Gordon Research Conferences

Alexander M. Cruickshank

The Gordon Research Conferences for the summer of 1976 will be held in New Hampshire and California.

Purpose. The Conferences were established to stimulate research in universities, research foundations, and industrial laboratories. This purpose is achieved by an informal type of meeting consisting of scheduled speakers and discussion groups. Sufficient time is available to stimulate informal discussion among the members of each conference. Meetings are held in the morning and in the evening, Monday through Friday, with the exception of Friday evening. The afternoons are available for recreation, reading, or participation in discussion groups, as the individual desires. This type of meeting is a valuable means of disseminating information and ideas to an extent that could not be achieved through the usual channels of publication and presentation at scientific meetings. In addition, scientists in related fields become acquainted and valuable associations are formed that often result in collaboration and cooperative efforts among laboratories.

It is hoped that each conference will extend the frontiers of science by fostering a free and informal exchange of ideas among persons actively interested in the subject under discussion. The purpose of the program is to bring experts up to date on the latest developments, to analyze the significance of these developments and to provoke suggestions concerning the underlying theories and profitable methods of approach for scientific research. 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. The recording of lectures by tapes and so forth and the photography of slides are prohibited.

Registration and Reservations. Individuals interested in attending the Conferences are requested to send their applications to the office of the Director. It is important that you submit your application promptly in order that it may be given early consideration by the review committee. This is particularly necessary for those Conferences which are customarily oversubscribed and for which it is often necessary to establish a waiting list. It is no longer possible to acknowledge receipt of applications. Please be assured, however, that you will be notified immediately following a review of applications by the Chairman and his committee.

Applications must be submitted in duplicate on the standard application form which may be obtained from 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 applicants so as to distribute the attendance as widely as possible among various institutions and laboratories represented by the applications.

A registration card will be mailed to those selected. Advance registration by mail for each conference is required and is completed on receipt of the card and the deposit of $30. 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.*

A deposit is considered an indication of serious intent to participate in a conference. As you know, most conferences are oversubscribed; therefore, I am sure you can appreciate our problems with other scientists who are qualified to attend but have been placed on waiting lists. It is only fair to caution you that failure to return the registration card and deposit before the date stamped on the card may jeopardize your attendance. PLEASE RETURN YOUR CARD IMMEDIATELY WITH THE DEPOSIT TO ASSURE YOUR ATTENDANCE AND ACCOMMODATIONS.

Special Fund. A special fund is provided from the registration fee and is made available to the chairman of the conference for the purpose of increasing the 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 conferees travel expenses, registration fee, and/or subsistence expenses at the conference, or both. Total travel and subsistence expenses usually will not be provided.

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 provide the Special Fund which is available to each conference chairman. *The fixed fee will be charged regardless of the time a conferee attends the conference—that is, for the periods of from 1 to 4 1/2 days. An additional charge per night per person will be made for a room with a private bath or for a single room, if no double rooms or roommates are available.* An additional charge will also be made for rooms occupied more than five conference nights (Sunday through Thursday).

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

Guests. Accommodations are available for guests. (Children must be 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.

Guests are not permitted to attend the conference lectures and discussion sessions.

A deposit of $30 is required for each guest reservation. This deposit will be refunded if cancellation is received 2 weeks prior to the Conference.

Pets are prohibited at the Conference site.

Cancellation. The conferee deposit will be forfeited if an approved application for attendance at a conference is cancelled. *The deposit is not transferable to another conferee or conference.*

The author, director of the Gordon Research Conferences, is professor of chemistry, University of Rhode Island, Kingston 02881.

Program. The complete program for the 1976 Gordon Research Conferences is published in *Science*, 12 March 1976. Reprints are available on request to Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, Pastore Chemical Laboratory, University of Rhode Island, Kingston, Rhode Island 02881, Telephone: 401-783-4011.

Mail for the office of the Director from 14 June to 3 September 1976 should be addressed to Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, Colby-Sawyer College, New London, New Hampshire 03257, Telephone: 603-526-2870.

Conference Fees

New Hampshire	
Conferee:	
Resident (Registration, room, meals, service)	$160
Deposit	30
Non-resident (Registration, meals)	130
Deposit	30
Guest:	
(Room, meals, service for five conference days)	110
Deposit	30
California	
Conferee:	
Resident (Registration, room, meals, service)	$185
Deposit	30
Guest:	
(Room, meals, service for five conference days)	135
Deposit	30

The program to be presented is as follows.

Adhesion, Science of

New Hampton School

John L. Gardon, chairman; Alan N. Gent, vice chairman.

16 August. (A. C. Zettlemoyer, discussion leader): G. P. Anderson, "Interpretation of results obtained with various adhesive test specimens"; W. P. Parsons, "Morphology and rheology of peel of model adhesives." (H. Schornhorn, discussion leader): T. Smith, "Mechanisms of adhesion failure between polymers and metals."

17 August. (F. Fowkes, discussion leader): H. R. Anderson, "Electron donor-acceptor properties of thin polymer films on silicon"; B. J. Briscoe, "The measurement of van der Waals dispersion force for the range of 1.5 to 130 nm." (E. Baer, discussion leader): I. Krieger, "Long range order and interactions in colloidal dispersions."

18 August. (W. D. Bascom, discussion leader): J. Huntsberger, "Adhesion between polyvinylbutyral and glass"; W. Funke, "Water permeability and wet film adhesion." Panel discussion of "Unresolved problems of adhesion" (J. L. Gardon, discussion leader): special subjects and panelists: R. J. Good, "Intermolecular forces"; R. E. Johnson, "Wetting"; H. Corten, "Fracture mechanics"; A. Lewis, "Rheology."

19 August. (R. R. Stromberg, discussion leader): L. L. Hench, "Adhesion of bioglass to bone and implants"; E. E. Waller, "Bonding of U.V. cured dental materials"; J. Van Houte, "Bacterial adherents in oral ecology." Reports by active or former graduate students on their thesis research (J. Kardos, discussion leader): N. Eib, "Electron tunnelling spectroscopy of thin films"; D. Tryson, "Inner layers for improved performance in fiber-reinforced plastics"; R. Vera, "The effect of high pressure on adhesion"; K. A. Mauritz, "Macromolecular organization on inorganic surfaces."

20 August. (P. M. Erlandson, discussion leader): J. A. Koutsky, "Morphology and structure of thermoset resins and applications to adhesive systems"; T. J. Dearlove, "The physical and mechanical properties of diluted epoxy adhesives."

Analytical Chemistry

New Hampton School

Kenneth W. Gardiner, chairman; Donald R. Johnson, vice chairman.

9 August. Nicholas Winograd, "Recent developments in surface analysis: a multitechnique approach"; L. B. Rogers, "New directions in liquid chromatography."

10 August. Bert L. Vallee, "Metals in biology"; James N. Little, "Recent developments in liquid chromatography instrumentation"; Guy Blaise, "The behavior of surfaces under ion bombardment—discussion on some particular aspects revealed by secondary ion emission"; Donald T. Sawyer, "Chemical characterization of transition metal redox models for metalloenzymes."

11 August. J. Jack Kirkland, "Influence of sampling and extra-column effects in high performance chromatography"; M. Gary Mason, "Surface properties of light sensitive materials as determined by x-ray photoemission"; Gary M. Hieftje, "New alternatives in methods and instrumentation for multielement analyses of biological samples"; J. F. K. Huber, "Exploitation of phase system selectivity in liquid chromatography."

12 August. Arthur T. Hubbard, "Study of electrode surface structure and composition by means of low-energy electron diffraction and quantitative Auger electron spectroscopy"; Georges Guiochon, "Some current problems in liquid chromatography and their proposed solutions."

13 August. Merle A. Evenson, "Flameless atomic absorption of metals in biological fluids"; Barry L. Karger, "Biochemical analysis and modern liquid chromatography."

Animal Cells and Viruses

Tilton School

Harvey Lodish, chairperson; Alice Huang and Dan Nathans, co-vice-chairpersons.

21–25 June. RNA transcription—synthesis of specific mRNA's (Bert O'Malley, chairperson). Structure of individual genes (Donald Brown, chairperson). Chromosome structure (Sarah Elgin, chairperson). Processing of mRNA precursors (Jim Darnell, chairperson). Structure of messenger RNA (George Brownlee, chairperson). Biosynthesis of subcellular organelles—interaction of ribosomes and membranes (David Sabatini, chairperson). Control of cell proliferation (Dan Rifkin, chairperson). Genetics of individual proteins (Tom Caskey, chairperson). Subcellular structure—role of tubulins and actin (Jim Spudich, chairperson).

Atomic and Molecular Interactions

Brewster Academy

R. P. Andres, chairman; W. A. Lester, vice chairman.

9 August. Potential energy curves and surfaces (J. O. Hirschfelder, discussion leader): A. C. Wahl, "The calculation of rare gas-hydride potentials"; R. G. Gordon, "Electron gas models for interaction potentials." Chemical reaction dynamics: $H + H_2$ (B. Liu, discussion leader): G. C. Schatz, "Quantum dynamics of the three dimensional $H + H_2$ exchange reaction"; D. Truhlar, "Classical and semi-classical studies of $H + H_2$."

10 August. Interaction potential between molecules and solid surfaces (W. A. Lester, discussion leader): W. A. Goddard, "Theoretical studies of the interaction of molecules with surfaces"; A. B. Kunz, "Chemisorption of simple hydrocarbons by transition metals and insulators." Dynamics of molecule-surface interactions (F. O. Goodman, discussion leader): George Wolken, "A model of chemisorption and heterogeneous reactions"; J. D. Doll, "Inelastic gas-solid collision theory."

11 August. Experimental measurements of molecule-surface interactions (R. P.

Merrill, discussion leader): D. R. Frankl, "Atomic beam diffraction and selective absorption"; M. Cardillo, "Gas-surface reaction dynamics." Vibrationally and rotationally inelastic collisions (P. Toennies, discussion leader): H. Rabitz, "Theoretical analysis of rotation-vibration collisions"; G. Flynn, "Mode-mode energy transfer in small molecules."

12 August. Potential anisotropy and transport properties (Fred McCourt, discussion leader): J. J. M. Beenakker, "Molecular interactions and effective cross sections for rotating molecules"; L. Monchick, "Transport properties and anisotropic potentials." Long range forces (P. Certain, discussion leader): G. Scoles, "Experimental information on long range forces in simple systems"; W. Meyer, "Ab initio investigation of van der Waals interactions for small systems."

13 August. Excited state phenomena (R. E. Olson, discussion leader): W. A. Chupka, "Reactions of excited ions"; M. R. Flannery, "Collision of atoms and molecules in highly excited states."

Biological Regulatory Mechanisms

Holderness School

Charles Yanofsky, chairman; E. Peter Geiduschek, vice chairman.

5 July. Regulation of bacterial operons, I (W. Gilbert, chairman): J. Majors; W. Gilbert; D. Steege; N. Lee; R. Schleif and J. Hirsch; M. Casadaban and J. Beckwith; B. de Crombrugghe, R. Musso, R. DiLauro, J. Sklar and S. Weissman. Regulation of bacterial operons, II (G. W. Hatfield, chairman): S. Artz; F. Blasi; K. Bertrand, F. Lee and C. Yanofsky; W. Reznikoff, J. Gardner, R. Jorgensen, and D. Morse.

6 July. Regulation of bacterial operons, III (N. Glansdorff, chairman): N. Kelker and W. Maas; P. Rogers and R. Krzyzek; E. Stadtman and P. Chock; B. Tyler; B. Magasanik, R. Bender, F. Foor and K. Janssen; R. Valentine; S. R. Jaskunas, L. Lindahl and M. Nomura. Regulation in bacterial viruses (J. Steitz, chairwoman): M. Ptashne; J. Roberts; L. Gold; E. P. Geiduschek; M. Salas.

7 July. Regulation of RNA synthesis and metabolism (J. Richardson, chairman): G. Galluppi and J. Richardson; M. Kozak and A. Shatkin; B. Ames; G. W. Hatfield; H. Schaller; F. Sanger. Regulation in virus of eukaryotes (H. Varmus, chairman).

8 July. Regulation of gene expression in eukaryotes (G. Fink, chairman): R. Metzenberg; J. Stiles and F. Sherman; R. Zitomer and B. Hall; H. Greer and G. Fink; R. Bigelis and G. Fink; C. Thrash, F. Payvar and R. Schimke; R. Axel; R. Gilmour. Regulation of developmental processes in prokaryotes and eukaryotes (L. Shapiro, chairwoman): J. King; L. Shapiro; G. Gerish; R. Haselkorn; H. Chica Schaller.

9 July. Regulation of DNA synthesis (D. Helinski, chairman): K. Subramanian and S. Weissman, D. Helinski; R. Benbow; W. Messer; D. Clayton; D. Livingston and L. Hartwell.

Biomaterials, Science and Technology of

Proctor Academy

Everett J. Frazza, chairman; Allan S. Hoffman, vice chairman.

19 July. Cardiovascular implant materials (Samuel Koorajian, session chairman): Kenneth Mayhan, "Characterization of elastomeric materials for heart valve applications"; Wilbert L. Gore, "A new biocompatible expanded tetrafluoroethylene"; Charles McIntosh, "A clinical evaluation of various prosthetic heart valves." Short papers on new developments in biomaterials (Allan S. Hoffman, session chairman).

20 July. Biodegradable implant materials (E. J. Frazza, session chairman): Donald R. Cowsar, "Biodegradable polyester implants"; Duane E. Cutright, "Surgical applications of absorbable polyesters"; Jack E. Lemons, "Tricalcium phosphate ceramic implants"; Milos Chvapil, "Collagen as a biomaterial: definitions, limits, perspectives"; Stephen C. Woodward, "Cellular responses associated with the resorption of biodegradable implants."

21 July. Orthopedic implant materials (Frederic W. Rhinelander, session chairman): Larry L. Hench, "Bonding mechanisms at the interface between prosthetic materials and bone"; Jean L. Leray, "Ingrowth of bony tissue into experimental implant materials"; Stephan Perren, "New methods to test metal toxicity in animal tissues." Are surgical implants tumorigenic? (Stephen C. Woodward, session chairman): Mearl F. Stanton, "Some effects of microfibers on tissues: a new approach to the problem of carcinogenesis"; K. Gerhard Brand, "The etiological complexity of foreign body tumorigenesis."

22 July. Orthopedic implant materials (continued) (Frederic W. Rhinelander, session chairman): Bernard J. L. Moyen, "Metabolic and biomechanic effects of application of plates of different flexibility to bone"; Albert H. Burstein and Donald F. Gibbons, "The fabrication and design of joint replacement prostheses"; Charles O. Bechtol, "Failure of bony support after implantation of hip prostheses." Frontier medicine and surgery in the early West: Peter D. Olch.

23 July. Compatibility testing of biomaterials (Allan S. Hoffman, session chairman): Francis J. Meyer, "A critical survey of methodologies for compatibility testing of biomaterials"; Geoffrey H. Lord, "Bioevaluation of materials and devices—philosophical, rational, and specific considerations"; Roger E. Wilsnak, "Correlation of in vitro to in vivo biocompatibility tests."

Biopolymers, Physics and Physical Chemistry of

Holderness School

R. L. Baldwin and K. E. Van Holde, cochairmen.

28 June. Chromatin: J. Vinograd, "Interaction of the nicking and closing enzyme with chromatin proteins"; H. Martinson, "Cross-linking studies of chromatin proteins"; H. Zachau, "Use of restriction endonucleases in studying chromatin structure"; J. Wooley, "Physical studies of protein cores." Nucleic acids: J. Wang, "Statistical distribution of DNA supercoils"; L. Klotz, "Molecular weights of chromosomal DNA's"; B. Zimm, "Theory of sedimentation anomalies for large DNA's."

29 June. Membranes: E. Elson, "Mobility of proteins in lymphocyte membranes"; S. Chan, "A model system for nerve impulse transmission"; J. Sturtevant, "Thermodynamics of transitions in phospholipid bilayers"; W. Wickner, "Asymmetric orientation of M13 coat protein in synthetic and natural membranes." Membrane bound receptors: W. Englander, "Hydrogen exchange and solvent accessibility of rhodopsin in situ"; N. Unwin, "Structure of the purple membrane protein"; G. Hess, "Ion flux mediated by ligand binding to acetylcholine receptor in vesicles from electroplax membranes."

30 June. Protein folding: M. Levitt, "Computer simulation of protein folding"; J. Brandts, "Proline isomerization as a rate-limiting step in protein folding"; A. Schechter, "Antibody detection of stages in protein folding reactions"; D. Davies, "Structural studies of antibody combining sites." Supramolecular assemblies: P. Moore, "Neutron scattering studies of ribosome structure"; M. Kirschner, "Microtubule assembly"; Peter H. von Hippel, "DNA—'melting protein' interactions."

1 July. Physical problems in phage morphogenesis: J. King, "Survey of the problems"; S. Harrison, "X-ray scattering studies of the arrangement of DNA in phage heads"; J. Schellman, "The spermidine-induced condensation of DNA"; U. Laemmli, "DNA packaging in phage T4."

Lecture: H. Huxley, "Muscle contraction."

2 July. Special topics: D. Blow, "Structure of a tRNA synthetase"; J. Hopfield, "Kinetic proofreading and macromolecular biosynthesis."

Bones and Teeth, Biochemistry, Physiology and Structure of

Kimball Union Academy

James L. Matthews, chairman, William A. Peck, vice chairman.

12 July. Short papers, morning session (send abstracts to William A. Peck, Department of Medicine, University of Rochester School of Medicine, 601 Elmwood Avenue, Rochester, New York 14642). New developments on effects of steroid on mineralizing tissues (W. S. S. Jee and E. J. Collins, co-chairmen): Harold Frost, "Steroid hormones and bone remodelling"; W. S. S. Jee and Hugh Black, "Adrenocorticosteroid, diphosphonate, and bone"; Dave Simmons, "Chronobiology and steroid hormones"; William A. Coty, "In vitro regulation of target cell genome activity by purified progesterone receptor."

13 July. Heterogeneity of connective tissue matrices (Klaus Kuettner, session chairman): John E. Scott, "Histochemical evidence of heterogeneity of cartilage matrices"; Dick Heinegard, "Current status of proteoglycan aggregation"; Tim Hardingham, "The role of link proteins and hyaluronic acid in proteoglycan aggregation"; Ted Oegema, "Proteoglycans of rat chondrosarcoma." Heterogeneity of connective tissue matrices (continued) (Klaus Kuettner, session chairman): Torvard Laurent, "On the biological function of hyaluronic acids"; David Eyre, "Characteristics of cartilage collagen"; Dennis Lowther, "Collagen—proteoglycan interactions."

14 July. Calcium and PO_4 transport in cells and tissues (Felix Bronner, chairman): Charles R. Scriver, "Renal phosphorus transport"; R. H. Wasserman, "Phosphorus transport in tissues"; F. Bronner, "Intestinal transport of calcium"; E. Carafoli, "Cell calcium transport and regulation"; W. L. Davis, "Calcium transport in tissues." Plasma calcium control and the bone fluid compartment (Roy V. Talmage, chairman): J. L. Mathews, "Morphological and physiological evidence for the role of bone cells in the control of plasma calcium levels"; W. K. Ramp, "The bone fluid compartment: a model using the chick embryo in vitro"; A. M. Parfitt, "The bone fluid compartment: clinical implications and explanations."

15 July. Mineral phase-matrix interactions (Arthur Veis, chairman): John Termine, "The amorphous calcium phosphate—crystalline hydroxyapatite transition"; Charles Nawrot, "The role of phosphoprotein in catalyzing the ACP-HA transition"; Sandra Lee, "Calcium binding properties of the phospho-protein of dentin and the relationship between Ca binding and conformational transitions in the protein"; Shu Tung Li, "Calcium binding by the insoluble dental matrix"; Andre Roufasse, "Organic-inorganic interactions in calcifying tissues, the role of hydrophobic interactions"; Ermanno Bonucci, "Organic-inorganic relationships in calcified tissues"; Marshal Urist, "Ectopic mineralization"; K. M. Wilbur, "Cells, crystals and creatures."

