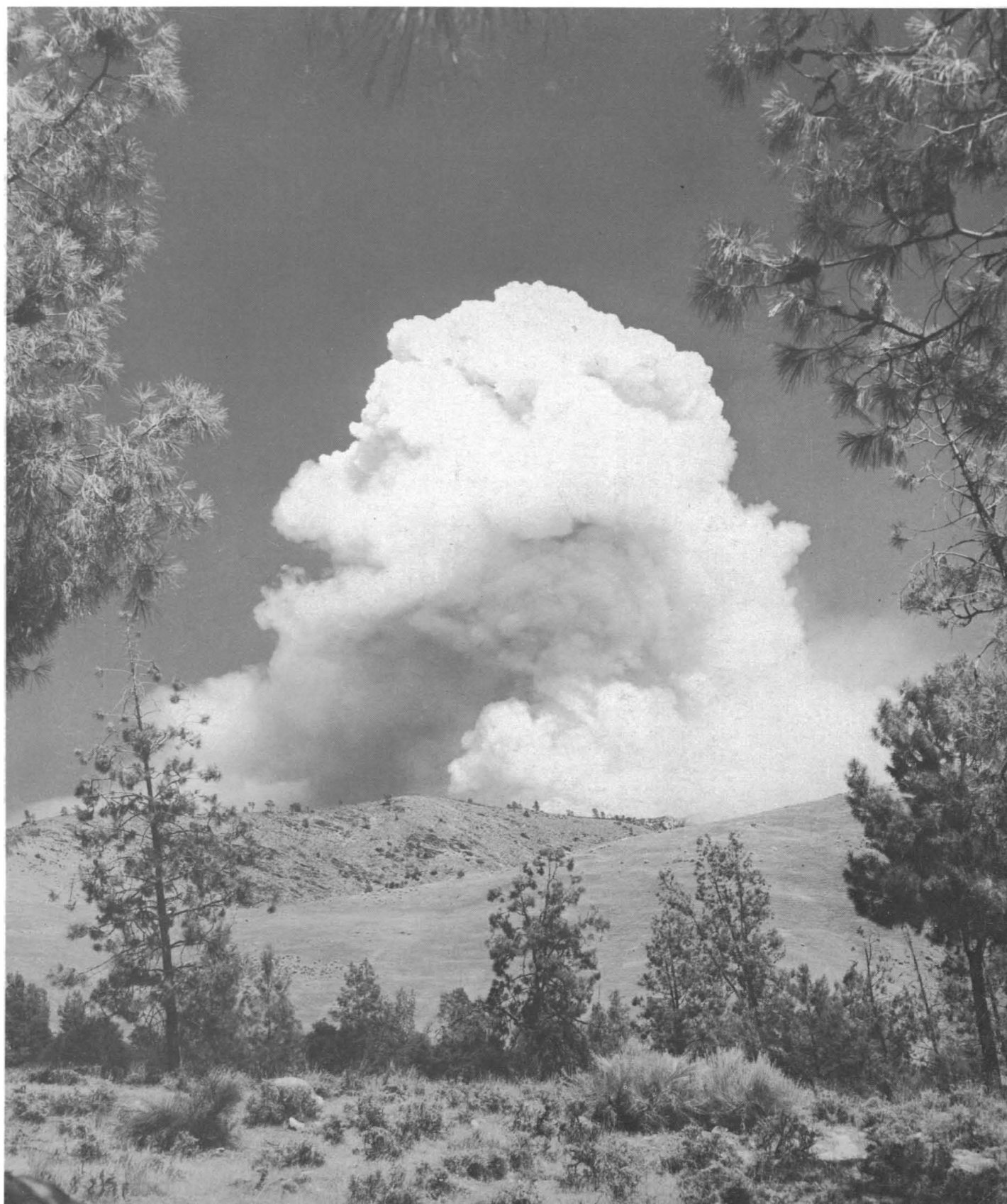


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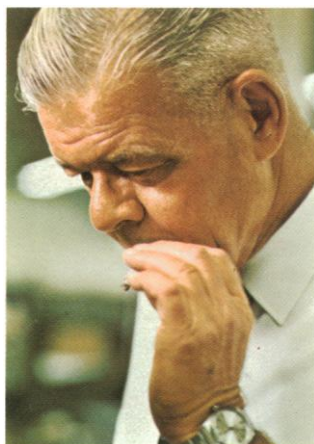
17 January 1969

Vol. 163, No. 3864

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



You'll pay more now for the Cary 60 spectropolarimeter, but in the long run, you'll pay less.



Howard Cary—
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We realize that a good recording spectropolarimeter is a big investment. And that the return on such an investment is measured by the reliability and confidence users have in the results. So, when we designed the Cary 60, we set out to build an instrument that would not only produce credible data, but one which would meet constantly upgraded analytical demands for a long time to come. Here are some of the design considerations we felt would be vital in achieving these objectives.

PERFORMANCE

An instrument which performs ORD and CD measurements must have the sensitivity for detecting differences in optical energy smaller than 10 parts in a hundred thousand as a function of wavelength. Large amounts of optical energy are essential. Not just to attain the high signal-to-noise ratio required for such sensitivity, but because energy is lost in a spectropolarimeter's complex optical train, and in the absorption band of the sample. Furthermore, since the difference in optical energy at the desired wavelength is minute, even a small amount of stray light (optical energy of an unwanted wavelength) will obscure the measurement. So what's needed is a monochromator with high energy and low stray light. And that's what we incorporated into the Cary 60.

The methylcyclopentanone vapor

spectrum below illustrates the resolving power of the 60. Resolving power so high it can be traded for needed energy, especially when working with difficult samples such as those with high absorbance but low optical activity, or to make measurements in the low UV. Energy enough to handle just about any future measurements required of a spectropolarimeter.

Normally, the monochromator is programmed to produce a 15Å spectral bandwidth. For this particular vapor, the spectral bandwidth was set at only 1Å. That means the instrument was operated with only 1/225 the normal amount of energy falling on the detector, yet a good signal-to-noise ratio was achieved, (or, to put it another way, it's the equivalent of running a sample with an absorbance of about 2.27).

RELIABILITY

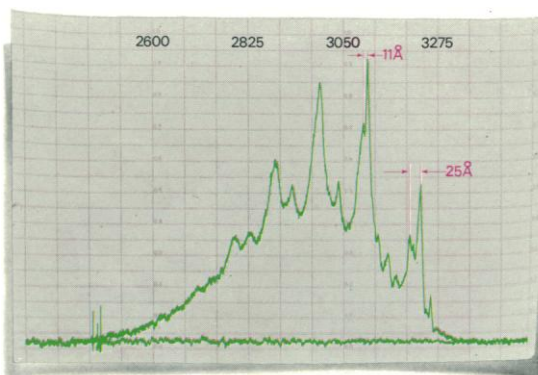
The Cary 60 was conservatively designed to insure long life. We did this because cutting corners or pushing components to their limits can jeopardize an instrument's reliability. Although it takes more time and costs a little more money, we wouldn't make a spectropolarimeter any other way.

EASE OF OPERATION

Convenience features of the Cary 60 include direct coupling between the strip chart recorder and wavelength drive, pen center switch, electrical range change switch, base line controls, zero suppression, and pen response controls. There's even a variable slit program so that the 60 can be operated at constant resolution or constant energy.

For information on the Cary 60, write Cary Instruments, 2724 South Peck Road, Monrovia, California 91016. Ask for data file R 808-128.

Sample: (+) -3-
Methylcyclopentanone Vapor;
Mode: CD; Concentration: 6.3 mg.
in 5.0 cm cell; Solvent: N₂ gas;
Pathlength: 5.0 cm; Temp. 27° C;
Range: 0.2 ellipticity full scale;
Slit Program: 1 Å SBW;
Scan Speed: 0.2 Å/sec;
Presentation: 75 Å/div;
Pen Response: 10 sec time constant;
Spectrum Region: 3500-2300 Å;
Spectrum courtesy of
Dr. T. M. Dunn, Chemistry Dept.,
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Burning out Caldwell Creek, Sequoia National Forest, California. Forest fires may increase the production of cloud condensation nuclei (CCN) in the atmosphere, thus potentially decreasing rainfall in the vicinity. Anthropogenic production of CCN in heavily industrialized cities may approach the level produced by natural causes. See page 279. [Norman L. Norris, U.S. Forest Service]

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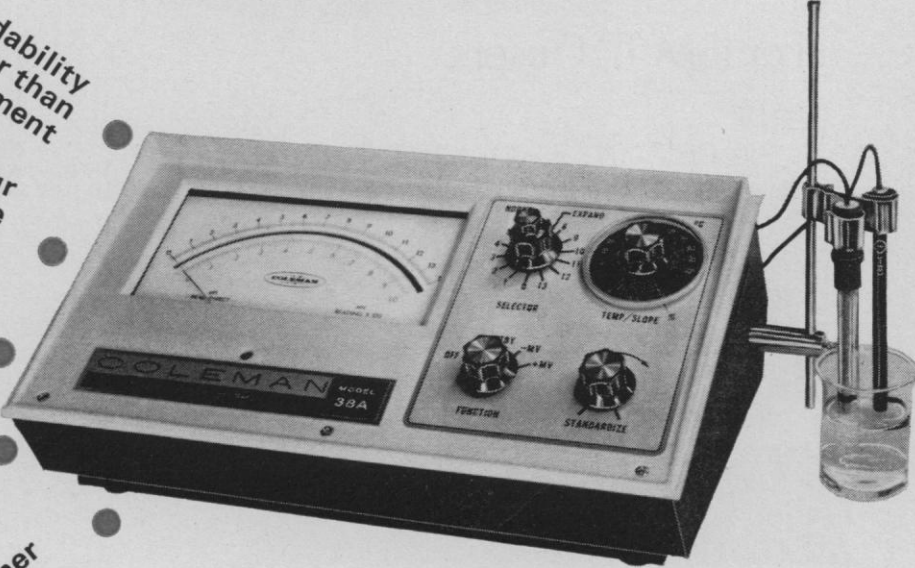
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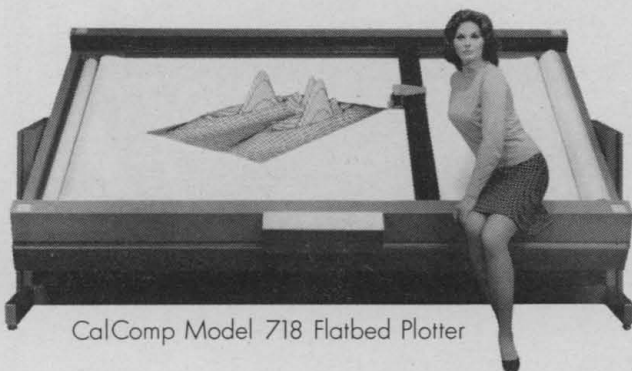
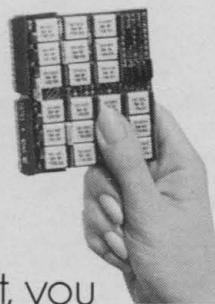
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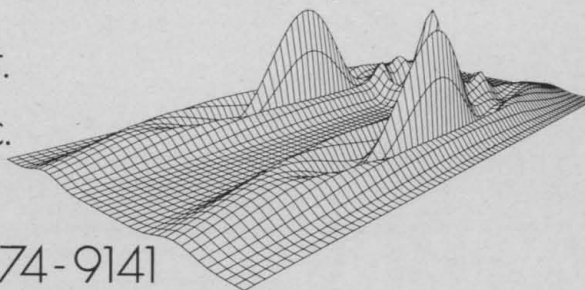
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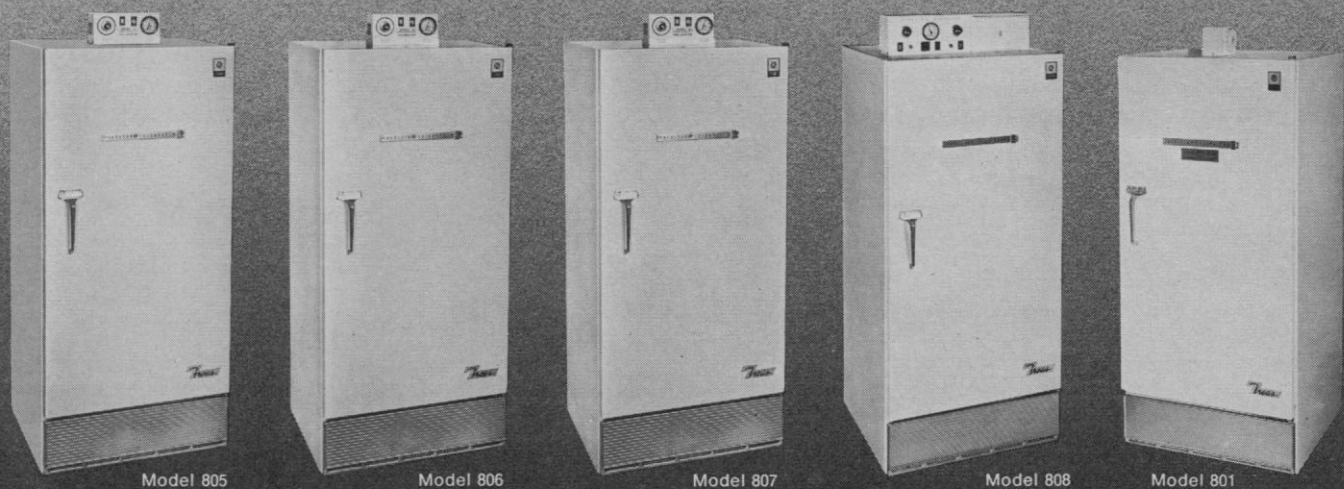
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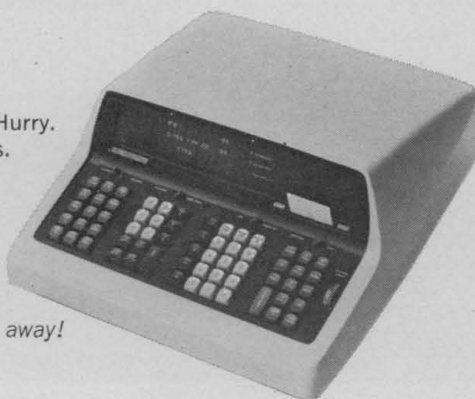
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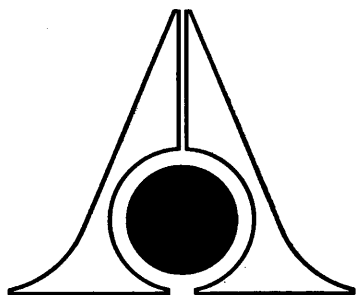
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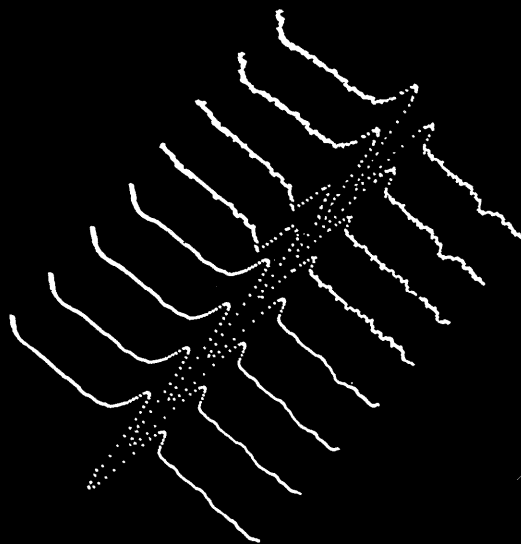
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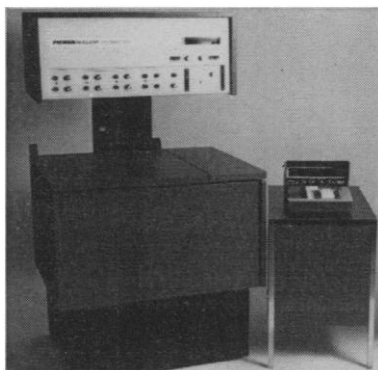
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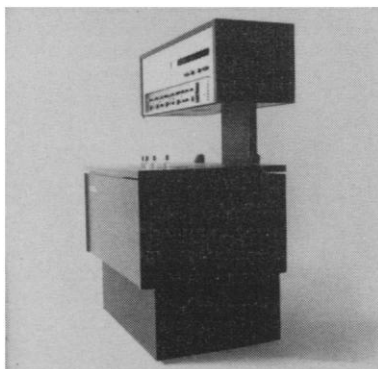
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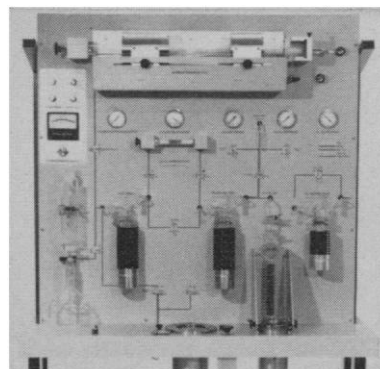
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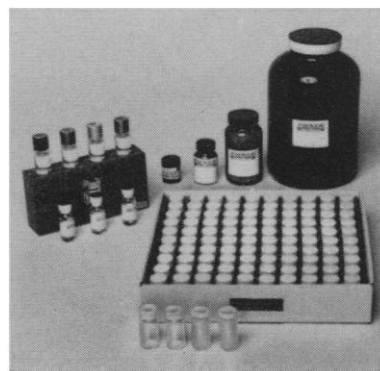


