Gordon Research Conferences

Alexander M. Cruickshank

The Gordon Research Conferences for the summer of 1974 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 publicaitons 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. These applications should be received no later than two months prior to the Conference.

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 the various institutions and laboratories represented by the applications.

A registration card will be mailed to those selected. *Advance registration by mail for each Conference is required and is completed on receipt of the card and 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 that is not accompanied by the deposit will not be accepted.

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 4½ 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.

A deposit of $30 is required for each guest reservation. This deposit will be refunded if cancellation is received two 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. *This deposit is not transferable to another conferee or Conference.*

Program. The complete program for the 1974 Gordon Research Conferences is published in *Science*, 8 March 1974. Reprints are available on request to Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, Pastore Chemical Laboratory, Univer-

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

sity of Rhode Island, Kingston, Rhode Island 02881. Telephone 401-783-4011.

Mail for the office of the Director from 10 June to 30 August 1974 should be addressed to Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, Colby College-New Hampshire, New London, New Hampshire 03257. Telephone 603-526-2870.

Conference Fees:

New Hampshire	
Conferee:	
Resident (Registration, room, meals service)	$135
Nonresident (Registration, meals, service—no room)	120
Deposit	30
Guest:	
(Room, meals, service, for five Conference days)	85
Deposit	30
California	
Conferee:	
Resident (Registration, room, meals service)	$175
Deposit	30
Guest:	
(Room, meals, service for five Conference days)	125
Deposit	30

Adhesion, Science of

New Hampton School

Willard D. Bascom, Chairman; K. L. DeVries, vice chairman.

26 August. (Samuel Sterman, discussion leader): Malcolm E. Schrader, "Wettability of clean high-energy surfaces"; Anita I. Bailey, "Studies of mica/liquid/vapor systems." (Joseph P. Reardon, discussion leader): Tomlinson Fort, "Interfacial contact, interfacial stress and adhesion."

27 August. (Richard E. Robertson, discussion leader): Stephen L. Rosen, "Rubber-reinforced thermoplasts"; Daniel R. Mulville, "Interfacial crack propagation." (Warren H. Grant, discussion leader): Edgar H. Andrews, "Mechanics and mechanisms of adhesive failure."

28 August. (M. L. Williams, discussion leader): George C. Sih, "Stress and fracture analysis of adhesive joints"; Sheldon Mostovoy, "Fatigue fracture of adhesives." (Charles F. Bersch, discussion leader): Warten A. Jemian, "Deformation processes in lap-shear adhesion tests"; Max L. Williams, "Comments on adhesive bond fracture."

29 August. (Robert Baier, discussion leader): Adrian Parsegian, "What is the role of long-range forces in biological adhesion"; Malcoln S. Steinberg, "Adhesion between animal cells." (Wassily Poppe, discussion leader): Lawrence J. Broutman, "Effect of the interface on fracture of random short fiber composites."

30 August. Thomas T. Hitch, "Adhesion, structure and adhesion measurements in gold and silver hybrid thick films."

Aging, Biology of

Tilton School

D. Rao Sanadi, chairman.

29 July–2 August. Gene and protein regulation: J. Hoffman, G. Eichhorn, W. Hoyer, "Transcriptional and translational changes in aging"; D. Gershon, J. H. Buchanan, M. Rothstein, "Errors in protein synthesis"; W. Paik, B. Poole, P. F. Davison, "Post-translational changes in protein and turnover." Hormone action and metabolism: R. Adelman, G. Roth, J. Tobin and L. Romanoff. Membrane changes (A. Barber, chairman), D. Danon, L. Grinna, D. R. Sanadi. Aging of brain: M. Feldman, A. N. Siakotos, C. Finch. Aging of cells in culture: G. Martin, V. Cristofalo, H. Coon. Human life span (L. Duncan, chairman): A. Leaf, A. Comfort. Two round table conferences on topics to be selected by the participants will be held. The moderators will be M. Sinex and H. Woolhouse.

Analytical Chemistry

New Hampton School

James W. Robinson, chairman; John W. Miller, vice chairman.

12 August. V. A. Fassel, "Simultaneous multi-element determination at the ultra trace level. Some perspectives and a suggestive solution to the problem"; John Walters, "Development of spectrochemical methods from research on spark discharge."

13 August. John Willis, "Non-flame methods of atomization in atomic absorption spectroscopy"; L. S. Birks, "Advances in x-ray spectroscopy: heterogeneous samples, bonding in solids and plasma diagnostics."

14 August. Phil Kane, "Imperfections in semiconductor surfaces"; Nicholas Winograd, "Surface analysis of metal and metal oxide thin films using ESCA"; David Hercules, "ESCA and the analytical chemistry of surfaces."

15 August. W. S. Libby, "Technological future: where we are going and when"; Walter C. McCrone, "Microscopy."

16 August. Frederick Brech—summary.

Animal Cells and Viruses

Tilton School

Robert P. Perry, chairman; Aaron Shatkin, vice chairman.

24–28 June. Somatic cell genetics (Louis Siminovitch, chairman). Gene replication / amplification / recombination (Joel Huberman, chairman). DNA sequences and their transcripts (Klaus Scherrer, chairman). Gene organization and activity/effectors (Brian J. McCarthy, chairman). Enzymes involved in replication/transcription/processing (Frederick J. Bollum, chairman). RNA processing/post-transcriptional modifications/turnover (Robert P. Perry, chairman). Synthesis and properties of specific messages (Robert Shimke, chairman). Translational regulation (Harvey F. Lodish, chairman). State and expression of integrated viral sequences (Malcolm Martin, chairman).

Atomic and Molecular Interactions

Brewster Academy

Arnold C. Wahl, chairman; Ronald P. Andres, vice chairman.

Potential curves and surfaces and dynamics on them are forming a vehicle for greatly increased communication between experimentalists and theoreticians. The conference will focus on this theory-experiment interaction and will attempt to amplify and improve it. The conference sessions will have both an experimental and theoretical component with major talks given by workers who are interacting. Theory contribution will not be details of how potentials are computed but primarily on how they can, are, and have been used to complement experimental disciplines in adding to our understanding of atomic and molecular interactions.

12 August. Potential energy curves and surfaces: their availability, reliability, and use (R. Gordon and J. O. Hirschfelder, discussion leaders): J. Muckerman, D. Truhlar. Potential

energy curves and surfaces: their availability, reliability, and use (W. Lester and M. Alexander, discussion leaders): M. Krauss, H. F. Schaeffer.

13 August. Long-range forces (B. Liu and A. D. McLean, discussion leaders): Y. T. Lee, P. Certain. Interaction potentials in transport and bulk properties (C. F. Curtiss and J. Dollar, discussion leaders): J. Barker, D. Chandler.

14 August. Curve crossing phenomena and excitation exchange (W. Miller, discussion leader): F. Smith, J. C. Tully. Excited state phenomena (U. Buck, discussion leader): K. Wilson, V. McCoy.

15 August. Deep potential wells and the chemical bond (R. Zare and M. Hessel, discussion leaders): W. Stwalley, J. Berkowitz. Inelastic collisions, endoergic reactions (R. Levine, discussion leader): P. Toennies, C. B. Moore. Banquet speaker: A. Buckingham.

16 August. Exoergic reactions (C. Bender, discussion leader): J. Polanyi, M. Berry.

Bacterial Cell Surfaces

Holderness School

Mary Jane Osborn, co-chairman; U. Henning, co-chairman.

8 July. Biosynthesis of cell envelope polymers.

9 July. Molecular organization and assembly of supramolecular structure.

10 July. Surface related functions: receptor proteins, chemotaxis, cell division.

11 July. Energy coupling mechanisms in active transport.

12 July. In vitro reconstitution of function.

Biological Regulatory Mechanisms

Holderness School

Robert F. Goldberger, chairman; Charles Yanofsky, vice chairman.

15 July. Bacteriophage and animal viruses (David Botstein, chairman): Malcolm Martin, Philippe Kourilsky, Larry Gold. Nucleotide sequences of regulatory regions—I (Charles Yanofsky, chairman): Gobind Khorana, Walter Gilbert, James Dahlberg, Mark Ptashne, William Reznikoff, Thomas Steitz.

16 July. Nucleotide sequences of regulatory regions—II (James Dahlberg, chairman): Charles Yanofsky, Joan Steitz, Sherman Weissman, Nancy Lee, Heinz Schaller. Autogenous regulation (Elizabeth McFall, chairman): Alan Williamson, Francesco Blasi, Marjorie Russell, David Hagen, Michael Savageau.

17 July. Operon organization (Robert Schleif, chairman): Peter Starlinger, Irving Crawford, Alvin Markovitz, Allen Campbell, Boris Magasanik. Polarity, termination and mRNA degradation (Sankar Adhya, chairman): Ruth Ehring, Benoit de Crombrugghe, David Schlessinger, Sheldon Penman, David Kennel, H-L. Yang.

18 July. Regulation of RNA synthesis (Robert Lazzarini, chairman): Ole Maaløe, James Darnell, Ricardo Block, Pál Venetianer, Michael Bishop. In vitro systems for enzyme synthesis (Geoffrey Zubay, chairman): Katherine Squires, Ellis Englesberg, Werner Maas, Robert Schlief, Masayasu Nomura.

19 July. Transport and chemotaxis (Robert Simoni, chairman): Winfried Boos, Julius Adler.

Biomaterials, Science and Technology of

Proctor Academy

Robert I. Leininger, chairman; Stephen C. Woodward, vice chairman.

15 July. Materials/tissue interactions (Claude Onkelinx, chairman): T. N. Salthouse, "Enzyme response to soft tissue implants"; John Autian, "Effect of levels of impurities." B. Morrissey, "Confirmation of adsorbed blood proteins"; R. Falb, "Effects of surface functional groups on blood."

16 July. Materials/tissue interactions (continued) (S. C. Woodward, chairman): J. C. Herrmann, "Effect of implant size and shape"; A. Katz, "Capsule development." Joseph Miria, "Effects of implant debris from artificial joints tissue reaction"; H. A. Haschall, "Bioglass ceramics."

17 July. Materials/tissue interactions (continued) (R. I. Leininger, chairman): S. C. Woodward, "Cyanoacrylate degradation effects"; S. A. Wesolowski, "Aortic injury, atherosclerosis and healing of arterial prostheses." There will be volunteered papers on current research.

18 July. Measurement of blood compatibility (S. D. Bruck, chairman): A. U. Daniels, "Vena caval rings"; B. K. Kusserow, "Aortic rings." E. F. Leonard, "Ex vivo shunts"; M. C. Williams, "Effects of surface on hemolysis."

19 July. (E. J. Frazza, chairman): C. W. Bruch, "Evaluation of medical plastics."

Biomathematics, Theoretical Biology and

Tilton School

Evelyn Fox Keller, chairman; George F. Oster, vice chairman.

17–21 June. George Oster, "Dynamics of interacting populations"; Thomas Nagylaki, "The geographical structure of populations"; Michael Gilpin, "Interference and niche"; Joseph B. Keller, "Population genetics—analysis of stochastic models"; Stuart Kauffman, "The mitotic oscillator and physarun polycephelum"; Robert D. Allen, "Recent advances in the theory of amoeboid movement"; Edward Spiegel, Stephen Childress and Michael Levandowsky, "Pattern formation by swimming microorganisms"; Cyrus Levinthal, "Instructive model for developmental specificity"; Bruce Knight (subject to be announced); Nancy Kopell, "Chemical pattern formation—a mini survey of mechanisms"; Rurtherford Aris, "The mathematical theory of diffusion and reaction in permeable catalytic bodies"; Lee A. Segel, "Theories of bacterial chemotaxis"; Sol Rubinow, "The swimming of microorganisms"; Garrett Odell, "A continuum theory of amoeboid pseudopodium extension"; Julia T. Apter, "A physical model for muscular action."

Biopolymers, Physics and Physical Chemistry of

Holderness School

Victor Bloomfield, co-chairman; Charles R. Cantor, co-chairman.

Macromolecular Interactions

1–5 July. Nucleic acid interactions: N. Davidson, "Polynucleotide complementarity studied by electron microscopy"; O. Uhlenbeck, "Oligonucleotide interactions"; D. Crothers, "Spectroscopic studies on tRNA"; S. H. Kim, "Crystallographic studies on tRNA."

Protein-nucleic acid interaction: G. Felsenfeld, "DNA-histone"; W. Gilbert, "DNA-repressor"; P. Schimmel, "tRNA-synthetases."

Protein-protein interactions: D. De Rosier, "Electron microscopy of multienzyme complexes"; K. E. Van Holde, "Hemocyanin"; H. Schachman, "As-

partate transcarbamylase"; T. Schuster, "TMV protein assembly kinetics"; M. Laskowski, Jr., "Trypsin inhibitors."

Protein-lipid interactions: W. Hubbell, "Lipid mobility in membranes"; O. H. Griffith, "Spin label studies."

Complex assemblies: A. Klug, "Mechanism of TMV assembly"; S. Lowey, "Muscle"; D. Pettijohn, "Bacterial chromosomes."

Bones and Teeth, Chemistry, Physiology and Structure of

Kimball Union Academy

David V. Cohn, chairman; Claude D. Arnaud, vice chairman.

8 July. Contributed short papers (send abstracts to Claude D. Arnaud, Mayo Clinic, Rochester, Minnesota 55901). The induction of bone and cartilage (J. W. Hamilton, chairman): M. R. Urist, "Biochemical control of cartilage and bone morphogenesis"; C. Huggins, "The fibroblast-chondroblast-osteoblast transformation"; J. Lash, "Stimulation of in vitro somite chondrogenesis."

9 July. Magnesium and phosphate interrelationships with calcium regulating hormones (C. S. Anast, chairman): C. S. Anast, "Magnesium and parathyroid hormone interrelationship"; W. Y. W. Au, "Effect of magnesium on hormonal secretion in parathyroid gland culture"; R. V. Talmage, "Calcitonin and phosphate"; H. F. DeLuca, "Vitamin D and phosphate interrelationships." New bone-resorptive factors (L. G. Raisz, chairman): R. Luben, "Osteoclast-activating factor from human lymphocytes"; P. Goldhaber, "Prostaglandins and bone resorption"; L. G. Raisz, "Humoral, immunological and chemical mechanisms for stimulation of bone resorption."

10 July. Enzymatic degradation of the collagen-proteoglycan matrix (J. F. Woessner, Jr., chairman): Alan Barrett, "The enzymic degradation of cartilage proteoglycans"; E. D. Harris, Jr., "Collagenolysis in vivo: a multistep, highly regulated system." Calcium transport and deposition (C. L. Wadkins, chairman): A. L. Lehninger, "Mechanisms of energy-mediated calcium transport"; A. B. Borle, "Modulation of mitochondrial control of cellular calcium transport and homeostasis."

11 July. Calcium transport and deposition. A. R. Terepka and J. R. Coleman, "Localization of Ca^{2+} in calcium transporting epithelia"; R. E. Wuthier, "Studies on isolated extracellular vesicles from mineralizing cartilage"; C. L. Wadkins, "In vitro studies of collagenous matrix calcification"; J. D. Termine, "Calcium phosphate chemistry and physiological mineral deposition." Specialty program. William Young, "The chemical methodology in the examination of art masterpieces and the detection of frauds."

12 July. Quantitation of bone resorption in vivo (LeRoy Klein, chairman): D. J. Baylink, "Morphological methods for measurement of bone resorption"; J. W. Hansen, "Measurement of bone resorption using calcium isotopes"; L. Klein, "Measurement of bone resorption using ^{3}H-tetracycline."

Cancer

Colby College

Judah Folkman, chairman; Fred Rapp, vice chairman.

26 August. (R. Auerbach, discussion leader): H. Holtzer, "Differentiation in neoplasia"; W. J. Rutter, "Regulation of growth and cytodifferentiation by extracellular factors." (H. Eagle, discussion leader): M. Nirenberg, "Recent studies with neuroblastoma"; G. Nicholson, "Change in cytoplasmic control over cell surface after transformation."

27 August. (F. Rapp, discussion leader): A. Allison, "Mechanism of tumor cell destruction by lymphocytes"; G. Klein, (subject to be announced). (J. Coggin, discussion leader): J. Castro, "Recognition of fetal antigens in adult animals"; S. Rosenberg, "Mechanism of increased cell immunogenicity by neuraminidase."

28 August. (I. Fidler, discussion leader): D. Rifkin, "The pleiotropic effect of a protease produced by tumor cells"; R. Prehn, "Reticulo-endothelial system as a growth promoter." (F. Becker, discussion leader): M. Apple, "Strategies for anti-cancer prophylaxis." New methods fundamental to cell biology: S. Latt, "Microfluorometric analysis of DNA synthesis"; W. Dreyer, "New microsphere reagents for study of cell surface with light microscopy and scanning electron microscopy."

29 August. (E. Scolnick, discussion leader): P. Black, "Oncogenic viruses and autoimmunity"; C. Scher, "In-vitro transformation of cells by a murine leukemia virus." (J. Folkman, discussion leader): D. Thomas, "Marrow transplantation in acute leukemia"; D. Knighton, "Tumor angiogenesis: role of embryonic thymus."

30 August. J. Folkman, "Clues for cell biology from human cancer"; Lewis Thomas, "Perspectives."

Catalysis

Colby College–New Hampshire

John H. Sinfelt, chairman; Gary L. Haller, vice chairman.

