., Canada. (I. F. Small, Larue D. Carter Memorial Hospital, 1315 W. 10 St., Indianapolis, Ind. 46202)

8-13. **Astronomical Soc. of the Pacific**, Los Angeles, Calif. (L. Salanave, California Acad. of Sciences, Golden Gate Park, San Francisco 94118)

10-14. Institute of **Food Technologists**, Miami Beach, Fla. (C. L. Willey, IFT, 221 N. LaSalle St., Chicago, Ill. 60601)

10-14. **Special Libraries Assoc.**, Philadelphia, Pa. (F. E. McKenna, SLA, 235 Park Ave. S., New York 10003)

10-15. **Neurosurgical Soc. of America**, Pembroke, Bermuda. (S. N. Chou, Univ. of Minnesota Medical School, Minneapolis 55455)

10-15. **American Nuclear Soc.**, Chicago, Ill. (O. J. Du Temple, ANS, 244 E. Ogden Ave., Hinsdale, Ill. 60521)

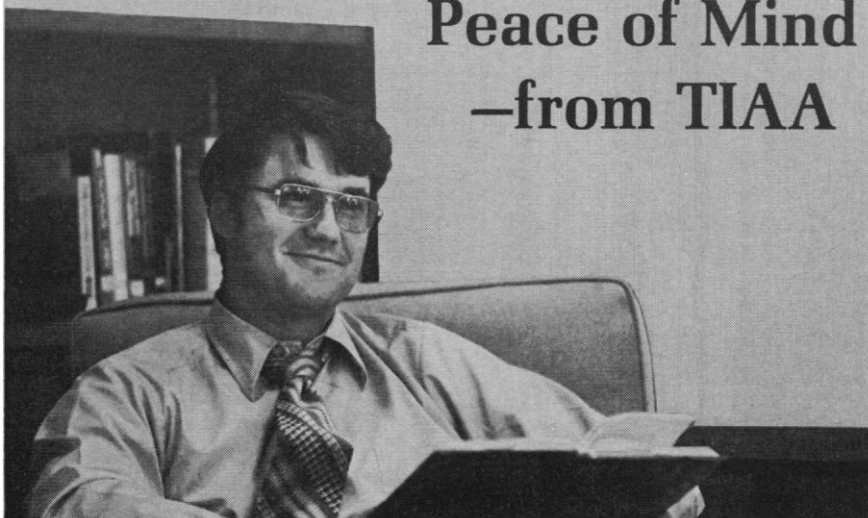
11-13. International Conf. on **Communications**, Seattle, Wash. (S. Tashiro, ICC, P.O. Box 648, Bellevue, Wash. 98009)

11-13. **American Neurological Assoc.**, and Canadian Congr. of Neurological Sciences, Montreal, P.Q., Canada. (S. A. Trufant, Cincinnati General Hospital, Cincinnati, Ohio 45229)

11-13. **Power Electronics Specialists Conf.**, Inst. of Electrical and Electronics Engineers, Inc., Pasadena, Calif. (R. D. Middlebrook, Electrical Engineering Dept., 116-81 California Inst. of Technology, Pasadena 91109)

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11-13. **Recent Advances in Staphylococcal Research**, New York Acad. of Sciences, New York, N.Y. (W. W. Yotis, Loyola Univ. Stritch School of Medicine, Maywood, Ill.)

11-14. **Public Need and the Role of the Inventor Conf.**, sponsored by the Natl. Inventors Council, Natl. Bureau of Standards, and Dept. of Commerce, Monterey, Calif. (C. S. Draper, U.S. Dept. of Commerce, Natl. Bureau of Standards, Washington, D.C. 20234)

11-16. **American Assoc. for the Advancement of Science, Pacific Div.**, Salt Lake City, Utah. (R. T. Orr, California Acad. of Sciences, Golden Gate Park, San Francisco 94118)

12-14. **Frequency Control**, 27th symp., Atlantic City, N.J. (J. R. Vig, U.S. Army Electronics Command, Fort Monmouth, N.J. 07703)

12-15. **Identification and System Parameter Estimation**, 3rd intern. symp., Federation of Automatic Control, The Hague, Netherlands. (IFAC, c/o Klvl, 23 Prinsessegracht, The Hague)

12-16. **American Assoc. of Bioanalysts**, Miami Beach, Fla. (D. Birenbaum, AAB, 805 Ambassador Bldg., 411 N. 7 St., St. Louis, Mo. 63101)

