Gordon Research Conferences: Program for 1968

W. George Parks

The Gordon Research Conferences for 1968 will be held from 10 June to 30 August at six educational institutions in New Hampshire: Colby Junior College, New London; New Hampton School, New Hampton; Kimball Union Academy, Meriden; Tilton School, Tilton; Proctor Academy, Andover; and Holderness School, Holderness. From 24 June to 23 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 that often result in collaboration and cooperative efforts among laboratories are formed.

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 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. Registration cards 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. 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 five conference nights (Sunday through Thursday).

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 nonresident 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 pro-

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

vided from the registration fee and is made available to the chairman of the 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.

The following is a schedule of the fees:

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

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

Program. The complete program for the 1968 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 10 June to 30 August 1968 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

Martin Stiles and Samuel E. Horne, Jr., are chairman and vice chairman, respectively.

10 June. Andrew S. Kende, "Some transformations of cyclic polyenes"; David M. Lemal, "Synthesis and chemistry of micropolycycles"; Virgil Boekelheide, "Novel aromatic molecules."

11 June. Wendell Dilling, "Bishomocubyl cations"; Harris D. Hartzler, "Metallic derivatives of diazoalkanes"; Franz Sondheimer, "Recent advances in the annulene field."

12 June. Eugene LeGoff, "Synthetic approaches to pseudoaromatic and related carbocyclic systems"; Roy G. Miller, "Skeletal reorganization of hydrocarbon ligands bonded to nickel"; Richard G. Lawton, "Corannulene."

13 June. Donald L. Crain, "Synthesis of olefins via disproportionation"; E. A. Ofstead, "Olefin metathesis: a redistribution reaction"; Herman L. Finkbeiner, "Reactions of Grignard reagents with olefins."

14 June. Horst Prinzbach, "Pentahendecaful valences. Synthesis, chemistry, and electronic structure."

Nuclear Chemistry

Robert Vandenbosch and Sven Bjørnholm are chairman and vice chairman, respectively.

17–21 June. Central theme will be nuclear reactions. Heavy ion reaction mechanisms; pre-compound decay and establishment of statistical equilibrium; high-energy production and identification of light fragments far from position of beta stability; recoil studies of reaction mechanisms; prediction of properties of very heavy nuclei; nuclear deformation energies and shapes; spontaneous fission isomerism; identification of fission saddle-point states; radiochemical studies of ternary fission. Subject of broad interest: space-mission applications of chemical analysis. (Speakers to be announced.)

Catalysis

Samuel Siegel and Thomas R. Hughes are chairman and vice chairman, respectively.

24 June. James T. Richardson, "Activity centers in zeolites"; Shao E. Tung, "Catalysis by insulator-type metal oxides"; H. Noller, "On the mechanism of contact eliminations."

25 June. Allen S. Hussey, "Hydrogenation of cycloalkenes on platinum, palladium, and rhodium"; Edgar W. Garbisch, Jr., "The mechanism of heterogeneous catalytic benzylic and homobenzylic substituent hydrogenolysis"; J. J. Rooney, "Reactions of cycloalkanes with hydrogen and deuterium on palladium catalysts."

26 June. James P. Collman, "Mechanistic patterns in homogeneous catalysis"; A. N. Webb, "The reducibility of supported metals."

27 June. R. L. Banks, "Olefin disproportionation"; Frank D. Mango, "Molecular orbital symmetry conservation in transition metal catalysis"; Bernard L. Shaw, "Allylic and related complexes of transition metals."

28 June. Jack H. Lunsford, "An EPR study of surface interactions"; Joe W. Hightower (subject to be announced).

Polymers

John R. Elliott and Conrad Schuerch are chairman and vice chairman, respectively.

1 July. (Conrad Schuerch, discussion leader): H. A. Vogel, "Polyarylsulfones, synthesis, structures, and properties"; S. Tazuke, "Photopolymerization of vinyl compounds involving ionic processes"; (Otto Vogl, discussion leader): C. G. Overberger, "Conformation of asymmetric polymers."

2 July. (R. Waack, discussion leader): M. Szwarc, "Ionic polymerization chemistry"; H. L. Hsieh, "Anionic copolymerization of diene and vinyl monomers"; A. Skoulios, "Structure of block copolymers and block copolymer-diluent systems."

3 July. (T. G. Fox, discussion leader): A. J. Kovacs and G. C. Berry, "Relaxation and viscoelastic phenomena in polymers and concentrated polymer solutions"; M. L. Huggins, "Progress in determination of parameters of polymer solutions"; A. J. Chompff, "A possible model for entangled networks."

4 July. (R. Stein, discussion leader): P. Corradini, "The use of x-rays in determining the structure of polymers"; E. G. Baker, "Heterophase composition of polymers." (H. Mark, discussion leader): W. F. Gibbs, "High-temperature polymers."

5 July. (M. Goodman, discussion leader): N. Yoda, "New heterocyclic polymers by polyphosphoric acid solution methods"; J. Stille, "Polyphenylenes."

Textiles

Charles R. Williams and William O. Statton are chairman and vice chairman, respectively.

8–12 July. J. L. Koenig, M. Hannon, and W. Statton, "Characterization of chain folding in fibers"; D. C. Prevor-

sek, "Role of molecular parameters in the strength of highly oriented polymers"; J. W. S. Hearle, "Mechanics of wool fibers, and other systems containing fibrils having a phase transition"; A. G. Pittman, "Interrelationships between surface wetting properties and the structure of polymers"; D. E. Howe, "Optical properties of fibers: interrelationships with visual aesthetics and soiling"; M. Lewin, "New approach to the structure of the cellulose fibers"; K. Mühlethaler, "Ultrastructure and formation of plant cell walls"; J. G. Roberts, "Structure and accessibility factors in reactions of cellulose"; F. Jones, "The vapor phase dyeing of synthetic fibers"; B. Milicevic, "Equilibrium and nonequilibrium thermodynamics of dyeing."

Scientific Information Problems in Research

Douglas B. Remsen and Frank Fremont-Smith are chairman and vice chairman, respectively.

Disciplinary and Multidisciplinary

15 July. Douglas Remsen, "Objectives"; Ascher Opler, "Mission-oriented patterns and operations"; Arthur Hirschman, Hugh Wolfe, and François Kertesz, "Physics and interdisciplinary research."

16 July. James Mullen and Scott Maclennan, "Chemistry and interdisciplinary research"; Robert Harte and Karl Heumann, "Biology and interdisciplinary research."

17 July. Frank Fremont-Smith and Richard Orr, "Medicine and interdisciplinary research"; Ruth Davis, "Integrated documentation (interfaces of CA, BA, medlars)."

18 July. Gus Simpson, "Engineering and multidisciplinary research."

19 July. Harold Wooster, "The future of science information and the information scientist."

Corrosion

Sidney Barnartt and J. Bruce Wagner, Jr., are chairman and vice chairman, respectively.

Corrosion Kinetics and Mechanisms

22 July. General kinetics and mechanisms: H. Kaesche, "Corrosion kinetics and mechanisms"; S. Barnartt, "Linear corrosion kinetics." Metal and alloy dissolution: B. Miller, "Ring and split ring-disk studies of corrosion reactions"; M. Kolotyrkin, "Role of the solution components in the dissolution of metals of the iron group."

23 July. Metal and alloy dissolution (continued): D. A. Vermilyea, "Mechansim of aluminum dissolution"; H. W. Pickering, "Volume-diffusion mechanism of alloy dissolution"; E. J. Kelly, "Mechanism of iron dissolution with and without inhibitors". Inhibition: G. W. Poling, "Inhibition of copper dissolution, infrared studies"; B. E. Conway, "Self-inhibition and surface oxide formation in oxygen evolution at some transition metals."

24 July. Passivation kinetics and mechanisms: N. Hackerman, "Correlation of inhibition and passivation mechanisms"; N. Sato, "Passivation and reactivation of iron in neutral solutions"; S. Schuldiner, "Passivity of platinum and iron in high-purity systems"; R. P. Frankenthal, "Passivation kinetics and mechanism on iron-chromium alloys"; J. Kruger, "Passivation mechanism on iron and its alloys."

25 July. Passivity breakdown and pitting: T. P. Hoar, "Mechanism of passivity breakdown and pitting as revealed by potentiostatic solution-replacement techniques"; G. Bianchi, "Passivity breakdown and pitting of stainless steels"; D. Duquette, "Corrosion fatigue of mild steels, new data and a new mechanism." Special topic: H. H. Uhlig, "The frontiers of corrosion science: unsolved problems."

26 July. Passivity breakdown and pitting (continued): H. L. Craig, "Rotating-disk studies of pitting on aluminum"; M. J. Pryor, "Passivity breakdown on binary aluminum alloys by chloride solutions." General reappraisal.

Elastomers

Thor L. Smith and S. L. Aggarwal are chairman and vice chairman, respectively.

29 July. Sanford S. Sternstein and George M. Lederle, "Rubber elasticity theory—minimum free-energy deformation states"; P. Thirion, "Empirical modification of the non-Gaussian treatment of the statistical elasticity theory"; Donald J. Plazek, "Retarded elastic and flow behavior of polystyrene: molecular weight and temperature dependences."

30 July. John D. Ferry, "Viscoelastic properties of elastomers and their relation to short-range and long-range molecular motions"; K. Ninomiya, "Application of polymer rheology to rubber technology"; C. A. Uraneck, "New aspects in modification of emulsion polymerization."

31 July. G. I. Keim, D. L. Christman, L. R. Kangas, and S. K. Shyluk, "Monomer-polymer interactions—tracer studies involving homogeneous Ziegler catalysis"; D. J. Meier and G. Holden, "Theory of flow properties of block copolymers"; H. A. Vaughn, R. P. Kambour, and D. G. LeGrand, "Silicone-polycarbonate block copolymers: synthesis, physical properties, and morphology."

1 August. S. B. Clough and N. S. Schneider, "Structural studies on urethane elastomers"; L. L. Harrell, Jr., "Segmented polyurethanes—properties as a function of segment size and distribution"; Maurice Morton, "Mechanism of reinforcement of elastomers by model fillers"; L. Mullins, "Mechanical behavior of reinforced vulcanizates."

2 August. Andries Voet, "Electrical properties of stretched carbon black filled vulcanizates"; Merton S. Studebaker, "Some aspects of reinforcement."

Medicinal Chemistry

Murray Weiner and Joseph P. Dailey are chairman and vice chairman, respectively.

5 August. Physical methods in medicinal chemistry: Barbara W. Low, "Application of x-ray crystallography to biologically active molecules"; F. W. McLafferty, "Mass spectroscopy in structure determination"; Biologically active peptides: Miklos Bodansky, "Recent advances in peptide synthesis"; John T. Potts, Jr., "Study of thyrocalcitonin structure."

6 August. Chemotherapy of cancer: Frederick S. Philips, "Current problems in cancer chemotherapy"; Charles Heidelberger, "Recent studies with fluorinated pyrimidine nucleosides"; Albert Segaloff, "Hormones in cancer chemotherapy"; Compounds related to thyroid function: R. Pitt-Rivers, "Chemistry of thyroglobulin fragments"; Edward A. Carr, Jr., "The clinical pharmacology of antithyroid drugs and thyroid hormones."

7 August. Synthesis, biological evaluation, and metabolism of potential drug substances: Paul von R. Schleyer, "Recent chemistry of adamantane and its relatives"; E. C. Hermann, "Biological activity of compounds related to adamantane"; Peter G. Dayton, "Metabolism of potential drug substances."

8 August. Needs of medicine: Ernest Bueding, "The biochemical mode of action of antiparasitic agents"; Russell P. Sherwin, "The cellular dynamic approach to respiratory disease therapy." Hallucinogenic agents: Daniel X. Freedman, "Medical aspects of the hallucinogens."

9 August. Regulation of immunologic system: Abraham White, "Immunoregulators of tissue origin"; George W. Santos, "Immunosuppressive drugs."

Food and Nutrition

Max Milner and Imri J. Hutchings are chairman and vice chairman, respectively.

12 August. Vitamins and antioxidants (Imri J. Hutchings, chairman): W. Henry Sebrell, "Minimum daily requirements"; H. Klaui, "Synergists in food antioxidant systems." Foods and dental health (Ray H. Anderson, chairman): Juan M. Navia, "Nutritional factors in tooth development and oral health"; Kenneth O. Madsen, "Effects of some ingredients of foods on tooth decay."

13 August. Reactions in frozen systems (Owen R. Fennema, chairman): Thomas E. Kiovsky, "Kinetics and mechanisms of reactions in frozen systems"; Norman Grant, "Acceleration of biochemical reactions in frozen systems." Aspects of obesity (George F. Cahill, Jr., chairman): Derek Miller, "Factors affecting calorie balance"; Jerome L. Knittle, "Effect of early nutrition on adipose tissue cellularity and metabolism."

14 August. Protein foods (Aaron M. Altschul, chairman): Edgar A. Day, "Protein beverages for improved nutrition"; Sidney M. Cantor, "Marketing aspects of cereal fortification." Factors influencing child nutrition (Richard H. Barnes, chairman): Juan M. Baertl, "Evaluation of effectiveness of an experimental food supplementation program in a group of Peruvian villages"; Diva Sanjur, "A social-cultural approach to the study of infant feeding practices and weaning habits in a Mexican village."

