

# SCIENCE

6 March 1964

Vol. 143, No. 3610

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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## When will it wear out?

Most things we know about—and this includes biological systems—begin to wear out as soon as they go into service. Survival rates do not follow a Gaussian distribution. Life is not symmetrical. For the person concerned with reliability, the problem is to find a realistic mathematical representation of the wear-out phase of components.

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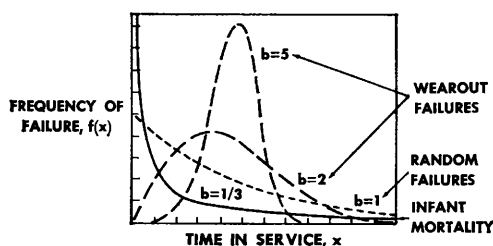
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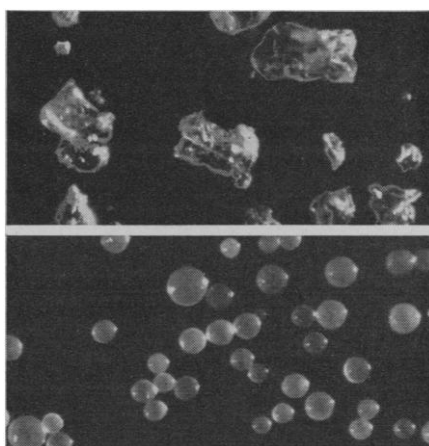


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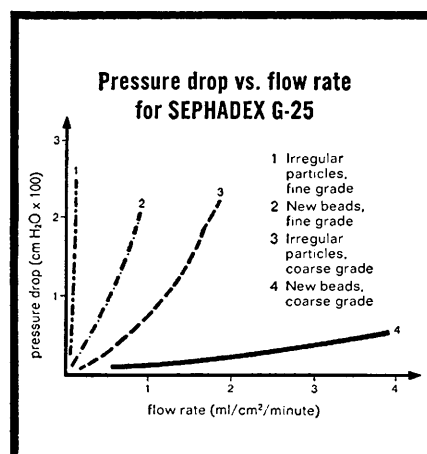