13-15. **Society for Developmental Biology**, 32nd symp., Manhattan, Kan. (T. J. King, Div. of Cancer Grants, Natl. Cancer Inst., Bethesda, Md. 20014)

14-16. **American Assoc. of Physics Teachers**, Reno, Nev. (W. V. Johnson, AAPT, 1785 Massachusetts Ave., NW, Washington, D.C. 20036)

16-18. **American Assoc. of Neuropathologists**, Freeport, Bahamas. (R. L. Davis, Cajal Lab. of Neuropathology, LAC-USC Medical Center, 1200 N. State St., Los Angeles, Calif. 90033)

16-20. **Canadian Pediatric Soc.**, Sherbrooke, P.Q., Canada. (J. H. V. Marchessault, Centre Hôpital Universitaire, Sherbrooke Univ., Sherbrooke)

16-24. **American Physical Therapy Assoc.**, Houston, Tex. (R. Noland, APTA, 1156 15th St., NW, Washington, D.C. 20005)

16-24. **National Speleological Soc.**, Bloomington, Ind. (L. A. Klein, Apt. 18-0, 98-30 57th Ave., Flushing, N.Y. 11368)

17-20. **American Soc. of Agricultural Engineers**, Lexington, Ky. (J. L. Butt, ASAE, P.O. Box 229, St. Joseph, Mich. 49085)

17-21. **Health Physics Soc.**, 18th annual, Miami Beach, Fla. (S. C. Bushing, Dept. of Radiology, Baylor College of Medicine, Houston, Tex. 77025)

17-22. **American Inst. of Biological Sciences**, 24th, Amherst, Mass. (A. Kulback, AIBS, 3900 Wisconsin Ave., NW, Washington, D.C. 20016)

17-22. **Botanical Soc. of America**, Amherst, Mass. (B. F. Palser, Dept. of Botany, Rutgers Univ., New Brunswick, N.J. 08903)

17-22. **American Crystallographic Assoc.**, Storrs, Conn. (Mrs. E. E. Snider, ACA, 335 E. 45 St., New York 10017)

17-22. **Cytopharmacology of Secretion**, 2nd intern. symp., Venice, Italy. (F. Clementi, Istituto di Farmacologia, Università di Milano, Via Vancitelli 32, 20129 Milan, Italy)

17-22. **Ecological Soc. of America**, Amherst, Mass. (J. F. McCormick, Dept. of Botany, Univ. of North Carolina, Chapel Hill, N.C. 27514)

17-22. **American Soc. of Medical Technologists**, Boston, Mass. (Mrs. N. Preuss, 116 W. Frier Dr., Phoenix, Ariz. 85021)

17-22. **Phycological Soc. of America**, Amherst, Mass. (M. J. Wynne, Dept. of Botany, Univ. of Texas, Austin 78712)

17-22. **International Symp. on Purine Metabolism in Man**, Tel-Aviv, Israel. (Mrs. K. Tchetchik, ISPM, P.O. Box 16271, Tel-Aviv)

17-22. **Society for the Study of Evolution**, Amherst, Mass. (D. L. Jameson, Dept. of Biology, Univ. of Houston, Houston, Tex. 77004)

18-19. **American Fern Soc.**, Amherst, Mass. (R. L. Hauke, Dept. of Botany, Univ. of Rhode Island, Kingston 02881)

18-20. **Union Intern. des Laboratoires Independents**, 7th general assembly, Wiesbaden, Germany. (A. Herzka, Ashbourne House, Alberon Gardens, London, NW11 0BN, England)

18-21. **Society for Industrial and Applied Mathematics and Inst. for Computer Applications in Science and Engineering**, Hampton, Va. (SIAM, 33 S. 17 St., Philadelphia, Pa. 19103)