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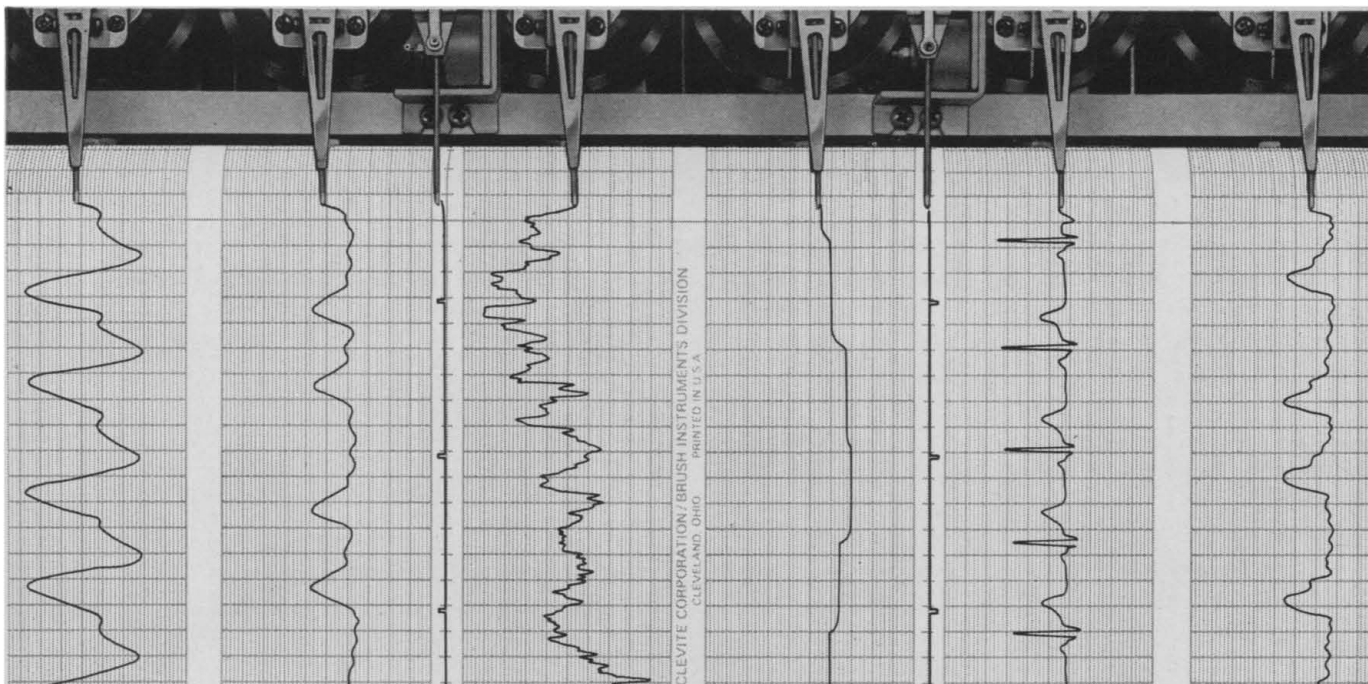


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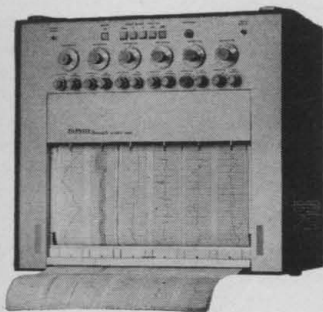
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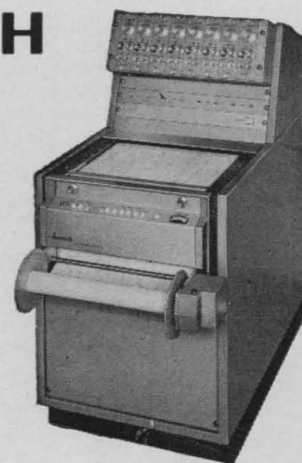


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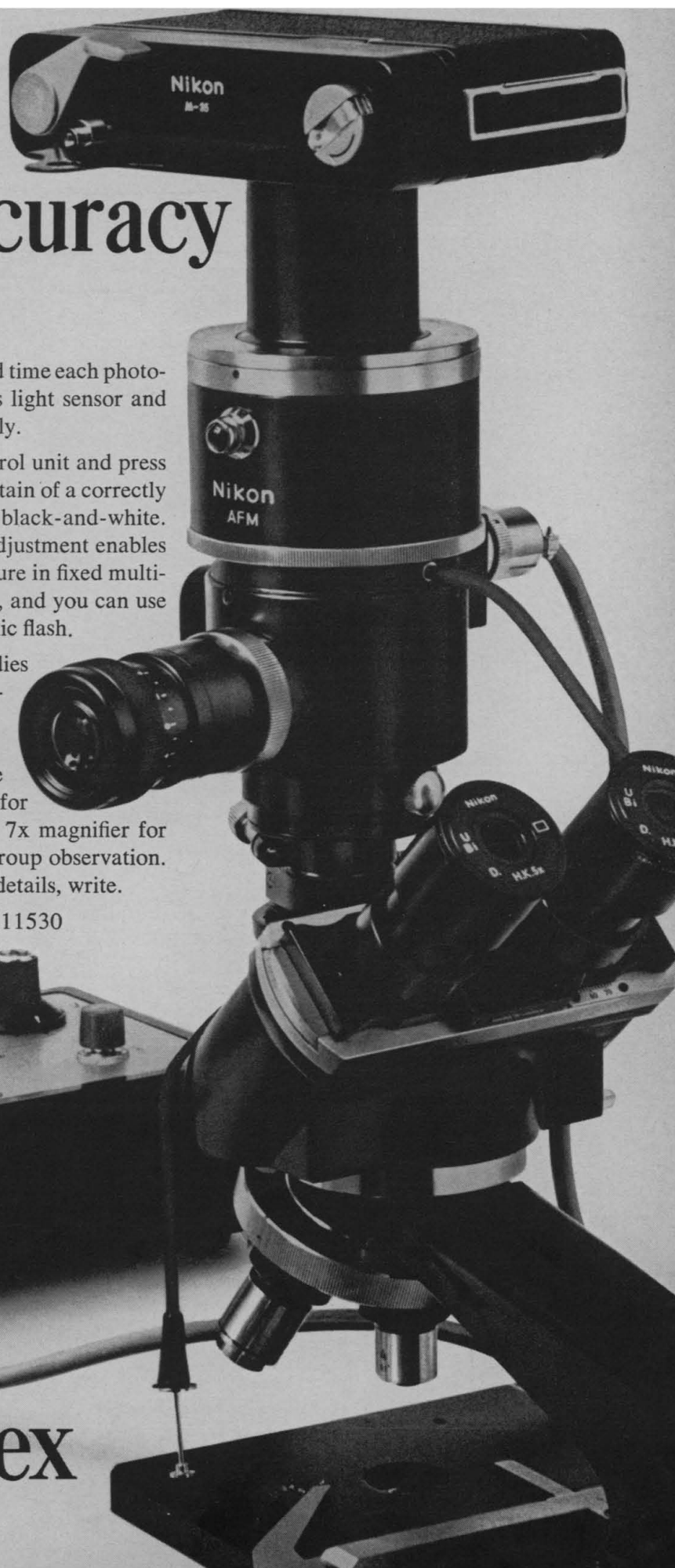
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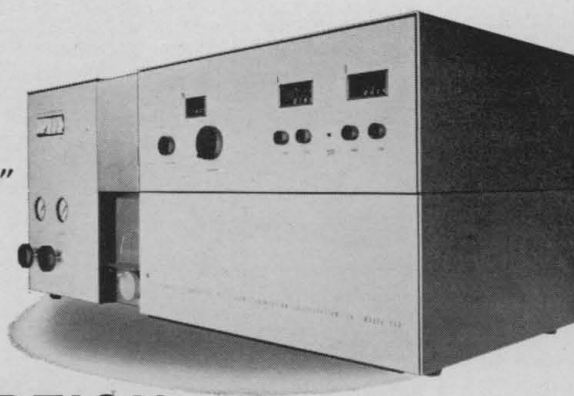
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The "resistance" came, appropriately enough, not from people but from the resistors on thin film integrated circuits. These resistors, which are made of tantalum sputtered onto a ceramic base, must be precisely adjusted, measured and tested before they leave the factory. Since some variations are inevitable in mass manufacture, the necessary precision is achieved by controlling the electrolytic anodization of the tantalum. This effectively reduces the cross-sectional area of the resistors, including the resistance.

Manual anodizing would require acres of expensive testing machines and scores of operators. So engineers at Western Electric's Allentown Plant began to think in terms of a computer-controlled tester which would simultaneously adjust many resistors. The technical problems encountered in designing and building such a machine represented a tremendous challenge.

