Gordon Research Conferences

W. George Parks

The Gordon Research Conferences for 1962 will be held from 11 June to 31 August at Colby Junior College, New London, N.H.; New Hampton School, New Hampton, N.H.; Kimball Union Academy, Meriden, N.H.; and Tilton School, Tilton, N.H.

Purpose. The conferences were established 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. In addition, scientists in related fields become acquainted, and valuable associations are formed which often result in collaboration and cooperative efforts between different laboratories.

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 purpose of the program is to bring experts up to date on the latest developments, to analyze the significance of these developments, and to elicit suggestions concerning the underlying theories and profitable methods of approach for making progress. The review of known information is not desired.

In order to protect individual rights and to promote discussion, it is an established requirement of each conference that no information presented is to be used without specific authorization of the individual making the contribution, whether it is made in formal presentation or in discussion. Scientific publications are not prepared as emanating from the conferences.

Registration and reservations. Attendance at the conferences is by application. Individuals interested in attending the conferences are requested to send their applications to the director at least 2 months prior to the date of the conference. *All applications must be submitted in duplicate on the standard application form, which may be obtained by writing to the office of the director.* This procedure is important because certain specific information is required in order that a fair and equitable decision on the application may be made. Attendance at each conference is limited to approximately 100 conferees.

The director will submit the applications of those requesting permission to attend a conference to the committee for that conference. This committee will review the applications and select the members in an effort to distribute the attendance as widely as possible among the various institutions and laboratories represented by the applications. A registration card will be mailed to those selected. Advance registration by mail for each conference is required and is completed on receipt of the card and a deposit of $15. (Checks are to be made payable to the Gordon Research Conferences.) The deposit of $15 will be credited against the fixed fee for the conference if the individual attends the conference for which he has applied. A registration card not accompanied by the $15 deposit will not be accepted. This advance deposit is not required of scientists from foreign countries.

The Board of Trustees of the conferences has established a fixed fee of $100 for resident conferees at each conference. This fee was established to encourage attendance for the entire conference and to increase the special fund that is available to each conference chairman for the purpose of assisting conferees who attend a conference at total or partial personal expense with their travel or subsistence expenses, or with both. This fixed fee will be charged regardless of the time a conferee attends the conference—that is, for periods of from 1 to 4½ days. It is divided as follows: registration fee, $40; room and meals, $60 (including gratuities) for 5 days. An additional charge of $1 per night per person will be made for a room with private bath or for a single room, if no double rooms are available. These rooms will be assigned in the order that applications are received. An additional charge will also be made for rooms occupied more than 5 nights.

Conferees are expected to live at the conference location, because one of the objectives of the conference is to provide a place where scientists can get together informally for discussion of scientific research of mutual interest. It is to the advantage of all participants to attend a conference for the entire week. When special circumstances warrant a request to live elsewhere, permission must be obtained from the director. If the request is approved, these nonresident conferees will be charged a registration fee of $50, instead of the resident fee of $40.

The fixed fee will cover registration, room (except room with private bath or single room), and meals (plus gratuities) for resident conferees. It will not provide for golf, telephone, taxi, laundry, conference photograph, or any other personal expenses.

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 ($75) must be made when the registration card is returned to the director.

Accommodations are available for wives who wish to accompany their husbands. All such requests should be made at the time the attendance application is submitted, because these accommodations, limited in number, will be assigned in the order that specific requests are received. Children 12 years of age and over can be accommodated at the conferences. The charge for room

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and meals for a guest is $60 (including gratuities) for 5 days. An additional charge of $1 per night per person will be made for a room with private bath or for a single room. An additional charge will also be made for rooms occupied more than 5 nights. Pets are not permitted in the dormitories.

Special fund. A special fund is provided by the Board of Trustees from the registration fee and is made available to the chairman of each conference for the purpose of increasing the participation of research scientists who could not otherwise attend or participate because of financial limitations. Its use is not limited to scientists who have been invited by the chairman to be speakers or discussion leaders. The money is to be used as an assistance fund only and may be used to contribute toward travel expenses or subsistence expenses at the conference, or both. Total travel and subsistence expenses usually will not be provided.

Cancellations. The $15 deposit is forfeited if an approved application for attendance at a conference is cancelled.

Attendance. Requests 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, R.I. From 11 June to 31 August mail for the office of the director should be addressed to Colby Junior College, New London, N.H.

Colby Junior College

Hydrocarbon Chemistry (Formerly Petroleum)

John R. Thomas, *chairman*
W. G. Appleby, *vice chairman*

11 June. L. H. Piette, "The use of electron spin resonance in the study of organic mechanisms"; A. W. Weitkamp, "Stereochemistry of aromatic hydrogenation"; R. L. Strong, "Halogen atom—aromatic charge transfer complexes."

12 June. J. H. Raley, "High temperature reactions of iodine with hydrocarbons"; C. E. Boozer, "Solvent and isotope effects in antioxidant action"; B. H. Mahan, "The oxygen atom—carbon monoxide reaction."

13 June. G. A. Russell, "The reactions of resonance stabilized carbanions and amide ions with molecular oxygen"; J. Wei, "A new approach to the kinetic analysis of complex reaction systems with applications to the isomerization of butenes"; R. Breslow, "The stabilities of some cyclic conjugated systems."

14 June. A. Schneider, "Recent studies in carbonium ion chemistry of hydrocarbons"; M. S. B. Munson, "Reactions of ions and excited atoms of rare gases"; R. K. Lyon, "Chemistry of the H_3^+ molecule ion."

15 June. J. E. Hoffman, "Carbonium ion reactions occurring in concentrated sulfuric acid"; I. A. Eldib, "The colloidal nature of petroleum."

Catalysis

M. Boudart, *chairman*
W. Keith Hall, *vice chairman*

18 June. Robert Hansen, "Study of adsorption of hydrogen, ethane, ethylene and acetylene on iridium by field emission microscopy"; Pierce W. Selwood, "Adsorption and collective paramagnetism"; Alfred Clark, "Thermodynamics of adsorption of ammonia on acidic catalysts."

19 June. Andreas Acrivos, "Influence of convective mass transfer on the rate of surface reactions"; Robert L. Burwell, Jr., "Hydrogenolysis of dicyclopropylmethane on metallic catalysts"; G. Parravano, "Transport phenomena in solids and catalytic activity."

20 June. S. J. Teichner, "Hydrogenation of ethylene on alumina and zinc oxide catalysts"; Lonnie W. Vernon, "Physical and chemical studies on the catalysts and reactions of hydrodesulfurization"; Thomas W. Leland, Jr., "Effects of radiation on solid catalysts."

21 June. Carl Wagner, "Significance of ionic and electronic defects for reactions at the surface of ionic crystals"; A. Schriesheim, "Production, stabilization and reactions of hydrocarbon carbanions"; P. Debye, "Light scattering and the study of catalysts."

22 June. D. T. A. Huibers, "Process characterization: a rapid method of catalyst evaluation in process development studies"; R. Brill, "Experiments on poisoning of ammonia catalysts."

Nuclear Chemistry

Arthur W. Fairhall, *chairman*
J. M. Miller, *vice chairman*

25–29 June. Nuclear reactions at low to medium energies: "Compound statistical processes"; "Direct interaction processes"; "Nuclear level densities and parameters"; "Role of angular momentum in nuclear reactions"; "Recent advances in nuclear fission."

Polymers

F. H. Winslow, *chairman*
M. Szwarc, *vice chairman*

2 July. (C. G. Overberger, *discussion leader*): H. F. Mark, "Recent advances in polymer chemistry"; G. C. Schweiker, "Aldehyde polymerization and polymers"; C. S. Marvel, "Polymers containing heterocyclic units."

3 July. (C. G. Overberger, *discussion leader*): G. Natta, "Chain conformation of polytactic polymers and synthesis of optically active polymers from monomers not containing asymmetric carbon atoms"; P. Pino, "Optically active vinyl polymers from monomers containing asymmetric carbon atoms"; M. Goodman, "Conformational and configurational aspects of optically active polymers"; P. J. Flory, "Conformation of macromolecules in the amorphous state."

