Gordon Research Conferences: Program for 1967

W. George Parks

The Gordon Research Conferences for 1967 will be held from 12 June to 1 September at five educational institutions in New Hampshire: Colby Junior College, New London; New Hampton School, New Hampton; Kimball Union Academy, Meriden; Tilton School, Tilton; and Proctor Academy, Andover. From 3 July to 18 August conferences will be held at Crystal Inn, Crystal Mountain, Washington.

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 speakers and discussion groups. Sufficient time is available to stimulate informal discussion 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 that often result in collaboration and cooperative efforts among 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 subject 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 provoke 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 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 two 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. Registration cards will be mailed to those persons selected. Advance registration by mail for each conference is required and is completed on receipt of the card and a deposit. This advance deposit is not required from foreign scientists. Checks are to be made payable to the Gordon Research Conferences. The deposit will be credited against the fixed fee for the conference. A registration card not accompanied by the deposit will not be accepted.

The Board of Trustees of the Conferences has established a fixed fee 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. It is to the advantage of all participants to attend a conference for the entire week. The fixed fee will be charged regardless of the time a conferee attends the conference—that is, for the periods of from 1 to 4½ days. An additional charge per night per person will be made for a room with a private bath (New Hampshire only) or for a single room, if no double rooms or roommates 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 the 5 conference nights.

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

Conferees 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 for discussion of scientific research. When special circumstances warrant a request to live elsewhere permission must be obtained from the director. If the request is approved these non-resident conferees will be charged a registration fee of $60, instead of the resident fee of $50.

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. *Application for this special fee must be requested at the conference office during the conference.*

Accommodations are available for wives who wish to accompany their husbands and for children at least 12 years of age. 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. No pets will be permitted in the dormitories.

Special Fund. A special fund is provided from the registration fee and is made available to the chairman of the

The author, director of the Gordon Research Conferences, is professor and chairman of the department of chemistry at the University of Rhode Island, Kingston.

conference for the purpose of increasing participation of research scientists who could not otherwise attend and participate because of financial limitations. Its use is not limited to scientists who have been invited by the chairman as a speaker or discussion leader. The money is to be used as an assistance fund only and may be used to contribute toward travel expenses, registration fee and/or subsistence expenses at the conference, or both. Total travel and subsistence expenses usually will not be provided.

Fees. The following is a schedule of the fees:

	New Hampshire	Washington
Deposit	$ 20	$ 30
Fixed fee	120	130
Registration fee	50	50
Resident (included in fixed fee)		
Nonresident	60	60
Guest charges (Room and meals, 5 conference days)	70	80

Cancellation. The deposit will be forfeited if an approved application for attendance at a conference is cancelled.

Program. The complete program for the 1967 Gordon Research Conferences is published in this issue of *Science.* Reprints are available on request.

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, Rhode Island 02881. Mail for the office of the director from 12 June to 1 September 1967 should be addressed to W. George Parks, Director, Gordon Research Conferences, Colby Junior College, New London, New Hampshire 03257.

The program to be presented is as follows:

Colby Junior College

Hydrocarbon Chemistry

David A. McCaulay and Martin Stiles are chairman and vice chairman, respectively.

12 June. G. J. Karabatsos, "Protonated cyclopropanes"; George A. Olah, "Stable carbonium ions"; Werner O. Haag, "Characteristics of heterogeneous acid-catalyzed olefin reactions."

13 June. A. Schneider, "Lewis-acid-catalyzed rearrangements leading to adamantanes"; Herman Pines, "Recent studies in the base-catalyzed reactions of hydrocarbons and of related compounds"; R. E. Kallio, "Mechanism of microbial attack on hydrocarbons."

14 June. Ellis K. Fields, "Formation and reactions of arynes at high temperatures"; W. R. Roth, "Intramolecular hydrogen shifts."

15 June. Jürgen Sauer, "Mechanism of the Diels-Alder reaction"; (Martin Stiles, moderator): short invited papers.

16 June. E. J. Eisenbraun, "Reductive amination and other reactions related to the Birch reduction."

Nuclear Chemistry

Raymond K. Sheline and G. Davis O'Kelley are cochairmen; Robert Vandenbosch is vice chairman.

19–23 June. (Speakers to be announced.) Central theme will be nuclear spectroscopy. Experimental aspects: nuclear reaction spectroscopy, decay scheme spectroscopy, use of computers and mass separators on-line. Theoretical aspects: spherical nuclei, analog states, spherical-deformed nuclei and the transition region, Nilsson level systematics, vibrations in deformed nuclei, description of odd-mass deformed nuclei, parity mixing in nuclear decay. Subjects of broad interest: geochemical aspects of lunar exploration and evolution chemical molecules to biological systems.

Catalysis

Richard J. Kokes and Samuel Siegel are chairman and vice chairman, respectively.

26 June. G. C. Bond, "Mechanism of hydrogenation of unsaturated hydrocarbons"; R. G. Schultz, "Olefin dimerization over cobalt oxide on carbon catalysts"; J. C. Walker, "Mössbauer effects on thin films."

27 June. John W. Ward, "Investigations of the acidic properties and active sites on ion exchanged molecular sieves"; Thomas R. Hughes and Harry M. White, "A study of the surface structure of decationized Y zeolite by quantitative infrared spectroscopy"; Joseph Danforth, "An investigation of an organo-silica-alumina catalyst by a new chromatographic technique"; Hertha Skala and R. A. Hildebrandt, "High temperature acidity measurements and correlation with catalyst activity."

28 June. John Turkevich, "Electron spin resonance and catalysis"; G. A. Samorjai, "Low energy electron diffraction studies of the structure of platinum single crystal surfaces. Surface reactions on platinum"; F. C. Tompkins, "Heterogeneous oxidations catalyzed by platinum"; Gilbert Gordon, "Initiation of gas phase reactions at catalyst surfaces."

29 June. James F. Roth, "Dispersion and catalytic properties of supported platinum"; P. W. Selwood, "Adsorption and catalytic activity on ruby and sapphire"; Hans Brintzinger, "Reduction of molecular nitrogen in homogeneous solution."

30 June. F. G. Gault, "Isomerization on metals"; Peter T. Dawson, "The application of the field emission microscope to the study of processes of catalytic interest."

Polymers

Murray Goodman and John R. Elliott are chairman and vice chairman, respectively.

3 July. Conrad Schuerch, "Synthetic polysaccharides"; Piero Pino, "Optically active vinyl and related polymers." (Herbert N. Friedlander, discussion leader): John Boor, "Mechanisms of stereopolymerization."

4 July. (Richard Stein, discussion leader). Anton Peterlin, "Studies of polymer morphology"; Turner Alfrey, Jr., "Some aspects of structure and properties of network polymers"; Harry Frisch, "Topological isomerisms and configurational statistics of polymer structures."

5 July. (F. A. Bovey, discussion leader). Raymond C. Ferguson, "High frequency nuclear magnetic resonance studies of polymer structure"; Tsuneo Yoshino, "Anionic polymerization mechanisms of deuterated acrylates by nmr characterization"; Robert Ullman, "Nuclear magnetic relaxation of polymer solutions"; Victor Kabanov, "On the mechanisms of organic and matrix polymerizations."

6 July. Hanss Fischer, "ESR spectroscopy of transient radicals during liquid phase polymerization"; N. S. Enikolopov, "Zero energy of activation polymerizations"; J. L. Gardon, "The effects of slow termination rates in emulsion polymerization."

7 July. (John R. Elliott, discussion leader). M. Kryszewski, "Electrical properties of polymers"; Hans Coll, "Polymer characterization by osmometry with solute permeable mem-

branes"; R. F. Schaufele, "Characterization of polymers by Raman spectroscopy."

Textiles

Hector C. Borghetty and Charles R. Williams are chairman and vice chairman, respectively.

10–14 July. L. Rebenfeld, "Recent studies on the chemical modification of cellulose"; C. R. Williams, "A theoretical treatment of warp sizing"; M. Feughelman, "Longitudinal stability of keratin fibers and its relationship to molecular structure"; E. G. Bendit, "Applications of infrared absorption spectroscopy to investigations of keratin structure"; B. S. Sprague, "The relationship of critical fiber structural parameters to fiber physical properties"; I. D. Rattee, "The degradation of polyamides by absorbed dye and other molecular species"; R. R. Benerito, "Untangling the web of inconsistencies in theories of cotton resiliency"; H. R. Billica, "Structure of man-made fibers"; W. O. Statton, "The extension of solid state physics to polymers"; I. Wizon and J. A. Robertson, "Continuous filament ceramic fibers via the viscose process."

Scientific Information Problems in Research

J. M. Mullen and D. B. Remsen are chairman and vice chairman, respectively.

Prudent Exploitation of Scientific Information

17 July. Keynote presentation. Information problems and opportunities from the user's viewpoint. (Two or three papers to be submitted by a biologist, a medical researcher, a biochemist, a chemist, a physicist, or an engineer).

18 July. Oral and informal communication. Information analysis centers.

19 July. Selecting information on a qualitative basis. An imaginative approach-experience and implications of Project Interex.

20 July. A corporate plan to cope with scientific information—the du-Pont Company. Marketing the product —the NASA technology transfer experiment. Computers in music.

21 July. Recent developments affecting the national information network.

Corrosion

Jerome Kruger and Sidney Barnartt are chairman and vice chairman, respectively.

Structure, Defects, and Impurities in the Oxidation of Metals

24 July. Metal structure: G. O. Krause, "The formation of interfacial dislocations in the early stages of oxidation of copper single crystals"; Fl. Bouillon, "Low pressure oxidation of metals: influence of some chemical or physical defects in the metal on nucleation and growth of oxide crystals." (K. R. Lawless, discussion leader). L. H. Jenkins and U. Bertocci, "Some effects of substrate structure and oxide film formation on the reactivity of copper in aqueous systems"; S. A. Jansson, "Role of defects in the metal substrate in alloy oxidation." (S. Barnartt, discussion leader).

25 July. Oxide structure and morphology: R. A. Ploc, "The morphology of low temperature ZrO_2 films"; A. G. Revesz, "Noncrystalline oxide films with emphasis on the Si-SiO_2 interface system." (E. A. Gulbransen, discussion leader). J. Stringer, "The role of scale failure mechanisms in the oxidation of tantalum and niobium"; R. L. Tallman, "Crystal morphology and mechanisms of growth of α-Fe_2O_3 whiskers on iron." (R. A. Meussner, discussion leader).

26 July. Defects in oxides: P. Lacombe, "Anionic and cationic diffusion and electro-transport in transition metal oxides"; W. W. Smeltzer, "Reactant transport by shortcircuit diffusion in nickel oxide films." (J. B. Wagner, discussion leader). J. V. Cathcart, "The role of oxide structural defects in the oxidation of metals"; D. L. Douglass, "The role of oxide plasticity on oxidation." (D. Holmes, discussion leader).

27 July. Impurities in oxides: M. Cohen, "Studies of the reactions of clean and 'contaminated' metal surfaces"; J. L. Weininger, "Electrochemical studies of doped single crystal oxide electrodes." (M. C. Bloom, discussion leader). Panel discussion—new directions in theory and experiment: J. E. Draley, A. T. Fromhold, P. Kofstad, and R. A. Rapp. (J. E. Draley, moderator).