16 July. Phosphate metabolism (L. V. Avioli, chairman): Shaul Massry, "Advances regarding renal control of phosphate metabolism"; Philippe Bordier, "Phosphate regulation of skeletal turnover"; Hector DeLuca, "Vitamin D metabolism in genetic hypophosphatemia."

Cancer

Colby-Sawyer College

Arthur B. Pardee, chairperson; Vittorio Defendi, vice chairperson.

Basic Science and Chemotherapy

30 August. (G. Sato, chairperson): R. D. Berlin, "Membrane organization"; S. M. Jazwinski, "Stimulation and control of lymphoid cells." (V. E. A. McCulloch, chairperson): J. Gorski, "Hormones and intercell messengers"; C. W. Parker, "Intracell messengers."

31 August. (R. Baserga, chairperson): S. C. Barranco, "The cell cycle and drug action"; A. B. Pardee, "The G_0 state and chemotherapy." (R. E. Handschumacher, chairperson): M. Apple, "New drugs and bases of differential drug action"; D. V. Santi, "Molecular approaches to drug design."

1 September. (Chairperson to be announced): H. S. Smith, "New cell lines and their use for chemotherapy studies"; F. M. Schabel, Jr., "Mice as models for clinical chemotherapy." (V. Defendi, chairperson): E. Frei, III, "Some developments in clinical chemotherapy"; B. Fisher, "Surgery, chemotherapy and immunotherapy."

2 September. (M. L. Mendelsohn, chairperson): E. M. Hersh, "Interrelationship of chemotherapy, immunotherapy, and immunity"; T. L. Phillips, "Radiation and chemotherapy"; C. G. Zubrod, "Perspectives for chemotherapy: clinical"; E. Reich, "Perspectives for chemotherapy: basic."

3 September. (J. Folkman, chairperson): I. J. Fidler, "Metastases in vivo"; G. L. Nicolson, "Metastases in vitro."

CO_2 Fixation by Green Plants

New Hampton School

Martin Gibbs, chairman; Israel Zelitch, vice chairman.

21 June. Environmental control of photosynthesis (O. E. Björkman, chairman): J. S. Boyer, E. R. Lemon, I. A. Tarchevsky, O. V. Zalensky, I. P. Ting, J. E. Pallas, K. Raschke, N. Terry, B. Buchanan. Partitioning of photosynthate within the plant (J. van Overbeek, chairman): A. L. Christy, B. Quebedeaux, H. S. Ku, E. Tschabold, R. G. S. Bidwell, C. A. Swanson.

22 June. Genetic control of photosynthesis (whole plants) (D. Duvick and O. E. Nelson, chairmen): J. Cock, R. W. Breidenbach, T. Ledig, C. D. Miles, G. E. Carlson, N. J. Chatterton, C. J. Nelson, C. R. Benedict, Y. S. Nasyrov. Genetic control of photosynthesis (cellular level) (Z. Sestak, chairman): S. Wildman, M. Berlyn, R. C. Huffaker, M. Edelman, J. Polacco, S. D. Kung.

23 June. Regulation of CO_2 fixation in cells and chloroplasts (C. C. Black, chairman): D. A. Walker, E. Latzko, G. E. Edwards, M. L. Champigny, L. Anderson, J. A. Bassham, J. Coombs. Interactions between chloroplast and cytoplasm (C. R. Stocking, chairman): U. Heber, H. Heldt, R. P. Poincelot, R. Douce, J. M. Robinson.

24 June. Photorespiration (C. P. Whittingham, chairman): D. Canvin, N. E. Tolbert, E. R. Waygood, R. H. Brown, W. L. Ogren, E. Beck, N. P. Voskresenskaya. H. Gaffron, "Role of catalytic amounts of CO_2 in photosynthesis."

25 June. Plant development and CO_2 fixation (J. A. Schiff, chairman): D. Moss, J. Hesketh, D. I. Dickman, V. Walbot, E. E. Goldschmidt.

Applications

Scientists are invited to submit applications for attendance at the Gordon Research Conferences. An application blank is on page 1083 and may be submitted to Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, University of Rhode Island, Kingston, Rhode Island 02881.

Catalysis

Colby-Sawyer College

Jack H. Lunsford, chairman; Mordecai Shelef, vice chairman.

28 June. Pierre Jacobs and Jan B. Uytterhoeven, "Redox behavior of transition metals in zeolites"; V. Ponec, "Selectivity in catalysis by metals and alloys"; F. G. Gault, "Skeletal rearrangement of hydrocarbons on metals, alloys and bimetallic clusters: dispersion and cluster effects."

29 June. A. P. Bolton and T. J. Weeks, "A study of the cracking and isomerization of ^{13}C labeled alkanes with type Y zeolites"; Kozo Tanabe and Hideshi Hattori, "The synthesis of solid super acids and their catalytic activity"; Gilbert F. Froment, "Modeling of fixed bed catalytic reactors."

30 June. Burkhard E. Wagner, "Molecular dynamics at catalyst surfaces: dynamic nuclear polarization and ESR of ligand spin labels"; Robert L. Palmer, "Studies of CO and hydrogen reactions on cobalt and nickel surfaces at low to intermediate pressures"; Gary Haller and John B. Fenn, "Surface studies using a recycling molecular beam reactor."

1 July. Karl Seff, "Structural chemistry inside zeolite A"; Rowland Pettit, "Reduction of carbon monoxide by homogenous catalysis", P. R. Ryason, "Hydrogen from the solar photolysis of water."

2 July. H. C. Yao and M. Shelef, "Interaction of base metal oxides with the surface of insulator supports"; Robert Friedman, "The interaction of cupric ions with alumina supports."

Cellular Materials, Chemistry and Physics of

Holderness School

Eberhard Meinecke, chairman.

14 June. Recent research in cellular materials: John Backus, "U.S."; (speaker to be announced), "Europe"; K. Ashida, "Japan"; T. E. Lipatova, "Russia."

15 June. Structure-properties relationships for cellular materials: G. A. Campbell, "Variables affecting the compression creep in flexible polyurethane foams"; G. Wilkes, "Structure property relationships for two-phase polymeric materials"; J. H. Robson, "Physical properties of rigid polyurethane foams."

16 June. Flammability and toxicity: I. Einhorn, "Thermal degradation of model polyurethane foams"; K. C. Frisch, "New developments in catalysis and flammability characteristics of isocyanurate foams"; Y. Alarie, "Toxicological evaluation of combustion products of organic polymers"; K. L. Stemmer and R. H. Bell, "Toxicity of heat degradation products of plastics."

17 June. Analytical chemistry related to cellular materials: R. A. Godfrey, "New methods to determine the concentration of isocyanates in the atmosphere"; D. A. Reilly, "Interferences in the analysis of aromatic isocyanates." Cryogenic recycling of cellular materials: I. B. Mishra, "Cryogenic recycling of cellular materials."

18 June. Properties of cellular materials: D. L. Steinner and E. K. Moss, "Polyisocyanurate foams having unusual thermal stability"; (speaker to be announced), "Thermal and mechanical requirements for the Alaskan pipe line insulation."

Ceramics, Solid State Studies in

Plymouth State College

Sheldon M. Wiederhorn, chairman; Dennis Readey, vice chairman.

Mechanical Strength and Strength Degradation

26 July. Deformation and creep of ceramic materials (Martin S. Seltzer, session chairman): Terence G. Langdon, "High temperature creep in ceramic materials"; Arthur H. Heuer, "High temperature dislocation mechanics of basal slip in sapphire: a transmission electron microscopic study." (Benjamin A. Wilcox, session chairman): J. Philibert, "Mechanisms of high temperature plastic deformation in Cu_2O single crystals"; David L. Kohlstedt, "High temperature plastic deformation of olivine"; Kenneth H. G. Ashbee, "High temperature deformation of glass ceramics."

27 July. Crack tip structure and phenomena (Roger Dutton, session chairman): Pierre C. Gehlen, "Atomic structure of cracks and dislocations"; E. Smith, "Effect of the discreteness of atomic structure on cleavage fracture of brittle crystalline solids"; Robb M. Thomson, "Physical phenomena at the tips of cracks." Mechanisms of crack growth (Fred F. Lange, session chairman): William W. Gerberich, "The mechanics of thermally activated crack growth"; Robert H. Doremus, "Static fatigue of brittle materials."

28 July. Mechanisms of crack growth (continued) (John S. Nadeau, session chairman): D. G. Holloway, "A plastic flow model of crack growth and static fatigue"; Norman H. Macmillan, "The environment-sensitive deformations and fracture of nonmetals." Structural design (Steven W. Freiman, session chairman): Edward T. Wessel, "Applications of fracture mechanics to design"; John E. Ritter, "Assuring mechanical reliability of ceramic materials."

29 July. Strength degradation of ceramics (Richard C. Bradt, session chairman): Anthony G. Evans, "Solid particle impact damage"; Bernard J. Hockey, "The use of transmission electron microscopy to study impact damage"; Brian R. Lawn, "Contact fracture and strength degradation of ceramics." Guest speaker (Sheldon M. Wiederhorn, session chairman): Theodore A. Wertime, "On the trail of the early pyrotechnologist."

30 July. Strength degradation of ceramics (continued) (Dennis W. Readey, session chairman): William F. Adler, "Analysis of liquid drop impacts on ceramic materials"; John E. Field, "Recent work on solid particle and liquid drop erosion at Cambridge."

Coatings and Films, Chemistry and Physics of

Kimball Union Academy

John W. Vanderhoff, chairman; Marco Wismer, vice chairman.

26 July. Adhesion of coatings—theory and practice: J. J. Bickerman, (speaker to be announced).

27 July. Dispersion of pigments: K. Hamann, "Interaction between pigments and vehicles"; (speaker to be announced), "Measurement of degree of dispersion."

28 July. New polymers: George Ham, "Photopolymers"; (speaker to be announced), "Water-dispersible resins"; (speaker to be announced), "Latexes by emulsification."

29 July. Future coating choices: (speaker to be announced), "Summary—available choices"; (speaker to be announced), "Solvent recovery"; (speaker to be announced), "Solvent incineration"; (speaker to be announced), "Solventless coating types—comparisons."

30 July. Management of research: panel discussion. New research: short presentations.

Coherent Optics and Holography

Miramar Hotel

Emmett N. Leith, chairman; Joseph Goodman, vice chairman.

21–25 June. D. Close, "Holographic optical elements"; R. Alferness and S. Case, "Volume diffraction in sinusoidally-stratified phase media"; W. Lee, "New techniques in computer generated holograms and their use as optical elements";

A. Korpel, "Bit-type optical storage and retrieval systems"; N. George, "Speckle in remote-sensing data analysis"; W. Rhodes, "Coherent optical processing using 1-D to 2-D encoding techniques"; A. Sawchuk, "Non-linear non-monotonic optical processing"; H. Barrett, "3-D radiographic imagery"; T. Jeong, "Composite-type white-light holograms for displays"; L. Cross, "The multiplex hologram."

Corrosion

Colby-Sawyer College

Brian Cox, chairman; Robert Rapp, vice chairman.

12 July. Formation and breakdown of passive films (Robert Rapp, discussion leader): Barry McDougall, "Formation and breakdown of passive oxide films on nickel"; John R. Ambrose, "Repassivation and depassivation processes associated with the crevice corrosion of iron, and iron-chromium alloys." Monitoring of film properties (Jerry Kruger, discussion leader): Dan McCright, "Transient rupture and reformation of protective oxide films"; F. Mansfeld and J. V. Kenkel, "Electrochemical monitoring of atmospheric corrosion phenomena."

13 July. Applications of high temperature electrochemistry (Ellis D. Verink, Jr., discussion leader): George J. Theus, "A slow scan technique for finding the electrochemical regions for stress corrosion cracking"; Pat E. Morris, "Development of electrochemical methods for testing stressed and unstressed Fe-Cr-Ni alloys in high temperature aqueous environments." Applications of Auger electron spectroscopy (Morris Cohen, discussion leader): Jesse B. Lumsden, "Application of Auger spectroscopy to the study of passive films and surface segregation"; Ellis D. Verink, Jr., and S. Maitra, "Auger electron spectroscopic studies of thin oxide films on aluminum."

14 July. Environmental cracking, I. Fe-Cr-Ni alloys (Nev Pugh, discussion leader): M. Lopez da Cunha Belo, "Effects of alloying elements and impurities on SCC of Fe-Cr-Ni alloys—influence of alloy chemistry and the properties of the surface film"; Mel Bernstein, "Role of H embrittlement in SCC of structural alloys—especially steels". Titanium alloys (Roger Staehle, discussion leader): John C. Scully, "The mechanism of SCC of α-Ti alloys at room temperature"; Russell J. H. Wanhill, "Subcritical crack growth in titanium alloys—interrelation between micromechanisms, microstructures and its significance for engineering structure."

15 July. Environmental cracking, II. Aluminum alloys (Mike Pryor, discussion leader): John A. S. Green, "Stress corrosion cracking of high strength aluminum alloys"; E. Nev Pugh and L. Nelson, "Environmentally induced fracture of Al-Zn-Mg alloys." Other materials (John Scully, discussion leader): Albert R. C. Westwood and John J. Mills, "Adsorption-sensitive fracture processes; their control and application."

16 July. Inhibitors (Howard Pickering, discussion leader): Takenori Notoya, "Surface topography and the corrosion inhibition mechanism for copper and copper alloys"; Ewa A. Bardasz, "Evaluation of corrosion inhibitors at a metal-oil-water interface."

Crystal Growth

Proctor Academy

August F. Witt, chairman; Charles S. Sahagian, vice chairman.

12 July. Growth of large crystals (John R. Carruthers, chairman): E. Sirtel, "Growth of large diameter silicon crystals by Czochralski and floating zone methods"; C. D. Brandle, "Growth of large oxide crystals with controlled properties"; Robert A. Laudise, "Hydrothermal quartz crystallization." Defect characterization (Glenn Cullen, chairman): Michael S. Abrahams, "Characterization of the defect structure of heteroepitaxial silicon by cross section transmission electron microscopy"; L. C. Kimerling, "The electrical properties of defects in semiconductors by SEM charge collection techniques"; David C. Miller, "Characterization of the defect structure of garnets and semiconductors by etching and x-ray topography."

13 July. Heat and mass transport phenomena associated with crystal growth (William R. Wilcox, chairman): Simon Ostrach, "Convection in crystal growth systems"; L. E. Scriven, "Surface tension driven convection effects in high temperature melts"; W. Uelhoff, "Meniscus related problems in one and zero gravity environments." Panel discussion on crystal growth of garnets (James W. Nielsen, chairman): Roger F. Belt, "Growth of GGG and YAG"; E. A. Giess, "Garnet nucleation in supercooled flux solutions and control of magnetic properties in small bubble materials"; Stuart L. Blank, "Temperature dependence of magnetic properties."

14 July. Recent advances in LPE (Morton B. Panish, chairman): Jaw Jim Hsieh, "Thickness and surface morphology of III-V compound semiconductor LPE layers"; Ronald Hiskes, "LPE growth and characteristics of garnets"; G. H. B. Thompson (subject to be announced). Growth and processing techniques of materials for photovoltaic devices (Jerry M. Woodall, chairman): Sigurd Wagner, "InP-CdS in solar cells"; Thomas Surek, "Theory of shape stability in crystal growth from the melt"; Marvin Garfinkel and Robert Hall, "The floating substrate process for silicon growth."

15 July. Growth generated defects and their effects on device performance (Robert A. Burmeister, chairman): John McFarlane, "Defects in EFG silicon and their influence on device properties"; Pierre Petroff, "Effect of structural defects in LPE and MBE GaAs-GaAlAs multilayered devices"; George Rozgonyi, "Defect behavior in silicon device processing." Zero gravity materials processing—expectations and how they can be realized (Harry C. Gatos, chairman): Charles W. Mathews (subject to be announced); H. Weiss (subject to be announced).

16 July. Current progress on specific topics (Don W. Shaw, chairman): Bernhard Wunderlich, "Crystallization of large molecules"; Joseph Daniele, "Recent results in Peltier induced LPE of GaAs-GaAlAs."

Cyclic Nucleotides

Kimball Union Academy

Ora M. Rosen, chairman; Joel G. Hardman, vice chairman.

14–18 June. The β-adrenergic receptor (Alfred Gilman, chairman): G. D. Aurbach, "Adrenergic receptor-adenylate cyclase interactions with avian erythrocytes"; Alfred Gilman, "Cultured mammalian cells"; Robert Lefkowitz, "Molecular mechanism of agonist induced desensitization of the β-adrenergic receptor." Modification of adenylate cyclase by enterotoxins (D. Michael Gill, chairman): D. Michael Gill, "Mechanism of activation"; Michael Field, "Altered properties of adenylate cyclase"; Mark Bitensky, "The active moiety of cholera toxin." Regulation of contraction by phosphorylation (Donal Walsh, chairman): Paul England, "Phosphorylation of troponin"; Robert S. Adelstein, "Phosphorylation of myosin"; Madeliene Kirchberger, "Phosphorylation of sarcoplasmic reticulum." Narcotic analgesics and cyclic nucleotides (G. Alan Robison, chairman): Werner A. Klee, Bernd Hamprecht, G. Alan Robison, "Narcotic analgesics and cyclic nucleotides." Role of cyclic nucleotides in growth and differentiation (Wesley D. Wicks, chairman): John Pawlek, "A simple proposal for the role of cAMP-dependent protein kinase in the regulation of

cell proliferation"; Michael J. Berridge, "A unifying hypothesis for the control of cell division." Microbiological models for studying cyclic nucleotide synthesis, metabolism and function (Milton Saier, chairman): J. Woodland Hastings and H. Kenneth Nealson, "Regulation of bacterial bioluminescence by cyclic nucleotides"; Alan Peterkofsky, "Regulation of adenylate cyclase in *Escherichia coli*"; Philip Silverman, "Cyclic nucleotide metabolism coupled to the cell cycle of *Blastocladiella emersonii*." Insulin action via cyclic AMP and cyclic GMP (John N. Fain, chairman): Tetsuro Kono, "Activation of fat cell cyclic AMP phosphodiesterase by insulin"; Joseph Avruch, "Hormonal control of protein phosphorylation in fat cells"; Leonard Jarett, "Insulin, cyclic nucleotides and calcium in fat cells"; Bert W. O'Malley, "The molecular mechanism of steroid hormone action." Clinical implications of cyclic nucleotides (John J. Voorhees, chairman): Christopher S. Henney, "Modulation of the immune response by cyclic nucleotides"; Ferid Murad, "Some uses of cyclic nucleotides to diagnose and evaluate clinical disorders"; Pavel Hamut, "Cyclic nucleotides in hypertension."

Dielectric Phenomena

Proctor Academy

Worth E. Vaughan, chairman; John M. Deutch, vice chairman.

26 July. Dielectric loss and intermolecular forces in fluids: Myron Evans, "Extended Langevin theory and far IR/microwave absorption in molecules"; U. Buontempo, "Experiments on the induced absorption spectra in the far IR and molecular motion in fluids." Theory: Robert L. Fulton, "Theory of dielectric relaxation in polar media"; Bruce J. Berne, "Models of molecular motion in fluids."

27 July. Conducting dielectrics: Michel Mandel, "Conduction and relaxation in liquids"; Robert H. Cole, "Relaxation in electrolytes." Instrumentation and measurement: Karl Giese, "Time domain studies of conductive aqueous solutions"; George W. Chantry, "Intercomparison and measurement of dielectric properties at high frequencies."

28 July. Instrumentation and measurement (continued); effects of high fields on dielectric relaxation: Graham Williams, "Dielectric and electro-optical studies of low frequency motions in liquids"; Jose Goulon, "High field orientation effects and critical phenomena."

29 July. Relaxation in glasses and solids: A. K. Jonscher, "A new model of dielectric polarization in solids"; J. van Turnhout, "Thermally stimulated depolarization of electrets." Dielectric phenomena: J. H. Van Vleck, "Dielectrics, a second love."

30 July. Computer simulation of dielectric properties: William B. Streett, "Computer simulations of dense fluids of polyatomic molecules"; J. P. Valleau, "Monte Carlo studies of polar fluids."