15 August. Nutrient utilization for growth in infants, I (George G. Graham, chairman): Robert B. Schultz, "Role of the endocrine system in utilization of nutrients"; John C. Waterlow and David Picou, "Protein turnover in relation to diet and growth." Weaning habits (Max Milner, chairman): Derek B. Jelliffe, "Cultural, socioeconomic, and ecological factors affecting weaning practices in developing countries."

16 August. Nutrient utilization for growth in infants, II (J. Masek, chairman): Sanford A. Miller, "Protein requirements for development"; Fernando Viteri, "Absorption and gastrointestinal enzyme changes during protein malnutrition."

Separation and Purification

Raymond F. Baddour and Robert B. Long are chairman and vice chairman, respectively.

19–23 August. Wayne McRae, "Application of electrodialysis to food and chemicals processing"; Carel J. Van Oss, "The applications of ultrafiltration"; Robert B. Long and Norman N. Li, "Permeation through polymer films: I. High-pressure gases. II. Nonaqueous liquids"; Verle N. Schrodt, "Unsteady-state processing"; Olof Samuelson, "Chromatographic separations of sugars and organic acids"; J. Calvin Giddings, "Ultrahigh-pressure gas chromatography"; Wolfgang K. Haller, "Steric chromatography of macromolecules and virus particles on glass of controlled pore size"; Earle C. Makin, "Organic molecular sieves—a new separation tool"; William M. Goldberger, "Separation by thin film fractionation"; Peter V. Danckwerts, "Needs and opportunities in separation and purification." Panel speakers: Lyman C. Craig, J. Ward Greiner, Kenneth C. Hickman, and Howard S. Bryant.

Cancer

M. Michael Sigel and Hilary Koprowski are chairman and vice chairman, respectively.

26 August. (Fred Rapp, chairman): Richard S. Metzgar, "The nature of virus-specific cell surface antigens associated with malignant transformation by SV40 virus"; Anthony J. Girardi, "Prevention of SV40-induced tumors in hamsters"; Satvir S. Tevethia, "In vivo and in vitro studies on SV40-induced tumor immunity." (Mary A. Fink, chairman): Ronald B. Herberman, "Human cellular antigens"; Herbert J. Rapp, "Tumor antigens of a transplantable guinea pig hepatoma: delayed hypersensitivity and protection tests."

27 August. (Karl Habel, chairman): Ruth A. Fugmann, "Studies on antibodies in animals bearing virus-induced tumors"; Ariel C. Hollinshead, "Identification and separation of antigens which protect against tumor formation"; Dean F. Stevens, "Factors influencing cytokinesis in hamster ascites multinucleated cells." (Hilary Koprowski, chairman): Karl Erik Hellstrom, "In vitro studies on cell-bound immune reactions against tumor-specific antigens"; David W. Weiss, "Spontaneous neoplasia and the immune response: findings and perspectives."

28 August. (Paul Siminoff, chairman): Robert A. Good, "Relation of immunologic function to malignant adaptation"; R. A. Adams, "The serial transplantation in rodents of human and animal leukemia and lymphoma: biologic and immunologic considerations"; R. E. McCarthy, "Immunological studies on the effect of tumors on donors and recipients of normal tissue grafts." (Felix Milgrom, chairman): Phil Gold, "Carcinoembryonic antigens of the human digestive system"; Jose Uriel, "Association of α-foetoprotein with primary hepatoma in man."

29 August. (George Foley, chairman): Saul A. Schepartz, "New developments in the search for antitumor drugs"; Frank M. Schabel, Jr., "Kinetics of cell kill of animal tumors by effective drugs." (John M. Venditti, chairman): Emil J. Freireich, "Objectives and techniques for evaluation of clinical chemotherapy studies"; Edward Miller, "The most effective administration of antineoplastic antimetabolites."

30 August. (M. Michael Sigel, chairman): Edmund Klein, "Local cytostatic and immunologic management of epidermal neoplasms"; W. R. Bruce, "Studies of the action of chemotherapeutic agents on normal and tumor stem cells."

New Hampton School

Environmental Sciences: Water

Walter J. Weber, Jr., and August T. Rossano, Jr., are chairman and vice chairman, respectively.

Surface Phenomena in Aqueous Systems

10 June. Sorption at the solid-water interface (Philip L. de Bruyn, moderator) (Everett A. Jenne, discussion leader): "Solution-solid exchange reactions of inorganic species." A discussion of kinetic and equilibrium factors affecting

the sorptive accumulation of inorganic species at solid-water interfaces. Consideration of the surface characteristics of selected solids and how these affect the sorption process. (Walter J. Weber, Jr., moderator) (Douglas W. Fuerstenau, discussion leader): "Solution-solid exchange reactions of organic species." A discussion of kinetic and equilibrium factors affecting the sorptive accumulation of organic species at solid-water interfaces. Consideration of the surface characteristics of selected solids and how these affect the sorption process.

11 June. Coagulation-flocculation (Ronald Packham, moderator) (James J. Morgan, discussion leader): "Surface reactions in coagulation." A discussion of interfacial forces and mechanisms involved in the coagulation or flocculation of colloidal systems, or both. (Warren J. Kaufman, discussion leader): "Physical parameters in coagulation." The influence of the hydrodynamics of a system on particle growth kinetics, state of dispersion, etc. (Jesse M. Cohen, moderator) (Egon Matijevic, discussion leader): "Chemical parameters in coagulation." A discussion of how the coagulation process is affected by solution composition, primary coagulants, coagulant aids, etc.

12 June. Filtration (Sheldon K. Freidlander, moderator) (Kenneth J. Ives, discussion leader): "Surface reactions in filtration." A discussion of interfacial forces and mechanisms involved in the filtration of particulate and colloidal fractions from water. (Charles O'Melia, discussion leader): "Relationships between surface reactions and physical aspects of filtration." An attempt to define the relative significance of surface forces and gross physical effects in sand filters. (Jack A. Borchardt, moderator) (John L. Cleasby, discussion leader): "Practical considerations in filtration applications." A consideration of the functions of filtration processes in water and waste-water treatment, with emphasis on the interrelationship between filtration and coagulation operations.

13 June. Membrane processes (A. S. Michaels, moderator) (Harry P. Gregor, discussion leader): "Surface characteristics of membranes." A discussion of the role of surface forces in membrane process—types of membranes and the relative significance of surface forces as a function of type. (Robert N. Rickles, discussion leader): "Mechanisms of mass transfer." A consideration of mechanisms by which inorganic and organic substances undergo transport across membranes and of how surface properties of membranes affect the transport process. (K. S. Spiegler, moderator) (Ulrich Merten, discussion leader): "Membrane applications." A discussion of the application of membrane processes to water and waste-water treatment, including detailed consideration of limiting factors and conditions.

14 June. Presentations originating from the conference (Gordon Robeck, moderator): On Monday morning, it will be announced that the Friday morning session will be kept open for presentation of discussions originating during the conference. Any persons wishing to make a presentation on Friday morning will so inform the conference chairman by Thursday a.m. to allow time for scheduling for Friday a.m.

Nucleic Acids

A. Dale Kaiser and Gunther S. Stent are chairmen. Robert M. Bock and Jerome R. Vinograd are vice chairmen.

17–21 June. (Paul Berg, chairman): "Transfer RNA and suppression"; (Peter Geiduschek, chairman): "RNA synthesis I—structure and properties of RNA polymerase"; (David Hogness, chairman): "RNA synthesis II—transition from early to late viral messenger synthesis"; (Walter Gilbert, chairman): "RNA synthesis III—repression"; (Norton Zinder, chairman): "RNA synthesis IV—replication of viral RNA"; (James Watson, chairman): "Ribosomes, their formation, structure, and function"; (Matthew Meselson, chairman): "Secondary modification of RNA and DNA"; (Jerome Schiff, chairman): "Plastid nucleic acids."

Proteins

Edmond H. Fischer and Daniel E. Koshland, Jr., chairmen. C. H. W. Hirs and Howard K. Schachman are vice chairmen.

24 June. (F. Richards, chairman): Does protein folding occur from the *N*-terminal end? D. Phillips—"Yes"; C. Anfinsen—"No"; A. D. McLachlan and M. Perutz, "Maybe." (H. Sober, chairman): Is the search for a homogeneous protein worth while? E. Haber—"Yes"; G. von Ehrenstein—"No."

25 June. (G. M. Tomkins, chairman): Macromolecule assembly is easy! J. A. DeMoss—"Yes"; W. Wood—"No"; W. F. Harrington—"Maybe." (W. Stein, chairman): Are physical techniques still in? Y. A. Ouchinnikov; W. D. Phillips—"Yes"; E. N. Shaw—"No."

26 June. (H. Dintzis, chairman): What happens when proteins confront nucleic acids? W. Gilbert—"They repress"; G. Dixon—"They repress"; R. D. Cole—"They express." (C. H. W. Hirs, chairman): How do transport proteins function? E. P. Kennedy; S. Roseman.

27 June. (B. Horecker, chairman): Is protein function and design based on symmetry? J. Monod—"Yes"; R. Dickerson—"No"; M. Rossman—"Maybe." Special topics.

28 June. (Y. Pocker, chairman): Can specificity go too far? B. Malmström, "Yes"; E. E. Snell—"No."

Chemistry of Heterocyclic Compounds

Leo A. Paquette and James A. Moore are chairman and vice chairman, respectively.

1–5 July. George Büchi, "The synthesis of natural products"; Lloyd Dolby, "New transformations of 2-acyl- and 3-vinylindoles"; Paul Gassman, "Nitrenium ions in organic sythesis"; Alfred Hassner, "Synthesis and chemistry of azirines"; Richard K. Hill, "Thermal rearrangement involving heteroatoms"; Gurnos Jones, "Azonia-azulenium salts"; Thomas Kauffmann, "Solved and unsolved problems in hetaryne chemistry"; Nelson Leonard, "Synthetic spectroscopic models related to coenzymes and dinucleotides"; Günther Maier, "Valence tautomerism in diaza derivatives of bicyclo(4. 1. 0)heptadienes, bicyclo(4. 2. 0)octadienes, and bicyclo(4. 2. 0)octatrienes"; Günter Opitz, "Cycloadditions with sulfenes"; Vincent Traynelis, "The reaction of heterocyclic *N*-oxides with acid anhydrides"; Eugene E. van Tamelen (subject to be announced); Ernest Wenkert, "Alkaloid synthesis."

Statistics in Chemistry and Chemical Engineering

Ernest G. Bianco and Wesley L. Nicholson are chairman and vice chairman, respectively.

8 July. (Lloyd S. Nelson, chairman): George E. P. Box, "Statistics in industry"; (Hale C. Sweeny, chairman): John Mandel, "Some new thoughts on the analysis of multiway data."

9 July. (Otto A. Kral, chairman): Sidney Addelman, "Sequences of fractional factorial plans." (William J. Hill, chairman): H. Fairfield Smith, "The statistics of metal fatigue."

10 July. (David H. Doehlert, chairman): Lincoln E. Moses, "Statistics of the national halothane study—a case of retrospective treatment comparison"; (Ralph C. Manring, chairman): Louis J. Painter, "The least-squares analysis of correlated responses."

11 July. (John W. Gorman, chairman): Maurice G. Kendall, "On the analogies between the physical and behavioral sciences." (Hubert M. Hill, chairman): J. M. Honeycutt, "On selecting and obtaining computer services."

12 July. (Ralph A. Bradley, chairman): William A. Thompson, Jr., "Recent results in variance component analysis."

Radiation Chemistry

John E. Willard and Robert R. Hentz are chairman and vice chairman, respectively.

15 July. (J. J. Weiss, discussion leader): H. A. Schwarz, "Current status of the radiation chemistry of water"; G. Stein, "Role of H atoms in the radiation chemistry of aqueous systems." (R. H. Johnsen, discussion leader): W. H. Hamill, "Radiolytic intermediates as studied by optical absorption and emission in trapping media"; J. E. Bennett, "The study of free radicals and radical ions at low temperatures using a rotating cryostat."

16 July. (R. L. Platzman, discussion leader): A. C. Albrecht, "Properties of electrons and excited states produced by photoactivation in solid organic matrices." (J. L. Magee, discussion leader): F. Williams, "Electron escape probabilities in radiation chemistry."

17 July. (A. J. Swallow, discussion leader): L. M. Dorfman, "Current research on the pulse radiolysis of organic and aquo-organic systems." (F. W. Lampe, discussion leader): J. L. Beauchamp, "Use of ion cyclotron resonance techniques for studying ion-molecule reactions."

18 July. (F. Hutchinson, discussion leader): M. Ebert, "Frontiers of understanding of biological effects of radiation"; R. E. Zirkle, "Radiation effects on several organelles of vertebrate cells: production by microbeam exposure of cytoplasm several microns distant." (R. R. Hentz, discussion leader): Contributed papers.

19 July. (F. S. Rowland, discussion leader): S. Wexler, "Chemical reactions of neutral and ionic species in accelerated beams."

Applications

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 1095 to W. George Parks, Department of Chemistry, University of Rhode Island, Kingston, R.I.

Organic Reactions and Processes

Harold Kwart and Stanley J. Brois are chairman and vice chairman.