28 July. Transformations in oxides: J. P. Pemsler, "Structure, anisotropy, diffusion and atomistics in the oxidation of zirconium and hafnium"; G. R. Wallwork, "Oxidation of iron, iron nickel and iron chromium alloys in oxygen and carbon dioxide." (J. Kruger, discussion leader).

Elastomers

B. B. Boonstra and Thor L. Smith are chairman and vice chairman, respectively.

31 July. Herman Mark, "Concepts and materials for superior elastomers"; E. T. Bishop and S. Davison, "Network characteristics of the thermoplastic elastomers"; Leon Marker, "Transition behavior of block copolymers."

1 August. W. S. Bahary, "The effect of branching on concentrated solution viscosities"; A. C. Martellock, "The rheology of branched polydimethyl siloxanes"; R. E. Bellis, "Electron spin resonance investigation of free radicals in irradiated polymers."

2 August. Herman Westlinning and S. Wolff, "Effect of fillers on vulcanization and molecular network formation"; Zvi Rigbi, "Theoretical aspects of filler reinforcement"; Alan N. Gent, "Some special types of fracture of filled and unfilled rubbers."

3 August. H. K. Frensdorff, "Vulcanization chemistry of Nordel hydrocarbon rubber"; F. P. Baldwin, P. Borzel, C. A. Cohen, H. S. Makowski, and J. F. Van de Castle, "Vulcanization of polymers containing limited olefinic functionality"; Harry Drushel, "Monomer sequence distribution in ethylene-propylene copolymers by computer analysis of infrared spectra."

4 August. Roger S. Porter and Julian F. Johnson, "Mechanisms and variables of amorphous polymer degradation in laminar flow shear and sonic wave irradiation"; N. Calderon, "Elastomers from cyclo-olefines."

Separation and Purification

Gilbert J. Sloan and Raymond F. Baddour are chairman and vice chairman, respectively.

7–11 August. Thomas H. Donnelly, "A continuous electrophoretic fractionator for ampholyte solutions"; Edward W. Eckey, "The horizontal fractionator"; Ralph E. Kunkee, "Isolation of flavor components of wine"; John H. Knox, "How can the speed of gas and liquid chromatography be improved?"; F. R. Lipsett, "Speculations on the role of chemical impurities and physical defects in the luminescence of naphthalene and anthracene"; Bernard Loev, "Dry column chromatography, an improved technique for chromatography"; Earle C. Makin, "Organic molecular sieves—a new separation tool"; I. Michaeli, "Ion binding and critical

transitions in polyelectrolyte systems"; C. H. H. Neufeld, "The use of dialysis in polymer purification"; A. Polson, "Electro-decantation, as applied to protein fractionation and concentration"; R. A. DeZeeuw, "The role of solvent vapor in thin-layer chromatography."

Food and Nutrition

Herbert P. Sarett and Max Milner are chairman and vice chairman, respectively.

14 August. Food colors (Bernard L. Oser, chairman): Harold C. Grice, "Evaluation of food colors for use in Canada"; Samuel Zuckerman, "Chemistry and technology of currently permitted certified food colors in relation to industrial requirements." Enzymatic processing of foods (L. J. Teply, chairman): Kendall W. King, "Processing foods with cellulases and related enzymes"; Oswald A. Roels, "Production of acceptable human foods from unusual marine resources by fermentation."

15 August. Malnutrition in early life and brain development (Richard H. Barnes, chairman): Myron Winick, "Effects upon RNA-DNA composition"; John W. T. Dickerson, "Effects upon lipid composition." The national diet heart study (Eldon E. Rice, chairman): Helen B. Brown, "Foods and feasibility"; Jeremiah Stamler, "Clinical and biochemical findings and their implications in a national mass field trial."

16 August. Soybeans: nutritional and physiological effects (Max Milner, chairman): L. Ross Hackler, "Nutritional studies on soybeans and soybean products"; Joseph J. Rackis and Frederic R. Steggerda, "Soybean flatulence factors: isolation, characterization, and physiological activity." Nutritional significance of type of carbohydrate in the diet (Herbert P. Sarett, chairman): Arnold E. Bender, "The effects of carbohydrates on metabolism"; Mildred Adams, "Influence of factors such as heredity, age, and kind of diet on the differing responses to various dietary carbohydrates."

17 August. Energy metabolism in man (Olaf Mickelsen, chairman): Elsworth R. Buskirk, "Energy balance studies in man—usefulness and problems"; J. V. G. A. Durnin, "Relationship between intake and expenditure of energy: influence of physique, type of activity, and age." Sami A. Hashim, "Tailor-made triglycerides—new approaches to nutritional and metabolic research."

18 August. Bone demineralization (Paul A. Lachance, chairman): Pauline Beery Mack, "Calcium balance and bone density during prolonged recumbency"; Leo Lutwak, "Attempts at measurement of mineral and nitrogen balance in space."

Ion Exchange

F. G. Helfferich and Richard M. Diamond are chairman and vice chairman, respectively.

21 August. Inorganic ion exchangers (K. A. Kraus, chairman): J. S. Johnson, Jr., "Hyperfiltration"; H. A. Sherry, "Polyvalent ion exchange in synthetic zeolites Linde X and Y"; Sten Ahrland, "Ion exchange properties of zirconium and iron (III) phosphates"; Leo Baetsle, "Inorganic ion exchangers and radiochemical properties."

22 August. Selectivity (George Eisenman, chairman): R. M. Diamond, "General survey." R. M. Diamond, G. Eisenman, H. P. Gregor, E. Högfelt and H. A. Sherry, discussion. R. H. Doremus, "Selectivity in ionic mobility in ion exchangers"; D. H. Freeman and W. Rittner, "Structure and its relation to selectivity." Thermodynamics of irreversible processes (K. S. Spiegler, chairman): Aaron Katchalsky, "General survey"; James Wei, "Usefulness of nonequilibrium thermodynamics." A. Katchalsky, M. Tribus, K. S. Spiegler, J. Wei, and F. G. Helfferich, discussion.

23 August. Chromatography (Fred Nelson, chairman): Fred Nelson and K. A. Kraus, "Development of a general ion exchange separation scheme"; Y. Arikawa, "Rapid amino-acid analysis by ligand exchange"; A. D. Kelmers, "Fractionation of transfer ribonucleic acids by column chromatography"; F. G. Helfferich, "Chromatographic behavior of interfering solutes."

24 August. Unusual materials, techniques, and applications (David Schwartz, chairman): Hans Determann, "Macroporous polymers as backbones for ion exchangers"; H. P. Gregor, "Nonaqueous ion exchange with oleophilic resins"; H. F. Walton, "Ligand-exchange chromatography"; Hamish Small, "Inhibition of ion exchange reactions"; D. Willis, "Thermal regeneration of ion exchangers."

25 August. Industrial applications (I. M. Abrams, chairman): I. M. Abrams, R. E. Anderson, C. Calmon, R. Kunin, and L. G. LeFevre, "A perspective view of ion exchange resin applications."

Cancer

Harry Eagle and M. Michael Sigel are chairman and vice chairman, respectively.

28 August. Cell transformation (H. Koprowski, chairman): R. Weil, "Further studies on the interaction of polyoma virus with the genetic apparatus of host cells"; W. Henle, "Attempts to isolate and identify the herpes-like virus present in cultures of Burkitt tumor cells"; M. Green, "Viral RNA and carcinogenesis."

29 August. Cell transformation (continued) (P. Marcus, chairman): R. Latarjet, "Effects of radiation on host cell-virus oncogenic interaction"; G. Sauer, "Complementation in oncogenic viruses"; H. Green, "Oncogenic viruses and their effects on cell functions."

30 August. Immunology (B. Benacerraf, chairman): K. Habel, "Tumor antigens in tumor virus research"; P. Grabar, "Embryonic components in tumors and auto-antibodies in cancerous patients"; J. Fahey, "Studies with human lymphoid tumors."

31 August. Metabolism (Chairman to be announced): J. Darnell, "The study of ribonucleic acid in animal cells"; J. E. Till, "Studies on hemopoietic stem cells"; G. Sato, "Some speculations on the stability of differentiated metabolic patterns in animal cells."

1 September. (Chairman to be announced): M. D. Scharff, "Synthesis and assembly of gamma globulin in myeloma tumor cells."

New Hampton School

Molecular Electronic Spectroscopy

K. Keith Innes is chairman. G. Wilse Robinson and Jon T. Hougen are vice chairmen.

12 June. Vapor phase: W. Klemperer; J. W. C. Johns.

13 June. Panel discussion, "Energy transfer." D. A. Ramsay, "New spectroscopic results obtained with the aid of high-speed computers."

14 June. New techniques: D. W. Turner; A. Kupperman.

15 June. Triplet states: J. H. van der Waals; R. Hochstrasser.

16 June. Solids: S. A. Rice.

Nucleic Acids

Robert W. Holley is chairman. A. Dale Kaiser and Gunther S. Stent are vice chairmen.

19–23 June. Primary Structure (R. W. Holley, chairman); Photochemistry and chemical modifications (R. Chambers, chairman); Chemical synthesis of oligonucleotides (R. Letsinger, chairman); P. Berg; A. D. Kaiser; M. Meselson; J. Vinograd (subjects to be announced); Enzymology (M. Laskowski, Sr., chairman); Physical Chemistry (B. Zimm, chairman) Protein synthesis I (F. Lipmann, chairman); Separation procedures (G. Tener, chairman); Protein synthesis II (M. Nirenberg, chairman).

Proteins

Irving M. Klotz, and Emanuel Margoliash are co-chairmen. Edmond H. Fischer and Daniel E. Koshland, Jr., are vice chairmen.

26 June. "Structure at Å level I: x-ray; comparative sequences"; "Structure at Å level II: immunoglobulins."

27 June. "Structure at Å level III: genetics and evolution"; "Subunit interactions."

28 June. "Conformation I: energy minimization procedures; circular dichroism"; "Conformation II: probes; spin labelling, charge transfer."

29 June. "Macromolecular interactions"; "Special exotopics."

30 June. "Ultrafast reactions, isotope exchange reactions."

Coal Science

Irving Wender and R. Tracy Eddinger are chairman and vice chairman, respectively.

3 July. Organic geochemistry of coal (P. H. Given, discussion leader): W. Spackman, "Alteration of plant tissue during peat diagenesis"; W. Flaig, "Origin of nitrogen in coals"; F. M. Swain, "Biochemical aspects of coal diagenesis"; F. J. Stevenson, "Chemistry of humic acids." Organic geochemistry of coal (continued) (A. T. Cross, discussion leader): M. Teichmüller, "Carbon isotope ratios of coals and coal seam gases"; B. Nagy, "Chemical studies of ancient carbonaceous materials"; T. J. Chow, "Geochemistry of lead isotopes in coals."