Drug Metabolism

Holderness School

Peter G. Dayton, chairman; John E. Baer, vice chairman.

12 July. Studies with marijuana (Robert E. McMahon, chairman): M. Wall, "Chemistry and metabolism of cannabinoids"; Stig Agurell, "Metabolism of cannabinoids with a particular reference to side chain hydroxylation"; L. Lemburger, "Clinical pharmacology and metabolism of synthetic and naturally occurring cannabinoids." Contraceptive agents (David Kaiser, chairman): Samuel Sisenwine, "The metabolism of norgestrel in animals and humans"; E. Cook, "Recent metabolic studies with norethindrone and its analogs."

13 July. Pediatric pharmacology (James M. Perel, chairman): Bertrand Winsberg, "Humoral studies on neuroleptic engendered dyskinetic side effects among children"; Albert W. Pruitt, "Studies of age-related metabolism of furosemide in man and dogs"; Jeffery P. Redmond, "Metabolism of ethanol in children"; A. Neams, "Development of monoxygenase in man and animals." Cancer drugs (Vincent Oliverio, chairman): David W. Yesair, "Pharmacokinetics of the anthracycline drugs"; Michael Colvin, "Metabolism and mechanisms of action of nitrosoureas"; Bruce Chabner, "Metabolism and regulation of cytidine analog pathways."

14 July. Adult clinical pharmacology and drug metabolism (Marcus Reidenberg, chairman): Heinz Rahn, "Studies with clonidine and guanethidine in man"; Dennis Dreyer, "Procainamide, pharmacology and metabolism"; David Lowenthal, "Pharmacokinetics in uremia"; A. Alvares, "Effects of lead in man and animals"; H. Kappas, "Metal ion regulation of heme degradation." New concepts in drug metabolism (Hugh Sullivan, chairman): Fred Bartlett, discussant; William F. Trager, "Stereochemical factors in drug metabolism"; Pat Murphy, "Formation of heterocyclic imines and iminimium salts during metabolic oxidation of alicyclic and heterocyclic amines"; Franz Oesch, "Epoxide hydrase."

15 July. Psychopharmacology and drug metabolism (E. Usdin, chairman): M. Bickel, "Studies with imipramine"; J. Kiechel, "Metabolism of clozapine and thioridazine"; J. Heykants, "Metabolism of penfluridol"; I. Forest, discussant. S. Udenfriend, "The contribution of modern chemistry and biochemistry to chemical pharmacology."

16 July. Agricultural products (F. J. Wolf, chairman): M. L. Sutherland, "The nature of propanil bound residues in rice plants as measured by natural product plant fractionation, solubilization studies with ruminant incubation fluid, and monogastric animal bioavailability experiments." H. Wyman Dorough, "Bioavailability of covalently bound pesticides in laboratory animals."

Dynamical Instabilities and Fluctuations in Classical and Quantum Systems

Tilton School

Paul C. Martin, chairman; Jerry P. Gollub, co-chairman.

19–23 July. This conference will deal with experiments on instabilities and turbulence in classical fluids and in He II, chemical oscillations and waves, some nonequilibrium properties of solids, and mathematical techniques developed to study these and related problems.

Instabilities and the onset of turbulence in classical fluids: G. Ahlers, "High resolution measurements on the Rayleigh-Benard instability"; R. DiPrima, "The development of Taylor vortices and their instability"; C. Leith, "Statistical mechanics of climate"; J. McLaughlin, "Numerical simulation of instabilities in Couette flow and convection"; H. Swinney, "Transition to turbulence in a rotating fluid." Instabilities and oscillations of reactants and mixtures"; W. Goldburg, "Phase separation phenomena in fluids and mixtures"; G. Nicolis, "Self-organization phenomena in chemical reactions"; J. Ross, "Chemical instabilities and nucleation"; A. Winfree, "Oscillations and waves in biochemical systems." Instabilities and fluctuations in quantum systems: J. Clarke, "1/f noise—an equilibrium phenomenon"; R. Landauer, "Entropy and fluctuations in electronic systems far from equilibrium"; D. Langenberg, "Non-equilibrium phenomena in superconductors"; F. Moss, "Turbulence in superfluid helium." Mathematical methods and models for instabilities and chaos: R. Bowen, "What experimenters should know about qualitative differential equations"; H. Haken, "Pulse instabilities"; F. Hoppenstead, "Chaotic behavior of a nonlinear integral equation."

A series of short reports on the appli-

cation of equilibrium phase-transition mathematical techniques to turbulence and other non-equilibrium transitions is also planned.

Elastomers

Colby-Sawyer College

Roger S. Porter, chairman; Nissim Calderon, vice chairman.

Preparation and Properties of Elastomer Networks and Domain Structures

2 August. Elastomer synthesis: Russ A. Livigni, I. G. Hargis, S. L. Aggarwal, "A new class of crystallizing butadiene elastomers; synthesis and properties"; L. Peebles, "The statistics of monomer distribution in copolymers"; M. Bruzzone, "Synthesis and properties of new crystallizable elastomers of butadiene."

3 August. Ionomeric elastomers: Robert Lundberg, "Thermoplastic elastomers based on an ionic polymer"; Adi Eisenberg, "The rheology of ionomers." Structure of ionomers (William MacKnight, discussion leader): Ed Kresge and Robert Cohen.

4 August. Network mechanics: Neal Langley, "Molecular aspects of rubber elasticity"; Robert Cohen, "Dynamic tests of carbon black filled elastomers"; William Mead, "ESR studies of elastomer deformation."

5 August. Network mechanics: Edgar Andrews, "Crystallization of blends of cis and trans polyisoprene." (L. Peebles, discussion leader): K. L. De Vries, "Trends in the federal support of polymer research."

6 August. Elastomer morphology: T. Hashimoto, "Domain perfection in thermoplastic elastomers"; Gary Hagnauer, "Structure in poly(dichlorophosphazene) elastomers."

Electron-Donor-Acceptor Interactions

Brewster Academy

Colin Fyfe and Robert Strong, cochairmen; Allen Colter, vice chairman.

16–20 August. W. R. Ware, "Recent work in exiplex photophysics"; H. Scher, "Electron hopping transport in disordered organic systems"; R. West, " 'Aromatic' properties of cyclic polysilanes as electron donors and acceptors"; H. A. Staab, "Orientation dependence of electron donor-acceptor interactions"; K. Morokuma, "The 'origins' of electron donor-acceptor interactions"; D. Haarer, "High resolution optical studies of charge transfer complexes"; L. D. Hall, "High resolution n.m.r. studies of donor-acceptor interactions in solution"; K. B. Eisenthal, "Studies of chemical and physical properties of excited state charge transfer and cage effect processes by picosecond laser spectroscopy"; F. H. Herbstein, "Learning about electron donor-acceptor interactions by studying the crystal chemistry of π-molecular compounds"; M. Tamres, "Weak electron donor-acceptor interactions"; R. Foster, "Recent advances in the field of electron donor-acceptor complexes"; N. Kornblum, "Substitution reactions which proceed via radical anion intermediates"; R. S. Mulliken, "Charge transfer interactions"; J. E. Baldwin, "Electron conduction through proteins"; D. Williams, "Molecular motion on charged transfer in polymeric systems."

Electron Spectroscopy

Brewster Academy

Thomas A. Carlson, chairman; Charles S. Fadley, vice chairman.

19–23 July. O. H. Griffith, "Photoelectron microscopy"; W. E. Spicer and J. W. Taylor, "Uses of synchrotron radiation"; C. E. Brion, "Electron impact"; G. A. Samorjai, "LEED/Auger"; C. P. Wagner, "Auger parameter"; J. S. Brinen, "Industrial uses of XPS"; E. Heilbronner, "UPS of organic molecules"; D. Clark, "ESCA studies of organic molecules and polymers"; D. Menzel, "Surface studies with PES (experimental)"; J. W. Gadzuk, "Surface studies with PES (theory)"; J. E. Rowe, "Characteristic energy losses of surfaces"; T. Novakov, "Environmental research"; P. S. Bagus, "Theoretical interpretation of excited states in XPS"; D. Dill, "Theory of photoionization in molecules"; P. H. Citrin, "EXAFS"; G. S. Hurst, "Use of lasers for photoionization"; C. Nordling, "Recent developments in ESCA."

Elementary Particle Interactions

Tilton School

M. Derrick, chairman; D. Reeder, vice chairman.

Structure of Nucleons and Search for New Degrees of Freedom

16–20 August. Inelastic e and μ scattering (C. Heusch, discussion leader). Exclusive γ charged-current interactions (P. Schreiner, discussion leader). Inclusive γ charged-current interactions (D. Reeder, discussion leader). Neutral current γ phenomena (W. Y. Lee, discussion leader). Dilepton production in γ experiments (F. Sculli, discussion leader). New particles produced in e^+e^- annihilation (B. Wiik, discussion leader). Direct lepton production in hadronic collisions (R. Adair, discussion leader). Search for effective mass bumps in hadronic collisions (M. Abolins, discussion leader). L. Sehgal, "Quark parton model phenomenology"; B. Kayser, "γ neutral currents"; K. Gottfried, "How many quarks and leptons?"; J. Bjorken, "Conference summary."

Environmental Sciences: Water

Proctor Academy

Russell F. Christman, chairman; Charles R. O'Melia, vice chairman.

Organic Materials in Water

28 June–2 July. Sources of organic materials in water (Robert L. Jolley, discussion leader): Cornelius Steelink, "Natural sources of humates and other organics in surface waters"; Larry Keith, "Anthropogenic sources of organic pollutants in water." Stability and degradation of organic materials in natural waters (James J. Morgan, discussion leader): Stanley Dagley, "Microbial degradation of organic compounds"; Cooper H. Langford, "Photo- and thermal degradation of organic compounds coordinated to Fe (III)." Separation/isolation of organic materials in water (Robert A. Baker, discussion leader): William H. Glaze, "Volatile components"; Jerry A. Leenheer, "Nonvolatile components." Identification and surveillance of organic material (Roger A. Minear, discussion leader): Ronald A. Hites, "Identification of organic contaminants by GC/MS"; Clayton McAuliffe, "Surveillance of marine environments for hydrocarbons." Recent development in treatment of water and wastewater for organic removal (Walter J. Weber, Jr., discussion leader): Vernon L. Snoeyink, "Adsorption process"; James E. Cruver, "Membrane process." Chlorination of water supplies (J. Donald Johnson, discussion leader): Robert M. Carlson, "Research needs in water chlorination"; Alan L. Burlingame, "Consideration of the nature of the trace organic composition concerning the California Water Budget." Health effects of aquatic organics (Robert H. Harris, discussion leader): Eula Bingham, "Toxicologic approaches to risk assessment"; Robert N. Hoover, "Epidemiologic approaches to risk assessment." Municipal system case studies (Julian B. Andelman, discussion leader): John J. Rook, "Halogenated hydrocarbon formation in the Rotterdam system"; Irwin H. Suffet, "Case studies of water and wastewater in the Philadelphia area." Conference summary by Charles R. O'Melia.

Enzymes, Coenzymes and Metabolic Pathways

Miramar Hotel

Daniel Santi and Esmond E. Snell, co-chairmen; Richard V. Wolfenden and Frank Westheimer, co-vice chairmen.

14 June. Enzyme mechanism and stereochemistry I. (Jeremy Knowles, chairman): Perry Frey, "A model for non-stereospecific hydrogen transfer by UDPG-galactose-4-epimerase"; Eggehard Holler (title to be announced); Stephen Benkovic, "Stereochemistry and mechanism of serine transhydroxymethylase." Enzyme mechanism and stereochemistry II (George Kenyon, chairman): Heinz Floss, "Stereochemistry of some reactions catalyzed by pyridoxal phosphate enzymes"; Fred Midelfort, "Bridge to non-bridge oxygen scrambling in ATP in mechanistic studies"; Jeremy Knowles, "Enzyme catalyzed phosphoryl transfer."

15 June. Vitamin K metabolism and function (John W. Suttie, chairman): John W. Suttie, "Vitamin K dependent carboxylation of glutamyl residues in proteins"; John T. Matschiner, "Metabolism of vitamin K and possible relationships to function"; Paul M. Gallop, "Vitamin K dependent calcium binding proteins in bone." Model enzyme reactions (Thomas C. Bruice, chairman): Thomas C. Bruice, "Mechanisms of reaction of flavins with oxygen, carbon acids, carbonyl compounds, etc."; James K. Coward, "Methylase models. Steric constraints and modes of catalysis"; Woodland J. Hastings, "Flavin bioluminescence."

16 June. Membrane proteins I (Michael Raftery, chairman): Michael Raftery, "Functionally significant states and interactions of a neurotransmitter receptor"; Robert Stroud, "Towards the structure for an acetylcholine receptor"; Walther Stoeckenius, "Bacterial rhodopsin. A light driven proton pump"; E. H. Cordes, "Structural studies of human plasma lipoproteins. A carbon-13 NMR investigation."

17 June. Oxidative phosphorylation. Past, present and future (Paul Boyer, chairman): Paul Boyer, "Conformation interactions and energy transduction"; Peter Hinkle, "Development and status of chemiosmotic theory"; Harvey Penefsky, "Structure and role of the mitochondrial energy-transducing ATPases." Membrane proteins II (Christopher Walsh, chairman): H. Ronald Kaback, "Molecular aspects of active transport"; Christopher Walsh, "Kinetic isotope effects on membrane bound enzymes and active transport in bacteria"; Frank Huennekins, "Transport of folate compounds into bacterial and mammalian cells."

An application blank for attendance at the Gordon Research Conferences may be found on page 1083.

18 June. Folic acid (Frank Huennekins, chairman): Jesse Rabinowitz, "A novel route for the formation of ribothymidine involving a folate derivative"; Gene Brown, "Enzymatic synthesis of folic acid and related pteridines"; Roy L. Kisliuk, "Properties of thymidylate synthetase"; E. Pastore, "NMR studies of folates and antifolates."

Fiber Science

Colby-Sawyer College

Dusan C. Prevorsek, chairman; Earl Peters, vice chairman.

5 July. J. J. Gilman, "Metallic-glass filaments"; A. A. Bright and L. S. Singer, "Electronic and structural characteristics of carbon fibers from pitch"; M. Litt, "Piezo- and pyro-electric effects in oriented polymers."

6 July. A. Keller, "Polymer microfibers of fundamentally different origin"; R. H. Baughman, "Monocrystalline polymer fibers"; A. Ciferri, "Ultra-high modulus fibers by solution and melt spinning."

7 July. J. Preston, "Molecular criteria for high performance fibers from aromatic polymers"; S. W. Shalaby, "Towards risk free fibers for biomedical applications"; E. Baer, "Ultra-structure mechanical property relationship in collagene: effect of aging"; W. Work, "In vivo formation of spider fibers."

8 July. H. H. Kausch, "Molecular interpretations of fatigue"; J. Zimmerman, "Strength and durability of kevlar aramid fiber"; G. E. R. Lamb and H. D. Weigmann, "Pet fibers: decay in strength in presence of rubber curing chemicals."

9 July. J. Skelton, M. M. Schoppee and S. Schulman, "Transient thermomechanical response of protective fabrics"; C. W. Roberts, "Effects of light on fiber dye interactions."

Fluids in Permeable Media: Mathematical Methods for Simulating Heat and Mass Transfer

Kimball Union Academy

R. J. Blackwell, chairman; L. E. Scriven, vice chairman.

16 August. Simulation of physical processes—current mathematical capabilities and limitations: A. Klute, "Transport problems of soil physic"; H. Morel-Seytoux, "Relevance of multiphase flow in hydrological problems; C. C. Mattax, "Numerical simulation of petroleum reservoir problems"; C. R. McKee, "Uranium leaching"; C. Thorsness, "Coal gasification"; Chang Yul Cha, "Oil shale retorting—nonuniformities of flow."

17 August. Numerical techniques (B. Finlayson, chairman): G. F. Pinder, "Galerkin-finite element techniques with topologically equivalent spaces"; H. S. Price, "Use of tensor product elements with higher order time approximations in Galerkin procedure"; B. A. Egan, "Use of moments to suppress numerical dispersion"; W. C. Rivard, "Numerical simulation of interpenetrating flows."

18 August. Numerical techniques (continued) (Harvey Price, chairman): B. Finlayson, "Finite element application and theory"; R. F. Sincovec, "Application of generalized collocation methods"; J. Cheng-G. Hedstrom, "Lumping techniques in numerical solution of chemically reactive transport equations"; D. W. Peaceman, "Variable mobility weighting."

19 August. Solutions methods: G. H. Golub, "Generalized conjugate gradient method for non-symmetric systems of equations"; P. E. Saylor, "Iterative methods for non-symmetric linear equations"; M. H. Schultz, "Direct methods for solving sparse systems of equations."

20 August. Solution methods and special topics (L. E. Scriven, chairman): J. R. Cannon, "Parameter estimation for elliptic and parabolic systems of equations"; J. H. Seinfeld, "Estimation of petroleum reservoir parameter."

Food and Nutrition

Colby-Sawyer College

E. Earl Lockhart, chairman; Robert E. Smith, vice chairman.

Nutrition in Relation to Health in Early Life. Effects of Maternal Malnutrition.

16 August. Dental caries and oral health: J. McGhee, "Immunology"; Juan M. Mavia, "Protein malnutrition."

17–18 August. Effects on general metabolic and physiological systems: Myron Winick (subject to be announced); Mervin Susser, "Epidemiological evidence"; Pedro Russo, "Placental transport"; Howard Jacobson, "Nutrition management of pregnancy"; Georgio Solimano, "Nutrition supplementation; diagnosis of malnutrition and trace element effects."

19 August. Nutrition concept—food composition: Alan Forbes, "Regulatory overview and limitations"; Helen Guthrie, "Dietary and dietetic considerations."

20 August. Nutrition concepts—food

formulations: Paul A. LaChance, "Nitrogen and nutrient balance"; (speaker to be announced), "Formulating nutrient balance."

Friction, Lubrication and Wear

Colby-Sawyer College

Elmer E. Klaus, chairman; Carleton N. Rowe, vice chairman.

14 June. (R. P. Steijn, discussion leader): D. Tabor, "Self-lubricating polymers"; M. B. Peterson, "Friction and wear of metals and polymers against ice." (V. C. Mow, discussion leader): H. Lipshitz, "The relationship between the wear of articular cartilage and intermolecular interaction within the tissue"; S. Woo, "The mechanical properties of articular cartilage."

15 June. (C. N. Rowe, discussion leader): T. Sakurai, "Some studies in boundary lubrication"; F. Rounds, "Additive interactions and boundary lubrication"; N. P. Suh, "External and internal factors in controlling wear of metals"; M. Furey, "Infrared measurement of surface temperatures in dry and lubricated systems."

16 June. (P. M. Ku, discussion leader): J. W. Kannel, "Possible roles of temperature on traction"; W. O. Winer, "The role of glass transition in concentrated contacts"; D. Dowson, "Lubricant starvation in bearings"; E. R. Booser, "Turbulence effects in hydrodynamic lubrication."

17 June. (T. E. Tallian, discussion leader): D. Scott, "Fatigue in concentrated contacts"; W. E. Littmann, "Chemical effects in contact fatigue." (R. L. Johnson, discussion leader): E. Passaglia, "The role of lubrication and wear on materials conservation."

18 June. (J. A. Schey, discussion leader): W. R. D. Wilson, "Metal working lubricants"; R. S. Fein, "Ironing of aluminum with soluble oil emulsions."

Fuels Science

New Hampton School

M. D. Schlesinger, chairman; Frank C. Schora, vice chairman.

28 June–2 July. Coal structure (Charles R. Greene, session chairman): John Morrey, "Acid catalyzed phenolic depolymerization of coal—inferences on coal structure"; Herbert Retcofsky, "Proton and C^{13} NMR studies of coal"; Melvina Farcasiu, "Characterization of coal liquids and its implication for coal structure." Chemicals from coal (Charles R. Greene, session chairman): Hugh G. Davis, "Chemicals from coal"; Norman Moll, "Coal as an alternative feedstock for petrochemicals"; Roy Pruett, "Ethylene glycol synthesis." Coal conversion: chemistry and catalysis (Jon Olson, session chairman): Sol Weller, "Catalytic processes for coal conversion"; C. E. Hamrin, "Catalytic activity of mineral matter"; James Guin, "Solution kinetics of coal"; Joseph Weatherington, "Chemical composition of solvent refined coal." Environmental impacts of coal conversion (Cyril L. Comar, session chairman): John H. Knelson and C. E. Carter, "Health effects on coal conversion processes"; Edward S. Rubin, "Cross media pollutant considerations." Impact of environmental control on synthetic fuel plants (Seymour Alpert, session chairman): W. M. Hathaway, "Substitute natural gas from coal"; G. A. White, "Liquid fuels from coal"; E. A. Pirsh, "Low Btu gas from coal."

