# SCIENCE

16 April 1971

Vol. 172, No. 3980

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE


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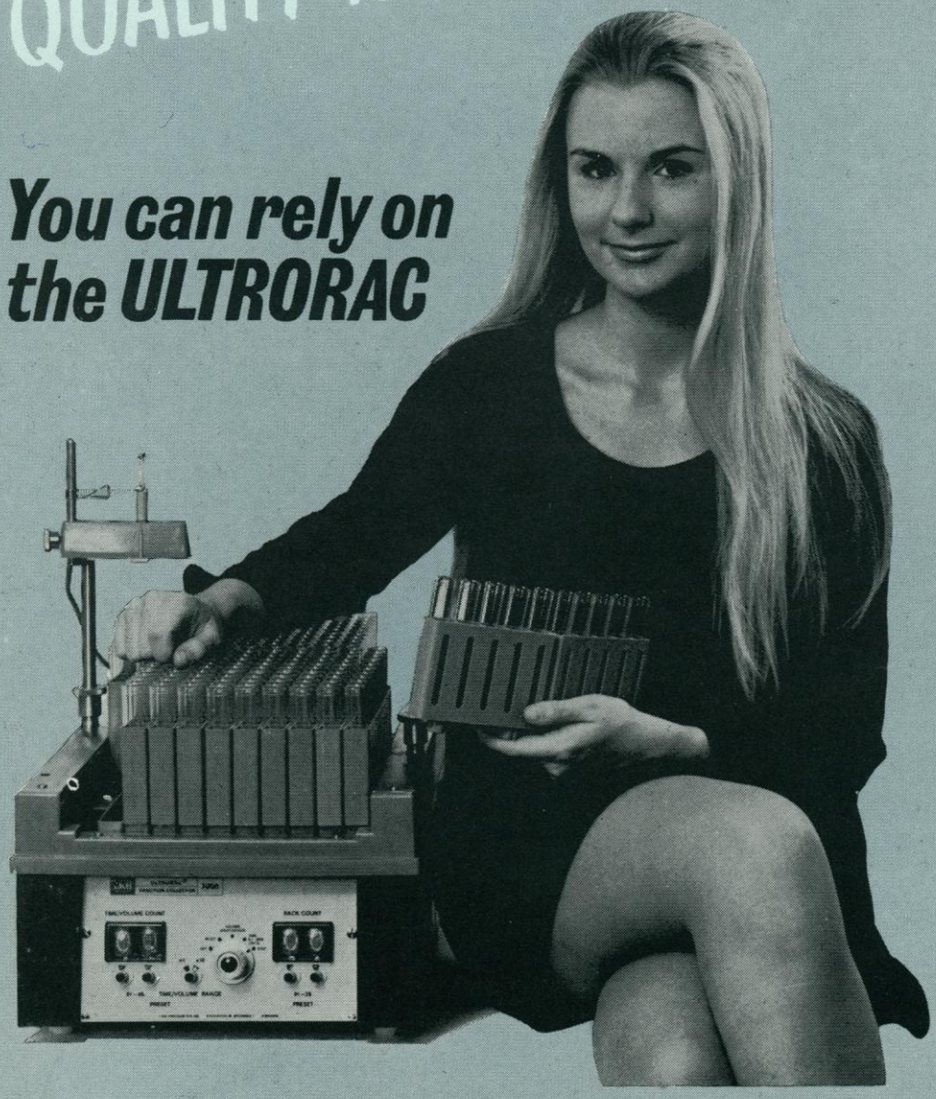

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Now there's a 19″ long x 10½″ wide plastic cage that allows an adult rat to assume a normal standing position. A cage that meets all published standards for breeding or housing rats, hamsters and guinea pigs. Even a female guinea pig with a litter.

It's the new Series 140 permanent plastic Econo-Cage. A full 8-inches high, the Series 140 is 2-inches taller than any previously available cage with the same area.

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Special stacking lugs provide convenient nesting and assure free flow of air for drying. The integral lip around the perimeter of the cage increases structural rigidity and facilitates use with hanging as well as stacking systems. Econo-Cage walls are 20% thicker than competitive cages; this means added strength and greater durability in actual laboratory use. These cages are compatible with most disinfectants, cleaning agents and animal wastes and are highly resistant to most toxic chemicals. Either stainless steel, or zinc-plated rust-resistant lids are available.

Series 140 cages are only part of the permanent plastic Econo-Cage line. They all meet NIH, AALAS, and Public Law 89-544 standards and specifications.

For a complete catalog of cages and accessories contact your Econo-Cage Distributor, or write Scientific Division, Maryland Plastics, Inc.
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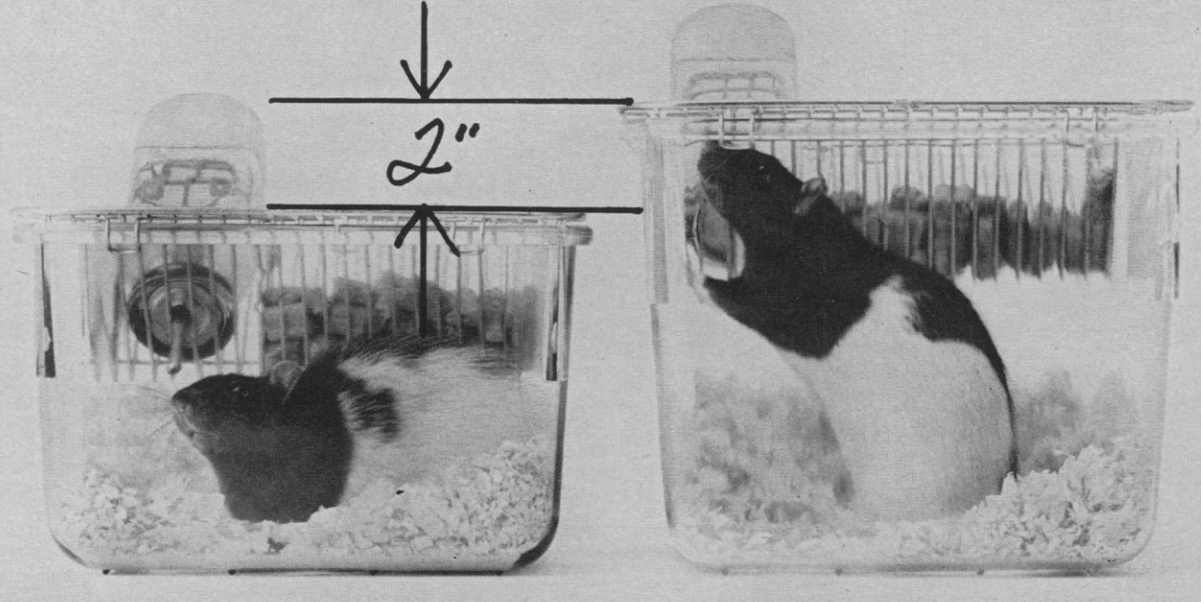
# Introducing the extra two inches that give a rat room to stand up and breed.




EC-P-2

16 April 1971
Vol. 172, No. 3980

# SCIENCE



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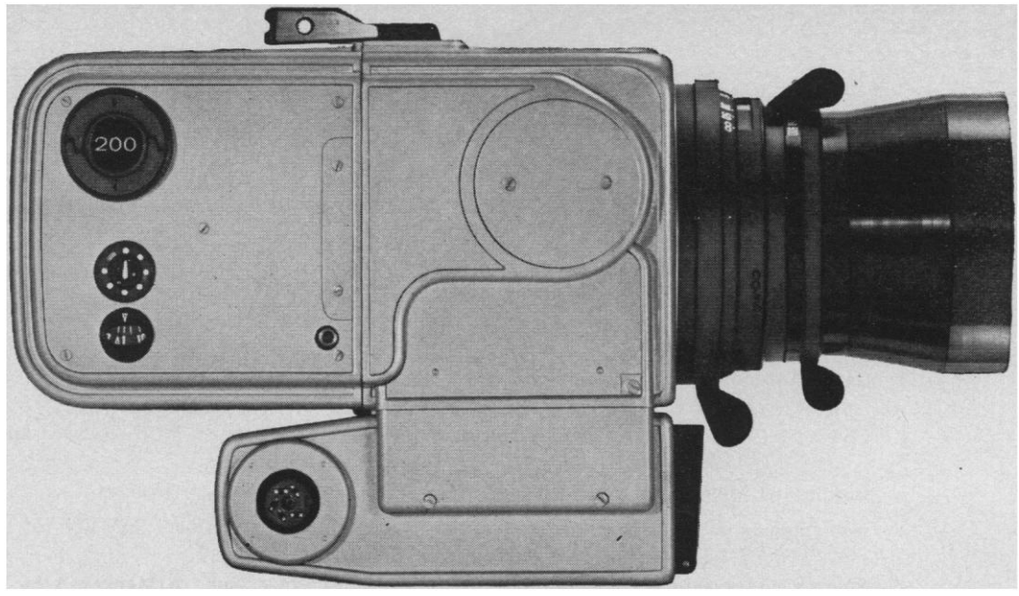
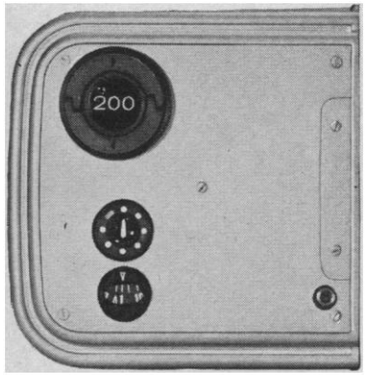
**COVER**

Unilateral ablation of the auditory cortex in the cat produces a profound deficit in auditory discrimination and in the ability to perceive the locus of See page 286. [Mittens Finger, by Gary Laurish Photography, Washington, D.C.]



# This is the Hasselblad that went to the moon.

## This is the part that came back.



The camera up above is the Hasselblad 500EL electrically-driven space camera.

It's the camera the astronauts used on the moon.

It's also the camera they left behind.

Only about a third of it came back.

But then the Apollo rocket that carried it was 365' tall when it left for the moon. And only 10' tall when it returned. So the Hasselblad didn't make out too badly, considering.

The back of the Hasselblad is the part that came back. A detachable film magazine that assured the safety of the film. And was necessary because the astronauts' bulky gloves would have made it difficult to remove film in any other way. (To appreciate the problem, try unloading your own camera wearing hockey gloves.)

As valuable as it proved to be, the removable back isn't something that was designed for NASA. Every Hasselblad on earth is made that way.