4 July. Pyrolysis studies (R. A. Friedel, discussion leader): D. Murchison, "Pyrolysis studies of certain coal macerals"; F. J. Vastola, "Studies of coal marcerals by means of laser micropyrolysis"; W. R. Ladner, "Time-of-flight mass spectrometer studies on

Program Summary, Gordon Research Conferences for 1967:

Date	Colby Junior College	New Hampton School	Kimball Union Academy
12–16 June	Hydrocarbon chemistry	Molecular electronic spectroscopy	Science and technology of bio-materials
19–23 June	Nuclear chemistry	Nucleic acids	Magnetic resonance
26–30 June	Catalysis	Proteins	Cell structure and metabolism
3–7 July	Polymers	Coal science	Coenzymes and metabolic pathways
10–14 July	Textiles	Statistics in chemistry and chemical engineering	Chemistry, physiology, and structure of bones and teeth
17–21 July	Scientific information problems in research	Radiation chemistry	Physical metallurgy
24–28 July	Corrosion	Organic reactions and processes	Chemistry at interfaces
31 July–4 August	Elastomers	Steroids and other natural products	Solid state studies in ceramics
7–11 August	Separation and purification	Inorganic chemistry	Toxicology and safety evaluations
14–18 August	Food and nutrition	Analytical chemistry	Chemistry and physics of solids
21–25 August	Ion exchange	Geochemistry	Chemistry and physics of cellular materials
28 August–1 Sept.	Cancer	Science of adhesion	Chemistry of molten salts

rapid thermal decomposition of coal"; A. G. Sharkey, Jr., "Studies of coal by high resolution mass spectrometry." Pyrolysis studies (continued) (L. C. F. Blackman, discussion leader): D. C. Davidson, "The influence of sulphur, chlorine, and sodium on deposition in pulverized fuel fired boilers"; P. J. Jackson, "Reactions of alkali metals with other coal minerals in boiler deposits"; R. Higgins, "High temperature corrosion by brown coal ash desposit."

5 July. Elimination of nitrogen, sulphur and oxygen (P. L. Cottingham, discussion leader) P. J. White, "Hydrogenation of oil products from pyrolysis of bituminous coal"; H. Jüntgen, "Rate of heating as the dominating factor in coal pyrolysis"; L. D. Friedman, "Hydrogenation of coal tar with iodine"; D. M. Montgomery, (subject to be announced). Elimination of nitrogen, sulphur and oxygen (continued) (N. Berkowitz, discussion leader): C. A. Gray, "Mechanism of hydrodesulfurization of coal chars"; G. R. Hill, "Kinetics of sulfur, nitrogen and oxygen removal from coal-derived materials"; S. Friedman, "Reaction of coal and coal-derived materials at pressures up to 40,000 psig"; S. Ergun, "Solid state removal of pyrite."

6 July. Problems due to environmental pollution. Air pollution (H. Perry, discussion leader): J. Field, "Air pollution and coal"; E. Diehl, "Pollutants from coal-burning plants other than SO_2"; C. W. Fisher and M. Perch, "Problems associated with coal carbonization"; J. W. Leonard, "Problems due to fly ash"; A. C. Stern, "Clean Air Acts of 1963 and 1965—problems for the scientist"; C. R. Montgomery, "Problems due to mining and preparation." Problems due to environmental pollution (continued). Solid wastes, water, and land pollution (W. E. Bullard, discussion leader): S. Krickovic, "Land and water pollution and coal"; G. Hanna, "Effects on environment"; C. V. Riley, "Land reclamation"; R. R. Goldberg, "Acid mine drainage"; C. S. Kuebler, "Subsidence, mine fires and refuse banks"; L. Cook, "Institutional aspects and public relations"; B. C. Raynes, "Research needs."

7 July. (V. Krukonis, discussion leader): H. Retcofsky, "Electron paramagnetic resonance spectrometry in coal research"; B. D. Blaustein, "Reactions of coal in electrical discharges"; R. Tracy Eddinger, Discussion of coal research trends and planning for next conference.

Statistics in Chemistry and Chemical Engineering

Donald A. Gardiner and Ernest G. Bianco are chairman and vice chairman, respectively.

10 July. (Truman Koehler, chairman): H. O. Hartley, "Analysis of unbalanced factorial data"; (Robert J. Hader, chairman): Max Halperin, "Shorter confidence bands in linear regression."

11 July. (John W. Wilkinson, chairman): Arthur F. Dershowitz, "The time-sharing revolution"; (Wesley L. Nichol-

New Hampshire and Washington

Tilton School	Proctor Academy	Crystal Inn
Animal cells and viruses		
Biochemistry and agriculture	Lasers in medicine and biology	
	Lipid metabolism	
Chemistry of heterocyclic compounds	Lysosomes	Environmental sciences: Air
Chemistry and physics of space	Biomathematics	Chemistry and physics of isotopes
Chemistry and physics of coatings and films	Chemistry and metallurgy of semiconductors	Molecular pathology
Microbiological deterioration	Chemistry and physics of paper	Dynamics of quantum solids and liquids
Nuclear structure physics	Chemistry and physics of liquids	Medicinal chemistry
Organic photochemistry	*	Plasma physics
Photonuclear reactions	*	Laser interaction with matter
Thin films	*	
Glass	*	

* Week not available

son, chairman): Richard G. Krutchkoff, "Empirical bayes and linear regression."

12 July. (F. Beckley Smith, Jr., chairman): David B. Duncan and Richard H. Jones, "Some recent work in recursive estimation"; (Herbert Ginsburg, chairman): John L. Jaech, "Some statistical problems in mass spectrometry."

13 July. (Charles Thigpen, chairman): Arthur F. Dershowitz, "The time-series"; (Joseph Weinstein, chairman): Burton V. Dean, "Criteria for evaluating and selecting research projects."

14 July. (Donald W. Marguardt, chairman): James R. Kittrell, "Reaction rate modeling in chemical kinetics."

Radiation Chemistry

Harold A. Schwarz and John E. Willard are chairman and vice chairman, respectively.

17 July. G. Scholes, "Effect of nitrous oxide and other specific electron scavengers in irradiated systems." (C. D. Wagner, discussion leader). E. J. Land, "Excited state studies by pulse radiolysis." (I. A. Taub, discussion leader).

18 July. P. Ludwig, "Ionic reactions as precursors to fluorscence in liquid scintillator systems." (P. J. Dyne, discussion leader). F. Kaufman, "Reactions of hydrogen atoms, oxygen atoms, and hydroxyl radicals produced in discharge flow experiments." (R. F. Firestone, discussion leader).

19 July. J. K. Thomas, "Nanosecond pulse radiolysis of liquids." (A. O. Allen, discussion leader). L. Kevan, "Solvated electron in ice." (R. H. Schuler, discussion leader).

20 July. R. R. Hentz, "High pressure radiolysis of aqueous solutions." (M. Matheson, discussion leader). Contributed papers. (J. E. Willard, discussion leader).

21 July. B. Bielski, "Oxygenated species in aqueous solution. Part I"; D. Felix, "Oxygenated species in aqueous solution. Part II." (C. J. Hochanadel, discussion leader).

Organic Reactions and Processes

Everett Clippinger and Harold Kwart are chairman and vice chairman, respectively.

24–28 July. E. M. Arnett, "Solution calorimetry—new tricks for an old dog"; J. A. Berson, "Some recent aspects of molecular rearrangements"; Stanley Brois, "New developments in synthesis and reactions of aziridines"; T. C. Bruice, "Details of the reaction of 3-hydroxypyridine-4-aldehyde with alanine"; R. T. Carroll, "Mechanism studies on the oxychlorination of ethylene"; A. D. Ketley, "Dimerization of olefins with noble metal catalysts"; Wolfgang H. Mueller, "The mechanism and synthetic utility of sulfeny chloride reactions"; T. Saegusa, "Reactions of carbon monoxide, isocyanides and diazoalkanes"; H. Taube, "Reactions involving electron transfer through organic ligands"; I. Ugi, "Synthetic applications of stereoselective four component condensations"; H. M. Walborsky, "The stereochemistry of radicals in and out of solvent cage."

Steroids and Other Natural Products

A. I. Scott and Norbert Neuss are chairman and vice chairman, respectively.

31 July–4 August. Topics to be covered include biosynthesis, microbiological transformation, total synthesis and structure elucidation. The following persons have been invited to speak: A. R. Battersby, J. D. Bu'Lock, R. E. Ireland, S. M. Kupchan, P. de Mayo, T. Money, H. Muxfeldt, K. Nakanishi, K. L. Rinehart, Jr., H. J. Ringold, and J. C. Sheehan.

Inorganic Chemistry

Seymour Yolles and Grant W. Urry are chairman and vice chairman, respectively.

7–11 August. The nature of ions in aqueous solution (S. Y. Tyree, Jr., chairman): P. Schindler, "The relationship between hydroxo complexes and the corresponding solids"; Egon Matijevic, "The use of lyophobic colloids in solute determination"; J. S. Johnson, "Hydrolysis: from solutions to hyperfiltration"; R. S. Tobias, "The nature of metal-oxygen bonds in aqueous solute species"; Georg Biedermann, "Hydrolytic equilibria over a wide temperature range: and, the validity of the ionic medium principle"; L. C. W. Baker and M. Pope, subject to be announced. Molecular orbital calculations for coordination compounds (F. Albert Cotton, chairman): R. D. Brown, "Practical lessons learned from calculations in non-metal-containing systems"; R. F. Fenske, "Calculational approximations and their effects on the final results"; M. Gouterman, "Extended Huckel calculations on transition metal"; H. B. Gray, "Electronic structures of cyanide and carbonyl complexes"; C. B. Harris, "Approximations suitable for calculations on complexes of heavier metals"; J. W. Richardson, "*Ab initio* calculation of spectra and electron delocalization in transition metal complexes." Recent developments in the field of silicon chemistry (Grant W. Urry, chairman): Max Bechtold, "Silicic acid from tetraethyl silicate hydrolysis, polymerization and properties"; Malcolm E. Kenney, "Phthalocyanine derivatives of silicon"; Alan G. MacDiarmid, "Some properties of the silicon-silicon bond"; Peter L. Timms, "Some chemistry of silicon dihalides"; Robert West, "Dative π bonding to silicon—the current status of the problem"; Nils Wiberg, "Chemistry of silyl azides."

This program is supported in part by a grant from the Directorate of Chemical Sciences, Air Force Office of Scientific Research.

Analytical Chemistry

C. W. Zuehlke and David N. Hume are chairman and vice chairman, respectively.

14 August. B. L. Henke and R. A. Mattson, "X-ray fluorescence of the light elements"; Dale Margerum, "Reaction kinetics."

15 August. James W. Robinson, "Atomic absorption and fluorescence." Open session (David N. Hume, chairman).

16 August. J. C. Moore, "Gel permeation chromatography"; Per-Åke Albertsson, "Partition in aqueous polymer two-phase systems."

17 August. George Eisenman and James Ross, "Ion selective electrodes." Open session (D. N. Hume, chairman).

18 August. R. H. Herber, "Mössbauer spectroscopy."

Geochemistry

Kenneth S. Deffeyes and Robert W. Rex are cochairmen.

Nonmarine

21–25 August. Ron Gibbs, "Geochemistry of the Amazon River"; Daniel J. Livingston, "East African lakes and their history"; Chester Langway, Jr., "Geochemistry of the Greenland Ice Sheet"; Earnest Angino, "Chemistry of saline lakes in the Antarctic"; John

Thrailkeld, "Solution chemistry and precipitate mineralogy in Carlsbad Caverns"; Blair Jones, "Geochemistry of temperate saline lakes"; Timothy Steele, "Geochemistry of precipitation and runoff in the Coast Range environment of Pescadero Creek, California"; Eville Gorham, "Geochemistry of wet lands"; Harold Helgeson, "Equilibration between waters and mineral phases in the Imperial Valley, California thermal area"; Fred Berry, "Proposed origin for the geothermal brines of the Imperial Valley of California"; Alfred Steiner, "Geochemistry of the waters of Wairakei, New Zealand"; Munro Waxman, "Interrelationships in transport through shales"; Harold Olsen, "Simultaneous flow of liquid and charge through saturated kaolinite"; Don Gray, "Ion and water movement in the geological environment in hydraulic, thermal, and electrical gradients"; Gordon Rittenhouse, "Bromine in oilfield waters and its use in determining the origin of these waters."