Fungal Metabolites: Their Biogenesis and Function

Plymouth State College

R. W. Detroy and A. Ciegler, co-chairmen.

16 August. Fungal morphogenesis and metabolic activity (D. Niederpruem, discussion leader): J. VanEtten, "Macromolecular events in fungal spore germination"; J. S. Lovett, "Regulation of macromolecular synthesis in fungi"; G. Medoff, "Dimorphism in *Histoplasma capsulatum*"; R. Storck, "Control of fungal dimorphism."

17 August. Biogenesis of fungal metabolites (A. Demain, discussion leader): N. Neuss, "The use of ^{13}C NMR in the elucidation of biogenetic pathways"; D. Hsieh, "Biosynthesis of metabolites with a bifuran moiety"; H. Floss, "Amino acid derived fungal metabolites"; J. Bu'Lock, "Fungal metabolites: regulation and hormonal action."

18 August. Biologically active metabolites from fungi (D. Perlman, discussion leader): P. A. Lemke, "Double-stranded RNA in fungi"; F. S. Chu, "Biochemical reactions of fungal metabolites with macromolecules"; C. H. Tamm, "Cytochalasins, biosynthesis and biological activity."

19 August. Pharmacologically active metabolites from fungi (J. Rodricks, discussion leader): C. Mirocha, "Chemistry of zearalenones"; R. Eppley, "Chemistry of trichothecenes"; T. Colin Campbell, "Liver microsomal system and mycotoxin metabolism."

20 August. Fungal metabolites of food and feedstuffs (P. Hamilton, discussion leader): E. B. Lillehoj, "Mycotoxin-producing fungi and toxins in cereal grains before harvest"; J. Vercellotti, "Isolation and detection of multiple toxins in cereal grains."

Glass Melting

Plymouth State College

S. M. Ohlberg, chairman; D. R. Uhlman, vice chairman.

2 August. (N. J. Kreidl, chairman): A. R. Cooper, "Glass making: a series of coupled transport processes"; P. K. Gupta, "Multi-component diffusion processes in glass melting." (C. K. Edge, chairman): A. F. Sarofim and L. A. Clomburg, Jr., "State of the art of two and three dimensional modeling of motion in glass melts"; A. F. Sarofim and L. A. Clomburg, Jr., "Application of models to batch cover, length, and glass quality."

3 August. (L. Penberthy, chairman); D. Gelder, "Theoretical modeling—the key to improved glass furnace design?"; E. Plumat, "New trends in glass melters through similitude interpretations"; J. Stanek, "Electric melting"; G. R. Machlin, "Physical modeling of electric glass furnaces."

4 August. (T. Spitz, chairman): K. Popadopoulos, "Homogenization of glass"; D. Sanders, "Vaporization processes during glass melting." (G. Rindone, chairman): H. O. Mulfinger, "Analytical and comparative investigation of the refining process on laboratory scale and in the melting tank"; K. P. Hanke, "The influence of polyvalent ions on reboiling of glass"; E. L. Swarts, "Fining problems in melts with carbon and sulphate batch additions."

5 August. (S. M. Ohlberg, chairman): L. Penberthy, "Preheating batch"; J. D. Mackenzie, "Melting of BeF_2 and other non silicates"; J. E. Mendel, "Fixation of radioactive waste in glass"; J. Zarzycki, "New methods of preparing refractory base glasses."

6 August. (D. R. Uhlman, chairman): P. L. Schultz, "Melting glass for fiber optics and other special applications"; D. Rostoker, "Glasses without melting."

Hemostasis

Proctor Academy

N. R. Shulman, chairman; P. W. Majerus, vice chairman.

14 June. Endothelium biochemistry (E. Jaffee, discussion leader): E. Jaffee, "Syhthesis of basement membrane by cultured human endothelial cells"; M. A. Gimbrone, "Metabolism of vasoactive substances by cultured endothelial cells"; Alice Johnson, "Angiotensin I converting enzyme in cultured human endothelial cells"; N. Kafalides, "Biosynthesis of collagen by endothelial cells in culture"; B. Howard, "Triglyceride uptake from lipoproteins by aortic endothelium in culture." Endothelium physiology (R. J. Friedman, dis-

cussion leader): R. J. Friedman, "Role of platelets in arteriosclerosis"; C. Kitchens, "Ultrastructural changes in endothelium during thrombocytopenia"; E. J. Bowie, "Porcine von Willebrand's disease and atherosclerosis"; L. Harker, "Endothelial cell proliferation: independence from platelet mitogenic factor."

15 June. Non-enzymatic and surface activation of coagulation (Y. Nemerson, discussion leader): Y. Nemerson, "Systems of non-proteolytic enzyme activation"; H. C. Hemker, "Activation of prothrombin without changes in primary structure"; J. Griffin, "Molecular events in contact activation"; S. Schiffman, "Contact activation co-factor"; V. Donaldson, "Inherited kininogen deficiency." Protein-lipid interactions (P. Barton, discussion leader): P. Barton, "A biochemical basis for platelet factor 3"; F. Dombrose, "A molecular model for the calcium mediated binding of bovine prothrombin to phospholipid vesicle surfaces"; C. T. Esmon, "Lipid binding by a new vitamin K dependent protein"; K. Mann, "Metal ion and phospholipid interaction with human prothrombin fragments."

16 June. Megakaryocytopoiesis (T. T. Odell, discussion leader): T. T. Odell, "In vivo aspects of megakaryocyte maturation"; R. F. Levine, "Culture of isolated megakaryocytes"; A. Nakeff, "Clonogenic assay of megakaryocyte precursors and its use in elucidating megakaryocytopoiesis." Thrombopoiesis and thrombopoietin (S. Ebbe, discussion leader): S. Ebbe, "Megakaryocytopoiesis in mice with hereditary abnormalities of hematopoiesis"; T. P. McDonald, "Assay, production, and purification of thrombopoietin"; B. Evett, "The relationships between thrombopoiesis and erythropoiesis."

17 June. Superoxide, free radicals and H_2O_2 (A. J. Marcus, discussion leader): A. J. Marcus, "Superoxide dysmutase and superoxide generation in human platelets"; R. I. Handin, "Effect of free radicals on platelet function"; P. Levine, "Effect of H_2O_2 on platelet function." Platelet prostaglandins (T. K. Bills, discussion leader): T. K. Bills, "Arachidonic acid metabolism by platelets"; J. M. Gerrard, "The effects of arachidonic acid on platelet cyclic GMP"; J. W. D. McDonald, "Sulfinpyrazone effects on platelet prostaglandin synthetase."

18 June. Characterization of factor VIII and von Willebrand factor (Alan Johnson, discussion leader): Alan Johnson, "A simplified method for purifying factor VIII and separating von Willebrand factor"; T. S. Zimmerman, "Heterogeneity of factor VIII-related antigen and its implications in von Willebrand's disease"; H. Gralnick, "Heterogeneity of von Willebrand factor."

Heterocyclic Compounds, Chemistry of

New Hampton School

E. Klingsberg, chairman; A. Hassner, vice chairman.

5–9 July. A. J. Ashe, III, "New heteroaromatic compounds"; J. E. Baldwin, "Studies on the synthesis of large encapsulating heterocycles"; P. Beak, "Chemistry and structures of tautomeric heterocyclic compounds"; J. I. G. Cadogan, "Aspects of the heterocyclic chemistry of phosphorus and nitrogen"; M. P. Cava, "Tetrathiafulvalenes and selenium analogs"; A. I. Meyers, "Synthetic utility of oxazolines"; N. Lozac'h, "Partial bonding in sulfur heterocycles"; R. Ratcliffe, "Total synthesis of β-lactam antibiotics"; C. W. Rees, "New reactions and structures in nitrogen heterocyclic chemistry"; J. K. Stille, "Synthesis and properties of rigid chain polyquinolines via a high yield Friedländer reaction"; A. M. Trozzolo, "Photochemistry of some small heterocycles"; A. Walser, "Second generation benzodiazepines"; F. Wudl, "Heterocycles: building blocks for organic metals"; Short talks, M. Gall, V. Horak and R. Hull.

High Pressure, Research at

Kimball Union Academy

Dennis B. McWhan, chairman.

Liquids and Chemical Reactions

28 June. Dense gases and liquids (G. A. Samara, session chairman): E. U. Franck, "Polar and ionic fluids at high temperature and pressure"; B. J. Alder, "Theoretical predictions on phase separations under pressure." (I. L. Spain, session chairman): W. W. Warren, Jr., "Nuclear magnetic resonance studies of mercury and selenium at high temperature and pressure"; H. Ikezi, "Optical studies on expanded mercury"; W. B. Streett, "Computer simulations of diatomic liquids."

29 June. Liquids (W. B. Daniels, session chairman): J. Jonas, "Water under high compression"; S. Yip, "Neutron scattering from liquids and gases at high pressure." Advances in experimental techniques (D. Bloch, session chairman): C. Vettier, "Neutron scattering at 40 kbar and 20K"; C. W. Chu, "The high pressure clamp technique and its application to the study of solids"; S. Block and G. Piermarini, "Pressure and electrical resistance measurements in the diamond cell"; W. A. Bassett and E. M. Brody, "Elastic constants from Brillouin scattering and laser heating in the diamond cell"; B. Welber, "Optical reflectivity in the diamond cell"; M. Besson, "Pressure limits of capillary tubing"; D. P. Kendall, "Bridgeman anvil device with variable lateral support"; A. L. Ruoff, "Ultrahigh pressure equipment."

30 June. Chemical reactions (J. Osugi, session chairman): W. Le Noble, "Applications of high pressure in organic chemistry"; H. Kelm, "Applications of high pressure to the elucidation of mechanisms in inorganic reactions." (C. A. Eckart, session chairman): D. Chandler, "Theoretical aspects of the structures of molecular liquids and chemical reactions at high pressure"; E. Whalley, "Effect of pressure on molecular conformations."

1 July. Solid state chemistry (A. Jayaraman, session chairman): H. G. Drickamer, "Photochemistry at high pressure"; C. M. Varma, "Theory of valence fluctuations in rare earth chalcogenides." (D. B. McWhan, session chairman): F. P. Bundy, "Toward higher pressures."

2 July. Geochemistry and shockwaves (J. C. Jamieson, session chairman): B. Mysen, "Effect of controlled activities of volatiles at high temperature and pressure on mantel materials"; J. Wacherle, "Shock induced chemical decomposition in condensed explosives."

High Temperature Chemistry

Tilton School

J. Berkowitz, chairman; E. David Cater, vice chairman.

5 July. R. W. Hockney, "Computer simulation of large ionic systems using the P^3M method"; F. Hensel, "Research on metal systems, selenium, sulfur and tellurium at sub- and super-critical temperatures and pressures"; G. D. Stein, "Cluster formation in jets"; V. Spiridonov, "Electron diffraction studies of high temperature vapors."

6 July. J. F. Ready, "Interaction of laser radiation with solid surfaces"; M. Bober, "Evaporation studies on oxide fuel at very high temperatures using laser beam heating"; W. M. Fairbank, "Absolute measurement of very low vapor densities using laser resonance fluorescence."

7 July. H. B. Palmer, "Electronically excited molecules in metal-oxidant flames: spectra, yields and mechanisms"; R. B. Cohen, "Reactive scattering of alkaline earth, rare earth and actinide atoms with O, OH and halogen atoms"; A. Rosen, "Relativistic calculations of orbital energies for molecules of high-temperature interest"; K. Radler, "Absorption spectroscopy of high-temperature vapors using extreme ultraviolet synchrotron radiation."

8 July. D. M. Gruen, "High temperature chemistry in CTR with special emphasis

on chemical effects of energetic particle interactions with surfaces"; H. K. Bowen, "Areas of application of high temperature chemistry to MHD research"; M. Blander, "Condensation in the solar nebula and the origin of meteorites."

9 July. C. B. Alcock, "Thermodynamics and transport of dilute solutes and liquid metal systems"; L. S. Darken and R. A. Snellgrove, "Defects and thermodynamics: the Fe-Mg-O system at 1400°C."

Hydrocarbon Chemistry

Brewster Academy

Stuart W. Staley, chairman; Marvin L. Poutsma, vice chairman.

14 June. William B. Hughes, "Stereochemical features of olefin methathesis"; Charles P. Casey, "Model studies of the olefin methathesis reaction"; Gernot Boche, "Rotation around bonds of unsaturated carbanions."

15 June. Heppie Hogeveen, "Chemistry of bi- and polycyclic alkenes and dienes"; Kenneth B. Wiberg, "Chemistry of some tricyclic hydrocarbons"; Leo A. Paquette, "Recent advances in alicyclic chemistry."

16 June. Robert G. Bergman, "Transition metal-induced transformations of organic compounds"; Reuben D. Rieke, "Electrochemical studies of arene and carbene metal carbonyl complexes"; Ronald Breslow, "Electrochemical measurements on hydrocarbon cations, radicals, and carbanions."

17 June. Robert D. Miller, "The chemistry and properties of some C_9 polycyclic derivatives." Open session for short contributions from attendees. Kendall N. Houk, "Theoretical and experimental insights into the mechanisms of additions and cycloadditions."

18 June. Jordan Bloomfield, "Photochemical cycloadditions to activated olefins"; Aaron C. L. Su, "Codimerization of ethylene and butadiene with nickel- and rhodium-based coordination catalysts."

Immobilized Enzymes and Other Active Molecules

Holderness School

E. R. Lieberman, chairman; David F. Ollis, vice chairman.

23 August. Fred R. Bernath, "Collagen-immobilized enzymes for extracorporeal devices and vascular prostheses for cancer therapy"; T. M. S. Chang, "Recent studies on microencapsulated multi-step enzyme systems for biomedical applications"; J. David Robertson, "The molecular organization of two unit membranes with attached enzymes"; Meir Wilchek, "Affinity studies on the lymphocyte triggering site"; A. Hiro Nishikawa, "Hydrophobic adsorption of proteins to immobilized ligands"; C. R. Lowe, "Affinity chromatography on immobilized coenzymes as an aid to mechanistic studies."

24 August. M. Frederick Hawthorne, "Resin anchored metallo-carborane catalysts"; Charles U. Pittman, Jr., "The effect of matrix motion on the selectivity and rates of reactions catalyzed by polymer anchored transition complexes"; K. F. O'Driscoll, "Gel entrapped catalysts"; D. C. Neckers, "Photochemical reactions on polymer supports"; Shuichi Suzuki, "Photocontrol of immobilized enzyme systems"; E. W. Hornby, "The analytical applications of immobilized enzymes catalyzing chemiluminescent reactions."

25 August. G. P. Royer, "Immobilized enzymes in protein chemistry"; Harold E. Swaisgood, "Structural refolding of immobilized proteins as measured by solid state fluorescence"; D. Thomas, "Memory and instabilities in artificial enzyme membranes. Kinetic and electrochemical aspects"; John F. Kennedy, "(Carbohydrate [matrices for immobilization) of carbohydrates]"; K. Venkatasubramanian, "Immobilized microbial cells as biocatalysts"; D. Perlman, "Sorbose oxidation with immobilized bacterial cells."

26 August. Charles G. Overberger, "Catalysis of organic reactions by polymers-hydrophobic interactions"; Toyoki Kunitake, "Design of efficient nucleophilic polymer catalysts"; Klaus Mosbach, "Artificial enzyme-coenzyme complexes"; I. V. Berezin, "Physico-chemical principles of enzyme stabilization"; W. R. Vieth, "Enzyme membranes and dual sorption theory."

27 August. George M. Whitesides, "Uses of enzymes in organic synthesis"; J. Bryan Jones, "The influence of organic solvents on catalysis by immobilized enzymes."

Infrared and Raman Spectroscopy

Brewster Academy

C. K. N. Patel and H. L. Strauss, co-chairmen.

23 August. New techniques of laser spectroscopy: F. P. Ippen, "Time resolved spectroscopy with subpicosecond pulses"; S. Ezekiel, "High resolution studies of atoms and molecules"; Bruce Hudson, "Coherent anti-stokes Raman spectroscopy."

24 August. Surfaces: H. Ibach, "Studies of localized vibrations of adsorbates"; P. Hansma, "Inelastic electron tunneling of organic monolayers." Ions in solution: W. Edgell, "Infrared and Raman studies of nonaqueous electrolytic solutions."

25 August. Two photon spectroscopy, isotope separation: F. Legay, "Vibrational energy transfer in condensed phases"; C. Paul Robinson, "The Los Alamos isotope separation program"; Paul Liao, "High resolution two-photon studies of atoms."

26 August. Raman spectroscopy: M. Tsuboi, "Resonance Raman effect of nucleic acids"; W. Peticolas, "Study of fast reactions by Raman spectroscopy"; R. Shen, "Resonance Raman studies of solids."

27 August. Pollution and spectroscopy in the atmosphere: M. Ackerman, "Spectroscopic studies of the atmosphere"; D. G. Murcray, "Measurements of the minor constituents and pollutants in the stratosphere using infrared spectroscopic techniques."

Inorganic Chemistry

New Hampton School

Leonard V. Interrante, chairman; Dale W. Margerum, vice chairman.

Cooperative Effects in Inorganic Chemistry

2 August. Theoretical considerations applied to polynuclear systems (R. Messmer, chairman): R. Hoffman, "An analysis of metal-metal interactions in dimeric and polynuclear complexes"; K. H. Johnson, "The electronic structure of polynuclear molecules and clusters." Organometallic clusters: structure and chemistry (P. Chini, chairman): L. Dahl, "Experimental and theoretical quantum mechanics applied to metal cluster systems"; F. Hawthorne, "Metallocarboranes in catalysis."

3 August. Chemistry on solid surfaces (M. Boudart, chairman): J. H. Sinfelt, "Catalysis by alloys and bimetallic clusters"; M. Wrighton, "Photoelectrochemical cells; semiconductor photoelectrodes; and optical energy conversion." Polynuclear bioinorganic systems (T. Spiro, chairman): H. Schugar, "Structural and electronic-spectral properties of iron (III)-oxygen and copper (II)-mercaptide cluster compounds"; H. B. Gray, "Metal-metal interactions in iron and copper proteins."

4 August. Mixed valence systems (A. Ludi, chairman): T. J. Meyer, "Redox processes involving mixed-valence compounds"; D. N. Hendrickson, "Mixed valence metallocenes and mixed valence transition metal complexes"; P. Day, "Theory and experiments on valence delocalization in mixed valence compounds." Theoretical considerations in the design

and synthesis of low-dimensional materials (B. Scott, chairman): R. Messmer, "The importance of molecular considerations in understanding of the electronic structure of 'low-dimensional' solids"; W. A. Little, "Structural and electronic requirements for a high temperature superconductor."

5 August. Systems with unusual magnetic and electrical properties—metal clusters, 1-D complexes and organic donor-acceptor compounds (W. Hatfield, chairman): A. P. Ginsberg, "Orbitally dependent exchange in transition metal cluster complexes"; B. Hoffman, "Electrical and magnetic properties of some stacked transition metal complexes"; F. Wudl, "The versatility of TTF and other donors and acceptors." Systems with unusual magnetic and electrical properties—KCP and $(SN)_X$ (A. MacDiarmid, chairman): H. R. Zeller, "Electronic structure and electronic instability of $K_2Pt(CN)_4Br_{0.30} \cdot 3H_2O$-(KCP)"; R. L. Greene, "Properties of the superconducting polymer (SN)x"; A. Garito, "Physical studies of polysulfur nitride."