Not only can the back of any Hasselblad be removed, but it can be interchanged with any of four other film magazines. Which lets you do things that weren't possible before.

There you are down at the water hole, photographing a rhino in black and white. When suddenly a red-billed oxpecker lands on its back. You'd love to switch to color, but you're only halfway through your roll, and you don't want to waste the rest of it.

With a Hasselblad you can simply take off the back in one second, and snap on a new one pre-loaded with color film. Then when the oxpecker flies off, you can switch back to black and white again.

And you haven't lost a single shot.

The backs even let you decide on the size and shape of your shot. You can pick a big 2¼" square. Or a rectangle 1⅝" x 2¼". Or make super slides 1⅝" x 1⅝" (they're 50% larger than ordinary slides, yet fit all standard projectors).

You can also choose the number of exposures you want, 12, 16, 24 right on up to 70. This last magazine is great for shooting continuous action, like the rhino coming to have a closer look at you.

The front, top and sides of the Hasselblad give you as many possibilities as the back. The front accepts ten different Carl Zeiss lenses, each with its own built-in Compur shutter, synchronized for flash and strobe at all speeds.

The top accepts five different viewers and two different focusing screens. And the side takes three different film advance mechanisms. These components, together with accessories and three different camera bodies, add up to the Hasselblad System.

Within the system, the 500ELM electrically-driven earth camera —cousin to the moon camera— can do a few things that even the other Hasselblads can't do.

Because this camera is electrically-operated, it can be triggered from a distance through the use of long release cords or remote radio control. And because the camera readies itself for the next shot automatically, you can shoot as many as 70 consecutive exposures without being anywhere near the camera. Which is a good way to get a shot of the rhino coming towards you, without having to be the one it's coming towards.

So you can see that the Hasselblad has even more application on earth than on the moon.

And another nice thing about using a Hasselblad on earth is that when you come back with your pictures, you also come back with your Hasselblad.

For more information, see your Hasselblad dealer. For his name, and a free 48-page catalog on The Hasselblad System, write to address below.

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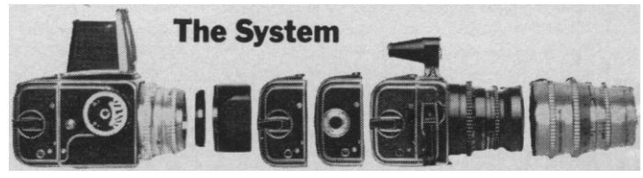


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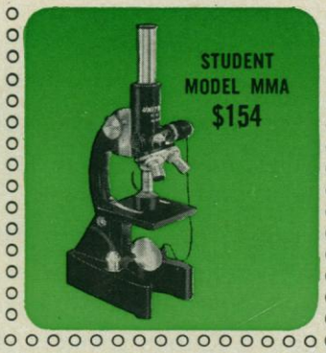


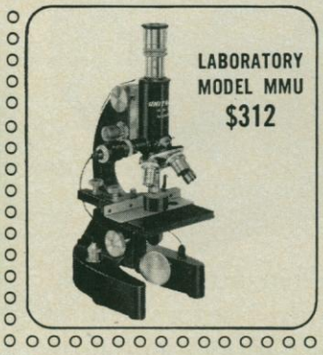





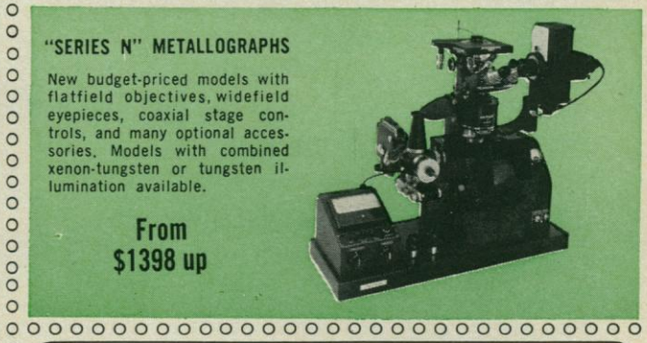




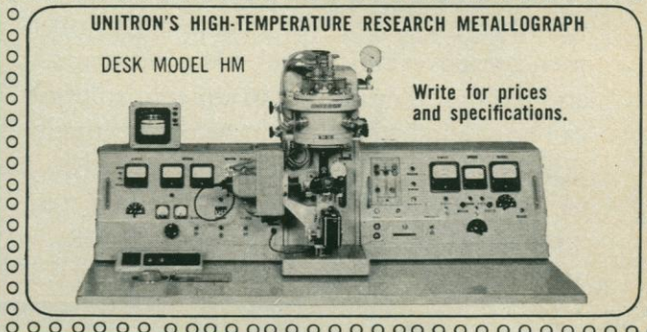



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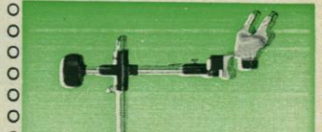
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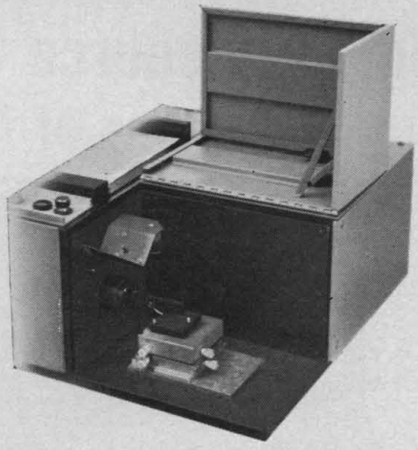


If you're now involved in infrared spectroscopy, it would be worthwhile for you to take a close look at the new Cary 83 laser Raman spectrophotometer. The most obvious advantage is that, complete with A+ laser, the new 83 is still priced under $15,000. But low cost is only the beginning.

### RAMAN vs IR

The Raman technique itself, although entirely complementary to infrared, offers several important advantages over IR. Scanning range, for one. Typically, from near 0 to 4000$\triangle cm^{-1}$ (it takes two IR instruments to cover this range). Also, inorganic and biological molecules in aqueous solution can be studied which might be prohibitively difficult, if not impossible, using IR.

Furthermore, many group frequencies, which are either weak or absent in the IR, are strong in the Raman effect. (In general, symmetric vibrations are strong in Raman and weak in IR.)

Finally, sample handling is greatly simplified with Raman because little or no preparation is needed to obtain spectra from liquids, powders, single crystals, gases, polymers and even small single fibers.

### COMPACT DESIGN, EASY OPERATION

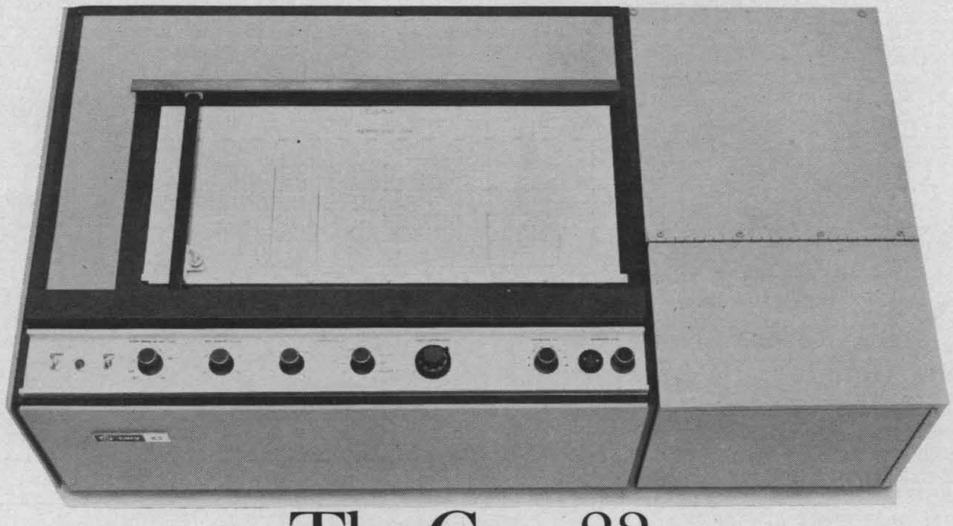
The solid-state, bench-top Cary 83 is contained in a compact, highly functional housing. Controls are all simple to use and are within easy reach. Scale with the 83 is IR-compatible to facilitate direct comparison between IR and Raman spectra. Also, space has been provided for the mounting of optional pen and scan position encoders for on-line computer interfacing and processing of Raman data. And the 83's flat bed recorder, coupled to the scanning mechanism, presents spectrum in full view.

cary

### LARGE SAMPLE COMPARTMENT

The spacious, 9.5″x 12″x 18″ sample area of the new Cary 83 was designed for both convenience and accessibility. Its unique double-hinged cover may be opened just from the front, swung back (above) or completely removed, if desired.

To get the complete story on the new Cary 83, contact Cary Instruments, a Varian subsidiary, 2724 South Peck Road, Monrovia, California 91016. Ask for data file 102.