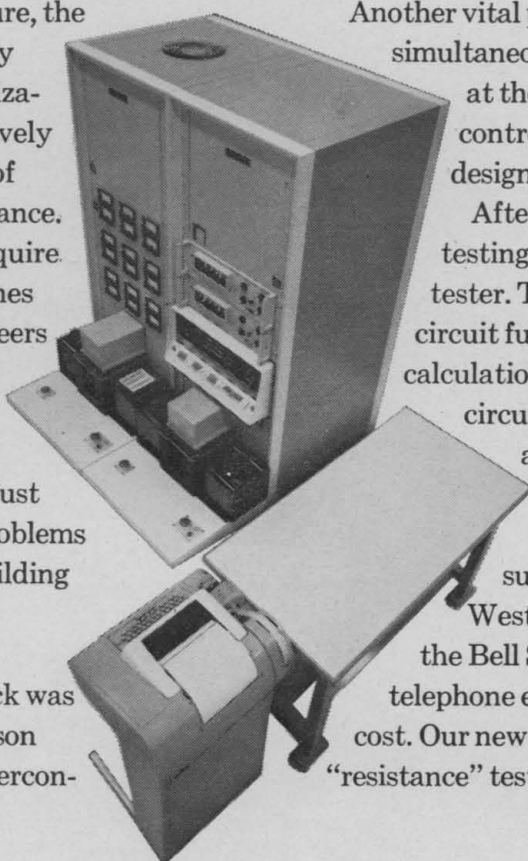
But the toughest nut to crack was how to establish a ratio-comparison technique, to adjust resistors intercon-

nected by many circuits. This technique was also needed to provide speed in testing circuit function efficiency according to precise but different requirements. The computer would use this test information for the different circuits to control the anodization circuitry for adjustment of the resistors.

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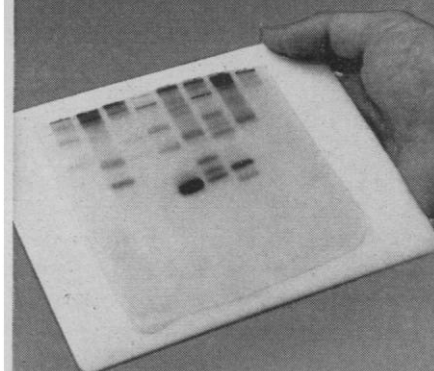
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read much about the newspaper and TV representatives who were injured by the police, but no one has reported how newsmen abetted the rioting by asking members of the mob to perform certain violent acts so they could be photographed. I saw a news photographer and his "accomplice" persuade a female to throw what appeared to be a fruit jar which broke near me and sprayed several spectators with urine. Arrests were made but only after rioters had actually struck police or bystanders with clubs or missiles. If every violation of the law had been dealt with, the entire mob could have been jailed.

After seeing these acts of violence, I can only conclude that the authors of "Boycott Chicago" have neglected the primary principle of scientific investigation—namely: first, learn the facts.

R. MILTON CARLETON
322 North Garfield Avenue,
Hinsdale, Illinois 60521

Note

1. A few of the remarks: "I dare you hit me, you mother f*ck*r"; "Fall in your own sh*t, you bastard"; "Go back to the station and s*ck the sergeant's pr*ck."

If we are to boycott Chicago as the bacteriophage workers suggest, let's do it right. We would be in a morally stronger position and would swing a lot more economic muscle if we boycott Chicago scientists instead of shifting convention sites. Manipulating meetings puts us in the position of a mobile elite applying pressure through the hotel industry and affecting most immediately the bottom of that industry's economic pyramid: busboys, waitresses, maids, taxi drivers, and so on. . . .

HARRY J. JERISON
Behavior Research Laboratory,
Antioch College,
Yellow Springs, Ohio 45387

Those scientists who would boycott Chicago should be aware of the following facts:

1) The bylaws of the professional societies that constitute the Federation of American Societies for Experimental Biology state as their purpose the following goals: extension of scientific knowledge, facilitation of personal intercourse of scientific investigators, the propagation of the results of scientific research, the promotion of knowledge in the fields of biochemistry, physiology, pharmacology, and so forth. Participation in political matters is limited to efforts that would promote both research in those sciences, and the pro-

fessional interests of its members. Since the political views of its members are irrelevant to the purposes of the societies, it follows that these political views reflect the full range of opinion, and that there will doubtless be conflicting viewpoints within the membership. If the professional society adopts a distasteful political position, the dissident member may, of course, resign. He might be forced to do this, even though he still agrees with the purposes of the society as stated in the bylaws, since continued membership serves to identify him with a political viewpoint that is distasteful to him. If he does resign, the purpose of the society as stated in the bylaws is violated. The society cannot take a political position on any matter that may result in the resignation of its members. The action contradicts the purpose of the society, and hence is unconstitutional.

2) The decision to meet in any city is based on questions of logistics and convenience.

3) A decision to abandon a meeting at Chicago constitutes a boycott that is motivated by the political views of some of the members of the society. It is a discriminatory action against the people of Chicago and its environs and is a form of political compulsion.

4) The argument presented for the boycott is that the "use of economic power represented by the choice of a convention site" would coerce Chicago to adopt policies more in accord with the views of the petitioners. This "power" in fact rests on federal funds. A large percentage of the total monies spent at professional conventions is charged to federal grants. The petitioners propose to use federal money, part of which has come from the taxpayer of Chicago, in order to practice a form of political compulsion directed against the people of Chicago.

5) If the society rules that the suppression of the demonstration was an "intolerable violation of the rights of free speech and assembly and an affront to decency," it might find it expedient to expel a scientist who publicly announces that the suppression was necessary in order to establish the conditions required to choose a presidential candidate. Obviously, the dissenting scientist would be acting "in a manner that is not in the public interest," which, according to the bylaws of the American Society of Biological Chemists, is grounds for forfeiture of membership.

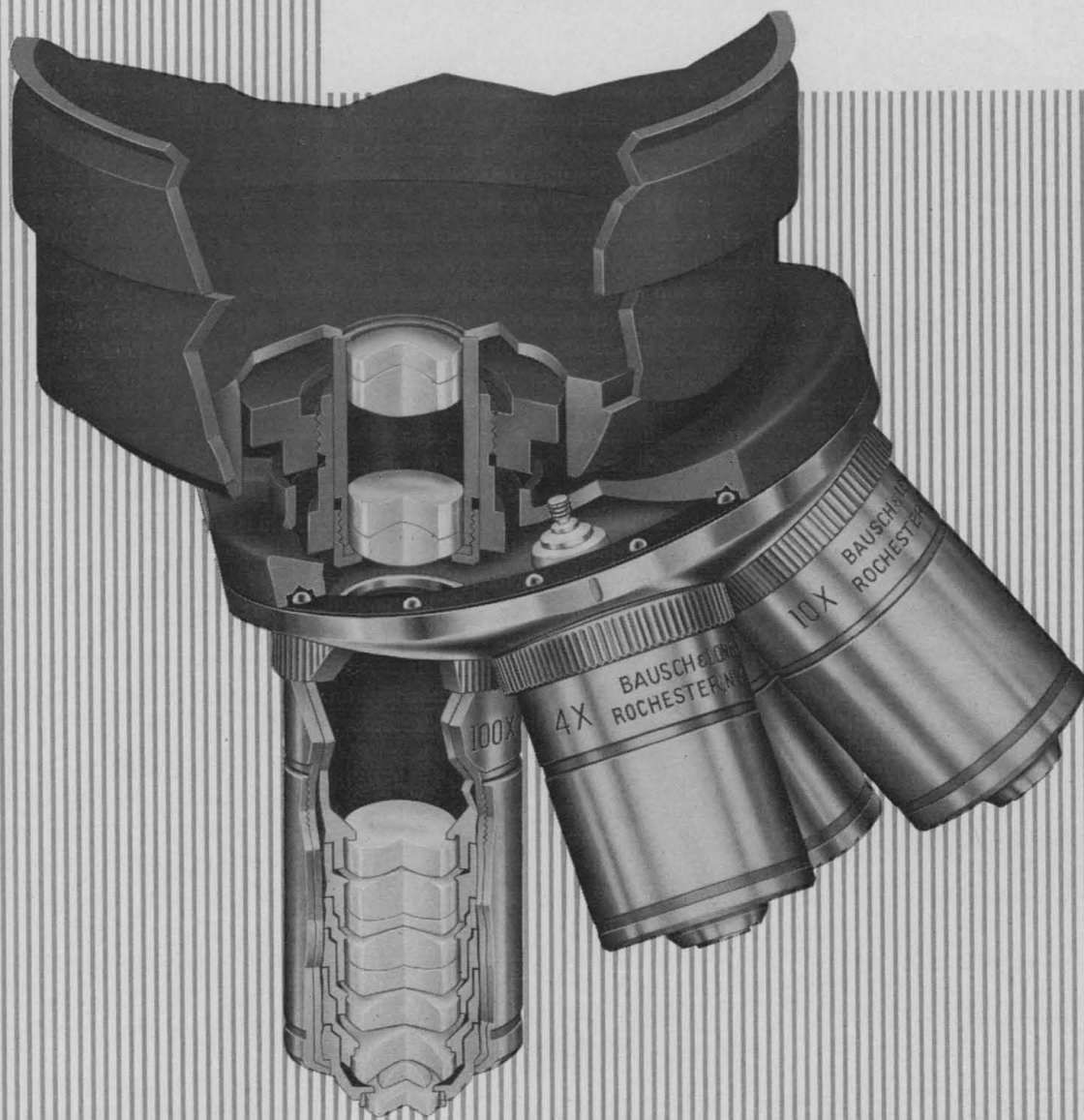
It is my opinion that those scientists who petition the societies to practice



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a form of economic boycott as a means of political coercion are in fact violating the principles of free speech and dissent which they profess to support.

ERIC G. BRUNNGRABER

*Illinois State Psychiatric Institute,
1601 West Taylor Street,
Chicago 60612*

Deep-Sea Drilling by JOIDES

In his editorial, "Deep earth sampling" (8 Nov., p. 623) Abelson discussed the JOIDES (Joint Oceanographic Institutions' Deep Earth Sampling) program, but he left out an important chapter between the Mohole effort and the present deep-sea drilling project.

One important factor leading to the present program was the success of the 30-day JOIDES offshore drilling project on the Blake Plateau in the spring of 1965. Drilling and coring were carried out along a 200-mile transect southeast from Jacksonville, Florida to the eastern edge of the Blake Plateau. These results were reported in *Science* (1). Most of the tertiary section was sampled in six core holes drilled in the Continental Shelf, Florida-Hatteras Shelf, and the Blake Plateau. Water depths at the drill sites ranged from 25 to 1032 meters and penetrations into the bottom from 120 to 320 meters. Core recovery averaged 36 percent, allowing good reconstruction of the stratigraphy, which shows the continental margin as a wedge-shaped constructional feature thinning seaward. These scientific results and the demonstration that a consortium of oceanographic laboratories could work effectively together were important factors leading to the present expanded JOIDES program.

It should be pointed out that National Science Foundation funds can neither be granted to nor administered by a consortium. For this reason, a single operating institution from within the JOIDES organization is selected for each project by the executive committee which consists of the directors of the member institutions (Institute of Marine Sciences of the University of Miami, Lamont Geological Observatory of Columbia University, Scripps Institution of Oceanography of the University of California, Woods Hole Oceanographic Institution, and, since the summer of 1968, the University of Washington). Lamont Geological Ob-

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servatory was the operating institution for the Blake Plateau work, and Scripps Institution of Oceanography is the operator for the present JOIDES project.

One further clarification: the selection of the 55 ocean-drilling sites for the present project is not the work of the operating institution (Scripps) alone, but is the work of the planning committee of JOIDES and, in particular, the Atlantic and Pacific advisory panels, whose members include representatives from JOIDES as well as numerous experts outside that organization.

ROBERT GERARD

*Lamont Geological Observatory of
Columbia University, Palisades,
New York 10964*

Reference

1. JOIDES, *Science* 150, 709 (1965).

Editing Changes

This item is not important enough for an erratum, but I felt the urge to write to the Editor about it, as it may be symbolic of a policy that could lead to more serious errors, and that I understand has disturbed some other authors. This is the assumed privilege of making arbitrary editorial changes in manuscripts before publishing. I believe that an author is entitled to his individual style so long as it is clear and grammatically correct.

In my article on the 1968 Nobel Laureate in Physics (8 Nov., p. 645) there are some minor stylistic changes which are not worth commenting on, and one change that led me to write this letter, the reduction of "Bevatron" to lower case. This occurs twice, and can hardly be a typographical error. Among high energy physicists it is well known that "Bevatron" and "Cosmotron" are "personal" names, the generic term being "proton synchrotron." They have as much right to capitalization as "Science," which is only a special example of the general category "magazine."

Further, on page 646, there was inserted "the University of" in the beginning of the sentence describing Alvarez' return to California. This was misleading as he had never before that time been associated with the University.

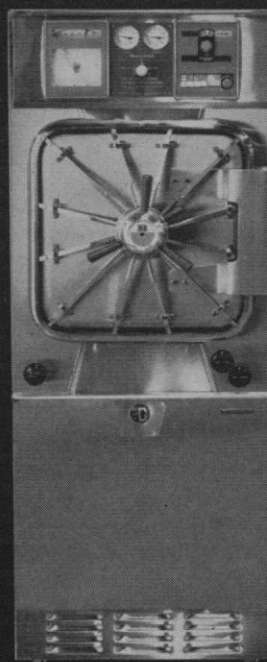
EDWIN M. McMILLAN

*Department of Physics and
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17 JANUARY 1969

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Abolish the Draft

The draft is immoral in principle, inequitable in practice, and detrimental to national security. The first thing the new administration should do is start to stop it.

Nothing is more opposed to our ethical, religious, and political principles than taking bodily control of a person and forcing him to submit totally to the will of others. This might be justifiable if it were necessary for the preservation of the nation, or to assure that each person did his duty for the survival or safety of others. No such necessity has existed since 1945.

