Meetings

Winter Gordon Research Conferences

The Winter Gordon Research Conferences will be held from 24 January to 4 February 1966 in Santa Barbara, California, at the Miramar Hotel and at the Santa Barbara Biltmore Hotel. The purpose of the Gordon Research Conferences is to stimulate research in universities, research foundations, and industrial laboratories. This purpose is achieved by an informal type of meeting consisting of scheduled lectures and discussion groups. Sufficient time is available to stimulate informal discussions among the members of each Conference. Meetings are held in the morning and in the evening, Monday through Friday, with the exception of Friday evening. The afternoons are available for recreation, reading, or participation in discussion groups as the individual desires. This type of meeting is a valuable means of disseminating information and ideas to an extent that could not be achieved through the usual channels of publication and presentation at scientific meetings. It is hoped that each Conference will extend the frontiers of science by fostering a free and informal exchange of ideas among persons actively interested in the subjects under discussion. The Summer Conferences are held in New Hampshire [see *Science* **147**, 3663 (1965)].

Registration and reservations. Attendance at the Conferences, limited to approximately 100, is by application. Individuals interested in attending the Conferences are requested to send their applications to the office of the Director. *Applications must be submitted in duplicate on the standard form, which may be obtained from the office of the Director.* The applications will be reviewed by the Conference Committee. This Committee in selecting the participants will distribute the attendance as widely as possible among the institutions and laboratories represented by the applications. A registration card will be mailed to those selected. Advance registration by mail is required; this is completed when the registration card with a deposit of $25 is received in the office of the Director. A registration card not accompanied by the $25 deposit will not be accepted. This advance deposit is not required of scientists from foreign countries.

A fixed fee of $125 has been established for resident conferees, and covers registration, double room with bath, City of Santa Barbara room tax, meals, and gratuities for five conference days. There will be an additional charge for a single room and for rooms occupied more than the five conference nights (Sunday through Thursday). This fee was established to encourage attendance for the entire Conference and to increase the Special Fund that is available to the Conference Chairman for assisting praticipants who attend the Conference wholly or in part at their own expense.

The participants are expected to live at the Conference location because one of the objectives of the Conferences is to provide a place where scientists can get together informally to discuss scientific research. All participants are urged to attend the Conference for the entire week. Under special circumstances conferees will be permitted to stay at locations other than the site of the Conference. Such nonresident conferees will be charged a registration fee of $60.

Conferees living at the Conference location who will pay all or part of the fixed fee as a personal expense may request a reduction of $25 in the fixed fee. *Application for this special fee must be made at the Conference office during the Conference.*

Accommodations are available for wives who wish to accompany their husbands, and for children 12 years of age and over. All such requests should be made at the time the attendance application is submitted. The charge for room and meals for a guest is $75.

Cancellation. The $25 deposit is forfeited if an approved application for attendance at the Conference is cancelled.

Attendance. Requests for application forms for attendance at the Conferences, or for additional information, should be addressed to W. George Parks, Director, Gordon Research Conferences, University of Rhode Island, Kingston, Rhode Island.

Miramar Hotel

Polymers

E. A. Youngman and M. T. O'Shaughnessy will serve as *chairman* and *vice chairman*, respectively.

24 January. H. F. Mark, "Progress in polymer science"; C. L. Segal, "Poly-(phenylene oxide)—cupric-pyridine catalyzed coupling of 2,6-dimethylphenol in the presence of oxygen"; M. Lautout Magat, "Method for calculating various chain configurations of polymers or copolymers in infinitely dilute solution."

25 January. A. Schindler, "Characterization of Ziegler-Natta catalyst systems by transfer and exchange reaction studies with deuterium"; J. Boor, Jr., "Mechanistic aspects of Ziegler catalysis"; D. Puett, "Network structures and the associated elasticity of copolymers."

26 January. C. E. H. Bawn, "Donor-acceptor complexes as polymerization initiators"; speaker and subject to be announced; D. C. Priest and N. L. Zutty, "The spontaneous copolymerization of SO_2 and norbornene. Propagation through biradical coupling."

27 January. M. Imoto, "Stereospecific radical polymerizations initiated by nickel peroxide"; A. Peterlin, "Mechanism of the deformation and structure of plastically deformed polymers"; F. P. Gay, "Polymer post-reactions."

28 January. C. F. Cornett, "Determinations of theta conditions and unperturbed dimensions of polymer molecules"; R. S. Porter and J. F. Johnson, "Determination of energy induced changes in molecular weight by gel permeation chromatography."

Electrochemistry

Ernest Yeager and Robert A. Osteryoung will serve as *chairman* and *vice chairman*, respectively.

31 January. Henry Eyring; John O'M. Bockris; Michel Boudart, "Electrochemical catalysis."

1 February. N. S. Hush; R. A. Marcus; D. B. Matthews, "Quantum mechanical aspects of electrode processes."

2 February. Fritz G. Will; S. Schuldiner; Fred Anson, "Platinum"; speakers to be announced, "Special methods in electrochemistry" (for example, optical, thin layer, nonconventional relaxation techniques, strain electrochemistry).