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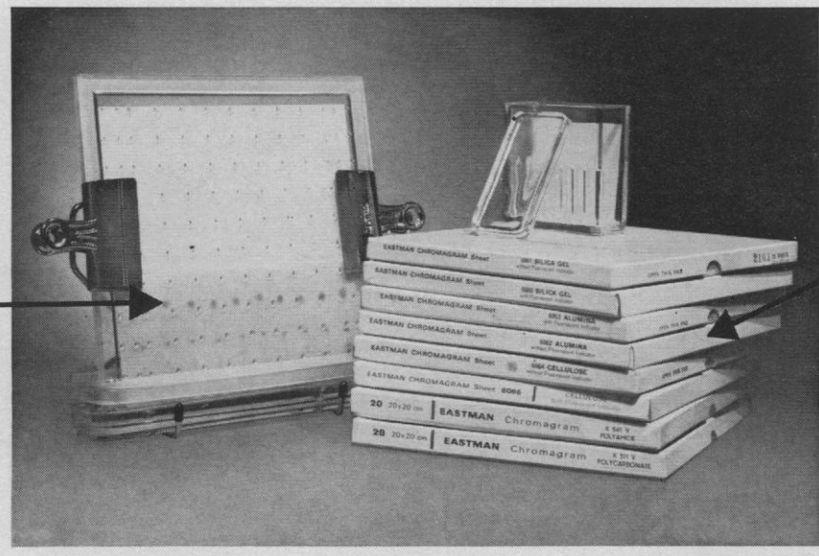


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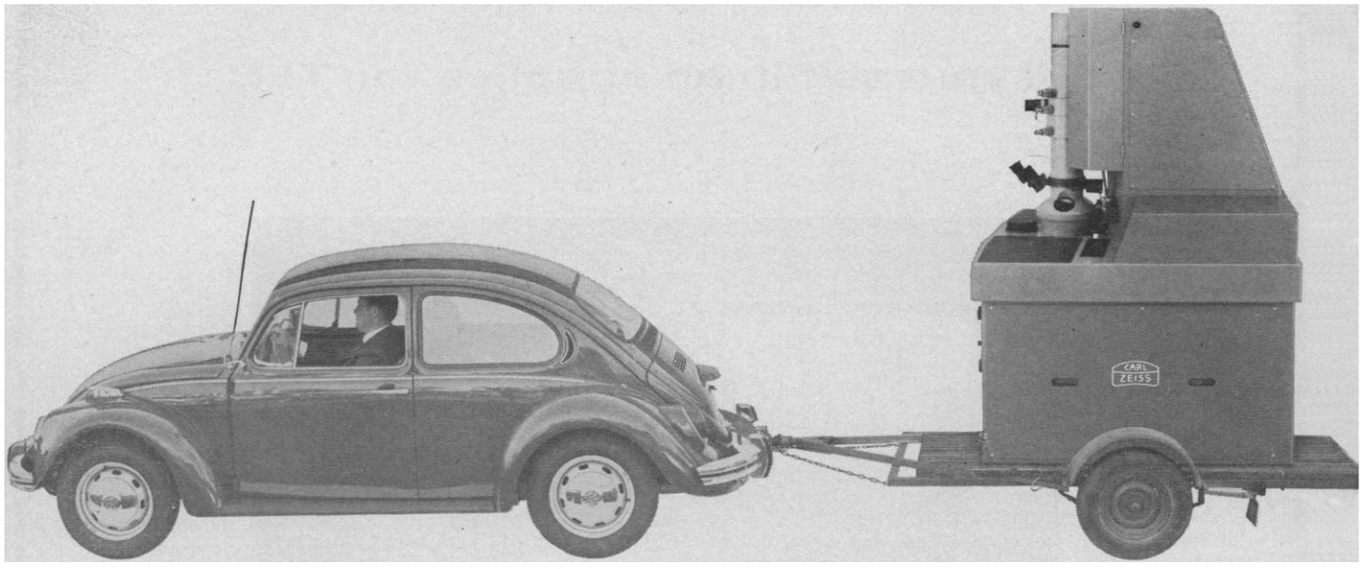


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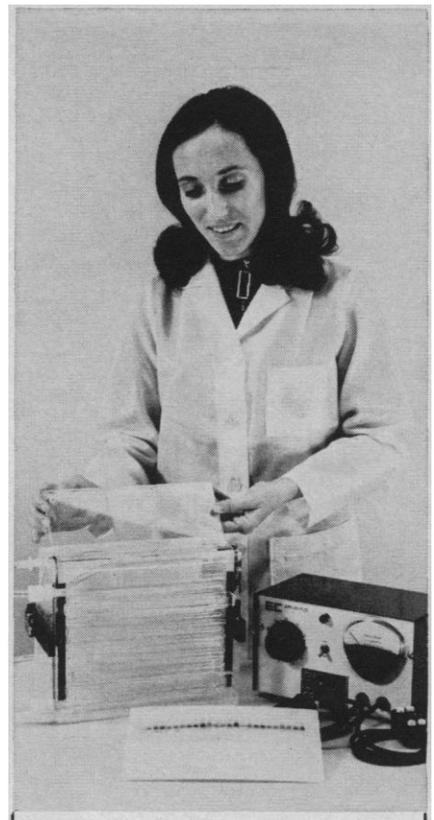

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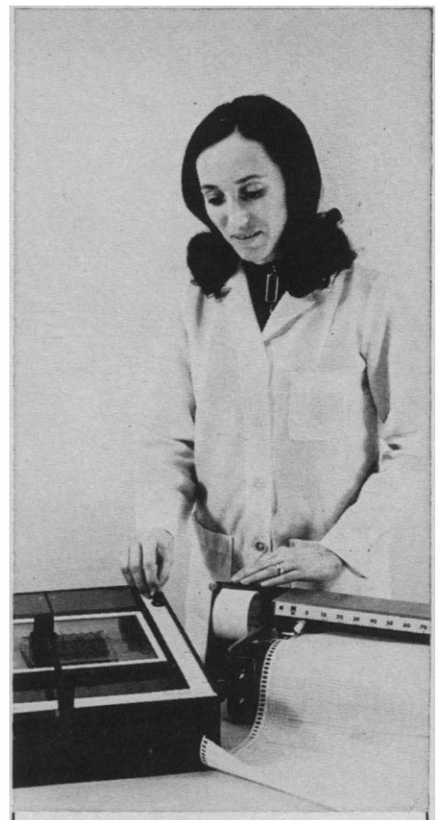

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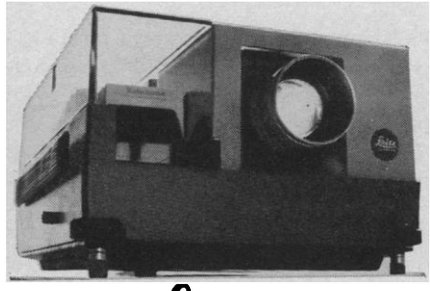

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formation to become available which would permit more precise predictions of DDT flows and storages in ecosystems. However, with regard to assumptions, we would be interested in learning the reasons for Bloom's and Menzel's assumption that, in 1964, the losses of DDT from the ecosystem balanced the application rates.

For the benefit of those who may wish to make use of our equations, we would like to point out two errors in the equations as they were printed. In the first term of Eq. 9, $\dot{m}_i$ should be $m_i$. In Eqs. 13, 14, and 15, $\dot{m}_{i-1}$ should properly be $\dot{m}_{i-1,i}$.

H. L. HARRISON, O. L. LOUCKS
J. W. MITCHELL, C. R. TRACY
*College of Engineering,*
*University of Wisconsin,*
*Madison 53705*

## Enlightened Employment Tactics

We commend Boris Magasanik for his letter (19 Feb.) encouraging qualified women to apply for positions in his department. He is correct in surmising that women are often discouraged from seeking positions in academic departments of excellent reputation in the certain knowledge that they will not be considered or, if considered, will be placed at extreme disadvantage relative to male competitors. It would be helpful if other department chairmen would similarly state their willingness to consider qualified candidates regardless of sex, by publishing statements in *Science* or elsewhere.

Recruitment for posts at this level is customarily informal and not pursued by public advertisement. Thus chairmen should also tell their colleagues of their willingness to consider applicants regardless of sex. Often when a woman allows her candidacy to be known via a third party, she is at a great disadvantage if this third party is ambivalent about women filling such posts. If more employers would publicize their intent to hire on the basis of qualifications alone, it would create a climate in which women would be encouraged to apply, directly or indirectly, and their colleagues would feel more free to recommend them.

LORETTA LEIVE
MAXINE F. SINGER
*National Institute of Arthritis and Metabolic Diseases, Bethesda, Maryland 20014*

## M.I.T. Confrontation

Southwick's News and Comment article "Visitors ask M.I.T. faculty to renounce military research" (15 Jan., p. 156) describes demonstrations carried out in front of M.I.T. by members of the New York branch of Scientists and Engineers for Social and Political Action (SESPA). The article contains little news and rather biased comment. It is absurd to say that M.I.T. is probably the most important military research center in the United States. Seymour Melman is quoted as saying that M.I.T. has done nothing about the problems of conversion. In fact, M.I.T. and its faculty have been leaders in turning science to societal problems.

The demonstration was carried out, and knowingly so, at a time when M.I.T. was not in regular session. There was no notice of the event. According to the article, the Union of Concerned Scientists (UCS), of which I serve as chairman, was the "main target of the demonstrations." If so, it was an injudicious choice. It is far easier to confront your potential allies than the Pentagon. It is also far less productive. Several points in the article should be clarified and amplified:

I have no idea how many UCS members would work on a laser ABM, but I was prompted by the quote to inquire of a few nearby members of scientific persuasion. One conditional "yes" is worth noting. The member allowed that he might conceivably work on the laser ABM, but only on very cloudy days with air heavy with smog.

UCS has taken no position on the SESPA pledge not to participate in war research. We do not intend to. This point became clear when Melman, at his request, addressed an open meeting of UCS on 16 October 1970. The UCS members present held to the view that signing such a pledge is a matter for personal conscience, not collective intimidation.

There are circumstances when some of us would work on weaponry. We are convinced that now is not such a time. We devote our energies and our talents so that the time may never come.

The principal discussions of the 16 October meeting concerned the tactics used by SESPA in its confrontation with workers at the Riverside Research Institute in New York, an effort which Melman hoped we would emulate in Boston. The UCS members rejected those tactics which went beyond the picketing of the laboratory to the