Inequities in the operation of the draft are widely recognized. It is less widely recognized that inequities are inevitable and are as likely to be aggravated as alleviated by formula selection or lottery selection. No system is equitable if the risk of being drafted is the same for a school dropout as for a heavyweight boxing champion, who never again will be able to win fame or fortune, or a young man in a period of rare artistic or scientific inspiration, or one for whom personal and psychological factors make this the most critical year of his life.

The draft is, moreover, inefficient. Less than a year of useful service is obtained from a draftee's 2-year tour. This is so brief that the relationships necessary for effectiveness seldom grow up and never last. Furthermore, with the 2-year tour, more than twice as many men must be taken each year as would be required with 3-year enlistments.

But the detriment to national security is deeper than mere inefficiency. Much of the violence and passion associated with opposition to the war arises from the threat of being conscripted to fight that war. Not only does this passion disrupt the campuses and overflow from them, but it will weaken the credibility of our negotiators in Paris if they threaten not to accept whatever terms are offered. As was demonstrated in the 1930's, culminating at Munich, a peace-at-any-price approach to preserving peace courts a holocaust.

The alternative to the draft is to set the compensation for service in the armed forces high enough to attract enough volunteers. This would not increase the economic cost of the war; that cost is the value of the goods and services lost to other uses. It would, however, transfer costs which now fall on draftees (in the form of lost civilian earning power) to the taxpayers (who generally have higher incomes) and so would increase the federal budget. While complete abolition of the draft on 30 June would add perhaps \$13 billion to next year's budget, we could go far with \$3 billion wisely deployed.

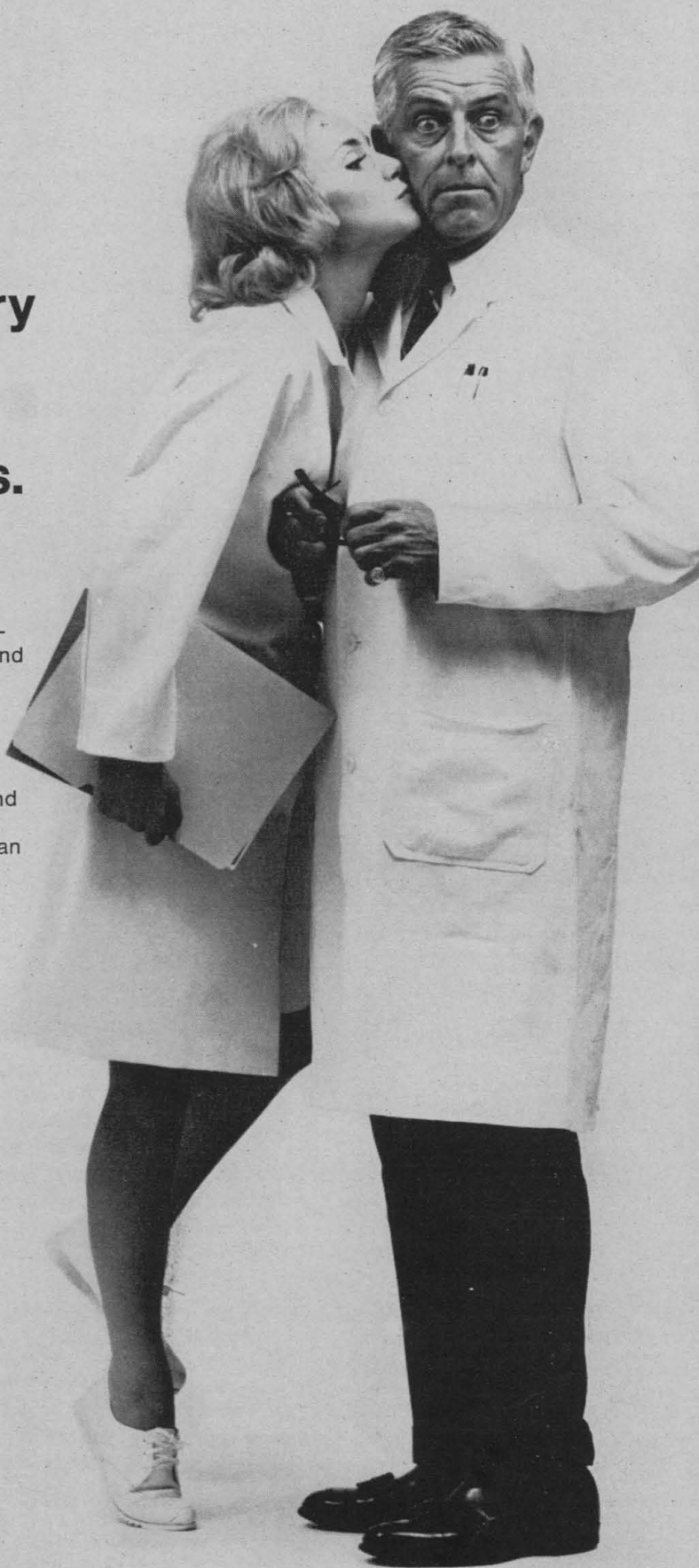
During most of our history all members of the armed forces have been volunteers, and most of them are now: three-fifths of the Army, nearly all of the Marines, all of the Navy, and all of the Air Force are volunteers (though some are draft-induced volunteers), as are all of the higher-ranking noncommissioned officers and 90 percent of the commissioned officers. (Why is a volunteer officer a "dedicated career man" but a volunteer enlisted man a "mercenary"?) It is not true that, as is sometimes alleged, an all-volunteer force would be predominantly Negro. Most experts expect the proportion to be little if any larger than it is now. What is true is that those in the armed forces, Negro or not, would be paid far better for their services.

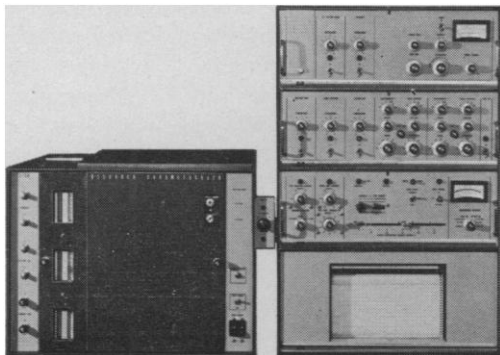
The case against the draft cannot be developed fully here. It is, however, about as lopsided a case as one ever meets in questions of public policy. If the present law were not on the books, it is inconceivable that it would be passed now.—W. ALLEN WALLIS, *University of Rochester**

* This editorial is adapted from an address delivered 11 November 1968 before the American Legion, Rochester, New York.

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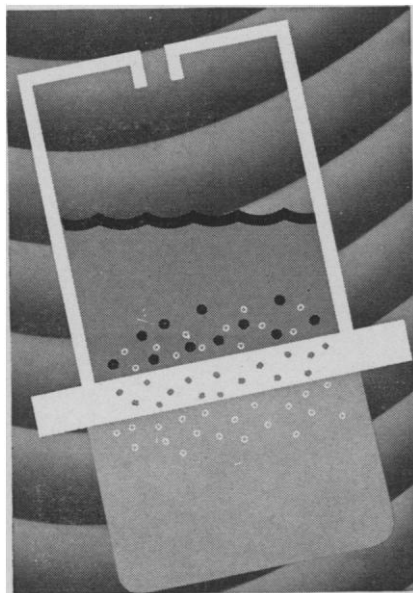
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At the same time, however, it was recognized that two great barriers stood in the way of these achievements. One was the fact that the surveillance authority originally given by Congress to the National Science Foundation was seen as a threat by other already established agencies which were larger and stronger and which, in a number of cases, had well-developed congressional support. The other barrier is the fact that, by and large, scientists have wanted the National Science Foundation to be "above politics," and have wanted its programs and activities to be determined by the needs and wishes of research scientists—the clients of NSF—rather than by the needs and wishes of the national scientific effort, as interpreted by the federal government—the Foundation's sponsor and supporter.

Looking toward the future, one participant proposed killing the Foundation on the grounds that under current budgetary pressures its existence is too much of a threat to the research appropriations that should be made to other agencies. That proposal got no support, but there was emphatic agreement that any pressure to make the National Science Foundation the one agency of government that supports fundamental research should be resisted. Other agencies with scientific and technological interests should continue to engage in or support fundamental research, both for their own welfare and for the welfare of science.

The legislative changes made last year, which now require the National Science Foundation to appear before congressional committees in authorization hearings as well as in appropriation hearings, can provide the Foundation with new opportunities to develop political strength in Congress and new opportunities to debate and secure agreement on its own priorities in the ways in which it supports scientific activities.

In considering possible new and better institutional arrangements, two possibilities were considered: the proposed Department of Science and the possibility of establishing competing sources of policy studies and ideas.


In one form or another, the idea of a Department of Science has been suggested to Congress often and over a period of many years. After a comparatively dormant period, the idea has been revived recently and given new attention. One advocate of such a department argued that it offers opportunities for better governmental manage-

ment. Independent agencies have often led a precarious life; collecting appropriate ones together into a department would offer greater strength and continuity to all and make possible better management of their programs. He also suggested that there are sometimes advantages in reorganization for its own sake, in revivifying an agency or in changing or increasing its responsibilities.

There was no agreement among the participants as to whether they favored a Department of Science, but it was generally agreed that the decision would probably be made on the basis of practical political reasons rather than on the basis of the wishes of scientists. And it was also agreed that thus far the debate had not given sufficient attention to an analysis of what would be done better in a department than under present arrangements. In fact, there was not even agreement—either among the seminar participants or among others who have discussed the idea—of which existing agencies or parts of agencies could most usefully be brought together into a single department.

Although there was not agreement on whether a department is desirable, there was clear agreement that if a Department of Science or a Department of Science and Technology or a Department of Science and Higher Education is established, it should not be comprehensive—that is, it should not include all scientific activities, for much scientific work needs to be done by and in other agencies. For the same reasons, it was agreed that no department should be the sole sponsor of fundamental research. Finally, although under some arrangements a Department of Science might assume responsibility for some of the special councils that are now attached to the Office of the President, the department itself should be responsible for operations and should be clearly separated from the agencies which are responsible for advising the President on scientific and technological matters, the President's Science Advisory Committee and the Office of Science and Technology.

Competition is valuable in research and development and valuable in business and commerce. Would not competition also be valuable, the seminar asked, in the analysis and recommendation of science policy? The need for better policy-oriented studies was recognized, and various alternative sources were considered: universities, professional societies, nonprofit institutions, and ad hoc groups.




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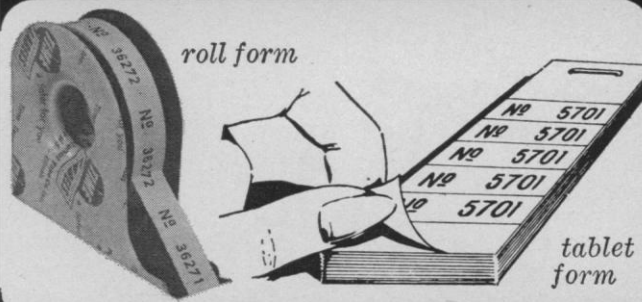
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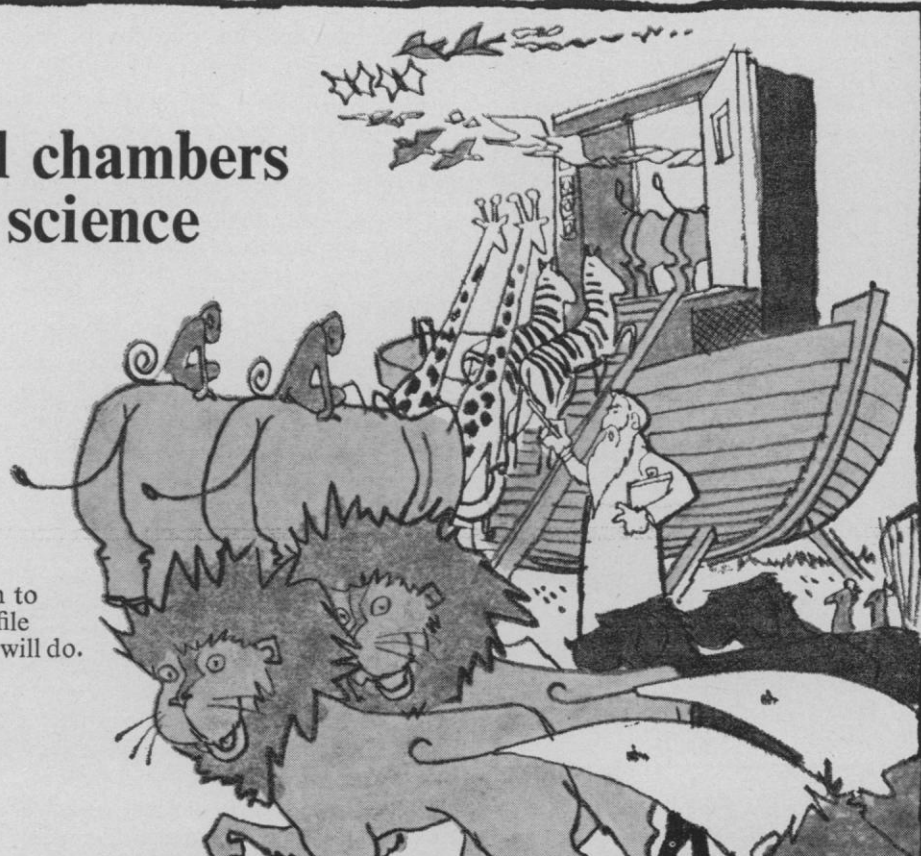


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A number of models were cited from other areas in which privately sponsored studies and recommendations had competed successfully with and had supplemented the work of government agencies, for example, studies of education supported by the Carnegie Corporation and economic studies conducted by the National Bureau of Economic Research or the Committee on Economic Development.