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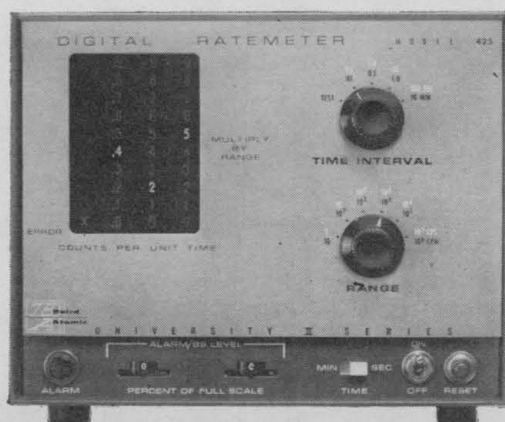
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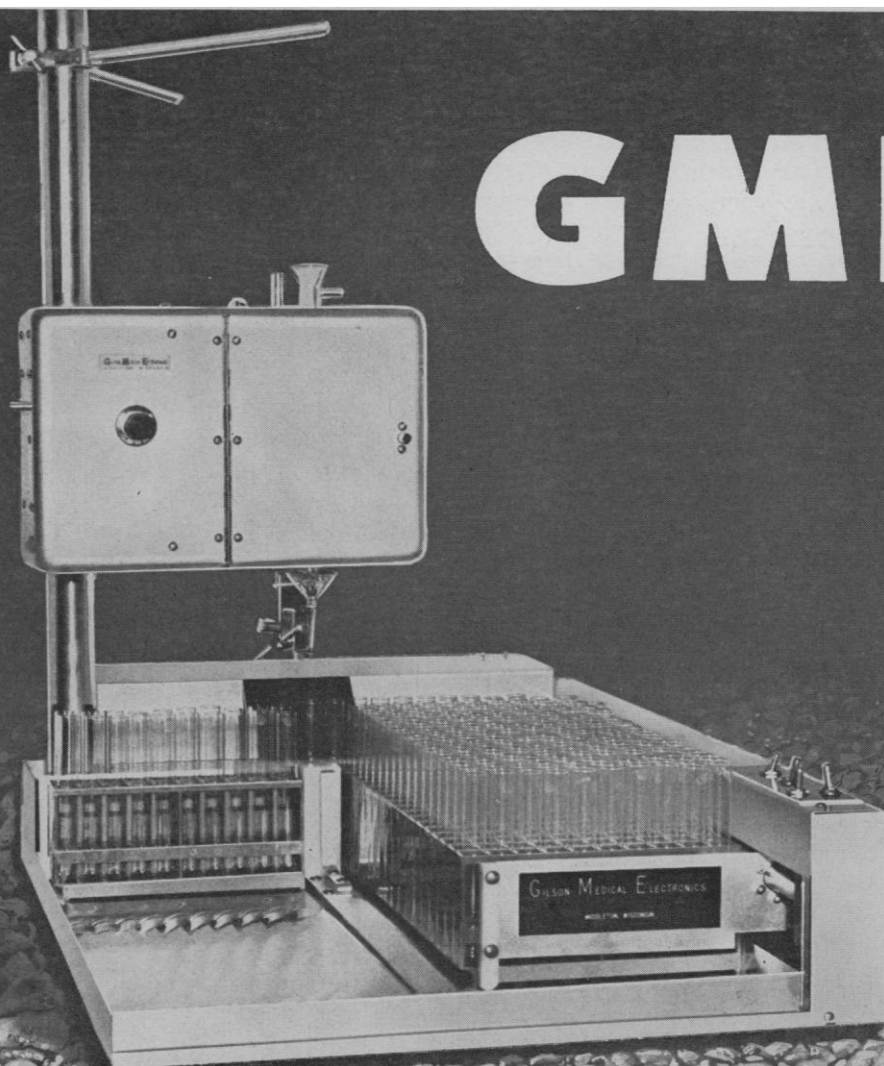
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## Lost Opportunities

Why do social scientists not take better advantage of major and foreseeable social changes to study the processes and effects that are involved? In its tax reduction program the U.S. is undertaking one of the greatest economic and fiscal experiments in modern history. The President has announced a "war on poverty." Integration is bringing a variety of sweeping changes. There will be practically oriented studies related to these programs, and government agencies are likely to study the public policy aspects. But where are the plans for fundamental or basic research on these changes prior to, during, and after their occurrence in order to gain additional understanding of the social processes involved?

Natural scientists are more forehanded. A solar eclipse is preceded by elaborate preparation in order to gain the maximum possible amount of new information during the fleeting moment of the event itself. The International Geophysical Year included arrangements for a world-wide warning system so that observations of solar flares and other particularly significant events could be coordinated on a world-wide basis. The U.S. Geological Survey maintains an observatory on the rim of Kilauea to study the forewarnings, the active processes, and the subsidence of volcanic eruptions.