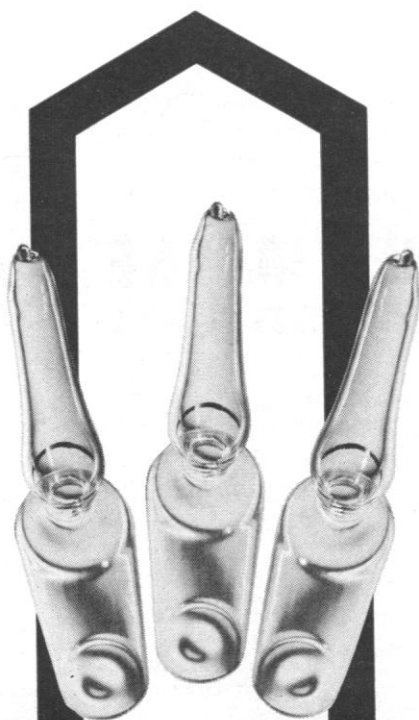
18-21. **American Soc. of Plant Physiologists**, Calgary, Alta., Canada. (W. H. Klein, Smithsonian Radiation Biological Lab., 12441 Parklawn Dr., Rockville, Md. 20852)

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


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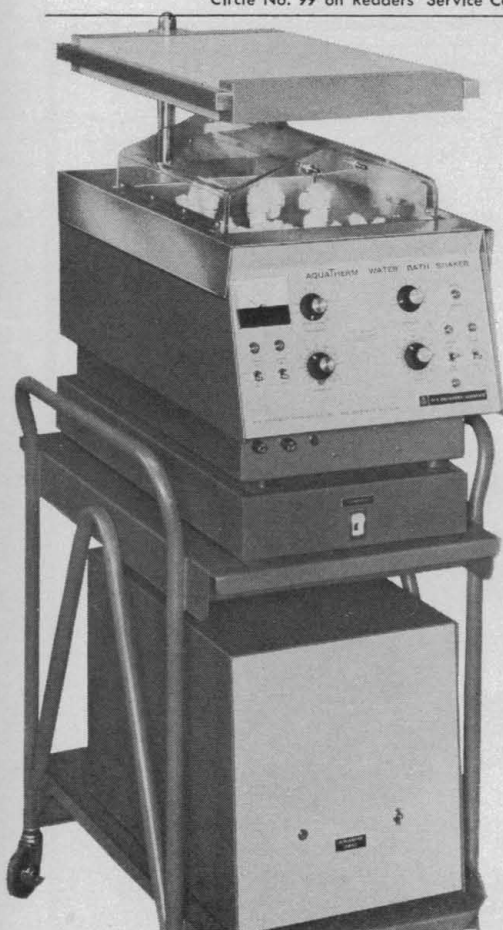


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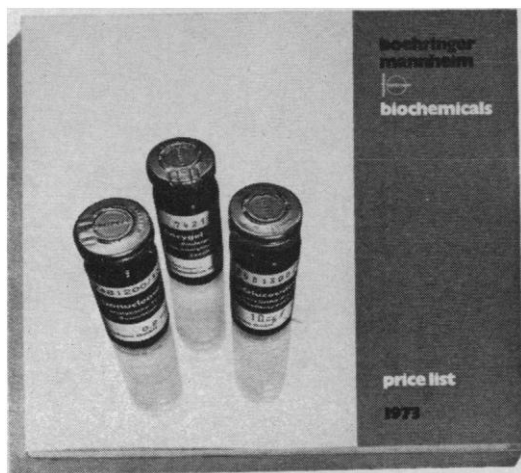
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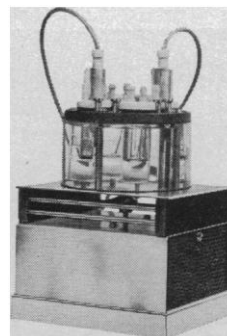
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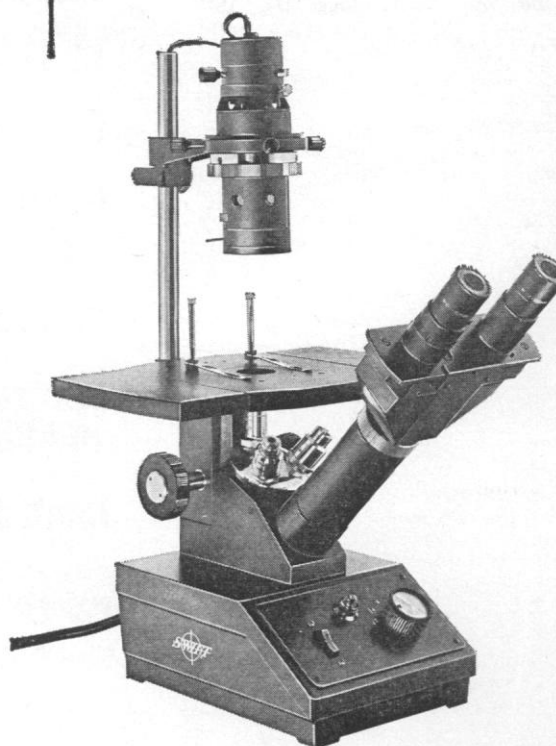
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18-22. **International College of Psychosomatic Medicine**, 2nd congr., Amsterdam, Netherlands. (A. J. Krakowski, 202A Cornelia St., Plattsburgh, N.Y. 12901)