17 June. J. T. Richardson, "Magnetic studies of dispersed nickel catalysts"; J. A. Dumesic, H. Topsoe, M. Boudart, "Surface anisotropy of supported iron catalysts"; F. W. Lytle, "Application of extended x-ray absorption fine structure (EXAFS) studies to highly dispersed catalyst systems."

18 June. R. Vaughan, "Application of new NMR techniques to surface chemistry"; L. Schmidt, "Catalytic oxidation of ammonia-kinetics and surface structure studies"; G. Ertl, "Interaction of small molecules with metal single crystal surfaces."

19 June. G. C. Bond, "Searching for novel catalysts"; D. Ollis, "Kinetic and thermodynamic aspects of alloys"; W. M. H. Sachtler, "Geometrical and electronic effects in catalysis by alloys."

20 June. R. L. Garten, "Mössbauer spectroscopic studies of supported bimetallic catalysts"; J. B. Peri, "Infrared studies of Pt and Pt-Re reforming catalysts"; V. Haensel, "Perspectives in applied catalysis research."

21 June. H. Skala, "Characterization of multi-metal catalysts by adsorption studies"; M. V. Mathieu, M. Primet, "Properties of highly dispersed Pt and Pd catalysts."

Ceramics, Solid State Studies in

Proctor Academy

Arthur M. Diness, chairman; Robert W. Vest, vice chairman.

Molecular and Microstructural Tailoring of Ceramics

5 August. (D. Niesz, discussion leader): P. E. D. Morgan, "Direct precipitation techniques for the preparation of ceramic compounds"; C. Greskovich, "Control of microscopic and submicroscopic defects in some sintered ceramics"; Short contribution: A. G. Eliott, "Polymeric precursor methods for producing ceramics." (R.

J. Doremus, discussion leader): L. H. Peebles, "Chemical processing and structure development in carbon fibers"; J. L. White, "Mesophase mechanisms in the formation of carbon and graphite microstructures."

6 August. (N. Tallan, discussion leader): B. G. Koepke, "Design of halide materials for laser windows"; R. E. Newnham, "Crystal chemistry and properties of ferroics." (R. W. Vest, discussion leader): W. H. Bonner, "Compositional changes as related to properties of garnet films"; R. J. Gambino, "Design of amorphous magnetic materials for bubble domain applications." Short contribution: R. J. Charles, "High temperature electrical properties of sintered SiC."

7 August. (W. B. Crandall, discussion leader): K. H. Jack, "The SIALONS-crystal chemistry, characterisation and properties"; Y. Oyama, "Fabrication, microstructure and behavior of SIALONS." (S. Wiederhorn, discussion leader): F. F. Lange, "The use of fracture mechanics in developing optimum microstructures for structural ceramics"; Short contributions: W. B. Crandall, "Pressure sintering of SIALONS"; J. Wimmer, "Sintering and properties of SIALONS"; J. McCauley, "Oxygen in αSi_3N_4?".

8 August. (V. J. Tennery, discussion leader): C. M. Cox, "Design of LMFBR ceramic fuels"; J. L. Scott, "Design of HTGCR ceramic fuels"; M. Marlowe, "Design of BWR ceramic fuels." (A. H. Heuer, discussion leader): R. Rose, "Evolutionary design of a natural structural material: Development and remodelling of human cancellous bone."

9 August. (P. J. Gielisse, discussion leader): E. Dow Whitney, "Microstructural design of hard materials"; R. Roy, "Surface design of hard materials"; Short contribution: D. P. H. Hasselman, "Alloying effects and processing variables for hard materials."

Coatings and Films

Kimball Union Academy

Kenneth L. Hoy, chairman; Joseph W. Prane, vice chairman.

15 July. (Robert M. Evans, chairman): C. L. Osborne, "Photoinitiation of acrylate-based coatings"; V. McGinniss, "Kinetic measurement of photocure systems"; James Dodge, "Studies on the rheology of paint systems."

16 July. (Harry Frisch, chairman): Shoji Ikeda, "Application of dynamic mechanical measurements to the study of coatings and films"; Souheng Wu, "Brittle ductile transition in polymers and its application to coatings technology"; L. H. Sperling, "Synthesis and behavior of prototype silent paint."

17 July. (John W. Vanderhoff, chairman): D. R. Bassett, "Controlled nonuniform polymers by a novel polymerization technique"; Geoffrey Mason, "Capillary forces in the formation of films from latices"; P. Killgoar, Jr., "Application of quasi-elastic light scattering to coatings systems."

18 July. (Joseph Vasta, chairman): E. Bagley, "Cheimstry and physics of hydrogel films"; Earl Hill, "Failure analysis applied to films and coatings properties"; M. J. R. Schwar, "Automatic color control for paint manufacture."

19 July. (Joseph Prane, chairman): John Simms, "Amine modification of polymers to improve intercoat adhesion"; M. Wismer (subject to be announced).

Applications

Scientists are invited to submit applications for attendance at the Gordon Research Conferences. An application blank is on page 1001 and may be submitted to Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, University of Rhode Island, Kingston, Rhode Island 02881.

Coherent Optics and Holography

Miramar Hotel

Brian J. Thompson, chairman; Emmett N. Leith, vice chairman.

24–28 June. N. Balasubramanian, "Optical correlation techniques and its application to image matching"; H. H. Barrett, "Coded-aperture imaging in radiology and nuclear medicine"; Byron Brendon, "Recent developments in acoustical holography"; Keith Bromley, "Optical data processing with incoherent light"; Nabil H. Farhat, "Microwave holography—recent advances"; John Latta, "Holographic optical elements and hybrid optical processors"; Peter Nisenson, "New directions in speckle pattern astronomy"; W. L. Rogers, "Imaging in nuclear medicine with time modulated coded apertures"; Jon E. Sollid, "Coherent optics applied to structural components"; J. D. Trollinger, "Coherent techniques in flow field visualization"; Anthony Vander Lugt, "Coherent optical processing"; James Wyant, "Holography in optical testing."

Corrosion

Colby College–New Hampshire

Howard W. Pickering, chairman; D. L. Douglass, vice chairman.

22 July. Elevated temperature corrosion I (R. W. Staehle, discussion leader): J. F. Elliott, "Activity of Na_2O in Na_2SO_4 and the destruction of protective oxides"; A. Panson, "Physical chemistry of sodium phosphate solutions and their corrosiveness in nuclear steam generators." Elevated temperature corrosion II (H. H. Uhlig, discussion leader): D. A. Vermilyea and A. W. Urguhart, "Zirconium alloys in aqueous and gaseous media at 200–600°C." D. de G. Jones, "Stress corrosion of iron alloys in water."

23 July. Thin film analysis I (N. Hackerman, discussion leader): D. Mitchell, "Surface analysis of oxide films by combined high energy electron diffraction and x-ray spectroscopy"; M. Froment, "Study of anodic layers by a new spectroreflectometric method." Thin film analysis II (R. P. Frankenthal, discussion leader): J. E. Castle, "The technique of XPS: analysis of protective oxides on alloys"; J. R. Ambrose and J. Kruger, "Depassivation and repassivation in localized corrosion."

24 July. Localized corrosion (M. B. Ives, discussion leader): H. Kaesche and H. Kaiser, "Uniform and intercrystalline corrosion of homogeneous Ni-Co-Pd alloys"; T. Beck, "Electrical transient studies with one-dimensional pits in titanium." Water vapor effects (M. Cohen, discussion leader): G. W. Simmons and R. P. Wei, "Surface chemistry studies related to SCC and corrosion fatigue"; B. Phipps, "The adsorbed aqueous phase in atmospheric corrosion."

25 July. New concepts in inhibition I (H. Leidheiser, discussion leader): J. Oudar, "Influence of the adsorption of oxygen and sulfur on the electrochemical properties of chromium-iron alloys"; R. H. Hausler, "Transients

during corrosion inhibitor application and problems related to inhibitor evaluation"; (H. Leibhafsky, discussion leader); S. V. Radcliffe, "Materials, the next crisis?"

26 July. New concepts in inhibition II (E. Verink, discussion leader): P. H. Ralston and B. P. Boffardi, "Phosphorus bearing materials as non-polluting corrosion inhibitors"; C. C. Nathan and D. C. Deegan, "Cooling water environment investigations."

Crystal Growth

Proctor Academy

Arnold Reisman, chairman; August F. Witt, vice chairman.

8 July. Crystal growth dynamics (James J. Tietjen, chairman): John Carruthers, "Hydrodynamics in melts"; Franz Rosenberger, "Transport phenomena and morphological stability in vapor growth"; Hans J. Scheel, "Accelerated crucible rotation techniques." Phase equilibria and non-stoichiometry (Joan Berkowitz, chairwoman): Lawrence Kaufman, "Computer calculations of phase diagrams and correlations with experiment"; Robert F. Brebrick, "Non-stoichiometry and the preparation of well-defined compositions of crystalline compounds."

9 July. Crystal defects and interfacial strain (Donald W. Shaw, chairman): J. Blanc, "Si/si epitaxy and models of epitaxial strain"; Thomas O. Baldwin, "X-ray diffraction investigations of defect clusters in semi-conductors"; G. R. Booker, "Structural defects associated with Type III-V compound epitaxial layers." Gaseous complexes and surface kinetics in solid-gas interactions (Margaret Frisch, chairwoman): F. P. Emmenegger, "Enhanced volatility of low volatility substances due to formation of gaseous complexes"; Thomas O. Sedgwick, "Raman scattering techniques in CVD"; B. A. Joyce, "Evaluation of surface kinetic data by the transform analysis of modulated molecular beam measurements in the crystal growth of III–V compounds."

10 July. Crystal growth by novel methods (R. Nitsche, chairman): J. O. McCaldin, "Si and Ge growth by solid phase epitaxy"; J. Brian Mullin, "The high pressure growth of GaAs and other compounds"; Leo Esaki, "Preparation, characterization and properties of superlattice crystals." Crystal growth of unusual materials and under unusual conditions (Gerard M. Blom, chairman): James H. Bredt, "The Skylab zero gravity crystal growth studies"; Alexander Rich, "Growth and polymorphism of transfer RNA molecules."

11 July. Growth of large crystals (Bruce A. Joyce, chairman): Ferenc E. Rosztoczy, "State of art in growth of GaAs and InP by LPE and CVD for microwave applications"; Ted L. Larsen, "LEC growth of large GaAs and GaP crystals for LED applications"; A. J. R. de Kock, "The effect of growth parameters on the formation and elimination of vacancy clusters and impurity striations in dislocation free Si crystals." Music for the piano, and commentary: Findlay Cockrell.

12 July. General topics in crystal growth (Charles S. Sahagian, chairman): Kurt Nassau, "Recent developments in the science of natural and synthetic gem crystals"; H. Gatos, "Impact of crystal growth on advanced technology."

Cyclic AMP

Tilton School

Alfred G. Gilman, chairman; Nelson D. Goldberg, vice chairman.

10 June. Cyclic AMP metabolism. Bacterial models of adenylate cyclase regulation (T. W. Rall, chairman): G. A. Robison, A. Peterkofsky. Regulation of mammalian adenylate cyclase (H. Bourne, chairman): V. A. Najjar, R. W. Butcher.

11 June. Cyclic AMP metabolism. Receptor-cyclase relationships (L. Birnbaumer, chairman): R. Schwyzer, K. L. Melmon. Phosphodiesterases. S. J. Strada, T. Russell.

12 June. Cyclic AMP Action. Cell proliferation. D. L. Friedman, R. E. Barnett. Enzyme induction (R. Haynes, chairman): W. D. Wicks, G. M. Tomkins.

13 June. Cyclic AMP Action. Protein kinases and phosphatases (J. Larner, chairman): O. M. Rosen, J. S. Bishop. P. Greengard.

14 June. Cyclic GMP. F. Murad, N. D. Goldberg.

Developmental Biology

Proctor Academy

Igor B. Dawid, chairman; Mary Lou Pardue, vice chairwoman.

12–16 August. Sequence organization in DNA (M. L. Pardue, chairwoman): R. Britten, D. Brown, J. Gall, E. Southern, S. Clarkson, D. Skinner. Macromolecular syntheses in oogenesis (J. Gall, chairman): P. Ford, H. Denis, R. Hallberg. Messenger RNA-1 (R. Perry, chairman): E. Davidson, H. Lodish, B. Daneholt, B. Brandhorst, R. Firtel. Messenger RNA-11 (D. Brown, chairman): P. Gross, F. Kafatos, E. Weinberg, L. Kedes, G. Brownlee, J. Lingrell, D. Shapiro, T. Honjo. Developmental genetics in Drosophila (W. Gehring, chairman): A. Shaern, D. Lindsley, P. Ripoll, W. Sofer, D. Suzuki, D. Kankel. Germ plasm; morphogenetic substances (J. Gurdon, chairman): A. Mahowalt, K . Ilmense, A. Gierer, C. Schaller, L. D. Smith. Developmental genetics and biochemistry in mammals (E. Russell, chairman): K. Paigen, D. Bennett, C. Manes, B. Mintz. Terratoma cells (L. Stevens, chairman): A. Levine, B. Mintz. Eukaryotic microorganisms (H. Lodish, chairman): L. Hartwell, H. G. Murti, A. L. Sonnenshein, A. Robertson.

Dielectric Phenomena

Proctor Academy

George Birnbaum, chairman; W. Vaughn, vice chairman.

29 July–2 August. L. Galatry, "Hydracid rotational structure in simple liquids"; S. H. Glarum, "Theory of HX absorption in simple nondipolar fluids"; R. G. Kepler, "Piezoelectric and pyroelectric phenomena in polyvinylidene fluoride"; M. G. Broadhurst, "Piezoelectricity and pyroelectricity in polymers"; Y. Wada, "Dynamic piezoelectric response in polymers"; G. Williams, "Dielectric relaxation and thermally stimulated dipolarization in amorphous systems"; G. E. Johnson, "Fourier transform techniques in dielectric measurements"; R. H. Cole, "Real time analysis of time domain reflectometry"; R. W. Zwanzig, "Rotation of perpendicular dipoles in polymer molecules"; G. W. Chantry, "High frequency dielectric properties of polymers"; A. A. Maryott, "Debye relaxation in gases and liquids"; W. Gelbart, "Collision induced dielectric and optical properties of gases and liquids"; G. Stell, "Equilibrium properties of polar fluids"; B. Berne, "Molecular dynamics studies of rotational motion in gases and liquids"; A. H. Price, "Microwave/far infrared dielectric measurements on liquids and

liquid crystals"; J. L. Rivail and J. Goulon, "Active intramolecular processes in dielectric relaxation"; U. Titulaer, "Analysis of conflicting theories of dielectric relaxation"; J. Constant, "Raman scattering and far infrared spectra of simple liquids"; W. Vaughn, "Dielectric relaxation of polar rodlike molecules in polar solvents."

Drug Metabolism

Holderness School

Robert S. Rozman, chairman; Hans W. Ruelius, vice chairman.

22 July. How good are animal models in drug metabolism studies? (James R. Gillette, chairman): Daniel L. Azarnoff, "Animal models for therapeutic agents"; Elizabeth Weisburger, "Animal models in chemical carcinogenesis"; Bert N. LaDu, "Species differences in noncytochrome P-450 enzymes." The effect of disease states on drug metabolism (Peter G. Dayton, chairman): Marcus M. Reidenberg, "The effects of kidney disease on drug metabolism and distribution"; Irwin W. Arias, "The effects of hepatic disease on drug metabolism and distribution."

23 July. Heme metabolism as a mechanism of toxicity (James R. Gillette, chairman): Urs A. Meyer, "Mechanisms of drug-induced porphyria"; Wayne Levin, "Drug-induced destruction of cytochrome P-450 in hepatic microsomes"; Bitten Stripp, "Drug-induced destruction of cytochrome P-450 in extrahepatic tissues." Interactions of xenobiotics (David W. Yesair, chairman): Elliot S. Vesell, "Problems in drug interactions"; Alasdair Breckenridge, "Alterations of drug response in man."

24 July. Formulation effects on metabolism and bioavailability of drugs (Takeru Higuchi, chairman): Milo Gibaldi, "The influence of route of administration on drug metabolism"; Arnold H. Beckett, "Metabolism and distribution of basic drugs—the importance of the base center." Metabolism of xenobiotics in agricultural animals (Frank J. Wolf, chairman): J. E. Bakke, "Metabolism of cyclophosphamide in sheep"; Donald J. Lisk, "Metabolism and milk residues."

25 July. The effects of age on metabolism of xenobiotics (Frederick J. DiCarlo, chairman): Paolo Morselli, "Drug metabolism during development"; Charles R. Short, "Perinatal development of mixed function oxidase activity in swine"; Sumner J. Yaffe, "Drug metabolism in the human fetus and newborn." Alan Done, "Pediatric drug problems."

26 July. Isomerism (geometric, positional and asymetric) in the metabolism of xenobiotics (George J. Wright, chairman): Marion W. Anders, "Stereochemistry of microsomal drug metabolism"; Robert E. McMahon, "Stereospecificity effects in the metabolism of alicyclic compounds."