Approximately 50 universities have established or are developing programs on science and society, science and public policy, research and development management, or similar topics. Thus far, the university programs have been of most interest to social scientists, and the typical approach has been historical or retrospective rather than being directed toward the analysis of current issues and the formulation of policy for new or future problems. Some university groups might emphasize current and foreseen problems, but universities are probably more likely to contribute to the whole area by training students and by serving as critics of past and present performance.

Nonprofit or profit-making organizations with appropriate staffs and interests could be used for a variety of analyses and studies, and the wider use of such institutions offers an attractive way of increasing the capacity of the science advisory apparatus in the President's office without increasing the size of the staff.

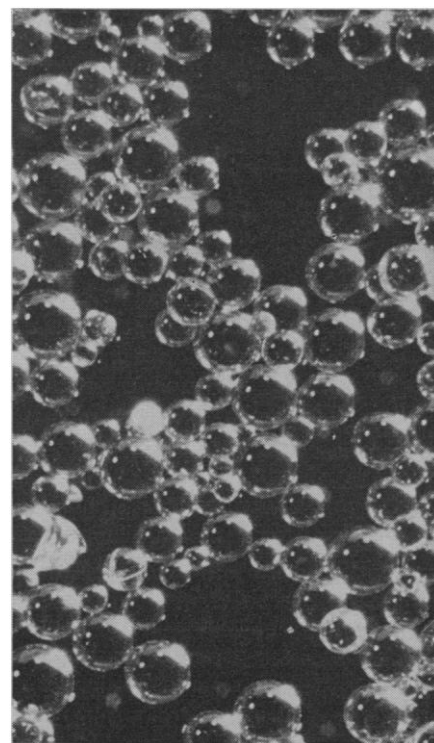
Often, however, it will probably continue to be desirable to organize ad hoc commissions or groups that can bring together the talents of persons and organizations particularly chosen for a particular purpose.

Whatever the mixture of these kinds of agencies, the group agreed on the desirability of having alternative and sometimes competing sources of policy analysis and advice. Congressional hearings with their probing and sometimes adversary tactics have their role, and so do the internal and sometimes confidential councils of government, in the President's office and elsewhere. But as is true in the formulation of economic and educational and social policy for the nation, it is desirable that analyses and recommendations come from a variety of sources, that there be several forums for their debate, and that national science policies result from a broad base of informed consideration.

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Calendar of Events

National Meetings

February

16-20. Soc. of Economic Geologists, Washington, D.C. (R. A. Laurence, P.O. Box 1549, Knoxville, Tenn. 37901)

16-20. American Inst. of Mining, Metallurgical, and Petroleum Engineers, 98th, Washington, D.C. (W. V. O'Connell, Public Relations, The Institute, 345 E. 47 St., New York 10017)

18-22. American College of Radiology, Atlanta, Ga. (W. C. Stronach, 20 N. Wacker Dr., Chicago, Ill. 60606)

19-21. Solid State Circuits Conf., Philadelphia, Pa. (Office of Technical Activities, Inst. of Electrical and Electronics Engineers, 345 E. 47 St., New York 10017)

20-22. Catalysis Soc., 1st North American mtg., Atlantic City, N.J. (J. H. Sinfelt, Central Basic Research Lab., Esso Research and Engineering Co., P.O. Box 45, Linden, N.J. 07036)

20-22. Central Surgical Assoc., Chicago, Ill. (V. L. Williams, 1325 S. Grand Blvd., St. Louis, Mo. 63104)

23-28. Intersociety Committee on Pathology, Los Angeles, Calif. (O. Neibel, CAP, 230 N. Michigan Ave., Chicago, Ill. 60601)

26-1. Biophysical Soc., Los Angeles, Calif. (W. A. Brodsky, Univ. of Louisville, Reynolds Bldg., Louisville, Ky. 40208)

26-2. American College of Cardiology, New York, N.Y. (W.D. Nelligan, 9650 Rockville Pike, Bethesda, Md. 20014)

27-1. Experimental Nuclear Magnetic Resonance Conf., 10th, Pittsburgh, Pa. (J. M. Anderson, Dept. of Chemistry and Chemical Engineering, Univ. of Illinois, Urbana 61801)

27-1. American Physical Soc., St. Louis, Mo. (W. W. Havens, Jr., The Society, 335 E. 45 St., New York 10017)

March

1-7. American Concrete Inst., 65th, Chicago, Ill. (The Institute, 22400 W. Seven Mile Rd., Detroit, Mich. 48219)

2-7. Pittsburgh Conf. on Analytical Chemistry and Applied Spectroscopy, Inc., 20th, Cleveland, Ohio. (W. M. Hickam, 1969 Pittsburgh Conf., Westinghouse Research Labs., Pittsburgh, Pa. 15235)

3-5. National Conf. on Underwater Technology, 3rd, San Diego, Calif. (J. T. Quirk, Ocean Engineering Div., U.S. Naval Civil Engineering Lab., Port Huene, Calif. 93041)

3-6. American Assoc. of Junior Colleges, Education Material and Equipment Exposition, Atlanta, Ga. (American Junior College Exposition, P.O. Box 1016, Alexandria, Va. 22313)

3-7. Symposium on Arthritis and Related Disorders, New York, N.Y. (Office of the Recorder, New York Univ. Post-Graduate Medical School, 550 First Ave., New York 10016)

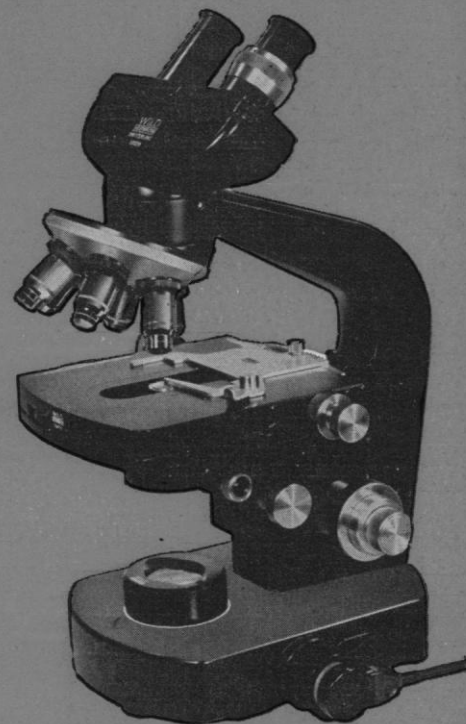
4-6. National Space Mtg. of the Inst. of Navigation, Houston, Tex. (R. H. Battin, M.I.T. Instrumentation Lab., 75 Cambridge Parkway, Cambridge, Mass. 02139)

4-7. Offshore Exploration Conf., 4th,

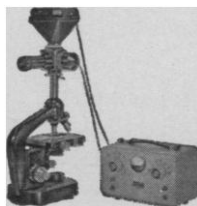
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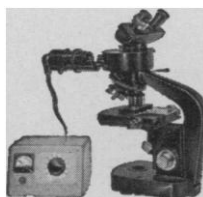
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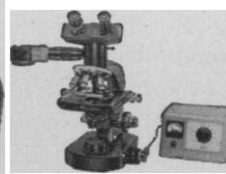
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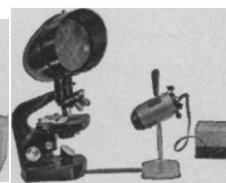
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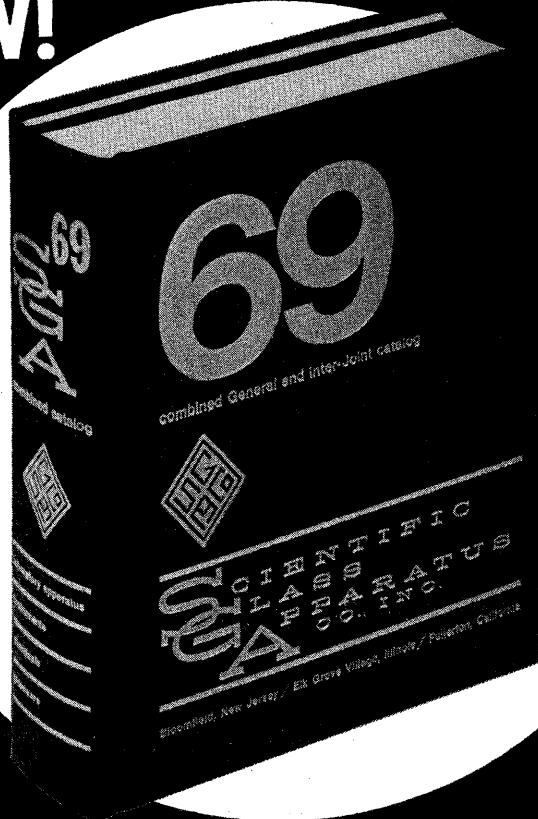
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5-7. **Fundamental Cancer Research**, 23rd symp., Houston, Tex. (D. E. Anderson, Univ. of Texas, M. D. Anderson Hospital and Tumor Inst., Houston)

5-7. **Particle Accelerator Conf.**, Washington, D.C. (E. H. Eisenhower, Center for Radiation Research, Natl. Bureau of Standards, Washington, D.C. 20234)

9-11. American Assoc. of **Pathologists and Bacteriologists**, San Francisco, Calif. (K. M. Brinkhous, Dept. of Pathology, Univ. of North Carolina School of Medicine, Chapel Hill 27514)

9-14. American Soc. of **Photogrammetry**, Washington, D.C. (G. L. Loelkes, 8608 Cherry Valley Lane, Alexandria, Va. 22309)

10-12. **Flight Test, Simulation, and Support Conf.**, 3rd., Houston, Tex. (J. C. McLane, Jr., Structures and Mechanics Div., Engineering and Development Directorate, NASA Manned Spacecraft Center, Houston 77058)

10-12. Society of **Toxicology**, Williamsburg, Va. (J. F. Borzelleca, Dept. of Pharmacology, Medical College of Virginia, Richmond 23219)

10-13. Conference on **Electric Fields in the Magnetosphere**, Houston, Tex. (J. W. Freeman, Jr., Dept. of Space Science, Rice Univ., P.O. Box 1892, Houston 77001)

10-13. American **Nuclear Soc.**, Idaho Falls, Idaho. (J. E. Kunze, General Electric Co., P.O. Box 2147, Idaho Falls 83401)

10-14. National Assoc. of **Corrosion Engineers**, 25th, Houston, Tex. (Publication Director, 980 M & M Bldg., No. 1, Main St., Houston)

11-14. **Optical Soc. of America**, San Diego, Calif. (M. E. Wurga, The Society, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

13-14. Symposium on **Automated, High-Resolution Analyses in the Clinical Lab.**, Oak Ridge, Tenn. (Oak Ridge Natl. Lab., P.O. Box X, Oak Ridge 37830)

13-15. Conference on **Nuclear Isospin**, 2nd, Asilomar, Calif. (S. D. Bloom, Lawrence Radiation Lab., P.O. Box 808, Livermore, Calif. 94550)

14-15. American **Burn Assoc.**, Atlanta, Ga. (J. A. Boswick, Cook County Hospital, 1835 W. Harrison, Chicago, Ill. 60612)

15-19. American Acad. of **Allergy**, Bal Harbour, Fla. (J. O. Kelly, 756 N. Milwaukee St., Milwaukee, Wis. 53202)

16-20. American Inst. of **Chemical Engineers**, 64th, New Orleans, La. (R. M. Persell, U.S. Dept. of Agriculture, Southern Utilization R&D Div., Box 19687, New Orleans 70119)

16-20. American Soc. of **Mechanical Engineers**, Cleveland, Ohio. (The Society, 345 E. 47 St., New York 10017)

18-19. Central States Section of the **Combustion Inst.**, Minneapolis, Minn. (B. Schukraft, Inst. of Gas Technology, 3424 S. State St., Chicago, Ill. 60616)

20-22. American Acad. of **Facial Plastic and Reconstructive Surgery**, New Orleans, La. (J. R. Anderson, 111 Tulane Ave., New Orleans 70112)

23-29. American **Crystallographic Assoc.**, Seattle, Wash. (W. L. Kehl, Gulf Research and Development Co., P.O. Box 2038, Pittsburgh, Pa. 15230)

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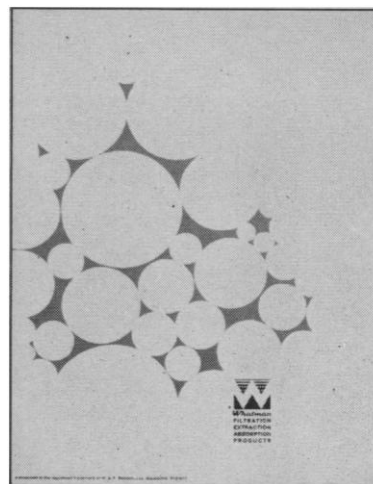
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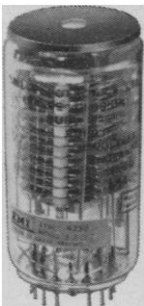
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24-25. **Laser Safety Conf. and Workshops**, 2nd, Cincinnati, Ohio. (L. Goldman, Laser Lab., Children's Hospital Research Foundation of the Medical Center of the Univ. of Cincinnati, Cincinnati)

