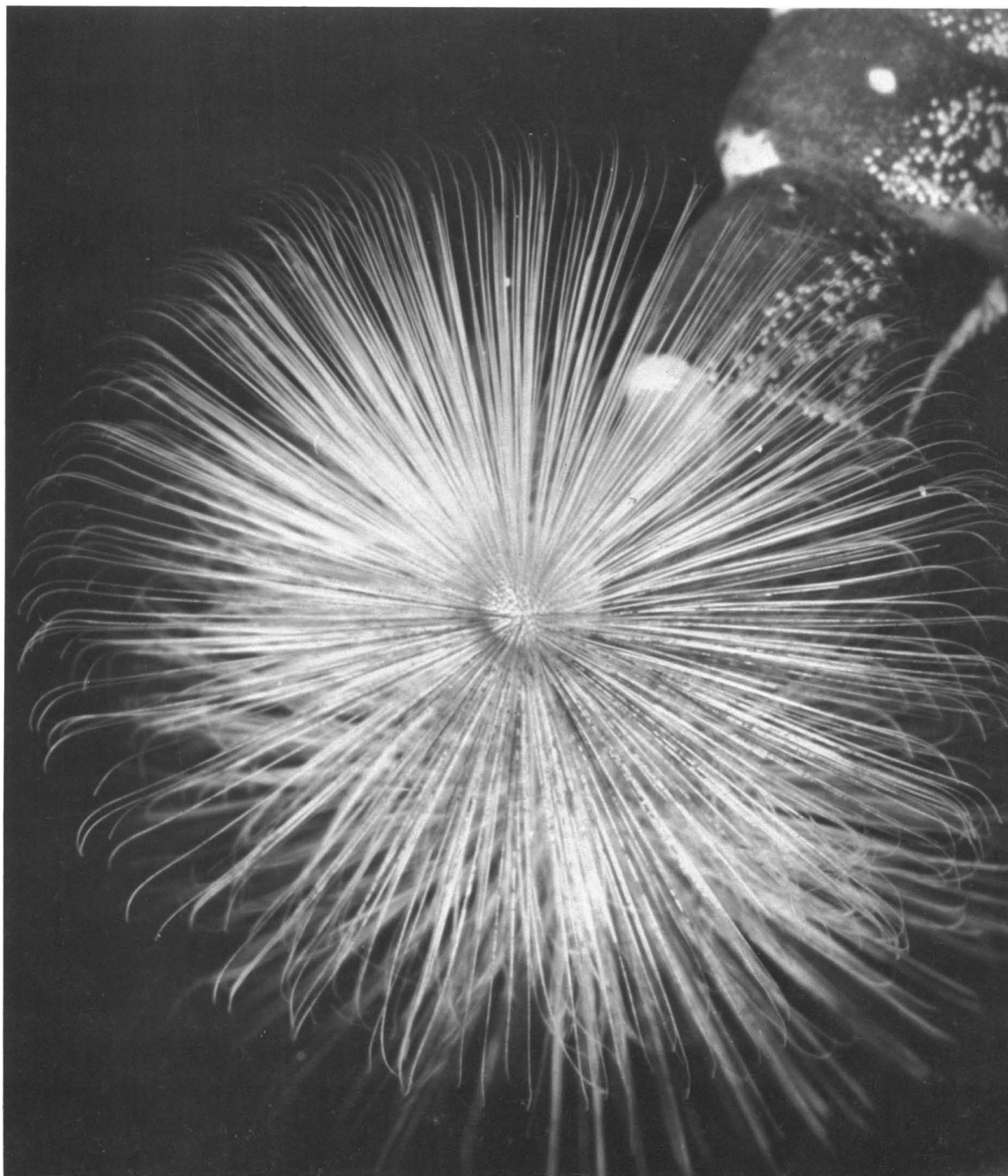


SCIENCE

6 June 1969

Vol. 164, No. 3884

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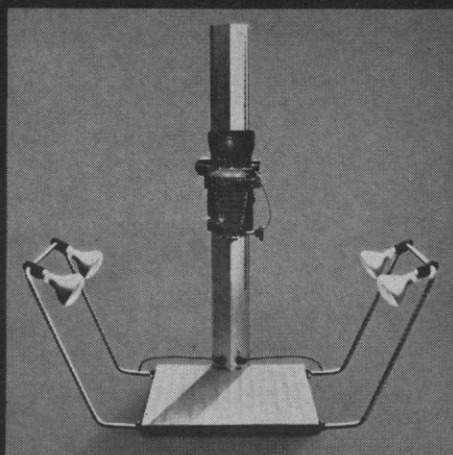
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COVER

Sexual tuft of queen butterfly (*Danaus gilippus berenice*). This structure which acts as the carrier of an aphrodisiac secretion is used by the male to seduce the female (actual diameter of tuft, 8 millimeters). See page 1170. [Thomas Eisner, Cornell University]

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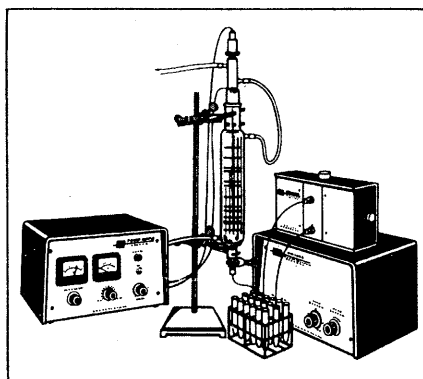
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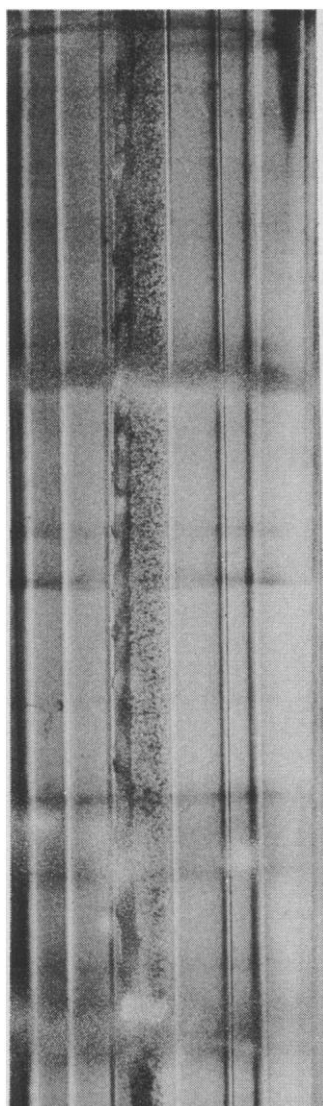