Elastomers

Colby College–New Hampshire

J. Roger Beatty, chairman; D. P. Tate, vice chairman.

29 July. (M. L. Studebaker, discussion leader): J. Reid Shelton and Edward R. Harrington, "Organic sulfur compounds as peroxide decomposers." (Daniel Meyer, discussion leader): Alan Gent and A. Ahagon, "On bonding rubber to glass"; Thor L. Smith, "Strength of elastomeric block copolymers."

30 July. Elastomer processing symposium (V. L. Folt, discussion leader): Paul R. Van Buskirk, S. B. Turetzky and P. F. Gunberg, "Concepts leading to practical parameters for mixing"; Nobu Nakijima and E. A. Collins, "Linear and nonlinear viscoelastic measurements, ultimate properties and processability of raw elastomers"; Merton L. Studebaker, "Polymer-black interaction during mixing and its effects."

31 July. (W. F. Busse, discussion leader): M. M. Hall, "Vibration damping with elastomers"; M. K. Chakko, J. M. Foulk and K. D. Marshall, "Applications of material properties in predicting product performance"; Hans Palmgren, "Analysis of wear in mining applications and its correlation with laboratory test methods"; Hans Palmgren, "Crushing or penetration of rubber by large falling objects."

1 August. (Fred Eirich, discussion leader): C. J. Durham, "Measurement of creep, the relation of laboratory tests to service performance"; R. F. Bauer and E. A. Dudley, "Aspects of polymer blend compatibility"; B. C. Sekhar, "New facets in the Malaysian natural rubber industries."

2 August. (A. M. Gessler, discussion leader): Carl G. Siefried, "Relationship of structure and properties for urethane rubbers"; B. B. Boonstra, H. Cochrane and E. M. Dannenberg, "The reinforcement of silicone rubber by particulate silica."

Electron Donor-Acceptor Interactions

New Hampton School

E. A. Chandross, chairman; S. D. Christian, A. K. Colter, and E. M. Kosower, co-vice chairmen.

19–23 August. G. Bird, "Sensitized photoconductivity in imaging systems"; M. J. Blandamer, "Theory and application of charge transfer to solvent spectra"; J. Bolton, "Photo-induced electron transfer reactions in photosynthesis"; F. DiSalvo, "Layered transition metal compounds as electron acceptors: interactions with metallic elements and organic molecules"; W. C. Herndon, "Calorimetric studies of π-molecular complexes"; U. Mueller-Westerhoff, "Organometallic charge transfer complexes and their conductive properties"; H. D. Roth, "The study of electron transfer reactions by nuclear magnetic resonance techniques"; H. Staerk, "Laser photolysis studies of excited state EDA interactions"; M. Szwarc, "Electron transfer induced cis-trans isomerization"; J. Verhoeven, "Conformational requirements for intramolecular donor-acceptor interaction"; F. Wudl, "Electrical conductivity by the organic solid state: synthesis and determination of some unusual properties"; N. C. Yang, "Chemistry of exciplexes." Contributed papers (two sessions, eight papers).

Energy Coupling Mechanisms

Tilton School

D. Rao Sanadi, co-chairman; Paul D. Boyer, co-chairman.

8–12 July. Energy-related modifications. Iron-sulfur proteins (A. San Pietro, chairman): H. Beinert, P. Garland, T. Ohnishi, T. P. Singer, S. P. J. Albracht. Cytochromes (E. C. Slater, chairman): B. Chance, M. K. F. Wikstrom, W. Butler. Conformational changes (A. Jagendorf, chairman): P. D. Boyer, J. Gergely, D. E. Green. Proton transport and coupling: (S. Papa, chairman) P. Hinkle, M. Avron, A. Trebst. Transport mediators (M. Klingenberg, chairman): W. Albers, E. Carafoli, G. Blondin. Mechanism of uncouplers and phosphorylation blocks (H. Lardy, chairman): L. Ernster, J. Wang,

R. B. Beechey. Membrane fragmentation and reassembly: Y. Hatefi, L. Vernon, W. Hasselbach. Photophosphorylation in halobacterium halobium: W. Stoeckenius. Nucleotide binding to ATPase: (M. Pullman, chairman). Biogenesis and mutant approach to energy coupling (R. Butow, chairman): A. Tzagaloff, D. Griffiths, F. Gibson, D. Gutnick. There will be an opportunity for participants to introduce data relevant to the discussion topics in scheduled poster displays.

Environmental Sciences: Water

New Hampton School

Richard J. Benoit, chairman; John L. Brooks, vice chairman.

Aquatic Oligodynamics—The Science of Trace Substances in Water

1 July. Chemical aspects. Analytics, precision and accuracy. Chemical dynamics of trace metals, organics, nutrients.

2 July. Biological aspects. Physiological responses; chronic effects. Ecological effects and implications.

3 July. Engineering aspects. Control and monitoring strategies and methods. Economic implications.

4 July. Management aspects. State-of-the-art (best available technology). Criteria standards, regulations and policies.

5 July. Reserved for unscheduled papers and discussion.

Enzymes, Coenzymes and Metabolic Pathways

Miramar Hotel

Michael Raftery, co-chairman; M. Martinez-Carrion, co-chairman; William P. Jencks, co-vice chairman; Konrad E. Block, co-vice chairman.

17–21 June. Pyridoxal phosphate dependent enzymes (M. Martinez-Carrion, coordinator). Metalloenzymes (W. Orme-Johnson, coordinator). Half-of-the-sites reactivity in enzymes (F. W. Dahlquist, coordinator). Enzymes of nucleic acid synthesis, restriction and recognition (B. Reid, coordinator). Control enzymes (S. Parsons, coordinator). Recent advances in enzymes catalysis (M. Raftery, coordinator). Membrane bound enzymes (M. Raftery, coordinator).

Fertilization Processes of Man and Mammals

Holderness School

Ralph B. L. Gwatkin, chairman; David Epel, vice chairman.

17 June. The cumulus oophorus and zona pellucida (Luciano Zamboni, session chairman): Luciano Zamboni, "Structure of the cumulus oophorus before and after ovulation"; Harry W. Carter, "Cumulus cells under the scanning EM"; Ralph B. L. Gwatkin, "Role of the cumulus in sperm capacitation"; Michael G. O'Rand, "Comparison with the capacitation-like interaction of hydroids." (Terry G. Baker, session chairman): Gilles Bleau, "Effect of steroids on capacitation by cumulus"; Terry G. Baker, "Origin of the zona pellucida"; George E. Seidel, Jr., "Structure of the zona pellucida"; C. Alex Shivers, "Antigenic structure of the zona pellucida."

18 June. Interactions before sperm penetration (John F. Hartmann, session chairman): John F. Hartmann, "Prepenetration reactions between sperm and egg"; David M. Phillips, "Fine structure of the sperm acrosome"; Henning Pedersen, "Functional anatomy of the human acrosome"; Garth L. Nicolson, "Action of plant agglutinins on gametes"; Kay A. O. Ellem, "Comparison with virus-host cell interactions." Sperm enzymes and their inhibitors (Hans Fritz, session chairman): Penelope Gaddum-Rosse, "Demonstration of proteases by gelatin films"; Hans Fritz, "Human and boar acrosomal proteinases and their inhibitors"; Richard Stambaugh, "Sperm enzymes and their role in fertilization"; Charles B. Metz, "Antibodies to sperm enzymes"; William L. Williams, "Acrosomal enzyme inhibitors as antifertility agents."

19 June. Zona reaction and block to polyspermy (C. R. Austin, session chairman): C. R. Austin, "Comparative aspects"; Daniel Szollosi, "Cortical granules"; Ralph B. L. Gwatkin, "Zona reaction in mammalian eggs"; Herbert Schuel, "Comparison with sea urchins"; Jerry L. Hedrick, "Comparison with amphibians."

20 June. Fusion, formation of pronuclei and syngamy (Luther Franklin, session chairman): Michael Edidin, "General aspects of cell fusion"; Luther Franklin, "Fusion of the sperm with the vitellus and syngamy"; Frank J. Longo, "Pronuclear migration and association"; Patricia Olds, "Effect of the T locus on fertilization"; Everett Andersen, "Events leading to mitosis." Parthenogenesis and metabolic response of the egg to fertilization (David Epel, session chairman): David Epel, "Egg activation"; Richard A. Steinhardt, "Ionic mechanisms in the activation of eggs"; Andrzej K. Tarkowski, "Parthenogenesis in mammals"; Samuel Stern, "Metabolism of the mammalian oocyte in preparation for fertilization"; John D. Biggers, "Changes in energy requirements as a result of fertilization"; Gary D. Burkholder, "A storage form of ribosomes in mouse oocytes."

21 June. Human fertilization (Pierre Soupart, session chairman): M. C. Chang, "Critical review of in vitro fertilization systems"; Pierre Soupart, "Fertilization of human eggs in vitro"; Benjamin G. Brackett, "Subhuman primate fertilization"; E. S. E. Hafez, "Human fertilization under SEM"; J. Michael Bedford, "Summing-up of conference and unsolved problems."

Food and Nutrition

Colby College–New Hampshire

Richard L. Hall, chairman; Gilbert A. Leveille, vice chairman.

12 August. Nutrition and sub-cultures (Gilbert A. Leveille, chairman): "Appalachia"; "Black poverty"; "Organic foods."

13 August. Energy and the food supply (Georg A. Borgstrom, chairman): "Energy and agriculture"; "Energy and food processing"; "Energy and food transportation."

14 August. Nutrition and food safety (Richard A. Greenberg, chairman): Discussion of nitrites, sulfites, and other topics on which new data are available bearing on both benefit-cost and benefit-risk. A national monitoring system for food supply and diet (Terrance Hanold, chairman): "Is such a monitoring system a realistic possibility?"

15 August. A national monitoring system for food supply and diet (Terrance Hanold, chairman): "Characteristics of past surveys. What do we need to do better? How can it be done?" Maynard A. Amerine, "Wine and nutrition."

16 August. The philosophical and informational base for decisions regarding the food supply (Samuel E. Stumpf, chairman): A series of dis-

cussions of major issues in attempting to apply ethical, risk-benefit, and cost-benefit considerations to controversial problem areas.

Friction, Lubrication and Wear

Colby College–New Hampshire

Robert L. Johnson, chairman; Elmer E. Klaus, vice chairman.

10 June. (B. W. Kelley, discussion leader): J. McCool, "Characterization of surfaces"; D. H. Buckley, "Adhesion, friction, wear and deformation of unlubricated surfaces."

11 June. (D. Flom, discussion leader): G. Salomon, "Systems analysis in wear studies"; R. Courtel, "Phenomena in friction with polymers"; E. E. Klaus, "Boundary lubrication—the role of surface polymers."

12 June. (H. Cheng, discussion leader): A. Cameron, "Transition conditions for failure of thin film lubrication"; L. D. Wedeven, "Friction and starvation in elastohydrodynamic lubricated contacts."

13 June. (F. F. Ling, discussion leader): W. O. Winer, "Rheology for lubricant films in concentrated contacts"; J. Lauer, "I. R. spectrographic analysis of lubricants in concentrated contacts"; Paul F. Donoven, "The energy problem."

14 June. (K. Ludema, discussion leader): D. Godfrey, "Field streaming and cavitation as wear phenomena."

Fuels Science

New Hampton School

G. Alex Mills, chairman; Richard C. Neavel, vice chairman.

8 July. Structure and constitution of coal (N. Berkowitz, discussion leader): S. K. Chakrabartty, "Some new structure concepts for coal"; R. A. Friedel, "Cellulose, wood, and coals at 200°C for five years." Science of oil shale conversion (C. H. Prien, discussion leader): J. J. Schmidt-Collerus, "Structure and biogenesis of oil shale kerogens"; D. Allred, "Mechanisms and kinetics of oil shale pyrolysis"; J. J. Duvall, H. B. Jensen, and G. L. Cook, "Kerogen conversion and transport of the shale oil in a controlled state retort"; T. F. Yen, "Biochemical conversion of oil shale kerogens."

9 July. Coal gasification (B. S. Lee, discussion leader): D. Elgin, "Commercial sized coal gasification plants"; P. Tarman, "Oxygen based coal gasification pilot plants"; G. Curran, "Air based coal gasification pilot plants." Fuel gases for nearterm industrial needs (A. M. Squires, discussion leader): J. F. Farnsworth, "The Koppers-Totzek gasification system and its industrial applications"; M. Gluckman and J. Yerushalmi, "The ignifluid gasification system, and problems of its interfacing with boilers and other fuel-burning equipment"; D. Teixeira, "Retrofitting gas-fired boilers to burn low- and intermediate-Btu fuel gas."

10 July. Coal liquefaction (R. C. Neavel, discussion leader): Z. L. Taylor, "Chemistry of coal liquefaction"; D. C. Cronauer, "Products from a catalytic liquefaction of coal"; P. M. Yavorsky, "Catalytic liquefaction of coal by the synthoil process." Liquefaction (I. Wender, discussion leader): National coal board—Coal liquefaction by liquid and supercritical gaseous solvents. H. Pichler, "Products from coal in competition with products from petroleum"; R. D. Long, "Processing of heavy ends from petroleum."

11 July. Advances in energy conversion (R. M. Lundberg, discussion leader): R. Hoy, "Fluidised bed combustion." Impact of energy policy on R & D (speakers and subjects to be announced).

12 July. (G. A. Mills, discussion leader): F. L. Jones, "Methanol from coal"; F. W. Camp, "Science of tar sands processing."

Geophysics

Brewster Academy

Thomas J. Ahrens, chairman; M. Nafi Toksoz, vice chairman.

The Driving Mechanisms of Plate Tectonics

5 August. Global observations (C. Kisslinger, discussion leader): L. Sykes, "Intraplate earthquakes and observations of stresses in the lithosphere"; J. Sclater, "Gravity and bathymetry in the North Atlantic"; P. Molnar and T. Atwater, "The last 100 million years of plate motion in the Pacific"; P. Hurley, "Upwelling under continents, evidence from intercratonic thermotectonic belts."

6 August. Convergent zones, marginal basins and ridges (D. T. Griggs, discussion leader): W. Hamilton, "Formation of subduction melanges"; J. Bird, "Rocks from the interior of the earth"; A. Smith, "Stresses in the downgoing slab and the surrounding athenosphere"; A. Lachenbruch, "Ocean ridge mechanics."

7 August. (G. Ernst, discussion leader): G. Ernst, "Subduction zones and the petrology of convergent plate margins"; P. Perkins and O. L. Anderson, "Episodic magmatic activity from thermal runaways in the mantle." Plate tectonics and man (Orson Anderson, discussion leader): W. Benson, "The international deep sea drilling program"; (speaker to be announced): "Plate tectonics and mineral exploration strategies."

8 August. Hydrodynamics of the mantle (W. Kaula, discussion leader): W. Kaula, "Mantle convection as an inverse problem"; D. Turcotte and M. Parmentier, "Mantle flow calculations"; F. Richter, "Mantle wide convection"; B. Parsons, "Laboratory experiments on convection and their application"; V. Artyushkov, (subject to be announced); G. Schubert, "Phase changes and convection"; N. Sleep, "Convection calculations in converging zones."

9 August. Unresolved problems of plate tectonics (L. Knopoff, discussion leader): D. T. Griggs, "The thermal engine"; L. Knopoff, "Unresolved problems of plate tectonics"; D. J. Andrews, "The range of tectonic problems susceptible to numerical calculations."

Hemostasis

Proctor Academy

Aaron J. Marcus, chairman; Kenneth C. Robbins, vice chairman.

10 June. Anti-hemophilic factor and von Willebrand factor (Kenenth M. Brinkhous, discussion leader): Dominique Meyer, "Von Willebrand factor, factor VIII and factor VIII–related antigen"; Bunno N. Bouma, "Immunological characterization of von Willebrand factor." (Walter H. Seegers, discussion leader): Leon W. Hoyer, "Immunologic properties of AHF subunits"; Harvey J. Weiss, "Factor VIII and platelets in the pathogenesis of von Willebrand's disease." (Allan J. Johnson, discussion leader): Theodore S. Zimmerman, "Immunochemical approaches to molecular aberrations of hemophilia and von Willebrand's dis-

ease"; Herbert A. Cooper, "Studies of the recombination of factor VIII after dissociation by $CaCl_2$"; Eric A. Jaffee, "Synthesis of anti-hemophilic factor (factor VIII) by cultured human endothelial cells."

11 June. Inhibitors, coagulation, lipids, endotoxin and thrombosis (Sandor S. Shapiro, discussion leader): Peter C. Harpel, "Structure and function of α_2-macroglobulin and C1 inactivator"; Robert Rosenberg, "Human antithrombin-heparin cofactor." (Stanford Wessler, discussion leader): Allen P. Kaplan, "Hageman factor dependent pathways of coagulation, kinin generation and fibrinolysis"; Charles Cochrane, "Hageman factor." (Peter G. Barton, discussion leader): Arne Nordøy, "Interactions between lipids and platelets in the pathogenesis of thrombosis"; S. Renaud, "Platelet factor 3 activity and hypercoagulability"; Julian Niemetz, "Endotoxin: its role on the procoagulant activity of leukocytes."