24-27. **American Physical Soc.**, Philadelphia, Pa. (W. W. Havens, Jr., The Society, 335 E. 45 St., New York 10017)

24-28. **Desalination: Methods and Applications**, Berkeley, Calif. (Continuing Education in Engineering, Univ. Extension, Univ. of California, 2223 Fulton St., Berkeley 94720)

25-27. **American Laryngological, Rhinological and Otolological Soc., Inc.**, New Orleans, La. (V. R. Alfaro, 917 20th St., NW, Washington, D.C. 20006)

26-28. **National Business Aircraft Mfg. and Engineering Display**, Wichita, Kan. (A. J. Favata, SAE Headquarters, 2 Pennsylvania Plaza, New York 10001)

26-28. **Symposium on the Engineering Aspects of Magnetohydrodynamics**, 10th, Cambridge, Mass. (J. Klepeis, Arrangements Committee, Avco Everett Research Lab., 2385 Revere Beach Parkway, Everett, Mass. 02149)

26-28. **George H. Hudson Symp.**, 4th, Plattsburgh, N.Y. (M. H. Tourin, State Univ. College of Arts and Sciences, Plattsburgh 12901)

27-28. **Technical Writing Inst.**, Lubbock, Tex. (M. Miles, Technical Writing Inst., Dept. of English, Texas Technological College, Lubbock 79409)

27-29. **Geological Soc. of America**, South-Central Section, Lawrence, Kans., "Basement Rocks of the Mid-Continent" and "Paleo-Environmental Implications of Palynology." (W. M. Merrill, Dept. of Geology, Univ. of Kansas, Lawrence 66044)

28-29. **American Otological Soc., Inc.**, New Orleans, La. (W. H. Bradley, 1100 E. Genesee St., Syracuse, N.Y.)

28-30. **American Psychosomatic Soc., Inc.**, 26th, Cincinnati, Ohio. (H. Weiner, 265 Nassau Rd., Roosevelt, N.Y. 11575)

30-2. **American Orthopsychiatric Assoc.**, New York, N.Y. (M. F. Langer, Room 1313, 1790 Broadway, New York 10019)

31-2. **Advances in Water Quality Improvement-Physical and Chemical Processes**, Austin, Tex. (Center for Research in Water Resources, Univ. of Texas, Rt. 4, Box 189, Austin 78757)

31-2. **Metals Engineering Conf.**, Washington, D.C. (R. J. Cepulch, Hartford Steam Boiler Inspection and Insurance Co., 56 Prospect St., Hartford, Conn. 06102)

31-2. **American Assoc. of Thoracic Surgery**, San Francisco, Calif. (T. B. Ferguson, Suite 311, 7730 Carondelet Ave., St. Louis, Mo. 63110)

International and Foreign Meetings

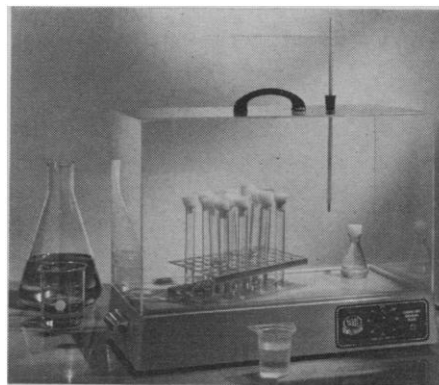
February

19-21. **International Solid-State Circuits Conf.**, Philadelphia, Pa. (J. H. Wuorinen, Bell Telephone Labs., Murray Hill, N.J.)

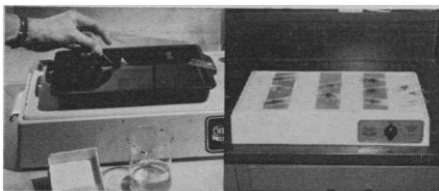
23-27. **Pan American Congr. for Psychoanalysis**, 4th, New York, N.Y. (H. Montessori, Intern. Psychoanalytical Assoc., 2B Prins Hendriklaan, Amsterdam Z, Netherlands)

27-28. **Congress of Intern. Inst. for Sugar Beet Research**, 32nd, Brussels, Belgium. (The Institute, 150 rue Beauduin, Tirlemont, Belgium)

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March

2-6. International Soc. of **Anesthesia Research**, 43rd, Bal Harbour, Fla. (B. B. Sankey, 3645 Warrensville Center Rd., Cleveland, Ohio 44122)

3-6. Symposium on **Protein Structure and Function**, St. Marguerite, P.Q., Canada. (T. H. G. Michael, Chemistry Inst. of Canada, 151 Slater St., Ottawa 4, Ont.)

7-12. International Acad. of **Pathology**, 58th, San Francisco, Calif. (P. K. Mostofi, % Armed Forces Inst. of Pathology, Washington, D.C. 20305)

9-11. International Conf. and Exposition on **Urban Transportation**, Pittsburgh Pa. (Pittsburgh Urban Transit Council, 945 Union Trust Bldg., Pittsburgh 15219)

9-22. International Postgraduate Congr. for **Practical Medicine**, Daves, Switzerland. (W. Brune, Kongressburo der Bundesärztekammer, Haedenkampstr. 1 5000 Köln-Lindenthal, Germany)

10-12. International Conf. on **Urban Transportation**, 4th, Pittsburgh, Pa. (G. R. Schaefer, WABCO Mass Transit Center, Westinghouse Air Brake Co., Pittsburgh)

12-13. Conference on **Safety on Construction Site**, London, England. (Institution of Civil Engineers, Great George St., London, S.W.1)

17-18. International Symp. of **High-speed Testing: The Rheology of Solids**, Boston, Mass. (R. H. Supnik, % Plas-Tech Equipment Corp., 4 Mercer Rd., Natick, Mass. 01760)

20-23. International Assoc. for **Dental Research**, 47th, Houston, Tex. (A. D. Frechette, 211 E. Chicago Ave., Chicago, Ill. 60611)

24-27. International Convention of Inst. of **Electrical and Electronics Engineers**, New York, N.Y. (The Convention, 345 E. 47 St., New York 10017)

25-28. **Autoclaved Building Products**, 2nd intern. symp., Hanover, Germany. (Secretary, Second Intern. Symp. 1969, "Haus der Kalksandstein-industrie," Postfach 66, 3 Hanover-Herrenhausen)

25-28. **Liquefied Natural Gas**, London, England. (Conference Dept., Inst. of Mechanical Engineers, 1 Birdcage Walk, Westminster, London, S.W.1)

27-28. International Congr. for **Heating, Ventilating, Air Conditioning**, 19th, Frankfurt am Main, Germany. (S. Ausschuss, Kongress für Heizung, Lüftung, Klimatechnik, Kongressburo, Königstr. 5, 4 Dusseldorf 1, Germany)

31-4. International Symp. on **Concrete Bridge Design**, 2nd, Chicago, Ill. (American Concrete Inst., P.O. Box 4754, Redford Sta., 22400 W. Seven Mile Rd., Detroit, Mich. 48219)

April

7-11. Federation of European **Biochemical Societies**, 6th, Madrid, Spain. (Secretariat, Centro de Investigaciones Biológicas, Velazquez, 144, Madrid 6)

8-11. International Symp. on **Laboratory Animals**, Washington, D.C. (B. F. Hill, Charles River Breeding Labs., Inc., Wilmington, Mass.)

9-12. **British Medical Assoc.**, clinical mtg., Valletta, Malta. (British Medical Assoc. House, Tavistock Sq., London, W.C.1, England)

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14-17. **Cleft Palate**, intern. congr., Houston, Tex. (B. J. McWilliams, Cleft Palate Research Center, Univ. of Pittsburgh, 313 Salk Hall, Pittsburgh, Pa. 15213)

15-17. **Civil Engineering Problems of the South Wales Valleys**, Cardiff, England. (Institution of Civil Engineers, Great George St., London, S.W.1, England)

15-18. **International Magnetism Conf.**, Amsterdam, Netherlands. (T. Holtwijk, Philips Research Labs., Eindhoven, Netherlands)

17-18. **British Inst. of Radiology**, London, England. (British Inst. of Radiology, 32 Welbeck St., London, W.1)

19-27. **Yugoslav Seminar and Exhibition of Regulation, Measuring and Automation-Jurema 1969**, 14th, Zagreb. (Jurema, Unska U1, P.O.B. 123, Zagreb)

21-23. **Canadian Inst. of Mining and Metallurgy**, 71st, Montreal, Canada. (Executive Director, The Institute, Suite 906, 1117 St. Catherine St. W., Montreal 2, P.Q.)

21-25. **Switching Techniques for Telecommunication Networks**, London, England. (Conference Dept., Institution of Electrical Engineers, London, W.C.2)

21-26. **Canadian Pulp and Paper Assoc.**, 10th, Vancouver, B.C. (W. K. Voss, Ontario Paper Co. Ltd., Thorold, Ont.)

22-25. **Cotton Textile Research**, 1st intern. symp., Paris, France. (Institut Textile de France, 23 rue des Abondances, 92, Boulogne, France)

22-29. **Hydrology of Deltas**, intern. symp., Bucharest, Rumania. (A. I. Johnson, Water Resources Div., U.S. Geological Survey, Federal Center, Denver, Colo. 80225)

28-2. **Symposium on Radiation-Induced Carcinogenesis**, Athens, Greece. (R. N. Mukherjee, Unit of Radiation Biology, Intern. Atomic Energy Agency, Karntner Ring 11-13, A-1010 Vienna, Austria)

May

5-8. **Instrumentation in Aerospace Simulation Facilities**, 3rd intern. congr., Farmingdale, N.Y. (C. R. Spitzer, MS 236, NASA Langley Research Center, Hampton, Va. 23365)

5-8. **International Microwave Symp.**, Dallas, Tex. (J. B. Horton, MS 905, Texas Instrument Co., Box 5012, Dallas 75222)

5-9. **Commonwealth Mining and Metallurgical Congr.**, 9th, London, England. (Congress Secretary, Commonwealth Council of Mining and Metallurgical Institutions, 44 Portland Pl., London, W.1, England)

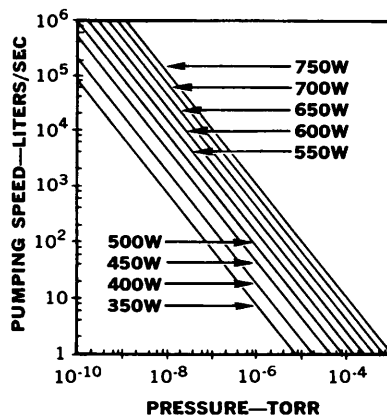
6-8. **Nuclear Electronics Symp.**, Ispra, Italy. (L. Stanchi, C.C.R. Euratom, 21020 Ispra)

6-8. **Power Thyristors and Their Applications**, London, England. (Conference Dept., Institution of Electrical Engineers, Savoy Pl., London, W.C.2, England)

6-8. **Radiosensitizing and Radioprotective Drugs**, 2nd intern. symp., Rome, Italy. (H. Moroson, Sloan-Kettering Inst. for Cancer Research, Donald S. Walker Lab., 145 Boston Post Rd., Rye, N.Y.)

6-9. **Fluid Sealing**, 4th intern. conf., Philadelphia, Pa. (J. J. Sherlock, Midwest Aero Industries, Inc., P.O. Box 536, Oak

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7-9. International Joint Conf. on **Artificial Intelligence**, Washington, D.C. (D. E. Walker, Mitre Corp., Bedford, Mass. 01730)

10-11. International Soc. for the Study of **Social and Behavioral Sciences**, Princeton, N.J. (J. Jaynes, Dept. of Psychology, Princeton Univ., Princeton 08540)

11-18. International Exhibition on **Diagnostics**, Munich, Germany. (Munchener Messe-und Ausstellungs-Gesellschaft MBH, Theresienhohe 13, 8 Munich 12)

15-18. International **Revolving-Shutter** Products Fair, Stuttgart, Germany. (Stuttgarter Ausstellungs GMBH, Postfach 990, 700 Stuttgart 1)

26-30. **Spectroscopy**, 15th intern. colloquium, Madrid, Spain. (Secretary, XV Colloquium Spectroscopium Internationale, Serrano 119, Madrid-6)

27-31. International Assoc. of **Thalassotherapy**, 14th, Eforie Nord, Roumania (Prof. Biculescu, Strada Transilvaniei 47, Bucharest, Roumania)

27-1. German Congr. for **Medical Continuation Studies**, 18th, Berlin. (Kongressgesellschaft fur Artliche Fortbildung, Klingsortstr. 21, Berlin 41)

28-7. **Pro Aqua** Congr., 4th, Basel, Switzerland. (O. Jaag, % Secretariat Pro Aqua, Basel 21)

29-3. International Assoc. for **Accident and Traffic Medicine**, 3rd, New York, N.Y. (M. Helpert, % Office of Chief Medical Examiner, 520 First Ave., New York 10016)

29-19. General Assembly of Pan-American Inst. of **Geography and History**, Washington, D.C. (C. A. Forray Rojas, Ex-Arzobispado 29, Mexico, D.F. Mexico)

