Gordon Research Conferences

Alexander M. Cruickshank

The Gordon Research Conferences for the summer of 1983 will be held in New Hampshire.

Purpose. The object and exclusive purpose of the Gordon Research Conferences is to foster and promote education and science by organizing and operating meetings of research scientists with common interests in the fields of chemistry or related sciences for the purpose of discussions and the free exchange of ideas, thereby stimulating advanced thinking in research at universities, research foundations, and industrial laboratories. 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.

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.

In order to protect individual rights and to promote discussion it is an established requirement of each conference that no information presented is to be used without specific authorization of the individual making the contribution, whether in formal presentation or in discussion. Scientific publications are not to be prepared as emanating from the Conferences. The recording of lectures by tapes and so forth and the photography of slides are prohibited.

Registration and Reservations. Individuals interested in attending the Conferences are requested to send their applications to the office of the Director. It is important that you submit your application promptly in order that it may be given early consideration by the review committee. This is particularly necessary for those conferences which are customarily oversubscribed and for which it is often necessary to establish a waiting list.

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 may be made on the application. 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 chairperson for that conference. This chairperson 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 is required for each conference and is completed on receipt of the registration card and the full fixed fee which is required in *advance of all participants and guests.* The advance payment is also required from scientists arriving in the United States from foreign countries and should be payable through a U.S. bank in U.S. dollars. Checks are to be made payable to the Gordon Research Conferences.

The card must be returned 3 weeks prior to the conference with the advance payment or the approved application may be canceled. A registration card not accompanied by the advance payment will not be accepted.

As you know, most conferences are oversubscribed; therefore, I am sure that you can appreciate our problems with scientists who are qualified to attend but have been placed on a waiting list. *Please return your card immediately with the advance payment to assure your attendance and accommodations.*

Special Fund. A Special Fund is provided from the registration fee and is made available to the chairperson of each 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 chairperson 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 all resident participants (speakers, discussion leaders, and 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 chairperson. The fixed fee will be charged regardless of the time a participant (speakers, discussion leaders, and conferees) attends a conference—that is, for the periods of from 1 to 4½ days.

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

Cancellation. (A) Conferees: All but $40 of the fixed fee will be refunded if an approved application is canceled not later than 2 weeks prior to the Conference. (B) Guests: Accommodations (room and meals) 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. The charge for five conference nights is indicated in the Fixed Conference Fee schedule. Full refund will be made if cancellation is received 2 weeks prior to the conference; otherwise $40 will be forfeited. Guests are not permitted to attend the conference lectures and discussion groups.

The author, director of the Gordon Research Conferences, is professor of chemistry, Pastore Chemical Laboratory, University of Rhode Island, Kingston 02281.

Pets are prohibited at the conference sites.

Program. The complete program for the 1983 Gordon Research Conferences will be published in *Science*, 4 March 1983. Reprints are available on request.

Requests for applications to the Conferences, or for additional information should be addressed to: Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, University of Rhode Island, Kingston, Rhode Island 02881. Telephone: 401-783-4011 or 401-783-3372.

Mail for the office of the Director from 13 June to 26 August 1983 should be addressed to: Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, Colby-Sawyer College, New London, NH 03257. Telephone: 603-526-2870.

Fixed Conference Fees—1983

New Hampshire

Conferee (double occupancy) $230.00
Nonresident conferee
(meals, no room) $190.00
Guest (room, meals) $170.00

Adhesion

New Hampton School

Robert A. Draughn, chairperson; David W. Dwight, vice chairperson.

22 August. F. M. Fowkes, "Infrared determination of the acid-base interaction of polymers"; F. J. Boerio, "Structure and properties of silane primers"; W. P. Townsend, "Metallization of polymers."

23 August. T. L. St. Clair, "High-temperature polymers for aerospace applications"; R. Young, "Ligno-cellulosic adhesives"; N. S. Eiss, "Role of adhesion in friction and wear of polymers." Poster session.

24 August. G. P. Anderson, "Analyses of standard adhesion test specimens"; W. S. Johnson, "Cyclic debonding of adhesively bonded composites"; R. S. Williams, "Characterization of adhesive processes and materials properties using ultrasonic NDE."

25 August. J. R. Cantey, "Mechanisms of adherence of pathogenic bacteria to gastrointestinal surfaces"; S. Dexter, "Marine bioadhesion"; R. J. Simonsen, "Clinical aspects of resin bonding for preventive dentistry."

26 August. L. H. Peebles, "Carbon-carbon composites." Applicants to this conference are asked to indicate their interest in participating in the poster session to be held Tuesday evening. Attendance preference will be given to participants. Further information may be obtained from R. A. Draughn (803-792-2828) or D. W. Dwight (703-961-6346).

Aerobiology

Colby-Sawyer College (S)

Edgar W. Larson, chairperson; William E. Marlatt, vice chairperson.