22–26 July. P. D. Bartlett, "Dialkyltetroxides"; R. Mayer, "Reactivity of thiols"; V. Horok, "The chemical properties of aromatic sulfur"; G. Kresze, "Structure and reactivity of benzothiacyclene derivatives"; G. Payne, "Reactions of ethyl (dimethylsulfuranylidene) acetate"; W. Sheppard and A. Cairncross, "Organo-copper compounds"; H. Wasserman, "Aspects of the reactivity of singlet oxygens"; E. Fields, "Free radical formation and reactions in the vapor phase"; E. Hedaya, "Reaction through flask-vacuum pyrolysis"; L. Friedman, "Cycloaddition and ENE reactions of benzyne."

Steroids and Other Natural Products

Werner Herz and Paul J. Scheuer are chairman and vice chairman, respectively.

29 July to 2 August. F. Bohlmann, "Structure and biogenesis of naturally occurring acetylenes"; J. Fried, "New approaches to the total synthesis of steroids"; S. Ito, "Structural studies of di- or triterpenes"; J. A. Marshall, "Recent progress in terpene synthesis"; F. McLafferty, "Recent advances in mass spectrometry"; G. Ourisson, "Use of plant tissue cultures in the study of sterol biosynthesis"; M. Shamma, "Rates of methiodide formation and alkaloid stereochemistry"; M. Uskokovic, "Topic in alkaloid synthesis"; D. H. Williams, "Use of benzene-induced solution shifts of proton resonances as an aid to structure elucidation"; T. B. Windholz, "Chemical reactions of the macrocycle zearalenone"; B. Witkop (subject to be announced); J. E. Pike, "Synthetic studies on the prostaglandins."

Inorganic Chemistry

Grant W. Urry and Jack Halpern are chairman and vice chairman, respectively.

Charge Delocalization Phenomena in Inorganic Systems

5–9 August. John Fackler, "New reactions with old compounds, dithiocarbamates, xanthates, and other 1,1-dithiols"; B. N. Figgis, "The significance of the orbital reduction factor k"; Frank Fong, "Symmetry and electric dipole transition selection rules for Sm II and Eu III in crystals"; D. R. Eaton, "Spin delocalization in transition metal complexes"; Edwin Hengge, "Delocalization in polycyclic silicon layers"; R. H. Holm, "Stereochemical determinations in molecules with delocalized electronic structure"; Jurgen M. Honig, "Electrical properties of metal oxides"; A. H. Maki, "Estimation of electron delocalization from ligand hyperfine structure"; C. N. R. Rao, "Electrical conduction in coordination polymers"; J. D. W. van Voorst, "Bonding in sandwich compounds, magnetic and optical studies of metallocenes"; S. I. Weissman, "Electron spin resonance studies of the triplet states in some metallo-organic compounds."

Special topics: The evening sessions on Monday, Tuesday, and Wednesday will be devoted to special topics listed below. Conferees with interests in any of these areas are invited to present informal short talks. To arrange for such a presentation, the conferee should contact the discussion leader for the appropriate area before noon on 5 August 1968. The number of such presentations will be limited only by the available time. (Alan Davison, discussion leader): "Phenomena related to the nonrigidity of molecules"; (Charles B. Harris, discussion leader): "The metal-metal bond in transition metal complexes"; (George W. Parshall, discus-

sion leader): "Transition metal complexes of molecular nitrogen"; (M. L. Huggins, discussion leader): "Some inorganic horizons."

Analytical Chemistry

David N. Hume and Ralph A. Brown are chairman and vice chairman, respectively.

12–16 August. A. P. Altshuller, "Air pollution analysis"; Jonathan Amy, "New techniques instrumentation"; Walter J. Blaedel, "Ion exchange membranes"; Edward G. Brame, "Nuclear quadripole resonance spectroscopy." (Ralph A. Brown, moderator): Open sessions. Stanley Bruckenstein, "Osmotic techniques"; David Dyrssen, "Computer methods in equilibria and titrations"; Shizuo Fujiwara, "Application of NMR and ESR"; David M. Hercules, "Electron spectroscopy"; William H. King, "Piezoelectric sorption detectors"; Anthony J. Waraksa, "Electron spectroscopy instrumentation."

Chemistry and Physics of Cellular Materials

Louis C. Rubens and Alan L. Gent are chairman and vice chairman, respectively.

19 August. I. O. Salyer, "New foams and foaming techniques"; J. K. Backus and D. L. Bernard, "Isocyanate polymer foams"; I. G. Morrison, "Pyranyl foams."

20 August. E. Baer, "Relationships between heterogeneous nucleation and crystallization of polymers"; F. Gornick, "Some fundamental considerations in nucleation of phases"; J. A. Koutsky, "Homogeneous and heterogeneous nucleation in polymers"; J. W. Westwater, "Nucleation and growth in bubbles or drops during boiling or condensation on surfaces."

21 August. N. Seki, "A study on heat transfer in porous media"; N. C. Hilyard, "Dynamic mechanical properties of fluid-filled foam systems in the frequency range—0.1–1000 hz"; J. Parker, "Evaluation of the dynamic thermo physical properties of cellular plastics."

22 August. I. N. Einhorn and R. W. Mickelson, "Evaluation of the effectiveness of fire retardance in model urethane compounds"; R. W. Mickelson and I. N. Einhorn, "Determination of the kinetic parameters for pyrolysis of model urethanes by DTA and TGA analyses"; D. d'Eustachio, "Physical and chemical conditions necessary for cellulating glasses."

23 August. I. K. Hinselmann, "The physical basis for preexpansion of expandable polystyrene"; M. Nakamura, F. Buttler, and D. W. Liou, "Diffusion of gases in plastic foams"; H. G. Nadeau, "Development of high-temperature low flame spread cellular materials with emphasis on physical test methods."

Science of Adhesion

Irving Skeist and Charles A. Kumins are chairman and vice chairman, respectively.

26 August. Justin C. Bolger, "Specific interactions at polymer solid interfaces"; Harold Schonhorn, "Surface morphology, joint strength, and wetability." (Armand Lewis, discussion leader)

27 August. A. Kelly, "High-strength composites." (Albert G. H. Dietz, discussion leader). Wartan A. Jemian, "Deformation mechanisms of adhesive-metal system." (Robert E. Keith, discussion leader). Alden J. Deyrup, "Adhesion of polymers to metals under tensile stress in the presence of water."

28 August. Symposium on "Adhesion in biological systems"; E. G. Shafrin and W. A. Zisman, "Mechanisms involved in adhesion"; Henry L. Lee, "Adhesion of epoxy resins to hard tissues"; Robert E. Hillman and Paul Nace, "Barnacle cypride adhesive formation." (Leo Gross, discussion leader): D. V. Keller, Jr., "Metallic adhesion." (F. R. Eirich, discussion leader)

29 August. John Appeldoorn, "Adhesion in lubrication"; John R. Zurbrick, "Nondestructive testing." (J. F. Abere, discussion leader): Current research presentations. H. N. Vazirani, "Surface treatment of metals"; Souheng Wu, "Intermolecular interactions in some polymer monolayers"; Hans R. Schloss, "Urethane adhesives"; Y. S. Chiang, "Inorganic-organic polymer interfaces."

30 August. Ben S. Bryant, "Mechanism of bonding with porous substrates and water-dispersed thermosetting resins"; Walter O. Pillar, "Interplay of the environment and the substrate with adhesive cure in wood joints."

Kimball Union Academy

Lipid Metabolism

DeWitt S. Goodman and P. Roy Vagelos are chairman and vice chairman, respectively.

10 June. D. Chapman, "Physical studies of lipid-lipid and lipid-protein interactions"; D. M. Small, "The interaction of biologically active lipids in aqueous systems"; E. D. Korn, "Membrane lipids in relation to fatty acid transport and phagocytosis"; A. J. Marcus, "Studies on the lipids of subcellular platelet particles."

11 June. L. I. Rothfield, "Biosynthesis and assembly of bacterial membrane components"; S. Fleischer, "The role of lipid in the function and molecular architecture of membranes"; DeWitt S. Goodman, "Retinol transport in human plasma"; H. Danielsson, "Mechanisms of the conversion of cholesterol to bile acids." (E. H. Mosbach, J. Wilson, discussants)

12 June. D. B. Zilversmit, "Formation and release of intestinal chylomicrons"; H. A. Eder, "The plasma apoprotein of the very-low-density lipoproteins: characterization and biologic role"; R. S. Lees, "Studies on human B-protein (apoprotein of β-lipoprotein)"; J. B. Marsh, "Biosynthesis of the apoprotein of low- and high-density plasma lipoprotein by rat liver ribosomes." (M. Fried and H. Windmueller, discussants)

13 June. M. Vaughan, "Hormonal regulation of lipolysis"; R. W. Butcher, "The role of cyclic AMP in the actions of lipolytic and antilipolytic hormones"; D. Steinberg, "Alpha-oxidation of branched-chain fatty acids in relation to Refsum's disease."

14 June. J. Glomset, "Recent studies on the lecithin:cholesterol acyltransferase reaction"; R. J. Havel, "Hepatic metabolism of free fatty acids and production rate of triglyceride fatty acids in normo- and hypertriglyceridemic dogs and humans."

Research at High Pressure

John C. Jamieson and George E. Duvall are chairman and vice chairman, respectively.

Geophysics and Shock Waves

17 June. Dynamic material studies: T. J. Ahrens, "Hugoniot and release

measurements on silicates"; J. N. Fritz, "Dynamic and theoretical equation of state of sodium chloride"; R. N. Keeler, "Electrical conductivity to 1.2 megabars"; S. P. Marsh, "Review of Los Alamos shock-wave experiments on minerals"; W. M. Isbell, "The behavior of several geological materials under shock-wave loading to 2 megabars."

18 June. High-pressure mineralogy: R. G. McQueen, "Application of shock-wave studies to the interior of the earth"; R. C. Newton, "Collapsing liquids and the melting-point curve of the earth"; T. Takahashi, "Isothermal compression of possible mantle minerals up to 300 kilobars"; E. G. Zukas, "Iron and its alloys under shock-loading."

19 June. Planetary interiors I: D. L. Anderson, "Integration of ultrasonic, shock-wave, and seismological data"; L. Knopoff, "Problems in the design of universal potential functions"; E. B. Royce, "Effects of the electronic configuration on the compressibility of metals"; J. Wacherle, "Oxygen in the megabar region"; H. S. Zapolsky, "TFD equations of state and a model for the major planets."

20 June. Planetary interiors II and theoretical equation of state: N. W. Ashcroft, "Equation of state of metallic hydrogen and helium"; H. Graboske, "The equation of state of low-mass stars"; F. Herman, "Calculation of solid properties at high pressures"; W. C. deMarcus, "Giant planets during a hypothetical collapse phase."

21 June. (Speaker and subject to be announced.)

Cell Structure and Metabolism

George E. Palade and Werner Loewenstein are cochairmen.

Cell Contact and Interaction

24–28 June. Cell junctions (G. Palade, chairman): M. Farquhar, S. Bullivant, and V. Luzzati, "Structural aspects"; (W. Loewenstein, chairman): B. Pethica, S. Socolar, and A. Politoff, "Physicochemical aspects"; (V. Hamburger, chairman): E. Furshpan, D. Potter, Y. Kanno, R. Penn, and J. Subak-Sharpe, "Functional and developmental aspects"; (J. Eccles, chairman): S. Weidmann and M. Bennett, "Transmission of electrical signals." Cell adhesion (B. Pethica, chairman): A. Moscona, T. Humphreys, M. Steinberg, and L. Weiss. Contact inhibition (M. Abercrombie, chairman): S. Carter, H. Green, and L. Sachs. Cell transformation (F. Jacob, chairman): H. Rubin, R. Dulbecco, and M. Stoker. Cell fusion (heterokaryons) (H. Eagle, chairman): H. Harris. Cell growth factors (R. Levi Montalcini, chairman): S. Cohen, I. Königsberg, and S. Gelfant.

Coenzymes and Metabolic Pathways

Morris E. Friedkin and Herbert Weissbach are chairman and vice chairman, respectively.

1 July. (Alton Meister, chairman): Major lectures on vitamin B_6 by E. Snell and P. Fasella. Discussions by E. Wilton-Miles and T. Jenkins. (D. Shemin, chairman): E. Margoliash, "Evolutionary control of cytochrome *c* primary structure"; D. Shemin, "Early steps in porphyrin synthesis: control and mechanisms."

2 July. (H. P. Broquist, chairman): T. Stadtman, "Cobamide coenzyme dependent reactions of the *Clostridium sticklandii* lysine fermentation"; S. Udenfriend, "Biosynthesis of hydroxyproline in collagen"; E. Adams, "Hydroxyproline metabolism." (H. Weissbach, chairman): E. R. Stadtman, B. M. Shapiro, and A. Ginsburg, "Regulation of *E. coli* glutamine synthetase activity"; A. Meister, "Mechanism of action of glutamine synthetase from brain."

3 July. (L. J. Old, chairman): Major lectures on the role of asparagine in neoplastic growth by J. D. Broome and J. C. Wriston, Jr. Discussions by R. E. Handschumacher, A. Meister, and H. Eagle. (M. Friedkin, chairman): B. L. Vallee, "Function and structure of metalloenzymes."