12 June. Thrombin, cyclic nucleotides, platelets and arterial thrombosis (Marian A. Packham, discussion leader): Philip W. Majerus, "Thrombin-platelet interaction": Daniel Deykin, "The effects of thrombin on platelet lipid metabolism." (J. Bryan Smith, discussion leader): Lowell E. McCoy, "Proteolytic specificity of thrombin"; Richard J. Haslam, "Roles of cyclic AMP and cyclic GMP in platelet function." (N. Raphael Shulman, discussion leader): Edwin W. Salzman, "Interactions of platelets with surfaces"; Peter N. Walsh, "Platelets and intrinsic coagulation"; Laurence A. Harker, "Arterial thrombus formation: pathogenesis and prevention."

13 June. Vascular injury, atherosclerosis, tissue factor and collagen (Sean Moore, discussion leader): Russell Ross, "Platelet factors present in serum responsible for smooth muscle proliferation in vitro"; Michael B. Stemerman, "Tissue factor and the blood vessel: localization by electron microscopic immuno-histochemistry." John C. Hoak, discussion leader): C. Richard Minick, "Immunological injury and atherosclerosis"; Frances Pitlick, "Chemistry of cell surface tissue factor." (Graham A. Jamieson, discussion leader): Caroline McI. Chesney, "The role of collagen carbohydrates in the platelet-collagen interaction"; Andrew H. Kang, "Collagen-induced platelet aggregation: covalent structural determinants"; Hans R. Baumgartner, "Platelet adhesion to natural and artificial surfaces."

14 June. Platelet contractile proteins (Ernst F. Lüscher, discussion leader): Robert S. Adelstein, "The contractile proteins of human blood platelets"; Isaac Cohen, "Regulation of the platelet contractile system." Clinical aspects of occlusive vascular disease: Jack Hirsh, "The use of fibrinogen scanning and blood tests to predict, diagnose and follow the response to therapy of venous thromboembolism."

Heterocyclic Compounds, Chemistry of

New Hampton School

Pius A. Wehrli, chairman; Rudi A. Abramovitch, vice chairman.

24 June. (P. A. Wehrli, discussion leader): P. A. Wehrli, Introductory remarks; R. H. Schlessinger, "New construction of heterocycles using Michael addition reactions"; U. Schöllkopf, "Syntheses of heterocyclic compounds with α-metalated isocyanides." (R. H. Schlessinger, discussion leader): P. L. Stotter, "Heterocycles as intermediates in natural products synthesis"; D. Lednicer, "Synthesis of heterocycle substituted benzospiranes."

25 June. (L. Miller, dicussion leader): G. Büchi, "Synthesis of indole alkaloids"; M. Schwartz, "Oxidative phenol coupling in the synthesis of alkaloids." (A. I. Meyers, discussion leader): H. W. Moore, "Azidoquinones, versatile synthetic precursors of heterocyclic compounds"; L. Miller, "Anodic organic chemistry."

26 June. (G. Büchi, discussion leader): R. Scheffold, "Synthesis and reactions of corrine-type metal-complexes"; J. Richman, "Macrocyclic amines—synthesis, properties and reactions." (R. Abramovitch, discussion leader): P. Gassmann, "New syntheses of old heterocyclic"; K. W. Ratts, "Synthesis of sulfur containing heterocycles from amids."

27 June. (P. L. Stotter, discussion leader): J. M. McIntosh, "Dihydrothiophenes and related heterocycles: useful organic synthons"; J. Gosteli, "New syntheses of dibenzcycloheptenes-azepins-oxepins and -thiepins." (J. Gosteli, discussion leader): E. Klingsberg, "Recent developments in the chemistry of thiothiophthene no-bond resonance compounds"; S. Kukolja, "Chemical transformations of cephalosporins and penicillins."

28 June. (P. A. Wehrli, discussion leader): K. Potts, "Heteroaromatic ylides—synthesis and reactions."

High Pressure, Research at

Kimball Union Academy

George A. Samara, chairman; David Lazarus, vice chairman.

Matter at High Density

17 June. Introductory lecture: Paul Fleury, "Spectroscopy and the properties of condensed matter." Spectroscopy: lattice dynamics: Robert P. Lowndes, "Lattice anharmocities"; Paul S. Peercy, "Soft modes and coupled mode interactions." Spectroscopy: molecular structure: John P. McTague, "Properties and phases of solid hydrogen below 10 kbar"; M. Jean-Louis *et al.*, "Near IR and Raman spectra of solid normal hydrogen up to 12 kbar at 4.2°K and 2.0°K." Jeri Jonas, "Raman spectroscopy in liquids at high pressure."

18 June. Spectroscopy and optical properties: M. Cardona, "Raman scattering in semiconductors under uniaxial and hydrostatic pressure"; K. Vedam, "Effects of pressure on the optical properties of materials"; S. S. Mitra and J. Vetelino, "Optical properties of structurally disordered solids." Advances in experimental techniques and new results I: Carl Garland, "Heat capacity measurements under hydrostatic pressure"; Edward Whalley, "Hydrostatic optical cell to 20 kbar"; Malcolm Nicol, "4°K cryostat for high pressure optical cell"; Arthur Ruoff, "High pressure apparatus design: material strength considerations"; other contributions.

19 June. Cooperative phenomena: "Jörg Wittig, "The electronic structure of lanthanum metal: how useful are high pressure-low temperature experiments?"; Daniel Bloch, "Recent high pressure studies in magnetism"; Paul Keyes and William B. Daniels, "Tricritical points in liquid crystals at high pressure." Phase transitions: Denis McWhan, "Continuous s-d transition in fcc cesium"; Shigeru Minomura, "Pressure-induced transitions in amorphous semiconductors"; James Asay and Lynn Barker, "Melting and polymorphic transitions under dynamic compression"; Russian group, "Recent Russian results."

20 June. Hydrogen I: Marvin Ross, "Shock compression of the liquid hy-

drogen isotopes and a prediction of their metallic transitions"; Max Fowler and Robert Caird, "Isentropic compression of solid deuterium"; Andrew McMahan and James Krumhansel, "Molecular interactions at high densities from first principles calculations": Russian group, "Recent Russian results." Hydrogen II: Wendel de Marcus, "Metallic hydrogen and planetary interiors."

21 June. Advances in experimental techniques and new results II: R. S. Raghavan, "Nuclear techniques"; Naoto Kawai, "Advances in the split-sphere apparatus"; Robert A. Beyerlein and Thomas G. Worlton, "Neutron diffraction at high pressure"; other contributions.

High Temperature Chemistry

Proctor Academy

Gerd M. Rosenblatt, chairman; Joseph Berkowitz, vice chairman.

22 July. High temperature chemical kinetics (W. L. Worrell, discussion leader): H. J. Grabke, "Kinetics and adsorption in gas-metal interactions at elevated temperatures"; D. R. Olander, "Heterogeneous chemical kinetics using modulated molecular beams"; R. A. Rapp, "Displacement reactions in the solid state"; H. Hörster, "High temperature chemistry and light production."

23 July. New high temperature methods: H. Rickert, "Electrochemical methods for the investigation of high temperature chemical kinetics"; L. N. Gorokhov, "Studies of ion-molecule reactions"; R. N. Zare, "Kinetic and thermodynamic studies of high temperature vapors using chemiluminescence and fluorescence techniques"; J. L. Margrave, "High temperature applications of levitation."

24 July. New high temperature methods: I. R. Beattie, "Raman spectroscopy of high temperature species"; R. Forman, "High temperature heat pipes." Panel discussion: "High temperatures data complications: status and prospects" (D. Cubicciotti, chairman): R. J. Ackerman, M. W. Chase, J. F. Masi, H. J. White, Jr. High temperature materials problems in reactors (M. G. Bowman, discussion leader): E. A. Aitkin, "Oxygen transport and other problems in fission reactor fuel elements."

25 July. High temperature materials for energy conversion (O. H. Krikorian, discussion leader): A. E. Morris, "Compatibilities of fusion reactor materials at high temperatures"; E. J. Cairns, "Materials considerations for high temperature batteries and fuel cells." Keynote address: L. Brewer, "High temperature chemistry and chemical bonding."

26 July. Chemical bonding in high temperature systems (J. L. Margrave, discussion leader): R. F. Barrow, "High temperature diatomic molecules: spectra and structure"; K. E. Spear, "Correlations of bonding and properties in solid borides."

The program is supported in part by the Directorate of Chemical Sciences, Air Force Office of Scientific Research.

Hormone Action

Kimball Union Academy

Jean D. Wilson, chairman; Bert W. O'Malley, vice chairman.

29 July. The mechanism of action of the thyroid hormones: perspectives (Jack W. Oppenheimer, discussion leader): Martin I. Surks, "Nuclear receptors in thyroid hormones"; Herbert Samuels, "Thyroid hormone action: relation of biologic effects to hormone-receptor interaction in cell culture"; Earl Frieden, "Development of differentiation and calorigeneic effects of thyroid hormone in vertebrates"; Isidore S. Edelman, "Thyroid thermogenesis and active sodium transport"; Overview of steroid hormone binding proteins (Elwood V. Jensen, discussion leader): G. A. Pucca, "Purification and properties of the estrogen-receptor protein"; Thomas Gorell, "Purification and characterization of estrophilin"; William Shrader, "Progesterone binding protein of the oviduct"; Daniel Santi, "Affinity chromatography of the glucocorticoid receptor."

30 July. Receptors for small hormones and peptide hormones (Kevin J. Catt, discussion leader): John Bilzekian, "The catecholamines"; Kevin J. Catt, "Angiotensin II"; Ronald Kahn, "Insulin"; Jesse Roth, "Growth hormone"; Louis E. Underwood, "Somatomedins"; Melvin Blecher, "Glucagon"; J. Bockaert, "Vasopressin/oxytocin"; Maria Dufau, "Luteinizing Hormone"; Anthony R. Means, "The Follicle Stimulating Hormone"; R. Shiu, "Prolactin."

31 July. Role of cyclic AMP in cell growth and differentiation (Gordon Gill, discussion leader): Ira H. Pastan, "Cyclic AMP and malignant transformation"; Philip Coffino, "Mutations in mouse lymphoma cells affecting cyclic AMP function"; Ora M. Rosen, "Cyclic AMP dependent phosphorylation of membrane proteins"; Gordon Gill, "Cyclic AMP dependent protein kinases." Steroid hormones and brain function (Bruce McEwen, discussion leader): Donald W. Pfaff, "The neuroanatomy of hormone receptors"; Bruce McEwen, "Metabolism and binding of steroid hormones"; Charles A. Barraclough, "Neuroendocrine regulation"; Harvey Feder, "Regulation of reproductive behavior"; Roger A. Gorski, "Role of steroid hormones in development of the central nervous system."

1 August. Nuclear-cytoplasmic interactions (Jack Gorski, discussion leader): Gary C. Chamness and William L. McGuire, "In vitro studies of receptor interactions with nuclei"; Carl M. Feldherr, "Exchange of macromolecules across the nuclear envelope"; Samuel B. Horowitz, "The nucleocytoplasmic permeability and distribution of small solutes and macromolecules"; Jack Gorski, "The interchange of steroid receptors between nuclear and cytoplasmic compartments." Current topics in hormone action (Stanley Korenman, discussion leader): (short presentations).

2 August. Protein-DNA interactions (Bert W. O'Malley, discussion leader): Suzanne Bourgeois, "Repressor binding to specific operator sequences"; Arthur Riggs, "Repressor binding to non-operator DNA sequences"; John Baxter, "Receptor binding to nuclear constituents"; Bert W. O'Malley, "Receptor binding to chromatin and effects on transcription." Plenary lecture to be given during the week: Kenneth Paigen, "Genetic control of androgen mediated glucuronidase induction in mice."

Hydrocarbon Chemistry

Proctor Academy

Charles H. DePuy, chairman; Donald M. Fenton, vice chairman.

17 June. A. de Meijere, "Unusual bridgehead reactivities of new polycyclic hydrocarbons"; R. C. De Selms, "Formation and rearrangements of some cyclopropane and cyclobutene systems"; O. L. Chapman, "Low temperature photochemistry."

18 June. P. A. Argabright, "Cyanate ion in organic synthesis and oil recovery"; W. T. Wipke, "Computer anal-

ysis of molecular rearrangement"; A. G. Anastassiou, "Synthesis and study of select medium-size π systems."

19 June. T. J. Atkins, "Macrocyclic polyamines"; J. M. Lehn, "Macropolycyclic ligands and their complexes"; D. J. Cram, "Host-guest chemistry—how molecules get a grab on one another."

20 June. V. Rautenstrauch, "Reactions of alkali metals with unsaturated hydrocarbons: some new variants of a classical reaction." Open session for short contributions from attendees. L. M. Stephenson, "Stereochemistry of some hydrocarbon oxidation reactions."

21 June. R. H. Shapiro, "Organic ion-molecule reactions in a flowing afterglow"; G. M. Kramer, "Cyclopropanes in super acid and ion stability as an acidity index."

Immobolized Enzymes and Other Active Molecules

Holderness School

Louis A. Pilato, chairman; E. R. Lieberman, vice chairman.

26 August. Chemical attachment or entrapment of active molecules (E. R. Lieberman, discussion leader): P. S. Forgione, O. R. Zaborsky, D. C. Neckers. Material science of the support components (W. R. Vieth, discussion leader): L. M. Robeson, R. W. Coughlin, R. A. Messing.

27 August. Chemical reactions of immobilized molecules: enzymes and biomolecules (R. D. Falb, discussion leader): K. Mosbach, P. T. Gilham. Kinetics of immobilized enzymes (L. B. Wingard, Jr., discussion leader): D. Ollis, W. R. Vieth.

28 August. Coenzymes and multienzymes: (E. K. Pye, discussion leader) G. M. Whitesides, H. Hultin. Utilization of immobilized molecules for separation or purification: affinity chromatography and immunoassay (A. Emery, discussion leader): S. C. March, R. Easterday, S. E. Charm.

29 August. Utilization of immobilized molecules for analysis and asymmetric synthesis: W. E. Hornby, H. B. Kagan. Properties, structure, modification of active species (J. B. Kinsinger, discussion leader): E. T. Kaiser, R. H. Grubbs.

30 August. Chemical reactions of immobilized molecules: crown ethers and organometallics (J. C. Bailar, Jr., discussion leader): C. U. Pittman, Jr., D. J. Cram.

Infrared and Raman Spectroscopy

Kimball Union Academy

George E. Leroi, chairman; James R. Scherer, vice chairman.

19 August. Weakly bound complexes: H. L. Welsh, "Spectra of van der Waal's complexes in pressure-induced infrared absorption"; W. A. Klemperer, "Molecular beam spectroscopy of loosely bound complexes." Double resonance spectroscopy: K. Shimoda, "Double-resonance spectroscopy of molecules."

20 August. Environmental spectroscopy: T. Hirschfield, "Environmental spectroscopy"; P. Hanst, "Long path infrared absorption spectroscopy of pollutants"; H. Tannenbaum, "Remote infrared spectroscopy." Ultrafast processes in liquid: W. Kaiser, "Time-resolved investigations of the dynamics of molecular vibrations in liquids."

21 August. Spectroscopy of surfaces and films: R. G. Greenler, "Infrared and Raman studies of adsorbed molecules on metal surfaces"; A. H. Hardin, "Raman scattering from some adsorbent/adsorbate systems." Electron diffraction: K. Kuchitsu, "How can electron diffraction complement spectroscopic structure studies?"

22 August. Circular differential Raman scattering: A. D. Buckingham, "Circular intensity differential Raman scattering from optically active molecules"; B. Bosnich, "The measurement and potential applications of Raman circular dichroism." Astrophysics: P. Solomon, "Interstellar molecules."

23 August. Resonance Raman spectroscopy and resonance fluorescence: D. L. Rousseau, "Resonance Raman scattering and resonance fluorescence: implications from iodine"; T. G. Spiro, "Resonance Raman spectroscopy of biological molecules."

Inorganic Chemistry

New Hampton School

M. Frederick Hawthorne, chairman; Frederick E. Brinckman, vice chairman.

5 August. Solid state inorganic chemistry (Aaron Wold, chairman): Introduction. A. R. Hilton, "Chalcogenide glasses"; R. Johnson, "Lead alloy salts in the systems, lead tin, telluride, lead germanium telluride"; R. Bouchard, "Platinum metal oxide conductors." (J. M. Longo, chairman): M. Stanley Whittingham, "Solid state chemical and electrochemical energy systems"; Walter L. Roth, "Structures and transport properties of solid ionic conductors"; Brian Steele, "Thermodynamic and transport properties of possible secondary cathodes."

6 August. Solid state inorganic chemistry (George D. Libowitz, chairman): D. M. Gruen, "The role of solid state chemistry in the development of controlled thermal nuclear fusion"; J. J. Lofersi, "Solid state science as related to solar energy utilization"; George G. Libowitz, "Solid state chemistry and the hydrogen economy." (Robert Laudise, chairman): Murray Robbins, "Chemical preparation of solid state materials—thermistors and ferrites"; J. G. Bergman, "Non-linear optical susceptibilities of individual bonds"; J. H. Wernick, "Ternary semiconductors"; Frank Di Salvo, "Intercalation compounds"; Bruce Scott, "Mixed valence platinum chains—an approach to one dimensional metals."