Science of Adhesion

Louis H. Sharpe and Irving Skeist are chairman and vice chairman, respectively.

28 August. G. Salomon, "Horizons in adhesion research." (W. T. M. Johnson, discussion leader). S. Sterman, "Functional silanes and the glass-resin bond." (Willard D. Bascom, discussion leader).

29 August. Turner Alfrey, "Adhesion of coatings to substrate." (E. G. Bobalek, discussion leader). Sidney Ross, "Mechanisms of soil removal." (Anthony M. Schwartz, discussion leader).

30 August. A. F. Martin, "Dynamic mechanical properties of adhesive-type polyblends." (Seymour Newman, discussion leader). R. D. Falb, "Surface effects of foreign materials on blood clotting and red cell damage." (Vincent Gott, discussion leader).

31 August. John P. Tordella, "Effect of thermal history on the peel strength of linear polyethylene." (Shiro Matsuoka, discussion leader). The conferees, "Current research presentations" (10 to 15 minutes each). (Louis H. Sharpe, discussion leader).

1 September. Romauld Bulas, "The phenomenon of tack: in printing inks"; John D. Skewis, "The phenomenon of tack: in rubbers"; C. A. Dahlquist, "The phenomenon of tack: in adhesives." (Frank H. Wetzel, discussion leader).

Kimball Union Academy

Science and Technology of Bio-materials

James A. Bougas and C. P. Bean are chairman and vice chairman.

12 June. Theory of surface (William A. Zisman, chairman): Arthur W. Adamson, "Aspects of the physical chemistry of surface"; Elaine G. Shafrin and William A. Zisman, "Advances in adhesion fundamentals." (William Hillig, discussion leader). Methods of examining surfaces (Robert E. Ogilvie, chairman): A. J. Tousimis, "Microbeam probes"; William G. Morris, "Scanning electron-microscopy"; (speaker to be announced), "Low energy electron diffraction and x-ray diffraction." (Arthur Saffir and Homer Hagstrum, discussion leaders).

13 June. Biologic surfaces (John L. Bethune, chairman): (speakers and subjects to be announced). Blood-surface interactions (Robert Leininger, chairman): A. V. Gott, "Development of intravascular prostheses"; R. D. Falb, "Modification of polymer surfaces"; P. L. Blacksher, "Hemolysis at bio-material surfaces"; Harris Bixler, "Polyelectrolyte complex surfaces."

14 June. Application of polymer surfaces (Silas Braley, chairman): Judah Folkman, "Use of implanted polymer materials"; Richard Buckles, "Gas exchanges at polymer membranes"; Claus Dohlman and Miguel Refojo, "Ophthalmologic applications." Bio-material problems in cardiovascular prosthesis (Sigmund A. Weslowski, chairman): Sigmund A. Weslowski, "Textile prostheses"; Julio C. Davila, "Tissue behavior at bio-material interfaces"; Adrian Kantrowitz and Arthur Kantrowitz, "Problems in prosthetic heart."

15 June. Ceramic surfaces (W. David Kingery, chairman): Catherine Rappaport, "Some physical properties of surfaces regulating growth and differentiation of mammalian cells"; Marlin Norberg, "Ion exchange at glass surfaces." (S. N. Levine, chairman): Paul Weiss, "Cell interaction with surface."

16 June. Metal-bioenvironment interface (Edward Korostoff, chairman): Raja M. Iyengar, "Interaction of proteins and nucleic acids with metal ions"; Geoffrey E. Belton, "Pourbaix diagrams and corrosion in bioenvironment"; Evan Greener, "Electrochemical surface phenomena of dental and medical materials"; (speaker to be announced), "Clinical observations of interactions at surfaces of orthopedic protheses."

Magnetic Resonance

George K. Fraenkel and John S. Waugh are chairman and vice chairman, respectively.

19 June. (J. S. Waugh, chairman): S. Meiboom and L. C. Snyder, "Molecular structure determination from NMR in nematic solvents"; B. P. Dailey, "The determination of chemical shift anisotropies from NMR spectra in nematic solvents." (P. H. Rieger, chairman): H. Fischer, "Coupling constants of some simple substituted alkyl radicals"; A. Carrington, "Electron resonance of gaseous free radicals."

20 June. (H. S. Gutowsky, chairman): A. Allerhand, "Multiple-echo experiments on coupled nuclear spin systems: scalar and dipolar coupling in solids and partially oriented liquids"; J. D. Baldeschwieler, "The study of ion-molecule reactions in cyclotron resonance spectroscopy." (M. Bloom, chairman): A. Narath, "Nuclear magnetic resonance in transition metals and alloys"; A. J. Heeger, "Magnetic resonance in dilute alloys."

21 June. (W. I. Goldburg, chairman): S. R. Hartmann, "Photon echoes"; E. L. Hahn, "Interaction of coherent optical travelling wave pulses with a resonant optical system." (J. R. Bolton, chairman): D. Kivelson, "Spin relaxation in liquids"; G. Vincow, "The temperature dependence of hyperfine splittings."

22 June. (R. G. Shulman, chairman): H. M. McConnell, "Spin-label studies of allosteric transitions"; W. D. Phillips, "High frequency NMR studies of proteins and nucleic acids." (I. J. Lowe, chairman): R. Orbach, "Superexchange and the super transferred hyperfine field in magnetic materials"; T. R. Carver, "Paramagnetic resonance transmission in simple and not-so-simple metals."

23 June. (A. H. Maki, chairman): J. S. Hyde, "ENDOR of systems exhibiting anisotropically broadened EPR spectra"; J. H. Freed, "Radio frequency coherence effects in ENDOR."

Cell Structure and Metabolism

Paul R. Gross is chairman. Clifford Grobstein and Jerard Hurwitz are vice chairmen.

Molecular Biology of Development and Differentiation

The program will consist of a series of discussions on topics of current re-

search interest, each one under the guidance of a rapporteur. There will be no formal presentation of papers, but participants will be encouraged to make contributions of data and ideas wherever appropriate. Rapporteurs will communicate with certain potential contributors in advance of the meeting. Those interested in attending should communicate with the chairman as soon as possible, and should indicate from the following program the topics on which they may wish to speak. The complete program will be available in April.

26–30 June. Nucleic acids in embryos: invertebrates and plants. Nucleic acids in embryos: vertebrates. Transcription processes and controls in mammalian cell populations. Protein metabolism in early development. Translation-level control of protein synthesis: cell cultures and differentiating systems. Embryonic induction: systems. Embryonic induction: active principles and biochemical mechanisms. Cell growth, stasis, and death in developing tissues. Evocation and maintenance of differentiated activities in microorganisms, cell cultures, and other model systems.

Coenzymes and Metabolic Pathways

D. Perlman and M. E. Friedkin are chairman and vice chairman, respectively.

3 July. (Dorothy C. Hodgkin, chairman): A. W. Johnson, "Approaches to chemical synthesis of B_{12}"; G. N. Schrauzer, "Studies on cobalamin model compounds"; D. Shemin, "Early steps in porphyrin synthesis; control and mechanisms"; A. Prieto, "Biosynthesis of B_{12} analogs in propionibacteria." Discussant: H. C. Friedmann. (H. A. Barker, chairman): R. H. Abeles, "Mechanisms of B_{12} catalyzed reactions"; Discussant: H. W. Whitlock, Jr.; F. M. Huennekens, "Role of thioproteins in B_{12}-dependent systems."

4 July. (H. Weissbach, chairman): L. Jaenicke, "Properties of highly purified *E. coli* methionine synthetase"; R. Taylor, "Role of B_{12} in enzymatic synthesis of methionine"; R. S. Wolfe and J. Wood, "Inhibition of methyl transfer by chlorinated hydrocarbons"; L. Ljungdahl, "Role of corrinoids in the synthesis of acetate from CO_2 by *Clostridium thermoaceticum.*" Discussants: B. C. Johnson, L. Mervyn. (G. W. E. Plaut and R. F. Schilling, chairmen): H. C. Heinrich, "Effects and metabolism of B_{12} anti-vitamins in microorganisms and man"; L. Ellenbogen, "Chemical studies on intrinsic factor and other B_{12}-binders"; A. Giorgi and G. W. E. Plaut, "Excretion of methylmalonate in man; its clinical and hematologic significance."

5 July. (W. S. Beck, chairman): R. L. Blakeley, "Coenzyme B_{12} and ribonucleotide reduction"; R. Abrams, "Factors affecting the rate of deoxycytidine triphosphate synthesis with the ribonucleotide reductase of *Lactobacillus leichmannii*"; E. Colleen Moore, "The ribonucleoside diphosphate reductase system from rat tumors"; R. R. Schmidt, "Characteristics of ribonucleotide reductase in *Chlorella*"; R. J. Suhadolnik, "Nucleoside triphopshate analogs as effectors of ribonucleotide reductase"; J. R. Cowles and H. J. Evans, "Relationship of ribonucleotide reductase to the role of cobalt in *Rhizobium.*" (M. E. Friedkin, chairman): L. M. Kozloff, "Pteridine conjugates in capsids of bacterial viruses"; H. Dickerman, "Formylation of methionyl t-RNA"; H. P. Broquist, "Lysine biogenesis."

6 July. (J. C. Rabinowitz, chairman): A. San Pietro, "Plant ferredoxins"; W. Lovenberg, "Iron bonding in ferredoxin and rubredoxin"; L. H. Jensen, "X-ray crystallographic study of ferredoxin"; K. T. Yasunobu, "Structure, function, and evolutionary relationships of the ferredoxins"; M. J. Coon, "Role of rubredoxin as an electron carrier in fatty acid and hydrocarbon hydroxylation"; I. C. Gunsalus, "Physical and biological properties of oxygenase ferroproteins components." (M. J. Coon, chairman): R. W. F. Hardy, "Non-heme iron proteins and mechanism of nitrogen fixation"; K. M. Dus, "Active site in high potential nonheme proteins"; J. B. Neilands, "Microorganisms as coordination chemists."

7 July. (J. B. Neilands, chairman): J. Nüesch, "Mode of action of siderochromes"; N. Brot, "Control of synthesis of 2,3-dihydroxybenzoylserine by iron"; H. G. Mautner, "Isosteric, but nonisoelectronic compounds. Studies with oxygen, sulfur, and selenium isologs."

Chemistry, Physiology and Structure of Bones and Teeth

Clayton Rich and Robert E. Rowland are chairman and vice chairman.

10 July. Submitted papers (abstracts should be sent to Robert E. Rowland, vice chairman, before 1 May 1967). Ultrastructural biochemistry of mineralization: Part I. Ultrastructure of bone (Aaron S. Posner, chairman): Leon Richelle, "Bone mineral"; E. J. Miller, "A biochemical study of chick bone collagen."