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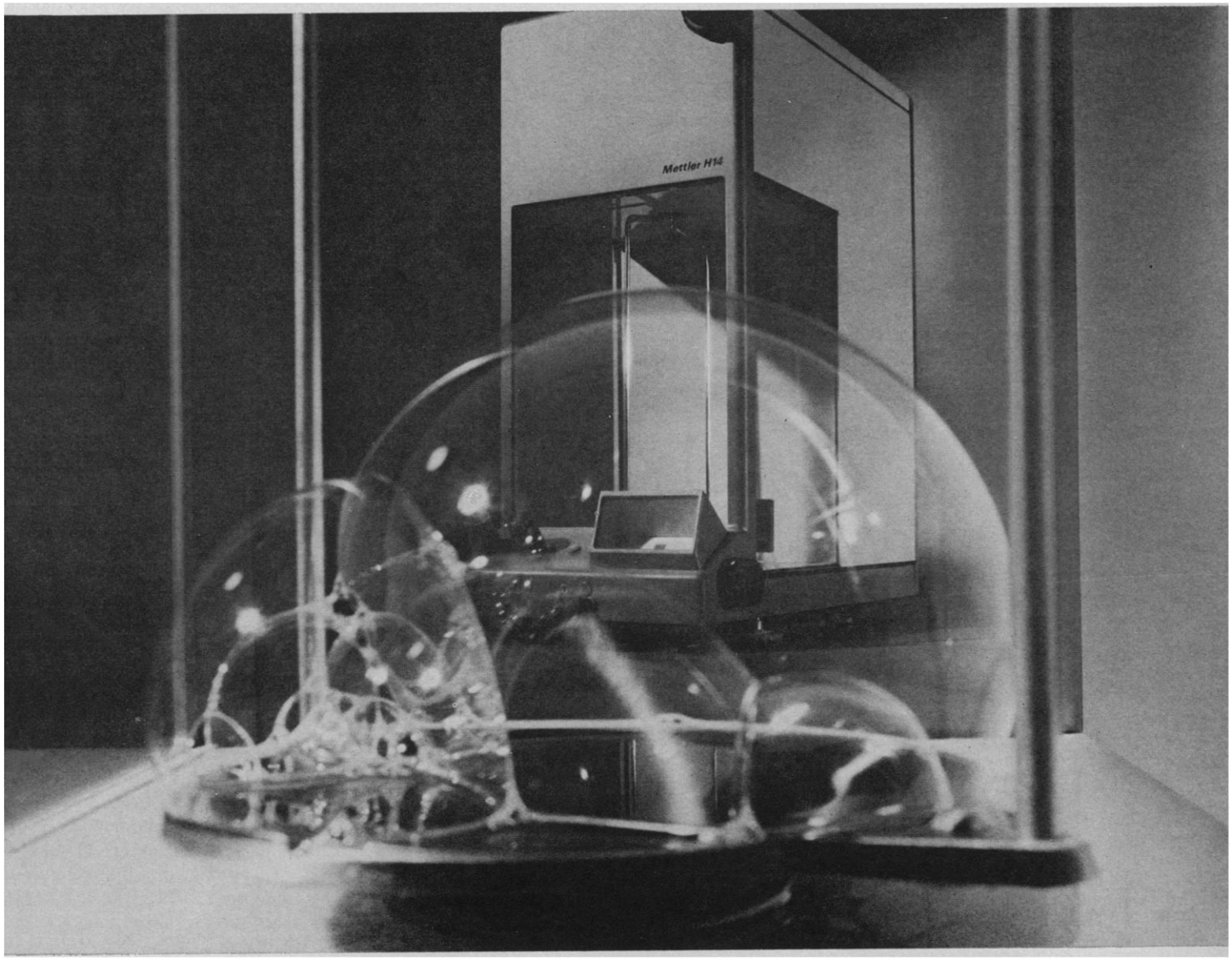


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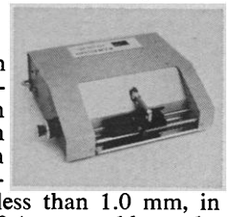

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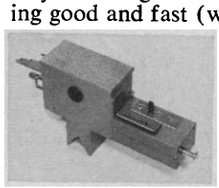

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picketing of individual scientists at their homes.

Through the UCS publications on MIRV, ABM, CBW, and environmental issues, we have expressed our belief that a strengthening of the democratic process would lead to a more humane exploitation of scientific and technical knowledge, and to a reduction of the very real threats to the survival of mankind. UCS has become the Boston chapter of the Federation of American Scientists. We are bending our own energies toward that revitalized organization in its concerted and continuing effort to influence public policy in areas where our scientific knowledge and skill can play a significant role. We hope that SESPA would eschew tactics so alien to civil libertarians, and join us in this cause.


LEE GRODZINS

*Union of Concerned Scientists, Room 26–413, Massachusetts Institute of Technology, Cambridge 02139*


## Political Discussions at Gordon Conference: Suggestions

It is natural that members of the scientific community are deeply concerned with the social structure of our nation. One would expect them therefore to participate actively in political dialogues and to contribute their individual thoughts on what changes are desirable to improve the lot of the individual and that of mankind. As scientists, one would expect that their contributions would be unbiased, if not impartial, and based on a thorough analysis of all controversial subjects. However, one would be reluctant to accept their choice of scientific meetings as a sounding board for their political beliefs.

Two members from Harvard's and M.I.T.'s departments of bacteriology and biology describe three political sessions they organized at last year's Gordon Conference on Biological Regulatory Mechanisms where the following topics were presented: trip of one of the signers of the letter to Hanoi, Saigon, and Vientiane; films on the People's Park at Berkeley and on the Black Panther Party; discussion of political repression and of the newly formed Scientific and Medical Workers Committee to Support the Panthers; discussion of destructive aspects of competition, and the exploitation of graduate students. To top it off, one of the signers showed slides of a 1964 trip to the People's Republic of China. The authors express the "hope that discussions of these and related issues will be organized regularly at scientific conferences and elsewhere."

Undoubtedly, in future sessions topics such as "Should Policemen be Referred to as Fascist Pigs or merely as Pigs," and "Revolution for the Hell of It" will be discussed. Should the organizers of the political sessions run out of topics involving the "Rottenness of the Establishment" the following subjects could be suggested to insure lively meetings: "Why the Russians Liberated Czechoslovakia in 1969," "Why Comrade Mao's People's Guard Knocked off Several Million Right-Wingers during the Great Proletarian Cultural Revolution," "How to Organize Political Sessions in Moscow or Peking at Meetings of Biologists and Bacteriologists," and a companion subject: "The Happy Life of Dissenting Russian Biologists and Bacteriologists in a Siberian Detention Camp." Finally a nonpolitical pastoral subject: "How to Grow Daisies on the Berlin Wall."


SILVE KALLMANN

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## UN Conference in Stockholm

As an occasional participant in the work of the World Health Organization, I have become concerned with the role and responsibility of the scientific community of the United States in matters affecting the human environment. The United Nations Conference on the Human Environment, set for Stockholm in 1972, will serve as a focal point for primarily political decisions. What these decisions will be depends largely on the scientific community. In this country the mechanisms for active and constructive participation by the scientific community do not seem to be well developed.

The UN Secretary-General has identified the main problems for the Conference as problems of human settlements, territorial problems, and global problems (*1*). The first group concerns urbanization, its technology, its organization, the challenges of industrialization, and the attendant threats of air and water pollution. Territorial problems include requirements for long-term conservation and rational use of the human environment. Territorial problems differ in the different climatologi-


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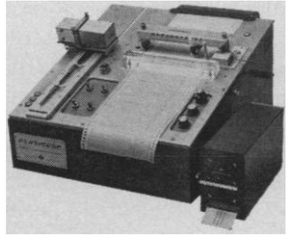

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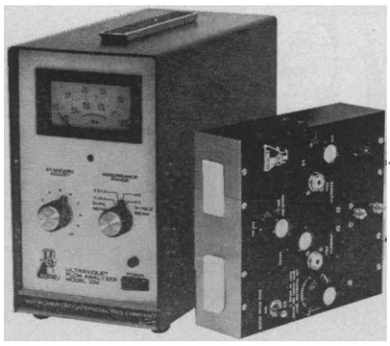

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cal areas of the world, and they take different forms according to the state of development of a country and its social and scientific resources. As a massive consumer of energy and goods, the United States is directly or indirectly responsible for many of the decisions regarding mining, harvesting, fishing, processing, and marketing, all of which can lead to unplanned and uncontrolled pollution of rivers, lakes, and oceans as well as the extinction of species and the destruction of ground cover. Since many of these processes are irreversible, the predictive capacities of science and technology become crucial. Global problems are those of worldwide pollution or environmental modification which are amenable to solution only by international agreement and a willingness of nations to act in concert for their common betterment.

U.S. scientists can contribute to these problems such as research on improved methods for measuring and monitoring pollutants and environmental quality changes, on methods for predicting and evaluating trends in environmental effects on weather, diversity of plankton, soil fertility and mutation rate, and improved models for dealing with the interactions of environmentally related phenomena and their behavior under alternative procedures of management. Just as the interpretation of the biological consequences of continued atmospheric nuclear weapons testing has led to international agreements limiting such testing, so the interpretation by knowledgeable scientists of ecologically disruptive practices such as defoliation, biological warfare, and oceanic dumping of wastes can lead to effective international agreements.

It is also reasonable to expect that cooperative international research on selected matters will be agreed upon next year in Stockholm. Among important (but not well enough known) examples are the International Biological Program (IBP) which is stressing biological adaptation and unique biological species. The report of the work of the International Agency for Research on Cancer by Higginson (*2*) describes another example of a significant program of biological research.

Forecasts of political agreements to which the work of the UN Conference might lead have been published by the David Davies Memorial Institute of International Studies (Thorney House, 34 Smith Square, London S.W.1). They include "Draft Rules Concerning Changes in the Environment of the Earth," "Oceanic Pollution: A Survey and Some Suggestions for Control" and the Annual Lecture for 1970 by J. E. S. Fawcett on "Priorities in Conservation."

There is every reason to hope that the columns of *Science* and the operations of the AAAS can continue to assist the scientific community in this country to play a more significant and active role in dealing with environmental problems on a worldwide scale.

JOHN R. GOLDSMITH
*767 San Diego Road,*
*Berkeley, California 94707*

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1. "Problems of the Human Environment," United Nations Economic and Social Council, 26 May 1969.
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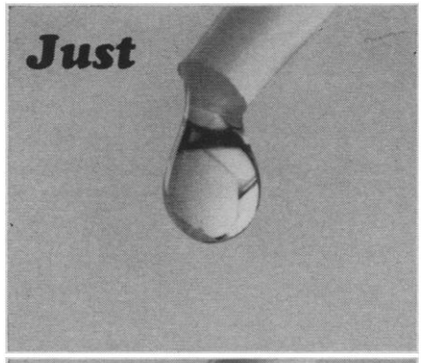
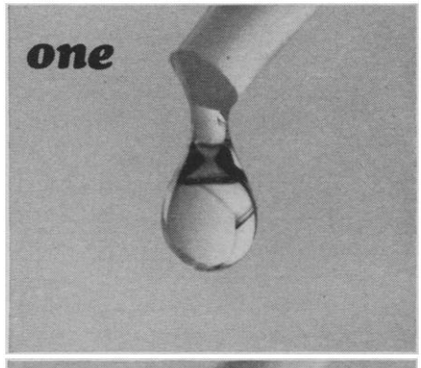
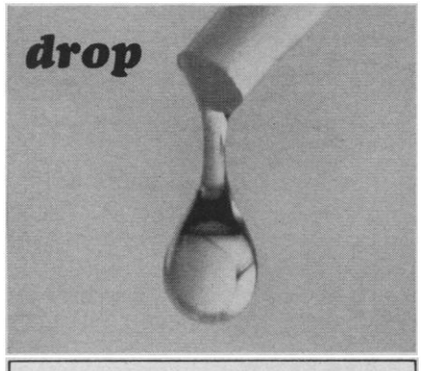
## Professional Performance of Women Physicians

The Carnegie Commission on Higher Education's report, *Higher Education and the Nation's Health: Policies for Medical and Dental Education* (McGraw-Hill, New York, 1970), will be regarded as a definitive and scholarly treatise. It is regrettable that a grievous error in citation presents a grossly distorted view of the professional performance of women physicians. Such an error is likely to be used, both wittingly and unwittingly, in "justification" of present prejudicial medical admission policies. Clark Kerr, the Commission chairman, has assured me that the error will be removed from future printings. Unfortunately, tens of thousands of copies are already extant.