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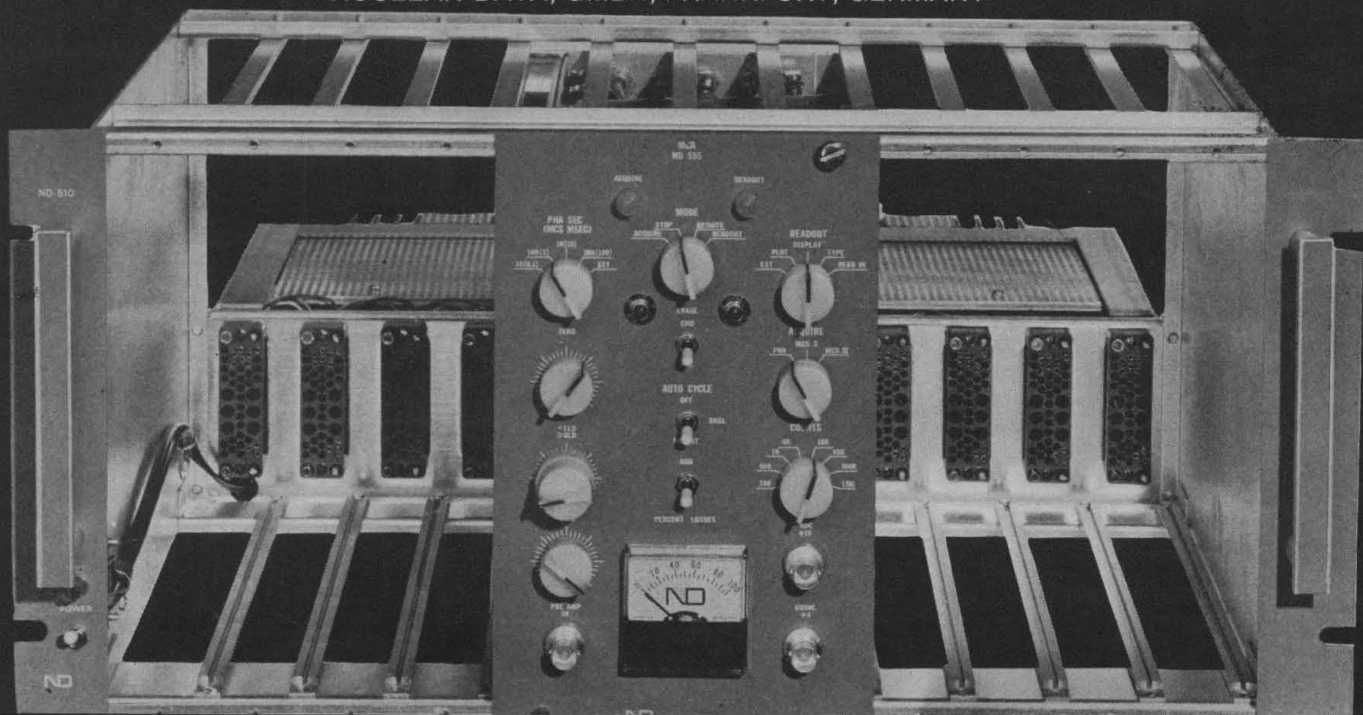
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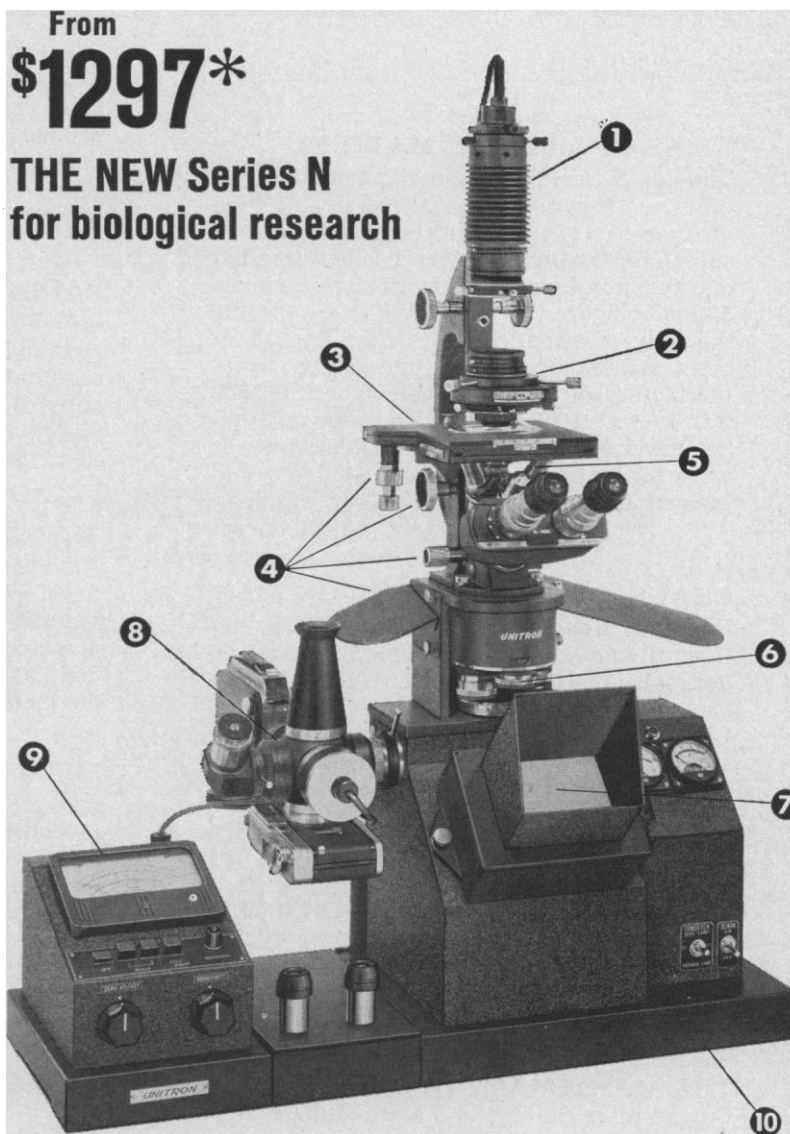
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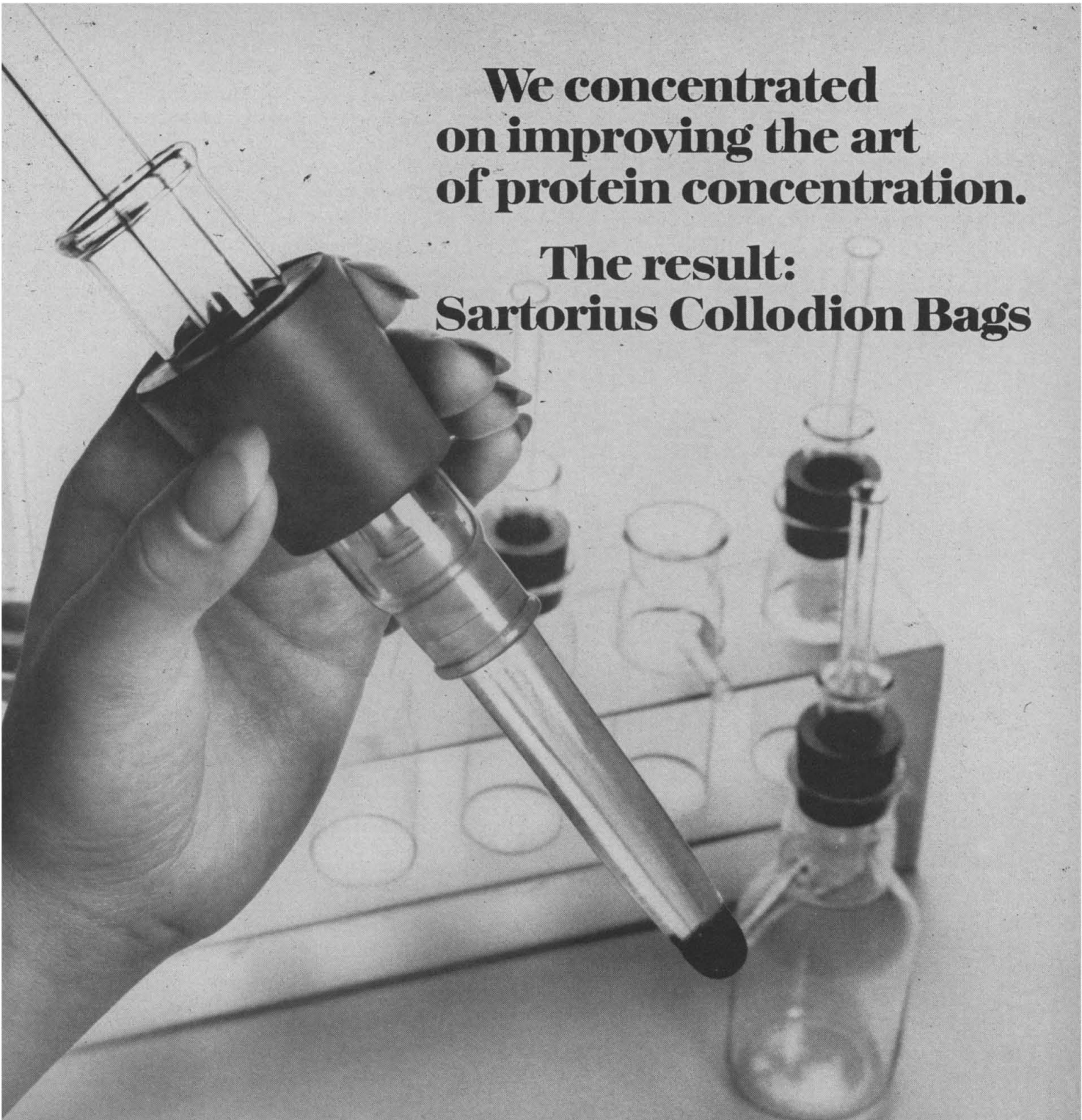
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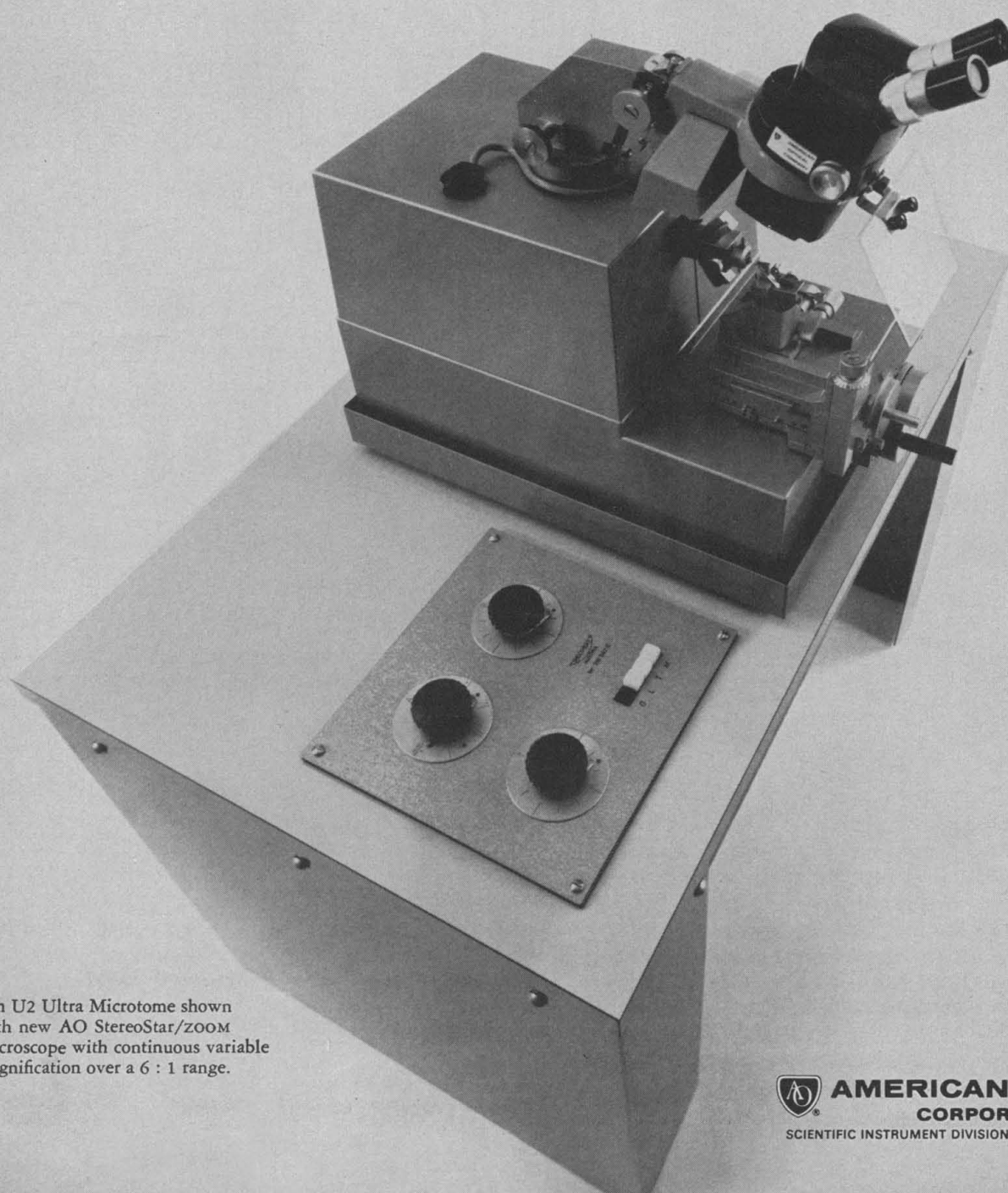
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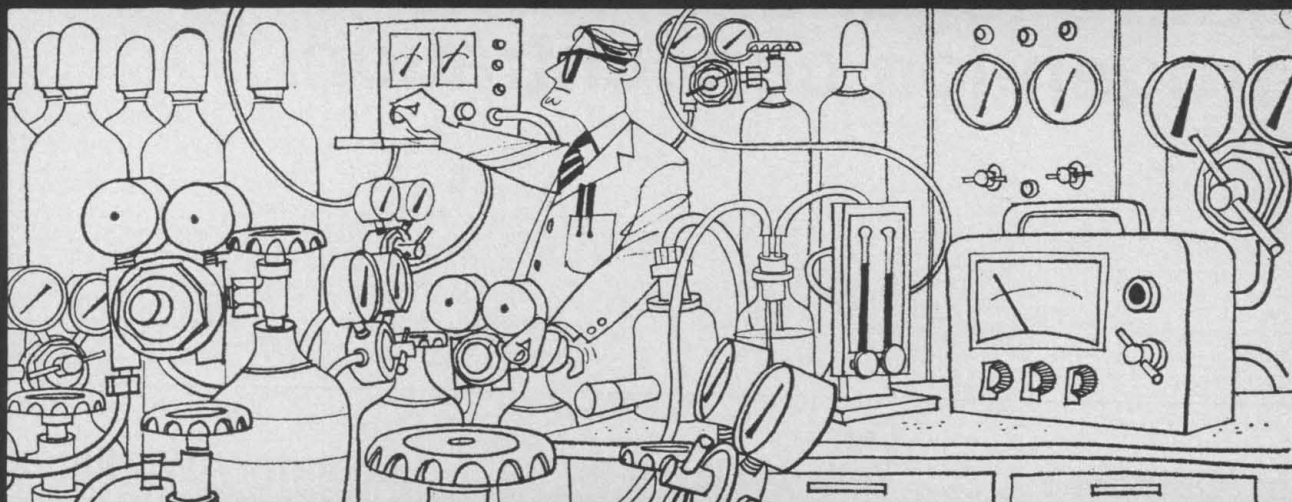


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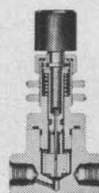
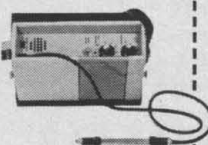
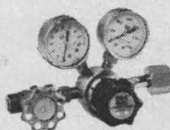
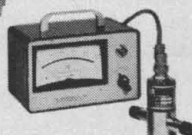
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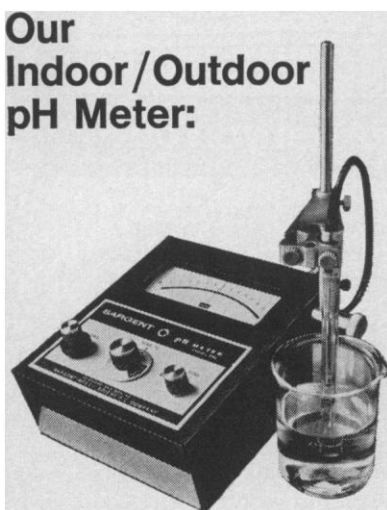