11 July. Ultrastructural biochemistry of mineralization: Part II. Endochondral calcification. D. S. Howell, "Calcification of cartilage"; J. M. Matthews and E. J. Collins, "Electron microscopic study of calcifying cartilage"; J. D. Termine, "Nature of mineral phase during early bone formation"; R. E. Wuthier, "Matrix chemistry in endochondral calcification." (S. M. Krane, E. D. Eanes, discussants). Bone cells: Part I. Structure (George Nichols, Jr., chairman): R. A. Robinson, "Morphology of bone cells at the electron microscopic level"; L. F. Belanger, "Changes in osteocytes in response to parathyroid hormone."

12 July. Bone cells: Part II. Function. D. J. Procokp, "The synthesis and extrusion of collagen"; J. P. Revel, "The role of chondrocyte organells in matrix synthesis"; Gilbert Vaes, "Hydrolytic enzymes and bone resorption"; B. Flanagan, "Metabolic phenomena in isolated bone cells"; William Peck, "Hormonal modification of bone cell behavior." Bone cells: Part III. Differentiation. R. J. Goss, "Control systems in cellular growth and differentiation"; Maurine Owen, "Cell differentiation in growing bone"; S. Fitton-Jackson, "Responses of cultured cells to environmental change."

13 July. Mechanism of vitamin D action (Lawrence G. Raisz, chairman): Hector DeLuca, "Biochemical studies on the metabolism and action of vitamin D"; Robert H. Wasserman, "The vitamin D_3-dependent calcium binding protein in intestinal mucosa"; David Schacter, "Molecular basis for vitamin D action on calcium transport." (Harold E. Harrison, Louis Alveoli, discussants). (Clayton Rich, chairman): William F. Neuman, "On the possible role of crystals in the origin of life."

14 July. Age related bone loss (Eugene Eisenberg, chairman): Stanley M. Garn, "Decrease in skeletal mass and increase in skeletal volume; concomitant bone loss and gain through late adulthood"; James Arnold, "Changes in skeletal mass and organization in aging"; Harold Frost, "Internal organization and cell dynamics of bone in aging"; Patricia Durbin, "Skeletal changes in the superannuated rat."

Physical Metallurgy

J. P. Hirth and P. G. Shewmon are chairman and vice chairman, respectively.

Dislocation Microstructures

17 July. T. E. Mitchell, "Dislocation arrangements in deformed bcc metals"; W. H. Robinson, "Work hardening: a critical comparison of theory and experiment"; A. S. Keh, "The deformation substructure in iron"; S. Weissman, "Defect structures in statically and dynamically strained crystals."

18 July. J. W. Mitchell, "Dislocation arrays in copper-aluminum alloys"; R. E. Smallman and P. S. Dobson, "Kinetic studies using the electron microscope with particular emphasis on interfacial energies"; P. R. Strutt, "Dislocation structures and mechanisms in cubic single crystals deformed in high temperature creep"; J. W. Eddington and A. H. Clauer, "Dislocation substructures in molybdenum and niobium deformed at various strain rates and temperatures."

19 July. C. Laird and H. I. Aaronson, "The role of interphase boundary structure in the growth of precipitate crystals"; R. B. Nicholson, "Dislocation arrangements and interactions in two-phase materials"; E. Hornbogen and H. Gleiter, "Interaction of dislocations with disordered and ordered coherent particles, with and without stress field"; M. F. Ashby, "Dislocation arrays in dispersion-hardened crystals."

20 July. M. H. Loretto, "Extrinsic and intrinsic faulting in fcc alloys"; P. C. J. Gallagher, "The stacking fault energy"; S. Amelinckx, "Extended dislocation arrays."

21 July. B. H. Kear, "Dislocation interactions in fcc superlattices"; M. J. Marcinkowski, "Dislocation arrays in bcc superlattices."

Chemistry at Interfaces

F. R. Eirich and George L. Gaines, Jr., are chairman and vice chairman, respectively.

24 July. Penetration of porous materials by fluids (D. H. Everett, chairman): J. C. Melrose, "Thermodynamic problems in fluid phase displacements"; W. H. Wade, "Calorimetric measurements related to capillary displacement processes"; D. H. Everett, "Movement of phase boundaries through porous materials."

25 July. Association, adsorption, stabilization (S. Brunauer, chairman): E. D. Goddard, "Molecular association in long chain compounds"; A. W. Adamson, "Adsorption of hydrocarbons on ice"; R. Ottewill, "Stabilization of dispersions by nonionic materials."

26 July. The growth and energetics of subphases (H. L. Frisch, chairman): J. D. Hoffman, "Nucleation"; F. Goodrich, "The breakdown of Gibbs thermodynamics for droplets of embryonic size"; J. Th. G. Overbeek, "The breaking of thin liquid lamellae by spontaneous growth of fluctuations."

27 July. Solvation and the structure of water (B. Pethica, chairman): J. Griffith, "The solvation of nonpolar and micellar solutes in water"; J. Goodman, "The interaction of surface active molecules with water"; B. Derjaguin, "Energetics and structure of solvating layers."

28 July. Adsorption and adhesion (R. Stromberg, chairman): L. Ter-Minassian-Saraga, "Chemisorption and wetting and non-wetting"; F. Leonard, "Biological adhesives"; R. H. Marchessault, "Surface aspects of coordination catalysts."

Open dates—short contributions: M. Manes, "Liquid-phase adsorption and a modified Polanyi adsorption potential theory"; Tennyson Smith, "Hydrocarbon adsorption by a fully instrumented mercury Langmuir trough"; J. Katz, "Total and surface free energies of nuclei."

Solid State Studies in Ceramics

Cryrus Klingsberg and A. R. Cooper are chairman and vice chairman.

Instrumental Characterization of Ceramics

31 July. (A. D. Franklin, chairman): R. Roy, "Characterization of structure and structure-change"; R. G. McQueen, "Shock-induced phase changes and high pressure equations of the state of minerals." (A. R. Cooper, chairman): R. L. Barns, "Use of precision lattice parameter measurements as a tool for the characterization of single crystal materials"; J. Kohn, "Structure determination: electron microscopy as a supplement to x-ray diffraction."

1 August. (S. C. Carniglia, chairman): P. J. Bray, "Coordination by NMR"; W. L. Baun, "Chemical bonding by x-ray emission." (I. B. Cutler, chairman): A. Wold, "Chemical purity of ferrites"; H. C. Gatos, "Surfaces of covalent and ionic crystals."

2 August. (F. A. Halden, chairman): W. R. Buessem, "Characterization of poly-crystalline materials"; T. Vasilos, "Grain boundary characterization and phenomena." (S. W. Bradstreet, chairman): F. J. P. Clarke, "Mechanical properties"; G. H. Jonker, "Ceramic oxidic semiconductors."

3 August. (D. H. Whitmore, chairman): R. J. Stokes, "Line and point defects"; H. Schmalzreid, "Non-stoichiometric solid solutions." (C. Klingsberg, chairman): D. Kingery, "A ceramist at sea."

4 August. (J .H. Westbrook, chairman): V. D. Frechette, "Optical properties"; A. J. Najumdar, "Application of the scanning electron microscope."

Toxicology and Safety Evaluations

O. Garth Fitzhugh and Joseph C. Calandra are chairman and vice chairman, respectively.

7 August. (Fred H. Snyder, moderator): Donald L. Opdyke, "The use of pharmacologically active agents in cosmetics"; Francis N. Marzulli, "Advances in ocular toxicology." (Philippe Shubik, moderator): G. Della Porta, "Use of newborn and infant animals in the testing of chemicals for possible carcinogenic activity"; Geoffrey Woodard, "Evaluation of the utility of administering chemicals to infant rats or hamsters for carcinogenic screening."

8 August. (Stephen Krop, moderator): Samuel Irwin, "Behavioral toxicity—problems of the laboratory investigator"; Conan Kornetsky, "Behavioral toxicity—problems in the study of effects in man." (Joseph C. Calandra, moderator): S. B. de C. Baker, "Assessment of the carcinogenesis of drugs."

9 August. (Robert C. Anderson, moderator): Paul Mattis, "Comparative teratogenic study of anti-inflammatory steroids"; E. Marshall Johnson, "Physiology and biochemistry of structural malformation." (W. A. Mannell, moderator): A. B. Morrison, "Research in toxicology at the Canadian Food and Drug Directorate."

10 August. (John P. Frawley, moderator): Kenneth P. DuBois, "The comparative inhibitory action of organic phosphates on several esterases and amidase and the relationship of esterase inhibition to phosphate potentiation"; C. G. Hunter, "To 'ye that are heavy laden'—the burden of organochlorine pesticides." (Bernard L. Oser, moderator): R. Truhaut, "The influence of the simultaneous absorption of food additives, pesticides and other chemi-

cals on their possible toxicity to humans."

11 August. (William L. Downs, moderator): Harold C. Hodge, "Safety evaluation of food additives—intentional and incidental"; Arthur Ruskin, "Safety evaluation of products proposed for drug use."

Chemistry and Physics of Solids: Metals

Walter A. Harrison and John M. Rowell are chairman and vice chairman, respectively.

14–18 August. Energy-band theory (J. C. Slater, chairman): A. B. Pippard, "Electrons in metals"; T. Loucks, "Energy-band calculations." Pseudopotentials (chairman to be announced): W. Harrison, "Pseudopotential theory"; J. Wilkins, "Beyond the one-electron approximation." Fermi surfaces (A. V. Gold, chairman): V. F. Gantmakher, "Gantmakher effect"; R. G. Chambers, (subject to be announced); R. Stark, "Experimental studies." Superconductivity (J. Bardeen, chairman): W. McMillan, "Superconducting properties from knowledge of metals"; J. M. Rowell, "Knowledge of metals from superconducting properties"; J. Swihart, "Knowledge of properties from knowledge of superconductors." Liquid metals (H. Brooks, chairman): J. E. Enderby, "Experimental studies"; L. Ballentine, "Theory of liquid metals." Cohesive energy and stability (L. M. Falicov, chairman): J. Friedel, "Stability of structures"; N. Ashcroft, "Cohesion." Defects and vibrations (B. N. Brockhouse, chairman): A. D. B. Woods, "Experiments on phonon dispersion"; D. Brust, "Theory of defects." Transition metals (M. H. Cohen, chairman): W. Spicer, "Optical and electron emission studies"; V. Heine, "Theory of transition-metal bands." Alloys (F. Seitz, chairman): D. Turnbull, "Experimental studies of alloys"; D. Scalapino, "Electron states in dilute alloys."

Chemistry and Physics of Cellular Materials

Kurt C. Frisch and Louis C. Rubens are chairman and vice chairman, respectively.

21 August. J. K. Lepper, H. G. Hammon and N. W. Hetherington, "Creep properties of plastic foams"; G. M. Fehn, "Extrusion behavior of cellular high-density polyethylene"; A. N. Gent, "Some studies on the frictional properties of foams."

22 August. T. G. Decker and B. Kanner, "The role of silicone surfactants in the formation of polyurethane foam"; D. Dunn, "Gelation determination during rigid polyurethane formation"; E. J. Rock, Jr., "Foaming metals."

23 August. D. S. Morehouse, "Expandable thermoplastic microspheres"; A. J. deVries, "Foaming mechanism and properties of polysulfone foams"; Y. Landler, "Cross-linked rigid cellular polyvinyl chloride."