7 August. Inorganic polymers (Robert A. Shaw, chairman): Introduction. O. O. Glemser, "Isopolymolybdates and isopolytungsates"; S. Friberg, "Aluminum disoaps; the structure of association polymers"; G. F. Heron, "Asbestos: recent advances in science and technology." (Chairman to be announced): R. M. Barrer, "Aspects of zeolite synthesis"; J. G. Hooly, "Graphite intercalation compounds"; R. J. Diefendorf, "Origin and consequences of microstructure in carbon fibers."

8 August. Inorganic polymers (chairman to be announced): D. V. Badami, "Inorganic fibers"; E. Hedaya, "New approaches to carborane siloxanes." Donald R. Johnson, "Transient molecules from the laboratory to the milky way."

9 August. Inorganic polymers (chairman to be announced): H. Allcock, "Phosphazene high polymer chemistry"; R. A. Shaw, "Chemical and physical chemical factors affecting replacement patterns in phosphazenes"; J. B. Hyne, "Polymeric sulfur; stabilization and properties."

Interfaces, Chemistry at

Kimball Union Academy

Henry M. Princen, chairman; Robert J. Good, vice chairman.

22 July. Precipitation and dissolution (G. H. Nancollas, chairman): G. H. Nancollas, "The kinetics of crystal growth and dissolution in aqueous solution"; M. Kahlweit, "Station-

ary growth forms, their stability and the effect of additives"; G. Gilmer, "Kinetic models for crystal growth."

23 July. Surface chemical aspects of energy and food research (I. J. Heilweil, chairman): J. Johnson, "Physical and chemical factors of importance in coal gasification processing"; B. Davis, "Some applications of surface science to petroleum recovery problems"; L. Erickson, "Surface considerations in single cell protein production from hydrocarbons."

24 July. The gas-solid interface (W. H. Wade, chairman): J. G. Dash, "Phases of absorbed monolayers"; W. H. Wade, "Adsorption on chemically modified surfaces"; J. M. Thomas, "Chemistry and physics of the surface of graphite."

25 July. Biological interfaces (M. Blank, chairman): S. Chien, "Dynamic properties of the red cell membrane"; M. Blank and J. S. Britten, "Interfacial aspects of the nerve excitation problem"; R. J. Scheuplein, "The permeability of the skin."

26 July. Contributed papers (R. J. Good, chairman).

Isotopes, Physics and Chemistry of

Asilomar

Francis T. Bonner, chairman; Brown L. Murr, vice chairman.

1 July. Secondary isotope effects in solution kinetics (Brown L. Murr, session chairman): V. J. Shiner, "Deuterium isotope effects and solvolysis"; Eugene Cordes, "Alpha-secondary deuterium isotope effects in carbonyl additions and related reactions"; A. J. Kresge, "Solvent isotope effects in H_2O-D_2O mixtures." Laser isotope separation (Benjamin Snavely, session chairman): C. Bradley Moore, "Use of lasers in isotope separation"; Andrew Kaldor, "Infrared laser enhanced reactions and their potential use in isotope separation."

2 July. Isotope applications in the environmental sciences (Samuel Epstein, session chairman): E. M. Galimov, "Intramolecular carbon isotope effects"; Samuel Epstein, "Variation in the isotopic composition of carbon and oxygen in CO_2 and of hydrogen in H_2O vapor in an urban atmosphere"; Charles Stevens, "Isotopic composition of atmospheric CO"; Leonard L. Newman, "The application of isotopic ratio measurements to the study of atmospheric sulphur pollution"; Richard S. Scalan, "Carbon isotope ratio variation in low molecular weight hydrocarbons." The physical chemistry of isotopes (Max Wolfsberg, session chairman): Jacob Bigeleisen, "Condensed phase isotope effects in molecular solids"; Peter A. Rock, "The electrochemical determination of equilibrium constants for isotope exchange reactions"; George H. Kwei, "Crossed beam studies of isotope effects in the hydrogen exchange reaction"; Max Wolfsberg, "The Born-Oppenheimer approximation and isotope effects."

3 July. Isotope effects in enzyme catalysis (Richard L. Schowen, session chairman): Irwin A. Rose, "Primary and secondary isotope effects in the study of enzyme mechanisms"; John H. Richards, "Kinetic isotope effects in enzymatic hydration reactions (fumarase and aconitase)"; Richard D. Gandour, "Isotope effects and transition state structure in enzyme reactions and enzyme catalysis"; Judith A. K. Harmony, "Solvent isotope effects on protein subunit association (formyltetrahydrofolate synthetase and microtubule protein)." Separation of uranium isotopes (Paul Vanstrom, session chairman): (speakers and subjects to be announced).

4 July. Isotope effects in multicentered transformations (Melvin J. Goldstein, session chairman): William Dolbier, "Secondary deuterium isotope effects in pericyclic reaction"; Richard A. Caldwell, "Photochemical isotope effects"; D. J. Pasto, "Isotope effects in additions to unsaturated functions"; Arthur J. Fry, "Heavy atom isotope effect studies of rearrangements to electron deficient atoms." Isotope applications in the environmental sciences (Patrick L. Parker, session chairman): Joel D. Cline, "Nitrogen isotope fractionation in oceanic processes"; Ian R. Kaplan or George E. Claypool, "Kinetic carbon isotope effect in biological methane production in natural environments"; J. M. Hayes, "Application of submicrogram carbon isotope ratio variation techniques to environmental problems"; John A. Calder, "Carbon isotope ratio variations as indicators of petrochemical and petroleum pollution of marine organic matter"; Patrick L. Parker, "Carbon isotope ratio variations in sediments"; Edward P. Myers, "Isotopic composition of carbon in sediments as affected by sewage effluent."

5 July. Contributed papers (William Spindel, session chairman).

Lasers in Medicine and Biology

Kimball Union Academy

Frederick Brech, chairman; Ralph H. Stern, vice chairman.

24–28 June. Lasers in research at the cellular level (Paul F. Mullaney, session chairman): Lawrence R. Adams, "Laser cytofluorimetric identification of six classes of human leukocytes"; Michael W. Berns," Laser microbeams in cell biology"; Richard Meyers, "Laser light scattering from single mammalian cells"; Evan Siegel, "Laser irradiation of sensitized mammalian cells"; Paul F. Mullaney, "Laser flow–microphotometers and sorters in cell research." Special effects of lasers on vision (Gerald Holst and Harry Zwick, session chairmen): Harry G. Sperling, "Low level effects on spectral sensitivity and the receptor mosaic"; Harry Zwick, "Effects on visual acuity and spectral sensitivity"; David O. Robbins, "Visual acuity and recovery functions immediately following exposure"; Myron Wolbarsht, "Differential retinal pathology"; Gerald Holst, "Effects on cone adaptation using ERG criteria"; Theodore Lawwill, "Comparative chronic effects"; John Marshall, "Comparative aspects of macular damage in humans and monkeys." Lasers in dental sciences (Ralph H. Stern, session chairman): Bruce Altschuler, "In vivo holograms of oral structures"; Ralph H. Stern, "Dental pulpal cautery with an argon laser"; Harold Eastgate, "Materials for potentiate Nd absorption by human enamel"; Harold Eastgate and Ralph Stern, "Flexible delivery system for dental laser applications." Photobiological research (Michael Seibert, session chairman): Robert R. Alfano, "Physical and biological studies in the pico-second time domain"; Philip Wyatt, "Laser light scattering technique in microbiology and chemotherapy"; Thomas G. Spiro, "Laser Raman spectroscopy in biological chromophores." Legislative and protective practices (Wordie H. Parr, session chairman): R. James Rockwell, Jr., "Human skin laser damage threshold"; James K. Franks, "Electrical hazards associated with lasers"; William Fodor, "Periodic determination of optical densities"; David H. Sliney, "Laser standards." Research topics (Frederick Brech, session chairman): Stephen F. Cleary, "An application of laser-generated acoustic transients to the study of structural bonding forces in viruses"; Franz Hillenkamp, "Mass

spectrometric analysis of laser produced microplasmas of biological cells and tissues"; Stanley Stellar, "Principles and applications of carbon dioxide laser surgery"; R. C. J. Verschueren, "CO_2 thermal tissue damage defined by enzyme histochemical determinations of glucose-6-phosphatase activity." Lasers in surgery (James Fidler and James Rockwell, session chairmen): James Fidler, "The use of CO_2 lasers for burn surgery of children"; Gunther Noth, "Development of YAG endoscopic system"; Stanley Fox and Robbin Cotton, "Development of an argon laser bronchoscope"; R. C. J. Verschueren, "Comparative study of classical and laser surgery of the Cloudman S91 melanoma"; R. C. J. Verschueren, "Comparative study of classical and laser osteotomies in dogs"; Issaac Caplan, "CO_2 laser surgery in Israel."

Lipid Metabolism

Kimball Union Academy

Richard J. Havel, chairman; Howard Goldfine, vice chairman.

10 June. (R. J. Havel, chairman): R. L. Jackson, "Lipid-protein interactions in plasma lipoproteins"; J. P. Segrest, "Lipid-protein interactions in membrane lipoproteins." (W. Stoeckenius, chairman): J. C. Metcalfe, "Role of phospholipids in a Ca^{2+} pump reconstituted from defined membrane components."

11 June. (D. Steinberg, chairman): A. Spector, "Fatty acid binding to plasma albumin"; R. Ockner, "Fatty acid binding to a cytoplasmic protein." (H. Goldfine, chairman): P. Desnuelle, "Lipolytic enzymes as models for lipid-protein interactions."

12 June. (J. Glomset, chairman): B. Shore, "Changes in apolipoproteins and properties of rabbit lipoproteins in cholesterol-fed rabbits"; R. W. Mahley, "Atherogenic and non-atherogenic hyperlipidemia in cholesterol-fed dogs." (V. Rodwell, chairman): G. Salen, "Impairment of bile acid biosynthesis in cerebrotendinous xanthomatosis"; R. Heller, "Cold lability of soluble HMG-CoA reductase."

13 June. (G. Rothblat, chairman): J. Goldstein, "Lipoprotein binding and catabolism in cultured fibroblasts from normal subjects and patients with familial hypercholesterolemia"; M. Brown, "Regulation of HMG-CoA reductase activity and cholesterol synthesis in cultured fibroblasts from normal subjects and patients with familial hypercholesterolemia." (D. S. Goodman, chairman): G. Popjak, "The transmethylglutaconate shunt of intermediates of sterol biosynthesis; dissipation of intermediates derived from mevalonate."

14 June. (D. B. Zilversmit, chairman): E. Bierman, "Lipoprotein uptake by aortic smooth muscle."

Lysosomes

Proctor Academy

Christian de Duve, chairman.

Lysosomotropic Agents

1–5 July. Agents entering by permeation: A. C. Allison, B. Poole, P. Tulkens, D. C. Warhurst, "Chloroquine, neutral red, other basic drugs and dyes"; J. L. Mego, J. M. Tager, "Proton pump." Agents entering by endocytosis: Z. A. Cohn, M. Mannik, I. Sternlieb, V. A. Najjar, E. Neufeld, H. J.-P Ryser, "Specificity and mechanism"; T. de Barsy, E. Neufeld, "Enzyme replacement therapy"; T. de Barsy, F. Van Hoof, "Pharmacology and toxicology." Agents entering by piggyback endocytosis: L. Fiume, A. H. Gordon, "Proteins as vector"; A. Trouet, "DNA as vector"; G. Gregoriadis, Y. E. Rahman, G. Weissmann, "Liposomes as vector"; T. M. S. Chang, "Microcapsules as vector." Special lecture: G. E. Palade.

Magnetic Resonance in Biology and Medicine

Tilton School

Harold M. Swartz, chairman; D. Borg, vice chairman.

12 August. Paramagnetic changes in malignant and non-malignant tissues. Session chairmen: D. Borg, W. Blumberg, J. Hyde and J. Leigh. Speakers: P. Aisen, B. Commoner, N. J. Dodd, S. Lukiewicz, C. Mailer, J. Paxton, L. Piette, M. Sentjurc.

13 August. Nuclear magnetic resonance studies of cancer. Session chairman: P. Lauterbur. Speakers: R. Damadian, C. Hazelwood, D. Hollis, M. Sentjurc, I. Weisman.

14 August. Lipid peroxidation. Paramagnetic approaches.

15 August. Biochemical approaches. Session chairman: B. Goldstein. Speakers: A. Lamolla, K. Schaich, M. Seligman, H. Swartz. Paramagnetic changes in malignant and non-malignant tissues. Poster session discussion. Session chairman: Harold M. Swartz. There will be provision for contributed papers via "poster" presentations during the conference, with one session for a general discussion of selected poster presentations. If you wish to make a poster presentation, contact the chairman at the Department of Radiation Biology and Biophysics, 8700 W. Wisconsin Avenue, Milwaukee, Wisconsin 53226.

16 August. Paramagnetic changes in malignant and non-malignant tissues.

Medicinal Chemistry

Colby College—New Hampshire

Jack Peter Green, chairman; Walter T. Moreland, vice chairman.

5 August. Hypothalamic peptide hormones (Karl Folkers, chairman): C. Y. Bowers, D. H. Coy, M. Fujino, S. E. Leeman, J. M. Stewart, Franz Ensmann.

6 August. Therapy of emerging "problem" microorganisms (K. E. Price, chairman): J. C. Godfrey, L. D. Sabath, J. P. Utz, J. A. Webber. Topics in medicinal chemistry (W. T. Moreland, chairman): H. Stahle, invited papers.

7 August. Prostaglandins: Structure activity relationships (Josef Fried, chairman): Invited papers. Approaches to gallstone therapy (P. D. Klimstra, chairman): W. Higuchi, A. F. Hofmann.

8 August. Therapeutic implications of immune adjuvants (W. J. Wechter, chairman): A. Goldstein, A. C. Johnson, S. H. Stone. Coordination of fields of information (I. J. Greenblatt, chairman): P. R. Bell.

9 August. Chemistry and biological activities of ionophores (Marvin Gorman, chairman): B. C. Pressman, John Westley, P. W. Reed.

Metal-Insulator-Semiconductor Systems

Kimball Union Academy

Robert J. Strain, chairman; Jay N. Zemel, vice chairman.

26 August. Alternative dielectric MIS systems (R. J. Jaccodine, discussion leader): C. W. Kim, "MOS results on III-V semiconductors"; G. Cullen, "Silicon on insulators"; H. Stein, "Ion channeling and optical studies of interface characteristics."

27 August. Quantum effects at interfaces (F. Stern, chairman): H. Kennedy, "Anisotropic effects in surface transport"; R. F. Greene, "Scattering

processes at interfaces"; (P. J. Stiles, chairman): Panel discussion: "Role of low temperature and surface quantization in MIS systems."

28 August. Chemical effects at interfaces (P. F. Schmidt, discussion leader): T. W. Hickmott, "Thermally stimulated ionic conductivity of Na in SiO_2"; A. Goetzberger, "Correlation of surface states and bulk levels"; P. F. Schmidt and L. P. Adda, "Interface state generation by Au diffusion in SiO_2."

29 August. Interface phenomena and structure (F. J. Feigle, discussion leader): D. L. Griscom, "Defects in oxide glasses and MOS insulators: a viewpoint"; J. E. Rowe, "Electron spectroscopy of silicon and its oxide."

30 August. Interaction between carriers and interface (R. J. Strain, discussion leader): R. J. Van Overstraeton, "Interface interactions in the weakly inverted MOS transistor"; R. J. Powell, "Electron injection and trapping in Si-Al_2O_3-metal structures."

Microbial Toxins

Brewster Academy

Peter F. Bonventre, chairman; Seymour Halbert, vice chairman.

The second Gordon Conference on Microbial Toxin will consider several aspects of toxins including chemical structure, mode of action, genetics and role in disease. Toxins to be discussed include several whose role in infectious disease is unquestioned and others where importance of the toxins has not yet been established. In view of the current state of the field, the consequences of toxin–mammalian cell interaction at the level of the plasma membrane will be stressed.

22–26 July. Membranes and models of cytotoxicity (D. Gingell, discussion leader): D. Gingell, A. Allison, Sonia Guterman. Enterotoxins and virulence of enteric pathogens (R. Finkelstein, discussion leader): M. Gill, J. Metzger, S. Formal, V. Bennett, S. Falkow. Clostridial toxins (C. Lamanna, discussion leader): C. Lamanna, L. Simpson, R. Mollby, M. Eklund. Diphtheria toxin (M. Gill, discussion leader): P. Bonventre, N. Groman, W. Murphy, A. Pappenheimer. Plant toxins; abrin and ricin. S. Olsnes. Toxins in search of disease (Peter F. Bonventre, discussion leader): E. Hanna, T. Montie, L. Callahan, S. Kapral. (Pseudomonas, staphylococcal, streptococcal and plague murine toxins will be discussed). Diseases in search of toxins (H. Smith, discussion leader): H. Smith, J. Schwab. (Role of toxins in viral and mycotic infections and in rheumatic heart disease will be discussed).

Molecular Pathology

Tilton School

George M. Martin, chairman; Donald A. Rowley, vice chairman, "Genetic mechanisms for the generation of somatic diversity."