4 July. F. A. Bovey, "The high-resolution nuclear magnetic resonance spectroscopy of polymers"; H. Morawetz, "Polymerization in the crystalline state"; A. Rich, "The structure and function of biological polymers."

5 July. (R. S. Stein, *discussion leader*): J. M. O'Reilly, "Glass transition phenomena and free volume at high pressure"; L. Mandelkern, "The nature of the crystalline state in polymers"; P. J. Flory, "Remarks on the nature of the crystalline state in polymers"; H. Hendus, "X-ray studies on the structure and morphology of polyethylene and a comparison with the results of mechanical and infrared measurements"; A. V. Tobolsky, "The physics of semicrystalline polymers."

6 July. T. W. Campbell, "Polycarbodiimides: a new family of high molecular weight condensation polymers."

Textiles

T. F. Cooke, *chairman*
R. O. Steele, *vice chairman*

9 July. W. O. Statton, "Segment mobility in fibers as shown by high temperature NMR"; R. R. Davies, "The chemistry of reactive dyes forming ester-like bonds with cellulose."

10 July. H. F. Mark, "Recent progress in polymer research and its effects on textile activities"; S. Backer, "Methods for evaluation of the dynamic behavior of textile systems."

11 July. T. L. Koehler, "Use of statistics in textile research"; E. Bohnert, "Chemical reactions of vinyl-sulfone reactive dyes during application."

12 July. R. H. Peters, "Diffusion studies of dyes"; F. H. Dyke, Jr., "Data retrieval and correlation."

13 July. R. G. Quynn, "Internal volume in fibers."

Elastomers

Henry J. Peters, *chairman*
David Craig, *vice chairman*

16 July. D. J. Buckley and M. Berger, "Dilatometric studies of synthetic elastomers under strain"; T. P. Yin, "The frequency-temperature dependence on damping characteristics of several elastomers"; H. Leaderman, "Linear and non-linear viscoelastic behavior of raw and vulcanized elastomers."

17 July. E. C. Gregg, Jr., "The chemical structures of monosulfide crosslinks in rubber vulcanizates"; H. Westlinning, "Structure elements of rubber vulcanizates"; M. Morton, "Kinetics of anionic polymerization of dienes."

18 July. G. Natta, "New polymers and copolymers with elastomeric properties"; E. Schoenberg, D. Chalfant, R. H. Mayor, "Preparation variables and performance of aluminum-titanium catalysts for isoprene polymerization"; R. P. Zelinski, "Cis-polybutadiene by initiation with titanium tetraiodide and trialkylaluminum."

19 July. O. Lorenz and C. R. Parks, "Mechanism of antiozonant action"; J. R. Shelton, "Deuterium isotope effects in the mechanism of inhibitor action"; A. M. Gessler, "Reinforcement of butyl. Effect of oxygen funtionality on carbon black."

20 July. W. F. Brucksch, "Reinforcement in pyridine-butadiene elastomer"; F. J. Linning, E. J. Parks, R. D. Stiehler, "Reversible reinforcement of natural rubber with phenylbetanaphthylamine."

Corrosion

M. A. Streicher, *chairman*
A. U. Seybolt, *vice chairman*

The Influence of Structure and Composition on the Reactivity of Metals

23 July. (Morris Cohen, *discussion leader*): E. Müller, "Field-ion microscopy of surface structures and reactions"; T. H. Orem, "The influence of lattice distortion on the initiation of corrosion in pure aluminum." (Henry Leidheiser, Jr., *discussion leader*): J. V. Petrocelli, "The effect of electronegative elements on the electrochemical reactivity and passivity of nickel"; Z. A. Foroulis, "Metallurgical factors affecting the corrosion of iron in acids."

24 July. (C. V. King, *discussion leader*): L. E. Samuels, "The effects of mechanical finishing treatments on the structure of the surface layers of metals"; H. L. Weisbecker, "The effect of abrasion on the real area of metallic surfaces." (R. B. Mears, *discussion leader*): P. Lacombe, "Imperfections of structure and their influence on the reactivity of metals"; S. J. Ketcham, "The effect of precipitates in an aluminum-copper-magnesium alloy on its corrosion behavior."

25 July. (A. U. Seybolt, *discussion leader*): H. C. Gatos, "The role of crystalline structure in the surface behavior of semiconductors"; G. G. Kamm, "Tin-iron alloy structure and its effect on corrosion resistance of electrolytic tin plate." *Unusual valence states in the dissolution of metals* (J. V. Petrocelli, *discussion leader*): A. W. Davidson, "Evidence for one-electron oxidation as primary electrode reaction in anodic dissolution of metals"; W. J. James, "Disintegration of beryllium and magnesium during anodic dissolution."

26 July. (M. G. Fontana, *discussion leader*): D. Warren, "The influence of structure on the corrosion behavior of stainless steels"; F. S. Lang, "The effect of composition and purity on stress-corrosion cracking of austenitic stainless steel in chloride solutions"; N. Hackerman, "The effect of metal structure on the dissolution rate of iron and low-carbon steels in an NH_3-NH_4NO_3-H_2O system." *Corrosion research for the future: what kind and why* (H. A. Liebhafsky, *moderator*): T. P. Hoar, "A British university view"; N. Hackerman, "An American university view"; F. L. LaQue, An American industrial view"; the moderator's overview.

27 July. (M. A. Streicher, *discussion leader*): T. P. Hoar, "Some factors in the stress-corrosion cracking of *a*-brass"; H. H. Uhlig, "The effect of heat treatment and cold work on stress-corrosion cracking of steel."

Medicinal Chemistry

William M. Govier, *chairman*
Frederick Leonard, *vice chairman*

30 July. Symposium: *Collagen*. P. H. Von Hippel, "Structure of collagen"; P. M. Gallop, "Unusual linkages in collagen"; K. Piez, "Characterization of collagen"; D. S. Jackson, "Biosynthesis of collagen"; B. Gould, "The collagen defect in vitamin C deficiency."

31 July. *Antibiotics*: J. MacMillan, "Synthesis and microbiological properties of griseofulvin analogs and homologs"; E. P. Abraham, "Biochemical and microbiological studies on derivatives of 7-amino-cepholosporanic acid"; J. C. Sheehan, "Studies on penicillin chemistry"; L. C. Cheney, "Synthesis and microbiological properties of derivatives of 6-amino-penicillanic acid."

1 Aug. *Antispermatogenic agents*: A. R. Surrey, "History and chemistry"; A. L. Beyler, "Pharmacology"; W. Nelson, "Clinical evaluation." *The virus cancer relationship*: M. P. Gordon, "The chemical basis of virus infectivity"; C. M. Southam, "The virus in cancer."

2 Aug. *Fibrinolytic agents*: M. Weiner, "Relation between anticoagulants and fibrinolytic agents"; W. F. White, P. G. Sesin, G. H. Barlow, and M. M. Mozen, "Purification and properties of the urinary fibrinolytic activator: urokinase"; A. Fletcher, "Problems in the clinical application of fibrinolytic agents"; B. B. Brodie, "The central control of energy utilization and mobilization."

3 Aug. Symposium: *The receptor site*. D. E. Koshland, Jr., "Protein-small molecule interactions"; S. Fries, "Structure of the cholinergic receptor"; M. Nickerson, "The adrenergic receptor."