On page 26, after noting the low percentage (6 percent) of U.S. physicians who are women in contrast to Germany (30 percent) or the Netherlands (20 percent), the report states: "Increasing the proportion of women in medical and dental schools, in the absence of other changes, would not increase the supply of physicians' and dentists' services, since many married women in these professions who have young children work only part time or drop out of the labor force entirely." This statement is "documented" by a footnote which reads: "Among female medical school graduates active from 1931 to 1956, 45% were working full time or part time in 1964." If, however, the reader consults the paper by Powers *et al.* (*1*) cited as the reference for this "datum," he will discover that 45 percent is the figure for *full-time practice* and that the correct figure for *full-time and part-time practice* (page 483) is





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*91.1 percent!* These findings are corroborated by an unpublished study of Radcliffe alumnae who have entered medicine (*2*).

The Powers *et al.* study estimates that the male physicians in the sample work an average of 30 percent more hours and attend about one-third more patients than the women respondents (page 485). These data must be evaluated in relationship to differences in practice patterns, with women more often than men found in salaried than in private practice, a pattern likely to become more common for male physicians as well in the future. If we consider the obstacles that face women in entering medicine, in obtaining training in certain specialties, and returning to practice after bearing children, this record should be regarded as an extraordinary accomplishment rather than as an indication of limited potential. If we consider how much greater their professional output is likely to be, once these obstacles to training are removed, when day care becomes more widely available for women with children, and when problems of reentry into professional life for those who elect to withdraw temporarily for child-rearing are simplified by the provision of rational job and retraining opportunities, then it becomes abundantly clear that womanpower can contribute in a major way to meeting the national shortage of medical care. . . .

Perhaps a psychiatrist may be forgiven the speculation that so egregious an error could hardly have been overlooked had not the author of the section, the editor who followed him, and the proofreaders been all too ready to nod at statements that reflect hoary belief. After all, this is no mere misprint of a number; both the text and the footnote supply distorted information. . . .

There are other aspects of this report with which I take issue, but I limit this letter to a caveat to readers, lest they, too, give continued life to the canard that educational investment in women physicians is an unproductive endeavor. . . . This society can ill afford the waste of the talents of women.


LEON EISENBERG

*Harvard Medical School, Massachusetts General Hospital, Boston 02114*


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1. L. Powers, R. D. Parmelle, H. Wiesenfelder, *J. Med. Educ.* **44**, 481 (1969).
2. P. A. Williams, "Women in Medicine: Some Themes and Variations," unpublished manuscript.



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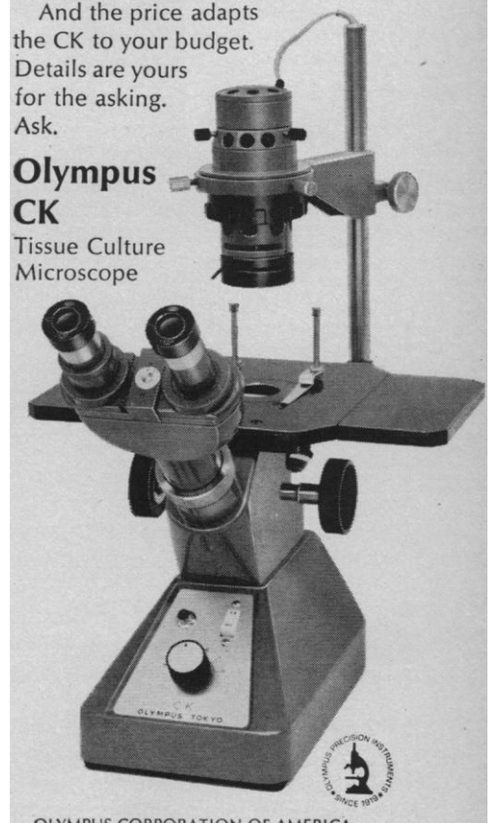


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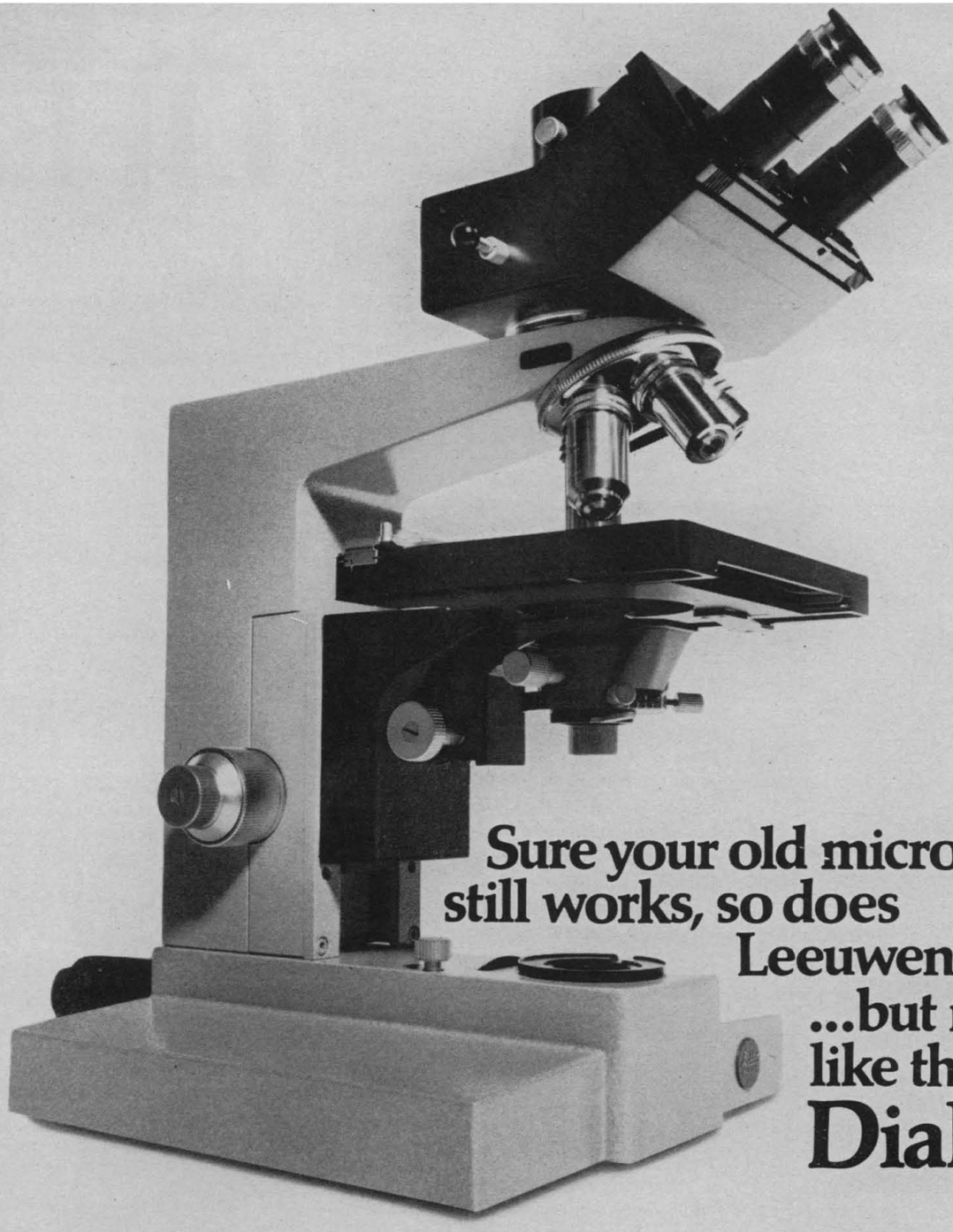

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# Underemployment of Scientists and Engineers

The plight of aerospace scientists and engineers has been drawing front-page attention. Less dramatic, but fully as important, are trends affecting most scientists and engineers. A conjunction of developments has sharply curtailed job opportunities in industry, academic, and government. These trends seem likely to persist.

The current economic slump has eroded industrial profit margins at a time when most companies face huge expenditures for pollution control. Managements have cut back on deferable expenditures, including research. Industrial scientists are not optimistic that the curtailments will end soon. Growing competition from Japan and Germany represents a long-range constricting influence; many jobs have already migrated to those countries.

The economic slump and public disillusionment with higher education have led to financial strains for most universities. Few new appointments are being made. The science and engineering departments are additionally affected by the outcry against technology. In many places their enrollments are down, and this will bring further pressure to cut faculties.

Given the present climate of public opinion, it is not politically feasible for the government to do much about the situation. Direct employment of scientists and engineers has decreased slightly during the past year. Massive new support for technological goals is not in sight.

What will happen to the scientists and engineers who are having difficulty finding jobs in fields for which they have been trained? The major problem appears to reside with individuals who are in their forties or older. The young graduates are more flexible. Their knowledge of new developments is current, and they have the backing of their professors and placement bureaus. Some of the young graduates will find it necessary to accept employment that is only marginally related to their training. Removal from the ranks of science and engineering will constitute a serious loss to the nation; it will not be so great a blow to the individuals.

The senior scientists and engineers face a rougher situation. Their services have been in great demand, and they have not experienced the necessity of seeking employment. Their world has fallen apart. They need help.

Some companies and congressmen would like to believe that high technology can be effectively directed to solving problems of society such as pollution. This is only wishful thinking. A limited number of individual scientists and engineers are being hired by municipalities, states, and industries, but no mass hiring is likely. In many instances companies have filled their needs within their organizations.

In this situation it would be a mistake to place too much dependence on government. Legislation calling for funds for retraining has been introduced in Congress. But retraining without specific job openings is a waste of money, time, and emotion. Experience has shown that scientists and engineers quickly develop needed skills on the job.