8 August. Modeling of airflow patterns over complex terrain (William Marlatt, session chairperson). Chemical transformations of urban and industrial air pollutants during atmospheric transport (Arther Winer, session chairperson).

9 August. Natural aerosols and water-to-air transfer of microorganisms (Duncan Blanchard, session chairperson). Sources of microorganisms in nature and the evidence for airborne transmission of infection to man—with emphasis on legionellosis (Richard Tyndall, session chairperson).

10 August. Pathogenesis and immunogenesis of aerosol induced infections (Edward Stephenson, session chairperson). Aerosol administration of therapeutic drugs in the treatment of human respiratory infections (Vernon Knight, session chairperson).

11 August. Advances in knowledge on the atmospheric pathways of insects affecting forests (Michael McManus, session chairperson). Aerobiological factors in the spread and control of plant pathogens (Robert Edmonds, session chairperson).

12 August. Atmospheric transport and deposition of allergins in nature (Stephen Hall, session chairperson).

Biology of Aging

Holderness School

Edward J. Masoro, chairperson.

8 August. Biological assessment of aging (Reuben Andres, session chairperson): Caleb Finch, "Biomarkers of aging"; David Harrison, "Measurement of biological age." Life prolongation in mammals (Roy Walford, session chairperson): Byung Yu, "Analyses of hypotheses for antiaging action of food restriction"; Arthur Schwartz, "Does DHEA have an antiaging action?"

9 August. Life prolongation in invertebrates (George Baker, session chairperson): R. L. Russell, "Life prolongation in nematodes by food restriction"; R. S. Sohal, "Prolongation of life in houseflies by modulation of metabolic activity." Does food restriction prolong life by influencing free radical metabolism? (Denham Harman, session chairperson): Rolando Del Maestro, "Potential role of free radicals in the aging process"; Hans Nohl, "Electron transport and free radical formation."

10 August. Possible endocrinologic and immunologic bases for actions of food restriction (G. Fernandes, session chairperson): Brian Merry, "Endocrine changes underlying the antiaging action of dietary restriction"; Richard Weindruch, "Role of the immune system in the antiaging action of food restriction." Exercise and aging (Elsworth R. Buskirk, session chairperson): John Halloszy, "Interactions between aging and exercise in rats"; Steven Horvath, "Aging and exercise in humans."

11 August. Environmental factors influencing age-related disease and longevity (E. J. Masoro, session chairperson): Robert Sapolsky, "Stress and stress-related disease during aging"; C. S. Pittendrigh, "Chronobiology and aging"; John W. Rowe, "Interrelationships between aging and disease."

12 August. Hormone production and action (George Roth, session chairperson): Gaetano Crepaldi, "Age and the action of insulin"; Richard Adelman, "Regulation of pancreatic islet hormone secretion."

Analytical Chemistry

New Hampton School

J. J. Kirkland, chairperson; Gary Horlick, vice chairperson.

15 August. Lloyd R. Snyder, "Retention mechanisms in liquid-solid chromatography and their practical consequences"; Joel M. Harris, "Laser enhanced absorption measurements." Howard R. Morris, "New mass spectrometry methods for the analysis of biopolymers."

16 August. Bruce R. Kowalski, "Multivariate chemical analysis"; Lynn W. Jelinski, "Solid state NMR characterization of polymers: Structure, morphology and dynamics"; Roger W. Giese, "Combining antibodies, chromatography and gas-phase electrophoresis for ultratrace analysis."

17 August. Ben S. Freiser, "New developments in Fourier-transform mass spectrometry"; Thomas H. Mourey, "Adsorption chromatography of synthetic polymers." Raymond E. Dessey, "The impact of microelectronics on the analytical laboratory."

18 August. John C. Travis, "Studies in selective laser ionization for inorganic analysis"; Roland W. Frei, "Detection in liquid chromatography based on different luminescence principles." James

C. Sternberg, "Recent advances in clinical analysis."

19 August. Stanley N. Deeming, "Optimization and experimental design in analytical chemistry"; D. Bruce Chase, "Diffuse reflectance infrared spectroscopy: A sensitive, versatile analytical tool."

Analytical Pyrolysis

Holderness School

Fred Shafizadeh, chairperson; Hans-Rolf Schulten, vice chairperson.

11 July. Pyrolysis of natural polymers (Hans-Rolf Schulten, discussion leader). J. J. Boon, "Carbohydrates"; M. T. Klein, "Lignins"; W. T. Smith, "Amino acids and proteins"; Further contributions, "T. A. Milne, B. Krieger, H. Menard, and M. Gray. New methods (Frank J. Vastola, discussion leader). P. R. Solomon, "FT-IR"; M. L. Lee, "Super-critical solvent chromatography"; R. J. Cotter, "Laser and thermal desorption mass spectrometry"; Further contributions, D. A. Chattfield, G. V. Robbins and C. E. R. Jones.