Instrumentation

Elwyn D. Jones, *chairman*
Wendell G. Sykes, *vice chairman*

6–10 Aug. R. R. Perron, "An ultraminiature pump"; W. V. Wright, "The application of semiconductor strain-measuring elements to instrumentation"; G. V. Downing, "Measurement of thermoelectric properties of materials"; M. J. Laubitz, "Measurements of thermal conductivity"; W. Slavin, "Methods for evaluating spectrophotometric performance"; D. A. Kendall and T. E. Dickelman, "The correlation of odor intensity and quality perceptions by vapor phase chromatography"; G. Marmont, "Feedback clamping mechanisms for studying nerve activity"; D. E. Williamson and W. D. Dandliker, "A fluorescence polarometer for detection and quantification of antigen-antibody reactions"; R. Jonnard, "Problems and advances in transducers for biomedical measurements"; T. Sheridan, "On remote manipulations"; G. B. Levy, "Physiological and psychological fac-

tors in color measurement"; W. Hagins, "Photo-reception in single receptor cells of the squid eye"; G. J. Thiessen, "Rapid or continuous measurement of liquid density"; J. R. Halsall, "Precision three-terminal dielectric constant cells for composition measurement of process streams"; H. Ziebolz, "A discussion of a self-adaptive control system with two or more time scale loops"; T. R. Vick-Roy, "Economically attractive applications of computer techniques to process control"; C. D. Morrill, "Artificial intelligence"; E. W. Lothrop, "Automatic processing of stress-strain data"; C. F. Hempstead, "Applications of superconducting magnets"; P. E. Brown, "Instrumentation for a nuclear rocket"; R. J. Meltzer, "Magneto-optic positioning"; H. E. Edgerton, "Photographic and underwater instrumentation"; S. Lees, "Recent concepts in error and uncertainties"; A. S. Iberall, "Dynamics of the earth-ground-water system"; S. B. Spracklen (subject to be announced); (speaker to be announced), "Recent developments in molecular amplifiers"; D. L. Ham, "Magnetic flow measurement of dielectric fluids"; J. H. Milsum, "Dynamic discovery in engineering and biology"; N. S. Ham, "Instrumentation in the excitation of Raman spectra"; J. L. Shearer, "Pneumatic jet relays"; J. R. Parsons, "Analog computers control processes dynamically."

Food and Nutrition

D. M. Hegsted, *chairman*
Lloyd W. Beck, *vice chairman*

13 Aug. C. O. Chichester, "Freeze-drying: biological and engineering aspects"; B. Kan, "Freeze drying process control"; J. E. Dowling, "Biological activity of vitamin A acid"; N. Kaplan, "Evolution of the vitamin-coenzyme relationship."

14 Aug. T. H. Wilson, "Intestinal absorption of amino acids"; A. C. Frazer, "Nutritional factors in etiology of the malabsorption syndrome"; L. C. Payne, "Active transport of gamma-globulin by the small intestine"; H. E. Harrison, "Mechanism of vitamin D action"; Geoffrey Berlyne, "Studies of calcium and vitamin D in intestinal preparations."

15 Aug. David D. Ulman, "Magnesium deficiency in man"; R. M. Forbes, "Magnesium deficiency in animals"; Jeremiah Stamler, "Approaches to the primary prevention of coronary heart disease by nutrition"; Jerome Green, "A practical approach to hypocholesterolemic diets."

16 Aug. R. A. McCance, "Growth size, and composition"; Samuel J. Foman, "Influence of age, sex, and diet on body composition in infancy"; Gilbert B. Forbes, "Estimation of lean body mass and total fat by the K-40 method"; Emil Mrak (subject to be announced).

17 Aug. Emily Wick, "Basic flavor chemistry, the identification of stimuli"; Marion Simone, "Flavor evaluation by sensory procedures."

Separation and Purification

J. Ward Greiner, *chairman*
Carl H. Deal, *vice chairman*

20 Aug. G. J. Sloan, "Zone refining organic compounds"; R. F. Baddour, "Conditioning polymer films and particles for use in separations by pervaporation and chromatography."

21 Aug. P. A. Belter, "Laboratory simulation and scale-up of continuous liquid-liquid extraction"; S. M. Speaker, "Pros and cons of controlled-cycle multistage liquid extraction columns"; R. A. Zelenery, "Factors entering scale-up of column chromatography—especially the plug-flow assumption."

22 Aug. S. Umano, "Fresh water from sea water by freezing"; W. S. Gillam, "Desalination: the need for exploratory and basic research."

23 Aug. J. G. Kirchner, "Thin film chromatography as a research tool"; R. E. Jentoft, "Theory and applications of preparative gas chromatography"; I. A. Eldib, "Foam fractionation as a waste water renovation process: potentialities, limitations, and complementary processes."

24 Aug. F. H. Kant, "Motion of heat and mass transfer fronts in cyclic gas-solid adsorption-disorption phenomena."

Cancer

Sidney Weinhouse, *chairman*
Joseph Leighton, *vice chairman*

27 Aug. Basic mechanisms in cell division (M. J. Kopac, *chairman*): Norman G. Anderson; Thomas King; Daniel Mazia; Gerald C. Mueller; Alex B. Novikoff.

28 Aug. Chomosome abnormalities (Theodore S. Hauschka, *chairman*): C. E. Ford; Peter C. Nowell and David Hungerford; Avery A. Sandberg; Hans F. Stich. *Drug resistance and nucleic acid metabolism*: R. W. Brockman; Glenn A. Fischer; Alex Haddow.

29–31 Aug. Chemical carcinogenesis and biochemical properties of tumors: Eric Boyland; Emmanuel Farber; Kenneth Ibsen; R. Latarjet; James A. Miller; Harold P. Morris; George Weber. *Discussants*: M. Earl Balis, Antonio Cantero, Roger Daoust, Gaston deLamirande, Abraham Goldin, Joseph Gots, H. R. Gutmann, J. Frank Henderson, Dorris J. Hutchison, P. N. Magee, Ralph W. McKee, Henry C. Pitot, William Regelson, Josephine Salser, Philippe Shubik, Sam Sorof, Jacob Stekol, Hewson Swift, Walter Troll, John Weisburger, Charles E. Wenner.

New Hampton School

Environmental Sanitation—Waste Water Reclamation

Wallace W. Sanderson, *chairman*
J. E. McKee, *vice chairman*

11 June. Wallace W. Sanderson, "Mechanics of the Gordon Research Conferences, and the scope and subject of the Conference on Waste Water Reclamation." *Nature and concentration of carbonaceous constituents of sewage and sewage treatment plant effluents* (Robert L. Bunch, *chairman*; A. L. Downing, *discussion leader*). *Nature and concentration of nitrogenous constituents of sewage and sewage treatment plant effluents* (George B. Morgan, *chairman*; James M. Symons, *discussion leader*).

12 June. Bacterial and fungal content of sewage and sewage treatment plant effluents as they affect further use of the water (Paul W. Kabler, *chairman*; K. R. Johansson, *discussion leader*). *Protozoan and viral content of sewage and sewage treatment plant effluents as they affect further use of the water* (W. L. Mallmann, *chairman*; Shih L. Chang, *discussion leader*).

13 June. Pesticides and their degradation products in agricultural soil (John F. Yost, *chairman*; L. A. Dean, *discussion leader*). *Pesticides and their degradation products in streams* (Jack T. Garrett, *chairman*; Richard H. Bogan, *discussion leader*).

14 June. Industrial requirements of water quality (C. H. Connell, *chairman;* I. A. Eldib, *discussion leader*). *Separation of persistent dissolved chemicals from waste water* (J. Carrell Morris, *chairman*; Francis M. Middleton, *discussion leader*).

15 June. Gerard A. Rohlich, summation of conference.

Biochemistry and Agriculture

Frank Stark, *chairman*
John B. Hanson, *vice chairman*

18 June. Basic studies related to insecticidal action (R. D. O'Brien, *chairman*): B. E. Brown, "Pharmacologically active constituents of the insect central nervous system"; Arthur Hess, "Comparisons of the fine structure of vertebrate and invertebrate nerve tissue"; H. A. Schneiderman, "The physiology and biochemistry of insect growth hormones"; M. S. Blum, "Venoms and terpenoid pheromones in ants"; B. Sacktor, "Energy metabolism in insect flight muscle."

19 June. Basic studies related to herbicidal action (W. Shaw, *chairman*): A. S. Crafts, "The absorption and translocation of herbicides in plant shoots"; R. P. Upchurch, "Movement of organic chemicals in plant roots"; J. L. Hilton, "Mechanism of action of herbicides"; R. H. Hamilton, Jr., "Metabolism of herbicides in plants"; N. E. Good, "Fundamental relationships between herbicidal action and the photosynthesis process."