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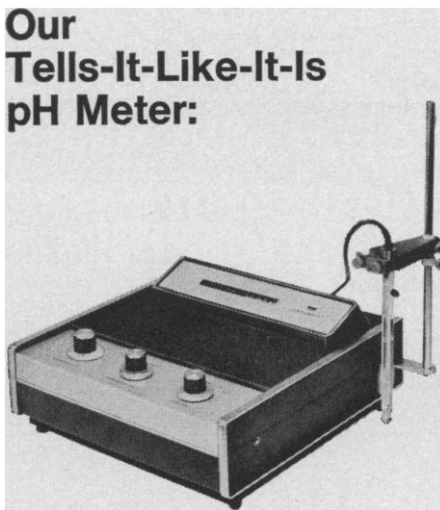
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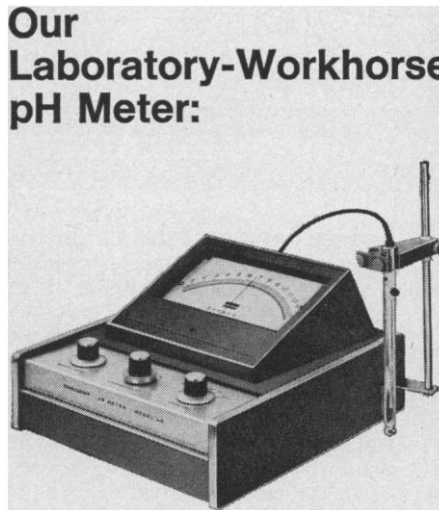
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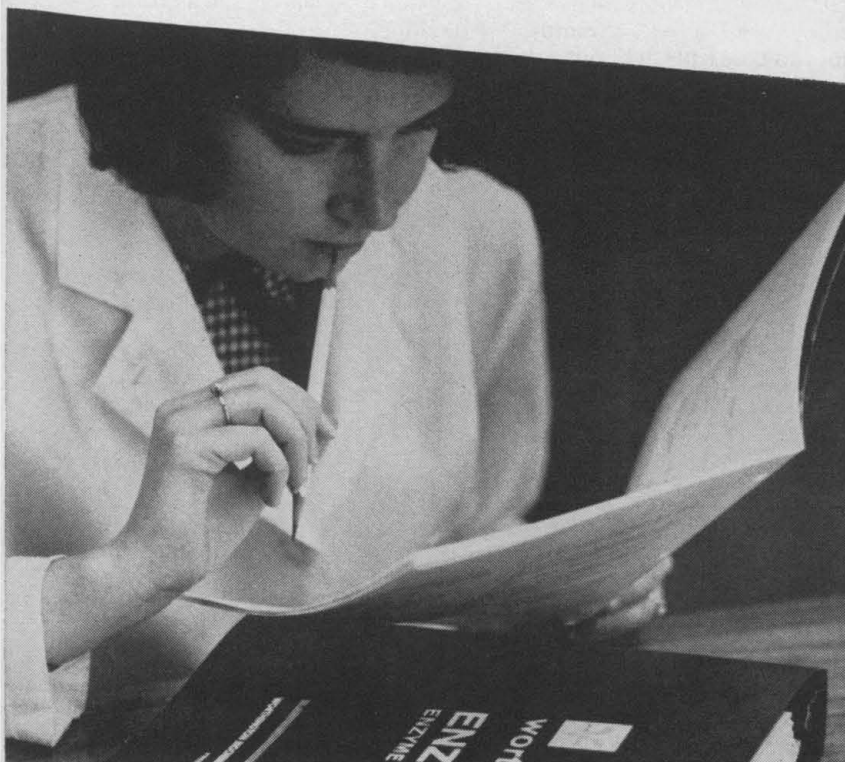
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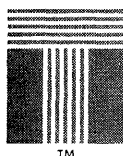
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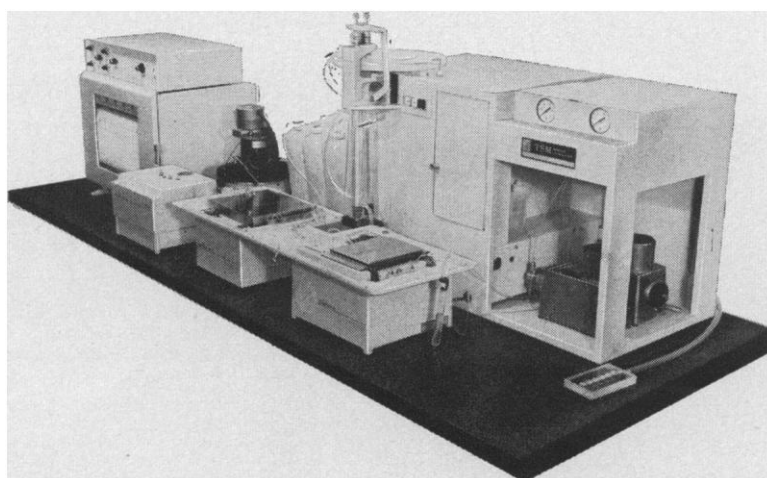
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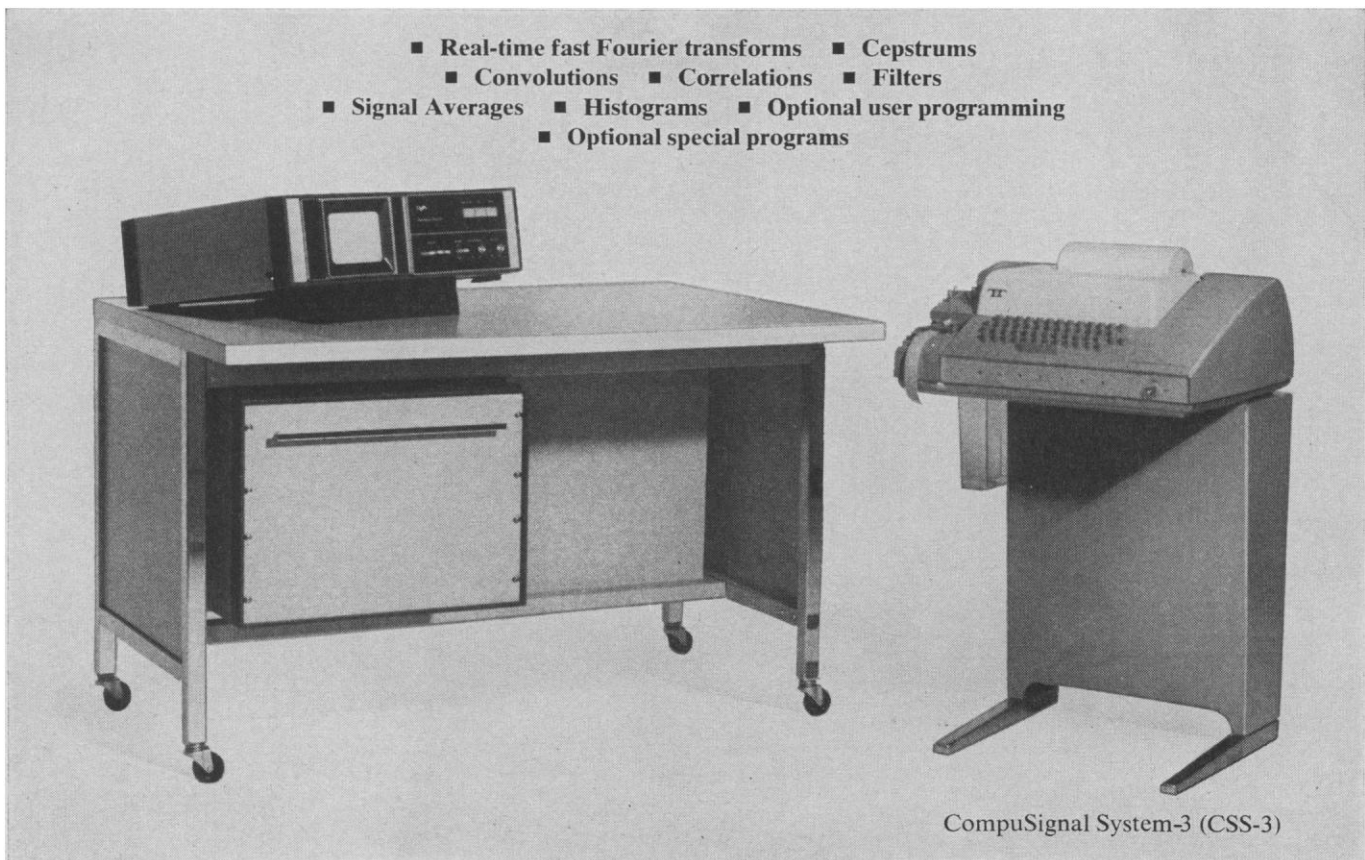


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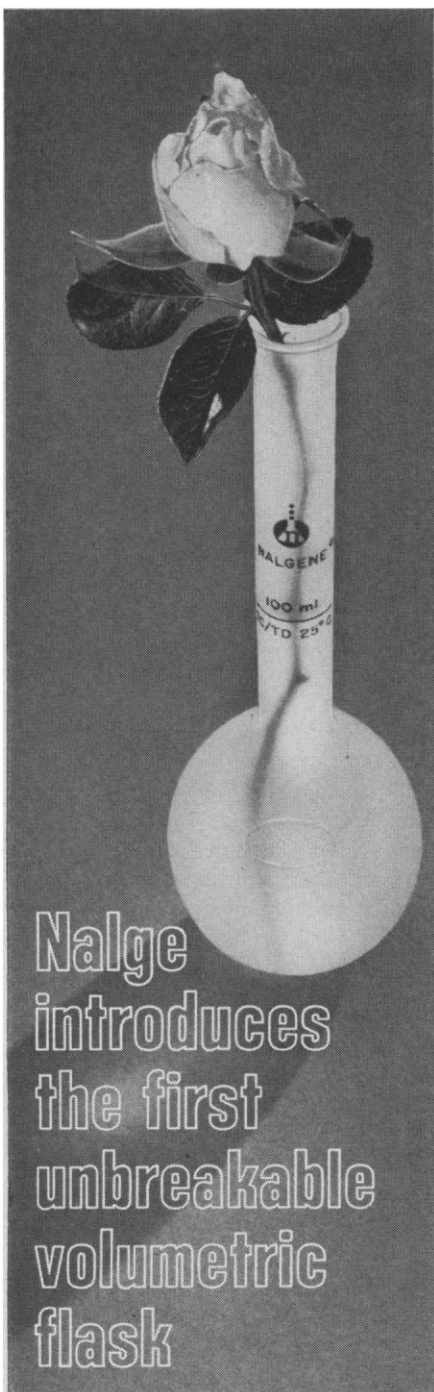
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3) The grade criterion in graduate should not be the object of our concern; rather we should be concerned with selecting those individuals who will make significant contributions to their field.

These points do indeed represent problems to consider in the prediction of graduate school performance, but clearly they are problems that exist whether we use the college GPA as a predictor, or standardized tests (which, it should be obvious from my affiliation, would earn my endorsement), or any other predictor. It does appear that Schagrin is aiming at the wrong target.

So much for misdirected criticism. But what distresses me most about Schagrin's letter is his willingness "to use the number of hairs on a student's head divided by his weight. . . if that were to be an effective predictor." The prediction of academic performance involves moral and ethical responsibilities as well as statistical precision, and to adopt a blindly empirical approach to prediction, as Schagrin suggests, without regard for its social consequences is to turn our backs on these responsibilities. Let's come right down to it: If skin color is a good predictor of academic performance—and the purely empirical results observed by many investigators indicate that it is—should it therefore be used to select graduate school students?

WILLIAM H. ANGOFF

*Educational Testing Service,
Princeton, New Jersey 08540*

Gaps in the Graduate Training of Students from Abroad

I should like to add to the sensible letter by R. R. Ronkin (3 Jan.) regarding the problems of foreign Ph.D. students in the United States and their subsequent work in their home countries. As an American teaching abroad, I have had some experience placing students from the University of Malaya in universities in the United States, Canada, Britain, and Australia. The three specific areas of supplementary training suggested by Ronkin are certainly well taken: identification of research problems, maintenance skills, and basic administrative techniques.

Also, I have found that a student is occasionally awarded a fellowship to work in an advanced country which stipulates study in an area different from that desired by the student and by his own institution and homeland.

Recently two students in our school of biological sciences were awarded scholarships, one to a university in country A, and the other to a university in country B. The awards should have been reversed. Country A required study in a field in which the first student was unfamiliar, and country B made the award for study which was unsuited to its grantee but would have furthered the work of the first student. These awards were both generous and difficult to secure. For those reasons, each student reluctantly agreed to accept them, even though the studies were different from their original work, and different in fact from that desired by their home institution.

Such anomalies are probably accidental, but they reflect other oversights made by the awarding committees of universities in advanced countries. Why, for example, do they insist that these students pursue highly applied training programs, even including those superior students who show promise of becoming skilled and independent research scientists? Developing countries need technicians and technologists, but also they need a superstratum of scientists who can work in pure science.

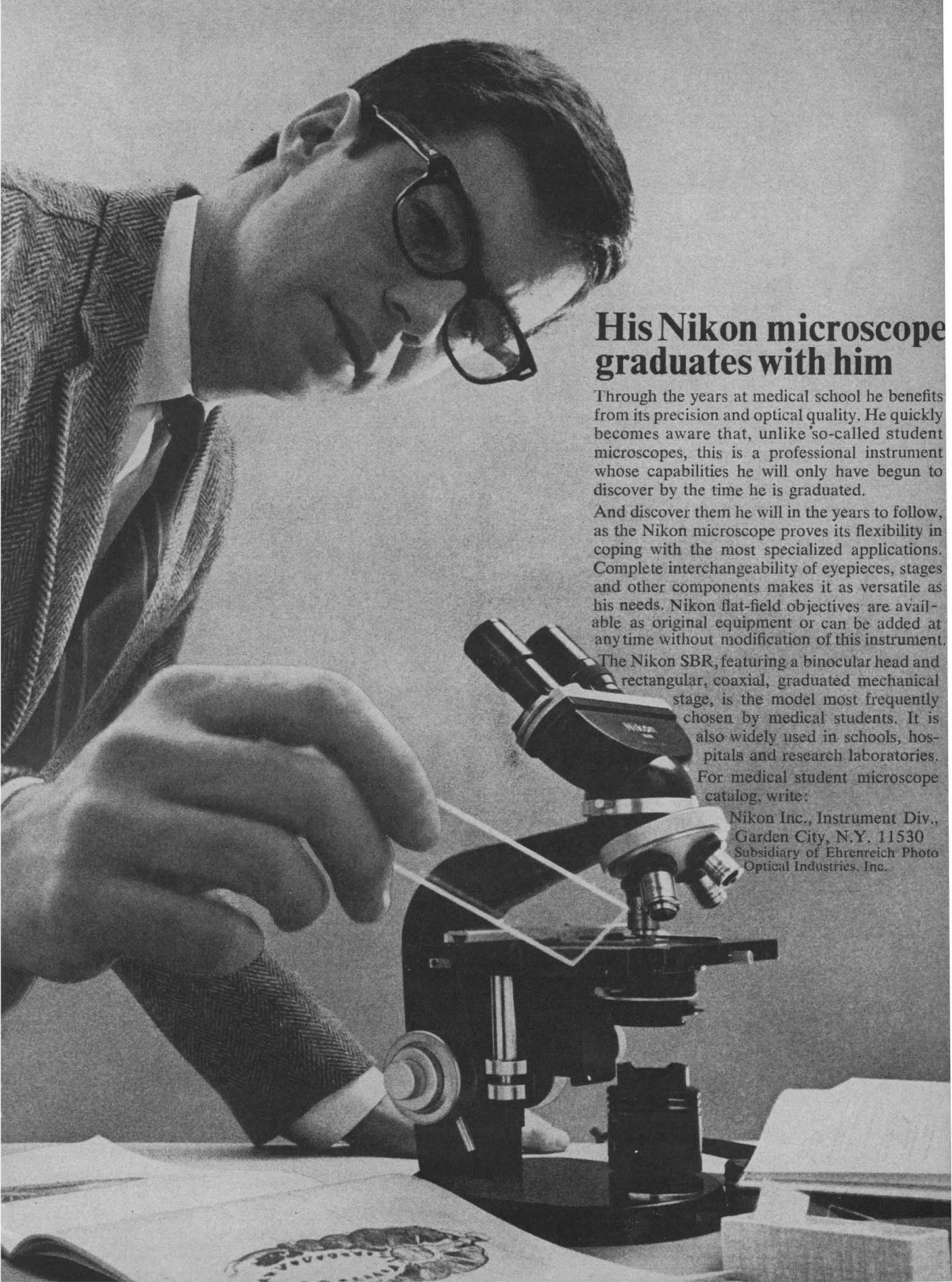
To cite one example, it is virtually impossible to find broadly-trained ecologists who can cope with all the aspects of land-use, as well as agriculture, in developing countries. There are great gaps between our knowledge of forestry, forest ecology, and forest resource management in the North American or European regions and its application to tropical rain forests. A newly-trained forester cannot uncritically apply in his tropical homeland, for example, the "monoculture" system which may work well in temperate areas, but is not necessarily suitable for the tropics. We need here more broadly trained and creative scientists who will begin original research instead of assuming that his knowledge of the management of pure stands of conifers, for instance, is all that is needed in order to utilize and preserve the dipterocarp forest, which is rich in species, but with an ecology largely undetermined.