June

1-12. Symposium on **Non-Destructive Testing of Concrete and Timber**, London, England. (Institution of Civil Engineers, Great George St., London, S.W.1)

2-6. International Symp. on **Yeasts**, Delft and The Hague, Netherlands. (L. Rodrigues de Miranda, Organizing Committee, Julianalaan 67A, Delft)

3-13. International Conf. on **Arid Lands in a Changing World**, Tucson, Ariz. (International Arid Lands Conf., % Dept. of Geochronology, Univ. of Arizona, Tucson 85721)

4-6. **Automated Analysis**, intern. congr., Chicago, Ill. (J. E. Golin, Technicon Corp., Ardsley, N.Y. 10502)

4-7. Union of Textile **Chemists and Colorists**, 21st congr., Baden-Baden, Germany. (Rohrbacherstr. 78, Heidelberg, Germany)

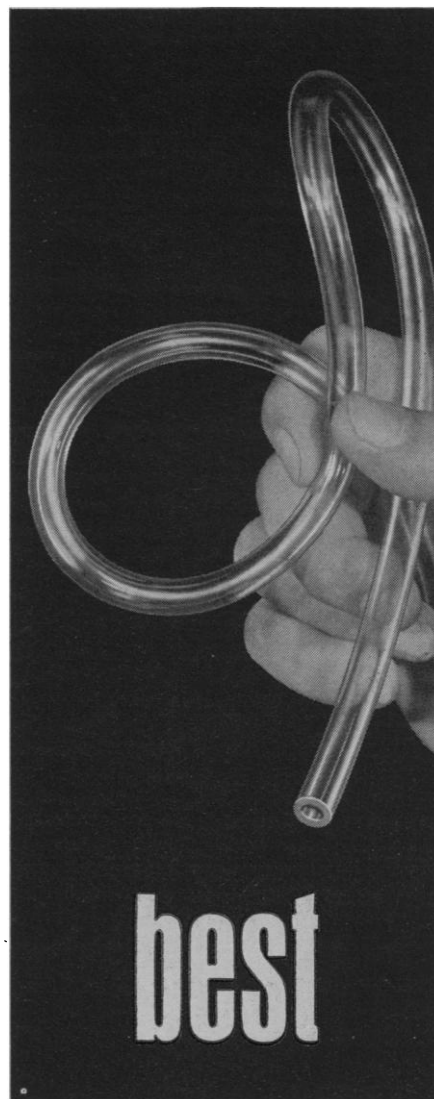
5. European Federation of Intern. College of **Surgeons**, London, England. (F. P. Fitzgerald, 129 Harley St., London, W.1)

5-7. **Mineralogical** Assoc. of Canada, Montreal, P.Q. (J. Beland, Dept. of Geology, Univ. of Montreal, Montreal)

5-11. **Forensic Sciences**, 5th intern., Toronto, Ont., Canada. (L. Ball, Center of Forensic Sciences, Dept. of Attorney General, 8 Jarvis Street, Toronto 2)

6-9. Canadian **Pediatric** Soc., Montreal, P.Q. (J. H. V., Marchessault, 14 Green Ave., St. Lambert, Quebec City, P.Q.)

8-14. Canadian **Medical** Assoc., 102nd, Toronto, Ont., Canada. (The Association,



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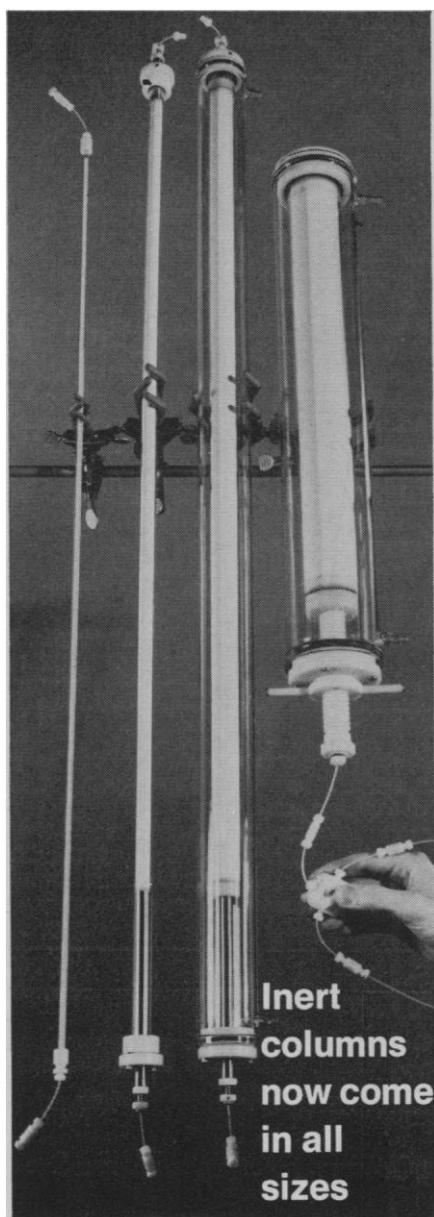
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9-11. **International Communications Conf.**, Boulder, Colo. (M. Nesenbergs, Environmental Science Services Administration, Inst. for Telecommunication Sciences, R614, Boulder 80302)

9-12. **International Food Congr. and Exhibition**, 7th, Madrid, Spain. (L. Naranon, % Federacion Nacional de Almacenistas de Alimentacion, Paseo del Prado 18-20, Planta 11, Madrid)

9-13. **Clean Air Congr. and Exhibition**, Dusseldorf, Germany. (V. Deutscher, Postfach 1139, 4 Dusseldorf 1)

9-14. **Canadian Assoc. of Pathologists**, Toronto, Ont., Canada. (D. W. Penner, Winnipeg General Hospital, Winnipeg 3, Manitoba)

10-20. **International Marine and Shipping Conf.**, London, England. (Inst. of Marine Engineers, 76 Mark Lane, London, E.C.3)

11-13. **Canadian Federation of Biological Societies** (Canadian Physiological Soc., Pharmacological Soc. of Canada, Canadian Assoc. of Anatomists, Canadian Biochemical Soc.), 12th, Univ. of Alberta, Edmonton. (A. H. Neufeld, Univ. of Western Ontario, London, Ont., Canada)

11-14. **Canadian Psychiatric Assoc.**, 19th, Toronto, Ont. (W. A. Blair, 225 Lisgar St., Ottawa, Ont.)

14-20. **Canadian Assoc. of Gastroenterology**, 8th, Toronto, Ont. (The Association, 426 170 St. George St., Toronto 5)

15-18. **Chemical Inst. of Canada**, 19th, Montreal, P.Q. (The Institute, 151 Slater St., Ottawa 4, Ont.)

15-20. **Canadian Anaesthetists Soc.**, 20th, Toronto, Ont. (E. R. Campbell, 178 St. George St., Toronto 5)

15-20. **International Data Processing Conf.**, Montreal, Canada. (M. Rafferty, Data Process Managing Assoc., 505 Busse Highway, Park Ridge, Ill. 60068)

15-22. **World Medical Assoc.**, 23rd, Paris, France. (M. Poumailloux, Domus Medica, 60 Blvd. de Labour-Maubourg, Paris 15)

16-18. **Thermophysics Conf.**, 4th, San Francisco, Calif. (E. R. Streed, Vehicle Systems Design Branch, NASA Ames Research Center, N244-6, Moffett Field, Calif. 94035)

16-21. **Triennial Congr. of Intern. Federation of Automatic Control**, Warsaw, Poland. (Organizing Committee, Ul Czackiego 3/5, P.O. Box 903, Warsaw 1)

16-21. **Sarcoidosis**, 5th intern. conf., Prague, Czechoslovakia. (L. Levinsky, University Clinic for Tuberculosis and Respiratory Diseases, 19 Katerinska, Prague 2)

21-29. **Quadrennial Congr. of Intern. Council of Nurses**, Montreal, Canada. (H. M. Nussabaum, P.O. Box 42, 1211 Geneva 20, Switzerland)

22-29. **Application of Mathematics in Engineering**, 5th biennial intern. congr., Weimar, Germany. (H. Matzke, Weimar College of Architecture and Building, Karl-Marx-Platz 2, 53 Weimar)

22-29. **Nephrology**, 4th intern. congr., Stockholm, Sweden. (F. Berglund, Post-fack 272, Stockholm 1)

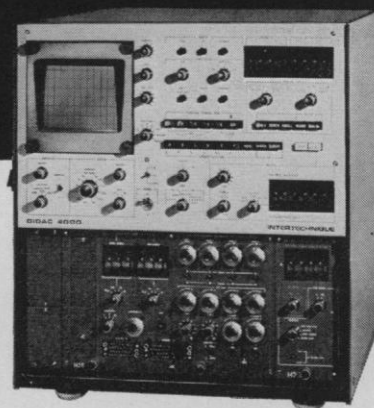
23-25. **Shock Tube**, 7th intern. symp., Toronto, Canada. (I. I. Glass, Inst. for Aerospace Studies, Univ. of Toronto, Toronto)

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BOOKS RECEIVED

(Continued from page 272)

Fish, Amphibian and Reptile Remains from Archaeological Sites. Part 1, Southeastern and Southwestern United States. With an appendix, The Osteology of the Wild Turkey. Stanley J. Olsen. Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, Mass., 1968. xviii + 138 pp., illus. Paper, \$4.85. Papers of the Peabody Museum, Vol. 57, No. 2.

The Fishes of New Guinea. Ian S. R. Munro. Department of Agriculture, Stock and Fisheries, Port Moresby, New Guinea, 1967. xxxviii + 651 pp., + 78 plates, illus. \$14.50 Australian + \$A1.80 postage.

Flashing Wings. The Drama of Bird Flight. John K. Terres. Illustrated by Robert Hines. Doubleday, Garden City, N.Y., 1968. xiv + 178 pp. \$4.95.

Folk Song Style and Culture. A staff report on cantometrics presented at the Washington meeting of the American Association for the Advancement of Science, Dec. 1966. Alan Lomax. With contributions by the Cantometrics Staff, Bureau of Applied Social Research, Columbia University, and with the editorial assistance of Edwin E. Erickson. AAAS, Washington, D.C., 1968. xx + 364 pp., illus. \$16.75; members' cash price, \$14.50. AAAS Publication No. 88.

Galactic Astronomy. Dimitri Mihalas. With the collaboration of Paul McRae Routly. Freeman, San Francisco, 1968. xiv + 258 pp., illus. \$10. A Series of Books in Astronomy and Astrophysics.

The Geology of the East Midlands. P. C. Sylvester-Bradley and T. D. Ford, Eds. Leicester University Press, Leicester, 1968. xx + 400 pp., illus. 84 s.

The Golden Web. A History of Broadcasting in the United States. Vol. 2, 1933-1953. Erik Barnouw. Oxford University Press, New York, 1968. vi + 394 pp., illus. \$9.

Government Contracting and Technological Change. Clarence H. Danhof. Brookings Institution, Washington, D.C., 1968. xiv + 472 pp., illus. \$8.75.

Growth and Imperfections of Metallic Crystals. D. E. Ovsienko, Ed. Translated from the Russian edition (Kiev, 1966). Consultants Bureau, New York, 1968. x + 270 pp., illus. Paper.

Growth and Organization in Plants. Structure, Development, Metabolism, Physiology. F. C. Steward. Addison-Wesley, Reading, Mass., 1968. xii + 564 pp., illus. \$15. Addison-Wesley Series in Life Science.

The Guidance Function in Education. Percival W. Hutson. Appleton-Century-Crofts, New York, ed. 2, 1968. xx + 786 pp., illus. \$9.50.

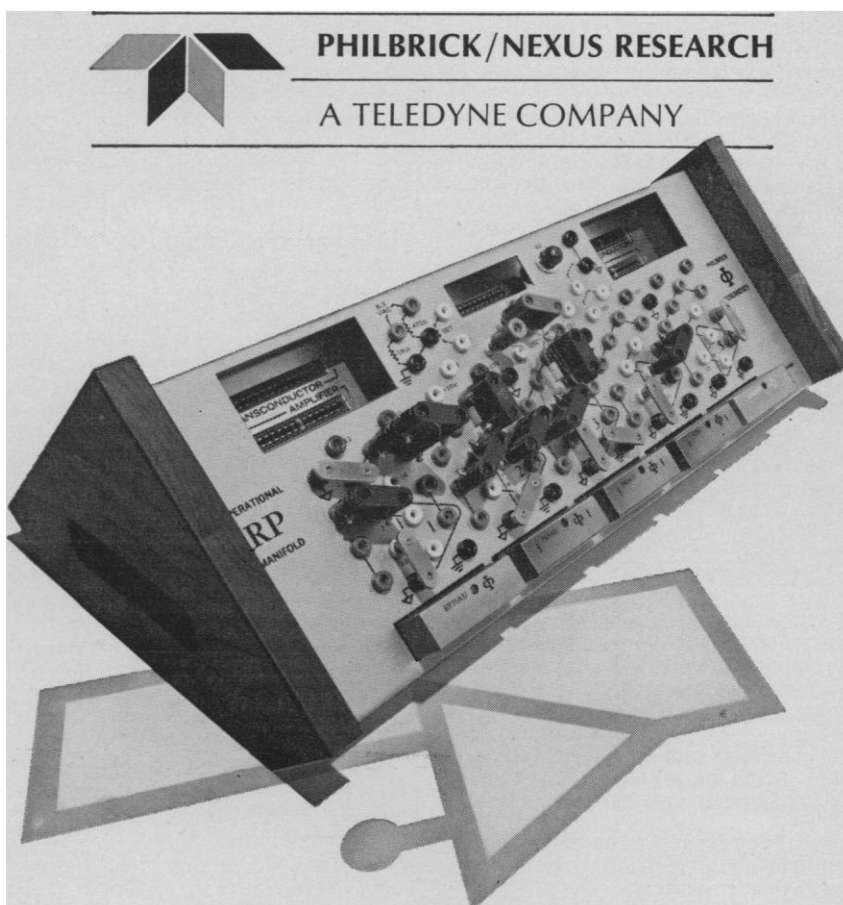
Hadrons and Their Interactions. Current and Field Algebra, Soft Pions, Supermultiplets, and Related Topics. Proceedings of the 5th course of the International School of Physics "Ettore Majorana," Erice, July 1967. A. Zichichi, Ed. Academic Press, New York, 1968. xii + 718 pp., illus. \$26.50.