20 June. Penetration of chemicals into plants and insects: W. E. Loomis, "Nature of plant cuticle"; L. L. Jansen, "Role of surfactants in affecting penetration of pesticides in plants"; Paul Becher, "Theoretical aspects of surface action agents in penetration of biological membrane"; A. G. Richards, "Nature of insect cuticle (chitin)"; (speaker to be announced), "Penetration of chemicals through insect cuticle."

21 June. Plant growth factors (A. C. Leopold, *chairman*): (speaker to be announced), "Plant stimulants"; (speaker to be announced), "Light effects other than photosynthesis"; N. E. Tolbert, "Plant growth regulators."

22 June. Techniques (J. Liverman, *chairman*): N. G. Anderson, "Integrated bioanalytical systems"; H. Fernandez-Moran, "Applications of high-resolution electron microscopy in correlative studies of biological systems."

Nucleic Acids

Leon A. Heppel, *co-chairman*
Cyrus Levinthal, *co-chairman*

25 June. DNA: Duplication mechanisms and molecular weight (chairman to be announced): H. V. Aposhian; F. J. Bollum; J. Winograd; J. Adler; P. F. Davidson. *DNA; Secondary structure and polymer interactions* (P. Doty, *chairman*): J. Marmur; N. Suoka; S. Spirin.

26 June. In vitro systems for RNA synthesis directed by DNA (chairman to be announced): J. Hurwitz; A. Stevens; K. K. Reddi. *Interactions involving biosynthetic polymers* (chairman to be announced): D. Davis; A. Rich; R. L. Baldwin.

27 June. Properties of "Information RNA" (J. D. Watson, *chairman*): F. Gros; S. Spiegelman; B. D. Hall; E. Volkin; R. Roberts; L. Astrachan. *The effects of incorporation of base analogues and of ultraviolet irradiation on the function of nucleic acids* (chairman to be announced): A. Wacker; A. Spirin; L. Grossman.

28 June. In vitro polypeptide synthesis: Effect of nucleic acids (F. Lipmann, *chairman*): M. Nirenberg; S. Ochoa. *The coding problem* (chairman to be announced): F. Crick; Wittman; H. Fraenkel-Conrat.

29 June. Properties of s-RNA (H. Hoagland, *chairman*): J. A. F. Stevenson; R. S. Schweet; R. W. Holley; E. Herbert.

Scientific Information Problems in Research

Karl F. Heumann, *chairman*
J. Scott Maclennan, *vice chairman*

2 July. Keynote address: Verner W. Clapp. *Linguistic and semantic problems (thesaurus building; terminology) —working systems* (Paul W. Howerton, *session leader*): Paul Klingbiel; Rollin D. Morse.

3 July. Linguistic and semantic problems (thesaurus building; terminology) —theoretical (Gerard Salton, *session leader*): Robert F. Barnes; A. F. Brown; Russell Kirsch. *Man-machine interaction—working systems* (M. M. Kessler, *session leader*): Howard R. Ball; David Jacobus; W. H. Waldo.

4 July. Man-machine interaction—theoretical (J. C. R. Licklider, *session leader*): Edward M. Bennett; R. M. Fano; John Kuipers. *Machines of the near future—prospects* (Ascher Opler, *session leader*): W. D. Lewis; Edward A. Quade.

5 July. Machines of the near future —goals (Samuel N. Alexander, *session leader*): Edward Fredkin; Ezra Glaser; Gordon Thomas. *The basic tool*: Isaac Asimov.

6 July, Discussion: *Goals and prospects.* (R. F. Marschner, *panel chairman*): Ralph R. Shaw, Hugh C. Wolfe.

Chemistry and Physics of Isotopes

Arthur N. Bourns, *chairman*
Peter E. Yankwich, *vice chairman*

9–13 July. Isotope abundance measurements in geochemistry (S. Epstein, *chairman*): (speakers and subjects to be announced). *Topics in the theory of isotope effects* (Max Wolfsberg, *chairman*): R. P. Bell "Tunnelling-in reactions and kinetic isotope effects"; R. J. Rubin, "Nonequilibrium and transmission coefficient problems in exchange reactions"; L. S. Bartell, "Study of isotope effects on molecular structure"; I. Dostrovsky, "Isotope separation coefficients in distillation processes"; R. E. Weston, "Hydrogen isotope effects in gas phase reactions"; P. E. Yankwich, "The status of carbon isotope effects." *Secondary isotope effects* (R. E. Robertson, *chairman*): R. E. Davis, "Several factors controlling the proton kinetic isotope effects"; Andrew Streitwieser, "On the 'inductive effect' of deuterium"; R. E. Robertson, "The temperature dependence of secondary deuterium isotope effects." *Solvent isotope effects* (V. J. Shiner, Jr., *chairman*): P. M. Laughton, "Significance of initial state solvation in solvent isotope effects"; M. L. Bender, "Intramolecular catalysis in heavy water"; C. G. Swain (subject to be announced). *Isotope effects of D_2O,D_3O+DO-* (V. Gold, *chairman*): A. J. Kresge, "Isotope effects in aromatic hydrogen exchange"; A. V. Willi, "Some theoretical aspects of isotope effects in aromatic substitution by hydrogen"; V. Gold, "Proton transfer and aromatic hydrogen exchange"; F. A. Long, "Correlation of tritium exchange rates"; G. A. Ropp, "Some small carbon-14 isotope effects." *Application of isotope effects to mechanism* (F. A. Long, *chairman*): Y. Pocker, "Kinetic, sterochemical and isotopic tracer studies of deuteron and deuteride abstraction"; S. Seltzer, "Secondary α-deuterium isotope effects as applied to mechanisms." Brief reports on work in progress (A. N. Bourns, *chairman*). Papers may be submitted at the beginning of the conference.

Steroids and Other Natural Products

William I. Taylor, *chairman*

16–20 July. Y. Abe, "The structure and synthesis of nereistoxin"; A. Bowers and G. Buchi (subjects to be announced); A. Dreiding, "The structure of betanine"; J. Fried (subject to be an-

nounced); M. Gorman, "The structure of vincaleucoblastine"; J. B. Hendrickson, S. M. Kupchan, W. D. Ollis, Z. Valenta (subjects to be announced); B. P. Vaterlaus, "The total synthesis of an antibiotic."

Organic Reactions and Processes

William A. Mosher, *chairman*
Ellis K. Fields, *vice chairman*

23 July. M. F. Hawthorne, "Reactions of boron hydrides"; D. Swern and L. S. Silbert, "Properties and reactions of organic peroxides."

24 July. H. Kwart, "Chlorinolysis of organic compounds"; A. M. Trozzolo, "Dicarbenes"; A. Fava, "Isomerizations of thiocyanates."

25 July. H. L. Goering, "Carbonium ion reactions"; W. W. Kaeding, "Phenols by oxidation of aromatic acids"; J. Smidt, "Oxidation of olefins."

26 July. M. I. Femery and E. K. Fields, "A novel ozonization reaction"; P. Pino, "Olefin polymerization"; C. G. Krespan, "Polyfluoroalkylacetylene reactions."

27 July. E. C. Taylor, "New heterocyclic chemistry."

Statistics in Chemistry and Chemical Engineering

J. Stuart Hunter, *chairman*
Mavis B. Carroll, *vice chairman*

30 July. (H. Smith, *chairman*): C. Daniel, "Criticism and fitting of collections of data." (R. J. DeGray, *chairman*): W. Williams, "Regression analysis with large quantities of data."

31 July. (William M. Mead, *chairman*): Sidney Addelman, "Techniques for constructing fractional replicate plans." (F. Wilcoxen, *chairman*): D. J. Finney, "Screening processes: problems and illustrations."

1 Aug. (J. Weinstein, *chairman*): Robert J. Buehler, "The method of parallel tangents for finding an optimum." (E. S. Page, *chairman*): G. E. P. Box, "Some aspects of adaptive optimization, adaptive control, and prediction."

2 Aug. (S. Katz, *chairman*): Gwilym Jenkins, "Further comments on adaptive optimization, adaptive control, and prediction." (R. DeBaun, *chairman*): Leon Lapidus, Computer control of chemical processes."