Money is not the only requirement of the smaller and poor countries; their students must be trained to fill these very special technical and scientific basic needs.

BENJAMIN C. STONE

*School of Biological Sciences,
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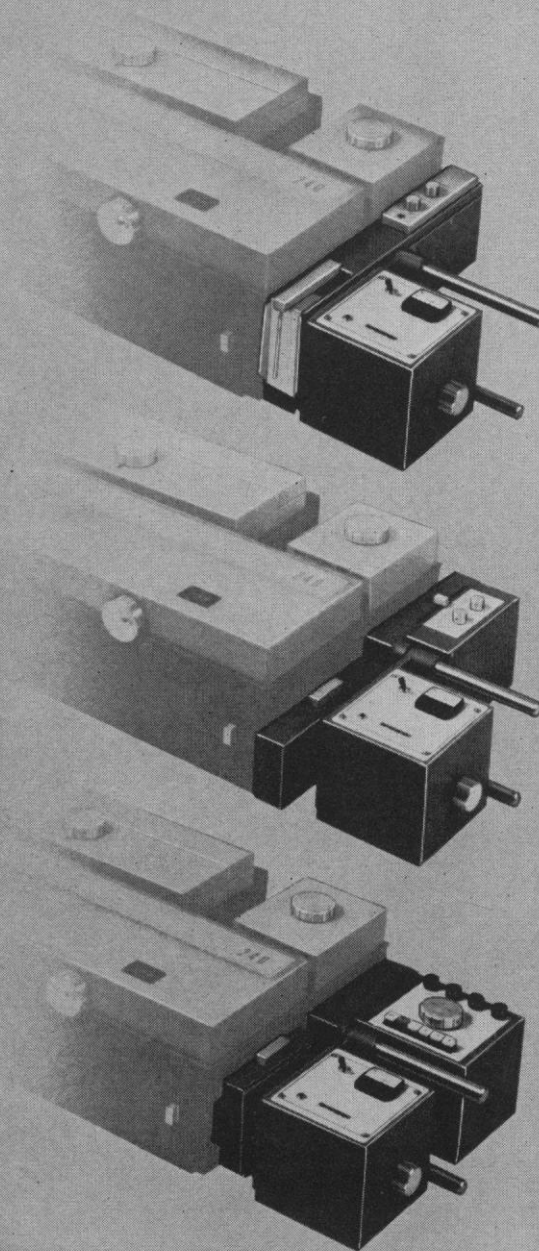
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Measuring Social Change

The marvels of electronics recently permitted hundreds of millions of viewers around the earth to be the vicarious companions of astronauts Stafford, Cernan, and Young in their exciting trip around the moon. It was interesting during those days to reread the 1961 thoughts of several psychologists and social scientists on what it would mean to society to be able to send men into space. In 1961, the first manned space flight was still to come, but it was not far off, and, foreseeing success, the editor of *The Journal of Social Issues* devoted an issue to the expected social-psychological implications of Man in Space.

The speculations varied. Inexorably, one author thought, we would launch "more and more men in space. Many will not return but we shall go right on, partly from scientific curiosity, partly from military urgency, partly because when invention has made a breakthrough there is no cultural force which can stop the forward thrust." Another foresaw international arguments over the height to which national sovereignty extends, and expected indemnity problems from falling space vehicles. One of the authors reported widespread belief among businessmen that by-products valuable to the earthly economy would pay for the whole space program. Still another worried about the hostility among crew members that studies on isolation and confinement led him to expect would develop on lonely missions far from the earth. Nevertheless, he concluded, space capsules might have a silver lining: "Interpersonal conflict . . . is the most dangerous single problem mankind faces in this century. If we can solve these problems in space, perhaps we can transfer the solution closer to home. What is more, I optimistically suspect that we can."

Guesses concerning the degree of popular interest in space voyages also varied. One writer, influenced by the ease with which people adapt to a new noise or to many other changes in their environment, predicted that the first landing on the moon would be taken casually by most people. Other authors expected greater involvement. One rather quickly collected 944 space jokes and interpreted the upsurge of such jokes as an effort to assimilate the idea of space into more familiar frames of reference—to domesticate space, as it were, and thus avoid the necessity of making radical readjustments in one's thinking.

These thoughts should be considered speculations rather than predictions of social change. The theoretical base was too insubstantial in 1961 (as it is in 1969) to permit much in the way of predictions or inferences solidly grounded in social theory. This limitation was made explicit in one paper, and illustrated by the inability of William F. Ogburn in 1945 to predict the social impact of aviation in the following decade.

There is another inadequacy that could be corrected more quickly. It is risky to make quantitative predictions without firm knowledge of present status, and quantitative information about current social conditions and trends is often much more a wish than a reality. The wish is likely to be expressed frequently in the next few years. No longer must it be taken for granted that "when invention has made a breakthrough there is no cultural force which can stop the forward thrust." On the contrary, there is a growing move to try to analyze in advance all of the consequences of new technology, and not simply the immediate advantages. The analysts will surely try to include the social implications, but they will not be able to make quantitative predictions with assurance until we have improved our programs of collecting and analyzing information about social conditions and social change. It is hard to predict where we are going when we don't know where we are.—DAEL WOLFLE



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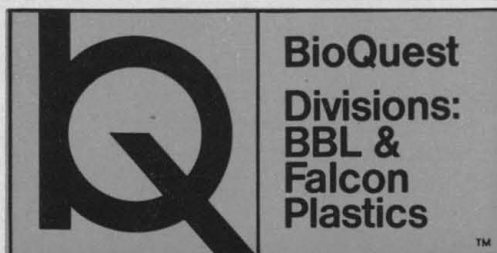
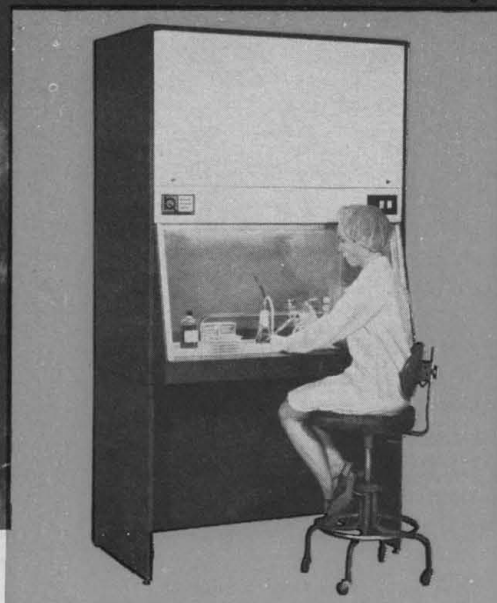
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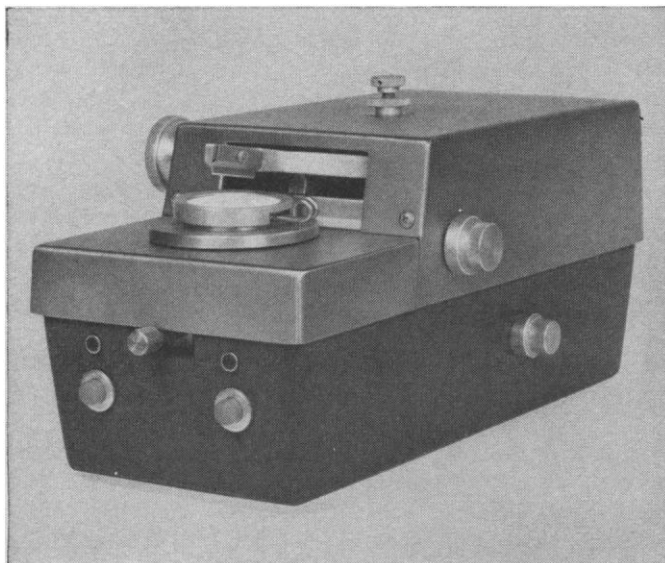


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Calendar of Events

Courses

Mathematical Biosciences, Los Angeles, Calif., 28 July–8 August. Is intended to help identify those areas of biology and medicine where a mathematical approach can be fruitful, and to develop the mathematical concepts and computational tactics necessary for meaningful accomplishment in these areas. Prerequisite is a bachelor's degree or the equivalent in engineering, science, or mathematics. *Fee*: \$375. Limited to approximately 30 participants. Registration deadline: *10 days before start of class*. (Mathematical Biosciences, Noncredit Programs, Administration Building 256, University of Southern California, Los Angeles 90007)

Workshop on Snow and Ice Hydrology, Fort Collins, Colo., 19–22 August. Is intended to (i) summarize the present state of the art in snow and ice hydrology; (ii) recommend research needs for the immediate future, including potential interdisciplinary and interagency efforts; (iii) explore future manpower needs and suggest educational and training programs; (iv) explore the practicability and desirability of a subsequent and much larger symposium on snow and ice; (v) provide background and guidance to U.S. participants in the international symposium on the hydrology of glaciers to be held in September; (vi) provide an opportunity to convene an interdisciplinary group composed of hydrologists, geologists, geographers, glaciologists, foresters, meteorologists, and engineers concerned with snow and ice hydrology to become acquainted with each other and each other's areas of interest and effort. (Dr. Robert E. Dils, College of Forestry and Natural Resources, Colorado State University, Fort Collins 80521)

Engineering Aspects of Aerospace and Undersea Medicine, Cambridge, Mass., 11–12 August. An intensive course is offered for engineers, physicians, and life scientists interested in a quantitative introduction to the specialized problems of supporting and utilizing men in space vehicles, submersibles, and other closed systems. Basic principles of physiology, life support, and human factors requirements will be discussed as well as engineering considerations in designs of current vehicles. Recent NASA biomedical results and current plans will be reviewed. (Director of the Summer Session, Room E19-356, Massachusetts Institute of Technology, Cambridge 02139)

Information Processing, Lafayette, Ind., 25–29 August. Topics to be discussed will include theory of feature extraction, selection, and its effectiveness; multidimensional estimation and recognition; feedback signal design and data organization; applications of statistical learning theory; real line mapping for computer output display; multiple access to random access communication systems with a hard-limited satellite repeater; clustering technique for combatting jamming. Requirements for the course are a bachelor of science degree in electrical engineering and knowledge of probability theory. *Fee*: \$200. (Prof. E. A. Patrick, Information Processing Short Course, School of Electrical Engineering, Purdue University, Lafayette 47907)

Underwater Acoustics, Los Angeles, Calif., 21 July–1 August. Is intended for engineers and physical scientists who work or anticipate working in areas that require knowledge of the techniques of underwater acoustics. Will examine the uses of underwater acoustics for ocean surveillance, sonar, and ocean engineering. A prerequisite is a bachelor's degree in a physical science or engineering, or equivalent experience. The course will cover introduction to basic acoustics; high-energy fields and their production; design, construction, and evaluation of transmitting and receiving transducers; and signal processing. *Fee*: \$375. (Engineering and Physical Sciences Extension, University Extension, University of California, 10851 Le Conte Ave., Los Angeles 90024)

Fermentation Technology, Cambridge, Mass., 4–8 August. Will emphasize the application of biological and engineering principles to problems involving microbial and biochemical systems. The aims of the program will be to review fundamentals and to provide an up-to-date account of current knowledge in fermentation technology. Deadline for applications: *15 July*. (Director of Summer Sessions, Massachusetts Institute of Technology, Cambridge 02139)

Electron and Light Microscopy, Ithaca, N.Y., 14–15 July. This is an introductory course in microscopy, with biological

and nonbiological applications. It is designed for persons who have had no formal training in microscopes, but who need to be able to interpret the results of microscopical studies. A minimum of a bachelor's degree in science, engineering, or mathematics or the equivalent in reading knowledge or experience is required. By means of lectures and demonstrations, the principles of microscopy, interrelationships among types of microscopes, operation and maintenance of microscopes and auxiliary apparatus, and specimen preparation techniques will be examined. Light and electron microscopy will be studied with an emphasis on similarities and complementary aspects. A major portion of the course is devoted to laboratory work, in which the common methods of specimen preparation are explored and the operation of various microscopes is undertaken. Registration will be limited to 16 students. *Fee*: \$400. (Director of Continuing Education, 251 Carpenter Hall, Cornell University, Ithaca, N.Y. 14850)