20-4. **Science and Man in the Americas**, inter-American scientific mtg., jointly by Mexico's Natl. Council for Science and Technology and AAAS, Mexico City. (AAAS Mtg. Office, 1444 N St., NW, Washington, D.C. 20005, or Consejo Nacional de Ciencia y Tecnologia, Avenida, Insurgentes sur 1677, Mexico 20 D.F.)

21-23. **Viral Replication and Cancer**, 2nd Duran Reynals Intern. Symp., Barcelona, Spain. (J. Oro, Dept. of Biophysics Sciences, Univ. of Houston, Houston, Tex. 77004)

21-23. **American Astronomical Soc.** (Div. on **Dynamical Astronomy**), Cincinnati, Ohio. (J. D. Mulholland, Dept. of Astronomy, Univ. of Texas, Austin 78712)

22-23. **Society for Vascular Surgery**, Toronto, Ont., Canada. (J. A. DeWeese, 260 Crittenden Blvd., Rochester, N.Y. 14642)

22-24. **Society for Investigative Dermatology**, New York, N.Y. (J. S. Strauss, Boston Univ. Medical Center, 80 E. Concord St., Boston, Mass. 02118)

24-27. **American Dairy Science Assoc.**, Pullman, Wash. (C. Cruse, ADSA, 113 N. Neil St., Champaign, Ill. 61820)

24-27. **American Assoc. of Plastic Surgeons**, New York, N.Y. (N. Georgiade, Duke Univ. Medical Center, Box 3098, Durham, N.C. 27710)

24-28. **American Soc. of Heating, Refrigerating, Air-Conditioning Engineers**, Louisville, Ky. (A. T. Boggs III, ASH-RACE, 345 E. 47 St., New York 10017)

24-29. **Corrosion in Seawater**, American Soc. for Testing and Materials Committee G-1, Philadelphia, Pa. (W. H. Ailor, Metallurgical Research Div., Reynolds Metals Co., Richmond, Va. 23261)

24-30. **American Library Assoc.**, Las Vegas, Nev. (D. H. Clift, ALA, 50 E. Huron St., Chicago, Ill. 60611)

25-28. **American Soc. for Engineering Education**, Ames, Iowa. (L. B. Williams, ASEE, Suite 400, 1 Dupont Circle, Washington, D.C. 20036)

25-28. **Canadian Ophthalmological Soc.**, Toronto, Ont. (G. A. Thompson, Suite 401, 1849 Yonge St. Toronto 7)

25-28. **International Conf. on the Origin of Life**, 4th, Barcelona, Spain. (J. Oro, Dept. of Biophysics Sciences, Univ. of Houston, Houston, Tex. 77004)

25-29. **Information Theory**, intern. symp., Inst. of Electrical and Electronics Engineers (Information Theory Group), Ashkelon, Israel. (Symp. Cochairmen: A. Wyner, Room 2C-357, Bell Labs., Murray Hill, N.J. 07974, or J. Ziv, Faculty of Electrical Engineering, Technion-Israel Inst. of Technology, Haifa)

25-30. **International Congr. of Psychotherapy**, Oslo, Norway. (F. Magnussen, Box 26, Vinderen/Oslo)

25-1. **Aeronautical Technology**, American Inst. of Aeronautics and Astronautics and the Soviet Ministry of Civil Aviation, Moscow, U.S.S.R. (P. D. Schaub, AIAA, 1290 Sixth Ave., New York 10019)