3 Aug. (R. Gnanadesikan, *chairman*): J. E. Jackson, "Applications of sequential multivariate techniques."

Inorganic Chemistry

M. L. Nielsen, *chairman*
R. W. Parry, *vice chairman*

6–7 Aug. Electronegativity and its applications to inorganic problems (J. L. Margrave, *chairman*): R. T. Sanderson, "Applications of electronegativity"; H. O. Pritchard, "Electronegativity of orbitals of non-integral occupation number"; A. L. Allred, "The transition metal contraction and electronegativity"; R. S. Drago, "Understanding the trends in group IV chemistry"; H. A. Bent, "Electronegativity of first row elements."

7–8 Aug. Metal oxides (H. B. Jonassen, *chairman*): E. O. Wollan, "Magnetic coupling in oxides"; S. Geller, "Crystal chemical and magnetic studies of garnets"; R. A. Van Nordstrand, "X-ray absorption edge fine-structure studies of transition metal oxides"; J. Richardson, "Ferrimagnetism and superparamagnetism in non-stoichiometric nickel oxides"; A. V. Macrae, "Electron diffraction studies of adsorbed gas atoms."

9–10 Aug. Aluminosilicates (Ralph J. Bertolacini, *chairman*): R. M. Barrer, "Aluminosilicates and molecular sieves"; Donald W. Breck and J. Rabo, "Molecular sieves, structure and characterization"; Roy S. Clarke, Jr., "The Smithsonian mineral and gem collection"; (speaker to be announced), "Synthetic gems"; John B. Peri, "Surface structure of alumina and silica-alumina"; and Hans Benesi, "Acidity of solids."

Analytical Chemistry

Donald D. DeFord, *chairman*
Stephen Dal Nogare, *vice chairman*

13 Aug. Klaus Biemann, "Mass spectra of complex organic molecules"; A. P. Altshuller, "Trace analysis in vapors and gases."

14 Aug. W. H. Reinmuth, "Voltammetry with periodically varying signals." Open discussion on electrochemical methods.

15 Aug. James M. Bobbitt, "Thin layer chromatography"; and Lloyd R. Snyder, "Theory and applications of linear elution adsorption chromatography."

16 Aug. J. Calvin Giddings, "Principles of gas chromatography." Open session.

17 Aug. Stanley Bruckenstein, "Non-aqueous acid-base equilibria."

Metals and Metal Binding in Biology

George C. Cotzias, *chairman*

20 Aug. Metals in vivo (George C. Cotzias, *chairman*): Daniel C. Tosteson, "Metal distribution and transport in red blood cells"; Aser Rothstein, "Metal binding, cellular anatomy, cellular function." *Metals in vivo* (continued) (Maynard B. Chenoweth, *chairman*): Harry Kroll, "Chemical aspects of chelation and metal binding in biological systems"; Alfred Farah, "Studies on the mechanism of action of mercury on the kidney."

21 Aug. Metal binding and valence state (Harry Foreman, *chairman*): Harry A. Saroff, "The binding of alkali and alkaline earth metals to proteins"; Rufus Lumry, "Lilliput principle in protein-metal complex ions." *Metal binding and valence state* (continued) (Walter L. Hughes, *chairman*): Abraham Mazur, "Oxidation-reduction systems and the transport of iron"; I. Herbert Scheinberg, "Some biologic implications of the oxidation states of copper in proteins."

22 Aug. Basic theory (L. E. Orgel, *chairman*): Donald S. McClure, "Interpretation of spectra of transition metal complexes"; Ralph G. Pearson, "Mechanisms of substitution reactions of metal ions." *Basic theory* (continued) (Donald S. McClure, *chairman*): L. E. Orgel, The mechanism of oxidation-reduction reactions involving metal ions."

23 Aug. Redox behavior (Rufus Lumry, *chairman*): Norman Sutin, "Redox reactions of the transition elements"; Donald C. Borg and George C. Cotzias, "Electron transfer reactions of biological interest involving metal ions and free radicals." *Redox behavior* (continued) (Daniel C. Tosteson, *chairman*): Albert Szent-Gyorgyi, "Charge transfer and cellular unity."

24 Aug. Special aspects of metal behavior (Esmond E. Snell, *chairman*): Eugene D. Weinberg, "Trace metal control of specific biosynthetic processes"; Maynard B. Chenoweth, "Possible and probable roles of metals in drug action."

Adhesion

F. H. Wetzel, *chairman*
Frederick R. Eirich, *vice chairman*

27–31 Aug. C. L. Weidner, "Pressure-sensitive adhesives"; J. R. Huntsberger, "Adhesion—theoretical and ex-

perimental approach to some basic problems"; E. Shafrin, "Constitutive effects in adhesion and abhesion"; R. E. Hughes and W. C. Forsman, "The configuration of polymers in solution and in liquid-solid interfaces"; J. L. Gardon, "Phenomenological aspects of the peel adhesion test"; B. V. Deryagin, "The role of electric double layer in the phenomena of adhesion of solid bodies"; L. H. Sharpe, "Further studies on surface phenomena by frustrated total internal reflection"; J. M. McKelvey, "Surface activation of solid polymers in electric discharges"; G. Salomon, "Fundamentals of adhesion"; M. B. Sheratte, "Surface preparation of aluminum alloys"; I. J. Gardner, "Some aspects of the adhesion of butyl rubber to synthetic tire cords"; A. F. Lewis, "Adhesion properties of nylons"; R. M. Kell and C. W. Cooper, "Some factors affecting bond durability"; R. L. Patrick, "Fracture theory applied to heterogeneous systems"; S. S. Voyutskii, "Importance of the phenomenon of spontaneous diffusion and interchangeable diffusion for autohesion and adhesion of high polymers."

Kimball Union Academy

Lipid Metabolism

Maurice M. Rapport, *chairman*
Manfred Karnovsky, *vice chairman*

11 June. Lipoproteins: Lionel Salem, "Cohesive forces in lipoprotein systems"; W. H. Cook, "Composition and properties of soluble lipoproteins from egg yolk and other sources in relation to structure"; Gilbert E. Moos, "Polyamino acid-lipid complexes"; Angelo Scanu, "Some aspects of the protein-lipid interrelationship in the high density lipoprotein class of human plasma"; Paul Roheim, "Metabolism of the plasma lipoproteins."

12 June. Gangliosides: Lars Svennerholm, "The chemistry of gangliosides and their topical distribution in the nervous system"; Eberhard G. Trams, "Studies on gangliosides"; Robert M. Burton, "Studies on the physical properties of cerebral glycolipids and their possible relevance to biological function." *Phospholipases*: Laurens L. M. van Deenen, "Studies on the substrate specificity and mode of action of phospholipases"; Neil H. Tattrie, "The action of phospholipase A on natural and synthetic lecithins." G. V. Marinetti, *discussion leader.*

13 June. Plasmalogens: G. M. Gray, "The fatty aldehyde and fatty acid composition of plasmalogens from various animal tissues with reference to their relationship with the corresponding diacyl phosphatides"; John W. Farquhar, "Human erythrocyte plasmalogens: composition and dietary influences"; Eugene L. Gottfried, "The lytic activity of some plasmalogen derivatives." *Gas-liquid chromatography*: Charles C. Sweeley, "Recent developments in the gas chromatography of substances derived from lipids"; Arthur Karmen, "Detectors for the analysis of lipids by gas chromatography: measurement of mass and the measurement of radioactivity."

14 June. Adsorption chromatography: Helmut K. Mangold, "New developments in the thin-layer chromatography of lipids"; Orville S. Privett, "Quantitative analysis of lipids by thin-layer chromatography"; Joseph F. Nyc and Kian Bo Lie, "The chromatography of neurospora lipids in test tubes coated with a thin layer of silicic acid." *Lipid membrane*: Paul Mueller and Donald O. Rudin, "Reconstitution of an excitable cell membrane structure in vitro."

15 June. Bacterial lipids: Morris Kates, "Lipid components of some microorganisms"; Alois Nowotny, "Molecular biology of Gram-negative bacterial cell wall lipids."