Cancer Chemotherapy, New York, N.Y., 13-19 October. Will consist of lectures and demonstrations of screening methods, pharmacological techniques, and methods for the clinical evaluation of potential chemotherapeutic agents. Topics to be discussed include a review of the chemistry, pharmacological effects, and clinical applications of the polyfunctional alkylating agents, the antimetabolites, steroid hormones, and miscellaneous agents in the treatment of cancer. The course is principally designed for physicians interested in cancer chemotherapy. *Fee*: \$100. Limited enrollment. (Dr. David A. Karnofsky, Memorial Hospital, 444 East 68 St., New York 10021)

Chemical and Biochemical Laboratory Instrumentation, Hopatcong, N.J., 8-10 July. Is intended to provide a basic understanding of various instruments and their components for laboratory personnel concerned with the application, operation, calibration and purchase selection of electro-optical-mechanical instruments. The course will include laboratory sessions and lectures in which the following topics will be discussed: introduction to instrument systems, instrumentation subsystems, spectrophotometers and colorimeters, chromatography and other separation techniques, thermal analysis, electroanalytical chemistry, nuclear resonance and mass spectroscopy. *Fee*: \$240, covering tuition and resident dormitory accommodations; or \$210, covering tuition and nonresident accommodations. Deadline for application: 1 July. (Dr. Saul Gordon, Executive Director, The Center for Professional Advancement, P.O. Box 66, Hopatcong, N.J. 07843)

Ecology and Revegetation of Drastically Disturbed Areas, University Park, Pa., 3-16 August. A NATO Advanced Study Institute will explore the problems resulting from drastic disturbances of the land, such as surface-mining operations and the revegetation of such areas. (Dr. Russell J. Hutnik, Forestry Research Laboratory, The Pennsylvania State University, University Park, Pa. 16802)

Interpretation of Complex Arrhythmias, Chicago, Ill., 8-13 December. This is an advanced course intended only for experienced electrocardiographers. Registration is limited to 30. *Tuition fee*: \$150. (Miss Beverly Petzold, Administrative Assistant, Cardiovascular Institute, Michael Reese Hospital and Medical Center, Chicago, Ill. 60616)

Alcohol Studies, New Brunswick, N.J., 29 June-18 July. Will include a Physicians Institute (29 June-11 July) of lectures and discussion sessions on selected medical aspects of alcoholism, such as the etiology and clinical course of alcoholism, treatment of acute stages and long-term rehabilitation, some of the major approaches to therapy, and various issues in program planning of alcoholism treatment facilities. Attention will also be given to basic and clinical research in the field of alcoholism. *Fee* (including tuition, room and board): \$325. The basic course program (29 June-18 July) is open to individuals with professional qualifications, such as physicians, clinical psychologists, educators, and public health workers; or to individuals employed in some alcohol problems area. Students are expected to register for two courses, a basic course in the student's special area of qualification and an audit course from among the other courses being offered. Among the courses that will be offered are: function and structure of alcoholism services, problems of drinking and driving, organizing and developing alcoholism programs in a public health setting, and organizing and administering community programs. *Fee*: \$325. (Summer School of Alcohol Studies, Rutgers University, New Brunswick, N.J. 08903)

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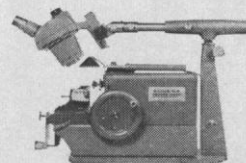


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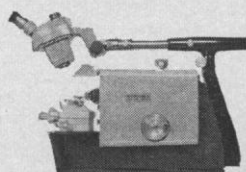
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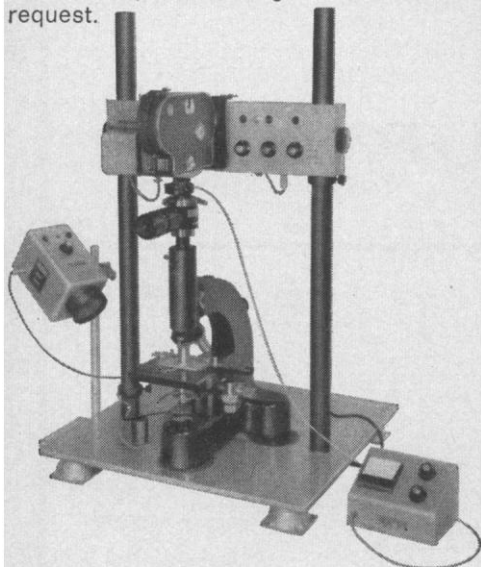
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National Meetings

June

12-23 Aug. **Fertilization and Gamete Physiology**, Woods Hole, Mass. (C. B. Metz, Inst. of Molecular Evolution, Univ. of Miami, 521 Anastasia, Coral Gables, Fla. 33134)

14-17. **Lepidopterist Soc.**, 12th, East Lansing, Mich. (J. P. Donahue, Dept. of Entomology, Michigan State Univ., East Lansing 48823)

15-18. Northeastern Section of the **Botanical Soc. of America**, Cortland, N.Y. (R. K. Zuck, Dept. of Botany, Drew Univ., Madison, N.J. 07940)

15-18. Harry Steenbock Symp. on the **Fat Soluble Vitamins**, Madison, Wis. (H. F. DeLuca, Biochemistry Dept., Univ. of Wisconsin, Madison 53706)

15-18. **Marine Technology Soc.**, Miami Beach, Fla. (M. H. Simons, 1730 M St., NW, Washington, D.C. 20036)

15-18. **American Proctologic Soc.**, Boston, Mass. (Administrative Secretary, The Society, 320 W. Lafayette, Detroit, Mich. 48226)

15-19. **National Industrial Pharmaceutical Research Conf.**, Land O'Lakes, Wis. (W. L. Blockstein, University Extension, 190 Pharmacy Bldg., Univ. of Wisconsin, Madison 53706)

15-21. **American Astronautical Soc.**, Denver, Colo. (G. W. Morgenthaler, Box 179, Mail No. 1609, Martin-Marietta Corp., Denver 80201)

16. **Rocky Mountain National Park Seminar**, Estes Park, Colo. (T. C. Thomas, Executive Secretary, Rocky Mountain Nature Assoc., Box 147, Estes Park 80517)

16-18. **Cryogenic Engineering Conf.**, Los Angeles, Calif. (R. A. Cliffe, Executive Secretary, National Acad. of Sciences, 2101 Constitution Ave., NW, Washington, D.C. 20418)

16-18. **International Symp. on Computer Applications in the Earth Sciences**, Lawrence, Kan. (D. F. Merriam, Kansas Geological Survey, Univ. of Kansas, Lawrence 66044)

16-18. **Rock Mechanics**, 11th symp., Berkeley, Calif. (Continuing Education in Engineering, Univ. of California Extension, 2223 Fulton St., Berkeley 94720)

16-20. **American Carbon Committee**, 9th biennial conf., Boston, Mass. (A. I. Medalia, 9th Carbon Conference, Cabot Corp., Billerica, Mass. 01821)

16-20. **Technical Writers' Inst.**, 17th, Troy, N.Y. (J. R. Gould, Rensselaer Polytechnic Inst., Troy 12180)

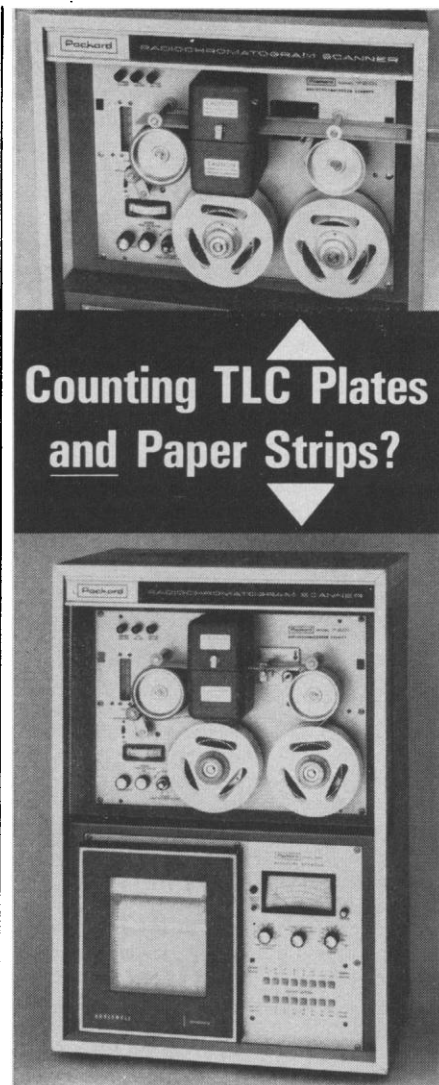
16-27. **Engineering Systems Analysis**, Cambridge, Mass. (Center for Advanced Engineering Study, Room 9-257, Massachusetts Inst. of Technology, Cambridge)

18-20. **American Physical Soc.**, Rochester, N.Y. (E. Efran, Office of Public Relations, Univ. of Rochester, Rochester 14627)

18-20. **Bibliographical Soc. of America**, Philadelphia, Pa. (W. H. Bond, Houghton Library, Harvard Univ., Cambridge, Mass. 02138)

18-21. **Western Soc. of Malacologists**, 2nd, Pacific Grove, Calif. (P. O. Hughes, 12871 Foster Rd., Los Alamitos, Calif. 90720)

19. **Marine Temperature Measurements**, Miami Beach, Fla. (A. E. Wheeler, Chair-



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man, Oceanographic Instrumentation Committee, North American Rockwell Corp., 350 S. Magnolia Ave., Long Beach, Calif. 90802)

19-21. American Assoc. of **Bioanalysts**, New Orleans, La. (The Society, 805 Ambassador Bldg., St. Louis, Mo. 63101)

20-22. Graduate Research Conf. in **Genetics and Cell Biology**, Middletown, Conn. (Research Conf. Committee, Shalin Lab. of Biology, Wesleyan Univ., Middletown 06457)

20-22. American Assoc. of **Neuropathologists**, New Haven, Conn. (S. M. Arosen, Dept. of Pathology, Downstate Medical Center, 450 Clarkson Ave., Brooklyn, N.Y. 11203)

22-26. **Air Pollution Control Assoc.**, 62nd, New York, N.Y. (B. Oliver, Hotel Americana, Seventh Ave. at 52nd St., New York)

22-27. American Soc. of **Medical Technologists**, Philadelphia, Pa. (S. B. Friedheim, Executive Director, The Society, Suite 1600, Hermann Professional Bldg., Houston, Tex. 77025)

22-27. Institute of Electrical and Electronic Engineers Summer **Power Mtg.**, Dallas, Tex. (R. S. Miner, Dallas Power & Light Co., 1506 Commerce St., Dallas 75201)

22-27. American Soc. for **Testing and Materials**, 72nd, Atlantic City, N.J. (T. A. Marshall, Jr., The Society, 1916 Race St., Philadelphia, Pa. 19103)

23-25. Workshop on **Computer-Based Chemical and Biological Information**, Athens, Ga. (Chemical and Biological Information, Retrieval Workshop, Computer Center, Univ. of Georgia, Athens 30601)

23-25. American **Water Resources Assoc.**, 3rd symp., Edmonton, Alberta, Canada. (A. H. Laycock, Dept. of Geography, Univ. of Alberta, Edmonton)

23-26. American Soc. for **Engineering Education**, 77th, University Park, Pa. (The Society, Suite 838, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

23-26. **Law of the Sea Inst.**, 4th conf., Kingston, R.I. (L. M. Alexander, Univ. of Rhode Island, Kingston 02881)

23-26. American **Orthopaedic Assoc.**, Hot Springs, Va. (A. B. Ferguson, 125 Desoto St., Pittsburgh, Pa. 15213)

23-28. Regional Conf. on **Automata Theory and Computational Complexity**, Plattsburgh, N.Y. (W. E. Hartnett, Dept. of Mathematics, State Univ. of New York, College of Arts and Science, Plattsburgh 12901)

24-26. **Navigation in a Changing Environment**, 25th annual, N.Y. (R. Freeman, Inst. of Navigation, 711 14th St., NW, Washington, D.C. 20005)

24-26. **Trace Substances in Environmental Health Conf.**, Columbia, Mo. (D. D. Hemphill, 1-43 Agriculture Bldg., Univ. of Missouri, Columbia 65201)

25-27. Art of **Glassblowing**, 14th symp., Albany, N.Y. (J. W. Baum, 200 Highland Ave., Rensselaer, N.Y. 12144)

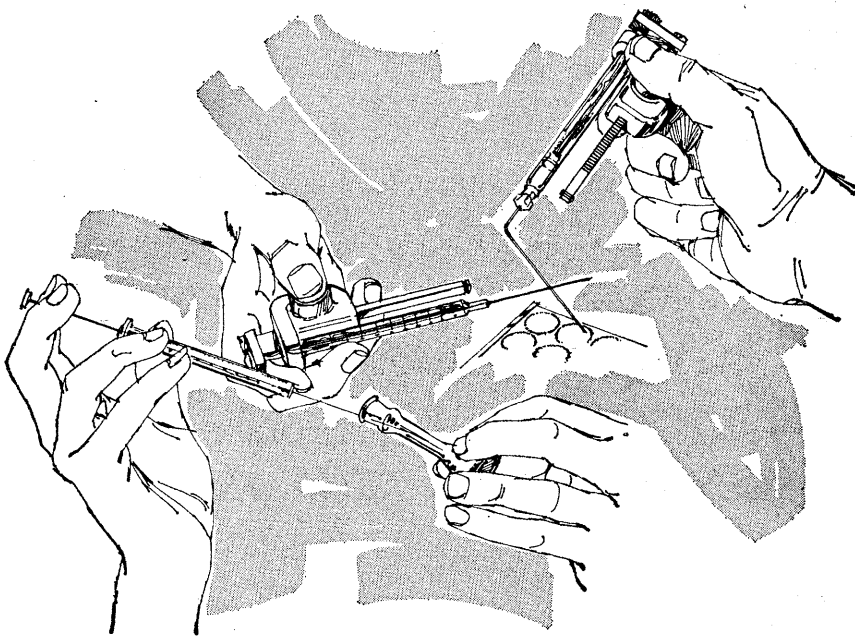
27-29. **Endocrine Soc.**, New York, N.Y. (N. L. Mattox, 1211 N. Shartel, Oklahoma City, Okla. 73103)

30-1. Applications of **Continuous System Simulation Languages**, San Francisco, Calif. (M. Burwen, Basic Computing Arts, Inc., 2680 Bayshore Frontage Rd., Mountain View, Calif. 94040)

30-2. Action of **Hormones from Molecules to Population Control**, Detroit, Mich.