6 August. Systems with unusual magnetic and electrical properties—2-D layered compounds and superionic conductors (G. Stucky, chairman): D. W. Murphy, "Chemistry of some lower dimensional transition metal chalcogenides"; D. Shriver, "Superionic conductors: vibrational spectra and new systems."

Interfaces, Chemistry at

Kimball Union Academy

G. D. Hansen, Jr., chairman; Tomilson Fort, Jr., vice chairman.

19 July. The gas-solid interface (James M. Holmes, chairman): John T. Yates, "Modern measurements in surface chemistry"; William A. Steele, "Atomic structure of monolayer films on crystal surfaces"; Gabor Somerjai, "Active sites for heterogeneous catalysis."

20 July. Tertiary recovery (L. A. Wilson, chairman): William H. Wade, "Trying to understand low interfacial tension"; I. J. Heilweil, "Use of macromolecules in recovery of oil"; Robert Ehrlich, "Oil recovery wetability alteration"; Carl Johnson, "Transport of adsorbate at the hot flood interface"; Clarence Miller, "Structure of aqueous surfactant interface and relation to interfacial tension."

21 July. Particle-particle interaction (Ira Weil, chairman): Denver Hall, "Thermodynamics of particle-particle interactions"; Trevor Walker, "Modification of particle-particle interaction by use of surface active agents"; Eric J. Clayfield, "Combined effects of dispersion attractive forces and entropic repulsion forces on particle-particle interaction."

22 July. Structure and function of membranes (Tomilson Fort, Jr., chairman): Stephen Prager, "Dynamic models for permeation through thin membranes"; Robert S. Hansen, "Thermodynamic and transport considerations in interpretation of membrane potentials"; William J. Ward, III, "Reaction and transport in liquid and polymer membranes."

23 July. Membrane transport (John A. Quinn, chairman): E. A. Mason, "Comments on theories of membrane transport"; C. P. Bean, "Streaming potential of fine pores."

Isotopes, Chemistry and Physics of

Plymouth State College

Brown L. Murr, chairman; Samuel Epstein, vice chairman.

5–9 July. Isotopes in the study of geochemistry (James O'Neill, chairman): Richard Becker, "Nitrogen isotope variations in lunar materials and meteorites"; Karlis Muhlenbach, "Oxygen-18 diffusion in silicates"; (Speaker and subject to be announced). Application of isotope effects in the study of enzyme reaction mechanisms (Marion O'Leary, chairman): Jack F. Kirsch, "Kinetic isotope effects and transition state structures and acyl transfer reactions"; Judith P. Kleinman, "Hydrogen isotope effects in the hydrogenases"; Marion O'Leary, "Heavy atom isotope effects in enzyme catalyzed reactions." Secondary deuterium effects and mechanism in solvolytic processes (V. J. Scheiner, chairman): Victor Vitullo, "Deuterium isotope effects in the solvolysis of benzal chlorides"; D. E. Sunko (subject to be announced), B. L. Murr, "Isotopic fractionation by so-called 'hot' carbonium ions." Vapor pressure (Jacob Bigeleisen, chairman): (speakers and subjects to be announced). Isotope effects systems related to enzymes (R. L. Schowen, chairman): (speakers and subjects to be announced). Laser isotope separations (Andrew Kaldor, chairman): (speakers and subjects to be announced). Contributed papers (William Spindel, chairman).

Lasers in Medicine and Biology

Kimball Union Academy

Myron L. Wolbarsht and David H. Sliney, co-chairman.

5–9 July. Ralph Allen, "Mechanisms of damage to biological tissue"; Donald Rounds, "Diagnostic techniques"; Fred Brech, "Instrumentation and analysis"; Bruce R. Altschuler, "Lasers in dentistry"; Rene Verschueren, "Lasers in surgery"; M. L. Wolbarsht, "Lasers in ophthalmology"; Aaron Lewis, "Raman spectroscopy and related techniques"; Franz Hillenkamp, "Unconventional laser applications"; David H. Sliney, "Safety overview and miscellaneous subjects."

Lipid Metabolism

Kimball Union Academy

John Glomset, chairman; David F. Silbert, vice chairman.

21 June. Formation and secretion of chylomicrons (D. B. Zilversmit, chairman): R. M. Glickman, "Chylomicron apoprotein localization in intestinal epithelium"; J. Albers and R. Havel, participants. S. B. Clark, "Changes in chylomicron composition during prolonged triglyceride transport." Lipoprotein interaction with the vascular surface (W. V. Brown, chairman): R. W. Scow, "Role of capillary endothelium in chylomicron clearance"; C. J. Fielding, "High and low affinity LPL species at the vascular surface."

22 June. Workshop on regulation of lipoprotein lipase (E. L. Bierman and T. Olivecrona, chairmen): E. L. Bierman, "Questions and approaches in the study of lipoprotein lipase regulation"; A. Bensadoun, J. Borensztajn, M. Schotz, participants. Coordinate control of hepatic sterol and lipoprotein metabolism (DeWitt Goodman, chairman): J. M. Dietschy, "Control of hepatic sterol metabolism by plasma lipoproteins"; Scott Grundy, "Role of bile acids in regulation of VLDL metabolism."

23 June. Workshop on lipoprotein structure (A. Gotto and A. Scanu, chairmen): A. Gotto, "Questions and approaches in the study of lipoprotein structure"; H. Hauser, J. Morrisett, A. Nichols, M. Rosseneu, G. Shipley, W. Stoffel, participants. Abnormal plasma lipoproteins: implications for normal structure and function (R. Mahley, chairman): G. Assman, "Tangier disease"; K. Norum, "Familial LCAT deficiency."

24 June. Control of lipid metabolism in animal cells (D. Silbert, chairman): A. Spector, "Fatty acid–sterol interrelationships in the membranes of cultured cells"; J. Volpe, "Control of fatty acid synthetase." Endoperoxides: important new physiological regulators (A. Spector, chairman): M. Hamberg, "Formation and function of platelet endoperoxides"; W. S. Lynn, "Platelet derived endoperoxides as chemotactic factors."

25 June. Biology and metabolism of prostaglandins (B. Jaffe, chairman): L.

Levine, "Prostaglandin biosynthesis by fibroblasts in culture"; M. Gimbrone, "Prostaglandin metabolism by vascular endothelium and smooth muscles in culture."

Lysosomes

Proctor Academy

Eric Holtzman, chairman; John Dingle, vice chairman.

5–9 July. Intracellular turnover of proteins in eucaryotes and procaryotes: A. Goldberg, "Turnover in bacteria"; D. Zipser, "Genetic studies of protein degradation in *E. coli*"; B. Poole, "Turnover in tissue culture cells"; R. Dean, "Effects of protease inhibitors on turnover in liver." Features of membrane internalization in endocytosing cells (S. Silverstein, chairman): J. Kaplan, "Endocytosis and differential turnover of membrane macromolecules"; F. Griffin, "Membrane-ligand interactions during phagocytosis"; R. Allen, "Membrane circulation in *Paramecium*;" N. K. Gonatas, "Uptake of plasma membrane ricin receptors into golgi associated sacs." Lysosome involvement in membrane turnover in the vertebrate retina (R. Steinman, chairman): D. Bok, "Turnover of photoreceptor outer segments"; J. Hollyfield, "Specificities of endocytosis by the pigment epithelium"; S. Schacher, "Recycling and degradation of synaptic vesicles in the retina." Lysosomes in plant cells: the vacuole: H. Holzer, "Yeast vacuole proteinases and inhibitors: properties and functions"; F. Marty, "Formation of plant cell vacuoles"; R. Leigh and D. Branton, "Isolation and properties of plant cell vacuoles." Acid hydrolases in plant cell development and pathology: M. Chrispeels, "Aleurone grains as lysosomes"; J. Varner, "Hydrolase secretion in endosperm"; E. C. Hislop, "Acid hydrolase secretion and fungal penetration into host plants, Lysomes and yolk: R. Wallace, "Yolk storage in amphibian oocytes"; H. Schuel, "Lysosomal hydrolases in sea urchin yolk"; E. Triplett, "Protease inhibitors in eggs and early embryos." Se-

Program Summary, Gordon Research Conferences

	Colby-Sawyer College New London, N.H.	New Hampton School New Hampton, N.H.	Kimball Union Academy Meriden, N.H.	Tilton School Tilton, N.H.
14–18 June	Friction, Lubrication and Wear	Nucleic Acids	Cyclic Nucleotides	Theoretical Biology and Biomathematics
21–25 June	Nuclear Chemistry	*Carbon Dioxide Fixation by Green Plants	Lipid Metabolism	Animal Cells and Viruses
28 June–2 July	Catalysis	Fuels Science	High Pressure, Research at	*Molecular Biology, Diffraction Methods in
5–9 July	Fiber Science	Heterocyclic Compounds, Chemistry of	Lasers in Medicine and Biology	High Temperature Chemistry
12–16 July	Corrosion	Statistics in Chemistry and Chemical Engineering	Bones and Teeth, Chemistry, Physiology and Structure of	Nuclear Structure Physics
19–23 July	Scientific Information Problems in Research	Organic Reactions and Processes	Interfaces, Chemistry at	Dynamical Instabilities and Fluctuations in Classical and Quantum Systems
26–30 July	Polymers	Natural Products	Coatings and Films, Chemistry and Physics of	*Plant Senescence
2–6 Aug.	Elastomers	Inorganic Chemistry	Toxicology and Safety Evaluations	Muscle, Rhythmic Activity in
9–13 Aug.	Medicinal Chemistry	Analytical Chemistry	Metal-Insulator Semiconductor Systems	Magnetic Resonance in Medicine and Biology
16–20 Aug.	Food and Nutrition	Adhesion, Science of	Fluids in Permeable Media: Mathematical Methods for Combined Heat and Mass Transfer	Elementary Particle Interactions
23–27 Aug.	Separation and Purification	Radiation Chemistry	Structural Macromolecules	Nuclear Proteins, Chromatin Structure and Gene Regulation
30 Aug.–3 Sept.	Cancer			

*New conferences in 1976

creted hydrolases (J. Dingle, chairman): Z. Werb, "Hydrolase release from cultured fibroblasts; possible involvement of non-lysosomal sources"; Y. Eeckhout, "Interactions of acid hydrolases and collagenase"; D. Morton, "Acrosomal hydrolases." J. T. Dingle, "Lysosomal hydrolases in connective tissue cells." Aspects of lysosomal movement and fusion phenomena (G. Weissmann, chairman): D. Bainton, "Microfilaments and phagocytosis"; S. Axline, "Microtubules and lysosomal fusions"; E. Essner, "Lysosomes and GERL in cells from the beige mouse"; J. Oliver, "Effects of cyclic nucleotides on lysosome fusions in cultured Chediak-Higashi and beige mouse cells."

Magnetic Resonance in Biology and Medicine

Tilton School

Donald C. Borg, chairman; Paul C. Lauterbur, vice chairman.

9 August. NMR in organized biological systems (P. Lauterbur, discussion leader): M. Klein, "Line narrowing experiments in biological materials"; K. Wüthrich, "NMR studies of biological systems"; C. F. Brewer, "C-13 cross polarization studies of collagen and connective tissue." ESR of biological systems and materials (J. Hyde, discussion leader): P. Aisen, "Transferrin interactions with reticulocyte acceptors"; K. Schaich, "Free radicals in the autoxidation and ozone damage of tissues and model lipid systems"; A. Saprin, "Cytochrome P450 levels and lipid peroxidation in carcinogenesis."

10 August. ESR of paramagnetic sites in cancer and other diseases (P. Aisen, discussion leader): N. Dodd, "ESR changes in tissue and blood during development of experimental tumors"; H. Swartz, "ESR studies of cancer"; M. Foster, "Interrelations of blood copper and iron levels." Tissue characterization by nuclear spin relaxation (W. Hinshaw, discussion leader): D. Hollis, "Potential uses of NMR in medical research"; P. Moran and L. Barroilhet, "NMR relaxation behavior in living and ischemically damaged tissue"; M. Pin-

1976 Schedule—New Hampshire and California

Proctor Academy Andover, N.H.	Holderness School Plymouth, N.H.	Brewster Academy Wolfeboro, N.H.	Plymouth State College Plymouth, N.H.	Miramar Hotel Santa Barbara
Hemostasis	Cellular Materials	Hydrocarbon Chemistry		Enzymes, Coenzymes and Metabolic Pathways
Polymer Physics	*Photoconductors, Chemistry and Physics of	*Microstructure Fabrication, Chemistry and Physics of		Coherent Optics and Holography
Environmental Sciences: Water	Biopolymers, Physics and Physical Chemistry of	Molecular Pathology	*Purines, Chemistry and Biology of	Plasma Physics
Lysosomes	Biological Regulatory Mechanisms	Radical Ions	Isotopes, Chemistry and Physics of	
Crystal Growth	Drug Metabolism	Non-Ventilatory Lung Functions	Physical Metallurgy	
Biomaterials, Science and Technology of	Tumor Immunology	Electron Spectroscopy	*Solid-Liquid Interactions in Cement Hydration	
Dielectric Phenomena	Molecular Collisions, Dynamics of	Microbial Toxins and Pathogenicity	Ceramics, Solid State Studies in	
Particle Solid Interaction	Water and Aqueous Solutions, Chemistry and Physics of	Pyrroles, Chemistry and Biology of	Glass Melting	
Molecular Electronic Spectroscopy	*Physico-Chemical Aspects of Water and Solute Exchange in the Microvasculature	Atomic and Molecular Interactions	Photonuclear Reactions	
Organometallic Chemistry	Organic Geochemistry	Electron-Donor-Acceptor Interactions	*Fungal Metabolites	
Plasma Chemistry	Immobilized Enzymes and Other Active Molecules	Infrared and Raman Spectroscopy	Paper, Chemistry and Physics of	

tar, "NMR of water and of large molecules in tissues."

11 August. Zeugmatographic NMR imaging of living organisms (P. Moran, discussion leader): P. Lauterbur, "The complete zeugmatographer: evaluations of a gallimaufri of techniques"; J. Hutchinson, "Problems of field in homogeneity in NMR imaging"; W. Hinshaw, "Sensitive-point method of NMR image formation." Advanced ESR and double resonance applications (D. Borg, discussion leader): J. Bolton, "Detection of transient free radicals by flash photolysis-ESR studies: green plant photosynthesis"; J. Fajer, "ESR and Endor of models for photosynthetic and enzymatic reactions"; J. Hyde, "Electron and ion exchange properties of melanins."

12 August. Spin trapping in biology and biochemistry (H. Swartz, discussion leader): E. Janzen, "Spin trapping: advantages and pitfalls for biological applications"; J. Harbour, "Adducts of hydroxyl and superoxide radicals by photolysis and in chloroplasts"; R. Floyd, "Spin trapping in peroxidation and carcinogen activation." This session will be followed by a general discussion of selected poster presentations. Unsolicited poster presentations are invited from all participants. This session will be devoted to further discussion by the assembled conferees of a selection from the poster contributions. (D. Borg, discussion leader).

13 August. Spin labels in biomedicine (J. Bolton, discussion leader): D. Butterfield, "Spin label studies of disease: myotonic muscular dystrophy"; L. Piette, "Spin label probes of free radicals in vivo and of the binding of carcinogens and steroid hormones."

Medicinal Chemistry

Colby-Sawyer College

Marvin Gorman, chairman; Kenneth E. Price, vice chairman.

9 August. Arthritis—etiology and control (Robert J. Perper, chairman): Robert J. Perper, "Survey of immunoregulatory mechanisms and potential for immunotherapeutic control"; Peter Dukor, "Experimental models of aberrant immunological responses and their pharmacological manipulation"; Ralph Williams, "Immunological abnormalities in patients with rheumatoid arthritis; possible genetic origin and attempts at immunotherapeutic control"; Israeli A. Jaffee, "Penicillamine therapy of rheumatoid arthritis and its influence on immune parameters." Anaerobic infections and their therapy (John W. Corcoran, chairman): Herbert M. Sommers, "Anaerobic infections from the clinical point of view"; John W. Corcoran, "Chemotherapy of anaerobic infections"; Satoshi Omura, "Structure-activity relationships among the 16-membered macrolide antibiotics."

10 August. Diabetes—role of somatostatin (C. Joseph Goodner, chairman): C. Joseph Goodner, "Role of glucagon in the diabetic syndrome: the rationale for therapeutic use of somatostatin"; Donna J. Koerker, "The pharmacology of somatostatin"; D. Sarantakis, "Synthesis of somatostatin and prospects for large scale production"; Paul Brazeau, "Speculation on the possible physiologic role of somatostatin." Periodontal diseases—pathology and therapy (Harold Löe, chairman): Harold Löe, "Periodontal diseases—aspects of pathology and prevention"; Sigmund S. Socransky, "Bacterial etiology of periodontal disease"; Robert J. Genco, "Immunopathology of periodontal disease."

11 August. Analgetics and antagonists (Maxwell Gordon, chairman): Bernard R. Belleau, "Synthesis and structure-activity relationships in the morphinan series"; Donald Jasinski, "Clinical testing of analgetics and antagonists"; Solomon H. Snyder, "Studies on the analgetic receptor"; Richard A. Partyka, "Potent analgetics and morphine antagonists in the 11-hydroxy and 11-alkoxy-2,6-methano-3-benzazocine series." Drug delivery systems: (Anthony A. Sinkula, chairman): G. H. Hottendorf, "Penicillin esters"; Peter H. Jones, "Renal vasodilators: amino acid amides of dopamine; chemistry, pharmacology, and enzyme kinetics"; Nicolae S. Bodor, "Drug delivery via derivatization of amines and related functions"; Andre Rosowsky, "Methotrexate drug delivery systems."

12 August. Performance enhancement and memory (John H. Biel, chairman): W. H. Gispen, "Learning-memory effects of peptide hormones: with some reference to their neurochemical mechanism of actions"; Curt A. Sandman, "MSH, ACTH 4-10: clinical effects on performance, learning, and memory"; E. Roy John, "Electrophysiological signs of the readout from memory"; Paul Gold, "Drug facilitation of learning and memory"; Louis Lasagna, "How do we facilitate the development of new drugs?"

13 August. Special topics (Kenneth E. Price, chairman): Robert Mazur, "Gastric anti-secretory peptides." Modulation of steroidogenesis by a novel class of steroids: Gordon O. Potts, "Clinical studies"; H. Philip Schane, Jr., "Laboratory studies"; Robert H. Christiansen, "Synthesis and structure-activity relationships"; Conrad E. Hoffmann, "Present state of viral chemotherapy."

Metal-Insulator Semiconductor Systems

Kimball Union Academy

Jay N. Zemel, chairman; Thomas W. Hickmott, vice chairman.

9–13 August. Oxides and other insulators: processing: high pressure III-V's composite layers (R. Kriegler, discussion leader): G. DeClerck, "TCE oxides." Transport: conduction process, breakdown (J. Simmons and T. Hickmott, discussion leaders): R. C. Hughes, "Excess electron and hole transport in amorphous SiO_2"; Z. Weinberg, "Hole injection and transport in SiO_2 films"; B. H. Yun and T. W. Hickmott, "Charge injection from poly-silicon into SiO_2." Defect processes insulators: radiation damage thermal effect, vacancies (F. Feigl and S. Butler, discussion leaders): R. Williams, "Hole traps and stoichiometry of SiO_2"; E. P. Ernisse, "High temperature stable defects in SiO_2." Substrates: stress and diffusion induced dislocation, oxide cluster (T. Sugano and R. Jaccodine, discussion leaders): J. Patel, "Strain and defects in silicon." Low temperature studies, galvanomagnetic studies (P. J. Stiles and A. Fowler, discussion leaders): M. Pepper, "Silicon dioxide interface carrier localization in inversion layer"; A. Hartstein, "Inpurity bands in silicon inversion layers." Optical measurements (J. F. Koch and R. G. Wheeler, discussion leaders): J. F. Koch, "Absorption of far infrared in silicon MOS structures"; T. A. Kennedy, "Far infrared photoconductivity in MOS structures"; R. G. Wheeler, "Photoconductivity in quantized systems." Chemical sensing (J. N. Zemel, discussion leader): P. Bergveld, "Ion sensitive FET's"; I. Lundstrom, "H_2 sensitive FET's"; J. N. Zemel, "Gas sensitive devices." Interface characterization (F. Fang, discussion leader): K. L. DeVries, "Surface states backscatter methods transport," Limits of MIS technology (R. W. Keyes, discussion leader):

Microbial Toxins and Pathogenicity

Brewster Academy

Richard A. Finkelstein, chairman; D. Michael Gill, vice chairman.