Higher Education: Who Pays? Who Gains? Financing Education beyond the High School. M. M. Chambers. Interstate, Danville, Ill., 1968. xvi + 304 pp. \$6.95; less educational discounts of 10 percent

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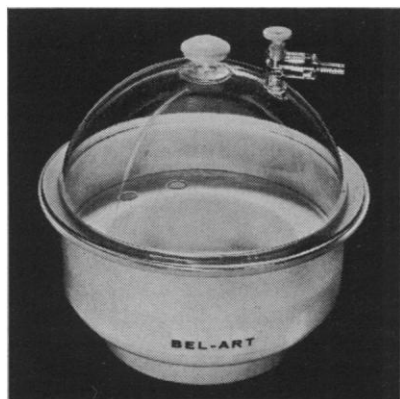
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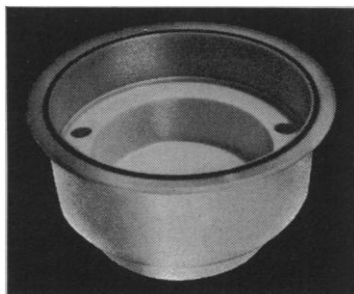
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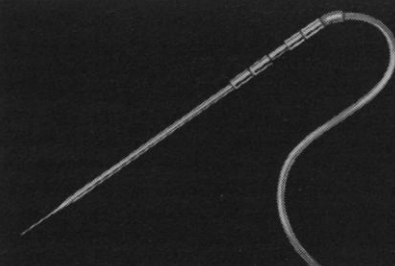
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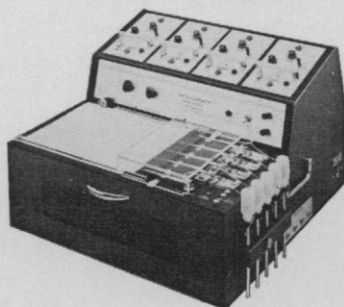
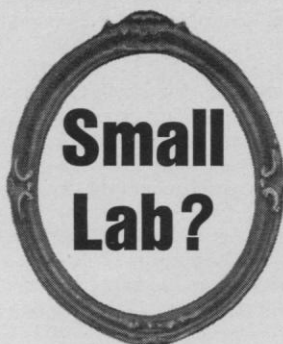
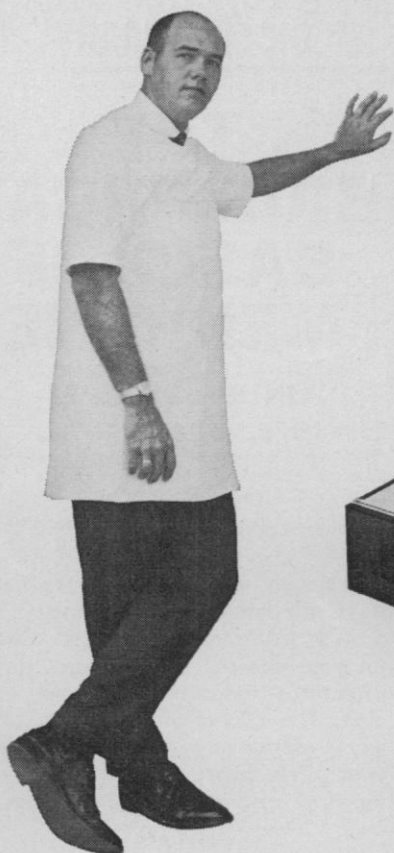
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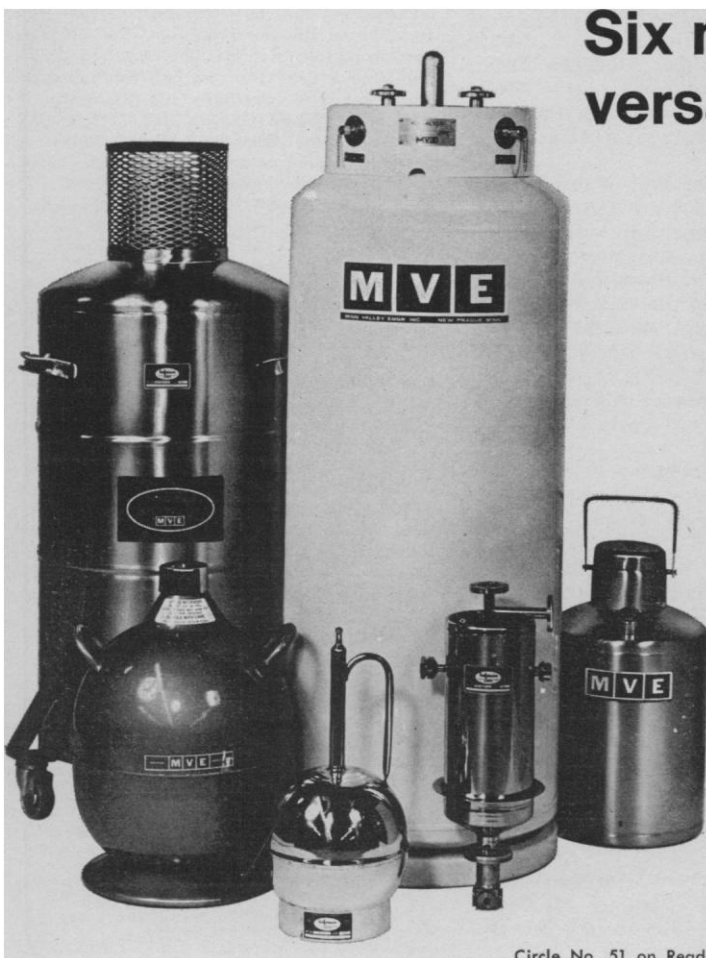
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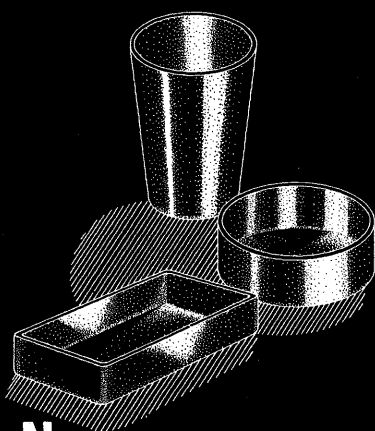


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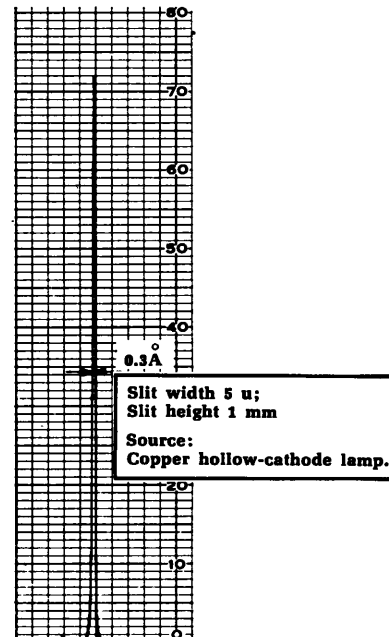
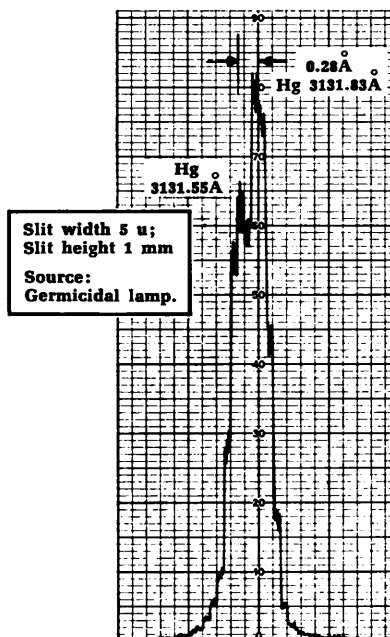
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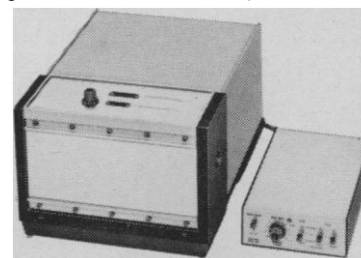
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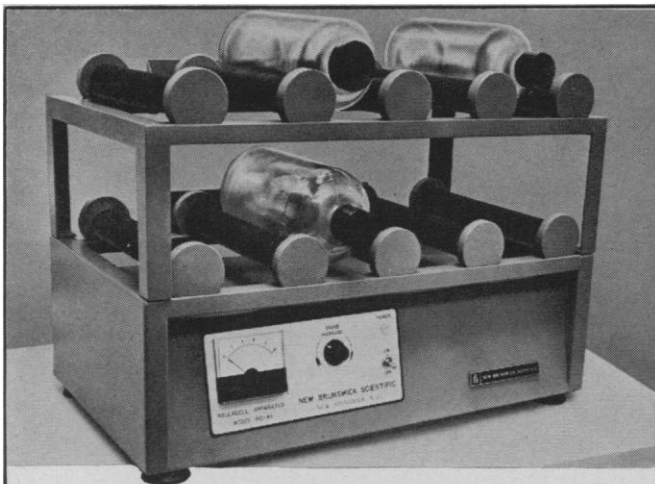
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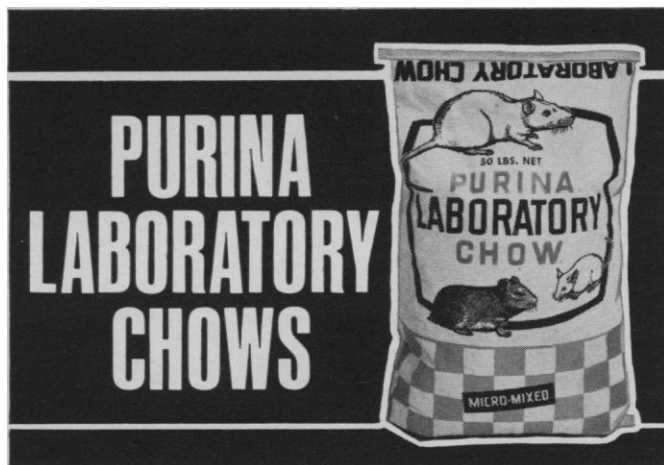
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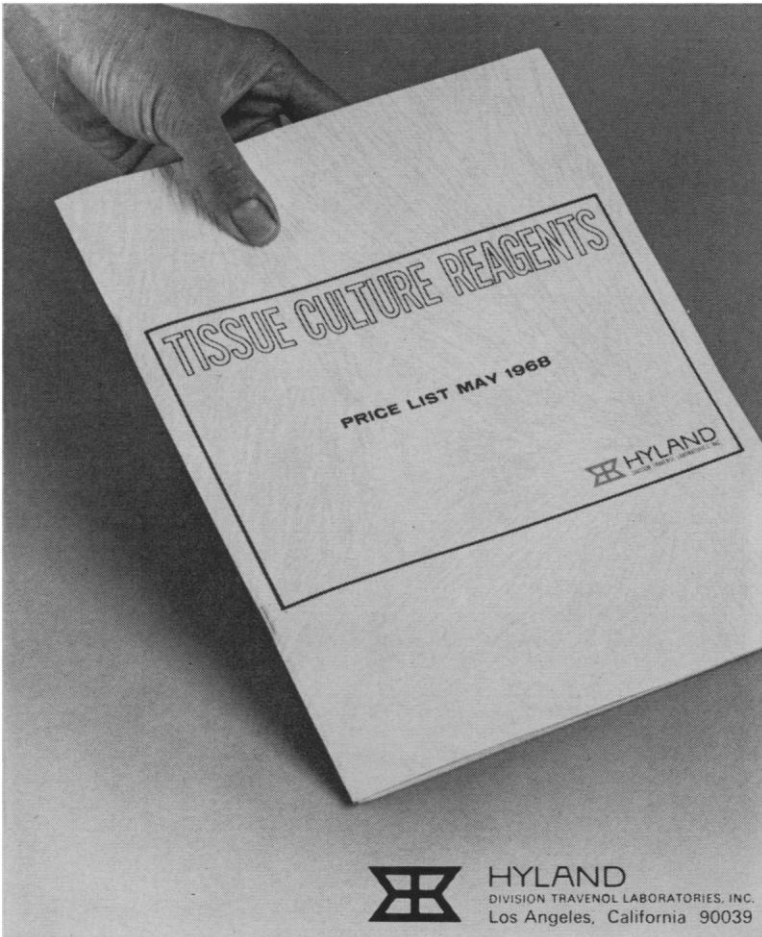
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