4 July. (N. O. Kaplan, chairman): Y. Nishizuka and O. Hayaishi, "Polymerization of NAD in mammalian nuclei"; A. M. Pappenheimer, Jr., and R. Gore, "Diphtheria toxin-NAD interaction and its relation to protein synthesis in mammalian cells"; R. Sarma, V. Ross, and M. A. Moore, "Investigation of the conformation of pyridine dinucleotides in solution by proton magnetic resonance."

5 July. (R. L. Kisliuk, chairman): G. M. Brown, "The enzymatic synthesis of pteridines"; S. Kaufman, "The role of pteridines in the enzymatic conversion of phenylalanine to tyrosine"; C. Kutzbach, "Properties of a mammalian enzyme catalyzing the formation of CO_2 from 10-formyltetrahydrofolate." Discussions by T. Shiota, F. Huennekens, and C. Levy.

Chemistry, Physiology, and Structure of Bones and Teeth

Robert E. Rowland and James T. Irving are chairman and vice chairman, respectively.

8 July. Submitted papers (abstracts should be sent to Aaron Posner, Hospital for Special Surgery, Cornell University Medical College, 535 East 70th Street, New York, New York 10021, before 1 May 1968). Osteomalacia (Clayton Rich, chairman): S. W. Stanbury and G. A. Lamb, "Renal osteomalacia"; Jenifer Jowsey, "The effect of parathyroid hormone in vitamin-D or calcium-deficient puppies."

9 July. Osteomalacia, Part II: D. Baylink, M. Stauffer, J. Wergedal, and C. Rich, "Effect of vitamin D deficiency on synthesis, mineralization, and resorption of bone"; D. S. Howell, J. C. Pita, J. F. Marquez, and J. E. Madruga, "Partition of calcium and phosphate in cartilage fluid during healing of experimental rickets"; L. V. Avioli, S. W. Lee, and G. S. Gordan, "Absorption and metabolism of vitamin D in osteomalacia"; W. L. Meyer, D. Simmons, and A. S. Kunin, "The dynamics of proteinpolysaccharide metabolism in epiphyseal cartilage and cell population kinetics in rickets." Destruction of hard tissues (J. T. Irving, chairman): P. J. Gaillard, " 'Public Health' activities in bone."

10 July. Destruction of hard tissues, Part II: John Jeffrey, "Enzymatic mechanisms of mammalian collagen degradation"; Harold Fullmer, "Cellular and enzymatic studies of bone resorption"; Paul Goldhaber and Lorne Golub, "The effect of sodium fluoride on bone remodeling in tissue culture." Phosphate and bone metabolism (C. D. Arnaud, chairman): L. V. Avioli, "The effect of exogenous phosphate on calcium homeostasis"; H. Fleisch, "Bone formation and resorption as related to phosphatase activities and pyrophosphate."

11 July. Phosphate and bone metabolism, Part II. S. M. Krane, "Possible roles of phosphate in mineralization of bone"; A. Tenenhouse, "Parathyroid hormone, calcitonin, and phosphatase in an isolated cell system." (R. E. Rowland, chairman): W. D. Armstrong, "Medicine in the Civil War."

12 July. Alkaline earth metabolism (John H. Marshall, chairman): George E. Harrison, "Plasma concentration, body retention, and excretion of Ca^{47}, Ba^{133}, and Ra^{223} following intravenous administration to a healthy man"; Charles W. Mays, "Radium retention";

Julian Liniecki, "The metabolic kinetics of calcium, strontium, barium, and radium in rats and rabbits."

Particle-Solid Interactions

Ladislaus L. Marton and D. V. Medved are chairman and vice chairman, respectively.

15–19 July. On the interaction of ions, atoms, and molecules with single crystals. Emphasis will be in the energy range 0.1–100 kev. The anisotropy effects with crystallographic orientation will be discussed in sessions on: "Secondary processes—kinetic and potential ejection of electrons, sputtering, and ion emission and reflexion"; "Penetration profiles and channeling mechanisms"; "Implantation and retention." Speakers and discussion leaders will include: E. V. Kornelsen, J. A. Davies, O. Oen, W. Gibson, G. D. Magnuson, P. Sigmund, G. Wehner, S. Datz, J. Kistemaker, H. Hagstrum, J. Gibbons, L. Erikson, E. Sternglass, and L. Feldman. J. Lindhardt, K. O. Nielsen, E. S. Mashkova, V. E. Yurasova, E. Parislis, and V. Molchanov have also been invited to participate.

Chemistry at Interfaces

George L. Gaines, Jr., and Robert S. Hansen are chairman and vice chairman, respectively.

22 July. Thin films: colloid stability (F. M. Fowkes, chairman): E. J. Clayfield, "Influence of configurational behavior of adsorbed macromolecules on colloid stability"; E. Willis, "Some investigations on anomalous water"; A. Scheludko, "Black films."

23 July. Thin films: monolayers (E. D. Goddard, chairman): K. J. Mysels, "Forces and potentials in soap films"; D. A. Cadenhead, "Air-water monolayer characteristics of some biologically significant molecules"; H. Kuhn, "Storage and transfer of information in monolayers."

24 July. Polymers at surfaces (T. Fort, Jr., chairman): G. E. Molau, "Interfacial and colloidal properties of block- and graft-copolymers"; C. Thies, "Use of infrared spectroscopy in studies of polymer adsorption phenomena"; D. Tabor, "Some properties of polymer surfaces as shown by friction studies on unlubricated and lubricated polymers."

25 July. Aerosols (E. Matijevic, chairman): J. R. Brock, "Surface properties and the dynamics of aerosols"; K. T. Whitby, "New data on the physics of submicron aerosols"; S. K. Friedlander, "Aerosol diffusion in the filter and the lung."

26 July. Seminar on research in progress: Mercury surfaces (R. S. Hansen, chairman): A. H. Ellison, T. Fort, Jr., T. Smith, and R. R. Stromberg.

Solid State Studies in Ceramics

Alfred R. Cooper and Alan D. Franklin are chairman and vice chairman, respectively.

Phase Transformations

29 July. (Rustum Roy, chairman): Martin J. Buerger, "Crystallographic aspects of phase transformations"; Paul Martin, "Critical phenomena"; (Stanley Austerman, chairman): Gerhard R. Barsch, "Mode instabilities in relation to mechanisms and kinetics of dilatational phase transformations"; David Adler, "Phase transformations in transition metal oxides."

30 July. (Vic Tennery, chairman): Leslie E. Cross, "Thermodynamics of ferroelectric phase transition"; Yuri Tretyakov, "Thermodynamics of transformations in magnetic oxides." (Dennis Readey, chairman): Harold Smyth, "Atomistic model of the melting of MgO."

31 July. (Frank Wagstaff, chairman): Donald Uhlmann, "Kinetics of crystallization in viscous melts"; Kenneth Russell, "Nucleation in condensed systems"; (James Heasley, chairman): J. I. Krugler, "Spinodal decomposition in ceramic systems"; Austin Angell, "Current ideas on glass transition."

1 August. (David Rossington, chairman): W. Klement, "Rapidly running phase transitions at high pressure (alpha-beta quartz)"; Paul Cucka, "Effect of the alpha-beta transition of quartz on stress and fracture of ceramics"; (Alan D. Franklin, chairman): Howard McMurdie, "Transition in architecture: A photographic record."

2 August. (Arthur Heuer, chairman): Walter Roth, "Phase transformation in nonstoichiometric solids" (stabilized zirconia); Robert Ruh, "Phase transformations and utility of zirconia."

Immunochemistry and Immunobiology

Dan H. Campbell and Felix Haurowitz are cochairmen.

5 August. (F. Karush, chairman): S. J. Singer, "The structure of antibody active sites"; M. E. Koshland, "The combining sites of antibodies." (D. Pressman, chairman): S. E. Svehag, "Ultrastructure studies of antigen-antibody complexes and free immunoglobulins."

6 August. (D. H. Campbell, chairman): M. Sela, "Role of conformation of the combining sites in the reaction of antigens with antibodies"; H. N. Eisen, "Heterogeneous and homogeneous anti-DNP-immunoglobulins." (B. Cinader, chairman): R. S. Nezlin, "Interaction of immunoglobulin chains and fragments with antibodies."

7 August. (A. H. Coons, chairman): A. B. Stavitski, "In vitro and in vivo studies of the primary antibody response"; R. B. Taylor, "Cellular cooperation in the antibody response." (H. J. Rapp, chairman): Hans J. Müller-Eberhard, "Complement: A biologically active system of interacting proteins."

8 August. (M. Landy, chairman): M. Hasek, "Antigen requirement and transplantation tolerance"; Z. Ovary, "Different antibody classes and their biological activities." (F. Haurowitz, chairman): B. Benacerraf, "The role of the carrier in the immune response to hapten-protein conjugates."

9 August. (M. W. Chase, chairman): A. Sehon, "Isolation of immunospecific antibodies to a protein antigen."

Chemistry and Physics of Solids

Morrel H. Cohen and Arthur Bienenstock are chairman and vice chairman, respectively.

Electrons and Phonons in Disordered Systems

12 August. Introduction and review: D. Turnbull, "Structures of disordered systems"; N. Mott, "Electrons in disordered systems."

13 August. Phonons in alloys and mixed crystals: Experimental; P. Pershan, "Optical"; B. N. Brockhouse, "Neutrons"; J. Carbotte, "Tunneling"; Theoretical; D. Taylor, "General"; W. M. Visscher, "Isotopically disordered systems (film)."

14 August. Electrons in alloys and mixed crystals: P. Soven, "Theory."

15 August. Phonons in amorphous systems: P. Dean, "Theory."

16 August. Electrons in amorphous systems: M. H. Cohen, "Simple systems"; J. Tauč, "Optical properties of

amorphous semiconductors"; H. Fritzsche, "Transport properties of amorphous semiconductors."

Infrared Spectroscopy

Samuel Krimm is chairman.

19 August. Ian M. Mills, "Evaluation of normal coordinate analyses"; Dolphus E. Milligan, "Spectra of molecular species in matrices."

20 August. Otto Schnepp, "Lattice vibrations and intermolecular forces"; Ludwig Genzel, "Defect-induced and disorder-induced infrared absorption."

21 August. Roy G. Gordon, "Band shapes and molecular motion in gases and liquids"; Harold J. Bernstein, "Laser Raman spectroscopy."

22 August. Gerald A. Segal, "A molecular orbital theory of intensities"; John J. Rush, "Inelastic neutron scattering spectroscopy."

23 August. Norman Sheppard, "Spectra of adsorbed species."

Nonlinear Optic Effects

Boris P. Stoicheff and R. G. Brewer are cochairmen.

26–30 August. Topics for discussion: Picosecond light pulses and applications; self-induced transparency; Self-focusing and beam trapping; Stimulated Rayleigh, Brillouin, and Raman scattering; Nonlinear light scattering. Discussion leaders and speakers: N. Bloembergen, R. Y. Chiao, A. J. DeMaria, J. Ducuing, P. A. Franken, E. Garmire, J. A. Giordmaine, E. L. Hahn, R. W. Hellwarth, R. M. Herman, P. L. Kelley, C. K. N. Patel, Y. R. Shen, R. W. Terhune, W. G. Wagner, and J. F. Ward.

Tilton School

Chemistry of Carbohydrates

Louis Long, Jr., and G. Norris Bollenback are chairman and vice chairman.

10 June. The Browning reaction (G. N. Bollenback, discussion leader): J. E. Hodge, "Review of the chemistry of the Browning reaction"; E. F. L. J. Anet, "Recent advances in the chemistry of the Browning reaction"; C. O. Chichester, "Importance of the Browning reaction in food industries"; G. N. Bollenback, "Importance of the Browning reaction in nonfood industries."

11 June. Cell wall carbohydrate chemistry (R. W. Jeanloz, discussion leader): H. J. Rogers, "The organization of polymers in the cell walls of bacilli"; H. Heymann, "Polysaccharides of the cell wall of streptococcus pyogenes"; D. J. Tipper, "Structure of the peptide of the glycan of the staphylococcus epidermidis cell wall"; R. W. Jeanloz, "Structure of the bacterial cell wall of *Micrococcus lysodeikticus*"; J. Baddiley, "The biosynthesis and attachment of teichoic acid to a bacterial cell wall."

12 June. Round-table discussions of topics to be selected at the conference (L. Long, Jr., and G. N. Bollenback,

Program Summary, Gordon Research Conferences for 1968:

Date	Colby Junior College	New Hampton School	Kimball Union Academy
10–14 June	Hydrocarbon chemistry	Environmental sciences: Water	Lipid metabolism
17–21 June	Nuclear chemistry	Nucleic acids	Research at high pressure
24–28 June	Catalysis	Proteins	Cell structure and metabolism
1–5 July	Polymers	Chemistry of heterocylic compounds	Coenzymes and metabolic pathways
8–12 July	Textiles	Statistics in chemistry and chemical engineering	Chemistry, physiology, and structure of bones and teeth
15–19 July	Scientific information problems and research	Radiation chemistry	Particle-solid interactions
22–26 July	Corrosion	Organic reactions and processes	Chemistry at interfaces
29 July–2 August	Elastomers	Steroids and other natural products	Solid state studies in ceramics
5–9 August	Medicinal chemistry	Inorganic chemistry	Immunochemistry and immunobiology
12–16 August	Food and nutrition	Analytical chemistry	Chemistry and physics of solids
19–23 August	Separation and purification	Chemistry and physics of cellular materials	Infrared spectroscopy
26–30 August	Cancer	Science of adhesion	Nonlinear optic effects

* Week not available

discussion leaders): Displacement reactions of sugar sulfonates (L. Anderson, discussion leader): L. Anderson, "Efforts to improve rate and yield in the displacement of sulfonate groups by azide ion"; L. Goodman, "Neighboring group displacement reactions of sugar sulfonates."