26 July. An overview of pathogenic microbial micro-ecology (Dwayne Savage, moderator): Garth Nicolson, "Lectin-membrane interactions as models for mechanisms of microbial colonization"; Ronald Gibbons, "Colonization by the oral microflora"; Hutton Slade, "The role of cell surface polysaccharide antigens of *Streptococcus mutans* in in vitro adherents." Surface active and penetrating pathogens (Emil Gotschlich, moderator):

Garth Jones, "Observations on adherence of enteric pathogens"; John Swanson and Milan Blake, "Gonococci." (Emil Gotschlich, discussion leader): free papers and discussion.

27 July. (Samuel B. Formal, moderator): G. Schmidt, "Genetic aspects of virulence determinants of enteric pathogens"; Eugene D. Weinberg, "Effect of iron on host-parasite interactions"; J. J. Bullen, "The role of iron-binding proteins in resistance to bacterial infection"; S. M. Payne and R. A. Finkelstein, "Role of iron in pathogenesis of gonorrhea." (Stanley Falkow, moderator): Randall Holmes, "Genetic aspects of microbial toxinogenesis"; Georg F. Springer and James C. Adye, "Endotoxin-binding." Free papers and discussion.

28 July. (Michael Gill, moderator): Michael Gill, "Cholera and *E. coli* enterotoxin(s)"; Gerald Keusch, "*Shigella* enterotoxin(s)"; Yoshifumi Takeda and Kujota Goshima, "*Vibrio parahaemolyticus*"; J. W. Peterson, "*Salmonella* toxin." (Peter Bonventre, moderator): John Collier, "Diphtheria toxin." Discussion: Paul Falmagne, John Murphy, Walter Laird, Patrice Boquet, and T. Uchida. Free papers and discussion.

29 July. (Barbara Iglewski, moderator): Barbara Iglewski, "Observations on *Pseudomonas* toxin." Discussion: Lynn Callahan and Dominic Chung. Anna Johnson and Joseph Metzger, "Staphylococcal epidermolytic toxin." Discussion: Marvin Rogolsky and Bill Wiley. (Carl Lamanna, moderator): G. Sakaguchi, "Botulinus toxin"; M. Matsuda, "Tetanus toxin." (B. Bizzini, discussion leader). Free papers and discussion.

30 July. (Moderator to be announced): Gary Strobel, "Helminthosporoside"; Richard Keeler, "Toxins of higher plants"; J. Richard, "Mycotoxins"; (speaker to be announced), "Synthesis and critique."

Microstructure Fabrication, Chemistry and Physics of

Brewster Academy

Robert W. Keyes, chairman; E. D Wolf, vice chairman.

21 June. Objectives and limitations in microstructures: R. W. Keyes, "Processing perspectives"; E. D. Wolf, "Models of photoresist"; (F. H. Dill, chairman).

22 June. New techniques in lithography (H. I. Smith, chairman): K. Bean, "Anisotropic etching."

23 June. C. J. Mogab, "Plasma etching"; G. Schwartz, "Dry etching."

24 June. A. Y. Cho, "Thin film molecular beam epitaxy"; J. Mayer, "Small contacts"; J. Black, "Electromigration limits"; M. Hatzackis, "Lift-off techniques."

25 June. Noel MacDonald, "Scanning Auger analysis"; C. Anderson, "Ion microprobe analysis"; A Broers, "Resolution limits of electron beam diagnostics."

An application blank for attendance at the Gordon Research Conferences may be found on page 1083.

Molecular Biology, Diffraction Methods in

Tilton School

L. J. Banaszak, chairman.

28 June. Electron diffraction and related forms of electron microscopy: (electron diffraction, optical diffraction from electron micrographs, three-dimensional image reconstruction) (S. C. Harrison, chairman): P. T. N. Unwin. Homologous proteins and protein families: (detailed description of homologous sets of proteins and variations within these sets, new protein sets and families) (R. E. Dickerson, chairman): (speakers to be announced).

29 June. Structure of non-crystalline macromolecules and cellular organelles: (structures of ribosomes, muscle, and other protein and nucleo-protein aggregates) (P. B. Moore, chairman): D. M. Engelman, H. E. Huxley, J. C. Haselgrove. Methods used for phase determination in diffraction studies: (isomorphous replacement, molecular replacement, non-crystalline symmetry, direct phase relationships, density modification, partial structure information, phasing for non-crystalline structures) (W. A. Hendrickson, chairman): B. W. Matthews, E. E. Lattman, D. Sayre.

30 June. Model analyses: (Hydration structures of proteins and nucleic acids, integral hologram methods, electronic "Richard boxes," energy maps, diagonal plots and other conformational maps) (S. H. Kim, chairman): K. D. Watenpaugh, N. C. Seeman, S. Levine, C. D. Barry. Diffraction results from membrane systems: (purple membrane protein, GAP junctions, myelin, lipid containing viruses, acetyl choline receptors) (D. Goodenough, chairman): D. L. D. Caspar, S. C. Harrison, R. M. Stroud.

1 July. New molecular structures: (recently determined molecular structures of proteins and nuleic acids, new liganded forms of enzymes) (B. W. Matthews, chairman): D. R. Davies and D. M. Blow (other speakers to be announced). Data collection methods: (area detectors, film systems applicable to large unit cells, diffractometry, radiation sources) (H. W. Wyckoff, chairman): N. G. Young (other speakers to be announced).

2 July. Refinement of protein structures: (refinement by differential synthesis, constrained least square refinement, constrained crystallographic refinement) (S. T. Freer, chairman): E. T. Adman, J. H. Konnert, W. Steigeman.

As an integral part of most of the sessions, there is opportunity for the presentation of poster-talks. This has been done in order to avoid an undigestible number of short talks during the formal part of the session. Conferees are encouraged to present up-to-date methods, data and results at these poster-talks. Furthermore, the display of maps and models throughout the entire conferences is strongly encouraged.

Molecular Collisions, Dynamics of

Holderness School

Bruce Mahan, chairman.

26 July. Photoionization phenomena: Tomas Baer and William A. Chupka. Infrared chemiluminescence: J. D. McDonald.

27 July. Laser studies of reaction dynamics: George C. Pimental and Michael J. Berry. Energy transfer studies: George W. Flynn.

28 July. Theory of reaction dynamics: Donald G. Truhlar and Thomas F. George. Contributed papers.

29 July. Surface scattering and atmospheric chemistry: Gabor A. Somorjai and F. S. Rowland. Contributed papers and discussion.

30 July. Reaction product energy distributions: Richard N. Zare.

Molecular Electronic Spectroscopy

Proctor Academy

Jon T. Hougen, chairman.

9–13 August. F. H. Read, "Measurement of lifetimes in atoms, molecules and ions"; P. Erman, "Time resolved molecular precision spectroscopy"; K. F. Freed, "Photodissociation"; R. M. Hochstrasser, "Multiphoton spectra of molecules"; F. W. Dalby, "Nonlinear photoionization of molecular iodine"; J. C. D. Brand, "Nitrogen dioxide: riddle or enigma?"; D. H. Levy, "Optical spectroscopy in supersonic molecular beams"; K. K. Innes, "Laser studies of S-tetrazine"; J.-C. Lehmann, "Lifetime measurements and predissociation effects in excited electronic states of molecules"; W. C. Lineberger, "Laser spectroscopy of molecular negative ions"; Ch. Jungen, "Sharp absorptions imbedded in a continuum."

Molecular Pathology

Brewster Academy

Godfrey S. Getz, chairman; Werner H. Kirsten, vice chairman.

The Biogenesis of Subcellular Organelles and Membranes

28 June. Membrane constituents (proteins, lipids), their characterization and interaction (Godfrey Getz, chairman): (speaker to be announced), "The characteristics of membrane proteins"; S. Fleischer, "The isolation and characterization of subcellular organelles: the distribution of lipids among them"; Dan Branton, "Morphological correlates of protein interactions in membrane." Mitochondrial biogenesis (Murray Rabinowitz, chairman): Murray Rabinowitz, "The mitochondrial genome and its contribution to mitochondrial biogenesis"; Alexander Tzagoloff, "The assembly of the inner mitochondrial membrane"; B. Kanner, "Topography of reconstituted inner mitochondrial membrane." T. Mason, R. Poyton, R. Butow, participants.

29 June. The endoplasmic reticulum (David Sabatini, chairman): David Sabatini, "The functional implications of membrane bound ribosomes"; (speaker to be announced), "Site of synthesis and assembly of membrane proteins"; (speaker to be announced), "Biogenesis of endoplasmic reticulum and golgi." The secretory granule (James Jamieson, chairman): Gunter Blobel, "Amino terminal clipping and processing of secretory proteins"; Bjorne Olsen, "Post translational processing of collagen precursors." Lysosomes and peroxisomes (Oscar Touster, chairman): Alex Novikoff, "The origin of lysosomes"; (speaker to be announced), "The specific uptake of lysosomal enzymes"; Oscar Touster, "Chemical reflections on the origin of lysosomal enzymes." The plasma membrane (Phil Robbins, chairman): (speakers to be announced).

1 July. The developmental aspects of intercellular communication (Carl Cotman, chairman): Dan Goodenough, "Gap junctions"; Jean P. Revel, "The emergence of electrical activity"; Rosemary Rees, "The morphology of synaptosome"; Doug Farnborough, "Development of transmitter receptors at peripheral synapses"; C. Cotman, "Assembly of central synapses." Microtubules (Joel Rosenbaum, chairman): Richard Berlin, "Tubulin and membranes"; Lionel Rebhun, "Microtubules and mitosis"; Roger Sloboda, "Initiation of microtubule assembly in vitro"; Joel Rosenbaum, "Microtubule assembly in vivo formation of cilia and flagella."

2 July. The intracellular assembly of viruses (Werner Kirsten, chairman): (speaker to be announced), "RNA viruses"; Patricia Spear, "DNA viruses."

Muscle, Rhythmic Activity in

Tilton School

Robert L. DeHaan, chairman; Harry Fozzard, vice chairman.

2–6 August. Theoretical aspects of rhythmic systems (F. A. Dodge, chairman): F. A. Dodge, "Rhythmic firing of sensory neurons"; Arthur Winfree, "Oscillations and ways in excitable media; a biochemical demonstration"; Stephen Smith, "Theoretical models and pacemaker mechanisms in molluscan neurons." Application of the Hodgkin-Huxley equations to heart and other oscillatory membranes (Yoram Palti, chairman): Yoram Palti, "Conditions for repetitive activity of Hodgkin-Huxley-like excitable membranes"; Louis J. DeFelice, "Small signal impedence and oscillation in heart cell membranes"; John Connor, "Conductance changes in oscillatory cells and the transduction of current stimuli to spike trains." Pacemaker ionic currents (W. Trautwein, chairman): W. Trautwein, "The outward current in myocardial excitation"; Richard W. Tsien, "Cardiotonic steroids and pacemaker activity in Purkinje fibers"; Harry Fozzard (subject to be announced); Harald Reuter, "Influence of catecholamines on membrane currents in mammalian cardiac muscle." Rate entrainment among spontaneously active cells (Louis J. DeFelice, chairman): Louis J. DeFelice, "Membrane noise, intercellular communication and synchronization and heart cell aggregates"; H. Jongsma, "Synchronization of the beat frequency of mammalian heart cells in tissue culture"; T. Sano, "Mechanism of synchronization and its disturbance such as fibrillation in the heart." Rhythmic activity in tissue culture models: cardiac cells (R. L. DeHaan, chairman): R. L. DeHaan, "Differentiation of action currents in spheroidal aggregate of embryonic heart cells in vitro"; K. Goshima, "Rhythmic and arrhythmic beating of myocardial cells cultured in vitro"; M. Lieberman, "Correlation between electrophysiological and ionic flux measurements in a synthetic strand of heart muscle"; J. B. Chapman, "Modeling and predicting the behavior of electrogenic pumps in the synthetically-grown cultured cardiac strand." Differentiation of rhythmic mechanisms (E. Carmeliet, chairman): E. Carmeliet, "Interaction between electrical activity, K flux and metabolism in the chick embryonic heart (with special references to the effects of hypoxia, the role of anaerobic glycolysis and changes with age)"; H. Irisawa, "Some electrophysiological properties of the rhythmic activity of sinoatrial node cells"; N. Sperelakis, "Automaticity of embryonic chick myocardial cells at different stages of development"; C. Bernard, "Rhythmic activity of the rat embryonic heart at the first beats"; D. A. Fischman, "Development of functional sympathetic innervation in the embryonic chick heart." Repetitive firing in neuronal systems (W. Calvin, chairman): W. Calvin, "Rhythmicity and extra spikes in CNS neurons arising from spatial interactions"; E. Jakobsson, "Features of ionic current in neurons which may be significant for understanding rhythmic electrical activity"; W. Adelman (subject to be announced); F. A. Dodge (subject to be announced). Rhythmic activity in smooth muscle (C. L. Prosser, chairman): R. Purves, "Spontaneous activity and electrotonus in tissue cultured smooth muscle"; N. Anderson (subject to be announced); J. A. Connor (subject to be announced). Autonomic control of rhythmic activity (G. Burnstock, chairman): J. D. Wood, "Neural regulation of autogenous activity of intestinal smooth muscle"; J. H. Szurszewski, "Hormonal and neurohumoral control of rhythmic activity in smooth muscle"; W. A. Weems, "Rhythmic activity in muscle." Special workshop: Pharmacological probes of pacemaker function.

Natural Products, Chemistry of

New Hampton School

Frank L. Weisenborn, chairman; Samuel Danishefsky, vice chairman.

26–30 July. Duilio Arigoni, "A topic in bio-organic chemistry"; Jack E. Baldwin, "A stereospecific synthesis of penicillin"; Ta-Sen Chou, "New chemistry of penicillin sulfoxides"; Pierre Deslongchamps, "Stereoelectronic control in hydrolytic reactions"; David Evans, "Studies in natural product synthesis"; Albert Gossauer, "Chemical synthesis of bile pigments related to the chromophores of chromoproteides isolated from the red and blue-green algae"; Daniel S. Kemp, "New approaches to peptide synthesis"; Yoshito Kishi, "Synthetic studies in the field of natural products chemistry"; Teruaki Mukaiyama, "Synthetic control based on the onium salts of azoaromatics. Approaches to the synthesis of optically active compounds"; Karl H. Overton, "On stereochemical choice in enzymic processes"; Jeffrey Schwartz, "Transition metal hydrides in organic synthesis"; Ernest Wenkert, "On natural product synthesis."

Non-Ventilatory Function of the Lung

Brewster Academy

Claude Lenfant, chairman; Donald J. Massaro, vice chairman.

12 July. Lung connective tissue (Carl Franzblau, chairman): Carl Franzblau, Paul Gallop, Ronald Crystal, Joel Rosenbloom, Judith Forster, Waldemar Johansen.

13 July. Proteases in the lung (Aaron Janoff, chairman): Aaron Janoff, Gerry Turino, James O. Harris, George Weinbaum, Kjell Ohlsson, Saimon Gordon.

14 July. Mucus and mucociliary clearance (Joseph Brain, chairman): Jay Nadel, Rosemary Jones, Thomas Boat, Donovan B. Yeats, Kenneth Adams.

15 and 16 July. Lung water and electrolytes (Norman Staub, chairman): Richard M. Effros, Eveline E. Schneeberger, Francis Chinard, Edmund A. Eagan, II, Marlys Gee, Jean Bignon.

Nuclear Chemistry

Colby-Sawyer College

J. Rayford Nix, chairman; Frank S. Stephens, vice chairman.

21–25 June. This conference will be devoted primarily to nuclear fission and very-heavy-ion reactions, although other frontiers of nuclear science will also be included. The focus will be on the fundamental aspects of nuclei learned from these reactions, including especially the nuclear potential energy of deformation, the nuclear inertia, nuclear dissipation, and the nuclear equation of state.

21 June. (Peter Armbruster, discussion leader): Wladyslaw J. Świątecki, "Nuclear macrophysics"; Jerry B. Wilhelmy, "The fission potential-energy surface meets the experimental data." (Frank S. Stephens, discussion leader): Zdzislaw Szymański, "Nuclear structure at very high angular momentum"; Joseph B. Natowitz, "The fission and fusion of relatively light nuclei."

22 June. (Marc Lefort, discussion leader): Franz Plasil, "Quasifission and compound-nucleus reactions"; John R. Huizenga, "Strongly damped heavy-ion collisions." (Ulrich Mosel, discussion leader): Tobias Ledergerber, "Mechanism of nuclear dissipation"; Steven E. Koonin, "Time-dependent Hartree-Fock description of heavy-ion reactions."

23 June. (Robert Vandenbosch, discussion leader): Kenneth S. Toth, "Heavy-element production at Dubna and elsewhere: what are we learning?" Hans J. Specht, report, "Spectroscopy in the second well"; Jacques Blons, report, "Evidence for a third minimum in the fission barrier." (Robert Klapisch, discussion leader): Phyllis A. Russo, report, "Identification of individual elements in very-heavy-ion reactions"; Christian Toepffer, report, "Semi-microscopic derivation of heavy-ion optical potentials." Open.

24 June. (Erwin Schopper, discussion leader): Phillip J. Siemens, "Determining the nuclear equation of state from high-energy heavy-ion collisions"; Hans H. Gutbrod, "Is there any experimental evidence for nuclear shock waves?" (Raymond Davis, Jr., discussion leader): Frederick Reines, "Neutrino electron scattering"; Gerald J. Wasserburg, "Anomalous isotopic abundances in meteorites and implications about nuclear processes."

25 June. (Walter Greiner, discussion leader): Alfred S. Goldhaber, "Interaction of relativistic hadrons with heavy nuclei"; Walter E. Meyerhof, "X-ray and positron emission in heavy-ion collisions."

Nuclear Proteins, Chromatin Structure and Gene Regulation

Tilton School

Brian J. McCarthy, chairman; Gary Felsenfeld, vice chairman.

23 August. Histone chemistry (Irvin Isenberg, chairman): Robert deLange. Structure of chromatin (Ken Van Holde, chairman): Roger Kornberg.

24 August. Structure II (Gary Felsenfeld, chairman): Harold Weintraub. Viral models for chromosome structure (Pierre Chambon, chairman): Walter Keller.

25 August. Histone modification (Vincent Allfrey, chairman): Morton Bradbury. Non-histone proteins (Sarah Elgin, chairman): Gordhan Patel.

26 August. Nuclear structure (Hewson Swift, chairman): Thoru Pederson. Chromatin transcription, dissociation and reassociation (Brian J. McCarthy, chairman): R. S. Gilmour.

27 August. Transcription and fractionation of chromatin (Ru-Chih Huang, chairman): Ronald Reeder.

Nuclear Structure Physics

Tilton School

Malcolm H. Macfarlane, chairman; B. H. Wildenthal, vice chairman.

Trends and Prospects in the Study of Nuclear Structure

12–16 July. Studies of nuclear structure with strongly-interacting projectiles: B. M. Preedom, "Studies of the deuteron in the reaction $\pi^+ + d \rightarrow p + p'$"; D. Koltun, "Studies of pion-nucleus interactions"; W. Haeberli, "Polarization effects in light-ion-induced transfer reactions"; J. P. Schiffer, "Global features of the cross sections of heavy-ion reactions"; R. G. Stokstad, "Heavy-ion fusion cross sections at low and high energies." Studies of nuclei via electromagnetic and weak interactions: J. Heisenberg, "Nuclear structure revealed by inelastic electron scattering"; E. Adelberger, "Symmetry breaking in light nuclei"; J. Hardy, "The nuclear physics of weak interaction fundamentals"; D. H. Wilkinson, "Mirror β-decays in light nuclei." The nucleon-nucleon interaction and nuclear matter: D. O. Riska, "Meson-exchange models of nucleon-nucleon potentials"; V. R. Pandharipande, "Variational calculations of many-body effects in nuclear matter"; B. D. Day, "The Brueckner-Bethe theory of nuclear matter and the influence of virtual Δ states"; C. M. Vincent, "Microscopic theory of the shell-model effective interaction." Nuclear models and nuclear level properties: R. Broglia, "Collective phenomena via nuclear field theory"; A. Faessler, "Ultra-high-spin states in nuclei"; J. M. Irvine, "The shell model with short-range correlations"; T. L. Khoo, "High-spin phenomena in nuclei—many-quasi-particle Yrast traps."