24 August. R. Merten, "Spectroscopic analysis of urethane foam." (Speaker and subject to be announced). Short papers by C. J. Benning, R. E. Skochdopole and R. H. Hansen.

25 August. R. W. Mickelson and I. Einhorn, "Optical methods for characterizing flammability characteristics of foams"; I. Einhorn and R. W. Mickelson, "Parameters covering the thermal decomposition of cellular plastics."

Chemistry of Molten Salts

Milton Blander and Richard W. Laity are chairman and vice chairman.

28 August. Equilibrium properties (O. J. Kleppa, chairman): H. T. Davis, "Theories of fused salts"; S. V. Meschel, "Thermochemistry of ternary fused salt mixtures." Equilibrium properties (continued) (M. Blander, chairman): K. Hagemark, "Ternary molten salt systems"; P. Franzosini, "Immiscibility gaps in reciprocal systems."

29 August. Metallurgical and oxide systems (J. F. Elliott, chairman): C. H. P. Lupis, "Metallic solution models"; D. Fray, "Structure of liquid oxides." Concentrated aqueous solutions (J. Braunstein, chairman): C. A. Angell, "Molten hydrates: dual importance in molten salt and aqueous electrolyte solutions"; R. Plane, "Raman spectroscopy of concentrated aqueous electrolytes"; H. L. Friedman, "Effect of non-Brownian motion on transport coefficients in solutions."

30 August. Open session. Chemical and electrode reactions (J. Corbett, chairman): W. Sundermeyer, "Chemical synthesis in molten salt systems."

31 August. Valence and structure (G. P. Smith, chairman): J. Corbett, "Unusual oxidation states in molten salts"; J. Brynestad, "Structure of transition metal ion centers in molten salts"; (speaker and subject to be announced). Transport properties (S. J. Yosim, chairman): L. Grantham, "Electrical conductivities of supercritical salts"; J. L. Copeland, "The influence of gas pressure and solubility on electrical conductivity"; R. Laity, "The effect of controlled membrane properties on 'transport numbers' in pure salts."

1 September. Energy storage and conversion (R. W. Laity, chairman): N. Weber, "The sodium-sulfur battery"; D. Swinkels, "The lithium-chlorine battery"; R. Rightmire, "Cathodes for secondary molten salt batteries"; E. Cairns, "Bimetallic galvanic cells with fused alkali halide electrolytes."

Tilton School

Animal Cells and Viruses

Wolfgang K. Joklik and David M. Prescott are chairman and vice chairman, respectively.

12 June. Poliovirus: D. F. Summers; D. Baltimore, S. Penman. Reovirus: A. R. Bellamy; A. F. Graham; P. J. Gomatos; A. J. Shatkin.

13 June. Cells I: Contact inhibition: H. Eagle; M. Stoker. Myxoviruses: C. Scholtissek; W. Robinson; P. Choppin.

14 June. Large nuclear DNA viruses: H. Ginsberg; A. Kaplan; B. Roizman. Cells II: The cell cycle: E. Robbins; D. M. Prescott.

15 June. Poxviruses: J. Holowczak; N. P. Salzman. Cells III: PPLO: L. Thomas; L. Hayflick.

16 June. Arboviruses, VSV: B. Burge; R. Wagner; W. Schlesinger.

Biochemistry and Agriculture

E. E. Smissman and Richard J. Magee are chairman and vice chairman, respectively.

Control of Growth and Development

19 June. J. Florini, "Biochemistry of RNA and protein synthesis"; J. Leatham, "Endocrine control of growth"; W. H. Linkenheimer, "Endocrine control of the estrous cycle"; G. W. Duncan, "Chemical regulation of fertility and development in mammals."

20 June. L. Gilbert, "Endocrine hormones in the control of insect growth and development"; J. B. Siddall, "Synthetic studies on insect hormones"; A. B. Borkovec, "Insect chemosterilants"; C. N. Smith, "Insect control with phermones and sterilants."

21 June. F. B. Abeles, "Auxin and ethylene"; C. Miller, "Cytokinins in plant growth"; D. J. Morre, "Biochemistry of plant cell wall"; A. H. Haber and D. E. Foard, "Roles of cell division in plant growth and morphogenesis."

22 June. G. Egley, "Seed germination"; W. Nickerson, "Biochemistry of morphogenesis in fungi"; F. T. Addicott, "Abscisins: their chemistry and physiological role in plants."

23 June. D. Dejongh, "Characterization of natural products by mass spectrometry"; R. Doskotch, "An approach to the isolation of natural products."

Chemistry of Heterocyclic Compounds

Edward C. Taylor and Leo Paquette are chairman and vice chairman, respectively.

3–7 July. A. J. Boulton, "Anthranil chemistry"; D. J. Brown, "The Dimroth rearrangement"; D. L. Fields, "Preparation and reactions of diels-alder adducts derived from azonia-polycyclic aromatic compounds and selected dienophiles"; R. I. Fryer, (subject to be announced); H. W. Heine, "Rearrangements of aziridines"; Rolf Huisgen, "Nitrile ylides and azomethine ylides, new classes of compounds"; W. Pfleiderer, "Drosopterins—a new class of natural product?"; H. A. Staab, (subject to be announced); H. E. Simmons, (subject to be announced); A. J. Speziale, (subject to be announced); L. M. Weinstock, "Chemistry of 1,3,4-thiadiazoles"; Emil White, "Chemiluminescence"; Hans Wynberg, "The synthesis and photochemistry of some substituted and condensed thiophenes."

Chemistry and Physics of Space

Edward C. Chao and Richard E. McCrosky are chairman and vice chairman, respectively.

10 July. Meteorites (chairman to be announced): Kurt Fredericksson and Arch Reid, "Equilibrium, recrystallization and metamorphism in chondrites"; Robert Dodd, (subject to be announced); short communications on hexagonal diamonds and the cliftonite problem. Tektites (chairman to be announced): Dean R. Chapman, (subject to be announced); Joe Zähringer (subject to be announced); short communications.

11 July. Origin of the moon (Donald E. Gault, chairman): John A. O'Keefe, "New consideration of the fission theory of the origin of the moon"; William Kaula, "The dynamics and gravity field of the moon"; Tor Hagfors, (subject to be announced); short communications. Lunar surface properties (Harold Masursky, chairman): Ronald E. Scott, "Surveyor data"; D. E. Gault, "Criterion for equilibrium lunar surface condition by impact cratering, illustrated with movies"; Henry H. Moore, "Experimental impact crater data and the nature of the lunar surface material—orbiter data"; short communications.

12 July. Lunar surface processes (John A. O'Keefe, chairman): Harold Masursky, "Geological processes on the lunar surface"; Lawrence Rowan, "Evidence of vulcanism from lunar orbiter data"; short communications. Mars and Mercury (Karl Sagan, chairman): (speakers and subjects to be announced).

13 July. Venus (F. L. Whipple, chairman): (speakers and subjects to be announced). The jovian planets (H. Smith, chairman).

14 July. Origin of the solar system (chairman to be announced): John Larimer, "Condensation processes in the solar nebulae"; Edward Anders, "Formation of organic compounds in the solar nebulae"; A. G. W. Cameron, "Current ideas of the origin of the solar system."

Chemistry and Physics of Coatings and Films

George Brown and James E. Guillet are chairman and vice chairman, respectively.

17 July. F. W. Billmeyer, "Color measurement"; Hugh Davidson, "Use of instruments in color formulation"; L. Valentine, "Pigment-media interactions."

18 July. R. M. Ikeda, "Orientation losses in crystalline films"; J. T. Chamness, "Adhesion of coatings to cellophane"; P. H. Geil, "Polymer morphology."

19 July. P. L. Kronick, "Glow discharge polymerization"; R. M. Fitch, "Particle formation in emulsion polymerization."

20 July. J. Cazes, "Gel permeation chromatography"; K. L. Hoy, "Uses of solubility parameter."

21 July. E. B. Bradford, "Electron microscopy in investigation of films."

Microbiological Deterioration

John M. Leonard and Ellis B. Cowling are chairman and vice chairman, respectively.

24 July. Microbial ecology (Ellis B. Cowling, discussion leader): M. Alexander, "Biochemical ecology and metabolism of natural microbial communities"; R. E. Hungate, "Anaerobic degradation of plant materials"; Alex L. Shigo, "Successions of organisms in the discoloration and decay of woods."

25 July. Nature of injury and repair (Hillel Levinson, discussion leader): Z. John Ordal, "Thermal injury and its repair"; M. J. Ashwood-Smith, "Ultraviolet damage at low termperatures"; J. Edward Donnellan, Jr., "Effects of utlraviolet radiation on microbial DNA."

26 July. Postharvest decay (John J. Beereboom, discussion leader): Joseph W. Eckert, "Control of postharvest decay of agricultural products"; Eugene B. Smalley, "Microbial toxins." Sheath bacteria in aquatic slime infestations (Antonio H. Romano, discussion leader): J. L. Stokes, "Biology and chemistry of *Sphaerotilis.*"

27 July. The Government looks at antimicrobials (L. S. Stuart, discussion leader): L. L. Ramsey, "Antimicrobials as food additives"; L. S. Stuart, "Public protection through the Federal Insecticide, Fungicide, and Rodenticide Act." Biological corrosion (Arthur Kaplan, discussion leader): Gordon C. Blanchard, "Biological corrosion in aerobic environments."

28 July. Summary and discussion.

Nuclear Structure Physics

John P. Schiffer and Joseph Weneser are chairman and vice chairman, respectively.

Nuclear Reactions

31 July–4 August. S. T. Butler, "A new method for deuteron stripping analysis"; N. Austern, "The DWBA—refinements and difficulties"; F. G. Perey, "Elastic scattering-systematics in optical-model parameters"; G. Greenlees, "Information on nuclear matter from elastic scattering"; H. Feshbach, "Intermediate structure"; H. Weidemuller, "Continuum states"; E. Rost, "Form factors for transfer reactions"; G. R. Satchler, "Form factors for inelastic scattering"; A. M. Lane, "Isobaric analog states"; H. McManus,

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"Nuclear reactions and the impulse approximation at high energies"; J. Friedes, "Nuclear physics with high-energy protons"; C. Barnes, "The role of nuclear physics in astrophysics"; H. Y. Chu, "The later stages of stellar evolution."

Organic Photochemistry

R. Srinivasan and N. C. Yang are chairman and vice chairman, respectively.

7 August. (R. Srinivasan, chairman): G. Quinkert, "Photochemical production of reactive intermediates from cyclic ketones"; H. M. Frey, "Photochemistry of diazirines."

8 August. (P. J. Kropp, chairman): K. W. Schaffner, "Recent results in the photochemistry of carbonyl compounds"; D. I. Schuster, "Stereochemical aspects and characterization of excited states"; H. E. Zimmerman, "Recent photochemical developments at Wisconsin."

9 August. (A. M. Trozzolo, chairman): E. Fischer, "Some aspects of reversible photochemical reactions"; J. Heicklen, "Mercury photosensitized reactions of perfluoro olefins"; K. E. Wilzbach and L. Kaplan, "Photochemical reactions of benzenes."

10 August. (G. M. Wyman, chairman): L. M. Dorfman, "Molecular ions and triplet states of aromatic molecules in radiation chemistry"; T. Mukai, "Photochemistry of tropanoid compounds"; E. Chandross, "Excimers."