Cell Structure and Metabolism

Franklin Hutchinson, *cochairman*
George Palade, *cochairman*

Structure and Function of Multilayer Systems in Cells

18 June. (A. K. Solomon, *chairman*): A. Katchalsky, "Forces and fluxes in layered systems"; J. H. Shulman, "Molecular reactions at oil-water interfaces." (Keith R. Porter, *chairman*): W. Stoeckenius, "Structural models in layered systems"; P. Mueller and D. Rudin, "Reconstitution of a cell membrane structure in vitro and its chemical transformation into an electrically excitable system."

19 June. (John R. Platt, *chairman*): Michael Kasha, "Introduction to energy transfer in lamellar systems"; David Kerns, "Physical reactions in layered systems." (Eugene Rabinowitch, *chairman*): D. von Wettstein, "Structure of chloroplasts"; Martin Kamen, "Biochemical constraints on the photochemistry of chromatophores."

20 June. (Eugene Rabinowitch, *chairman*): D. I. Arnon, "Photosynthetic reactions in subcellular particles"; K. H. Sauer, "Organization of pigments in the lamellar subunit of chloroplast." (H. K. Hartline, *chairman*): George Wald, "Visual excitation: a chemostructural study"; E. F. MacNichol, "Electrical potentials in photoreceptors."

21 June. (Lars Ernster, *chairman*): F. Sjöstrand, "Mitochondrial structure"; H. Lehninger, "Mechano-enzymes in mitochondria." (chairman to be announced): H. Fernandez-Moran, "Fine structure of layered systems."

22 June. (G. Palade, *chairman*): D. E. Green, "Stepwise oxidative phosphorylation in mitochondria"; Feodor Lynen, "Multienzyme complexes and sequential reactions."

Physical Metallurgy

W. D. Robertson, *chairman*
H. W. Paxton, *vice chairman*

The Structure and Properties of the Partially Periodic State

25 June. Structure models of the partially periodic state: J. D. Bernal, "Structural arrangements in the partially periodic state"; B. E. Warren, "X-ray structural analysis of the partially periodic state." *Transformation from partially periodic to periodic state:* D. Turnbull, "Transformation mechanisms and transformation kinetics"; J. L. Walker, "The growth of crystals into super-cooled liquids."

26 June. Physical properties of the partially periodic state: V. Heine, "Band structure in the partially periodic state"; W. D. Knight, "Nuclear resonance in the liquid and solid states"; J. M. Ziman, "Electronic transport properties of liquid metals"; H. B. Huntington, "Influence of order on transport properties in Cu_3Au."

27 June. Transport properties in the partially periodic state: R. A. Swalin, "The nature of diffusion in liquids"; K. B. McAfee, Jr., "Effects of structural order on atomic diffusion in silica glass." *Mechanical properties of the partially periodic state*: J. Weertman, "Creep and viscosity of ice."

28 June. Surface properties of materials in the partially periodic state: K. Jackson, "Structure of the interface separating solid and liquid states"; Pol Duwez, "The structure and properties of amorphous films obtained from the melt." *The determination of the properties of point, line, and area defects in the condensed state*: A. Guinier (subject to be announced).

29 June. Precipitation from the par-

tially periodic state: R. A. Oriani, "Nucleation of phase separation in liquid solutions"; and R. D. Maurer, "Crystallization kinetics in glass-forming liquids."

Coenzymes and Metabolism

James S. Dinning, *chairman*
Thomas H. Jukes, *vice chairman*

2–6 July. William Shive, "Some recent studies concerning biotin and folinic acid"; Nathan O. Kaplan, "The structure and biological properties of pyridine coenzymes"; L. M. Henderson, "Tryptophane degradation pathways in the rat"; M. L. Scott, "Factors interrelated with vitamin E in chick nutrition"; Jan van Eys, "Non thiamine-pyrophosphate functions of thiamine"; Elizabeth Neufeld, "Sugar nucleotide pathways in plants"; Stanley Gershoff, "Recent metabolic studies of the etiology of renal stone disease"; R. G. Hansen, "New nucleotides isolated from natural products"; John R. Totter, "Some observations on xanthine oxidase and xanthine dehydrogenase as studied by chemiluminescence techniques"; Philip Handler, "Studies on the structure and function of liver aldehyde oxidase"; Coy D. Fitch, "Metabolic alterations in experimental muscular dystrophy"; Arnold D. Welch, "6-Azauridine: inhibition of *de novo* biosynthesis of pyrimidines"; B. R. Baker, "Non-classical antimetabolites"; D. W. Woolley, "The relationship of vitamin B_{12} to spontaneous cancer"; Seymour Kaufman, "The mechanism of the enzymatic conversion of phenylalanine to tyrosine"; John G. Bieri, "Metabolic effects of vitamin E, antioxidants and selenium"; Karl Folkers, "Newer aspects of coenzyme Q"; David E. Green, "Role of coenzyme Q in electron transport and oxidative phosphorylation."

Chemistry, Physiology, and Structure of Bones and Teeth

Roy V. Talmage, *chairman*
George Nichols, *vice chairman*

9 July. Communications selected from submitted abstracts (George Nichols, *chairman*). *Matrix structure, calcification and breakdown* (R. A. Robinson, *chairman*). *Matrix and crystal formation*: D. Taves and W. Neuman, "Probable requirements necessary for crystal induction by bone matrix collagen"; M. Glimcher and S. Krane, "The structure of collagen in relation to mineralization."

10 July. Matrix breakdown: J. Gross, "Organization and disorganization of collagen"; P. Cameron, "Electron microscopic studies of bone matrix resorption with some remarks about bone matrix formation"; P. Gaillard, "Bone matrix resorption in organ cultures." *Bone induction* (Franklin McLean, *chairman*): H. Selye, "Calciphylaxis and mechanical interventions conducive to bone formation."

11 July. Parathyroids and bone (Franklin McLean, *chairman*): W. Bates, "Parathyroid influence on plasma hydroxyproline levels"; L. Belanger, "Osteoclasia and osteolysis"; D. Copp, "Calcitonin, a new parathyroid hormone." *Hormones and bone* (C. Willet Asling, *chairman*): "Hormones in bone repair;" E. Koskinen, "The effect of growth hormone, thyrotropin and cortisone on the repair of bone fractures."

12 July. Growth hormone and vitamin A: E. Knobil, "Physiology of growth hormone in primates"; P. Henneman, "Studies with growth hormone and vitamin A in man"; I. Clark, "Vitamin A and D interactions on bone metabolism." *Bone as an antigenic tissue* (J. A. Dingwall, *chairman*): V. Schwind, "The fate of bone in true homologous whole limb transplants in rats"; R. Burwell, "Whither bone antigenicity?"

13 July. J. Dingwall and R. Millonig, "Immunologic studies on the bone heterograft"; K. Heiple and A. Powell, "Effect of storage and sterilization on the antigenicity of the bone homograft"; and W. Enneking, "Antigenicity: osteogenic sarcoma compared with normal bone."

Radiation Chemistry

Ellison H. Taylor, *chairman*
Harold A. Dewhurst, *vice chairman*

16 July. R. H. Schuler, "Present status of radiation chemistry"; W. H. Hamill, "Evidence for ionic processes in rigid organic media at low temperature."

17 July. P. Howard-Flanders, "Application of radiation chemistry to radiation biology"; P. J. Dyne, "Radiation chemistry of hydrocarbons."

18 July. L. C. De Maeyer, "The study of fast chemical processes in solution by relaxation techniques." Contributed research papers.

19 July. A. O. Allen, "Present status of water"; (speaker and subject to be announced).

20 July. Concluding discussions.

Chemistry at Interfaces

L. E. Copeland, *chairman*
James M. Holmes, *vice chairman*

23 July. Solid surfaces (Peter Cannon, *chairman*): Gabor Somorjai, "Kinetics and mechanism of oxygen interaction with compound semiconductor surfaces"; John Silcox, "Processes at or near surfaces in metals by electron transmission microscopy"; D. J. Nicholas, "Electrical properties of metal surfaces and a new surface analyser"; J. Peter Hobson, "A study of physical adsorption at very low pressures using ultrahigh vacuum techniques."