At present the best job prospects seem to lie with the electrical utilities and with service industries such as health care. What is needed is a strenuous effort to identify possible openings that match to some degree the potentialities of individuals. Volunteer groups associated with scientific and technical societies could and should play an important role. This activity might be limited by lack of funds, but surely not by lack of goodwill and imagination.—PHILIP H. ABELSON

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*17–20.* Australian **Biochemical** Soc., Brisbane. (J. N. Mansbridge, Dept. of Biochemistry, Univ. of Queensland, St. Lucia, Q. 4067, Australia)

*17–20.* Symposium on **Blood Transfusion and Blood Utilization**, 7th annual, Tehran, Iran. (F. Ala, VIIth Congr. of the World Federation of Haemophilia, P.O. Box 13/1438, C.I.C.I. Tehran)

*17–20.* American Soc. of **Mechanical Engineers**, design engineering conf. and show, New York, N.Y. (A. B. Conlin, ASME, 345 E. 47 St., New York 10017)

*17–20.* International **Microwave** Symp., Washington, D.C. (R. V. Garver, Harry Diamond Labs., Washington, D.C. 20438)

*17–20.* American Inst. of **Mining Metallurgical and Petroleum Engineers** and Metallurgical Soc., spring mtg., Atlanta, Ga. (A. B. Conlin, AIMMPE, 345 E. 47 St., New York 10017)

*17–20.* American **Urological** Assoc., Chicago, Ill. (R. J. Hannigan, AUA, 1120 N. Charles St., Baltimore, Md. 21201)

*17–21.* Canadian Congr. of **Applied Mechanics**, 3rd annual, Calgary, Alberta. (L. G. Currie, Dept. of Mechanical Engineering, Univ. of Toronto, Toronto 5, Ont., Canada)

*17–21.* International Conf. on **Oral Surgery**, 4th annual, Amsterdam, Netherlands. (N. Rowe, Royal College of Surgeons, Lincoln Inn Fields, London, A.C.2, England)

*17–21.* **Otolaryngological** Soc. of Australia, Adelaide. (D. B. Arnott, 43 Lower Fort St., Sydney, Australia 2000)

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*18–21.* International **Instruments Electronics and Automation** Exhibition, London, England. (Secretary, Inst. of Physics and Physical Soc., 47 Belgrave Sq., London, S.W.1)

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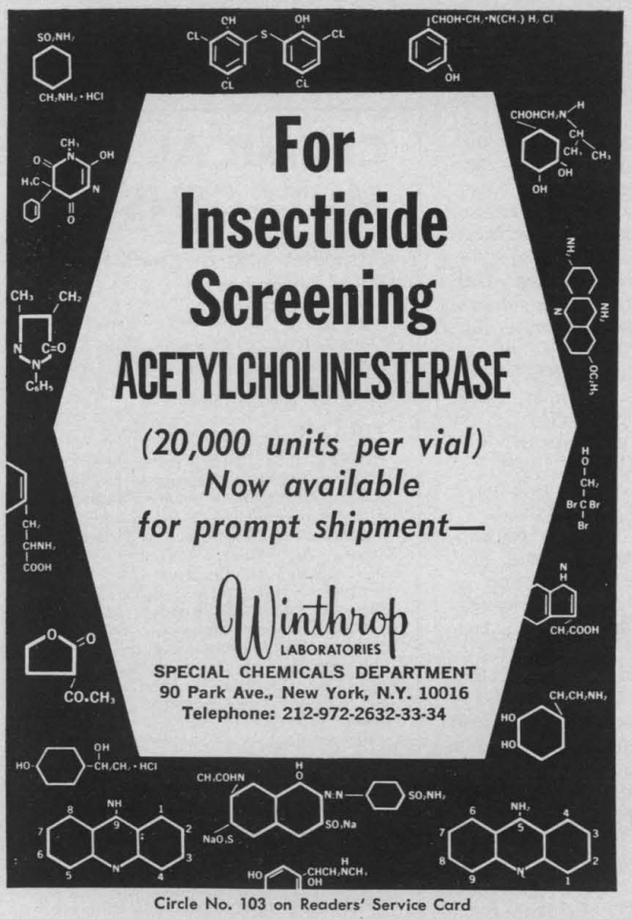


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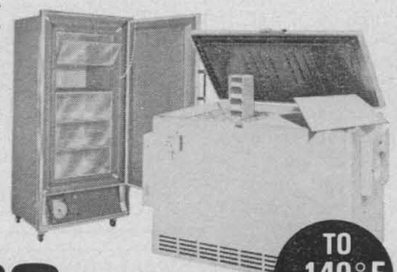


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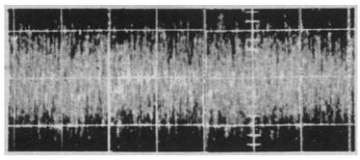

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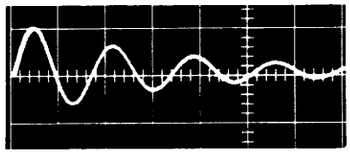

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*30–3.* **Medical Library** Assoc., 70th annual, New York, N.Y. (H. B. Schmidt, MLA, Suite 1601, 919 N. Michigan Ave., Chicago, Ill. 60611)

*31–4.* **Biological Aspects of Electrochemistry**, Rome, Italy. (Secretary, Inst. of Physics and Physical Soc., 47 Belgrave Sq., London, S.W.1, England)

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*1–2.* **Acoustics Testing** Facilities, Sudbury, England. (Meetings Officer, Inst. of Physics and Physical Soc., 47 Belgrave Sq., London, S.W.1, England)

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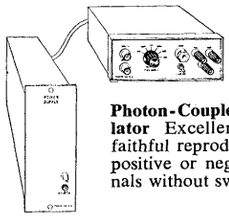

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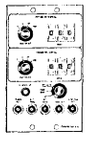

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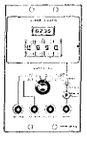

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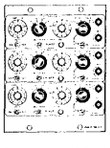

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*9–10.* **Biometeorology**, Columbia, Mo. (J. D. McQuigg, ESSA, P.O. Box 941, Columbia 65201)

*9–11.* **Genetics** Soc. of Canada, Quebec City, P.Q. (W. F. Grant, Genetics Lab., McGill Univ., Ste. Anne de Bellevue 800, P.Q., Canada)

*9–11.* International Conf. on **Radiation-Induced Voids in Metals**, Albany, N.Y. (J. W. Corbett, Physics Dept., State Univ. of New York, Albany 12203)

*9–12.* Canadian Soc. of **Microbiologists**, 21st annual, London, Ont. (E. L. Medzon, Dept. of Bacteriology and Immunology, Health Sciences Center, Univ. of Western Ontario, London 72)

*9–12.* International Federation of Assoc. of **Textiles Chemists and Colourists**, 9th annual congr., Baden-Baden, Germany. (M. Peter, IFATCC, Postfach 94, 4000 Basel 7, Switzerland)

*10–11.* **Agricultural Meteorology**, 10th annual, Columbia, Mo. (J. D. McQuigg, ESSA, P.O. Box 941, Columbia 65201)

*10–11.* American **Chemical** Soc., Great Lakes regional, Peoria, Ill. (K. E. Kolb, Dept. of Chemistry, Bradley Univ., Peoria 61606)

*10–11.* Symposium on **Metabolism and Disease**, Ottawa, Ont., Canada. (R. S. Meldrum, Secretariat, Food and Drug Directorate, Tunney's Pasture, Ottawa)

*10–16.* American **Rheumatism** Assoc., New York, N.Y. (M. M. Walsh, Arthritis Foundation, 1212 Ave. of the Americas, New York 10036)

*12–17.* Internationational Federation of **Automatic Control**, 5th annual world congr., Paris, France. (Secretary, AFCET, Assoc. Française pour la Cybernetique Economique et Technique, Centre Universitaire Dauphine, Place du Marechal de Lattre de Tassigny, Paris 16e)

*13–15.* Canadian Soc. of **Plant Physiologists**, Toronto, Ont. (D. S. Fensom, Dept. of Biology, Mount Allison Univ., Sackville, New Brunswick, Canada)

*13–16.* Canadian **Otolaryngological** Soc., 25th annual, Montreal. (J. D. Baxeter, Royal Victoria Hospital, 687 Pine Ave., W. Montreal, 112))

*13–17.* American **Electroplates** Soc., 58th annual, Buffalo, N.Y. (R. Leeds, 57 Melmore Gardens, East Orange, N.J. 07017)

*13–17.* American **Nuclear** Soc., 17th annual, Boston, Mass. (O. J. du Temple, ANS, 244 E. Ogden Ave., Hinsdale, Ill. 60521)

*13–18.* American Soc. of **Biological Chemists**, San Francisco, Calif. (R. A. Harte, ASBC, 9650 Rockville Pike, Bethesda, Md. 20014)

*13–18.* International **Hospital** Congr., 17th annual, Dublin, Ireland. (M. F. Carroll, 55 Fitzwilliam Sq., Dublin 2)

*13–18.* American Soc. of **Medical Technologists**, 39th annual, Las Vegas, Nev. (N. Rasmussen, Suite 1600, Hermann Professional Bldg., Houston, Tex. 77025)

*13–19.* American Assoc. on **Mental Deficiency**, Houston, Tex. (J. J. Noone, AAMD, 5201 Connecticut Ave., NW, Washington, D.C. 20015)

*13–19.* World **Petroleum** Congr., 8th annual, Moscow, Russia. (W. N. Seward, American Petroleum Inst., 1271 Ave. of the Americas, New York 10020)

*13–20.* American Soc. of **Ichthyologists and Herpetologists**, Los Angeles, Calif. (R. Highton, Dept. of Zoology, Univ. of Maryland, College Park 20742)

*14–16.* **Animal Behavior** Soc., Logan, Utah. (K. L. Dixon, Conf. and Inst. Div., Utah State Univ., Logan 84321)

*14–16.* International Conf. on **Communications**, Montreal, Canada. (J. A. Mahoney, ICC, P.O. Box 201, Station H, Montreal 107)

*14–17.* Conference on **Asian Environments**, Ann Arbor, Mich. (Yuh-jao Wu, Inst. for Environmental Quality, Univ. of Michigan, 2200 N. Campus Rd., Ann Arbor 48105)

*14–16.* American **Neurological** Assoc., 96th annual, Washington, D.C. (K. R. Magee, Dept. of Neurology, University Hospital, Ann Arbor, Mich.)