26 August. Shifts in ploidy (F. Ruddle, session chairman): P. S. Carlson, "Use of ploidy variants in the cell genetics of higher plants"; J. Freed, "Heritable variations in haploid cultured frog cells"; F. Pera, "Polyploidization of mammalian cells in-vitro"; F. Ruddle, "Segregation of chromosomes in somatic cell hybrids"; G. Veomett, "Reconstruction of cells and the derivation of a haploid cell line." Hetero-chromatization (S. Gartler, session chairman): S. Gartler, "X chromosome function in female germ cells"; S. Ohno, "Genetic control of X chromosome inactivation in the mouse"; M. Fellous, "Xg antigens in somatic cells in culture"; E. Eicher, "Expression of autosomal gene translocated to an X chromosome."

27 August. Translocation (P. Nowell, session chairman): G. Lefevre, "Genetic consequences of chromosomal breakage and rearrangements in Drosophila"; W. W. Nickols, "Role of viruses and chemicals in the pathogenesis of chromosomal translocations"; J. German, "Chromosomal translocations in non-neoplastic cells"; J. Rowley, "Chromosomal translocations in neoplastic cells." Mitotic nondisjunction and crossing-over (D. Pious, session chairman): B. Baker, "Genetic control of chromosomal loss in Drosophila"; A. Garcia-Bellido, "Mitotic recombination in Drosophila"; Y. Hotta, "DNA binding protein in relation to recombination"; H. Hoehn, "Crossing-over in human somatic cells: newer cytogenetic evidence"; D. A. Pious, "Crossing-over in human somatic cells: genetic evidence."

28 August. Transfer of genetic information (H. Ozer, session chairman): W. McBride, "Transfer of genetic information by purified metaphase chromosomes"; Henry Harris, "Correction of genetic defects in mammalian cells by the input of small amounts of foreign genetic material"; D. Jackson, "Integration of phage genes into SV_{40} DNA"; J. Eisenstadt, "Cytoplasmic inheritance in cultured mammalian cells." Mutation: conditional lethals (I. Scheffler, session chairman): I. Scheffler, "A mutant defective in the Krebs cycle"; C. Basilico, "A temperature-sensitive mutant defect in ribosomal RNA processing"; C. P. Stanners, "Temperature-sensitive tRNA synthetases in Chinese hamster cells"; T. T. Puck, "Selection and characterization of mammalian cell auxotrophs"; E. H. Y. Chu, "The nature of galactose-negative mutants in Chinese hamster cells."

29 August. Mutation: hypoxanthine-guanine phosphoribosyl transferase variance; genetic vs. epigenetic origin (M. Harris, session chairman): C. T. Caskey, "Mutations affecting the structure of HGPRT: Chinese hamster cells"; M. R. Capecchi, "Mutations affecting the structure of HGPRT mouse L cells"; C. Croce, "Re-expression of HGPRT genes in hybrid cells"; M. Harris, "Segregation of hybrid populations of Chinese hamster cells"; J. Morrow, "Azaguanine-resistant cells not deficient in HGPRT." Epigenetic or genetic origin of analogue resistance in cultured somatic cells: an appraisal (R. DeMars, session chairman and speaker). Mutation: lymphoid cell lines (J. Littlefield, session chairman): G. M. Tomkins, "Mutant lymphoid cells resistant to steroids"; A. D. Bloom, "Stability of immunoglobulin synthesis in human lymphoid lines" M. D. Scharff, "Immunoglobulin mutants in mouse myeloma cells"; Harry Harris, "Spontaneous and induced mutations in human lymphoid lines."

30 August. Somatic cell genetics and antibody diversity (D. A. Rowley, session chairman): L. Hood, "Germ line theories of immunoglobulin diversity"; J. A. Gally, "Somatic theories of immunoglobulin diversity"; O. Smithies, "Antibody diversity: an overview."

Multiparticle Production Processes

Proctor Academy

Albert Erwin, chairman; James W. Bjorken, vice chairman.

Internal Structure of the Hadrons

19–23 August. Constituent quark models. Current algebra, groups, duality. Current quarks as seen by leptons (theory). Study of parton-parton interactions with Hadron probes. Recent contributed work on Hadron structure (experimental and theoretical). Electron proton scattering and e^+e^- re-

sults (experimental). Neutrino scattering (experimental). High energy Hadron scattering and cosmic ray results. Alternatives to Hadron constituents.

Muscle: Activation of Striated Muscle

Holderness School

LeRoy L. Costantin, chairman, Richard W. Tsien, co-chairman.

12 August. Electrical properties of the transverse tubular system (Richard H. Adrian, chairman): Wolf Almers, Robert S. Eisenberg, Walter H. Freygang, Bert A. Mobley. The basis of voltage-sensitive activation (W. Knox Chandler, chairman): LeRoy L. Costantin, Martin F. Schneider.

13 August. Structure and function of the SR-T junction (Lee D. Peachey, chairman): R. I. Birks, Clara Franzini-Armstrong, Sally G. Page. The mechanism of calcium release (Paul Horowicz, chairman): MaKoto Endo, Robert F. Rakowski, Stuart R. Taylor.

14 August. The time course of mechanical activation (Richard J. Podolsky, chairman): Mark Schoenberg, Robert M. Simmons. Workshop on voltage-clamp techniques (LeRoy L. Costantin, chairman): Edward A. Johnson, Harold Reuter, Richard W. Tsien. Outward currents and the cardiac action potential (Silvio Weidmann, chairman): Martin Morad, Susan Noble, Richard W. Tsien.

15 August. Calcium currents and contraction in cardiac muscle (Martin Morad, chairman): H. G. Haas, Harold Reuter. Calcium movements and the staircase in heart (Brian R. Jewell, chairman): Rolf Niedergerke, Saul Winegrad.

16 August. Discussion session (R. W. Tsien, chairman).

Natural Products

New Hampton School

Koji Nakanishi, chairman.

29 July–2 August. Adam Allerhand, "C-13 FT NMR"; John ApSimon, "Some aspects of triterpene chemistry"; Yoshio Ban, "Total synthesis of polycyclic indole alkaloids"; Carl D. Bennett, "Structure and function of dihydrofolate reductase"; Peter Daniels, "Aminoglycosides"; M. N. Kolosov, "The antibiotic albofungin"; Satoru Masamune, "Macrolide synthesis"; John McMurry, "Some aspects of organic synthesis"; Gunther Ohloff, "Damascones and related compounds"; J. Polonsky, "Structural modifications in diterpene series"; Kenneth Rinehart, Jr., "Field desorption MS and CMR in natural products"; K. Barry Sharpless, "New V, Mn, Cr, Se, Mo, Te, W reagents for synthesis"; J. K. Sutherland, "Prostaglandin synthesis."

Nuclear Chemistry

Colby College–New Hampshire

James J. Griffin, chairman; Peter Gregers-Hansen, vice chairman.

24–28 June. The biennial cycle which has become traditional in this conference emphasizes nuclear reaction questions this year. Heavy ion reactions will be the major topic, occupying several sessions devoted to various experimental and theoretical subtopics, including the atomic physics of heavy ions in close collision. Recent developments in nuclear fission, pre-equilibrium nuclear reactions, and very high energy reactions are secondary topics also to be touched upon within the main theme of the conference. D. Burch, R. Hahn, Steve Landowne, L. Moretto, C. F. Tsang, K. Wolf, J. Pedersen, T. Mayer-Kuckuk, Marshall Blann, Sheldon Kaufman.

Nuclear Proteins, Chromatin Structure and Gene Regulation

Tilton School

Vincent G. Allfrey, chairman; Brian J. McCarthy, vice chairman.

19 August. Histone and protamine synthesis and post-synthetic modifications: Leonard M. Cohen, R. David Cole, Gordon H. Dixon, C. C. Liew, Henry C. Pitot, Adolfo Ruiz-Carrillo, Lloyd A. Stocken. Histone-DNA interactions: E. Morton Bradbury, Gerald D. Fasman, Ru-Chih C. Huang, Ruth Itzhaki, E. N. Moudrianakis, Donald E. Olins, Brian Richards, H. Weintraub.

20 August. Histone metabolism and function: Roger Chalkley, Dieter Gallwitz, Martin A. Gorovsky, Lawrence R. Gurley, Thomas A. Langan, Paul R. Libby, Kenneth S. McCarty, Roberts A. Smith. Non-histone proteins of chromatin-characterization, tissue-specificity and DNA-binding properties: Vincent G. Allfrey, Harris Busch, Michael Gronow, E. W. Johns, Lewis J. Kleinsmith, Gordhan L. Patel, J. Sanders Sevall.

21 August. Non-histone proteins of chromatin-biosynthesis, phosphorylation and function: Renato Baserga, Sarah C. R. Elgin, Edward M. Johnson, Wallace M. LeStourgeon, A. J. MacGillivray, Gary S. Stein, Giorgio Vidali, Wayne Wray. Non-histone proteins of chromatin—role in gene activation and transcription: Hans Berendes, R. Stewart Gilmour, Lubomir S. Hnilica, N. C. Kostraba, Anthony R. Means, Thomas C. Spelsberg, C. S. Teng.

22 August. Chromatin-isolation, fractionation and differential activity: Michael W. Berns, David P. Bloch, Gary Felsenfeld, Brian J. McCarthy, Ronald H. Reeder, Robert T. Simpson, Ulrich Grossbach. Organization of the genetic material in chromatin: James Bonner, Eric Davidson, Oscar L. Miller, Thoru Pederson, Ronald Seale, A. D. Mirzabekov.

23 August. Eukaryotic RNA polymerases—nature and processing of the transcript: Gunter Blobel, George Brawerman, Pierre Chambon, Richard Firtel, David Holmes, Warren Jelinek, William J. Rutter.

Nuclear Structure Physics

Kimball Union Academy

Larry Zamick, chairman; H. Terry Fortune, vice chairman.

1 July. (N. Auerbach, discussion leader): K. Yazaki, "Nuclear coupling constants from transfer reactions and particle decays"; H. Feshbach, "Theory of pre-equilibrium reactions." (K. Nagatani, discussion leader): S. Kahana, "Heavy ion induced transfer reactions —recent results"; C. Signorini, "Simple structure in the $f_{7/2}$ shell from heavy ion transfer reactions."

2 July. (I. Talmi, discussion leader): R. R. Whitehead, "Shell model calculations in light nuclei"; S. T. Belyaev, "Nuclear structure calculations and the first principles." (N. Koller, discussion leader): V. Hughes, "Muonium and muonic atoms"; J. Speth, "Isomer shifts, isotope shifts and E(o) transitions in spherical and deformed nuclei."

3 July. (D. Axen, discussion leader): A. M. Green, "The Δ (1236) in nuclei"; G. E. Brown, "Nuclear correlations in pion nucleus scattering." (R. Pollock, discussion leader): G. J. Stephenson, Jr., "(P,2P) reactions with realistic interactions"; H. Pugh, "A survey of knockout reactions at intermediate energies"; H. Meloner, "Single particle and rearrangement energies for

(finite time) removal reactions in finite many-fermion systems."

4 July. (V. E. Kim, discussion leader): D. Calaprice, "Search for second class currents in nuclear beta decay"; Mannque Rho, "Problems in the theory of weak interactions." (Speaker and subject to be announced.)

5 July. (R. Segal, discussion leader): K. Crowe, "Nuclear structure information from radiative pion capture"; J. Alster, "Pion nucleus reactions"; S. S. Hanna, "Giant quadrupole strength from capture reactions."

Nucleic Acids

New Hampton School

Philip Leder, co-chairman; Malcolm L. Gefter, co-chairman; P. T. Gilham, co-vice chairman; D. M. Crothers, co-vice chairman.

10–14 June. Biochemistry of DNA replication (Bruce Alberts, chairman). Physiology of DNA replication (Anna Skalka, chairman). Structure of chromosomes of prokaryotes and their phage (John Abelson, chairman). Structure of chromosomes of eukaryotes and their viruses (Julius Marmur, chairman). Regulation of prokaryotic genes (Max Gottesman, chairman). Regulation of eukaryotic genes (Allan Garen, chairman). Biochemistry of RNA synthesis and processing (Maxine Singer, chairman). Regulatory mechanisms in protein synthesis (Peter Lengyel, chairman). Genetic systems in eukaryotes (Sydney Brenner, chairman).

Organic Geochemistry

Holderness School

John C. Winters, chairman; John M. Hunt, vice chairman.

19 August. Hydrocarbons in the geosphere (G. C. Speers, session chairman): (European speakers for this session to be announced). Hydrocarbons in the geosphere (J. M. Hunt, session chairman): G. S. Bayliss, "Light hydrocarbons in surface sediments"; J. M. Hunt, "C_4 to C_7 hydrocarbons in ocean sediments"; K. F. Thompson, "Light hydrocarbons in subsurface sediments."

20 August. Oxygen and nitrogen compounds in the geosphere (K. A. Kvenvolden, session chairman): James Quinn, "Fatty acids in the estuarine environment"; K. A. Kvenvolden, "Amino and fatty acids in geo- and cosmochemistry"; J. L. Bada, "Application of amino acids to geochronology and paleothermometry." Sulfur in the geosphere (P. H. Given, session chairman): D. J. Casagrande, "Forms of sulfur in peats"; H. L. Lovell, "Environmental responses of pyrite inclusions in coal strata"; W. L. Orr, "Distribution of H_2S in natural gas and the factors controlling it."

21 August. Organometallics in the geosphere (J. M. Sugihara, session chairman): Earl Frieden, "Evolution of metal ions and inorganic ligands in biologic systems"; J. M. Sugihara, "Origin of vanadium and nickel in petroleum"; Earl Baker, "Mechanism of transalkalation of porphyrins." Microbiological reactions in the geosphere (R. E. Kallio, session chairman): David Gibson, "Bioimplications of large polyaromatic hydrocarbons"; Ralph Wolff, "Role of methane-producing bacteria in petroleogenesis"; T. F. Yen, "Biochemical conversion of kerogens."

22 August. Origin, maturation and generation of petroleum (S. R. Silverman, session chairman): R. J. Harwood, "Laboratory studies of petroleum generation from kerogen"; L. C. Price, "Implications of petroleum maturation and degradation to its origin"; W. K. Seifert, "High boiling biological marker hydrocarbons as correlation parameters in fossil fuels." Origin and generation of kerogen, coal and lignite (W. E. Robinson, session chairman): W. E. Robinson, "Possible precursors and conditions of deposition of classical oil-shale kerogen"; T. C. Hoering, "Possible reaction mechanisms in the genesis of kerogen-like materials"; R. A. Friedel, "Classification and nature of coal and coal-like materials."

23 August. Last minute results, techniques and methods (J. M. Hunt, session chairman).

Organic Reactions and Processes

New Hampton School

Carl R. Johnson, chairman; John A. Ford, Jr., vice chairman.

22 July. New reagents and methods for organic synthesis: Gary H. Posner, "New organocopper synthetic methods"; John K. Stille, "Syntheses and reactions of complexes containing palladium- and rhodium-carbon sigma bonds"; George W. Parshall, "Transition metal complexes in organic synthesis"; W. Edward Billups, "Transition metal species of synthetic interest."

23 July. David A. Evans, "Silicon reagents in organic synthesis"; Francis A. Carey, "Silicon, surfur: stereochemistry and synthesis"; K. Barry Sharpless, "Synthetic methods based on selenium reagents"; David N. Harpp, "New synthetic methods in organosulfur chemistry."

24 July. Paul G. Gassman, "The chemistry of azasulfonium salts"; Tony Durst, "New synthetic methods based on *t*-butyl alkyl sulfoxides." Contributed short papers by members of the conference.

25 July. Marc Julia, "Organic synthesis with sulfones"; Philip E. Eaton, "Synthesis and chemistry of polycyclic compounds"; Robert E. Ireland, "Applications of new reagents to total synthesis"; John S. Showell, "Federal support for synthetic organic chemistry—a status report."

26 July. Samuel J. Danishefsky, "New methods in the synthesis of isoprenoids"; Charles A. Brown, "Saline hydrides, superbases, and organic synthesis."

Organometallic Chemistry

Tilton School

Dietmar Seyferth, chairman; Eugene C. Ashby, vice chairman.

15 July. F. N. Tebbe, "Aluminum chemistry of niobium and titanium hydrides"; A. Davison, "The reactions of chiral organometallic compounds"; T. G. Traylor, "Applications of sigma-pi conjugation to synthetic problems."

16 July. A. I. Meyers, "Asymmetric syntheses using chiral lithium derivatives"; H. Alper, "Metal carbonyls in chemical synthesis"; P. M. Treichel, "Reactions of transition metal isocyanide complexes."

17 July. H. Lehmkuhl, "New aspects of the addition of Grignard compounds to C=C double bonds"; E. A. Hill, "Rearrangements in organomagnesium chemistry"; G. D. Stucky, "Unsaturated representative element organometallic stereochemistry and some studies of the reactions of group I, II, and IIIA organometallic compounds with transition metal organometallic compounds."

18 July. D. F. Shriver, "Basicity and reactivity of organometallics"; H. C. Clark, "Insertion reactions of organometallic and hydrido compounds of platinum"; J. A. Osborn, "The mode of formation of metal-carbon bonds in oxidative addition."

19 July. Short papers by conference members.

Paper, Chemistry and Physics of

Brewster Academy

Donald C. Johnson, chairman; Irving S. Goldstein, vice chairman.

19 August. (S. I. Falkehag, discussion leader): J. S. Gratzl, "Basic reactions in the degradation of lignin and carbohydrates in oxygen-alkali delignification processes"; J. Gierer, "On the mechanism of degradation of lignin by oxygen-alkali"; R. E. Mark, "Fiber-to-fiber bonding in oxygen and kraft pulps."