24 July. The solid-gas interface (E. A. Flood, *chairman*): R. M. Barrer, "Diffusion in porous materials"; L. Willard Richards, "Heats of adsorption from gas-solid chromatography"; Hugh Taylor, "Chemisorption during catalytic action."

25 July. Monolayers (Peter D. Klein, *chairman*): A. E. Alexander, "Some recent studies of monomolecular films with particular reference to hydrogen bonding and spreading phenomena"; John B. Arnold and Charles Pak, "The biological significance of the interaction of soluble proteins with protein monofilms"; D. G. Dervichian, "Molecular association in mixed monolayers."

26 July. Dispersed systems (H. van Olphen, *chairman*): J. Lyklema, "The influence of the nature of sorbers on the properties of the double layer"; Charles A. Kumins, "Long-range effects of sorption of solid polymers on crystalline solids"; A. S. Michaels, "Particle interactions in aqueous kaolinite dispersions."

27 July. Related topics and general discussion (Ralph Beebe, *chairman*).

Solid State Studies in Ceramics

Jorgen Selsing, *chairman*
J. E. Burke, *vice chairman*

Structural Aspects

30 July. R. L. Coble, "Kinetics of ceramic reactions"; A. Accary, "Study of sintering by resistivity methods"; J. Williams, "Sintering of nuclear ceramics."

31 July. J. P. Roberts, "Permeability of alumina to gases"; R. M. Fulrath, "Inclusions in brittle matrices"; W. B. Crandall, "Microstresses in synthetic crystal–glass systems."

1 Aug. J. H. Westbrook, "Some effects of grain boundaries on strength properties"; S. D. Stookey, "Effect of structure on properties of ceramics

Program Summary, Gordon Research Conferences for 1962

Qualified scientists are invited to submit applications for attendance at the Gordon Research Conferences. Application blanks may be obtained by returning the postcard on page 935 to Dr. W. George Parks, Department of Chemistry, University of Rhode Island, Kingston, R.I.

Date	Colby Junior College	New Hampton School	Kimball Union Academy	Tilton School
11–15 June	Hydrocarbon chemistry (formerly Petroleum)	Environmental sanitation —waste water reclamation	Lipid metabolism	Basic chemistry of aging
18–22 June	Catalysis	Biochemistry and agriculture	Cell structure and metabolism	Chemistry of carbohydrates
25–29 June	Nuclear chemistry	Nucleic acids	Physical metallurgy	Friction, lubrication, and wear
2–6 July	Polymers	Scientific information problems in research	Coenzymes and metabolism	Chemistry and physics of space
9–13 July	Textiles	Chemistry and physics of isotopes	Chemistry, physiology, and structure of bones and teeth	Theoretical chemistry—molecular quantum mechanics
16–20 July	Elastomers	Steroids and other natural products	Radiation chemistry	Organic coatings
23–27 July	Corrosion	Organic reactions and processes	Chemistry at interfaces	
30 July–3 Aug.	Medicinal chemistry	Statistics in chemistry and chemical engineering	Solid state studies in ceramics	
6–10 Aug.	Instrumentation	Inorganic chemistry	Toxicology and safety evaluations	
13–17 Aug.	Food and nutrition	Analytical chemistry	Chemistry and physics of solids	
20–24 Aug.	Separation and purification	Metals and metal binding in biology	High-temperature chemistry	
27–31 Aug.	Cancer	Adhesion	Infrared spectroscopy	

made by nucleation of homogeneous glasses."

2 Aug. O. W. Florke, "Crystal chemistry and structural anomalies of SiO_2 and $AlPO_4$"; Anne Roe, "The structure of the scientific mind."

3 Aug. W. M. Hirthe, "The interaction of point defects and dislocations in ceramic crystals."

Toxicology and Safety Evaluations

C. Boyd Shaffer, *chairman*
Frederick Coulston, *vice chairman*

6 Aug. (O. G. Fitzhugh, *moderator*): A. C. Frazer, "A critical evaluation of the available methods of assessment of chronic toxic effects of substances of low toxic potential"; (Frederick Coulston, *moderator*): Dietrich Henschler, "Reactions of the lung to repeated and long-term exposure to respiratory irritants"; A. J. Vorwald, "Criteria for evaluation of effects of atmospheric pollutants at low concentrations upon an organism."

7 Aug. (R. L. Roudabush, *moderator*): J. D. Judah, "General mechanisms of toxic injury"; R. O. Recknagel, "Physiological basis of fat accumulation in toxic liver injury." (H. E. Stokinger, *moderator*): E. J. Fairchild, II, "Neuroendocrine mechanisms affecting response to stress by toxic agents"; T. M. Brody, "Carbon tetrachloride poisoning and stress."

8 Aug. (K. P. DuBois, *moderator*): R. T. Williams, "The metabolism of foreign compounds in relation to their toxicity"; J. C. Dacre, "Biochemical and metabolic studies in safety evaluation." (F. R. Blood, *moderator*): H. B. Jones, "Is there carcinogenic activity at great dilution of carcinogen?"; C. S. Weil, "An inquiry into the relationship between stones and papillomas of the urinary bladder."

9 Aug. (K. B. Kerr, *moderator*): J. T. Litchfield, Jr., "Drug effects on fetal and newborn animals"; J. R. Fouts, "Biochemical mechanisms responsible for increased drug toxicity in various physiological or pathological states." (R. B. Smith, Jr., *moderator*): R. A. Kehoe, "A forward view of the objectives and methods of industrial toxicology."

10 Aug. (F. J. Coughlin, *moderator*): E. W. Ligon and T. W. Nale, "Safety evaluation in labeling."

Chemistry and Physics of Solids

Benjamin Lax, *chairman*
David Dexter, *vice chairman*

Optical Properties of Solids

13 Aug. Introduction: Benjamin Lax. H. Ehrenreich, "Optical and ultraviolet properties of semiconductors"; (speaker to be announced), "Impurity levels in semiconductors"; R. S. Knox, "Excitons."

14 Aug. (Speaker to be announced), "Magneto-optical effects in semiconductors"; L. G. Parratt, "Fine points in x-ray energy level diagram in solids"; B. S. Gourary, "Localized states in insulators."

15 Aug. C. C. Klick, "Alkali halides"; F. Brown or A. Gold, "Silver halides"; J. A. Rayne, "Optical experiments in metals"; (speaker to be announced), "Theory of optical properties in metals."

16 Aug. (Speaker to be announced), "Magneto-optical effects in metals"; P. A. Franken, "Nonlinear effects in solids"; W. Cochran, "Lattice vibrations"; M. Tinkham, "Infrared experiments in ferrimagnetics."

17 Aug. Final session: D. Dexter.

High Temperature Chemistry

Paul W. Gilles, *chairman*

20–24 Aug. Mass spectrometry; high temperature cells; matrix isolation; torsion effusion; and *structure of high temperature species.* The discussion leaders will be C. B. Alcock, S. H. Bauer, Joseph Berkowitz, Leo Brewer, Paul Goldfinger, Donald L. Hildenbrand, Everett G. Rauh, H. Rickert, L. E. J. Roberts, Harald Schäfer, Alan W. Searcy, William Weltner, and David White.

Infrared Spectroscopy

M. Kent Wilson, *chairman*

27 Aug. E. B. Wilson, "Rotational barriers"; N. Sheppard, "Rotational isomerism"; J. Decius, "Infrared spectra of solid solutions."

28 Aug. H. W. Thompson, "Quantitative Raman spectroscopy"; B. Stoicheff, "Masers as spectroscopic sources"; R. A. Smith, "Recent developments in infrared detectors."

29 Aug. J. Linnett, "Potential functions"; D. Hornig, "Potential functions in hydrogen bonding"; E. R. Lippincott, "Effects of high pressure on infrared spectra."

30 Aug. J. Schachtschneider, "Group frequencies and the transference of force constants"; D. M. Dennison, "Utility of normal coordinate calculations"; (speaker and subject to be announced).