Nucleic Acids

New Hampton School

Julius Marmur and William Studier, co-chairmen.

14–18 June. Cloning and expression of DNA fragments (Ronald W. Davis, chairman). Organization of prokaryotic and eukaryotic chromosomes (Abraham Worcel, chairman). Organization and expression of eukaryotic viral genomes (Ray Gesteland, chairman). Synthesis and processing of eukaryotic RNA (Fritz M. Rottman, chairman). Regulation of prokaryotic RNA synthesis (Mark Ptashne, chairman). Processing and utilization of prokaryotic RNA (Joan A. Steitz, chairman). DNA replication (Malcolm Gefter, chairman). Enzymology and physiology of recombination (Charles Radding, chairman). Genetic systems and their expression in eukaryotes (Philip Leder, chairman).

Organic Geochemistry

Holderness School

John M. Hunt, chairman; Richard D. McIver, vice chairman.

16 August. Diagenesis: J. R. Maxwell, "Occurrence and diagenesis of carotenoids in recent sediments"; P. Schenck, "Bio-

chemical markers in recent sediments and kerogen"; G. Eglinton, "Cutins as higher plant indicators"; W. R. Almon, "Clay organics in young sediments"; R. Pelet, "Organic sedimentation and early diagenesis in Norwegian Sea and Amazon River"; J. G. Erdman, "Quantitative aspects of the diagenesis of organic matter in young sediments."

17 August. Catagenesis: B. Tissot and A. Hood, "Application of organic geochemistry to formation of petroleum in the Uinta Basin"; W. Dow, "Catagenesis of sedimentary rocks as measured by the reflectance of disseminated vitrinite"; P. Albrecht, "Origin of polycyclic aromatic hydrocarbons in sediments and petroleum"; D. Welte, "Geochemical and petrologic aspects of coal catagenesis"; T. Goldstein, "Clay catalysis in origin of hydrocarbons"; B. Durand, "Laboratory simulation of three kerogen types compared to natural catagenesis."

18 August. Migration: P. Low, "Clay-water interaction and its possible effect on petroleum migration"; C. Barker, "Petroleum migration—a problem in water, rock, organic matter interactions"; G. Bayliss, "Vertical migration of hydrocarbons to the surface"; J. Connan, "Genetic relation between oil and ore in some lead-zinc barium ore deposits."

19 August. Round table: A. G. Douglas, "Pyrolysis GC and GC-MS of kerogens and coal macerals of different ranks"; A. Y. Huc, "Geochemistry of kerogen in recent sediments"; G. Claypool, "Thermal analysis of sediments: interpretation of oil yield hydrocarbon quality and maturity"; J. R. Castano, "Monitoring hydrocarbons in well cuttings by pyrolysis-fluorescence"; K. Thompson, "Pressure-temperature controls of oil and gas"; E. Baker, "ESR of kerogen"; P. Schenck, "Application of pyrolysis GC-MS in organic geochemistry"; J. L. Oudin, "Laser micro-pyrolysis of kerogen"; D. Scalan, "Hydrocarbons in zooplankton"; R. Thompson, "Location of lipids in recent sediments"; J. R. Maxwell, "Computerized identification of steranes and triterpanes in geolipids"; G. Eglinton, "Catagenesis of steranes"; B. Tissot, "Geochemical classification of crude oils."

20 August. Round table: J. S. Leventhal, "Structural analysis of native bitumens and kerogen precursors by step-wise pyrolysis—GC-IR-MS and C^{13}-NMR"; D. E. Anders, "Uinta Basin crude oils: compositional effects of source material vs. maturation"; A. Nissenbaum, "The geochemistry of asphalts and heavy oils associated with the Dead Sea Rift Valley." Additional last minute results will be added, R. D. McIver, session chairman.

Organic Reactions and Processes

New Hampton School

James C. Martin, chairman; Paul Nicholas, vice chairman.

19 July. Ivar Ugi, "New types of nucleophilic substitution reactions and novel synthetic applications of supernucleophiles"; Charles A. Liotta, "Chemistry of naked anions"; Richard A. Sneen, "The ion-pair mechanism and its ion-dipole analog"; Peter J. Stang, "Chemistry of vinyl and perfluoroalkyl sulfonate esters."

20 July. Walter S. Trahanovsky, "Synthesis of novel organic compounds by flash vacuum thermolysis"; William P. Weber, "From carbon-silicon double bonds to dihydroaromatics"; Philip S. Skell, "Use of metal atoms in synthetic reactions"; Charles P. Casey, "Metal carbene complexes in organic synthesis."

21 July. Paul Caubere, "Complex bases and complex reducing agents"; Milorad M. Rogic, "Nitrosolysis and other novel nitrosation reactions." Robert K. Boeckman, Jr., "Synthetic methodology directed toward biologically interesting natural products." Contributed short papers by members of the conference.

22 July. Hans Reich, "Functional group manipulation using organoselenium intermediates"; Owen W. Webster, "Large molecule chemistry—condensed triptycenes"; Robert M. Coates, "New synthetic methods for C-C bond formation"; Richard J. Anderson, "The energy situation—coping with uncertainty."

23 July. James F. King, "Sulfenes"; E. M. Burgess, "Hypervalent sulfur chemistry."

Organometallic Chemistry

Proctor Academy

Eugene C. Ashby, chairman; Paul M. Treichel, Jr., vice chairman.

16–20 August. Robert H. Grubbs, "Metallocycles in organometallic chemistry; cycloaddition reactions and olefin metalhesis"; R. Bruce King, "Novel organometallic compounds from reactions of metal carbonyl anions"; R. J. P. Corriu, "Some results concerning the mechanism of nucleophilic substitution at silicon"; Chadwick Tolman, "Cleavage of C-H bonds by low valent transition metal complexes"; James Collman, "Binuclear catalysis"; Andrew Wojcicki, "Cleavage reactions of iron carbon sigma bonds"; Herbert Kaesz, "Cyclometalation with methyl-manganese and methylrhenium pentacarbonyl complexes"; F. Albert Cotton, "Organometallic compounds with metal-metal bonds"; Sei Otsuka, "Organic chemistry of transition metal phosphine complexes"; Jay Kochi, "Electron transfer mechanisms in organometallic chemistry"; Erling Grovenstein, "Rearrangements of organoalkali metal compounds."

Paper, Chemistry and Physics of

Plymouth State College

Irving S. Goldstein, chairman; Sten I. Falkehag, vice chairman.

23 August. Pulping and pulp behavior (J. S. Gratzl, discussion leader): H. W. Giertz, "The mechanism of refining of chemimechanical birch pulp"; E. V. Sjostrom, "The behavior of wood polysaccharides during alkaline pulping processes"; R. P. Singh, "New developments in pulping and bleaching."

24 August. Mechanical properties of paper (D. H. Page, discussion leader): C. Fellers, "Theoretical and experimental analysis of the failure mechanism in bending of paper"; E. M. Wu, "Representation of strength, fracture and fracture trajectory of anisotropic paper"; A. de Ruvo, "The formation and nature of internal bonding and stresses in paper."

25 August. Polymers in paper (V. T. Stannett, discussion leader): J. F. Waterhouse, "The deformation characteristics of polymer reinforced fiber networks—bending and fatigue behavior"; E. Anczurowski, "Synthetic fibers and pulps in papermaking"; P. Luner, "Interaction and organization of polymers at interfaces."

26 August. Biological delignification (E. B. Cowling, discussion leader): R. L. Crawford, "Novel approaches for the study of lignin biodegradation"; T. K. Kirk, "Lingnin biodegradation and wood biodelignification"; Brief reports (I. S. Goldstein, discussion leader): C. Engman, "The effect of inter or intra fiber reinforcement on the strength of paper-polymer composites"; J. Gierer, "New aspects of lignin condensation during alkaline pulping"; S. L. Rosenberg, "Lignin and cellulose degradation by thermophilic fungi."

27 August. Renewable resources energetics (S. I. Falkehag, discussion leader): C. T. Hill, "Energy intensity and use of renewable materials"; R. S. Berry, "Energy in packaging."

Particle-Solid Interactions

Proctor Academy

James W. Mayer, chairman; Len C. Feldman, vice chairman.

2 August. Fusion and plasmas (D. Nagel, discussion leader): C. F. Barnett, "CTR

fusion research"; R. P. Godwin, "Plasma physics of laser fusion." Solar energy (R. Blieden, discussion leader): D. Redfield, "Status and prospects of solar energy."

3 August. Surfaces: structure and catalysis (E. Bøgh, discussion leader); T. E. Fischer, "Surface physics and catalysis"; W. Turkenburg, "Surface structure analysis by channeling and backscattering." Inelastic collisions and ion induced photons (W. Heiland, discussion leader): E. Thomas, "Formation of excited states"; T. W. Rusch, "Charge exchange."

4 August. Sputtering (P. Sigmund, discussion leader): H. H. Anderson, "Sputtering of compound metal and semiconductor materials"; R. Kelly, "Composition changes in bombarded compounds"; J. Smith, "CTR: first wall sputtering experiments." Ion induced x-rays (P. Richard, discussion leader): R. L. Watson, "Chemical effects: atomic states and new developments."

5 August. Cluster penetration and beam foil (W. Brandt, discussion leader): D. Gemmell, "Interactions of fast molecular ion beams with solids"; G. Berry, "Tilted foil experiments." Stopping cross sections (W. K. Chu, discussion leader): W. Pietsch, "Inverted Doppler shift attenuation method."

6 August. Dechanneling and lattice site location (Y. Queré, discussion leader): E. Rimini, "Channeling and disorder analysis"; E. N. Kaufman, "Lattice location of implanted impurities channeling and hyperfine interactions."

Photoconductors, Chemistry and Physics of

Holderness School

Evan S. Baltazzi, chairman; P. J. Reucroft and R. F. Cozzens, vice chairmen.

21 June. (J. Mort, discussion leader): E. S. Baltazzi, Introductory remarks; H. A. Pohl, "Carrier generation and transport in electronically conducting polymers"; H. Meier, "On the mechanism of doping organic photoconductors"; (H. A. Pohl, discussion leader): L. Kevan, "Photoconductive phenomena and carrier transport in aqueous and organic glasses"; J. Mort, "Transport in disordered molecular solids."

22 June. (D. M. Pai, discussion leader): G. Heiland, "Photoconductivity as a surface phenomenon and as a tool for surface studies"; D. Haarer, "Photoinduction in quasi-one dimensional charge transfer single crystals." (L. Kevan, discussion leader): D. Burland, "Cyclotron resonance and carrier scattering process in organic solids"; H. Geisler, "Defect studies in photoconductive TiO_2."

23 June. (H. Kiess, discussion leader): F. Stöckman, "Recombination kinetics in highly excited II-VI photoconductors"; J. R. Fisher, "Photoconductivity of ternary chalcogenides." (P. J. Reucroft, discussion leader): H. Killesreiter, "Charge carrier injection into molecular crystals controlled by steric relations of adsorbed dyes"; R. C. Nelson, "Recent advances in the theory of sensitization of photoconductors by dyes."

24 June. (A. K. Gosch, discussion leader): P. J. Reucroft, "Electrode effects in photoconductive and photovoltaic phenomena observed in organic films"; R. F. Cozzens, "Photochemical generation of impurities in organic polymers." (R. F. Cozzens, discussion leader): E. S. Baltazzi, "Chemistry of some novel photoconductive systems"; H. Bässler, "Photoelectric properties of polyacetylene single crystals."

25 June. (R. C. Nelson, discussion leader): R. R. Chance, "Experimental verification of the applicability of the Onsager theory of geminate recombination to intrinsic photoconductivity"; G. Kossmehl, "Preparation of new photoconductive systems"; L. Schwartz, "Chalcogenide/ZnO mixed pigment photoconductor system"; D. Schlosser, "Discharge characteristics of OPC's after flash illumination."

Photonuclear Reactions

Plymouth State College

Gerald A. Peterson, chairman; Benjamin F. Gibson, vice chairman.

9 August. Few-nucleon systems: (James Friar, discussion leader): Edward L. Tomusiak, "Experimental and theoretical advances in the few nucleon problem"; Manfred Gari, "The role of meson-exchange currents in electromagnetic interactions with nuclei." High-energy photon experiments (Bernardino Basco, discussion leader): B. Ziegler, "Photon absorption cross sections above the giant resonance"; June Matthews, "High-energy photoproton experiments."

10 August. Nuclear studies with photon (Michael Danos, discussion leader): R. Bergere, "Measurements with monochromatic photons." High resolution electron scattering and giant resonances: (H. Ehrenberg, discussion leader): Achim Richter, "High resolution electron scattering at low-momentum transfers"; Josef Speth, "The structure of new giant resonances."

11 August. Giant multipole resonances and sum rules: (Stanley Hanna, discussion leader): David H. Youngblood, "Excitation giant multipole resonances by inelastic Hadron scattering"; Yoshiharu Torizuka, "Electroexcitation of giant multipole resonances"; Dieter Drechsel, "Photonuclear sum rules." Investigations of the s-d shell by electron scattering: (Conrad deVries, discussion leader): Claude Williamson, "High momentum transfer electroexcitation of s-d shell nuclei"; B. Hobson Wildenthal, "Shell model calculations in the s-d shell."

12 August. Coincidence studies (W. Carlisle Barber, discussion leader): Tabor deForest, Jr., "Theory of (e, e'p) and (e, e'x) reactions"; J. Mougey, "Present and future experiments on (e, e'p) and (e, e'x) reactions; Helmut Herminghaus, "High-duty factor electron accelerators." Photofission and strong-interaction medium-energy physics (Barry L. Berman, discussion leader).

13 August. Other interactions and summary (Brian Spicer, discussion leader): J. Dirk Walecka, "Semi-leptonic weak interactions in nuclei"; Gerald E. Brown, "Conference summary."

Physical Metallurgy

Plymouth State College

James D. Livingston, chairman; U. Fred Kocks, vice chairman.

Rapidly Quenched Metals

12 July. D. Turnbull, "Thermodynamic and kinetic factors in metallic glass formation"; B. C. Giessen, "Alloy chemical considerations on metastable phase formation"; G. S. Cargill, III, "Structure of metallic alloy glasses"; J. F. Sadoc, "Structure of amorphous Co-P, Ni-P, and Pd-Si."

13 July. R. W. Cahn, "Comparison of various melt-quenching techniques"; S. Dahlgren, "Preparation of metastable phases by sputtering"; J. Vandersande, "Microstructural changes during thermal transformation of amorphous alloys"; D. Polk, "Annealing effects in metallic glasses."

14 July. J. Gavaler, "Metastable crystalline superconductors"; W. Johnson, "Amorphous superconductors"; R. Hasegawa, "Transport properties of metallic glasses"; T. Masumoto, "Mechanical properties of metallic glasses"; F. Spaepen, "Models for deformation and fracture of amorphous metals."

15 July. H. J. Leamy, "Ferromagnetic properties and magnetic domains in metal-metalloid glasses"; F. Luborsky, "Magnetic annealing of metallic glasses"; P. Chaudhari, "Amorphous rare earth-transition metal alloys"; P. Duwez, "Rapidly-quenched metals—history and prospects."

16 July. Short contributions.

Physico-Chemical Aspects of Solute and Water Exchanges in the Microvasculature

Holderness School

J. B. Bassingthwaighte, chairman.

9 August. Functional anatomy I: microvascular arrangements and relevance to exchange and organ function (Carl A. Goresky, discussion leader): The dynamics of flows in a microvascular bed (Paul C. Johnson and H. Wayland, discussion leaders).

10 August. Starling forces in the microvasculature (Curt A. Wiederhielm and H. Granger, discussion leaders). The interstitium (E. M. Renkin, discussion leader); C. A. Wiederhielm, participant.

11 August. Hydrodynamic and thermodynamic descriptions of solute and water transfer through pores and slits—I (E. N. Lightfoot and W. Perl, discussion leaders). Osmotically induced water and solute exchanges (John A. Johnson and C. C. Michel, discussion leaders).

12 August. Hydrodynamic and thermodynamic descriptions of solute and water transfer through pores and slits—II (D. Levitt and C. P. Bean, discussion leaders). Relation of transport to structure and function of endothelial cells (S. Shea and J. Rhodin, discussion leaders).

13 August. Transendothelial solute transfer via parallel systems of pores, slits, cells, carriers and vesicles (C. Crone and F. P. Chinard, discussion leaders).

Plant Senescence

Tilton School

Jacob B. Biale, chairman; James E. Baker, vice chairman.

26 July. Aging and senescence—general significance. Flower senescence (A. C. Leopold, discussion leader): Longevity and deterioration in seeds and seed parts (T. A. Villiers, discussion leader).

27 July. Foliar senescence—structural, physiological and biochemical changes (D. J. Osborne, discussion leader). Fruit ripening as a senescent phenomenon (G. G. Laties, discussion leader).

28 July. The aging of organelles, tissue cultures and unicellular organisms (L. Packer, discussion leader). Hormonal regulation (K. V. Thimann, discussion leader).

29 July. Free radicals and lipid peroxidation (N. F. Haard, discussion leader). J. Arditti, "Sex and the single orchid"; Control and applications (D. R. Dilley, discussion leader).

30 July. Theories and summary of current knowledge (H. W. Woolhouse, discussion leader).

Plasma Chemistry

Proctor Academy

Philip H. Wilks, chairman; Peter H. Dundas, vice chairman.

The program for the Plasma Chemistry conference this year is designed to stimulate exchange between plasma chemists and workers in the more classical fields of high temperature, thermodynamics, kinetics, and heat transfer. The intent is twofold: to give those in the more classical fields an awareness of the nature of chemical phenomena in the various plasma environments, and to give plasma specialists the benefit of the latest classical techniques in interpretation of their own work.

23 August. Thermodynamics, kinetics, and heat transfer.

24 August. Analytical applications and organic synthesis.

25 August. Thin film and electronic applications.

26 August. Equipment design and applications, and scaleup considerations.

27 August. Extractive metallurgy and ore processing.

Plasma Physics

Miramar Hotel

Akira Hasagawa, chairman; Miklos Porkolab and Alfred Wong, co-vice chairmen.

Plasma Heating

28 June–2 July. RF heating: (G. Guest, chairman): W. Hook, E. Tenneforns, S. Tanaka, and A. Bers. Neutral beam heating: (H. Berk, chairman): R. Ellis, R. Smith, N. Semashko, F. Coensgen, J. Lyon, and R. DeiCas. Compression heating (H. Furth, chairman): R. Gross, K. H. Steuer, R. Linford, and K. Hirano. Laser heating—I (C. Yamanaka, chairman): J. Dawson, W. Kruer, F. Mayer, K. Lee, and M. Lubin. Laser heating—II (F. Chen, chairman): A. Kaufman, D. A. Tidman, G. Vlases, and L. Johnson. Intense ion beam heating (G. Yonas, chairman): R. Sudan, P. Miller, and S. Humphries. Relativistic electron beam heating (K. Papaopoulos, chairman): T. Young, J. Freeman, N. Rostoker, R. A. Dandl, and R. Taylor. Nonlinear effects (R. Kubo, chairman): V. I. Karpman, R. L. Stenzel, A. Lichtenberg, J. Malmberg, and F. Tappert. Most recent topics: reserved for new results and suggestions.

See page 1083 for application blank.

Polymer Physics

Proctor Academy

Fraser P. Price, chairman; E. Helfand, vice chairman.