13 June. Displacement reactions of sugar sulfonates (continued): D. H. Ball, "Some current aspects of sulfonate ester chemistry"; L. Hough, "Steric and electronic factors affecting sulfonate displacement reactions." Synthesis and reactions of glycosides (C. T. Bishop, discussion leader): J. J. Fox, "Interactions between the sugar and a glycon of nucleosides via anhydronucleoside intermediates"; N. K. Kochetkov, "Synthesis of glycosides."

14 June. Synthesis and reactions of glycosides (continued): R. U. Lemieux, "Synthesis of *O*-glycosides from glycals and 1,2-orthoesters"; C. Schuerch, "Stereospecific polymerization of carbohydrates."

Interaction and Transport in Physical, Chemical, and Biological Systems

Alexander Mauro and David E. Goldman are chairman and vice chairman, respectively.

Biological Lamellae and Related Physical Lamellar Systems

17 June. Ultrastructure (W. Stoeckenius, chairman): (D. Robertson, discussion leader): G. Palade, "Review of lamellar structures in biological cells"; L. Napolitano, "Studies on the relationship of protein and lipids in myelin and other cell membranes." Ultrastructure (continued) (G. Palade, chairman): W. Stoeckenius, "Ultrastructure of mitochondrial membranes"; D. Branton, "Subunits in chloroplast lamellae"; T. M. Terry, "Characterization of the plasma membrane of *Mycoplasma laidlawii.*"

18 June. Liquid crystals (D. M. Small, chairman): G. W. Gray, "Liquid crystalline behavior of compounds and their chemical constitution"; J. L. Fergason, "Thermotropic liquid crystals"; V. Luzzati, "Liquid crystalline phases of lipid-water systems." Liquid crystals (D. Goldman, chairman): R. Williams, "Domain formation in liquid crystals and ferroelectric behavior in liquid crystals and related liquids"; L. C. Snyder, "Nuclear magnetic resonance studies of molecules in liquid crystal solvents"; E. Carr, "Ordering in liquid crystals owing to electric and magnetic fields."

19 June. Spherules and vesicles (T. E. Thompson, chairman): G. T. Stewart, "Liquid crystals as ordered components of living substance"; D. Papahadjopoulous, "Structural characteristics and permeability properties of hydrated liquid crystals derived from phospholipids"; R. Rendi, "Osmotic properties of swollen phospholipid suspensions." Studies on erythrocyte membranes (R. P. Rand, chairman): D. Chapman, "Nuclear magnetic resonance studies of lipids and membranes"; V. Marchesi, "Proteins

New Hampshire and Washington

Tilton School	Proctor Academy	Holderness School	Crystal Inn
Chemistry of carbohydrates	Dielectric phenomena	Animal cells and viruses	*
Interaction and transport	Dynamics of molecular collisions	Science and technology of biomaterials	*
Biochemistry and agriculture	Friction, lubrication, and wear	Chemistry and physics of isotopes	Theoretical chemistry
Plasma physics	Lysosomes	Lasers in medicine and biology	Chemistry and physics of coatings and films
Chemistry and physics of space	Radical ions	*	Physical metallurgy
Fluorine chemistry	Spectral line shapes	*	Molecular pathology
Biomathematics	Biological regulatory mechanisms	*	Quantum solids and fluids
Nuclear structure physics	Energy coupling mechanisms	*	High-temperature chemistry
Industrial hygiene	*	*	Toxicology and safety evaluations
Dissolution and crystallization of calcium phosphates	*	Myocardial contractility	Chemistry and physics of paper
Thin films	*	Metals and metal binding in biology	Biology and chemistry of pyrrole compounds
Physics and physical chemistry of biopolymers	*	Geochemistry	*

associated with red cell ghosts: biochemical and electron-microscopic analysis."

20 June. Ultrathin lipid films (H. T. Tien, chairman): R. J. Cherry, "Refractive index determination of black lipid films"; R. C. Bean, "Permeability of lipid bilayer membranes to organic solutes"; A. Cass, "Water permeability of ultrathin films." Ultrathin lipid films (T. E. Andreoli, chairman): B. C. Pressman, "The action of cyclic peptides on cation transport in mitochondria"; A. Finkelstein, "Electrical properties of lipid films treated with valinomycin and polyenes"; motion picture by Rudin and Mueller demonstrating excitability phenomena in a suitably modified lipid bilayer.

21 June. There will be a general discussion of transport properties of ultrathin films.

Biochemistry and Agriculture

Richard J. Magee and A. Carl Leopold are chairman and vice chairman, respectively.

Chemical Control Systems

24 June. (R. B. Turner, chairman): E. F. Rogers, "Antimetabolites in agriculture"; H. M. Taylor, "A new class of plant fungicides"; T. A. Angus, "The toxicity of *Bacillus thuringiensis* to insects"; W. Dauterman, "Studies of malathion analogs with regard to toxicity, inhibition, and detoxification."

25 June. (H. Schneiderman, chairman): Carroll M. Williams, "Hormones in insect morphogenesis"; G. R. Wyatt, "Hormones and biosynthesis in insect development"; W. S. Bowers, "Juvenile hormones—natural and synthetic"; and Joe H. Cherry, "The hormonal regulation of nucleic acid biosynthesis in plants."

26 June. (D. E. Moreland, chairman): Birgit Vennesland, "Photosynthesis"; R. W. F. Hardy, "Nitrogen fixation from the laboratory to the field"; W. L. Wright, "Trifluralin and related herbicides"; S. R. Colby, "The mechanisms of herbicidal synergism and antagonism."

27 June. C. L. Foy, "Physiology of herbicide action"; N. P. Kefford, "Processes regulating differentiation and development"; B. L. Strehler, "Biochemistry of aging."

28 June. Corwin Hansch, "Rational design of biocides."

Plasma Physics

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

Space Plasma Physics

1 July. Solar plasma: Peter Sturrock.

2 July. Solar wind: Leveritt Davis; Norman F. Ness.

3 July. Magnetosphere: Charles Kennel; Harry Petschek.

4 July. Van Allen belts: J. M. Cornwall.

5 July. Ionosphere: D. T. Farley.

Chemistry and Physics of Space

Richard E. McCrosky and Donald E. Gault are chairman and vice chairman, respectively.

8 July. Morphology and dynamics of comets (chairman to be announced): E. Roemer and B. G. Marsden; Dynamics of small bodies of the solar system (chairman to be announced): G. W. Wetherill.

9 July. Lunar geology from Surveyor and Orbiter (J. A. O'Keefe, chairman): H. Masursky and E. M. Shoemaker; Condensation of matter in the solar system (A. G. W. Cameron, chairman): G. O. Arrhenius.

10 July. Chemistry and petrology of the moon (R. Phinney, chairman): A. Turkevich, L. T. Silver, and M. B. Duke; Nature and influx rate of cosmic dust: ground-based collections (P. W. Hodge, chairman): M. Carr and E. L. Fireman.

11 July. Meteorites (K. Keil, chairman): G. J. Wasserburg. Short communications. Stellar and planetary evolution (J. A. Wood, chairman): A. G. W. Cameron.

12 July. Early heating of primordial bodies in the solar system (F. L. Whipple, chairman): C. P. Sonett and J. H. Reynolds.

Fluorine Chemistry

Joseph D. Park and Carl G. Krespan are chairman and vice chairman, respectively.

15 July. (Roy J. Plunkett, chairman): Paul R. Resnick, "The preparation of perfluoroolefin epoxides"; W. H. Gumprecht, "The preparation and chemistry of hexafluoropropylene epoxide polymers"; (C. G. Krespan, chairman): Charles DePuy, "Mechanism of C-O-F chemistry"; E. C. Coyner, "New developments in fluorocarbon fluids."

16 July. (Ronald A. Mitsch, chairman): F. G. A. Stone, "Fluoroorganometallics"; D. C. England, "Fluoroketenes, synthesis, and chemistry"; (J. Wesley Clayton, Jr., chairman): R. S. Waretz, "Inhalation toxicity of the pyrolysis products of poly TFE"; Russell A. VanDyke, "Metabolism and mechanism of the biological action of fluorocarbons."

17 July. (Neil Bartlett, chairman): P. L. Timms, "Boron-fluorine chemistry"; D. W. A. Sharpe, "Reactions of fluorides"; (Alan Clifford, chairman): R. D. Peacock, "Developments in transition metal fluorine chemistry"; Roy Thoma, "Thermodynamic relationship of rare-earth fluorides."

18 July. (H. H. Hyman, chairman): W. N. Hubbard, "Thermodynamic studies on fluorine bond strengths"; D. F. Smith, "Fluorine bond strengths by molecular spectroscopy"; J. L. Margrave, "Mass spectral studies of fluorine bond strengths"; (M. Hauptschein, chairman): Donald J. Burton, "Stereochemistry and mechanism of complex metal hydride reactions with fluoroolefins."

19 July. (Paul Tarrant, chairman): James R. Throckmorton, "Poly (perfluoroalkylene oxides) by photopolymerization"; R. L. Talbott, "Fluorocarbon peroxides. Synthesis and characterization"; P. G. Thompson, "The effect of various salts in direct fluorination reaction on the synthesis of novel fluorinated compounds containing carbon and oxygen."

Biomathematics

John H. Milsum and Julia T. Apter are chairman and vice chairman, respectively.

22 July. R. M. Thrall, "Mathematics in life science education"; R. N. Linebarger, "Systems analysis via state space and simulation techniques."

23 July. D. Cohen, "Simulation of biological pattern generation processes (morphogenesis); T. H. Waterman, "Molecular and cellular mechanisms of polarized light reception"; Biochemical systems (J. T. Apter, chairman): C. Walter, "Enzyme kinetics in open systems"; R. Shinnar, "Evaluation of models for biochemical systems."

24 July. Cochlear reception (E. M.

Glaser, chairman): C. A. Laszlo, "Electric potentials of the cochlea, and models of the transducer function"; J. Goldstein, "Some nonlinear aspects of cochlear processing"; Mathematical modeling of ecological systems: L. B. Slobodkin, "Ecologists' approach"; J. Cohen, "Mathematicians' approach."

25 July. Signal analysis of the average evoked response (D. H. Fender, chairman): E. M. Glaser, "Auditory aspects"; E. Donchin, "Multivariate statistical analysis"; Biological control systems (J. H. Milsum, chairman): A. C. Brown, "Recent developments in thermoregulatory modelling"; J. S. Outerbridge, "Optimization in the vestibulo-ocular reflex system."

26 July. D. H. Fender, "Component analysis of evoked potentials"; D. S. Specht, "VCG waveform analysis using nonlinear pattern recognition techniques."

Nuclear Structure Physics

Joseph Weneser and Linwood L. Lee, Jr., are chairman and vice chairman, respectively.

29 July to 2 August. Shell model: Theoretical and experimental foundation. K. Brueckner and D. Sprung, "Implications of nuclear matter calculations"; T. Davies, "Finite nuclei with realistic forces"; G. E. Brown and S. Kahana, "Residual interactions"; W. Czyz, "Ideas and experiments on nuclear correlations"; I. Talmi, "Successes and failures of the shell model"; M. Macfarlane and E. Halbert, "Status of shell model technology"; N. Hintz, "Assessment of recent evidence in the $f_{7/2}$ nuclei"; Assessment of recent evidence in the lighter nuclei: (speaker to be announced); O. Nathan and O. Hansen, "Assessment of recent evidence in medium-weight nuclei"; "Assessment of recent evidence in lead region"; (speaker to be announced); L. Grodzins, "Heavy ions and superheavy elements."

Industrial Hygiene

Kenneth W. Nelson and Bertram D. Dinman are chairman and vice chairman, respectively.

5 August. C. E. Kramer and J. E. Mutchler, "Simultaneous medical and industrial hygiene data collection and analysis"; L. J. Cralley, "Field exposure data analysis for TLV development."

6 August. N. Whitman, "Pathology and nonhealth factors in TLV development"; C. Xintaras, "Behavioral testing and TLV's."

7 August. H. F. Smyth, Jr., "Synthesis of TLV data for TLV recommendation"; D. D. Irish, "Promulgation of TLV's—the multilevel USASI approach"; H. E. Stokinger, "Promulgation and review of TLV's—the ACGIH approach."

8 August. M. W. First, "TLV's in engineering controls"; S. A. Roach, "A rational basis for air sampling."

9 August. W. R. Bradley, "Legal aspects of TLV's."

Dissolution and Crystallization of Calcium Phosphates

John D. Hatfield and Marion D. Francis are chairman and vice chairman, respectively.

12 August. Structure of calcium phosphates: F. Casciani and M. F. Little, "Structure of calcium phosphates from NMR and other methods"; E. E. Berry, "Structural considerations in phosphates using infrared and other physical methods"; Dale R. Simpson, "The effect of fluoride on the formation, chemical composition, and physical properties of apatite."