*14–17.* International Symp. on **Identification and Measurement of Environmental Pollutants**, Ottawa, Ont., Canada. (M. K. Ward, Natl. Research Council, Ottawa 7)

*14–17.* American Soc. of **Limnology and Oceanography**, Winnipeg, Manitoba, Canada. (G. W. Saunders, Jr., Dept. of Zoology, Univ. of Michigan, Ann Arbor 48104)

*14–17.* European Symp. on **Poliomyelitis and Other Virus Diseases**, 15th annual, Helsinki, Finland. (F. Recht, European Assoc. against Polio and Other Virus Diseases, 30 Blvd. General Jacques, Brussels 1050, Belgium)

*14–18.* **Molecular Structure and Spectroscopy**, 26th annual symp., Columbus, Ohio. (K. N. Rao, Dept. of Physics, 174 W. 18 Ave., Ohio State Univ., Columbus 43210)

*14–18.* Research Conf. on **Planning for Water Quality and Standards**, Milwaukee, Wis. (G. Karadi, College of Applied Science and Engineering, Univ. of Wisconsin, Milwaukee 53201)

*14–18.* **Propulsion**, joint specialist conf., 7th annual, Salt Lake City, Utah. (D. B. Waring, Component Technology, Pratt & Whitney Aircraft Div., United Aircraft Corp., 400 Main St., East Hartford, Conn. 06108)

*14–18.* Geological Soc. of America, Penrose Conf. on **Precambrian Metavolcanic and Plutonic Rocks of Colorado and Northern New Mexico**, Taos, N.M. (R. E. Riecker, Air Force Cambridge Research Labs., Bedford, Mass. 01730)

*14–18.* **Radiology**, 2nd intern. congr., The Hague, Netherlands. (J. R. von Ronnen, Holland Organizing Center, 16 Lange Voorhout, The Hague)

*14–18.* **Vacuum Metallurgy** Conf., New York, N.Y. (R. C. Krutenat, Pratt & Whitney Aircraft, Aircraft Rd., Middletown, Conn. 06457)

*14–20.* American **Therapeutic** Soc., Atlantic City, N.J. (R. T. Smith, 37 Narbrook Park, Narberth, Pa. 19072)

*15–16.* American Soc. for **Neuroradiology**, San Francisco, Calif. (E. V. Leslie, Edward J. Meyer Memorial Hospital, 462 Grider St., Buffalo, N.Y. 14215)

*15–18.* Canadian Federation of **Biological** Societies, 14th annual, Toronto, Ont. (K. K. Carroll, Dept. of Biochemistry, Univ. of Western Ontario, London 72)

*16.* National **Speleological** Soc., Blacksburg, Va. (D. N. Cournoyer, NSS, 2318 N. Kenmore St., Arlington, Va. 22201)


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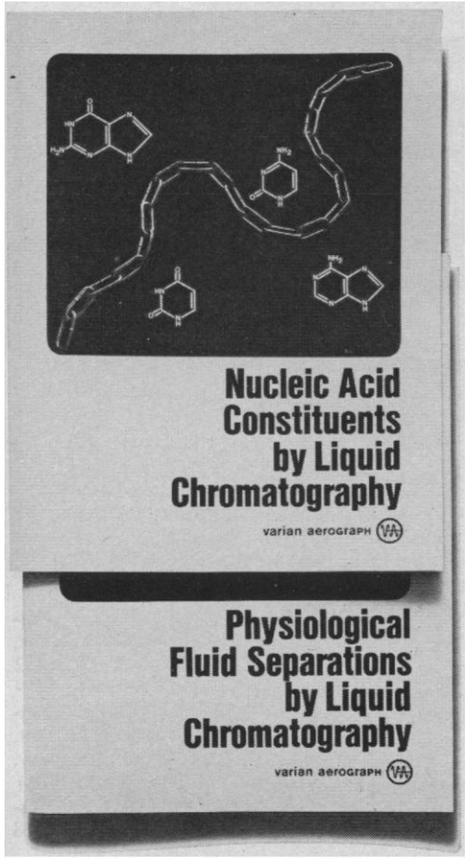


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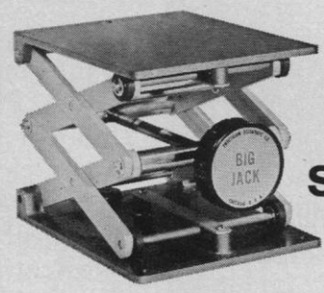


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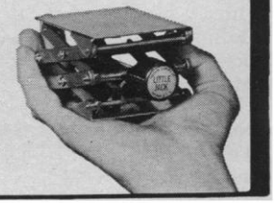

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*16–17.* Symposium on the **Implementation of Contemporary Biology in Dental Curriculum**, Ann Arbor, Mich. (S. S. Han, Univ. Of Mich., Extension Service, 412 Maynard, Ann Arbor 48104)

*16–18.* **Analytical Chemistry**: Key to Progress in National Problem Areas, 24th annual, Gaithersburg, Md. (R. A. Durst, Room A219, Chemistry Bldg., Natl. Bureau of Standards, Washington, D.C. 20234)

*16–18.* Conference on **Heat Exchangers**, Paris, France. (Meetings Officer, Inst. of Physics and Physical Soc., 47 Belgrave Sq., London, S.W.1, England)

*16–19.* **Hemispherectomy and Cerebral Function**, 3rd annual symp.; Coronado, Calif. (L. Smith, Porter Memorial Hospital, 2525 S. Downing, Denver, Colo. 80210)

*16–19.* Western Soc. of **Malacologists**, 4th annual, Pacific Grove, Calif. (M. D'Aiuto, 804 Fielding Drive, Palo Alto, Calif. 94303)

*17.* Canadian **Standards** Assoc., 44th annual, Montreal, P.Q. (Secretary, CSA, 178 Rexdale Blvd., Rexdale, Ont., Canada)

*17–19.* American Assoc. of **Bioanalysts**, St. Louis, Mo. (D. Birenbaum, AAB, 802 Ambassador Bldg., St. Louis, Mo. 63101)

*17–19.* **Macromolecules with Regulatory Functions in Development,** Soc. of Developmental Biology, 30th annual symp., Seattle, Wash. (Miss W. S. Badman, SDB, P.O. Box 2782, Kalamazoo, Mich. 49003)

*17–19.* American Assoc. of **Physics Teachers**, Beloit, Wis. (M. W. Zemansky, American Inst. of Physics, 335 W. 45 St., New York 10017)

*17–23.* **Plasma Physics and Controlled Thermonuclear Fusion**, 4th annual conf., Madison, Wis. (J. H. Kane, Div. of Technical Information, U.S. Atomic Energy Commission, Washington, D.C. 20545)

*18–19.* Society for **Vascular Surgery**, Philadelphia, Pa. (R. M. Nelson, Latter Day Saints Hospital, Salt Lake City, Utah 84103)

*18–20.* Society for **Investigative Dermatology**, Boston, Mass. (J. S. Strauss, Boston Univ. Medical Center, 80 E. Concord St., Boston 02118)

*18–22.* American Soc. of **Pharmacognosy**, Columbus, Ohio. (J. L. Beal, College of Pharmacy, Ohio State Univ., Columbus 43210)

*18–23.* International **Dental** Federation, 59th annual, Munich, Germany. (G. H. Leatherman, IDF, 64 Wimpole St., London, W.1, England)

*19–20.* Society for **Surgery of the Alimentary Tract**, Atlantic City, N.J. (L. M. Nyhus, SSAT, 840 S. Wood St., Chicago, Ill. 60612)

*20.* American College of **Legal Medicine**, Atlantic City, N.J. (B. Hanna, 1340 N. Astor St., Chicago, Ill. 60610)

*20–21.* **Data for Science and Technology**, International Council of Scientific Unions, 6th annual symp., Washington, D.C. (C. Schafer, CODATA Central Office, Westendstrasse 19, 6 Frankfurt am Main, Germany)

*20–22.* American Soc. for **Head and Neck Surgery**, Atlantic City, N.J. (W. M. Trible, ASHNS, 1234 19 St., NW, Washington, D.C. 20036)

*20–23.* American Assoc. of **Cost Engineers**, 15th annual, Montreal, P.Q., Canada. (K. K. Humphreys, 219 Mineral Industries Bldg., Morgantown, W.Va. 26506)

*20–23.* American **Dairy Science** Assoc., East Lansing, Mich. (C. Cruse, ADSA, 113 N. Neil St., Champaign, Ill. 61820)

*20–23.* American **Leather Chemists** Assoc., Mackinac Island, Mich. (W. T. Roddy, Tanners Council Research Lab., Univ. of Cincinnati, Cincinnati, Ohio 45221)

*20–23.* International Conf. on **Nuclear Reactors and Radioisotopes**, Montreal, Canada. (Secretary, Canadian Nuclear Assoc., 11 Ouest rue Adelaide St., West Toronto 1, Ont.)

*20–23.* International Symp. on **River Ecology and the Impact on Man**, Amherst, Mass. (C. Percy, Connecticut River Watershed Council, P.O. Box 89, Greenfield, Mass. 01301)

*20–24.* American Inst. of **Biological Sciences**, Alberta, Canada. (J. R. Olive, AIBS, 3900 Wisconsin Ave., NW, Washington, D.C. 20016)

*20–24.* Canadian **Botanical** Soc., Edmonton, Alta. (W. N. Stewart, Dept. of Biology, Univ. of Alberta, Edmonton 7)

*20–24.* American **Bryological and Lichenological** Soc., Edmonton, Canada. (B. E. Lemmon, Dept. of Biology, Univ. of Southwestern Louisiana, Lafayette 70501)

*20–24.* Canadian Soc. of **Laboratory Technologists**, 35th annual, Halifax, Nova Scotia. (Secretary, CSLT, 165 Jackson St., East Hamilton, Ont.)