3 February. Frank J. Morin; M. Fleischmann; B. E. Conway; Paul C. Milner, "The electrochemistry of oxides."

4 February. Robert Visco; Donald Maricle, "Electrochemical luminescence."

Santa Barbara Biltmore Hotel

Chemistry of Aging

Steven M. Horvath will serve as *chairman*.

24 January. Al Knutson; William Gillchriest; Denham Harman; Sam Lesher, "Molecular biology of aging—genetic regulation."

25 January. Ralph Brauer; F. Verzar, "Physiological parameters of aging"; Charles Barrows, "Chemical parameters of aging."

26 January. Albert Dorfman; George Stidworthy, "Chemistry of mucopolysaccharides", F. F. La Bella; Karl Piez, "Chemistry of collagen."

27 January. Effects of environmental stress on aging, I—Influence of pharmaceutical agents: A. D. Bender, "Mammalian systems"; Alan K. Done, "Developmental pharmacology"; Sheldon Aaronson, "Microbiological systems."

28 January. Stanley Mohler, "Reversal of certain undesirable features of the aging process"; Robert McGandy, "Nutrition, disease and aging."

Formulation of Research Policies

Lawrence W. Bass and Bruce S. Old will serve as *chairman* and *vice chairman*, respectively.

31 January, 1 February. Louis Henry; F. T. Rosser; Th. Franck; F. Goerlich; M. J. Cranley; Robert Major; Frederick C. Seitz, "Research policies at the national level."

2 February. A. A. Afifi; Stevan Dedijer; Alexander King; Arnold Kramish; F. N. Woodward, "Research policies in international perspective."

3 February. A. E. Pannenborg; Pierre Piganiol; speaker to be announced, "Corporate research policies."

4 February. Harry Melville; William J. Price, "Other major areas of policy."

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Rock-Forming Silicates

In recent years petrologists and mineralogists have found that the information presently available on the crystal structures of rock-forming silicate minerals is inadequate to solve many fundamental problems in the earth sciences. Such information is particularly important in three areas: (i) lattice energies and relative stabilities of different silicate structures; (ii) order-disorder relationships in silicates, especially those involving accurate knowledge of atomic distributions; and (iii) mechanisms of phase transformations and exact characterization of the phases involved. To bring together leading scientists from the various disciplines that bear on these problems, a conference on the crystal structures and crystal chemistry of rock-forming silicates was held at Lake Vermilion, Minnesota, 12–17 September 1965. The conference was attended by 50 invited participants from Australia, Canada, Germany, Iran, Japan, Switzerland, Turkey, the United Kingdom, and the United States. These scientists represented the fields of mineralogy, petrology, crystallography, physics, and chemistry.

The first session, dealing with polymorphism and phase transformations, was introduced by M. J. Buerger (Massachusetts Institute of Technology), Honorary Chairman of the Conference. He discussed the qualitative relations between changes in internal energy and changes in bonding, as reflected in the observable parameters of primary and secondary coordination. He pointed out that in phases related by displacive transformations the symmetry of the low-temperature form is always a subgroup of that of the high-temperature form. There are, also, a number of discontinuous transformation mechanisms in which some symmetry may be preserved, especially shear or shear-plus-differential dilatation. The higher symmetry often observed in the high-temperature forms may be based on the fact that the most symmetrical vibration modes of coordination groups are also those having the highest frequency. During the discussion T. Hahn (Aachen) said that, although the primary coordinations in high-temperature phases are often smaller than in corresponding low-temperature phases, there are several examples where the reverse is true. J. B. Thompson, Jr. (Harvard University), pointed out that some crystallographers incorrectly equate reconstructive and displacive transformations with first- and second-order transformations, respectively. The former are strictly crystallographic terms, whereas the latter are based on thermodynamic definitions.

Problems of order, disorder, and domain structures were discussed by Helen Megaw (Cambridge University) in terms of "pseudosymmetric" structures—those having subcells differing only slightly from one another because of puckering or segregation of atoms accompanied by puckering. The close similarity between subcells leads to the possibility of mistakes in the puckering arrangement. One can distinguish between localized disorder, a random distribution of individual mistakes where effects are not felt very far outside the unit cell, and extended disorder, where perfect domains exist with mistakes localized at domain boundaries. In cases such as bytownite, antiphase domains can blur out or completely remove the reflections caused by differences between subcells. However, these differences are indicated on Fourier maps of the "average" structure. Antiphase-domain boundaries are regions of different energy likely to be occupied by guest atoms; such boundaries may stabilize macrocrystals of non-end-member compositions, whereas at the end-member the single domain may be most stable. Framework geometry is controlled directly by temperature through a thermal expansion mechanism; site occupancy has a secondary effect. J. Papike (U.S. Geological Sur-