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30-2. **Rudolfs Research Conf.**, 5th, New Brunswick, N.J. (R. Locandro, Office of Resident Instruction, Room 206, Rutgers—The State Univ., New Brunswick 08903)

July

5-11. **Tri-Organizational Science and Clinical Rehabilitation Conf.**, 13th, Albany, N.Y. (J. Timmerman, 1520 Van Hoesen Rd., Castleton-on-Hudson, N.Y. 12033)

6-10. **Forest Products Research Soc.**, 23rd, San Francisco, Calif. (K. E. Huddleston, The Society, 2801 Marshall Court, Madison, Wis. 53705)

7-18. **Conference on Environmental Effects on Antenna Performance**, Boulder, Colo. (P. Blacksmith, AFCRL (CRD), L. G. Hanscom Field, Bedford, Mass. 01730)

7-18. **Science for Clergymen**, Oak Ridge, Tenn. (Special Projects Office, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge 37830)

8-11. **Nuclear and Space Radiation Effects**, University Park, Pa. (E. A. Burke, AFCRL (CRWH), Stop 30, L. G. Hanscom Field, Bedford, Mass. 01730)

9-12. **National Soc. of Professional Engineers**, Kansas City, Mo. (P. H. Robbins, The Society, 2029 K St., NW, Washington, D.C. 20006)

10-13. **American Therapeutic Soc.**, 70th, New York, N.Y. (R. T. Smith, The Society, 37 Narbrook Park, Narberth, Pa. 19072)

11-12. **Programming Language Users Conf.**, Binghamton, N.Y. (J. A. Higgins, Computer Center, State University of New York, Binghamton 13901)

12-13. **Society for Surgery of the Alimentary Tract**, 10th, New York, N.Y. (J. V. Prohaska, The Society, 950 E. 59 St., Chicago, Ill. 60637)

12-13. **Society for Vascular Surgery**, New York, N.Y. (R. M. Nelson, Surgical Research Lab., Latter-Day Saints Hospital, Salt Lake City, Utah 84103)

13-16. **Physiology and Biochemistry of Muscle as a Food**, Madison, Wis. (E. J. Briskey, Muscle Biology Lab., College of Agricultural and Life Sciences, Univ. of Wisconsin, Madison 53706)

13-17. **American Medical Assoc.**, New York, N.Y. (W. E. Burmeister, The Association, 535 N. Dearborn St., Chicago, Ill. 60610)

14-16. **Sanitary Engineering Research, Development, and Design**, 2nd natl. symp., Ithaca, N.Y. (A. W. Lawrence, 219 Hollister Hall, Cornell Univ., Ithaca 14850)

14-18. **Symposium on Ecology as a Guide to Social Change**, New Haven, Conn. (Z. W. White, Yale Univ., New Haven 06511)

14-18. **Symposium on the Nature, Induction, and Utilization of Mutations in Plants**, Pullman, Wash. (J. H. Kane, Div. of Technical Information, U.S. Atomic Energy Commission, Washington, D.C. 20545)

14-18. **Persistence of Food Habits: Problem in the War on Hunger**, Milwaukee, Wis. (Engineering Foundation Re-

search Conf., Room 308, 345 E. 47 St., New York 10017)

16-18. **Electron Probe Analysis Soc. of America**, 4th, Pasadena, Calif. (A. A. Chodos, Geology Dept., California Inst. of Technology, Pasadena 91109)

18-19. **Rocky Mountain Cancer Conf.**, Denver, Colo. (D. G. Derry, Colorado Medical Soc., 1809 E. 18th Ave., Denver 80218)

20-25. **Association for the Advancement of Medical Instrumentation**, Chicago, Ill. (J. J. Post, 19 Brook Rd., Needham Heights, Mass. 02194)

21. **Group Representations in Mathematics and Physics**, Seattle, Wash. (R. S. Paul, Battelle Memorial Inst., 4000 NE 41st St., Seattle 98105)

21-25. **Transportation Systems Analysis**, Milwaukee, Wis. (Engineering Foundation Research Conferences, Room 308, 345 E. 47 St., New York 10017)

23-25. **Montana Radiological Soc. Symp.**, Glacier National Park. (C. H. Agnew, 1231 N. 29th St., Billings, Mont. 59101)

25-26. **Linguistic Soc. of America**, Urbana, Ill. (R. B. Lees, Dept. of Linguistics, Univ. of Illinois, Urbana 61801)

28-29. **Society of Research Administrators**, San Francisco, Calif. (K. Hartford, Biology Dept., Yale Univ., 102 Kline Biology Tower, New Haven, Conn. 06520)

28-1. **Instrumentation Science**, research conf., Geneva, N.Y. (T. E. Tremellen, Education and Research Services, Instrument Soc. of America, 530 William Penn Pl., Pittsburgh, Pa. 15219)

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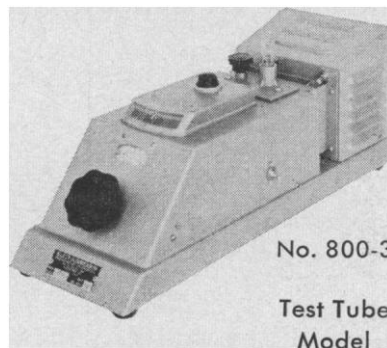
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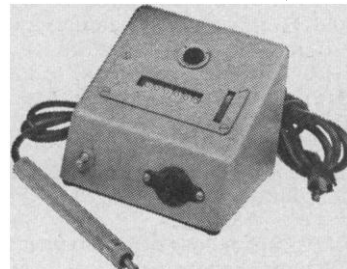
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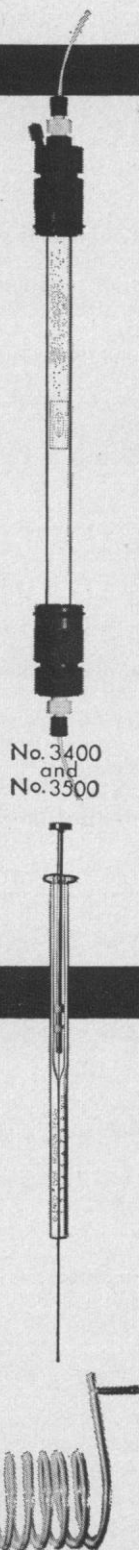
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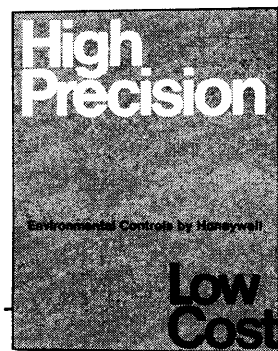
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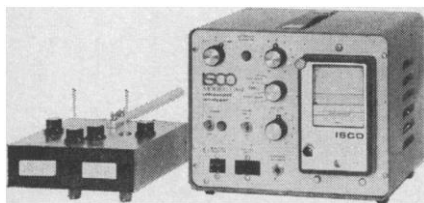
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28-1. **Quality Engineering and Research**, Milwaukee, Wis. (Engineering Foundation Research Conferences, Room 308, 345 E. 47 St., New York 10017)

August

3-6. **National Heat Transfer Conf.**, 11th, Minneapolis, Minn. (D. C. Kelly, American Inst. of Chemical Engineers, 345 E. 47 St., New York 10017)

3-7. **Society for Cryobiology**, 6th annual, Buffalo, N.Y. (R. E. Greco, 3175 Staley Rd., Grand Island, N.Y. 14072)

4-5. **Aerospace Structures Design Conf.**, Seattle, Wash. (J. R. Fuller, Boeing Co., P.O. Box 707, Ortn. 6-8650, M/S 77-89, Renton, Wash. 98055)

4-6. **Deterioration and Preservation of Library Materials**, 34th annual conf., Chicago, Ill. (H. W. Winger, Graduate Library School, Univ. of Chicago, 1116 E. 59 St., Chicago 60637)

4-8. **Molecular Biology and Pathology**, 2nd conf., Saratoga Springs, N.Y. (K. T. Lee, Dept. of Pathology, Albany Medical College, Albany, N.Y. 12208)

5-8. **World Conf. on Records**, Salt Lake City, Utah. (S. E. Beesley, 1030 S. Orchard Dr., Bountiful, Utah 84010)

6-8. **Applications of X-Ray Analysis Conf.**, Denver, Colo. (B. L. Henke, Div. of Metallurgy, Denver Research Inst., Denver 80210)

10-13. **Soil Conservation Soc. of America**, Fort Collins, Colo. (H. W. Pritchard, 7515 N.E. Ankeny Rd., Ankeny, Iowa 50021)

11-13. **Symposium on Crystal Growth**, Washington, D.C. (H. S. Peiser, Room B316, Bldg. 223, National Bureau of Standards, Washington, D.C. 20234)

11-14. **Society of Photo-Optical Instrumentation Engineers**, 14th annual technical symp., San Francisco, Calif. (H. L. Kasnitz, SPIE Symposium, P.O. Box 288, Redondo Beach, Calif. 90277)

12. **American Astronomical Soc.**, Albany, N.Y. (G. C. McVittie, Univ. of Illinois Observatory, Urbana 61801)

17-22. **Animal Behavior Soc.**, Burlington, Vt. (B. Dane, Tufts Univ., Medford, Mass.)

17-22. **American Inst. of Biological Science**, Burlington, Vt. (J. R. Olive, 3900 Wisconsin Ave., NW, Washington, D.C. 20016)

17-22. **American Soc. of Zoologists**, Burlington, Vt. (J. R. Shaver, Dept. of Zoology, Michigan State Univ., East Lansing 48823)

18. **American Soc. of Pharmacognosy**, Corvallis, Ore. (P. Catalfomo, School of Pharmacy, Oregon State Univ., Corvallis 97331)

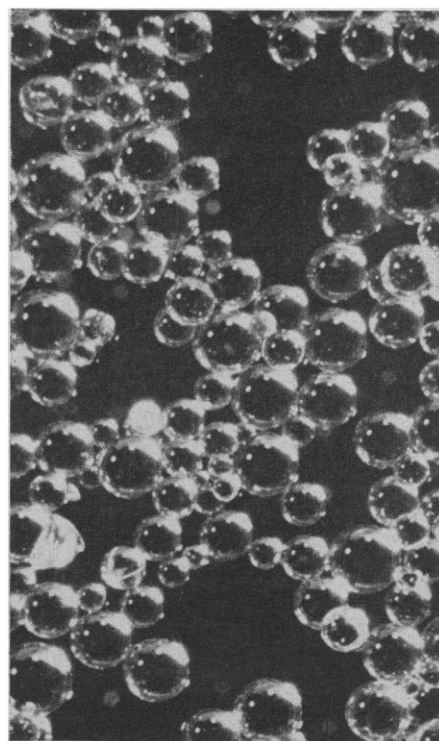
18-20. **Genetics Soc. of America**, Madison, Wis. (B. Wallace, Dept. of Genetics, Cornell Univ., Ithaca, N.Y. 14850)

18-21. **American Hospital Assoc.**, Chicago, Ill. (E. L. Crosby, 840 N. Lake Shore Dr., Chicago 60611)

18-22. **New England Assoc. of Chemistry Teachers**, 31st summer conf., Plymouth, N.H. (M. P. Olmsted, Publicity Chairman, NEACT, 9 Brookmont Dr., Wilbraham, Mass. 01095)

18-22. **Marine Biomedicals Symp.**, 10th annual, Corvallis, Ore. (P. Catalfomo, School of Pharmacy, Oregon State Univ., Corvallis 97331)

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18-22. American **Phytopathological** Soc., Spokane, Wash. (J. P. Fulton, Dept. of Plant Pathology, Univ. of Arkansas, Fayetteville 72701)

18-22. National Goals in **Water Pollution Control**, Santa Barbara, Calif. (F. A. Butrico, Coordinator of Environmental Sciences Programs, Battelle Memorial Inst., Columbus Labs., Washington, D.C.)