13 August. Structure of calcium phosphates (continued): D. W. Jones, "Structures of calcium hydrogen phosphate (anydrous and dihydrate) and monocalcium phosphate monohydrate by neutron diffraction and other techniques." Rate and thermodynamic studies: J. A. Gray, "Dissolution rates of dental hard tissues and hydroxylapatite"; G. H. Nancollas, "The kinetics of crystallization of dicalcium phosphate"; H. McDowell, "Thermodynamic properties of calcium phosphates."

14 August. Rate and thermodynamic studies (continued): Marion D. Francis and Ned C. Webb, "Rate and structure studies on hydroxylapatite, calcium monohydrogen phosphate, calcium fluoride, and polyphosphate anion"; Arne R. Hagen, "Dental enamel and other calcium phosphates in salt solution"; D. F. G. Poole, "Differential acid solubility of histological structures in enamel"; E. D. Eanes, "Intermediate phases in the basic solution preparation of alkaline earth phosphates."

15 August. Rate and thermodynamic studies (continued): W. I. Higuchi, "A mathematical description of a model for dissolution rate of apatite. "Hard tissue structure and composition: G. H. McLellan, "Crystal structure of apatite in natural phosphate." Alan Boyde, "Surface electron microscopy of hard tissue during formation and resorption."

16 August. Selected short communications (abstracts to be submitted by 31 May). Harold G. McCann, "Calcium magnesium apatites"; Richard S. Manly, "Membrane potentials and resistance changes of tooth enamel under simulated oral conditions"; K. Y. Kim, "Properties of basic calcium phosphates precipitated under various conditions."

Thin Films

M. H. Francombe and S. Mader are chairman and vice chairman, respectively.

Semiconductor Films—Preparation and Properties

19 August. Preparation and characterization (C. A. Neugebauer, discussion leader): J. B. Mullin, "Chemical vapor deposition of semiconductor films"; K. G. Günther, "Vacuum deposition of compound semiconductors." (J. N. Zemel, discussion leader): Panel discussion—"Problems in characterizing semiconductor films"; H. Holloway, H. R. Phillipp, and H. H. Wieder.

20 August. Structure-property relationships (S. Mader, discussion leader): G. R. Booker, "Growth and microstructure of semiconductor films"; H. Holloway, "Some diffraction studies of epitaxial semiconductors"; (O. C. Weils, discussion leader): T. E. Everhart, "Scanning electron microscope studies of semiconductor surfaces and junctions."

21 August. Elemental semiconductors (M. H. Francombe, discussion leader): B. W. Sloope, "Structure and properties of epitaxial germanium films"; D. J. Dumin, "Electrical characteristics of heteroepitaxial silicon and germanium films." (K. H. Behrndt, discussion leader): P. Duwez, "Structure and properties of amorphous semiconducting foils."

22 August. Films of II-VI and IV-VI compounds (H. R. Phillipp, discussion leader): J. N. Zemel, "Basic transport

properties of epitaxial films of PbS, PbSe, and PbTe"; D. A. Cusano, "Electrooptical effects in II-VI compound films." (J. Dickson, discussion leader): W. Paul and R. Ludeke, "Optical measurements on evaporated compound films."

23 August. Films III-V compounds (J. E. Davey, discussion leader): H. H. Wieder, "Growth and galvanomagnetic properties of recrystallized InSb films"; J. E. Johnson, "Vacuum deposition and properties of films of the aluminum class III-V compounds."

Physics and Physical Chemistry of Biopolymers

P. H. von Hippel is chairman.

26 August. Structure and properties of water and electrolyte solutions (H. Friedman, chairman): G. E. Walrafen, "Water structure"; H. Eisenberg, "Properties of water and water-macromolecule interactions." Aqueous solutions of electrolytes and nonelectrolytes and solution studies on relevant model compounds (J. Brandts, chairman): F. Franks, "Effects of nonelectrolytes on the hydrogen bonding in water"; A. Holtzer, "Micelles and solvent-micelle interactions."

27 August. Protein conformation calculations (C. Levinthal, chairman): W. Miller, "Random chain conformations"; H. Scheraga, "Free energy calculations of protein conformations"; C. Levinthal, "Kinetic (nucleation) approaches." Protein conformation and residue-residue interactions (D. Waugh, chairman): D. Davies, "General features of protein structure and residue interactions from x-ray analysis"; W. Harrington, "Solution studies of proline-proline interactions and effects on protein conformations."

28 August. Recent developments in optical methods relevant to macromolecular conformation analysis (S. Timasheff, chairman): M. Laskowski, "Model studies on UV difference spectroscopy of proteins"; R. Woody, "Conformation analysis of proteins and polypeptides by ORD and CD"; G. Fasman, "IR spectroscopy of proteins and polypeptides." Interactions important in stabilizing nucleic acid structures (J. Schellman, chairman); H. T. Miles, "Internucleotide hydrogen bonding: specificity and energetics"; C. Cantor, "Oligonucleotide stacking and interactions."

29 August. Interactions in nucleic acid structures, continued (N. Davidson, chairman): G. Felsenfeld, "Properties of partially ordered polynucleotide systems"; R. D. Wells, "Properties of fully ordered helical polynucleotide systems." Kinetics of macromolecular transconformation reactions (D. Crothers, chairman): R. Baldwin, "Kinetics of transconformation reaction in polynucleotides and nucleic acids"; K. Kirschner, "Kinetics of transconformation reactions in protein."

30 August. Kinetics of proton transfer and hydrogen exchange studies of macromolecules (R. Lumry, chairman): E. Grunwald, "Proton transfer in aqueous solution"; I. M. Klotz, "Hydrogen exchange in proteins and protein models."

Dielectric Phenomena

Arthur A. Maryott and Graham Williams are chairman and vice chairman, respectively.

10 June. Polymers (E. O. Forster and J. H. Hoffman, chairman): A. J. Bur, "Relaxation of butylpolyisocyanate in dilute solution"; M. G. Broadhurst, "Relaxation in paraffin-like solids"; W. H. Leidecker, Jr., "Theory of α and β relaxations."

11 June. General (R. M. Fuoss, chairman): A. Piekara, "Nonlinear Dielectric phenomena"; G. Schwarz, "Dielectric relaxation by chemical rate processes." S. Kielich (subject to be announced). Correlation functions (R. H. Cole, chairman): R. G. Gordon, "Time-correlation functions in dielectric and related phenomena."

12 June. Molecular relaxation (C. P. Smyth and G. Williams, chairmen): C. Brot, "Dielectric and NMR relaxation in rigid molecules"; W. E. Vaughan, "Relaxation in nonrigid molecules"; M. Bloom, "NMR relaxation in liquids and gases"; T. A. Litovitz, "Laser scattering and orientational relaxation."

13 June. Far infrared (A. D. Buckingham, chairman): H. A. Gebbie, "General survey"; J. Chamberlain, "Millimeter and submillimeter measurements of the dielectric properties of liquids"; G. W. Chantry, "Submillimeter studies of solids"; G. Birnbaum, "Collision-induced effects in gases."

14 June. Static behavior: H. G. Sutter, "Second dielectric virial coefficient of dipolar gases"; F. I. Mopsik, "Dielectric constants of liquids as function of pressure and volume."

Dynamics of Molecular Collisions

John C. Polanyi and Edward F. Greene are cochairmen.

17 June. (J. Ross, chairman): Ch. Schlier, "Elastic scattering"; (Felix Smith, chairman): J. Cross, "Inelastic scattering."

18 June. (A. Kuppermann, chairman): F. S. Rowland and G. Schultz, "Hot-atom reactions and electron scattering"; (S. Datz, chairman): J. Deckers, "High-intensity and high-energy beams."

19 June. (L. Friedman, chairman): M. Henchman, "Ion-molecule reactions"; (R. Marcus, chairman): M. Krauss, "Potential-energy surfaces."

20 June. (R. B. Bernstein, chairman): J. L. Kinsey, "Reactions: beam methods"; (F. Kaufman, chairman): I. W. M. Smith, "Reactions: spectroscopic methods."

21 June. (M. Karplus, chairman): J. Light, "Reactions: quantum mechanical and classical theories."

Friction, Lubrication, and Wear

Henry Gisser and Frederick F. Ling are chairman and vice chairman, respectively.

24 June. Fundamentals of solid-to-solid contact (D. Flom, discussion leader): D. H. Buckley, "The solid state and friction and wear"; D. V. Keller, Jr., "The investigation of the deformation, adhesion, and fracture of asperities between ultraclean and specifically contaminated metallic surfaces."

25 June. Mechanism of wear (F. F. Ling, discussion leader): R. S. Montgomery, "The mechanism of impact wear of tungsten carbide composites"; M. S. Cocks, "Sliding contacts in rolling bearings."

26 June. Surface phenomena in lubrication (J. K. Appeldoorn, discussion leader): A. J. Groszek, "The role of oleophilic surfaces in lubrication"; C. N. Rowe, "Role of adsorption phenomena and molecular size in the mitigation of wear."

27 June. Role of the surficial region in friction and wear (D. Godfrey, discussion leader): A. R. C. Westwood, "Some influences of environment on the mechanical properties of the surficial region in crystalline solids"; E. D. Brown, Jr., "Friction and wear, ancient and modern."

28 June. Elastohydrodynamic lubrication (H. S. Cheng, discussion leader):

K. L. Johnson, "The behavior of elastohydrodynamic oil films in combined rolling and sliding."

Lysosomes

Zanvil A. Cohn and Samuel Dales are chairman and vice chairman.

1 July. Metabolism and composition of the granulocyte: J. G. Hirsch, "Composition and fate of PMN granules"; P. Elsbach, "Lipases and phospholipases"; S. S. Spicer, "Composition and cytochemistry"; M. Karnovsky, "Metabolic consequences of phagocytosis." Functional aspects of the granulocyte: W. Barry Wood, "Formation of leukocytic pyrogen"; J. Spitznagel, "Cationic proteins"; S. Klebanoff, "Peroxidase mediated antibacterial mechanisms."

2 July. Macrophages and the RES: A. Volkman, "Origin, turnover, and function of RES macrophages"; B. Bloom, "Macrophages and delayed hypersensitivity"; Z. Cohn, "Macrophage lysosomes"; A. Novikoff, "Structure of the RES." Physiology of mononuclear phagocytes: G. Mackaness, "Mechanisms of cellular immunity"; A. Dannenberg, "Enzymes in cell immunity"; R. North, "Phagocytosis and postphagocytic events"; B. Ehrenreich, "Uptake and processing of soluble molecules."

3 July. Early events in viral penetration, uncoating, and replication: S. Silverstein, "Lysosomes in the penetration and uncoating of virus particles"; A. C. Allison, "Lysosomes in viral infection"; B. Mandel, "Interactions of antibody neutralized virus with host cells." Cellular response to viral infections: G. C. Goodman, "Cytopathogenic effects of picornavirus infections"; H. C. Bubel, "Hydrolytic enzymes in virus"; E. H. Ludwig, "Infected cells"; R. Wagner, "Studies with interferon"; R. Z. Lockart, "Use of interferon to study cell destruction by mengovirus."

4 July. Intracellular parasitism: P. D'Arcy Hart, "Mycobacteria modification of the intracellular environment"; L. Hayflick, "Interactions of mycoplasma with cultured cells"; M. Müller, "Studies with protozoa"; H. Harris, "Genetic activity in hybrid animal cells."

5 July. Genetic alterations in leukocyte functions: R. Good, "Chronic granulomatous disease of childhood"; E. Kauder (subject to be announced). F. Bang, "Murine viral hepatitis."

Radical Ions

Michael Szwarc and Glen A. Russell are chairman and vice chairman, respectively.

8 July. George K. Fraenkel, "Recent applications of ESR to organic free radicals and radical ions"; G. Vincow, "Electron spin resonance studies of radical ions"; F. W. McLafferty, "Unimolecular decompositions of gaseous radical ions."

9 July. (S. I. Weissman, discussion leader): E. de Boer, "ESR and NMR of radical ions and their ion pairs"; M. C. R. Symons, "Some aspects of ionic solvation and ion-pair formation derived from ESR studies"; G. J. Hoijtink, "Our present knowledge about aromatic ions."

10 July. (Glen A. Russell, discussion leader): Shelton Bank, "Reduction and addition reactions of aromatic radical anions"; Nathan Kornblum, "Radical anions as intermediates in substition reactions"; Edward G. Janzen, "Radical anions and di-anions of weak carbon acids"; Nathan L. Bauld, "Radical anions, di-anions, and tri-anions."

11 July. (Ralph N. Adams, discussion leader): Raymond E. Dessy, "Organometallic electrochemistry"; Ralph N. Adams, "Electrochemical oxidation (radical cations)"; M. Levy, "Hydrodimerization of radical ions of acrylonitrile and of related monomers"; A. Weller, "Chemiluminescent reactions of radical ions"; E. Chandross, "Chemiluminescent reactions of radical ions in electrode processes."

12 July. J. Jagur-Grodzinski, "Formation of radical ions by electron transfer from carbanions"; E. M. Kosower, "Stable pyridinyl radicals.

Spectral Line Shapes

Lewis S. Klein and Marshall Lapp are chairman and vice chairman, respectively.

15 July. H. Griem, "Spectral line shapes in plasmas" (A. Kolb, discussion leader); J. Cooper, "Astrophysical applications of line shapes" (W. R. Hindmarsh, discussion leader); H. L. Welsh, "Experimental studies of line shapes in collision-induced absorption"; J. Van Kranendonk, "Theoretical studies of line shapes in collision-induced absorption."