11 August. (R. Srinivasan, chairman): D. R. Arnold, "Photocycloaddition reactions of substituted styrenes"; N. J. Turro, "A model for the $n \rightarrow \pi$ states of simple ketones."

Photonuclear Reactions

Paul F. Yergin and Stavros Iallieros are chairman and vice chairman, respectively.

14–18 August. J. S. Levinger, "Prolegomena"; Frank W. K. Firk, "New experimental methods"; D. Drechsel, "Collective correlations and the structure of giant resonances"; W. Greiner, "The dynamic collective theory"; J. O'Connell, "Electromagnetic aspects of the three-nucleon problem"; W. Turchinetz, "Polarization studies"; T. DeForest, "Electron scattering"; L. Katz, "New facilities in operation"; J. Leiss, "New facilities in operation."

Thin Films—Structure Sensitive Properties

R. W. Hoffman and M. H. Francombe are chairman and vice chairman.

21 August. Basic growth mechanisms (D. S. Campbell, discussion leader): J. B. Hudson, "Nucleation and growth by mass spectrometric techniques"; M. J. Stowell, "The influence of diffusion controlled processes in thin film growth." (K. H. Behrndt, discussion leader): R. B. Marcus, "Recrystallization and phase change of tantalum films."

22 August. Recrystallization and phase changes (R. D. Heidenreich, discussion leader): R. W. Vook, "Low temperature recrystallization of thin films"; C. J. Mogab, "Structural rearrangements in noncrystalline silicon carbide films." (T. E. Hutchinson, discussion leader): M. H. Francombe, "Two-phase structures in oxide and metal films."

23 August. Mechanical properties (R. W. Hoffman, discussion leader): E. Klokholm, "Strains in evaporated metal films"; D. S. Campbell, "Stresses in the initial stages of thin film growth." (C. Weaver, discussion leader): P. F. Schmidt and R. J. Jaccodine, "Oxide films on silicon"; H. D. Keith, "Crystal growth and crystalline morphology of high polymers."

24 August. Dielectric and semiconductor properties (M. H. Francombe, discussion leader): T. W. Hickmott, "Conduction and electroluminescence in oxide films"; J. E. Davey, "Growth and properties of gallium arsenide films (C. Feldman, discussion leader): C. Weaver, "Dielectric loss mechanisms."

25 August. Transport properties (C. A. Neugebauer, discussion leader): H. J. Juretschke and S. Soffer, "Electron scattering near surfaces"; D. C. Larsen, "Resistance and magnetoresistance of metal films."

Glass

C. R. Kurkjian and F. M. Ernsberger are chairman and vice chairman.

Structure and Properties of Simple Glass-Formers

28 August. B. E. Warren, "Present-day possibilities for x-ray determination of glass structure"; R. Kaplow, "Structure of crystalline and amorphous B_2O_3"; H. A. Robinson, "A model for the structure of amorphous SiO_2."

29 August. P. Dean, "Atomic vibra-

tions and structure of glasses"; A. J. Leadbetter, "Low temperature heat capacity and related properties of some simple glasses"; R. A. Weeks, "Paramagnetic resonance of oxygen vacancies in crystalline and glassy oxides"; J. T. Krause, "Low temperature acoustic and thermal expansion measurements in simple glasses"; S. P. S. Porto, "Laser excitation of the Raman effect in simple glasses"; P. H. Gaskell, "Vibrational spectra of simple glasses."

30 August. R. Brückner, "Structure-specific investigations and properties of glasses"; D. B. Fraser, "Acoustic properties of fused SiO_2"; T. A. Litovitz, "Laser spectroscopy of viscous liquids"; P. Macedo, "Viscoelastic relaxation in simple glasses."

31 August. P. Jorgensen, "Hydrogen permeation through fused SiO_2"; A. Bishay, "Libyan desert sand glass"; I. Burn, "Water in fused SiO_2."

1 September. Short contributions and summary.

Proctor Academy

Lasers in Medicine and Biology

Jude R. Hayes and Myron L. Wolbarsht are co-chairmen.

19–23 June. Physical and engineering aspects of laser biomedical research: M. Stein, F. Johnson, "Physical properties of tissues"; D. A. McSparron, "Problems in characterizing laser performance"; R. J. Rockwell, Glen Hardway, "Methods and effects of controlled laser parameter variations for biomedical research." Irradiation damage at the molecular level: F. Barnes, C. Lun-Hu, L. Lauridson, "Thermal-chemical laser damage"; E. Cohen, "In vitro laser-induced changes in gamma globulin"; J. R. Feick, "Photoflash-induced enzyme denaturation in artifically pigmented human leukocytes"; F. Johnson, J. Helsper, D. E. Rounds, "Selected biochemicals as chromospheres." Laser irradiation damage in simple organisms: J. Griffin, "Laser irradiation effects in *Physarum* mold"; N. M. Saks, "Inhibition of chloroplast replication in *Nitella*"; W. H. Wilde, R. Kobylnyk, "Laser effects on arthropod life stages." Phenomenologic studies of laser injury in mammals: E. Klein, S. Fine, "Effects of laser irradiation in mammals"; T. Brown, R. McLaurin, C. True, R. Rockwell, R. Schooley, "Argon laser: biologic studies in neural tissue and hemophiliac beagles"; R. Ritter, L. Goldman, "Application of the argon laser

in hemangioma studies"; R. W. Bull, A. S. Brownell, A. J. Luzzio, W. Parr, "Skin and organ injury and related immunologic effects." The pathology of laser injury: R. C. Hoye, L. B. Thomas, G. Riggle, A. S. Ketchum, "The histopathology of interaction of high energy neodymium laser and tissue"; R. C. Rosan, M. Flocks, "Retinal pathology of laser irradiation"; B. Fine, W. Geeraets, S. Fine, "Light and electron microscopic retinal pathology of laser irradiation"; Y. Laor, L. Simpson, S. Fine, E. Klein, "Pathology of abdominal viscera after laser irradiation", G. Faith, "Ultrastructural pathology of laser irradiated liver." Laser effects in mineralized tissues: J. Adrian, M. Stein, "Minimal pulpal damage from enamel laser irradiation"; R. W. Ebbers, D. F. Buxton, W. C. Kaufman, T. L. Rodriquez, "Destructive effects of laser beams through various thicknesses of bone"; R. H. Stern, F. Goodman, H. L. Renger, "Laser effects on oral hard tissues." Occular effects of laser injury: H. Rose, "The minimal chorioretinal lesion"; A. Vassiliadis, H. C. Zweng, R. Peabody, R. Honey, M. Flocks, "Minimal spot size threshold retinal lesions produced by long, Q-switched, and mode-locked laser pulses"; W. Ham, W. Geeraets, R. C. Williams, R. G. King, "In vivo and in vitro studies of ocular effects of laser radiation"; C. J. Campbell, M. C. Rittler, C. H. Swope, C. J. Koester, "Some effects of Q-switched laser radiation on ocular tissue"; W. Parr, G. R. Peacock, "Corneal and severe retinal damage from laser radiation in the visible and infrared"; R. Smith, M. Stein, "Effects of trans-scleral laser irradiation"; R. Peabody, N. Peppers, M. Flocks, H. C. Zweng, A. Vassiliadis, "Corneal damage thresholds from CO_2 laser irradiation"; H. Spekreyse, M. Wolbarsht, J. Hayes, "Mathematical models in laser injury"; J. J. Vos, "Mathematical model of retinal burn"; G. Grosoff, "Mathematical model of laser injury." Effects of laser irradiation on integrated retinal functions: M. Yarczower, "Behavioral assessment of retinal damage"; A. J. Welch, "EEG and ERG responses to argon laser flashblindness"; H. Sperling, "Effects of intense light on spectral sensitivity of the eye"; G. M. Wilkening, "Laser safety in a large laboratory"; F. Huppe, "Laser safety at duPont"; F. A. L'Esperance, E. F. Labuda, A. M. Johnson, "The argon laser in ophthalmology"; H. C. Zweng, R. Peabody, "Further clinical experience with laser ocular photocoagulation."

Lipid Metabolism

Konrad E. Bloch and DeWitt S. Goodman are chairman and vice chairman, respectively.

26–30 June. C. Freeman Allen, "Lipid metabolism of algae"; A. A. Benson, (subject to be announced); P. P. M. Bonsen, (subject to be announced); H. E. Carter, "Plant glycolipids"; H. Goldfine, "Chemistry and metabolism of bacterial lipids"; T. W. Goodwin, "Biosynthesis of terpenes and sterols in plants"; G. G. Holz, "Lipid metabolism in protists"; A. T. James, (subject to be announced); M. Kates, "Lipids of halophilic bacteria"; E. P. Kennedy and N. Stanacev, "Phospholipid biosynthesis in *E. coli*"; S. C. Kinsky, "Studies in lytic mechanisms with membrane models"; J. H. Law, "Biosynthesis of branched-chain and cyclopropane fatty acids"; W. J. Lennarz, "Biosynthesis of aminoacyl phospholipids"; W. R. Nes, "Sterol alkylations in plants"; D. H. Nugteren, "Conversion of essential fatty acids into prostaglandins"; P. W. Robbins, "The role of lipids in the biosynthesis of *O*-antigens"; A. Rosenberg, "Metabolism of glycolipids in algae"; M. R. J. Salton, "Bacterial membrane lipids"; W. Stoffel, "Biosynthesis and β-oxidation of polyunsaturated fatty acids"; P. K. Stumpf, "Fatty acid biosynthesis in higher plants."

Lysosomes

Christian de Duve is chairman.

Biochemical and Structural Aspects of Self-Degradative Processes in Cells

3 July. Introduction: C. de Duve, "Lysosomal and nonlysosomal mechanisms in cellular self-degradation." Mechanism and control of cellular autophagy: A. B. Novikoff, "Biological significance and cellular mechanisms of autophagy"; B. Trump, "Observations on metabolic control of autophagy in the nephron." J. L. E. Ericsson, "Mechanisms of cellular autophagy"; M. Locke, "Changes in insect cells during molting and metamorphosis"; D. Brandes, "Autophagia during hormonally induced prostatic involution."

4 July. Turnover of mitochondria: L. M. Birt, "Some aspects of the turnover of mitochondria"; S. B. Koritz; N. Gregson; M. V. Simpson; D. R. Sanadi. Turnover of membranes and other particulate components: G. E. Palade, "Turnover of endoplasmic reticulum

membrane"; Z. A. Cohn, "Turnover of lysosomal hydrolases"; Th. Peters, "Turnover of catalase and serum albumin."

5 July. Turnover of soluble proteins: D. Schlessinger, "Polyribosome metabolism and the regulation of turnover in *Escherichia coli*"; S. Grisolia, "Substrate-induced enzyme inactivation. Stress and the plasticity hypothesis at the molecular level"; R. T. Schimke, "Studies on the inactivation and breakdown of soluble liver proteins"; H. Munro, "Ferritin turnover." Turnover of ribosomes and RNA: H. Munro, "Liver RNA stability and amino acid supply"; J. Loeb, "Turnover of ribosomal RNA."

6 July. Involution and related processes: J. F. Woessner, "Lysosomes in uterine involution and tissue resorption"; R. Lockshin, "Degradative processes in insect metamorphosis"; M. Farquhar, "Disposal of secretory products by lysosomes"; (Speaker and subject to be announced).