20 August. (Discussion leader to be announced): J. J. Renard, "Kinetics of the delignification of wood by oxygen and alkali: Results and implications"; J. S. Albrecht and G. A. Nicholls, "Mechanism of oxidative delignification of loblolly pine by peracetic acid." Session of short contributions by conferees.

21 August. (C. E. Dunning, discussion leader): V. L. Byrd, "Effect of fiber bonding level on the elastic modulus to density relationship"; D. H. Page, "The behaviour of wet fibres under stress and the effect of drying tensions on strength"; R. H. Atalla, "Raman spectral studies of cellulose polymorphs."

22 August. (Irving S. Goldstein, discussion leader): H. H. Espy, "How wet strength resins work when they should and why do they when they shouldn't." The names of other speakers to be announced.

23 August. (D. C. Johnson, discussion leader): H. Montrey, "Design of paper for stiffness." Session of short contributions by conferees.

Particle-Solid Interactions

Holderness School

E. V. Kornelsen, chairman; J. W. Mayer, vice chairman.

29 July. L. C. Feldman, "The X-ray spectrum from low energy heavy ion bombardment of silicon"; J. R. MacDonald, "Generation of X-rays by MeV/amu heavy ions"; R. G. Musket, "Electron emission under ion bombardment"; H. D. Hagstrum, "Ion neutralization spectroscopy."

30 July. H. H. Brongersma, "Influence of structure on low energy (0–10 keV) ion scattering from surfaces"; J. Applebaum, "The interrelation of surface geometrical and electronic structure"; R. Behrisch, "Sputtering by energetic light ions"; G. K. Wehner, "Microsectioning by sputtering in combination with surface analysis methods."

Program Summary, Gordon Research Conferences,

	Colby College–New Hampshire New London, N.H.	New Hampton School New Hampton, N.H.	Kimball Union Academy Meriden, N.H.	Tilton School Tilton, N.H.
10–14 June	Friction, Lubrication and Wear	Nucleic Acids	Lipid Metabolism	Cyclic AMP
17–21 June	Catalysis	Proteins	Research at High Pressure	Biomathematics, Theoretical Biology and
24–28 June	Nuclear Chemistry	Heterocyclic Compounds, Chemistry of	Lasers in Medicine and Biology	Animal Cells and Viruses
1–5 July	Polymers	Environmental Sciences: Water	Nuclear Structure Physics	Chemistry and Physics of Space
8–12 July	Textiles: Fiber Science	Fuels Science	Bones and Teeth, Chemistry, Physiology and Structure of	Energy Coupling Mechanisms
15–19 July	Scientific Information Problems in Research	Statistics in Chemistry and Chemical Engineering	Coatings and Films	Organometallic Chemistry
22–26 July	Corrosion	Organic Reactions and Processes	Interfaces, Chemistry at	Structural Macromolecules
29 July–2 Aug.	Elastomers	Natural Products	Hormone Action	Aging, Biology of
5–9 Aug.	Medicinal Chemistry	Inorganic Chemistry	Toxicology and Safety Evaluations	Photonuclear Reactions
12–16 Aug.	Food and Nutrition	Analytical Chemistry	Subsurface Fluid Displacement, Chemistry and Physics of	Magnetic Resonance in Biology and Medicine
19–23 Aug.	Separation and Purification	Electron Donor-Acceptor Interactions	Infrared and Raman Spectroscopy	Nuclear Proteins, Chromatin Structure and Gene Regulation
26–30 Aug.	Cancer	Adhesion, Science of	Metal-Insulator Semiconductor Systems	Molecular Pathology

* Miramar Hotel, Santa Barbara † Asilomar, Pacific Grove

31 July. R. J. Fortner, "Excitation states of ions moving through solids as determined from X-ray emission spectra"; B. R. Appleton, "Investigations of the charge state and interaction condition of channeled ions"; W. van der Weg, "Optical emission under ion bombardment"; H. W. Werner, "Interpretation of secondary ion mass spectra."

1 August. J. T. Yates and T. E. Madey, "Studies of gas adsorption on metal surfaces using X-ray photoelectron spectroscopy (ESCA)"; (speaker and subject to be announced) P. B. Sewell, "Surface oxidation studies using X-ray fluorescence"; J. U. Anderson, "Do we understand channeling?"

2 August. D. K. Brice, "Heavy particle energy deposition distributions in solids"; Wei Kan Chu, "Energy loss and straggling in backscattering."

Photonuclear Reactions

Tilton School

Judah M. Eisenberg, chairman; Stanley S. Hanna, vice chairman.

5–9 August. Recent developments in photoabsorption experiments: J. Ahrens. Theoretical aspects of the photonuclear sum rules: W. Weise. The theory of three-nucleon systems as it relates to photonuclear physics: Y. E. Kim. Photonuclear experiments on two-, three-, and four-nucleon systems: R. O. Owens. Giant resonances of E0, M1 and E2 variety: S. S. Hanna. Giant resonances and their overtones in inelastic electron and proton scattering: G. Bertsch, "Calculation of giant multipoles and total strength functions"; F. E. Bertrand, Jr., "Excitation of giant resonances by inelastic proton scattering." Collective phenomena in photonuclear physics: V. Rezwani. Nuclear reaction theory for giant resonance phenomena: J. Birkholz. Inelastic electron scattering on nuclei—experiment: S. Penner. Inelastic electron scattering on nuclei—theory: D. Drechsel. Hadronic scattering—experiment: C. Tzara. Hadronic scattering—theory: H. J. Weber. Polarization and angular distributions in photonuclear reactions and nucleon capture reactions: H. F. Glavish. Nuclear exchange currents: D. O. Riska. Short-range correlations in nuclei: J. D. Walecka. Recent developments in experimental facilities: P. Demos, "Electron accelerators in North America"; C. de Vries, "Electron accelerators in Europe"; D. E. Nagle, "Meson factories." Summary.

1973—New Hampshire and California

Proctor Academy Andover, N.H.	Holderness School Plymouth, N.H.	Brewster Academy Wolfeboro, N.H.	California	
Hemostasis			Plasma Physics*	10–14 June
Hydrocarbon Chemistry	Fertilization Processes of Man and Mammals		Enzymes, Coenzymes and Metabolic Pathways*	17–21 June
Polymer Physics	Radical Ions		Coherent Optics and Holography*	24–28 June
Lysosomes	Biopolymers, Physics and Physical Chemistry of		Isotopes, Chemistry and Physics of†	1–5 July
Crystal Growth	Bacterial Cell Surfaces	Physical Metallurgy		8–12 July
Biomaterials, Science and Technology of	Biological Regulatory Mechanisms	X-Ray Photoelectron Spectroscopy		15–19 July
High Temperature Chemistry	Drug Metabolism	Microbial Toxins		22–26 July
Dielectric Phenomena	Particle-Solid Interactions	Pyrroles, Chemistry and Biology of		29 July–2 Aug.
Solid State Studies in Ceramics	Water and Aqueous Solutions, Physics and Chemistry of	Geophysics		5–9 Aug.
Developmental Biology	Muscle: Activation of Striated Muscle	Atomic and Molecular Interactions		12–16 Aug.
Multiparticle Production Processes	Organic Geochemistry	Paper, Chemistry and Physics of		19–23 Aug.
Plasma Chemistry	Immobilized Enzymes and Other Active Molecules	Quantum Solids and Fluids, Dynamics of		26–30 Aug.

Physical Metallurgy

Brewster Academy

Bernard H. Kear, chairman; Charles J. McMahon, vice chairman.

Phase Transformations: New Insights and Impact on Material Design

8 July. Continuous decomposition of multicomponent systems: J. W. Cahn, "Current problems in the development and applications of theories of continuous transformations"; D. de Fontaine, "The lattice wave description of phase transformations in alloys." Continuous decomposition of multicomponent systems: B. Ralph, "Chemical development of dispersions from the cluster stage using the atom-probe technique"; S. L. Sass, "Direct observations of small coherent particles and pre-precipitates using the high resolution electron microscope, including dark field and lattice imaging techniques"; L. H. Schwartz and J. T. Plewes, "A critical examination of the mechanical strength of spinodal alloys."

9 July. Nucleation and growth in multicomponent systems: H. I. Aaronson, "Extensions and applications of solid/solid nucleation theory"; G. M. Pound and R. Gomez-Ramirez, "Nucleation of a second phase along dislocations"; P.R. Strutt, "Dynamic strain aging and pre-precipitation in creep and its potential as a microalloying concept." Nucleation and growth in multicomponent systems: S. M. Copley, "Segregation and precipitation due to diffusional creep"; E. P. Butler and P. R. Swann, "In situ observations of phase transformations using the high voltage electron microscope." A. Pineau and R. Cozar, "Factors influencing the stability, coarsening and morphology of γ' and duplex γ'/γ'' precipitates in nickel-base alloys."

10 July. Analysis and applications of phase transformations in alloys: R. F. Hehemann and C. M. Wayman, "Analysis and applications of pre-martensite and twinning reactions in TiNi and other alloys"; N. J. Grant and B. C. Giessen, "Metastable phases by rapid quenching from the liquid—implications for strength and alloy design"; J. D. Livingston. "Aligned composite structures by unidirectional decomposition of eutectoids: Stability, morphologies and applications." Analysis and applications of phase transformations in alloys: G. Thomas, "Microstructures from phase transformations: Applications and limitations"; K. H. Jack and D. H. Jack, "Transformation and precipitation processes in nitrided steels: Their control and utilization."

11 July. Analysis and applications of phase transformations in alloys: J. C. Williams and N. E. Paton, "Applications of phase transformations in microstructure and property control of titanium-base alloys"; H. Wiedersich, "High temperature radiation effects—can we apply our knowledge to design alloys for reactor environments?"; G. R. Purdy, "A critical examination of the relationships between nucleation and growth theories and hardenability in multicomponent systems." Analysis and applications of phase transformations in alloys: R. E. Hanneman, "Applications of high pressure phase transformations: Man-made diamond and cubic boron nitride."

12 July. Short contributions.

Plasma Chemistry

Proctor Academy

Alexis T. Bell, chairman; Phillip H. Wilks, vice chairman.

26–30 August. Velmar A. Fassel, "Plasmas as optical sources for analytical spectroscopy"; R. Hozumi, "Plasma preparation of samples for inorganic analysis"; Ramon N. Barnes, "Reactions of atomic oxygen with organic materials"; Alan R. Reinberg, "R F plasma deposition of inorganic films for semi-conductor applications"; Eugene Lemmons, "Plasma etching and photoresist removal"; Mitchel Shen, "Plasma polymerization"; Clarence L. Grant, "High temperature processing of metallurgical ores"; Claude Bonet, "High temperature processing of inorganic materials"; Emil Pfender, "Arc gas heaters"; Hans U. Eckert, "Production and characteristics of low frequency induction plasmas"; Fredrick H. Shair, "Production and characteristics of high pressure glow discharges"; Reed Jensen, "Laser radiation from glow discharges." Contributed papers. Provisions have been made to accept a limited number of contributed papers. Abstracts for contributed papers should be submitted to either the chairman or vice chairman by 1 June 1974.

Plasma Physics

Miramar Hotel

Igor Alexeff, chairman; Akira Hasegawa, vice chairman.

10 June. Parameter heating (Harry Dreicer, chairman). R. F. Heating (Burton D. Fried, chairman).

11 June. Turbulence (Carl Oberman, chairman). Electron beams I (Norman Rostoker, chairman).

12 June. Electron beams II (Everet H. Beckner, chairman). Lasers I (Richard Morse, chairman).

13 June. Lasers II (John Dawson, chairman). Magnetic compression (Alan DeSilva, chairman).

14 June. Neutral injection (Thomas Stix, chairman).

Polymer Physics

Proctor Academy

Stephen Prager, chairman; Fraser P. Price, vice chairman.

24 June. (F. P. Price, chairman): E. Helfand, "Theory of microphase structure in block copolymers"; H. Kawai, "Domain structure of amorphous AB and ABA block copolymers from small angle x-ray scattering." (D. J. Meier, chairman): M. Shen, "Viscoelastic behavior of block copolymers"; S. L. Cooper, "Segmental orientation in block polymers."

25 June. (H. L. Frisch, chairman): G. L. Gaines, Jr., "Surface and interfacial tension of polymer liquids and solutions"; C. Thies, "Spectroscopic determination of the adsorbed structure of copolymers." (W. H. Stockmayer, chairman): W. G. Miller, "Molecular motion at polymer interfaces by spin labelling"; A. W. Neumann, "Surface techniques to detect conformation changes in polymers."

26 June. (S. Prager, chairman): E. A. DiMarzio, "Effect of surfaces on helix-coil transitions in biological macromolecules"; F. R. Eirich, "Adsorption of water-soluble polymers on solid-liquid interfaces." (P. H. Geil, chairman): R. Kirste, "Chain conformation in amorphous bulk polymers by neutron diffraction"; P. J. Flory, "Chain flexibility and molecular disorder."

27 June. (A. DiBenedetto, chairman): R. P. Kambour, "Structure of microcrazes in relation to ultimate properties"; A. S. Argon, "Modeling nucleation and growth of crazes." (F. R. Eirich, chairman): Short presentations of current research by conference participants.

28 June. (F. H. Ancker, chairman): J. C. Halpin, "Interactions between polymer physics and composite materials science"; N. Tschoegl, "Time-temperature superposition in two-phase polymeric materials."

Polymers

Colby College–New Hampshire

Paul W. Morgan, chairman; John K. Stille, vice chairman.

1 July. (G. B. Butler, discussion leader): W. J. Bailey, "Monomers that expand on polymerization"; E. A. Ofstead, "Ring-opening polymerization of cycloolefins." (V. T. Stannett, discussion leader): J. C. Arthur, "Grafting studies on cellulose."

2 July. (O. Vogl, discussion leader): S. Penczek, "Polymerization of heterocyclic monomers initiated by derivatives of trifluoromethanesulfonic acid"; H. Yasuda, "Plasma polymerization of organic compounds." (R. W. Lenz, discussion leader): F. E. McFarlane, "Preparation and properties of polyesters forming liquid crystalline melts"; M. Matzner, "Organo-siloxane block copolymers."

3 July. (G. J. Smets, discussion leader): M. Hasegawa, "Photopolymerization and depolymerization"; A. Ledwith, "Polymerization by photoinduced electron transfer processes." (C. E. Sroog, discussion leader): I. K. Miller, "Kinetics and mechanism of polyamide interchange"; H. H. Levine, "Solvent participation in polyimide formation."

4 July. (D. S. Breslow, discussion leader): D. J. Lyman, "Biomedical polymers"; H. Ringsdorf, "Pharmacologically active polymers." (E. M. Fettes, discussion leader): J. E. Vandegaer, "Encapsulation techniques and applications."

5 July. (W. C. Wooten, discussion leader): G. G. Cameron, "Some chemically modified polymers and their applications"; S. Russo, "Polymer mobility and reactivity."

Proteins

New Hampton School

Gordon G. Hammes, co-chairman; Gregorio Weber, co-chairman; George Nementhy, co-vice chairman; Alan Schechter, co-vice chairman.

17 June. Protein site mapping (E. Blout, chairman): A. Mildvan, C. W. Wu, G. Radda. (C. H. W. Hirs, chairman): B. Vallee, R. Abeles.

18 June. Enzyme regulation (D. Koshland, chairman): C. Frieden, R. L. Blakeley, E. Stadtman. Organized enzymes (L. Reed, chairman): R. Hill, P. Strittmatter.

19 June. Cell surfaces (F. Richards, chairman): L. vanDeenen, R. Glew, M. Hollenberg. Membrane transport (E. Racker, chairman): G. Guidotti, J. Metcalfe.

20 June. Proteins and light (W. Hagins, chairman): W. Hastings, W. Stoeckenius, W. L. Hubbell.

21 June. Proteins in development (chairman to be announced): E. Shooter, R. Bradshaw, S. Cohen.

Pyrroles, Chemistry and Biology of

Brewster Academy

June Lascelles, chairman; Rudi Schmid, vice chairman.

29 July. Bile pigments (S. Schwartz, chairman): W. Rudiger, A. F. McDonagh, D. Lightner, Z. J. Petryka. Bile pigments (chairman to be announced): D. M. Bissel, N. I. Berlin, B. Schacter.

30 July. Plant pyrroles (L. Bogorad, chairman): A. Shlyk, G. Tait, C. Rebeiz, C. McFeeters, M. Gassman. Methodology (B. Burnham, chairman): M. Doss, S. Schwartz, D. Mauzerall, I. Bossenmaier, R. Cardinal, M. Weiner.

31 July. Porphyrias (E. Levin, chairman): W. Elliott, S. M. Joubert, U. Meyer, J. P. Kushner, B. Glenn. Porphyrias (R. Labbe, chairman): S. Granick, S. Sassa, G. Marks, J. Chisolm, A. Poland, F. DeMatteis.

1 August. Transport (U. Muller-Eberhardt, chairman): I. M. Arias, C. Finch, P Lazarow. Vitamin B_{12} (D. Shemin, chairman): I. Scott, C. Brown, R. H. Abeles.