31 Aug. J. Polanyi, "Infrared chemiluminescence"; (speaker and subject to be announced).

Tilton School

Basic Chemistry of Aging

Johan Bjorksten, *chairman*

11 June. Factual chemical data available on compounds significant in aging: Peter Alexander, "Nucleic acids"; A. S. Henick, "Lipids"; F. L. Crane, "Quinones"; K. H. Gustavson, "Aldehydes and other reactive organics"; Arthur Furst, "Polyvalent metals."

12 June. Physical methods and their use as applied to study of aging chemicals: H. H. Zinsser, "X-ray diffraction studies"; T. H. Benzinger, "Heat, driving force and measuring scale of chemical change"; H. Fernandez-Moran, "Electron microscopy as a tool for chemical research on aging"; F. Verzar, "Collagen studies."

13 June. Methods used in elucidation of structures of entirely insoluble substances in other fields: N. M. Sulkin, "Introductory statement on insoluble organic compounds of unknown structure observed in aging"; K. Kratzl, "Techniques from lignin chemistry for resolving structures of insoluble compounds"; George C. Claver, Jr., "Techniques from plastics chemistry"; O. A. Battista, "Techniques from cellulose chemistry." Discussion on how to apply these outside methods for further elucidation of the chemistry of aging: panel speakers from the morning session.

14 June. Assay for longevity properties—possibilities of extrapolating results with short-lived animals: Maria A. Rudzinska, "Tokophrya"; Morris Rockstein, *"Musca domestica"*; A. I. Lansing, "Rotifers"; A. W. B. Cunningham, "Tissue dynamics techniques."

15 June. (Speaker to be announced), "What should be done, by whom, and how?"

Chemistry of Carbohydrates

John T. Goodwin, Jr., *chairman*
Hewitt G. Fletcher, Jr., *vice chairman*

18 June. Enzymes in carbohydrate chemistry: (B. L. Horecker, *discussion leader*): B. L. Horecker, "Glucose and galactose oxidases"; W. Z. Hassid, "The role of sugar nucleotides in the biosynthesis of complex polysaccharides"; A. D. Elbein and E. C. Heath, "The biosynthesis of deoxy sugars"; L. Levine, "Immunochemical approaches to the study of polysaccharide structure"; W. A. Wood, "The enzymic determination of monosaccharides."

19 June. Mechanisms of carbohydrate reactions (R. U. Lemieux, *discussion leader*): R. U. Lemieux, "Conformational analysis of reactions at the anomeric center"; R. L. Whistler, "Replacement of the ring oxygen of sugars with other hetero atoms"; W. A. Bonner, "Mechanisms of anomerization"; C. T. Bishop, "Formation and stability of methyl glycosides"; A. B. Foster, "Influence of hydrogen bonding on the shape and reactivity of carbohydrates."

20 June. Oxidation of carbohydrates (B. Lindberg, *discussion leader*): B. Lindberg, "Carbonyl glycosides"; A. S. Perlin, "Cleavage of *vic*-Diols by lead tetraacetate"; W. G. Overend, "Oxosugars as intermediates for the synthesis of deoxy-, branched-chain, and aminosugars"; F. Smith, "Oxidation of carbohydrates by periodate."

21 June. Wood polysaccharides (T. E. Timell, *discussion leader*): T. E. Timell, "Isolation, constitution, molecular properties, and biochemical evolution of wood xylans"; R. H. Marchessault, "Physical properties of wood polysaccharides"; I. Croon, "Reactions of wood polysaccharides during pulping processes." *The synthesis of aminosugars* (H. H. Baer, *discussion leader*): H. H. Baer, "Synthesis of nitrogenous sugars via the nitromethane method"; B. R. Baker, "Facile displacement reactions in the mannitol series."

22 June. The chemistry of sucrose (W. W. Binkley, *discussion leader*): E. J. Bourne, "Acetals and metallic complexes of sucrose and its derivatives"; J. W. LeMaistre, "Anhydrization of some hexitols derivable from sucrose."

Friction, Lubrication, and Wear

Donald G. Flom, *chairman*

25 June. Fundamentals of wear (R. P. Steijn, *chairman*): J. K. Lancaster, "Mechanisms of wear"; E. Rabinowicz, "The energy of adhesion criterion and the wear process."

26 June. Friction in high vacuum (R. L. Johnson, *chairman*): A. J. Haltner, "Friction of lamellar solids in ultrahigh vacuum"; P. J. Bryant, "Cohesion of clean surfaces."

27 June. Lubrication with oils (D. Godfrey, *chairman*): A. A. Raimondi, "Latest fundamentals of hydrodynamic lubrication"; I. M. Liubarskii, "Penetration of oil into metal."

28 June. Deformation in sliding and rolling (F. F. Ling, *chairman*): L. D. Dyer, "Friction, deformation, and dislocations in copper"; D. Tabor, "The history of research in friction."

29 June. The nature of contact between solids (J. S. Courtney-Pratt, *chairman*): J. B. P. Williamson, "A method of studying the microtopography of surfaces."

Chemistry and Physics of Space

A. G. W. Cameron, *chairman*
J. R. Arnold, *vice chairman*

2–6 July. Small bodies and particles in space: (speakers to be announced), "Origin and development of meteorites"; "Anomalous isotopic compositions of meteorites"; "Cosmic ray exposure ages of meteorites"; "Tritium in solar cosmic rays"; "Element abundances in meteorites and stars"; "Experimental studies of hypervelocity impacts"; "Shock propagation in solids"; "Shock transformations of minerals"; "Results of the Ranger lunar experiments (if successful)"; "Nature of particles in comet tails"; "The zodiacal light"; "The Gegenschien"; "Measurements of interplanetary dust particles with satellites"; "Examination of interplanetary dust collected from high altitudes"; "Space erosion by dust particles"; "Properties of interstellar grains"; "Formation of H_2 on interstellar grain surfaces"; "Diffuse interstellar lines and their interpretation."

Theoretical Chemistry—Molecular Quantum Mechanics

Harrison Shull, *chairman*

9 July. C. C. J. Roothaan, "Self-consistent calculations on atoms and molecules." (Frank Harris, *discussion leader*.) F. O. Ellison and Robert K. Nesbet, "Qualitative applications of quantitative calculations: population analyses and the magic formula." (Robert S. Mulliken, *discussion leader*.)

10 July. Frank Harris and William T. Simpson, "Configuration interaction calculations on atoms and small molecules." (S. Hagstrom, *discussion leader*.) H. E. Zimmerman and L. C. Allen, "Applications of quantum mechanical calculations to organic chemistry." (L. C. Snyder, *discussion leader*.)

11 July. Robert G. Parr and Oktay Sinanoglu, "Pair functions and density matrices." (F. A. Matsen, *discussion leader*.) Thomas L. Allen, "Non-bonded atom-atom interactions." (Discussion leader to be announced.)

12 July. Martin Karplus and H. F. Hameka, "Hyperfine and external field interactions: theory and small molecules." (John A. Pople, *discussion leader*.) L. C. Snyder and G. G. Hall, "Hyperfine and external field interactions: larger systems." (Martin Karplus, *discussion leader*.)

13 July. Speaker to be announced, "Experimental areas inviting theoretical work." (Discussion leader to be announced.)

Organic Coatings

Raymond R. Myers, *chairman*
Harold Jaffe, *vice chairman*

16 July. Physical chemistry of polymerization: Lester C. Case, "Theoretical considerations in condensation polymerizations"; Myron J. Holm, "A light-induced polymerization occurring in the crystalline phase"; William Burlant, "Ionizing radiation and organic polymers."

17 July. Film-forming systems: John Gibbons, "Methyl glucoside in coatings resins"; Harold Jaffe, "Latex design from theoretical considerations"; James Evans, "The use of starch in the coatings industry."

18 July. Characterization of coatings: Walter K. Asbeck, "Coatings adhesion by knife cutting methods"; E. Jack Kahler, "Magnetic resonance studies of coatings."

19 July. Characterization of coatings (continued): Clara D. Smith and John K. Wise, "The application of special techniques of infrared spectroscopy to coatings problems"; Valeria Artel, "Solvent selection for maximum concinnity in coatings."

20 July. Characterization of coatings (continued): Allen L. Alexander and Robert B. Fox, "The effect of the aerospace environment on organic films."