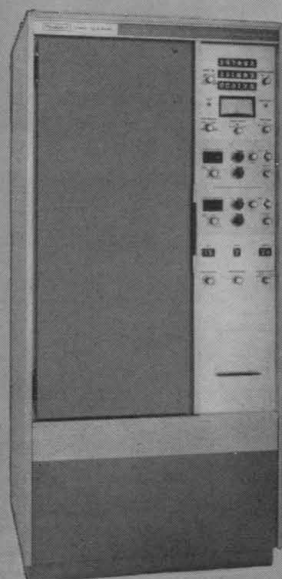
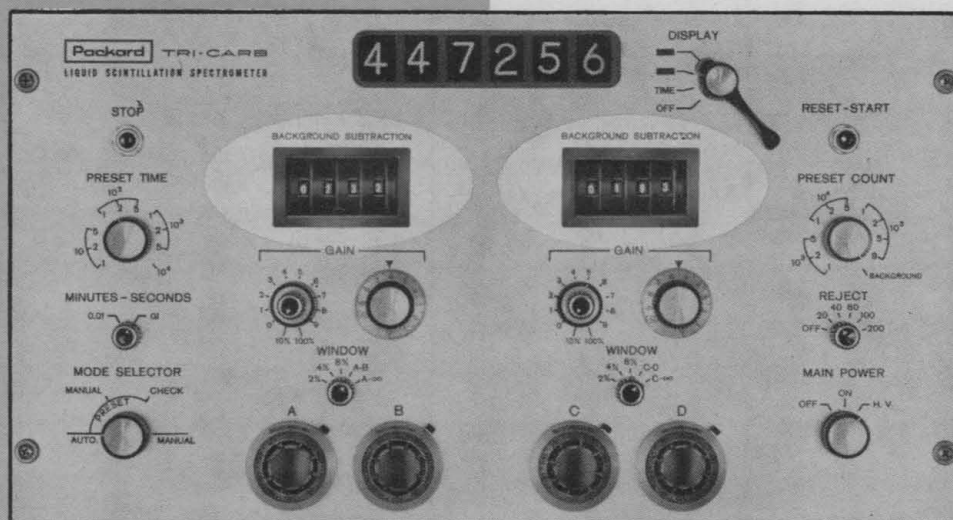
This difference between social scientists and other scientists does not exist because of differences in predictability of the events with which they are concerned. Social change cannot be anticipated with the precise timing of an eclipse, but the timing is often more predictable than it is for a volcanic eruption. The difficulty is not lack of money; there is a fair amount available for research in the social sciences. Nor is it entirely slowness in making funds available; the National Science Foundation gave immediate support to a quickly planned study of reactions to the assassination of President Kennedy.

Perhaps the problem is inexperience in tackling such large issues. If so, help is available from a wealth of experience in the planning and coordination of large-scale efforts in other fields; the large survey groups have relevant experience; and a few major universities could give special attention to such studies.

Maybe the reason is lack of interest. Months before the first satellite went into orbit, two or three of us tried to persuade social scientists to plan a study of popular knowledge about space and of attitudes toward human exploration of space, for then, before the first satellite was successfully launched, was the time to start such a study if information on a before-and-after basis was desired. A biologist and a physicist whom we invited to participate were eager to contribute their specialized knowledge to the planning of such a study, but the social scientists we invited all replied that they were too busy or for some other reason could not take part.

The processes and effects of something like the tax reduction program are, of course, exceedingly complex; to study them in their naturalistic setting is not easy. But complexity and difficulty are not peculiar to the social sciences; it is often easier to analyze a process in vitro than in vivo. Some things, however, can be observed only in their natural settings. In not studying them when they occur, social scientists are losing priceless opportunities to learn more about the processes involved in major social change.—D.W.

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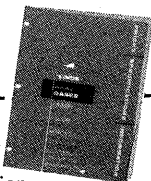
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Experiments, symp., Greenbelt, Md. (C. P. Boyle, Code 207, Goddard Space Flight Center, Greenbelt, Md. 20771)

12-13. **Information Organization**, New Brunswick, N.J. (S. Artandi, Graduate School of Library Service, Rutgers Univ., New Brunswick)

13-14. **Louisiana Acad. of Sciences**, Baton Rouge. (H. J. Bennett, Dept. of Zoology, Louisiana State Univ., Baton Rouge)

13-14. **Institute of Management Sciences**, 11th intern., Pittsburgh, Pa. (IMS, Box 273, Pleasantville, N.Y.)

13-14. **Effects of Shock and Vibration** on the human body, Denver, Colo. (A. E. Paige, Dept. of Electrical Engineering, University of Denver, Denver)

14-15. **Endocrinology**, 2nd annual symp., Salisbury, N.C. (H. Nushan, Medical Service, Veterans Administration Hospital, Salisbury)

14-19. **American Assoc. of Psychiatric Clinics for Children**, annual, Chicago, Ill. (AAPCC, 250 W. 57 St., New York 19)

15-19. **Microcirculation**, 3rd European conf., Jerusalem, Israel. (E. Davis, Capillary Research Laboratory, Hadassah Univ. Hospital, P.O. Box 499, Jerusalem)

15-21. **American Congr. on Surveying and Mapping** and the American Soc. of Photogrammetry, conv., Washington, D.C. (D. Landen, ASP, 4949 Old Chain Bridge Rd., McLean, Va.)

17-18. **Hypervelocity Flight Techniques**, symp., Denver, Colo. (W. G. Howell Denver Research Inst., Univ. of Denver, Denver, Colo. 80210)

17-19. **Society for Nondestructive Testing**, Los Angeles, Calif. (D. E. O'Halloran, Northrop Corp., 1001 E. Broadway, Hawthorne, Calif.)

17-19. **Statistical Assoc. Methods for Mechanized Documentation**, symp., Washington, D.C. (M. E. Stevens, Natl. Bureau of Standards, Washington, D.C. 20234)

17-20. **Society of Biological Chemistry**, Paris, France. (P. Malangeau, Executive Committee, 4, Avenue de l'Observatoire, Paris 6°)

18-19. **Mycotoxins in Foodstuffs**, intern. symp., Cambridge, Mass. (G. N. Wogan, Rm 16-210-B, Massachusetts Inst. of Technology, Cambridge 02139)

18-20. **Chemurgic Council**, 28th natl. conf., Philadelphia, Pa. (J. W. Ticknor, Chemurgic Council, 350 Fifth Ave., New York 1)

18-21. **Latin Medical Union**, intern. congr., Rome, Italy. (B. Urso, Policlinico Umberto I, Viale Policlinico, Rome)

18-21. **American Orthopsychiatric Assoc.**, Chicago, Ill. (M. F. Langer, 1790 Broadway, New York 19)

19-22. **International Assoc. for Dental Research**, 42nd meeting, Los Angeles, Calif. (J. C. Muhler, 1120 W. Michigan St., Indianapolis, Ind. 46202)

20-24. **National Assoc. for Research in Science Teaching**, Chicago, Ill. (G. G. Mallinson, Western Michigan Univ., Kalamazoo)

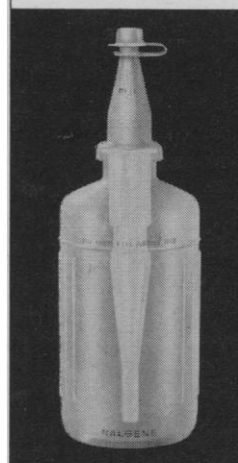
20-24. **National Science Teachers Assoc.**, Chicago, Ill. (R. H. Carleton, 1201 16th St., NW, Washington, D.C.)

21-3. **British Computer Soc.**, conf., Edinburgh, Scotland. (Secretariat, I.E.E., Savoy Pl., London, W.C.2, England)

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21-23. Asian-Pacific Dental Federation, 4th congr., Singapore and Malaya. (B. B. Eraña, Manila Doctors Hospital, Isaac Peral St., P.O. Box 373, Manila, Philippines)

21-24. Cybernetic Medicine, 3rd intern. congr., Naples, Italy. (A. DeChiara, 348, Via Roma, Naples)

22-25. American Assoc. of Dental Schools, 41st annual, Los Angeles, Calif. (AADS, 840 Lake Shore Dr., Chicago 11, Ill.)

23-24. Society for Economic Botany, 5th annual, Chapel Hill, N.C. (D. J. Rogers, New York Botanical Garden, Bronx Park, N.Y.)

23-25. Federation of European Biochemical Societies, 1st, London, England. (FEBS, Lister Inst., Chelsea Bridge Rd., London, S.W.1)

23-26. Institute of Electrical and Electronics Engineers, intern. conv., New York, N.Y. (IEEE, Box A, Lenox Hill Station, New York 21)

23-26. Gas Chromatography, 2nd intern. symp., Houston, Tex. (A. Zlatkis, Dept. of Chemistry, Univ. of Houston, Houston)

23-26. American Physical Soc., Philadelphia, Pa. (K. K. Darrow, Columbia Univ., New York 27)

24-26. Physics and Dynamics of Clouds, conf., American Meteorological Soc., Chicago, Ill. (Miss D. L. Bradbury, Dept. of Geophysical Sciences, Univ. of Chicago, Chicago)

25-27. Aerospace Bearings, USAF-Southwest Research Inst. conf., unclassified, San Antonio, Tex. (P. M. Ku, SwRI, 8500 Culebra Rd., San Antonio)

25-27. Entomological Soc. of America, Northcentral branch, Omaha, Neb. (G. E. Guyer, Dept. of Entomology, Michigan State Univ., East Lansing)

26-28. Michigan Acad. of Science, Arts and Letters, East Lansing (G. G. Mallinson, Western Michigan Univ., Kalamazoo)

26-28. Southern Soc. for Philosophy and Psychology, 56th annual, Lexington, Ky. (D. Calvin, Psychology Dept., Univ. of Kentucky, Lexington)

27-28. American Ethnological Soc., Pittsburgh, Pa. (N. F. S. Woodbury, U.S. National Museum, Smithsonian Institution, Washington, D.C.)

27-28. Seismological Soc. of America, annual, Seattle, Wash. (K. V. Steinbrugge, SSA, 465 California St., San Francisco 4, Calif.)

27-28. Pennsylvania Acad. of Science, University Park, Pa. (P. C. Martin, Point Park Junior College, Pittsburgh, Pa.)

27-29. Society for the Study of Evolution, annual, Chapel Hill, N.C. (H. H. Ross, Illinois Natural History Survey, Urbana)

28-30. American Assoc. of Colleges of Pharmacy, Detroit, Mich. (C. W. Bliven, 1507 M St., NW, Washington, D.C. 20005)

29-2. Association of American Geographers, annual, Syracuse, N.Y. (AAG 1201 16th St., NW, Washington, D.C.)

30-2. American Assoc. of Junior Colleges, Bal Harbour, Fla. (W. G. Shannon, AAJC, 1777 Massachusetts Ave., NW, Washington, D.C. 20036)

31-3. American Assoc. of Anatomists,

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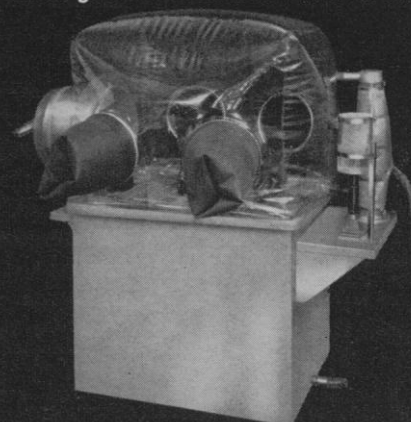
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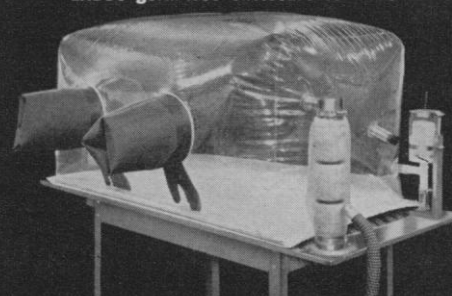
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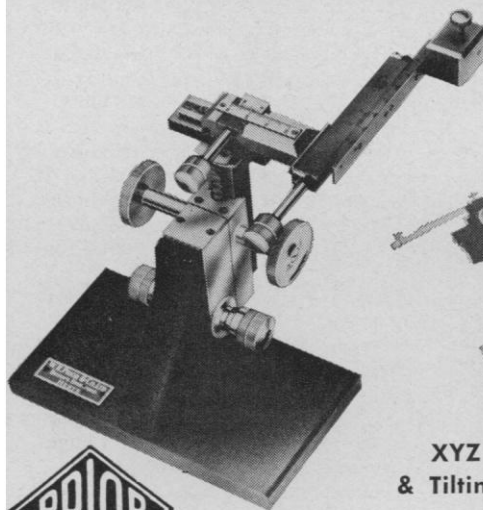


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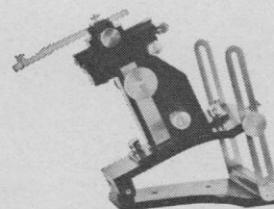


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Denver, Colo. (L. B. Flexner, Dept. of  
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delphia 4)

31-3. **Calcified Tissues**, European symp.,  
Liège, Belgium. (L. J. Richelle, 32, Boule-  
vard de la Constitution, Liège)

April

1. **Thermoplastic Materials**, conf., Soc.  
of Plastics Engineers, Akron, Ohio. (W.  
H. Nicol, RETEC, Goodyear Tire and  
Rubber Co., Akron 16)

1-2. **Engineering Aspects of Magneto-  
hydrodynamics**, symp., Cambridge, Mass.  
(G. S. Janes, Avco Everett Research  
Laboratories, Everett 49, Mass.)

1-2. **Methods for Measurement of  
Weak Beta-Emitters**, Karlsruhe-Leopolds-  
haven, Germany. (Gesellschaft Deutscher  
Chimiker, Gesellschaftsstelle, Postfach  
9075, Frankfurt/Main, Germany)

1-3. **Structures and Materials**, American  
Inst. of Aeronautics and Astronautics,  
5th annual conf., Palm Springs, Calif. (R.  
R. Dexter, AIAA, 2 E. 64 St., New York,  
N.Y.)

1-3. **Optical** Soc. of America, spring  
meeting, Washington, D.C. (M. E. Wurga,  
OSA, 1155 16th St., NW, Washington,  
D.C. 20036)

1-4. National Soc. for **Programmed  
Instruction**, annual, San Antonio, Tex.  
(NSPI Program Committee, Trinity Univ.,  
715 Stadium Dr., San Antonio, Tex.)

1-5. Latin **Oto-Rhino-Laryngology** Soc.,  
15th congr., Bologna, Italy. (G. Motta, Via  
Modica 6, Milan, Italy)

2-3. American Soc. of **Civil Engineers**,  
Engineering Mechanics Div., spring conf.,  
Boston, Mass. (ASCE, 33 W. 39 St., New  
York 18)

2-3. Alexander Graham Bell Assoc. for  
the Deaf, southeastern meeting, New Or-  
leans, La. (R. Tegeder, Utah School for  
the Deaf, 846 20th St., Ogden)

2-3. **Obstetrics and Gynecology**, semi-  
nar, Gainesville, Fla. (Mrs. D. Miller, Div.  
of Postgraduate Education, College of  
Medicine, Univ. of Florida, Gainesville)

2-3. **Industrial Applications of New  
Technology**, conf., Atlanta, Ga. (Director,  
Short Courses and Conferences, Georgia  
Inst. of Technology, Atlanta, Ga. 30332)

2-4. American Acad. of **Oral Pathology**,  
Bethesda, Md. (R. J. Gorlin, Univ. of  
Minnesota, Minneapolis)

2-4. Association of **Surgeons** of Great  
Britain and Ireland, annual, St. Andrews,  
Scotland (Secretariat, 47 Lincoln's Inn  
Fields, London, W.C.2, England)

2-5. British **Medical** Assoc., clinical  
meeting, Northampton, England. (D. Gul-  
lick, Tavistock Sq., London, W.C.1)

3-4. **Biology** colloquium, Corvallis, Ore.  
(C. M. Gilmour, School of Science,  
Oregon State Univ., Corvallis)

3-4. Society for **Industrial and Applied  
Mathematics**, midwest regional meeting,  
Cedar Rapids, Iowa. (W. J. Jameson,  
Collins Radio Co., 120-11, Cedar Rapids)

3-5. **Fleming's Lysozyme**, 3rd intern.  
symp., Milan, Italy. (G. Podio, Museo della  
Scienza e della Tecnica, Via Modica, 6,  
Milan)

3-5. American Soc. of **Internal Medi-  
cine**, annual, Atlantic City, N.J. (A. V.  
Whitehall, 3410 Geary Blvd., San Fran-  
cisco, Calif.)