2 August. Chemistry (A. Adler, chairman): J. Buchler, W. Caughey, J. Peisack.

Quantum Solids and Fluids, Dynamics of

Brewster Academy

T. Maurice Rice, chairman; Thomas Penney, vice chairman.

Electronic Phase Transition

26–30 August. The conference will be concerned with the mechanisms and phenomena of phase transitions which are electronic in origin; e.g., the Peierls transition in one-dimensional metals, especially in the mixed valence platinum salts, and organic compounds, charge density waves in two-dimensional metals (layered compounds and semiconductor surfaces), the martensitic phase transition in the A-15 compounds, change of valence transitions in rare-earth compounds (particularly Sm compounds), metal-insulator transitions in transition metal oxides, liquid-gas transitions in metallic systems and electron-hole liquids in semiconductors and pion condensation transitions. A partial list of speakers is: P. W. Anderson, J. A. Appelbaum, W. F. Brinkman, R. Comés, J. L. Freeouf, H. Launois, L. J. Sham, J. A. Wilson.

Radical Ions

Holderness School

Henry J. Shine, chairman; Edward G. Jenzen, vice chairman.

24 June. F. Gerson, "Some current problems in ESR spectroscopy of aromatic radical ions"; K. Möbius, "Endor in isotropic and anisotropic solutions"; J. L. Dye, "Kinetics of protonation of aromatic radical ions, dianions and ion pairs"; C. E. Castro, "Bio-electron transfer."

25 June. Wayne C. Danen, "ESR studies on amino and aminium radical ions"; F. A. Neugebauer, "Free radicals and radical cations derived from diphenylamine and tetraphenylhydrazine"; Y. L. Chow, "Chemistry of aminium ions under dilute acid conditions"; D. H. Rosenblatt, "Nitrogen-centered cation radical intermediates in aliphatic amien oxidations."

26 June. A. Weller, "Spectroscopic studies of radical ion formation and recombination"; H. Tsubomura, "Charge-transfer interactions and chemical reactions among radical ions and neutral molecules." Session of short papers.

27 June. K. Kimura, "Photo-induced radical anion formation of electron acceptor molecules in electron-donor solvents"; E. Hayon, "Redox potentials and electron-transfer reactions of radical ions in solution using fast reaction techniques"; G. Cauquis, "Preparation and study of some radical ions with the help of electrochemical methods."

28 June. Session of short papers.

Scientific Information Problems in Research

Colby College–New Hampshire

Russell J. Rowlett, Jr., chairman; Phyllis B. Baxendale, vice chairman.

15–19 July. Introduction: Bart Holm, "Research on information processing and its future impact on chemistry." Information input to machine processing systems: S. B. Soloway, F. G. Stockton, "Recognition procedures and utilization of chemical structure file system"; T. L. Isenhour, "Chemical structure input by optical recognition"; Lee Erman, "Optical recognition of speech input." Manipulation of input data: Martin Kay, "Machine translation"; Susan Artandi, "Machine index-

ing"; James Rush, "Machine abstracting"; Robert E. Stobaugh, "Chemical structure and name manipulation"; Todd Wipke, "Organic chemical synthesis"; Cyrus Levinthal, "3-D graphics for chemical structures." Utilization of data: Bruce Kowalski, "Prediction of chemical properties through pattern recognition"; Jack Frazer, "Pattern recognition in mass spectrography"; Dennis Smith, "Approaches to chemical problems by use of artificial intelligence." Conclusions: Bruce Buchanan, "Artificial intelligence, past, present and future"; Russell Rowlett, "Conference summary and future plans."

Separation and Purification

Colby College–New Hampshire

Harold B. Hopfenberg, chairman; Wolf R. Vieth, vice chairman.

19 August. (A. S. Michaels, discussion leader): Thomas A. Davis, "Encapsulation of powdered activated carbon in fiber-forming polymers for artificial kidney devices"; Edmund A. Spaeth, "Centrifugal liquid-liquid blood oxygenation"; A. S. Michaels, "Therapeutic systems for controlled administration of drugs: A new application of membrane science."

20 August. (C. J. King, discussion leader): H. A. C. Thijssen, "Freeze concentration"; Stanley Barnett, "Separations in the food industry"; C. J. King, "Separation of surfactants, heavy metals and other substances from waters by foaming."

21 August. (Hanju Lee, discussion leader): Douglas M. Ruthven, "Sorption and diffusion in molecular sieve zeolites"; Donald W. Breck, "Adsorption separation by zeolites"; Alan L. Myers, "Interactions of unlike molecules adsorbed on a solid surface"; Norman H. Sweed, "Adiabatic adsorption in a fixed bed."

22 August. (Ronald W. Rousseau, discussion leader): Warren L. McCabe, "Contact nucleation"; Alan D. Randolph, "Status of crystal size distribution analysis in real crystallizers"; M. Sakata, "Discussion of a high speed motion picture film titled: The mechanics of liquid entrainment generation in boiling vapor/liquid environments on fractionating trays."

23 August. (Wolf R. Vieth, discussion leader): Donald R. Paul, "Solvent and solute diffusive transport in swollen permselective polymer membranes"; Phillip C. Wankat, "Cyclic separation techniques."

Space, Chemistry and Physics of

Tilton School

John A. O'Keefe, chairman; John S. Lewis, vice chairman.

1 July. Microtektites: B. P. Glass, "Microtektites, normal and bottle-green; comparison with lunar glass spherules." Structure of tektite glass: D. R. Uhlmann, "Structure of tektite glass"; B. J. Evans, "Mössbauer studies on tektite glass."

2 July. Origin of tektites: geochemistry and glass-making questions: Michael Cable, "Tektites and glass-making theories"; S. R. Taylor, "Origin of tektites from the geochemical standpoint." Ablation of tektites and meteorites: diffusion and homogenization: K. K. Chen, "Turbulence and ablation in meteorites and tektites"; A. R. Cooper, "Diffusion and homogenization in glass and tektite formation."

3 July. Effects of violent explosions: Coy Glass, "Comminution in explosive processes"; J. H. Norman, "Condensation phenomena associated with fallout formation from nuclear events." Session reserved for late results: (Speakers and subjects to be announced.)

4 July. The Allende meteorite, especially the white particles: (Speaker and subject to be announced). Pioneer and Mariner results on Jupiter and the inner planets: S. I. Rasool and John S. Lewis, "The new results on the planets and their interpretation."

5 July. Are carbonaceous chondrites from comets? A. H. Delsemme, "New cometary data, including Kohoutek and new theories"; E. Olson, "Carbonaceous chondrites, with especial reference to possible cometary origin."

Statistics in Chemistry and Chemistry Engineering

New Hampton School

David W. Bacon, chairman; John D. Hinchen, vice chairman.

15 July. Marvin Zelen, "Problems of controlled human experimentation in cancer research"; William H. Lawton and Edward A. Sylvestre, "Principal component, nonlinear estimation: Applications to chemical spectrophotometry."

16 July. G. Tunnicliffe Wilson, "Modelling multiple time series—is there a best way?"; Wesley L. Nicholson, "Some statistical aspects of stereology."

17 July. Carl M. Metzler and Donald A. Lyon, "Statistics of comparative bioavailability studies"; William R. Fairweather, discussant; David F. Andrews, "Robust estimates, intervals and residuals for regression models."

18 July. De Verle P. Harris, "Concepts and methods for the estimation of metal endowment"; John R. Ellis, discussant; William J. Hill, "PLant EXperimentation (PLEX) and other statistical inroads to the plant."

19 July. Fred J. Endelman, "The mathematical modelling of soil-water-nitrogen phenomena."

Structural Macromolecules

Tilton School

Karl A. Piez, co-chairman; George R. Martin, co-chairman.

Collagen

22 July. Chemistry of collagen I (comparative chemistry of collagen types, amino acid sequences, crosslinks) E. J. Miller, discussion leader). Chemistry of collagen II (basement membranes, invertebrate collagens, procollagen) (N. Kefalides, discussion leader).

23 July. Molecular and fibril structure (molecular stability, molecular packing, microfibrils, polymorphic forms) (K. A. Piez, discussion leader). Elastin (chemistry, thermodynamics, structure) (W. Gray, discussion leader).

24 July. Biosynthesis I (mRNA, polysomes, cell-free systems, hydroxylation, secretion) (S. Udenfriend, discussion leader). Biosynthesis II (procollagen to collagen conversion aldehyde formation, control of fibrillogenesis, hereditary defects) (G. R. Martin, discussion leader).

25 July. Biomedical aspects (control of collagen type, macromolecular interactions collagen-cell interactions, pathology) (J. Gross, discussion leader). Light entertainment; R. Trelstad.

26 July. Collagen degradation (chemistry, enzymology, control) (G. Lazarus, discussion leader).

Subsurface Fluid Displacement, Chemistry and Physics of

Kimball Union Academy

Lyman L. Handy, chairman; Michael Prats, vice chairman.

Fluids in Permeable Media

12–16 August. R. A. Greenkorn, "Flow in non-ideal porous media"; C. F. Brandner, R. A. Slotboom, "Vertical immiscible displacement experi-

GORDON RESEARCH CONFERENCES

"FRONTIERS OF SCIENCE"

APPLICATION

Please complete this application and mail **(in duplicate)** to the Director.

DO NOT SEND DEPOSIT WITH THIS APPLICATION

Office Use Only:
Received:
Sent to Chairman:
Waiting List Letter:
Registration Mailed:
Registration Returned:

Conference on _____
(Name of Conference—Please Print)

Name: (Please Print) _____
Organization: _____
Business Address: _____
(inc. dept., street & no.) _____
City and State: _____
Zip Code

Accommodations at the Host site are requested for: ☐ Applicant ☐ Wife/Husband ☐ Child
(Children must be at least 12 years of age.)
State **name** and **age** of each child requiring accommodations.

Indicate your particular activities which justify favorable consideration of you as a participant in and contributor to this Conference. (Not required of speakers.) Applications are referred to the Conference Committee for review in accordance with the established regulations.

Please return to:
Dr. Alexander M. Cruickshank, Director
Gordon Research Conferences
Pastore Chemical Laboratory
University of Rhode Island
Kingston, Rhode Island 02881

Tel: (401) 783-4011

Office — Summer Schedule

Colby College-New Hampshire
New London, N. H. 09257
(603) 526-2870

The recording of lectures by tapes, etc. and the photography of slide material are prohibited. Printed reference to Gordon Research Conference papers and discussion is not permitted. Authors are requested to omit references to the Conference in any publication. Each member of the Conference agrees to this regulation when registration is accepted.

Signature _____

Date _____

Telephone: Business _____ _____

Home _____ _____

DO NOT SEND DEPOSIT WITH THIS APPLICATION

ments in a nonhomogeneous flow cell"; C. Y. Cha, "Mathematical model of in situ oil shale retorting"; M. Prats, "Flow regimes in thermal recovery processes"; C. S. Land, L. C. Marchant and C. J. Cupp, "Application of reverse combustion to in situ oil recovery from tar sands"; H. J. Ramey, "Unique flow problems in geothermal reservoirs"; R. J. Blackwell, "Isothermal displacement processes"; L. E. Scriven, "Dynamic interfacial phenomena during immiscible displacement processes"; C. Jacquin, "Representation of a two dimensional network of fractures by a probabilistic model"; J. Burger, "Spontaneous ignition in an oil reservoir."

Textiles: Fiber Science

Colby College–New Hampshire

John P. Knudsen, chairman; H. Dieter Weigmann, vice chairman.

8 July. J. E. Spruiell and J. L. White, "Structure development in polyolefin fibers during melt spinning and drawing"; J. A. Cuculo, "Flow induced crystallization of poly(ethylene terephthalate) melts in the extrusion process."

9 July. R. E. Cunningham, "A novel technique for preparing inorganic filaments from inviscid melts"; R. W. Work, "Some relationships between the conditions of formation and the physical properties of spider ampullate silk fibers."

10 July. S. K. Batra, "Analysis of bicomponent fiber crimp: a critical review; a generalized model"; J. H. Saunders, "Biconstituent fibers from segmented polyurethanes and nylon 6."

11 July. B. Miller, "Autoignition of textile systems"; S. Schulman, "An instrumented mannikin to determine burn damage."

12 July. J. Skelton, "Changes in interfiber forces during wetting and drying."

Toxicology and Safety Evaluations

Kimball Union Academy

Harold M. Peck, chairman; Ralph C. Wands, vice chairman.

5 August. (J. F. Borzelleca, discussion leader): M. F. Cranmer, "The mission and capabilities of the NCTR"; H. J. Schumacher, "The NCTR approach to developing new teratology methodology." (E. S. Feenstra, discussion leader): W. E. Jaques, "Early histopathologic studies on chemical carcinogenesis."

6 August. (R. J. Weir, discussion leader): P. J. Gehring, "Use of pharmacokinetics in assessing the environmental hazards of chemicals"; H. M. Hanson, "Techniques for assessing the behaviorial effects of chemicals." (H. N. MacFarland, discussion leader): E. D. Palmes, "Influence of particle dynamics on inhalation toxicology."

7 August. The role of diet in studies of chemical carcinogenesis and toxicology (H. C. Grice, discussion leader): P. M. Newberne, "Toxicologic response to diet"; A. E. Rogers, "Carcinogenic response to diet." (R. M. Hehir, discussion leader): G. E. Davies, "Evaluation of sensitizing potential."

8 August. (J. F. Finklea, discussion leader): R. C. Wands, "Intergovernmental agency communications on toxicology." Panel: (J. F. Finklea, moderator): M. F. Cranmer, H. J. Schumacher, W. E. Jacques, P. J. Gehring, H. M. Hanson, E. D. Palmes, P. M. Newberne, A. E. Rogers, G. E. Davies, R. C. Wands. (H. M. Peck, discussion leader): M. Eisler, "Toxicology, optimism, pessimism and reality."

9 August. (R. C. Wands, discussion leader): A. Furst, "Metal carcinogenesis."

Water and Aqueous Solutions

Holderness School

George J. Safford, chairman; Frank H. Stillinger, vice chairman.

Physics and Chemistry of Aqueous Solutions

5 August. (G. S. Kell, session chairman): J. H. Gibbs, "What melting and boiling tell us about liquid water"; H. C. Anderson, "Cluster expansions for water"; L. Blum, "Invariant expansions." (R. Lumry, session chairman): (R. Franks, "A reexamination of hydrophobic effects in very dilute aqueous solutions"; G. A. Jeffrey, "The effects of hydration on the conformation of carbohydrates as observed in the crystalline state"; J. H. Freed, "ESR studies of anisotropic rotational tumbling in liquid and frozen media and radical diffusion in aqueous solvents."

6 August. (H. G. Hertz, session chairman): A. Sugget, "Time-domain dielectric studies of nonelectrolyte aqueous solutions"; F. J. Millero, "The high pressure PVT properties of water and D_2O"; C. Hansch, "The role of hydrophobic forces in the interaction of drugs with macromolecular systems." (H. S. Frank, session chairman): C. A. Angell, "The weirdness of supercooled

water"; H. Yasuda, "Diffusive transport of salt and water in semipermeable membranes"; J. Wenzel, "Neutron scattering of amorphous ice."

7 August. (S. Lindenbaum, session chairman): W. Kauzmann, "Hydrophobic bonding"; I. Wadso, "Calorimetric studies of biopolymer solutions and model compounds"; U. P. Strauss, "Hydrophobic interactions in polyelectrolytes." (G. E. Walrafen, session chairman): M. J. Colles, "Stimulated Raman scattering in water"; P. Rentzepis, "Picosecond pulse spectroscopy of the hydrating electron"; A. R. Davis, "Pressure effect on ionic equilibria"; J. Muenter, "H_2O dimer."

8 August. (A. Ben-Naim, session chairman): J. White, "Neutron inelastic scattering from water and ionic solutions"; H. L. Friedman, "NMR relaxation studies of ionic pair distribution functions"; A. H. Narten, "X-ray and neutron diffraction from water and aqueous solutions." (R. L. Kay, session chairman): H. S. Frank, "Reflections on progress in the science of water"; L. Onsager, "Interpretation of kinetic properties of water."

9 Aug. (F. St. Lillinger, session chairman): E. Clementi, "Quantum mechanical calculations of potential energy surfaces and their applications to structural determinations for liquid"; H. A. Scheraga, "Semi-empirical potential functions for water"; A. Rahman, "Molecular dynamics—progress report."

X-Ray Photoelectron Spectroscopy

Brewster Academy

David M. Hercules, chairman; T. Carlson, vice chairman.

15–19 July. Correlations with other techniques: G. Andermann, "X-ray photon spectroscopy." Correlations with calculations: M. Schwartz, "Quantum calculations"; W. Jolly, "Empirical calculations." Surface reactions and catalysis: R. Brundle, S. Ikeda, N. Delgas. Satellite bands: M. Krause, "Shake-off and shake-up"; C. Fadley, "Multiplet structure." Band structure of solids: D. Eastman. Gas-phase core measurements: T. Thomas. Application to inorganic chemistry: C. Jorgensen, J. Van Wazer. Application to organic chemistry: W. Riggs. Application to analytical chemistry: W. Schwartz. Instrumentation: G. Schweitzer. The future of ESCA and other bothersome problems (panel discussion) (T. Carlson, moderator). Cross section calculations: S. Manson. Relaxation effects: D. Shirley.