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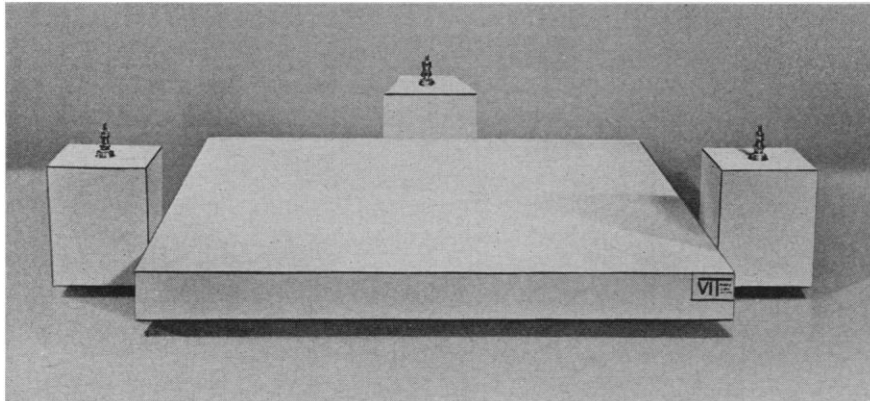
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26-28. Institute of Navigation, St. Louis, Mo. (R. E. Freeman, IN, Suite 832, 815 15th St., NW, Washington, D.C. 20005)

27-30. British Assoc. of Plastic Surgeons, Bristol, England. (I. Broomhead, Royal College of Surgeons, 35/43 Lincoln's Inn Fields, London W.C.2, England)

27-1. Society of Women Engineers, 23rd, San Mateo, Calif. (E. H. Williams, 2390 W. Middlefield Rd., Mountain View, Calif. 94040)

28-3. Perugia Quadrennial Intern. Conf. on Cancer, 5th, Perugia, Italy. (L. Severi, P.O. Box 327, 06100 Perugia)

### July

1-6. National Education Assoc., Portland, Ore. (S. M. Lambert, NEA, 1201 16th St., NW, Washington, D.C. 20036)

1-6. Urology, 16th intern. congr., Amsterdam, Netherlands. (Holland Organizing Center, 16 Lange Voorhout, S-Gravenhage, The Hague, Netherlands)

1-7. Biochemistry, 9th intern. congr., Stockholm, Sweden. (G. Aulin-Erdtman, Svenska Kemistsamfundet, Wenner-Gren Centre, 6 tr., S-113 46 Stockholm)

2-6. Association Internationale de la Couleur, 2nd congr., York, England. (W. D. Wright, Applied Optics Section, Imperial College, London, SW7 2BZ, England)

2-6. Fuel and Fuel Elements for Fast Reactors, Intern. Atomic Energy Agency, Brussels, Belgium. (J. H. Kane, Office of Information Services, Atomic Energy Commission, Washington, D.C. 20545)

2-6. International Solar Energy Congr., Paris, France. (W. Klein, Smithsonian Radiation Biology Lab., 2441 Parklawn Dr., Rockville, Md. 20852)

6-9. Buckeye Intern. Rocketry Conf., Columbus, Ohio. (G. M. Pantalos, BIRC, 1191 Shanley Dr., Columbus 43224)

3-5. Conference on Scanning Electron Microscopy Systems and Applications, Inst. of Physics, Newcastle upon Tyne, England. (Meetings Officer, IP, 57 Belgrave Sq., London SW1X, 8QX, England)

8-14. Health Education, 8th intern. conf., Versailles, France. (L. P. Aujoulat, 20 rue Greuze, Paris 16<sup>e</sup>, France)

9-13. American Soc. of Civil Engineers, Tulsa, Okla. (E. Zwoger, ASCE, 345 E. 47 St., New York 10017)

9-13. Illuminating Engineering Soc., Philadelphia, Pa. (P. C. Ringgold, IES, 345 E. 47 St., New York 10017)

10-12. Electromagnetic Compatibility Symp., Inst. of Electrical and Electronics Engineers, San Francisco, Calif. (Technical Activities Board, 345 E. 47 St., New York 10017)

10-13. International Conf. on the Regulation of Adipose Tissue Mass, Marseille, France. (J. Boyer, Clinique Endocrinologique, Hôpital de la Conception, 136 rue St. Pierre, F-13 Marseille)

10-14. National Soc. of Professional Engineers, Chicago, Ill. (P. H. Robbins, NSPE, 2029 K St., NW, Washington, D.C. 20006)

23-28. Global Impacts of Applied Microbiology, 4th intern. conf., American Soc. for Microbiology, São Paulo, Brazil. (A. F. Langlykke, ASM, 1913 I St., NW, Washington, D.C. 20006)