16 July. B. Zwanzig, "Liouville operator techniques in line shape theories"; E. Smith, "Relaxation theory of line

broadening in plasmas"; (A. Ben-Reuven, discussion leader): G. Birnbaum, "Collision-induced absorption in polyatomic molecules"; L. Galatry, "Far-infrared line broadening in liquids"; R. Herman, "Impact theory of rare gas-broadened HCl lines"; (H. Jacobson, discussion leader).

17 July. C. Alkemade, "The measurement of metal vapor damping parameters"; W. Behmenburg, "The determination of interatomic potentials from line shape measurements"; (M. Lapp, discussion leader); B. Bezzerides, "Kinetic equation approach to spectral line shapes"; A. Mead, "Resolvent operator method in the theory of spectral lines"; L. Klein, "Green function theory of stark broadening."

18 July. R. A. Hill, "Current status of experiments on spectral line broadening in plasmas"; H. W. Drawin, "Stark broadening in the presence of magnetic fields"; J. R. Greig, "Recent experimental results on stark broadening" (W. Lochte-Holtgraven, discussion leader); H. Van Regemorter, "Spectral lines from stellar atmospheres"; D. Hummer, "Spectral line shapes for optically thick radiating systems" (C. Pecker, discussion leader).

19 July. S. Y. Ch'en, "Developments in neutral atom line broadening" (G. Hammond, discussion leader).

Biological Regulatory Mechanisms

H. Edwin Umbarger is chairman.

22–26 July. Mechanisms regulating protein synthesis in prokaryotic and eukaryotic forms. The goal is to proceed from the simpler systems that led to the Jacob-Monod model through yeast and neurospora to more complex forms in which hormonal controls are operating. Both negative control and positive control systems will be considered. Speakers: S. Bourgeois, M. Cohn, E. Englesberg, W. Gilbert, R. F. Goldberger, S. R. Gross, I. C. Gunsalus, U. Henning, J. G. Kaplan, W. Maas, B. Magasanik, R. G. Martin, G. M. Tomkins, L. Gorini, O. Greengard, P. A. Kitos, and B. Komisaruk.

Energy Coupling Mechanisms

Henry A. Lardy and Lester Packer are cochairmen.

29 July. Protein conformation (S. J. Singer, chairman): J. Kraut, "Protein structures viewed by x-ray crystallography"; H. M. McConnel and W. Hub-

bell, "Spin label studies"; S. J. Singer, "Optical rotation and circular dichroism" (D. W. Urry, discussant). Membrane assembly (P. Siekevitz, chairman): D. Woodward, "Genetic control of mitochondrial proteins"; E. Racker, "Assembly of mitochondrial proteins"; S. Fleisher, "Membrane arrangements" (E. Wintersberger, discussant).

30 July. Outer mitochondrial membrane (D. F. Parsons, chairman): L. Ernster, J. Greenwalt, and D. Allman, "Composition and function"; O. Kreutziger, "Structure by freeze etching." Inner mitochondrial membrane —macromolecular conformation (W. Stoeckenius, chairman): D. E. Green, "Conformation and energy coupling"; L. Packer and J. Wrigglesworth, "Molecular and macromolecular correlations"; C. R. Hackenbrock, "Electron transport-dependent ultrastructural transformation" (P. V. Blair, discussant).

31 July. Inner mitochondrial and microbial membranes—energy transduction (H. A. Lardy, chairman): B. Chance, "Coupling and control mechanisms"; C. P. Lee and L. Ernster, T. Onishi and H. Schleyer, "Discussion of coupling at site I"; J. Mattoon, "A genetic defect of oxidative phosphorylation in yeast mitochondria"; R. Eisenhardt, " Energy transduction in brown fat"; M. Cusanovich, "Light-induced electron transport in chromatium chromatophores"; D. de Vault, "Redox carriers and coupling mechanisms"; A. Caswell, "Cytochrome *c* potentials during metabolic perturbations"; A. Brodie, "Coupling factors from *M. phelï*"; R. Sanadi, "Coupling factors in partial reactions of oxidative phosphorylation"; J. Fesenden, "Coupling factors in partial reactions of oxidative phosphorylation"; G. Pinchot, "The purification and nature of the high-energy intermediates"; (E. C. Slater, chairman): P. D. Boyer, "Paths of phosphate oxygen in oxidative and photosynthetic phosphorylation"; A. Loyter, "Calcium accumulation by submitochondrial particles"; E. Carafoli and A. Lehninger, "Movements of H^+ and K^+ in relation to energy coupling in mitochondria"; R. Cockrell, "Synthesis of ATP driven by an ion gradient"; J. Howland, "Ion movements associated with tetramethyl-*p*-phenylenediamine oxidation."

1 August. Photosynthetic membrane —energy transduction (A. San Pietro, chairman). Electron transport and phosphorylation: N. Good and S. Izawa, W. Lynn, and R. E. McCarty, "Plants"; B. Chance, M. Baltscheffsky,

and M. Nishimura, L. Vernon, R. E. McCarty, "Bacteria"; R. Dilley, N. Shavitt, G. Hind, and D. W. Deamer, "Ion movements." Special lecture: E. C. Slater, "Coupling mechanisms."

2 August. Electron transport mechanisms (H. Kamin, chairman): V. Massey, "Electron transfer from flavins to sulfur and iron" (G. Foust and J. Vorhaben, discussants). H. Beinert, "Interaction between flavins and metals" (K. V. Rajagopalan, L. Siegel, and T. Singer, discussants). J. Wang, "Model mechanisms for electron transport and oxidative phosphorylation" (J. Peisach, L. Parkhurst, and M. Morrison, discussants).

Holderness School

Animal Cells and Viruses

David M. Prescott and George K. Hirst are chairman and vice chairman, respectively.

10–14 June. The structure of chromosomes: H. Swift, J. H. Tavlor, H. Ris, E. Stubblefield, A. Cole, D. Wolstenholme, and J. Vinograd. Cell transformation: H. Koprowski, W. Nichols, H. Green, W. Eckart, H. Eagle, and G. Todaro. Viral RNA synthesis: R. Franklin, M. Girard, J. Bader, and M. Pons. Genetics of RNA viruses: E. Pfefferkorn, B. Fields, and R. Simpson. DNA tumor viruses: E. Winocour and W. Doerfler.

Science and Technology of Biomaterials

Charles P. Bean and Robert I. Leininger are chairman and vice chairman, respectively.

17 June. Electrodes I (Sumner N. Levine, chairman): Sumner N. Levine, "Electrodes in biological environments"; Alan R. Kahn, "Tissue impedance and electrodes." Electrodes II (speaker to be announced), "Implanted electrodes"; R. N. Scott, "Myoelectric control."

18 June. Charged surfaces (Robert I. Leininger, chairman): Richard Falb, "Protein absorption on charged electrodes"; William V. Sharp, "Bioelectric polyurethanes"; Preston Murphy, "Electrets as nonthrombogenic surfaces." Polymers (Donald Lyman, chairman): C. W. Cooper, "Specification of the mechanical properties of polymers"; John A. Lontz, "Cranial implant with dilatational polymers"; (speaker to be

announced), "Materials and piezoelectric energy sources."

19 June. Mechanical properties of teeth and restorations (John W. Stanford, chairman): George R. Dickson, "Mechanical properties of the tooth structure"; David Mahler, "Mechanical properties of restorative materials"; Robert Craig, "Stresses in teeth and restorations." Bones and joints (Harlan Amstutz, chairman): Edward Korostoff, "Electrical properties of dentin and bone"; Ernest Gardner, "Anatomy and physiology of joints"; Charles McCutchen, "What's good about synovial fluid?"

20 June. Friction, wear, and adhesion (John Wulff, chairman): John Wulff, "Mechanism of friction and wear of metals"; Donald G. Flom, "Friction and wear of polymers"; L. Lurie, "Acrylic adhesives"; Henry Lee, "Epoxys and polyurethanes as adhesives for hard tissues." (Edward I. Salkovitz, chairman): John Charnley, "The development of arthroplasty."

21 June. Progress in biomaterials (James A. Bougas, chairman).

Chemistry and Physics of Isotopes

A. J. Kresge and W. Spindel are chairman and vice chairman, respectively.

24 June. (R. E. Weston, Jr., chairman): M. Wolfsberg, "Magnetic resonance"; (L. Friedman, chairman): J. L. Beauchamp, "Ion-molecule reactions."

25 June. (L. Melander, chairman): P. C. Myhre, "Organic systems"; (S. Seltzer, chiarman): V. J. Shiner, Jr., "Secondary isotope effects."

26 June. (R. N. Clayton, chairman): T. A. Rafter, "Geochemistry"; (W. Spindel, chairman): J. Mühlenpfordt, A. Liberti, "Isotope separation."

27 June. (G. M. Harris, chairman): J. B. Hunt, "Inorganic systems"; (J. J. Katz, chairman): H. L. Crespi, "Biochemical systems."

28 June. (F. A. Long, chairman): R. P. Bell, "Proton transfer."

Lasers in Medicine and Biology

Myron L. Wolbarsht and Elmer N. Zeitler are cochairmen; H. Christian Zweng is vice chairman.

1–5 July. (W. J. Mautner, moderator): "Physical models of laser effects on biological materials"; (M. Cox, moderator): "Safety procedures for research and general usage"; (R. W.

Neidlinger, moderator): "Effects of laser radiation on the eye"; (R. Stern, moderator): "Special effects of lasers on teeth, bone, and skin"; (R. J. Rockwell, moderator): "Instrumentation and calibration"; (B. Chance, moderator): "Analysis and stoichiometry"; (L. Rose, moderator): "Medical aspects"; (R. C. Rosan, moderator): "Pathology"; (E. Zeitler and M. Wolbarsht, moderators): "Miscellaneous subjects."

Myocardial Contractility

William W. Sleator, Jr., is chairman.

Cellular Control of Cardiac Contraction

12 August. W. Trautwein, R. W. Tsien, K. Peper, and H. A. Fozzard, "Ionic mechanisms of the action potential plateau"; J. W. Woodbury, Lloyd Barr, M. M. Dewey, and E. A. Johnson, "Propagation of the action potential."

13 August. Ernest Page, J. Sommer, E. A. Johnson, and P. Müller, "Excitation-contraction coupling I: Structural consideration"; H. A. Fozzard, D. Hellam, M. Morad, and W. Trautwein, "Excitation-contraction coupling II: Voltage control of tension."

14 August. R. F. Furchgott, S. Winegrad, F. Jobsis, and John Blinks, "Excitation-contraction coupling III: Where does the calcium come from?"; W. W. Sleator, M. Reiter, and P. Braveny, "Relations between frequency, force, and action potential configuration."

15 August. Setsuro Ebashi and A. Martonosi, "Subcellular studies of proteins and calcium"; R. E. Davies, C. L. Gibbs, and G. Langer (subject to be announced).

16 August. H. Morgan, J. Williamson, and T. Cooper, "Metabolic controls."

Metals and Metal Binding in Biology

Frank R. N. Gurd and Paul D. Saltman are chairman and vice chairman.

19 August. Stereochemistry, structure, and reactivity in small complexes (R. H. Holm, chairman); Large complexes (M. Cohn, chairman).

20 August. Ligand exchange reactions (D. Margerum, chairman); Metal ion catalysis (R. G. Pearson, chairman).

21 August. Electron-transfer processes (H. Taube, chairman); Properties of nonheme iron (A. Bearden, chairman).

22 August. Biological nonheme iron systems (J. Rabinowitz, chairman); Presentation and discussion of molecular models (R. E. Marsh, chairman).

23 August. Biological transport mechanisms (J. B. Neilands, chairman).

Geochemistry

S. R. Silverman is chairman.

26 August. Geochemistry of organic matter in recent sediments (W. G. Meinschein, chairman): W. G. Meinschein and J. M. Mitchell, "Lipids in hydrothermal sediments"; additional speakers and subjects to be announced. Physics and chemistry of organic substances in aqueous media (P. A. Dickey, chairman): P. A. Witherspoon, "Diffusion of hydrocarbons in water"; R. L. Wershaw, "Particle size determination of humic acid fractions by low-angle x-ray scattering"; P. A. Dickey and J. C. Cartmill, "Capillary processes in primary oil accumulation."

27 August. Geochemistry of organic matter in ancient sediments (W. E. Robinson, chairman): E. Hare, "Amino acid diagenesis in fossil shells and associated sediments"; D. H. Welts, "Isoprenoid hydrocarbons produced by low temperature pyrolysis of kerogen and biochemical substances"; D. Anders, "Geochemistry of Green River oil shale bitumen"; W. E. Robinson, "Geochemistry of kerogen in Green River formation"; A. L. Burlingame, H. K. Schnoes, P. A. Haug, and D. R. Simoneit, "Carboxylic acid content of organic matter in Green River formation"; B. Nagy, "Ozonolysis of kerogen"; W. Van Hoeven, J. R. Maxwell, and M. Calvin, "Fatty acids in ancient sediments."