*20–24.* American **Medical** Assoc., Atlantic City, N.J. (E. B. Howard, AMA, 535 N. Dearborn St., Chicago, Ill. 60610)

*20–24.* National **Industrial Pharmaceutical Research**, 13th annual conf., Land O'Lakes, Wis. (J. R. Arndt, Extension Service in Pharmacy, University Extension, Univ. of Wisconsin, 425 N. Charter St., Madison 53706)

*20–24.* **Psychological** Soc. of America, Edmonton, Alberta, Canada. (P. L. Walne, Dept. of Botany, Univ. of Tennessee, Knoxville 37916)

*20–26.* American **Library** Assoc., Dallas, Tex. (D. H. Clift, ALA, 50 E. Huron St., Chicago, Ill. 60611)

*21.* Panamerican Congr. of **Psychopharmacology**, Buenos Aires, Argentina. (R. Kertesz, San Jose de Calasanz 431, Buenos Aires)

*21–23.* **Fluid and Plasma Dynamics**, 4th annual conf., Palo Alto, Calif. (A. Goldburg, Flight Sciences Lab., Boeing Scientific Research Lab., P.O. Box 3981, Seattle, Wash. 98124)

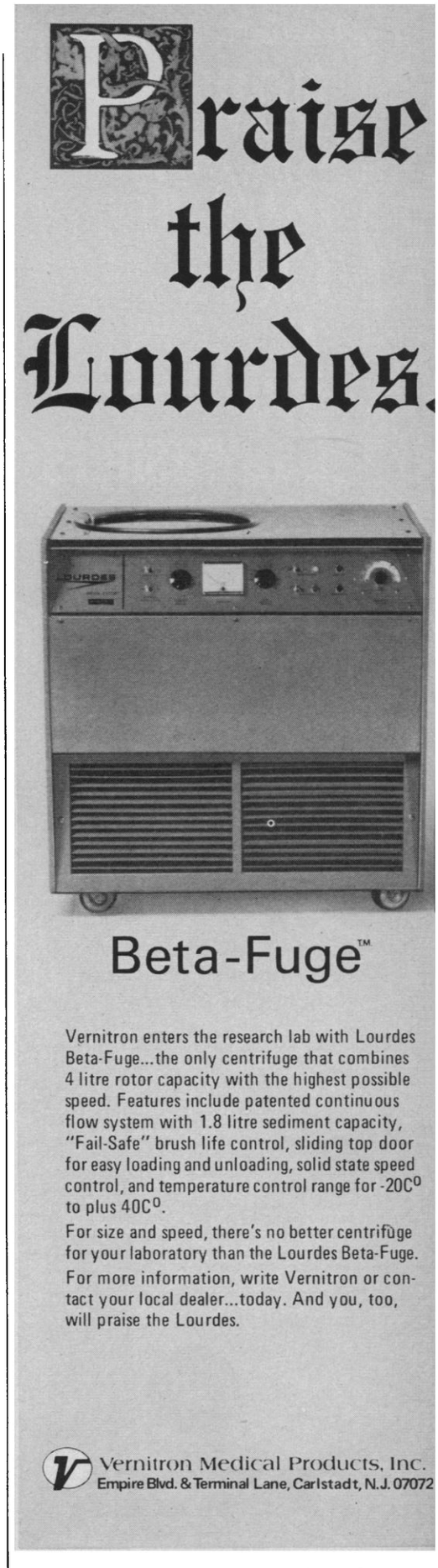
*21–23.* American College of **Preventive Medicine**, Atlantic City, N.J. (W. Bentley, ACPM, 801 Old Lancaster Rd., Bryn Mawr, Pa. 19010)

*21–23.* **Social and Economic Aspects of Water Resource Development**, Ithaca, N.Y. (L. B. Dworsky, Water Research and Marine Sciences Center, 468 Hollister Hall, Cornell Univ., Ithaca, N.Y. 14850)

*21–24.* American Soc. for **Engineering Education**, Annapolis, Md. (L. Hitch, ASEE, Suite 400, 1 Dupont Circle, Washington, D.C. 20038)

*21–24.* Canadian Assoc. of **Physicists**, Ottawa, Ont. (Secretary, CAP, Suite 903, 151 Slater, Ottawa, Ont.)

*21–25.* American Assoc. for the **Advancement of Science**, Pacific Div., San

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*21–25.* **Health Physics** Soc., 16th annual, New York, N.Y. (R. F. Cowing, HPS, 194 Pilgrim Rd., Boston, Mass. 02215)

*21–25.* Modern Methods for **Industrial and Product Noise Control,** Schenectady, N.Y. (W. L. Weifenbach, Carnegie Hall, Union College, Schenectady 12308)

*21–25.* **Oil and Colour Chemists** Assoc. 23rd annual, London, England. (Secretary, Wax Chandlers Hall, Gresham St., London, E.C.2)

*21–25.* **Temperature—Its Measurement and Control in Industry and Science**, 5th annual symp., Washington, D.C. (R. P. Hudson, U.S. Dept. of Commerce, Natl. Bureau of Standards, Washington, D.C. 20234)

*21–26.* **Theoretical Physics and Biology**, Versailles, France. (Meetings Officer, Inst. of Physics and Physical Soc., 47 Belgrave Sq., London, S.W.1, England)

*22–23.* American **Diabetes** Assoc., San Francisco, Calif. (J. R. Connelly, ADA, 18 E. 48 St., New York 10017)

*22–25.* American Assoc. of **Bioanalysts**, Chicago, Ill. (D. Birenbaum, Suite 805, 411 N. 7 St., St. Louis, Mo. 63101)

*22–25.* **Data Management** Assoc., Houston, Tex. (Secretary, Conference Dept., DMA, 505 Busse Hway, Park Ridge, Ill. 60068)

*23–25.* Applied Mechanics Conf., American Soc. of **Mechanical Engineers**, Philadelphia, Pa. (A. B. Conlin, 345 E. 47 St., New York 10017)

*23–26.* American **Optometric** Assoc., 74th annual congr., Houston, Tex. (G. Allen, AOA, 7000 Chippewa St., St. Louis, Mo. 63119)

*24–26.* **Endocrine** Soc., San Francisco, Calif. (Mrs. N. L. Mattox, 1211 N. Shartel, Oklahoma City, Okla. 73103)

*25–27.* American Assoc. of **Neuropathologists**, San Juan, P.R. (E. P. Richardson, Massachusetts General Hospital, Boston 02114)

*27–30.* American Soc. of **Agricultural Engineers**, Pullman, Wash. (J. L. Butt, ASAE, P.O. Box 229, St. Joseph, Mich. 49085)

*27–1.* **Air Pollution Control** Assoc., Atlantic City, N.J. (W. O. Farley, Director of Public Information, Consolidated Edison Co. of New York, 4 Irving Pl., New York 10003)

*27–1.* **Design Automation** Workshop, Atlantic City, N.J. (R. B. Hitchcock, IBM, Box 218, Yorktown Heights, N.Y. 10598)

*27–2.* Canadian **Anaesthetists** Soc., Quebec City. (Secretary, CAS, 178 St. George St., Toronto 5, Ont.)

*27–2.* Conference on **Carbon**, 10th annual, Bethlehem, Pa. (H. Leidheiser, Center for Surface and Coatings Research, Lehigh Univ., Bethlehem 18015)

*27–2.* National **Education** Assoc., Detroit, Mich. (S. M. Lambert, NEA, 1201 16th St., NW, Washington, D.C. 20006)

*27–2.* **Forest Products Research** Soc., Pittsburgh, Pa. (K. E. Huddleston, FPRS, 2801 Marshall Ct., Madison, Wis. 53705)

*27–2.* Society of **Nuclear Medicine**, Los Angeles, Calif. (Miss M. B. Glos, SNM, 211 E. 43 St, New York 10017)

*27–2.* American Soc. for **Testing and Materials**, Atlantic City, N.J. (T. A. Marshall, Jr., ASTM, 1916 Race St., Philadelphia, Pa. 19103)

*27–3.* International Congr. for **Virology**, 2nd annual, Budapest, Hungary. (J. L. Melnick, Dept. of Virology and Epidemiology, Baylor College of Medicine, Houston, Tex. 77025)

*28–30.* American **Astronautical** Soc., 17th annual, Seattle, Wash. (J. Vagners, Dept. of Aeronautics and Astronautics, Univ. of Washington, Seattle 98105)

*28–30.* Society for **Industrial and Applied Mathematics**, Seattle, Wash. (R. K. Windsor, SIAM, 33 S. 17 St., Philadelphia, Pa. 19103)

*28–30.* American Soc. of **Safety Engineers**, Tampa, Fla. (A. C. Blackman, 850 Busse Highway, Park Ridge, Ill. 60068)

*28–1.* Canadian **Ophthalmological** Soc., Montreal. (J. L. Burns, Suite 8, 825 Coxwell Ave., Toronto, Ont. Canada)

*28–2.* **Biomedical Physics and Biomaterials Science** Conf., Cambridge, Mass. (H. E. Stanley, Room 13-2122 Physics Dept., Massachusetts Inst. of Technology, Cambridge 02139)

*28–2.* World **Energy** Conf., 8th annual, Bucharest, Roumania. (D. E. Hart, Engineers Joint Council, 345 E. 47 St., New York 10017)

*28–2.* European Congr. of **Neurosurgery**, 4th annual, Prague, Czechoslavakia. (V. Benes, Sokolska 31, Prague)

*28–3.* British Council for **Rehabilitation of Disabled**, Edinburgh, Scotland. (I. R. Henderson, Tavistock House, Tavistock Sq., London W.C.1, England)

*29–1.* **Electron Microscopy and Analysis Group**, 25th annual, Cambridge, England. (Meetings Officer, Inst. of Physics and Physical Soc., 47 Belgrave Sq., London, S.W.1, England)

*29–1.* Institute of **Navigation**, 27th annual, Pasadena, Calif. (R. E. Freeman, IN, Suite 832, 815 15th St., NW, Washington, D.C. 20005)

*29–1.* Institute of **Nuclear Materials Management**, 12th annual, West Palm Beach, Fla. (L. K. Hurst, INMM, P.O. Box 273, Argonne, Ill. 60439)

*29–1.* **Trace Substances in Environmental Health**, 5th annual conf., Columbia, Mo. (D. D. Hemphill, Univ. of Missouri, 426 Clark Hall, Columbia 65201)

*30.* **Acoustic Atmospheric Propagation and Applications**, London, England. (Meetings Officer, Inst. of Physics and Physical Soc., 47 Belgrave Sq., London, S.W.1)

*30–4.* Idaho **Medical** Assoc., Sun Valley. (A. L. Bird, 407 W. Bannock St., Boise, Idaho 83702)

### July

*1–2.* **Effect of Environment on Material Properties in Nuclear Systems**, Intern. conf., London England. (Meetings Officer, Inst. of Physics and Physical Soc., 47 Belgrave Sq., London, S.W.1)

*1–3.* **European Dialysis and Transplant** Assoc., 8th annual, East Berlin, Germany. (R. Natusch, 2nd Medical Clinic, Charite, Schumannstrasse 20/21 104 Berlin)

*1–3.* Society of **Psycho-Neuroendocrinology**, intern. congr., Budapest, Hungary. (K. Lissak, SPN, Motesz, Budapest)