12 July. Pyrolytic conversion of biomass (John Sealock, discussion leader). R. Zabransky, "Gasification"; J. Diebold, "Chemical feedstock"; F. Shafizadeh, "Char formation"; Further contributions, C. Roy, S. H. Zeronian, A. Lipska, R. J. McCluskey, G. M. Simmons, and D. S. Scott. Fundamentals of pyrolysis (Michael J. Antal, Jr., discussion leader). G. D. McGinnis, "Mechanisms of thermal decomposition of carbohydrates"; T. J. Ohlemiller, "Thermal analysis and kinetics"; I. Luderwald, "Pyrolytic processes of synthetic polymers"; Further contributions, D. A. Nelson, A. E. Pavlath, R. T. Hallen, and A. Cutler.

13 July. Characterization and profiling (Henk L. C. Meuzelaar, discussion leader). E. J. Gallegos, "Asphaltine formations"; J. K. Whelan, "Marine sediments"; J. M. Bracewell, "Humic acids"; Further contributions, H. L. Retcofsky, S. Larter, A. Zsolnay, J. W. Patton and K. Haider. Synthetic polymers (Robert Lattimer, discussion leader). S. K. Brauman, "Pyrolysis of polystyrene"; S. Tsuge, "Polyolefins"; G. Montaudo, "Thermal fragmentation in polycondensation polymers." Further contributions, E. J. Levy, I. Ericsson, and L. D. Wescott, Jr.

14 July. Application in life sciences (Collin S. Gutteridge, discussion leader). S. Morgan, "Biomedical"; H. M. Schiebel, "Drug metabolites"; M. J. Whitehouse, "Forensic science"; Further contributions, R. Saferstein and T. O. Munson. Data processing (Steve Morgan, discussion leader). H. J. H. MacFie, "Sample information"; W. Windig and A. Harper, "Chemical interpretation."

15 July. Combustion and industrial applications (Kent J. Voorhees, discussion leader): W. D. Reents, "Pyrolysis of isotropically formed poly(vinylchloride); J. M. Vernaud, "Fire retardants, coatings"; Further contributions, G. Domburg and C. M. Wong.

Animal Cells and Viruses

Tilton School

Bernard Moss, co-chairperson; Edward M. Scolnick, co-chairperson.

20 June. Expression of DNA virus genomes (Tom Shenk, session chairperson). Replications of DNA viruses (Jerry Hurwitz, session chairperson).

21 June. Expression of RNA virus genomes (Bob Krug, session chairperson). Structure and replication of RNA viruses (David Baltimore, session chairperson).

22 June. Viruses as vectors (Peter Howley, session chairperson). Virus-cell interactions (Bernie Fields, session chairperson).

23 June. Virus transformation (Mike Bishop, session chairperson). New methods for diagnosis, prevention and treatment of viral diseases (Alice Huang, session chairperson).

24 June. Cell oncogenes (Bill Hayward, session chairperson). Conference participants who wish to present posters may include titles and brief abstracts with their conference applications.

Atherosclerosis

Kimball Union Academy

Robert Mahley, co-chairperson; Michael Gimbrone, co-chairperson.

27 June. Vascular injury and repair I: Cellular interactions (Morris J. Karnovsky, session chairperson): Morris J. Karnovsky, "Overview"; Stephen M. Schwartz, "Endothelial integrity"; Robert D. Rosenberg, "Endothelial cell–heparin–smooth muscle interactions"; David P. Hajjar, "How the endothelium modifies metabolism of the injured arterial wall." Vascular injury and repair II: Matrix interactions (Helene Sage, session chairperson): Helene Sage, "Novel glycoproteins of the endothelium: Characterization and modulation"; Joseph A. Madri, "Matrix influences on endothelial cell proliferation, migration and differentiation"; Mark H. Ginsberg, "The role of adhesive and matrix glycoproteins in platelet function"; Denisa D. Wagner, "Biosynthesis, secretion and subcellular localization of VWF protein in endothelium"; Robert J. Levy, "γ-Carboxyglutamic acid-containing proteins and calcific cardiovascular disease."

28 June. Cell surface receptors: Structure and function (Daniel Steinberg, session chairperson): Joseph L. Goldstein, "Mutations affecting the biosynthesis and processing of the LDL receptor"; Thomas L. Innerarity, "Protein determinants of apolipoproteins responsible for mediating lipoprotein receptor interactions"; Kurt Drickamer, "Structure of receptors for glycoproteins." Poster session I. Endocytosis: Intracellular pathways and processes (Richard J. Havel, session chairperson): Ann Hubbard, "Pathways of receptor-mediated endocytosis in hepatocytes"; Mark Marsh, "Endocytosis and Semliki forest virus infections"; Conrad A. Hornick, "Studies on an intermediate compartment of the LDL catabolic pathway of hepatocytes"; