

Donald S. McClure (R.C.A. Laboratories), "Colors and spectra of transition-metal ions in ceramics"; H. G. Drickamer (University of Illinois), "Effect of pressure on the electronic structure of solids"; C. E. Birchenall (University of Delaware), "Diffusion in ionic crystals"; J. E. Burke (General Electric Research Laboratory), "Science and technology of sintering"; R. J. Maurer (University of Illinois), "Optical properties of ionic crystals"; H. C. Gatos (Lincoln Laboratory, M.I.T.), "Electrical properties of semiconductor materials"; L. R. Bickford, Jr. (I.B.M. Research Center), "Magnetic properties of ceramics"; John J. Gilman (Brown), "Electrons, dislocations, and the strength of ceramic crystals"; Roger Chang (Atomics International), "High-temperature mechanical behavior of ceramics"; W. D. Kingery (M.I.T.), "Effects of microstructure on the properties of ceramics"; and Gerald W. Sears (General Dynamics Electronics), "Nucleation and crystal growth."

Gilman raised the possibility of obtaining ceramic materials with ultimate strengths of 5 million pounds per

square inch, ten times stronger than steel. This, he said, can be done if we learn how to make single-crystal materials in which the dislocations do not move. "The monocrystalline form is important because of the intrinsic weakness of boundaries between such crystals," he said. The dislocations must not move because it is through the motion of dislocations that yield takes place, resulting ultimately in rupture. While probably no large structures could be made of single-crystal materials, such materials would be very useful for certain critical applications—for example, the manufacture of small-size objects such as high-pressure vessels, ultracentrifuges, gyroscopes, and magnets. The carbides of the transition metals or the light elements will be the strongest compounds for such applications.

Cyrus Klingsberg, ceramist in the metallurgy branch of the Office of Naval Research, who organized the symposium, discussed federal sponsorship of research in ceramics. He stated that only \$15.8 million out of \$9.6 billion spent annually for research could be clearly identified as spent for

ceramics research, notwithstanding the critical need for new ceramics materials. He held both the ceramist and the government scientist in some degree responsible for this low level of support. On the one hand, the ceramist is primarily oriented toward the problems of industry, his research shows less breadth and imagination than research in other fields, and it is devoted primarily to making the most of the properties of known materials. On the other hand, the government funding agencies have shown much less interest in the problems of ceramics than in those, say, of metallurgy and have committed insignificant sums for the improvement of ceramics materials as compared to the huge investments in metals research. If the wall is to be breached, the ceramist must embrace the "new" ceramics and the funding agency must provide support commensurate with the potential rewards.

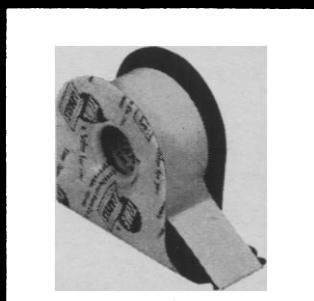
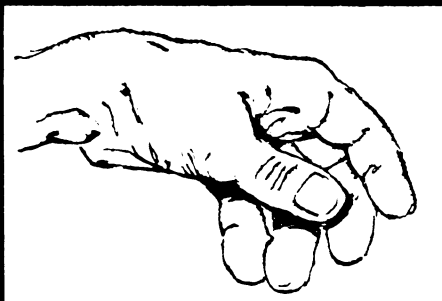
The wind-up panel on ceramics education focused on the problems of preparing bachelor's degree candidates to meet the needs of the ceramics industry and of conducting meaningful research at the graduate level to train an entirely different breed of ceramists. It was clear that not all departments have solved this problem, and in fact that none had solved it in its entirety. Participating in this discussion were G. W. Brindley (Pennsylvania State University), chairman; R. L. Coble (M.I.T.); R. L. Cook (University of Illinois); I. B. Cutler (University of Utah); V. D. Frechette (Alfred); J. E. Mueller (University of Washington); J. A. Pask (University of California, Berkeley); R. Russell, Jr. (Ohio State University); and R. L. Sproull (Cornell).

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2-4. American **Pomological Soc.**, Yakima, Wash. (G. M. Kessler, Dept. of Horticulture, Michigan State Univ., East Lansing)

2-6. American Inst. of **Chemical Engineers**, Chicago, Ill. (F. J. Van Antwerpen, AICE, 345 E. 47 St., New York 17)

3-4. **Satellite Communication**, intern.



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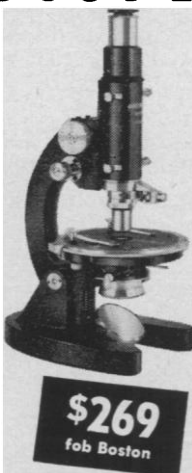
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3-5. Allied Air Forces **Medical** Conf., annual, Fontainebleau, France (by invitation). (A. E. Lauschner, Medical Advisory Staff, Allied Air Forces Central Europe, Camp Guynemer, Fontainebleau)

3-6. **Entomological** Soc. of America, Phoenix, Ariz. (R. H. Nelson, 4603 Calvert Rd., College Park, Md.)

3-7. International Assoc. for the Prevention of **Blindness**, New Delhi, India. (J. P. Bailliart, 47 rue de Bellechasse, Paris 7^e, France)

3-7. International Organization Against **Trachoma**, New Delhi, India. (J. Sedan, 94 rue Sylvabelle, Marseilles, France)

3-7. **Microbiology**, natl. congr., Monterrey, Mexico. (M. A. Rodríguez, Apdo. Postal 4464, Monterrey)

3-7. **Ophthalmology**, intern. congr. New Delhi, India. (Y. K. C. Pandit, Bombay Mutual Bldg., Sir Pherozeshah Metha Rd., Bombay 1, India)

3-7. **Rehabilitation**, Pan-Pacific conf., Manila, Philippines. (Philippine Foundation for the Crippled, Philippine Natl. Red Cross Bldg., Intramural, Manila)

3-10. Panel on **Tick-Borne Disease**, Food and Agriculture Organization of the UN-Intern. Office of Epizootics, Cairo, Egypt. (Intern. Agency Liaison Branch, Office of the Director General, FAO, Viale delle Terme di Caracalla, Rome, Italy)

3-13. **Hydraulics and Fluid Mechanics**, conf., Perth, Australia. (Conference Convener, School of Engineering, Univ. of Western Australia, Nedlands)

4-5. Microbiological Problems in **Petroleum** Production, symp., Long Beach, Calif. (C. C. Wright, Oilwell Research, Inc., 1539 W. 16 St., Long Beach 13)

4-6. **Computers**, joint fall conf., Philadelphia, Pa. (J. W. Leas, Radio Corp. of America, Camden, N.J.)

4-7. American **Documentation** Inst., Hollywood-by-the-Sea, Fla. (J. B. Kaiser, 1718 N St., NW, Washington 6)

4-8. Controlled Field Trials of **Communicable Diseases**, conf., Geneva, Switzerland. (World Health Organization, Palais des Nations, Geneva)

4-13. Techniques of Surveys on **Epidemiology of Mental Disorders**, Manila, Philippines. (World Health Organization, Regional Office for the Western Pacific, P.O. Box 2932, Manila)

5-11. American Acad. of **Optometry**, Miami, Fla. (C. C. Koch, 1506-08 Foshay Tower, Minneapolis 2, Minn.)

6-8. **Mathematics**, annual conf., Santa Monica, Calif. (H. Couzins, Chaffey High School, Ontario, Calif.)

7-8. American **Rheumatism** Assoc., Richmond, Va. (J. A. Coss, 20 E. 76 St., New York 21)

7-8. Oklahoma Acad. of **Science**, Tulsa. (A. D. Buck, Northern Oklahoma Junior College, Tonkawa)

7-9. American **Psychoanalytic** Assoc., New York, N.Y. (H. Kohut, 664 N. Michigan Ave., Chicago 11, Ill.)

7-11. **Visual Communications**, intern. congr., Philadelphia, Pa. (Visual Communications Congr., 18465 James Couzens Hwy., Detroit 35, Mich.)

7-12. **Environmental Physiology and Psychology in Arid Conditions** symp.,

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10-14. **Neutron Detection, Dosimetry, and Standardization**, Harwell, England. (Intern. Atomic Energy Agency, 11 Kärntner Ring, Vienna 1, Austria)

10-15. **Chronic Nonspecific Pulmonary Maladies**, symp., Moscow, U.S.S.R. (World Health Organization, Regional Committee for Europe, 8 Scherfigsvej, Copenhagen Ø, Denmark)

10-15. **Committee on Biological Standardization**, Geneva, Switzerland. (World Health Organization, Palais des Nations, Geneva)

11-17. **Committee on Antibiotics**, Geneva, Switzerland. (World Health Organization, Palais des Nations, Geneva)

12-14. **American Soc. of Agricultural Engineers**, Chicago, Ill. (J. L. Butt, P.O. Box 229, St. Joseph, Mich.)

17-20. **International Arms Control**, symp., Ann Arbor, Mich. (IACS, P.O. Box 1106, Ann Arbor)

17-21. **University Physics Teaching Curricula, Laboratory Experiments, and Equipment in UNESCO member states, comparative survey**, Paris, France. (UNESCO, Place de Fontenoy, Paris 7^e)

26-31. **American Assoc. for the Advancement of Science**, annual, Philadelphia, Pa. (R. L. Taylor, AAAS, 1515 Massachusetts Ave., NW, Washington 5)

The following 40 organizations will meet in conjunction with the AAAS annual meeting in Philadelphia:

Academy of **Psychoanalysis**. (A. H. Rifkin, 125 E. 65 St., New York 21)

American Assoc. of **Clinical Chemists**. (P. Paubionsky, Abington Memorial Hospital, Abington, Pa.)

American **Astronautical Soc.** (J. G. Stephenson, Airborne Instruments Laboratory, Walt Whitman Rd., Melville, L.I., N.Y.)

American **Economic Assoc.** (H. F. Williamson, AEA, Northwestern Univ., Evanston, Ill.)

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American **Meteorological Soc.** (F. Sergeant, II, Dept. of Physiology, Univ. of Illinois, Urbana)

American **Nature Study Soc.** (J. A. Gustafson, Route #1, Homer, N.Y.)

American **Physiological Soc.** (R. E. Smith, School of Medicine, Univ. of California, Los Angeles)

American **Political Science Assoc.** (E. M. Kirkpatrick, APSA, 1726 Massachusetts Ave., NW, Washington, D.C.)

American **Psychiatric Assoc.** (M. Greenblatt, Massachusetts Mental Health Center, Boston)

American **Rocket Soc.** (B. Chifos, ARS, 500 Fifth Ave., New York 36)

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Biomedical **Information-Processing** Organization. (R. S. Ledley, Natl. Biomed-

ical Research Foundation, Silver Spring, Md.)

Biometric Soc., ENAR. (T. A. Bancroft, Iowa State Univ., Ames)

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National **Geographic** Soc. (W. R. Gray, NGS, 16th and M Sts., Washington 6)

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Society of Systematic **Zoology**. (C. F. Lytle, 801 Ware St., SW, Vienna, Va.)

Tau Beta Pi Assoc. (R. H. Nagel, Tau Beta Pi Assoc., Univ. of Tennessee, Knoxville)

United Chapters of **Phi Beta Kappa**. (C. Billman, 1811 Q St., NW, Washington 9)

Special conferences to be held during the meeting include:

Academy Conference, natl. meeting of 47 state academies. (R. C. Miller, California Acad. of Sciences, San Francisco 18)

Conference on **Science Manuscripts**. (N. Reingold, Science and Technology Div., Library of Congress, Washington 25)

Conference on **Scientific Manpower**. (T. J. Mills, National Science Foundation, Washington 25)

27-29. American **Geophysical** Union, western natl. meeting, Stanford, Calif. (W. W. Kellogg, Rand Corp., 1700 Main St., Santa Monica, Calif.)

27-29. American **Philosophical** Assoc., Pacific Div., Berkeley, Calif. (L. E. Hahn, Washington Univ., St. Louis 30, Mo.)

27-29. Western Soc. of **Naturalists**, San Jose, Calif. (I. A. Abbott, Hopkins Marine Station, Pacific Grove, Calif.)

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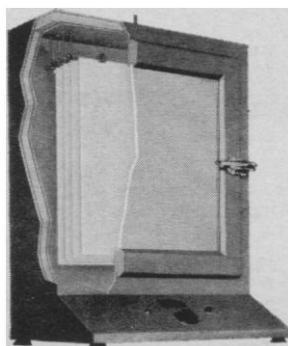


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