19. **Biometric** Soc., western North American regional, Pullman, Wash. (J. S. Williams, Statistical Lab., Colorado State Univ., Fort Collins)

19-22. **Biometric** Soc., eastern North American regional, New York, N.Y. (D. G. Gosslee, P.O. Box 713, Oak Ridge, Tenn. 37830)

19-22. American Assoc. of **Clinical Chemists**, 21st natl. mtg., Denver, Colo. (J. Preston, P.O. Box 18323, Capitol Hill Station, Denver 80218)

19-22. Western **Electronic** Show and Convention, San Francisco, Calif. (D. W. Martin, WESCON, 3600 Wilshire Blvd., Los Angeles, Calif. 90005)

19-22. American Soc. for **Horticultural Science**, 44th annual, Pullman, Wash. (C. Blackwell, The Society, 615 Elm St., St. Joseph, Mich. 49085)

19-22. American **Statistical** Assoc., 129th, New York, N.Y. (D. C. Riley, The Association, 810 18th St., NW, Washington, D.C. 20006)

19-23. American **Fern** Soc., Seattle, Wash. (A. M. Evans, Dept. of Botany, Univ. of Tennessee, Knoxville 37916)

20-22. American Soc. of **Civil Engineers**, Hydraulics Conf., Logan, Utah. (ASCE Hydraulics Conf., % Utah Water Research Lab., Utah State Univ., Logan 84321)

21-23. American **Nature Study** Soc., Pullman, Wash. (J. Geisler, Milewood Rd., Verbank, N.Y. 12585)

24-25. **Programming Languages Definition**, San Francisco, Calif. (J. A. Painter, IBM Corp., Research Lab., Dept. 978, Bldg. 025, Monterey and Cottle Rds., San Jose, Calif. 95114)

24-27. **Alaska Div., AAAS**, College. (V. Fisher, Inst. of Social, Economic and Government Research, Univ. of Alaska, College 99701)

24-27. **Defects in Electronic Materials for Devices**, Boston, Mass. (D. P. Seraphim, IBM Components Div., Bldg. 300, Hopewell Junction, N.Y. 12533)

24-27. Conference on **Food-Drugs from the Sea**, Kingston, R.I. (G. F. Greene, Jr., % Professional Services, Abbott Labs., North Chicago, Ill. 60064)

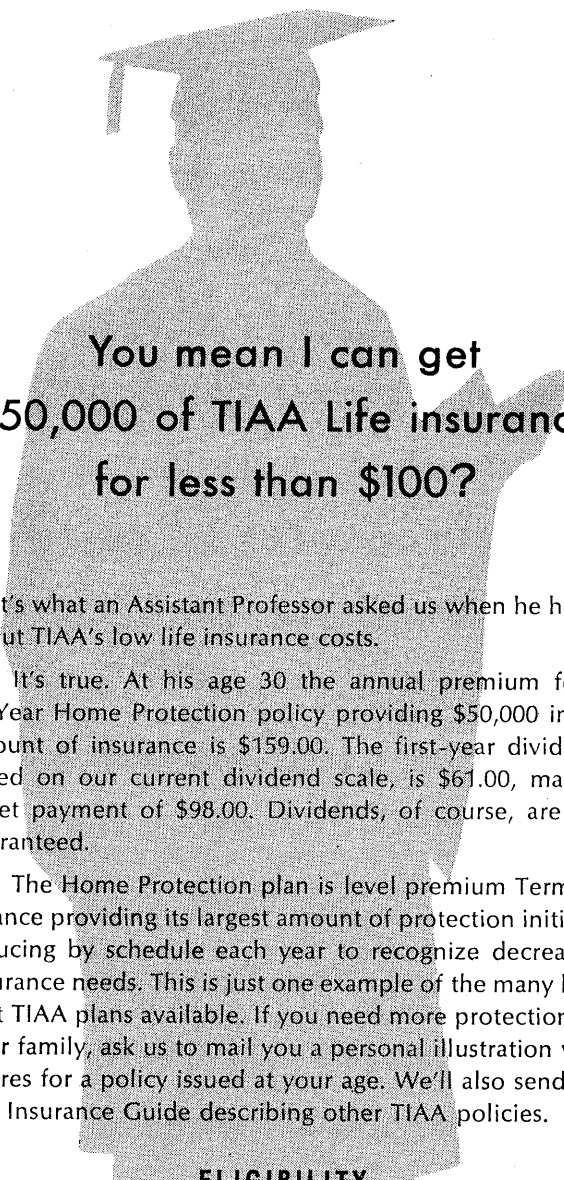
24-29. **Gerontological** Soc., Washington, D.C. (E. Kaskowitz, The Society, 660 S. Euclid St., St. Louis, Mo. 63110)

24-2. **Botanical** Soc. of America, Seattle, Wash. (R. C. Starr, Dept. of Botany, Indiana Univ., Bloomington 47401)

25-27. **Applied Mechanics** Western Conf., Albuquerque, N.M. (A. B. Conlin, Jr., Technical Depts., 345 E. 47 St., New York 10017)

25-27. **Mathematical** Assoc. of America, Eugene, Ore. (A. B. Willcox, The Association, 1225 Connecticut Ave., NW, Washington, D.C. 20036)

25-28. **Chromosphere-Corona Transition**, Boulder, Colo. (J. W. Evans, Sacramento Peak Observatory, Sunspot, N.M. 88349)



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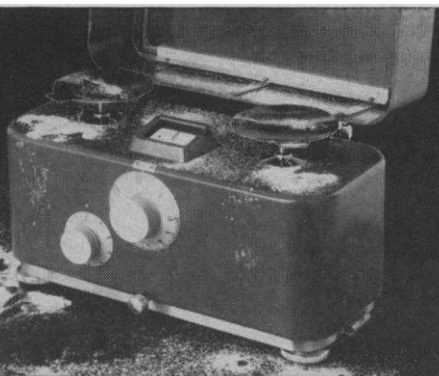
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26-28. Engineering Applications of **Electronic Phenomena** Conf., Ithaca, N.Y. (H. J. Carlin, School of Electrical Engineering, Cornell Univ., Ithaca 14850)

26-29. **Electron Microscope** Soc. of America, St. Paul, Minn. (G. G. Cocks, Olin Hall, Cornell Univ., Ithaca, N.Y. 14850)

28-1. Society of **Petroleum Engineers**, Denver, Colo. (J. B. Alford, 6200 N. Central Expressway, Dallas, Tex. 75206)

31-4. **Psychometric** Soc., Washington, D.C. (W. B. Schrader, Educational Testing Service, Princeton, N.J. 08540)

31-6. **Quantum Solids: Hydrogen and Helium**, Aspen, Colo. (J. C. Raich, Colorado State Univ., Fort Collins 80521)

International and Foreign Meetings

July

8-10. **Rational Development and Application of Drugs**, Nijmegen, Netherlands. (E. J. Ariens, Geert Grooteplein 21, Nijmegen)

12-19. International Inst. of **Welding**, 22nd, Kyoto, Japan. (P. D. Boyd, The Institute, 54 Princes Gate, Exhibition Rd., London, S.W.7, England)

13-19. **Clinical Pathology**, 7th intern. congr., Montreal, Canada. (VII Intern. Congr. of Clinical Pathology, P.O. Box 8, Station "G" Montreal 18)

14-16. **Non-conventional Electron Microscopy**, Oxford, England. (Inst. of Physics and the Physical Soc., 47 Belgrave Sq., London, S.W.1, England)

14-17. International **Turfgrass Research** Conf., Yorkshire, England. (J. B. Beard, Dept. of Crop Sciences, Michigan State Univ., East Lansing)

14-18. International **Atomic Absorption Spectroscopy** Conf., Sheffield, Yorks, England. (Conference Secretary, Soc. for Analytical Chemistry, 9-10, Savile Row, London, W.1, England)

14-18. **Chemical Control of the Human Environment**, intern. symp., Johannesburg, South Africa. (Intern. Union for Pure and Applied Chemistry, CSIR, Box 395, Pretoria, South Africa)

14-18. **Pharmacology**, 4th intern. congr., Basel, Switzerland. (F. J. Bové, Congr. on Pharmacology 1969, Postfach 30, 4000 Basel 4)

15-18. **Nuclear Reactions Induced by Heavy Ions**, Heidelberg, Germany. (H. v. Buttler, Dept. of Physics, Ruhr Univ., D 463 Bochum, Germany)

21-24. International Conf. on **Clustering Phenomena in Nuclei**, Bochum, Germany. (P. Kramer, Theoretical Physics Dept., Gartenstrasse 47, D 74 Tübingen, Germany)

27-2. **Psychology**, 19th intern. congr., London, England. (Secretariat, 19th Intern. Congr., 17 Gordon Sq., London W.C.1)

27-3. **Hemorheology**, 2nd intern. conf., Heidelberg, Germany. (G. Bugliarello, PH 123-C, Carnegie-Mellon Univ., Pittsburgh, Pa. 15213)

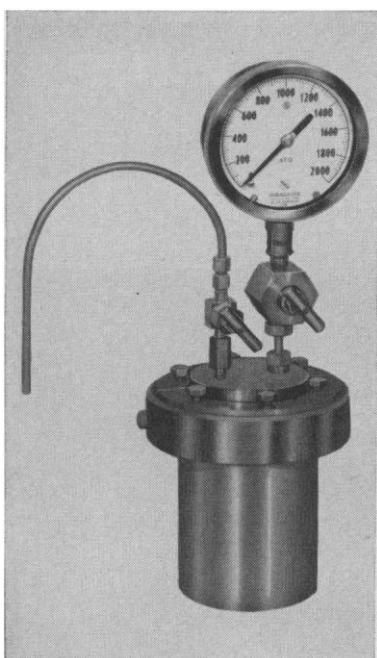
28-30. **Computational Physics**, Berkshire, England. (B. McNamara, United Kingdom Atomic Energy Agency, Culham Lab., Culham, near Abingdon, Berkshire)

28-1. **Fission**, Vienna, Austria. (H. v. Buttler, Dept. of Physics, Ruhr Univ., D 463 Bochum, Germany)

28-2. International Conf. on the **Physics**

SCIENCE, VOL. 164

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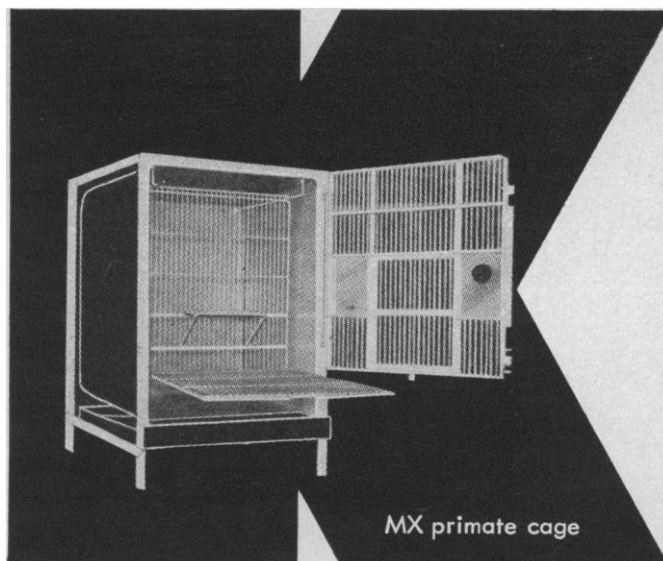
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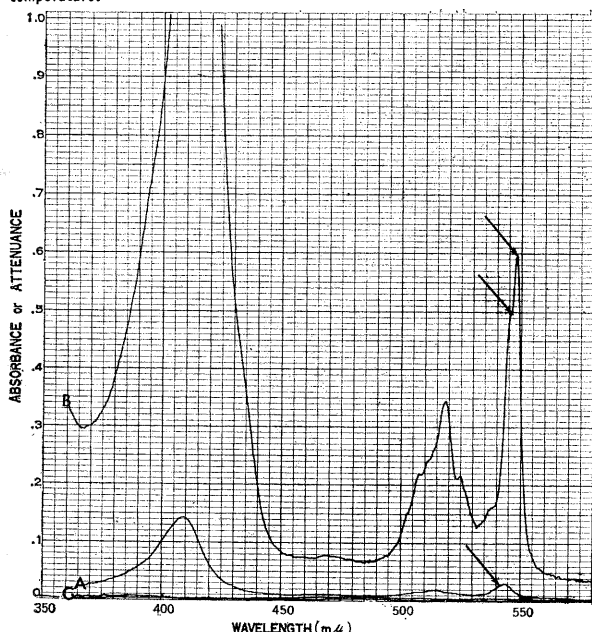
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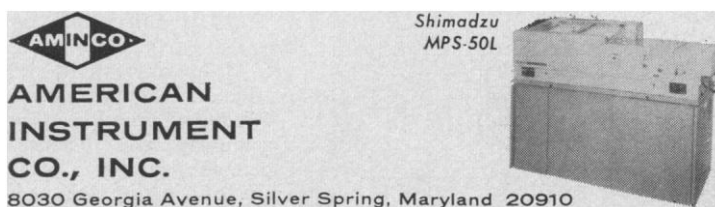
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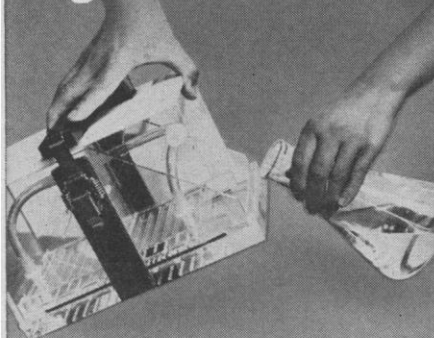
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of Electron and Atomic Collisions, Cambridge, Mass. (I. Amdur, Dept. of Chemistry, Massachusetts Inst. of Technology, Cambridge 02139)