28 August. Symposium—Environments of coal deposition (P. H. Given, chairman): W. Spackman, "Dependence of coal types on the environment of deposition"; A. Traverse, "Structure and formation of jets"; D. J. Swaine, "Boron as an environmental indicator in Australian coals"; F. M. Swain, "Distinction between primary and diagenetic variations in Minnesota peats." Coal geochemistry (P. H. Given, chairman): J. D. Brooks and J. Smith, "Diagenesis and metamorphism of lipids and cuticles"; F. J. Stevenson, "Chemistry of humic substances"; J. P. Martin, "Formation of humic substances by fungi"; P. H. Given, "Carbon isotope studies of peat constituents and corresponding living plant material."

29 August. Petroleum geochemistry (E. E. Bray, chairman): W. L. Orr,

"Sulfur compounds in the maturation of petroleum"; W. D. Redfield, "Optical rotation in petroleum"; F. H. Meister, "Distribution of carbon isotopic compositions of Permian basin crude oils." Origin of petroleum (J. G. Erdman, chairman): G. T. Phillippi, "The deep subsurface temperature-controlled origin of petroleum"; E. V. Whitehead, "Fossil fuels: their composition and evolution in relationship to living organism"; W. M. Sackett, "Kinetic isotope effects in the formation of natural gas and petroleum"; S. R. Silverman, "Carbon isotopic evidence for the origin and transformation of petroleum and gas."

30 August. Special topics in organic geochemistry (S. R. Silverman, chairman): R. A. Friedel, "Some spectral applications in organic geochemistry"; C. Ponnamperuma, "Abiogenic hydrocarbons"; M. Duel and G. J. Schrayer, "Evolution and migration of methane and heavier hydrocarbons in coal beds."

Crystal Inn

Theoretical Chemistry

John A. Pople and Albert Moscowitz are chairman and vice chairman, respectively.

24 June. L. C. Snyder, "Heats of reaction from Hartree-Fock energies of closed shell molecules"; D. A. Ramsey, "Recent problems in the electronic spectra of polyatomic molecules"; D. H. Levy, "Gas-phase electron resonance"; K. Ruedenberg, "*Ab initio* separated pair wave functions for some diatomic molecules."

25 June. J. L. Whitten, "*A priori* studies of excited electronic states of intermediate size molecules"; M. B. Robin, "Electronic states of small ring molecules"; J. N. Murrell, "Calculation of predissociation rates."

26 June. M. Karplus, "Correlation calculations and perturbed Hartree-Fock theory"; G. A. Segal, "Theory of electric dipole derivatives"; J. Hinze, "General multiconfiguration formalism."

27 June. S. F. Boys, "Correlation effects in many-electron wave functions"; I. Shavitt, "Configuration interaction calculations"; R. L. Stewart, "Study of electron density by x-ray and neutron diffraction."

28 June. H. F. Hameka, "Green function techniques in atomic and molecular calculations"; R. L. Somorjai, "A model of a linear chain of hydrogen bonds."

Chemistry and Physics of Coatings and Films

J. E. Guillet and Walter S. Ropp are chairman and vice chairman, respectively.

1 July. Warren Johnson, "Coatings requirements for high-performance aircraft and space vehicles"; John R. Chalmers, "Investigation of polyimides as coatings and laminates."

2 July. Irving Einhorn, "Thermal degradation of high-performance coatings"; Ronald Rheinisch, "Photodegradation of polymers in space environments."

3 July. H. Nelson Wright, "Photochemical deposition of protective coatings"; J. Hinsch, "Radiation cure of organic coatings."

4 July. S. G. Mason, 'Microrheology of suspensions"; Irving Krieger, "Rheology of monodisperse latices."

5 July. R. N. O'Brien, "The use of interferometry in the study of film properties"; F. W. Poling, "Application of infrared techniques to study absorbed and deposited films." Discussion leaders: Field H. Winslow, Walter S. Ropp, Raymond R. Meyers, Frank W. Maine, and Percy Pierce.

Physical Metallurgy

Paul G. Shewmon and Johannes Weertman are chairman and vice chairman, respectively.

8 July. M. J. Stowell, "Epitaxial growth"; Kenneth Russell, "Nucleation kinetics" (G. M. Pound, discussion leader). Wolfgang Pitsch, "Nucleation in solids" (John Hilliard, discussion leader).

9 July. R. Armstrong, "Twinning and martensite"; Paul Shewmon, "Mobility of coherent interfaces" (R. Fullman, discussion leader). K. R. Kinsman and H. I. Aaronson, "Coherent precipitation growth" (Gareth Thomas, discussion leader).

10 July. H. Gleiter, "Structure of grain boundaries"; B. B. Rath and H. Hu, "Grain boundary mobility" (M. Ashby, discussion leader). John Cahn, "Massive transformations" (Walter Owen, discussion leader).

11 July. Fred Bolling, "Cellular precipitation"; Martin Glicksman, "Solidification at large ΔT" (Fred Weinberg, discussion leader). Cyril S. Smith, "On interfaces in general."

12 July. (Presentations brought by conferees); (Paul Shewmon, discussion leader).

Molecular Pathology

Earl P. Benditt and Robert M. O'Neal are chairman and vice chairman.

15–19 July. "Control mechanisms and their aberrations." Some facts and fancies about and errors in regulation of DNA, RNA, and protein synthesis will be discussed. Drs. Baserga, Coffey, Gelboin, H. Harris, Lagunoff, Pitot, Smuckler, Van Lanker, Van Potter, and others will participate. Two sessions will be devoted specifically to DNA, two to RNA, two to protein synthesis, and the remainder to other general and specific aspects of regulatory phenomena.

Quantum Solids and Fluids

T. H. Geballe and S. Doniach are cochairmen.

Local Moments in Metals and Weak Magnetism

22 July. Localized magnetic moments: H. Suhl, "Theory of moment formation"; B. T. Matthias, "Experimental moment formation"; B. R. Coles, "Experimental studies: spin resonance, neutron diffraction, optical methods"; F. T. Hedgecock, "Semiconductors as solvents."

23 July. Compensated kondo states: W. Steyert, "Experiments"; P. W. Anderson, "Theory"; K. Yosida, "Theory: singled bound state of a localized spin"; A. C. Gossard and A. Narath, "NMR results."

24 July. Further compensated state experiments: J. Applebaum, "Tunneling"; R. D. Parks, "Superconductors"; A. J. Heeger, "Interaction effects."

25 July. Magnetic excitations, weakly magnetic and nearly magnetic metals: P. M. Platzmann, "Electron spin resonance in metals"; A. W. Overhauser, "Charge and spin density waves"; T. M. Rice and A. R. Mackintosh, "Chromium and rare earth metals."

26 July. Nearly ferromagnetic metals and alloys: W. F. Brinkmann and J. R. Schrieffer, "Theory"; S. Foner, "High field properties"; S. Ogawa, "Weakly magnetic compounds: $ZrZn_2$."

High-Temperature Chemistry

Daniel D. Cubicciotti, Jr., and Robert J. Thorn are chairman and vice chairman, respectively.

29 July. Keynote address: Leo Brewer, "Significant new directions in high-temperature research"; Electron impact

cross sections (F. E. Stafford, chairman): F. E. Stafford, "Introductory remarks"; J. Kistemaker, "Physical processes occurring during the passage of energetic ions through matter"; R. H. McFarland, "Electron impact cross sections by crossed beam methods"; E. N. Lassettre, "Excitation of atoms and molecules by electron impact"; M. Inokuti, "Some theoretical aspects of collision cross sections."

30 July. Theoretical aspects of bonding in high-temperature molecules (K. D. Carlson, chairman): K. D. Carlson, "Introductory comments"; E. Clementi, "Theoretical chemistry and high-temperature chemistry: recent *ab initio* computations on carbon vapor"; L. C. Allen (subject to be announced): A. C. Wahl, "*A priori* thermodynamics of alkali dimer vapors"; Donald F. Gibbons, "Electronic structure of solid refractory metals, compounds, and alloys."

31 July. Surface phenomena at high temperatures (G. M. Rosenblatt, chairman): G. A. Somorjai, "Low-energy electron diffraction"; G. Ehrlich, "Atomic view of surface diffusion and bonding"; W. P. Ellis, "Low-energy electron diffraction"; G. M. Rosenblatt, "Experimental studies of vaporization mechanisms."

1–2 August. Transport and chemical reactions in nonstoichiometric solids (R. J. Thorn, chairman): R. J. Thorn, "Introductory comments"; B. Fender, "Ordering in FeO"; M. O'Keeffe, "Diffusion in highly disordered solids"; J. B. Wagner, "Transport in transition metal compounds."

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Toxicology and Safety Evaluations

Joseph C. Calandra and Mitchell R. Zavon are chairman and vice chairman, respectively.

5 August. (Robert P. Giovacchini, moderator): Howard I. Maibach *et al.* "The mechanisms of skin sensitization and photosensitization"; "The molecular basis of delayed-type hypersensitivity." (Sheldon D. Murphy, moderator): James W. Gillett, "Comparative metabolism of insecticides"; Donald I. Mount, "Comparative toxicity of chemicals to fish."

6 August. (Alfred E. Earl, moderator): William P. Purcell, "Physicochemical factors determining structure-activity relationships in toxicology";

Leo Friedman, "A biochemical screening approach to toxicology." (Milton Eisler, moderator): Marvin Legator, "The role of pharmacogenetics in toxicology"; Warren W. Nichols, "Virus-drug chromosome relationships."

7 August. (Earl H. Dearborn, moderator): Jean Sice *et al.*, "Drug or chemical interaction and toxicology: (a) biotransformation mechanisms, (b) transport and distribution processes, (c) intestinal absorption." (Mitchell R. Zavon, moderator): Robert E. Eckardt, "The interaction of toxicology and biology in the evalution of environmental health"; Paul Kotin, "The interaction of man and his environment."

8 August. (O. Garth Fitzhugh moderator): H. Druckrey, "The contribution of new carcinogens to the understanding of carcinogenesis"; Leon Golberg, "Subcutaneous sarcomas as an index of carcinogenic potential." (Verald K. Rowe, moderator): Bruce W. Halstead, "Marine biotoxicology."

9 August. (Paul J. Schouboe, moderator): Robert E. J. Moddes, "Cybernetics and toxicology"; Lloyd W. Hazelton, "Systems analysis in toxicology."

Chemistry and Physics of Paper

Bengt Rånby and Bengt Leopold are chairman and vice chairman, respectively.

12 August. S. G. Mason, "The microrheology of dispersions"; P. H. Norberg, "Studies of fiber curling in high-consistency refined pulps"; K. E. Eriksson, "Enzymatic attack on surfaces of wood fibers."

13 August. Mrs. R. Marton, "Anatomical and pulping properties of normal and fast-grown softwoods and hardwoods"; P. H. Norberg, "Morphology of native barks and their properties in pulping processes"; A. M. Scallan, "The concept of accessibility in cellulose."

14 August. D. L. Brink, "Component analysis of fiber and fiber properties"; B. B. Thomas, "Observations on fiber and paper relations"; J. K. Craver, "Sonic modulus techniques."

15 August. E. Strazdins, "Role of surface charge in the interaction of stock additives with cellulose fibers"; N. A. Bates, "Retention and curing behavior of polyamide-epichlorohydrin resin"; V. Stannett, "Sonic observations on the mechanisms of wet strength."

16 August. Discussion of new directions in paper research: D. A. I. Gor-

ing, "Surface modifications in a corona discharge"; B. Rånby, "Some new paper fiber and synthetic polymer combinations."

Biology and Chemistry of Pyrrole Compounds

Donald P. Tschudy and Lawrence Bogorad are chairman and vice chairman, respectively.

19 August. Porphyrin and metalloporphyrin chemistry: David Mauzerall, Winslow Caughey, and Joseph J. Katz. Metalloporphyrin biosynthesis and its control: David Shemin, June Lascelles, Gerald Marks, Bruce Burnham, and S. Aranoff.

20 August. Metalloporphyrin biosynthesis and its control (continued): S. Granick, Harvey Marver, Robert F. Labbe, Herbert Schwartz, and Goro Kikuchi. Metalloporphyrin biosynthesis and its control (continued): Lawrence Bogorad, Richard Levere, A. Kappas, E. Y. Levin, and R. J. Porra.

21 August. Hemoproteins and control of hemoglobin synthesis: Emanuel Margoliash, Samuel P. Bessman, Arthur Grayzel, and Marco Rabinovitz. Clinical aspects of porphyrin metabolism: Allan C. Redeker, Lennox Eales, and Marilyn Cowger.

22 August. Clinical aspects of porphyrin metabolism (continued): Donald P. Tschudy, George Ludwig, and Leonard Harber. Bile pigment chemistry and metabolism: C. J. Watson, Roger Lester, Barbara Billing, and Lionel Israels.

23 August. Bile pigment chemistry and metabolism (continued): Rudi Schmid, Paul Berk, Irwin Arias, and Samuel Schwartz.

Calendar of Events

National Meetings

March

18–21. American **Physical** Soc., Berkeley, Calif. (W. Whaling, California Institute of Technology, Pasadena 91109)

18–21. American **Radium** Soc., annual mtg., Miami Beach, Fla. (J. L. Pool, Executive Secretary, Memorial Hospital, 444 E. 68 St., New York, N.Y.)

18–22. National Assoc. of **Corrosion Engineers,** 24th annual conf. and show, Cleveland, Ohio. (T. J. Hull, 980 M & M Building, Houston, Tex. 77002)

19–20. **Equipment Manuals** Symp., Washington, D.C. (National Security In-