7 July. Pathological aspects of self-degradation: H. G. Hers, "Genetic pathology of lysosomes"; I. M. Weinstock, "The acid hydrolases in muscular dystrophy and atrophy"; H. Swift, (subject to be announced).

Biomathematics

G. D. McCann and John H. Milsum are chairman and vice chairman, respectively.

10 July. Population dynamics (Herbert Landahl, chairman): Richard Lewontin, "Simulation of population genetics"; Prof. Kojiva, "Mathematical models of natural selection." (Speaker and subject to be announced); summary and discussions by chairman and speakers.

11 July. Critique of information processing for nervous system research (G. D. McCann, chairman): W. J. McGill, "Decision theory and pattern recognition in life science data"; D. G. Keehn, "Computers and data analysis for visual nervous system research." Ira Richer, "Plexius—a structural modeling concept for the nervous system." Summary and discussions by chairman and speakers.

12 July. Neuromuscular models (John H. Milsum, chairman): G. Melvill Jones, "Man; the incredible neuromuscular system"; D. A. Robinson, "The muscular mechanics of the oculomotor system." L. D. Partridge, "Dynamic aspects of the stretch reflex." Summary and discussions by chairman and speakers.

13 July. Models of the human operator in adaptive systems (D. H. Fender, chairman): Glenn A. Jackson, "Measuring human performance with a parameter tracking version of the cross-over model"; Jerry I. Elkind, "Decision and control theory model for human controller adaptive response." Michael A. Barone, "A methodology to analyze and evaluate critical human performance." Summary and discussions by chairman and speakers.

14 July. (Chairman to be announced): J. T. Apter, "Advances in biological viscoelastic theory"; K. N. Leibovic, "Model of information transfer in the visual pathway."

Chemistry and Metallurgy of Semiconductors

Raymond C. Sangster and **J. W.** Faust, Jr., are chairman and vice chairman, respectively.

17 July. B. A. Joyce, "The growth of silicon on foreign substrates"; W. Salmre, "Dielectric isolation for integrated circuits"; E. E. Loebner, "Deep lying multivalence impurities in silicon: phenomena and models."

18 July. E. F. de Haan, "Semiconductors for vidicons"; J. B. Goodenough, "Conduction processes in oxides"; E. Felty, "Vitreous semiconductors for xerography."

19 July. O. Jantsch, "Slow surface states"; T. L. Estle, "Electron paramagnetic resonance studies of defects in II-VI compounds"; D. B. Wittry, "Semiconductor investigations with electron microprobe instruments."

20 July. R. C. Keezer, "Growth of single crystals of (inorganic) polymers"; W. A. Tiller, "Crystal growth kinetics"; W. R. Field, "Lure and science of diamonds."

21 July. B. C. DeLoach, "Material properties for oscillator structures"; J. J. Tietgen, "The preparation of $GaAs_{1-x}P_x$ alloys for optical and microwave applications."

Chemistry and Physics of Paper

Vivian T. Stannett and Bengt Råånby are chairman and vice chairman, respectively.

24 July. E. Adler, "Lignin, its structure and its reactions in pulping"; N. Thompson, "Recent work in hemicellulose chemistry"; D. Atack, "Fundamentals of mechanical pulping."

25 July. A. J. Stamm, "Water-cellu-

losic material relationships"; B. Rånby, "NMR studies of water in cellulose"; K. Sarkanen, "Recent work in wood chemistry."

26 July. G. Jacquelin and J. F. Lafaye, "Cellulose-fiber surface properties; streaming potential and other means of investigation"; A. A. Robertson, "The sorption of polymers onto cellulose"; J. W. Swanson, "The role of additives in paper making."

27 July. K. W. Britt, "Fiber-to-fiber bonding in paper"; B. Leopold, "Remarks on the role of single fiber properties on paper strength"; J. K. Craver, "Paper and the hydrogen bond."

28 July. Kyle Ward, "Improvement of paper strength by hydroxyethylation and similar treatments."

Chemistry and Physics of Liquids

Marshall Fixman and Cornelius J. Pings are chairman and vice chairman, respectively.

31 July–4 August. Berni Alder, "Computer study of molecular dynamics"; George Benedek, "The spectrum of light scattered from a fluid near its critical point"; P. A. Egelstaff, "Microscopic transport phenomena in liquids"; Roy Gordon, "Angular correlations in molecular gases and liquids"; Leo P. Kadanoff, "Theory of λ transitions (critical region)"; Neil R. Kestner, "Additivity of intermolecular potentials"; Joel Lebowitz, "Theory of metastability"; P. L. Fehder, G. W. Robinson and R. P. Futrelle, "Molecular dynamics studies of Lennard-Jones particles with emphasis on microscopic structure and problems of chemical interest"; J. S. Rowlinson, "Status report: fluids in equilibrium"; L. K. Runnels, "Lattice statistics"; Loup Verlet, "Computer study of molecular dynamics"; Ben Widom, "Interfacial tension in the critical region"; W. W. Wood, "Monte Carlo study of liquids."

Crystal Inn

Environmental Sciences: Air

E. R. Hendrickson and Walter J. Weber, Jr., are chairman and vice chairman, respectively.

Oxides of Nitrogen

3–7 July. (Speakers to be announced.) "Theory of production, sources, original forms, and control of NO_x emissions (stationary and mobile)";

"Identification and measurement of atmospheric and source concentrations"; "Oxidation and photochemical reactions of NO_x in the atmosphere (omit meteorological aspects at this time)"; "Meteorological aspects of the problem, especially dispersion from mobile sources and the meteorological factors related to the photochemistry"; "Health and other biological effects of various oxides of nitrogen and important nitrogenous reaction products"; "Socio-economic effects (including materials damage and visibility interference) resulting from NO_x emissions"; "Development of air quality criteria"; "Specific research needs." Summary.

Chemistry and Physics of Isotopes

Max Wolfsberg and A. J. Kresge are chairman and vice chairman, respectively.

10–14 July. Condensed phase isotope effects (A. Van Hook, chairman); Physical chemistry of isotopes (W. Spindel, chairman); Kinetic isotope effects in "Non-Boltzmann" systems (F. S. Rowland, chairman); Stable isotope geochemistry (J. R. O'Neil, chairman); Heavy atom isotope effects (A. Fry, chairman); Isotope effects and nature of transition states (A. N. Bourns, chairman); Hydrogen isotope effects in hydrogen (proton) transfer (F. A. Long, chairman); Secondary hydrogen isotope effects (S. Seltzer, chairman); Contributed papers.

Molecular Pathology

Wilbur A. Thomas and Earl P. Benditt are chairman and vice chairman, respectively.

17 July. Energy relationships in cells and their disturbances (Abel L. Robertson, chairman): Alexander Leaf, "Hormonal regulation of membrane transport"; Vincent T. Marchesi, "The localization of enzymes and structural proteins in mammalian cell membrane." (Winfield S. Morgan, chairman): Morris J. Karnovsky, "Ultrastructural study of capillary permeability"; Abel L. Robertson, "Transport of lipids across mammalian cell membrane."

18 July. (R. Foster Scott, chairman): Lars Ernster, "Structural and functional organization of mitochondria"; Godfrey S. Getz, "The response of some mitochondrial components during the early aerobic adaptation of anaerobi-

cally grown yeast cells." (Wilbur A. Thomas, chairman): David E. Green, "Membrane ultrastructure with particular reference to the mitochondrion and the theory of membranes."

19 July. (Earl P. Benditt, chairman): Charles R. Hackenbrock, "Energy-linked ultrastructural transitions in mitochondria"; Dante G. Scarpelli, "Observations on the chronic effects of 2,4-dinitrophenol on mitochondrial structure and function." (Edward A. Smuckler, chairman): Lars Ernster, "Mitochondrial energy metabolism: mechanism and regulation"; R. Foster Scott, "Lipid composition, function and ultrastructure of mitochondria in rats fed high fat thrombogenic diets."

20 July. Ultrastructural and biochemical aspects of viruses and virus-infected cells (Erwin R. Rabin, chairman): Richard Franklin, "Molecular properties of viral ribonucleic acids"; Heather D. Mayor, "Morphology of viral particles and subviral components." (Robert M. O'Neal, chairman): Councilman Morgan, "Studies on the development of herpes simplex virus."

21 July. (Heather D. Mayor, chairman): Samuel Dales, "Participation of membranes in virus infection"; Erwin R. Rabin, "Morphologic studies of in vivo viral infections."

Dynamics of Quantum Solids and Liquids

Pierre C. Hohenberg and John Wheatley are chairman and vice chairman, respectively.

24–28 July. Solid helium and liquid helium under pressure: N. R. Werthamer, "~ theory"; H. Fairbank and H. Meyer, "~ experiments on solid He^3, He^4, He^3-He^4 mixtures." Liquid He II: B. Johnson, "Theoretical introduction"; R. Donnelly, "The film, fine channels and orifices"; D. Brewer, "Helium films and two dimensional phenomena"; J. Reppy, "Helium in rotation"; G. Chester, "Theoretical problems." Liquid He^3 and He^3-He^4 solutions: G. Baym, "Theory"; D. Edwards, "Experiment." Long-range phase coherence in He II and superconductors: D. Scalapino "Theoretical introduction"; J. Mercereau, "Experimental demonstration." Application to construction of devices: W. Fairbank, "~ using quantized flux"; J. Zimmerman, "~ using weak superconductivity." The physics of very low temperatures: J. Wheatley, "Methods"; P. W. Anderson, "Theory and experiments."

Medicinal Chemistry

Armin G. Wilson and Murray Weiner are chairman and vice chairman, respectively.

31 July–4 August. Insect attractants and repellents: Martin Jacobson; Michael Martin, "The chemistry of fungus-growing ants." Enzyme interactions: Hans Hirchmann, George Hein, "The specificity of chymotrypsin—a model for protein-small molecular interactions." Sterol and terpene synthesis: E. E. van Tamelen. Effect of adrogenic steroids on sterol metabolism: Erwin Mossbach. The classification of strong analgesics: E. Hay, "Chemistry"; J. E. Villareal, "Pharmacology"; W. R. Martin, "Clinical." Membrane transport: Elwood Titus. The use of substituent in drug design: Corwin Hansch. Hormonal mechanisms: Martin Sonenberg. Thyrocalcitonin: Philip Hirsch. Approaches to anti-fertility: Alan F. Guttmacher, Gregory Pincus, Harry W. Rudel. Weightlessness: Edward C. Knoblock.

Plasma Physics

Abraham Bers and Norman Rostoker are chairman and vice chairman, respectively.

Instabilities and Turbulence in Plasmas

7–11 August. T. Dupree, "General theory"; (speaker to be announced), "Laboratory plasmas"; P. Sturrock, "Space plasmas"; R. Post, "Fusion plasmas."

Laser Interaction with Matter

Alexander J. Glass and Abraham Herzberger are co-chairmen.

14–18 August. Topics to be discussed: "Laser sources for plasma generation," "Laser breakdown of gases," "Laser interaction with surfaces," "Production of plasmas in vacuum," "External field effects," and "Application to controlled thermonuclear research." Participants include P. V. Avizonis, A. H. Guenther, A. F. Haught, R. E. Kidder, A. C. Kolb, R. W. Minck, A. V. Phelps, K. D. Pyatt, Jr., S. A. Ramsden, and R. G. Tomlinson.