August

4-7. International Conf. on Raman Spectroscopy, Ottawa, Ont., Canada. (J. A. Koningstein, Chemistry Dept., Carleton Univ., Ottawa)

4-9. International Rhinologic Soc., Mexico, D.F. (G. H. Drumheller, 1515 Pacific, Everett, Wash. 98201)

4-15. Vertebrate Evolution: Mechanism and Process, Istanbul, Turkey. (M. K. Hecht, Dept. of Biology, Queens College, Flushing, N.Y. 11367)

10-14. International Conf. on Medical Physics, 2nd, Boston, Mass. (E. W. Webster, Dept. of Radiology, Massachusetts General Hospital, Boston 02114)

10-15. Chemotherapy, 6th intern. congr., Tokyo, Japan. (W. P. Boger, P.O. Box 265, Princeton, N.J. 08540)

11-15. International Conf. of Medical Physics, Boston, Mass. (W. T. Maloney, Suite 620, 6 Beacon St., Boston 02108)

12-15. International Photoconductivity Conf., 3rd, Palo Alto, Calif. (G. S. Picus, Hughes Research Labs., 3011 Malibu Canyon Rd., Malibu, Calif. 90265)

17-21. International Assoc. of Milk, Food and Environmental Sanitarians, Louisville, Ky. (H. L. Thomasson, Box 437, Shelbyville, Ind. 46176)

20-21. International Electronic Circuit Packaging Symp., San Francisco, Calif. (IECPS Papers Selection Committee, % WESCON, 3600 Wilshire Blvd., Los Angeles, Calif. 90005)

20-27. International Union of Pure and Applied Chemistry, 22nd, Sydney, Australia. (J. R. Price, Box 2249U, G.P.O. Melbourne, Australia 3001)

21-28. International Symp. on Statistical Ecology, New Haven, Conn. (G. P. Patil, Dept. of Statistics, 302 McAllister Bldg., Pennsylvania State Univ., University Park, Pa. 16802)

24-26. Laurentian Hormone Conf., Mont Tremblant, P.Q., Canada. (Laurentian Hormone Conf. Office, 222 Maple Ave., Shrewsbury, Mass. 01545)

24-28. Mobilizing Canada's Agricultural Resources, 49th, Saskatoon, Sask. (R. H. Burrage, 1969 AIC Convention Committee, Box 800, Sub. P.O. No. 6, Saskatoon, Sask.)

24-29. Gerontology, 8th intern. congr., Washington, D.C. (N. W. Shock, 9650 Rockville Pike, Bethesda, Md. 20014)

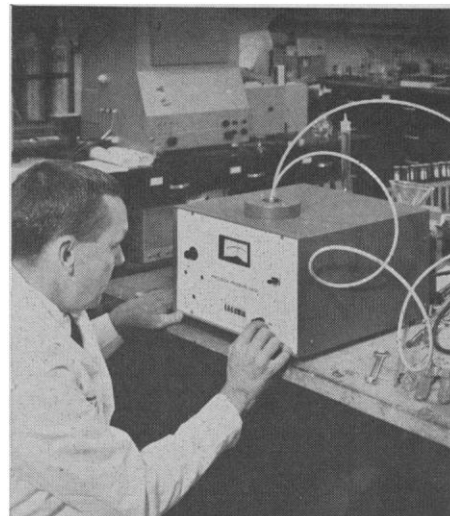
25-29. International Conf. on Luminescence, Newark, Del. (F. Williams, Dept. of Physics, Univ. of Delaware, Newark 19711)

24-29. Neuropathology, 6th intern. congr., Copenhagen, Denmark. (E. Christensen, Universitets Psykiatriske Lab., Rigshospitalet, Copenhagen)

25-29. International Agricultural Aviation Congr., 4th, Kingston, Ont., Canada. (K. M. Ward, National Research Council of Canada, Ottawa, Ont.)

25-30. International Symp. on Space Technology and Science, 8th, Tokyo, Japan. (T. Hayashi, Dept. of Aeronautics, Univ. of Tokyo, Bunkyo-ku, Tokyo 113, Japan)

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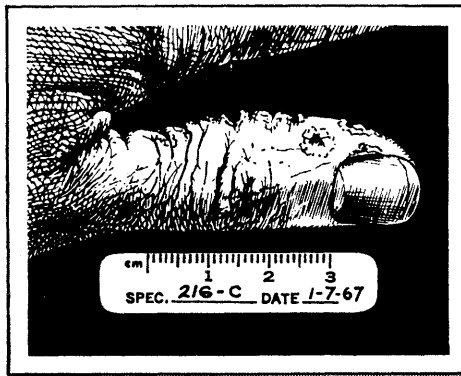
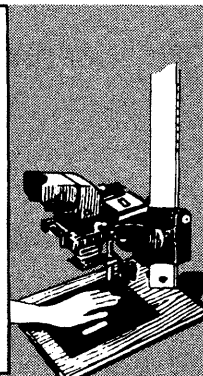
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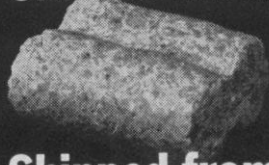
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Society, London, 1968. vi + 470 pp., illus. + 20 plates. \$11.

The Burge and Minnechaduzza Clarendonian Mammalian Faunas of North-Central Nebraska. S. David Webb. University of California Press, Berkeley, 1969. viii + 192 pp., illus. Paper, \$6. University of California Publications in Geological Sciences, vol. 78.

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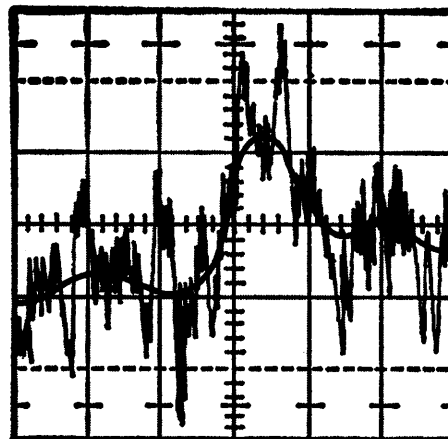
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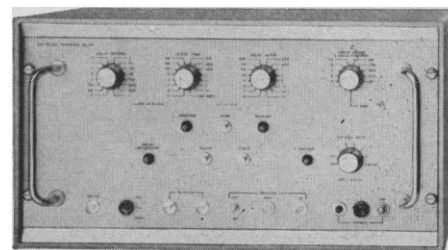
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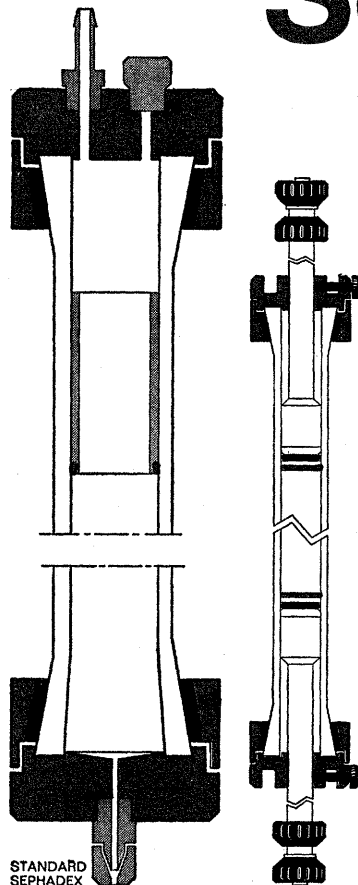
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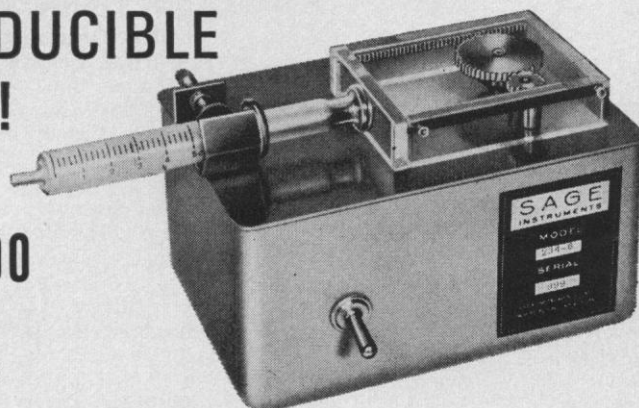
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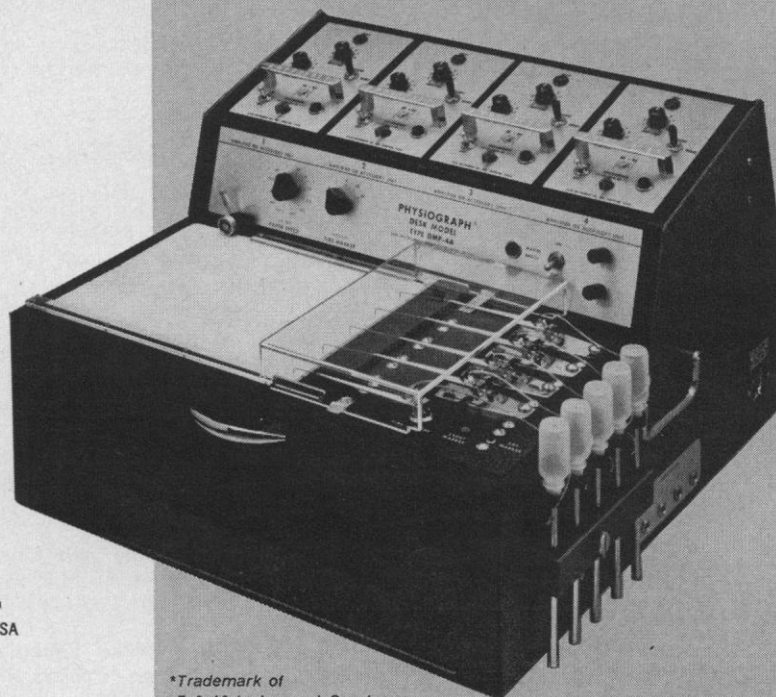
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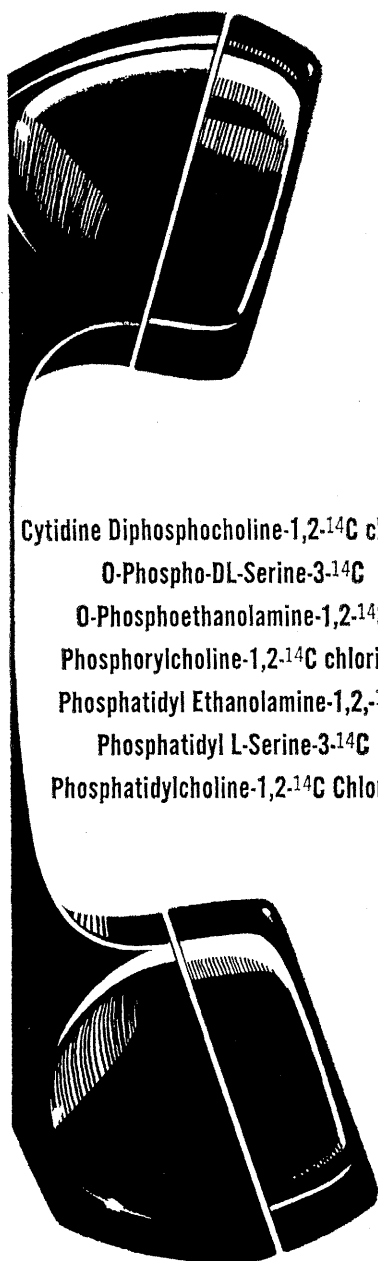


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Social Thought in the Soviet Union. Alex Simirenko, Ed. Quadrangle, Chicago, 1969. viii + 440 pp. \$14.95.

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Trigonometric Series. Volumes 1 and 2 combined. A. Zygmund. Cambridge University Press, New York, ed. 2, 1968. xiv + 384 pp., viii + 366 pp. \$17.50.

Turbulent Jets of Air, Plasma, and Real Gas. G. N. Abramovich, Ed. Translated from the Russian edition (Moscow, 1967). Consultants Bureau, New York, 1969. viii + 144 pp., illus. Paper, \$22.50.

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