21 June. John S. King, "Neutron scattering from polymers I—theory and experimental considerations"; Robert Ullman, "Neutron scattering from polymers II—some results on polyethylene"; George Wiggnall, "Low angle neutron scattering studies of crystalline polymers"; David M. Sadler, "How to see a folded polymer chain within the crystalline matrix—a neutron scattering study"; C. C. Han, "Conformation of PS-PMMA diblock copolymer in toluene by small angle neutron scattering"; C. Picot, "Characterization of polymer networks structure and copolymers conformation by neutron scattering."

22 June. G. Jannink, "Long range organization of polymer molecules in concentrated solutions I, neutron scattering experiments"; G. Sarma, "Long range organization of polymer molecules in concentrated solution II, the magnetic analogy"; M. Daoud, "Temperature-concentration diagrams of polymer solutions"; H. Berghmans, "Gelation and crystallization in relation to polymer chain composition and structure"; Andrew Keller, "Chain orientation and crystallization"; G. Zachmann, "Crystallization of blends of hydrocarbons and polystyrene."

23 June. T. T. Wang, "Transport factor in the growth kinetics of spherulites in PVF_2-PMMA mixtures"; L. M. Robeson, "Polymer-polymer miscibility-high molecular weight polymeric plasticizers for polyvinyl chloride"; Frank E. Karasz, "Blends of poly-(2,6-dimethyl phenylene oxide)-polystyrenes and related systems"; R. S. Stein, "Studies of polymer blends by low angle x-ray and light scattering."

24 June. Lucian Monnerie, "Molecular dynamics of polymer in solution; theoretical, experimental and Monte Carlo approaches"; Curtis W. Frank, "The use of excimer fluorescence as a probe of chain conformational structure and molecular dynamics of polymer/host interactions." Session of short contributed papers.

25 June. S. Krimm, "Mixed crystal infrared studies of chain folding in crystalline polyethylene"; J. H. Wendorff, "Studies on translational motions in polymer glasses by small angle x-ray and inelastic light scattering."

Polymers

Colby-Sawyer College

W. Carl Wooten, Jr., chairman; Robert W. Lenz, vice chairman.

26 July. (R. Lenz, presiding): S. L. Cooper, "Physical properties of polyurethanes and related heterophase elastomers"; S. Sundet, "Graft copolymers of pivalolactone." (P. W. Morgan, presiding): G. Yeh, "Molecular chain packing at the local scale in amorphous polymers"; R. S. Moore, "Some aspects of mobility and fracture surface morphology of glassy, amorphous polymers."

27 July. (G. Butler, presiding): J. Smid, "Solute binding to poly(crown ethers)"; V. Kabanov, "Polymer effects in reactivity of functional groups." (W. A. Hewett, presiding): R. D. Lundberg, "Glass-glass block copolymers and their plasticization."

28 July. (R. Gilbert, presiding): H. R. Allcock, "Phosphazene high polymers—recent developments and future prospects"; G. Hardy, "Polymerization in liquid crystalline systems." (O. Vogl, presiding): T. Tsuruta, "Mechanism of the stereoselective polymerization of oxirane."

29 July. (M. Litt, presiding): T. Hogen-Esch, "Ion pairs and the stereochemistry of anionic oligomerization of vinyl monomers"; A. D. Jenkins, "Titanium amides as initiators of polymerization." (V. Stannett, presiding): D. H. Richards, "New reactions involving anionic polymers to give novel copolymers."

30 July. (J. Stille, presiding): Subjects selected by conferees.

Purines and Related Derivatives: Chemistry and Biology

Plymouth State College

George B. Brown, chairman.

28 June–2 July. Natural analogs: occurrence, biosyntheses. Synthetic analogs. Rearrangements, migrations and conformations. Metabolism, transport and reutilization. Biological roles and responses: antagonists, modified adenosines and nucleic acids, poly ADPR, cyclic A,G,C,UMPs, adenosyl-corrinoids. Participants include: R. Nagarajan, A. Albert, M. J. Robins, J. R. Barrio, S. M. Hecht, G. Shaw, H. Vorbrüggen, A. Rosenthal, A. Yamazaki, J. Verheyden, R. S. Klein, J. T. Witkowski, D. J. Brown, T. Fujii, H. C. van der Plas, G. Zvilichovsky, G. Eichhorn, W. E. Cohn, G. B. Chedda, F. Cramer, J. Scribner, B. Singer, R. Shapiro, G. H. Hitchings, S. S. Koide, O. Hayaishi, H. Hilz, A. Bloch, N. I. Swislocki, M. H. Maguire, T. G. Brady, H. C. Hogenkamp, R. L. Blakley, G. B. Elion, S. S. Cohen, M. E. Balis, A. R. P. Paterson, L. L. Bennett, J. H. Lister, M. K. Haddox, S. Nishimura, Y. Kawazoe, W. Pfleiderer, F. Bergmann.

Pyrroles, Chemistry and Biology of

Brewster Academy

Bruce F. Burnham, chairperson; Rudi Schmid, vice chairperson.

2 August. G. Y. Kennedy, "Porphyrins in unusual places"; Henry Kamin and Lewis Siegel, "Nonclassical tetrapyrroles."

3 August. Formation of the porphyrin ring (Robert Troxler, chairperson): (Speakers to be announced), "The chemical, biological and medical aspects of tetrapyrrole formation."

4 August. Degradation of the porphyrin ring (Wolfhart Rudiger, chairperson): (Speakers to be announced), "The chemical, biological and medical aspects of tetrapyrrole degradation."

5 August. Porphyrins and photochemistry (A. W. McDonagh, chairperson): (Speakers to be announced), "The chemical, biological and medical aspects of tetrapyrrole photoreactions."

6 August. Porphyrins, general: contributed short papers.

Radiation Chemistry

New Hampton School

Russell H. Johnsen, chairman; Richard Firestone, vice chairman.

23 August. (L. Wayne Sieck, chairman): Robert N. Compton, "Collisional ionization reactions of alkali atoms and Rydberg states with molecules"; Loucas Christophorou, "Electron attachment in dense gases." (C. E. Klots, chairman): Yong-Ki Kim, "Secondary electron spectra."

24 August. (G. G. Meisels): John H. D. Eland, "Unimolecular decomposition of energy selected ions." (Richard Holroyd, chairman): A. D. Trifunac, "Time-resolved EPR studies in radiation chemistry."

25 August. (Peter Riesz, chairman): Harold C. Box, "Irradiated solids of biological significance." (Sanford Lipsky, chairman): Gilbert H-K. Hong, "Energy transfer processes in solids."

26 August. (Benon H. J. Bielski, chairman): E. Martin Fielden, "Radiation chemistry approach to redox processes in biochemistry and biology." (Richard Firestone, chairman): contributed paper.

27 August. (Janos Fendler, chairman): Francis J. Johnston, "Radiation studies in colloidal systems."

Radical Ions

Brewster Academy

Edward G. Janzen, chairperson; Wayne C. Danen, vice chairperson.

5 July. R. Livingston, "ESR studies of labile radicals in liquids"; C. L. Brown, "Gas phase anion radicals"; D. E. Wood, "Polyfluorobenzene radical anions"; M. D. Sevilla, "ESR studies of radiation induced radical ions in biological molecules"; P. D. Sullivan, "Conformational properties of substituted biaryl cation radicals."

6 July. E. T. Strom, "Substituent effects in aromatic radical anion and cation systems"; P. R. Jones, "Cation and anion radicals of silyl-substituted anilines"; H. Sakurai, "New radical anions and electron transfer reagents"; W. Weltner, Jr., "Inorganic diatomic radicals"; T. F. Williams, "ESR studies of hypervalent radical ions."

7 July. L. M. Stock, "Studies of radical ions"; M. V. Merritt, "Studies of the reactions of crown ether solubilized—potassium superoxide via spin trapping"; G. A. Russell, "Valence isomerization of radical anions"; M. D. Hawley, "Carbene radical anions"; H. N. Blount, "Mechanisms of reactions of cation radicals of EE systems with nucleophiles"; L. L. Miller, "Organic electrochemistry."

8 July. V. D. Parker, "The role of disproportionation in radical ion reactions"; G. R. Stevenson, "Calorimetric determination of the heat of formation and thermodynamic stability of anion radicals"; J. F. Garst, "Farewell to radical anions"; P. D. Gardner, "Chemistry of radical anions."

9 July. E. de Boer, "Alkali radical ion pairs in the liquid and in the solid state"; R. D. Guthrie, "Alkali metal ion effects on electron transfer reactions"; N. Hirota, "Structures and dynamic properties of ion pairs and ion clusters."

Scientific Information Problems in Research

Colby-Sawyer College

Carlos M. Bowman, chairman; Sidney Siegel, vice chairman.

19–23 July. Information systems. Past and present: Ben H. Weil and Peter Lykos. Text based information systems: Martha E. Williams, John O'Connor, Russell J. Rowlett, Jr. Real time data capture and analysis: Paul Day, Raymond E. Dessy, John F. Zieserl. Artificial intelligence—cluster and pattern analysis: Kurt Ensline, Russell Kirsch, Thomas L. Isenhour, Peter C. Jurs, Bruce Kowalski, Paul N. Craig and Lee D. Erman. Artificial intelligence—chemical synthesis: Saul Amarel, Herbert Gelernter, W. Todd Wipke, Kenneth Chu, Cyrus Levinthal, Dennis Smith. Impact on the future: Bart E. Holm.

Separation and Purification

Colby-Sawyer College

Alan S. Michaels, chairman; Harris J. Bixler, vice chairman.

23 August. Recent advances in chromatography (Eli Grushka, chairman and discussion leader): E. C. Horning, "GC/GC mass spec analysis of body fluids with glass capillary columns"; R. P. W. Scott, "Selection of stationary and mobile phases in liquid chromatography"; J. Cazes, "Recent insight into gel permeation chromatography: solvent effects."

24 August. Separations processes of importance in biology and medicine (C. R. Robertson, chairman and discussion leader): R. Arnon, "The antibody-antigen interaction process: a sophisticated natural separation"; A. H. Nishikawa, "Affinity methods of separation"; W. M. Deen, "Membrane separation processes in microscopic blood vessels of the kidney."

25 August. Advances in industrial purification/separation processes (J. R. Anderson, chairman and discussion leader): D. B. Broughton, "Large scale continuous adsorptive separation processes"; M. Midler, "The development of a new process for stereoisomer separation in column crystallizers"; B. R. Breslau, "Combined ultrafiltration and ion exchange for water treatment."

26 August. Separations utilizing unusual fields and forces (E. N. Lightfoot, chairman and discussion leader): J. C. Giddings, "Field flow fractionation"; W. Wilcox, "Particle chromatography"; R. Mitchell, "High gradient magnetic separation—a new approach to removal of biological materials from aqueous media."

27 August. Recent developments in hydrometallurgical separations (T. Chapman, chairman and discussion leader): J. P. Pemsler, "Metal recovery from solution by selective reduction of metal ions"; E. J. Michal, "Ion exchange for large scale recovery of heavy metals in dilute solutions." There will also be selected short (10 minute) presentations by conference participants. Conferees are invited upon arrival to submit contributions (by title and 25-word abstract) for selection on 23 August.

Solid-Liquid Interactions in Cement Hydration

Plymouth State College

Della M. Roy, chairman; Waldemar A. Klemm and H. F. W. Taylor, co-vice chairmen.

The first Gordon Research Conference on basic research in cement chemistry will be directed toward the physico-chemical mechanisms of early hydration reactions, the formation of hydration products, and their properties. The conference sessions will be structured to provide a perspective of past and current thought on the topics and this will be followed by research in progress, with major talks given by workers who are active in these areas. In view of the complexity of the field and its many controversial aspects, the reconciliation of theory with new experimental evidence will be stressed.

19 July. Physical chemistry of interfaces—general addresses on surface chemistry, colloid chemistry, and thermodynamics (S. Brunauer, session chairman): A. C. Zettlemoyer, "Water at oxide and silicate surfaces"; H. van Olphen, "Interactions between silicate surfaces and water." Hydration of calcium aluminates and ferrites (G. J. C. Frohnsdorff, discussion leader): H. N. Stein.

20 July. Hydration of calcium silicates (G. M. Idorn, discussion leader): J. P. Skalny and P. Fierens. Hydration reactions in the presence of sulfates (R. C. Mielenz, discussion leader): N. R. Greening.

21 July. Admixture interactions (W. L. Dolch, discussion leader): J. F. Young. Carbonation and polymerization: (Z. Sauman, discussion leader): J. A. Forrester and F. Tamás.

22 July. Development of microstructure (P. J. Sereda, discussion leader): S. Diamond and R. Kondo. Morphology-properties interrelationships (R. A. Helmuth, discussion leader): F. H. Wittmann.

23 July. Summary seminar (L. E. Copeland, principal reviewer).

Statistics in Chemistry and Chemical Engineering

New Hampton School

Peter W. M. John, chairman; Louis J. Painter, vice chairman.

12 July. J. Edward Jackson, "Principal components"; John Ramberg, "Non-parametric discriminant analysis."

13 July. David D. McLean, "Techniques in reaction network identification from multiple responses"; Ronald D. Snee, "Developing models for mixture systems in restricted regions."

14 July. Ronald A. Hocking, "Biased estimation in linear regression"; J. A. John, "Outliers in factorial experiments."

15 July. Edmund A. Gehan, "Non-randomized clinical trials"; Hale C. Sweeney, "Designs for clinical experiments."

16 July. Robert A. White, "A clustering procedure for bio-pharmaceutical problems."

Structural Macromolecules

Kimball Union Academy

Edward J. Miller and Paul Bornstein, co-chairmen.

23 August. Biosynthesis of collagen, intracellular aspects (cell free synthesis, hydroxylation, glycosylation) (D. J. Prockop, discussion leader). Biosynthesis of collagen, extracellular aspects I (lysyl oxidase, cross-link formation) (C. Franzblau, discussion leader).

24 August. Biosynthesis of collagen, extracellular aspects II (procollagen, structure, secretion and conversion to collagen) (P. Bornstein, discussion leader). Biomedical aspects of collagen metabolism (hereditary and acquired defects) (P. Byers, discussion leader).

25 August. Collagen types (primary structures, control of synthesis, biological significance) (E. J. Miller, discussion leader). The arterial wall-atherogenesis and structural macromolecules (platelets, smooth muscle cells, basement membrane) (R. Ross, discussion leader).

26 August. Extracellular proteases (collagenases, cathepsins, role in rheumatoid arthritis) (J. T. Dingle, discussion leader). R. Trelstad (subject to be announced).

27 August. Structure of collagen (molecular conformation, fiber formation, fiber architecture) (A. Miller, discussion leader).

Theoretical Biology and Biomathematics

Tilton School

Stuart Kauffman, chairman; Montgomery Slotkin, vice chairman.

14–18 June. The following have been invited to speak: Irving Adler, Peter Bryant, James Crow, Ralph Erickson, Judah Folkman, Sidney Fox, Joseph Frankel, Leon Glass, Steven Gould, Harvey Greenspan, Daniel Hartline, Lorne Houton, Steven Hubbell, Simon Levin, Frederick Meins, Ronald Shymko, Kenneth Trabert, Stanislaw Ulam, Michael Wade, and Hugh Wilson.

Toxicology and Safety Evaluations

Kimball Union Academy

Anne M. Wolven, chairperson; Joseph F. Borzelleca, vice chairperson.

2 August. (D. Mount, discussion leader): J. R. Gibson, "Laboratory toxicity testing with aquatic species"; R. E. Sparks, "Fish, wildlife and public health; the ultimate indicators of pollution abatement." (R. G. Tardiff, discussion leader): E. Somers, "Canadian approaches to the control of

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environmental and technicological hazards."

3 August. (R. J. Weir, discussion leader): C. Peraino, "Drug-induced enhancement of hepatic tumorigenesis"; W. G. Flamm, "Metabolism of procarcinogens by rodent liver extracts." (J. Campbell, discussion leader): R. A. Squire, "Evaluation of neoplastic response in mouse and rat livers."

4 August. (H. C. Grice, discussion leader): J. M. Rice, "Relevance to safety evaluation protocols of rodent response to carcinogens during fetal and neonatal life"; J. M. Spyker, "Functional evaluation of developmental disorders." (R. A. Scala, discussion leader): R. Willes, "The significance of alterations in physiology and behavior as indicators of a toxic response."

5 August. (G. Levinskas, discussion leader): D. Salsburg, "The statistical power of life-time studies in rodents to detect drug carcinogenicity in the presence of pharmacological activity"; C. J. Kodoski, "Safety factor considerations in toxicological evaluations." (A. M. Wolven, discussion leader): (Speaker and subject to be announced).

6 August. (J. F. Borzelleca, discussion leader): J. Beare-Rogers, "Dietary effects on *Brassica* oils."

Tumor Immunology

Holderness School

Ingegerd Hellström, chairman; D. Stewart Sell, vice chairman.

19 July. Genetic aspects of the immune response, with particular emphasis on the response to tumor antigens (chairman to be announced): Frank Lilly; David Gasser, discussant. Natural immunity to tumor antigens (Mary Fink, chairman): Robert Nowinski; Theodore Pincus, Ronald Herberman, discussants.

20 July. Molecular nature of tumor antigens (chairman to be announced): Jack Strominger; Stanley Nathenson, R. Reisfeld, Gary David, discussants. Embryonic antigens in tumors (Stewart Sell, chairman): R. Baldwin; M. Edidin and M. Hanna, discussants.

21 July. In vitro sensitization to tumor antigens (J.-C. Cerottini, chairman): Michael Feldman; (discussants to be announced). Nature of effector and suppressor cells in tumor immunity systems, and their mechanisms of action (Avion Mitchison, chairman): Melvin Cohn; Max Cooper, R. Gershon, Darcy Wilson, discussants.

22 July. Evidence for immunity to human tumor antigens (B. Bloom, chairman): Karl Erik Hellström; Mitsuo Takasugi, Evan Hersh, Eero Saksels, discussants. Workshops: H. Winn, "Immune response to animal tumors"; Bernard Amos, "Immune response to human tumors."

23 July. Macrophages in tumor immunity (Anthony Allison, chairman): Peter Alexander; Steve Russel, discussant.

Water and Aqueous Solutions, Chemistry and Physics of

Holderness School

Frank H. Stillinger, chairman; Robert H. Wood, vice chairman.

2 August. P. F. Low, "Water at the mineral/water interface"; R. Zana, "Influence of water on kinetics of micellization"; W. Kauzmann, "Pressure effects on water and the validity of theories of water behavior"; P. Delahay, "Photoelectron spectroscopy of liquids and solutions"; R. D. Birkoff, "Collective electronic oscillations in water and other liquids"; P. L. M. Plummer, "Nucleation of water and ice."

3 August. D. Chandler, "RISM theories for liquid water"; P. A. Kollman, "Theoretical studies of noncovalent interactions involving water"; A. Ben-Naim, "Present status of theory and experiment concerning hydrophobic interaction"; W. P. Jencks, "Polar and nonpolar interactions in aqueous solutions"; J. E. Desnoyers, "Thermodynamics of electrolyte-nonelectrolyte interactions"; R. Battino, "Solubility of gases in water."

4 August. P. von Hippel, "Water structure, the Hofmeister series of ions, and biopolymer conformation"; F. Franks, "Small-molecule pair and triplet interactions in dilute solution"; I. D. Kuntz, "Kinetics of water motion in biological systems"; C. J. Montrose, "Depolarized Rayleigh light scattering and relaxation dynamics in water"; D. F. Evans, "Selective transport of ions across membranes"; J. Jonas, "Experimental studies of the dynamic structure of compressed water."

5 August. K. S. Pitzer, "Theory of concentrated electrolytes including mixtures with nonelectrolytes, and applications at high temperatures"; J. P. Valleau, "Monte Carlo studies of polar solvents and ionic forces"; F. Gibbard, "Experimental verification of the charge-asymmetric limiting law"; M. Sceats, "Structural studies of amorphous ice"; C. A. Angell, "More on supercooled water"; A. P. MacKenzie, "Nonequilibrium freezing behavior of aqueous systems of biological interest."

6 August. E. Whalley, "What we can learn about water from the properties of ice"; J. E. Enderby, "Recent progress in the structure of aqueous solutions"; A. H. Narten, "Diffraction: a status report."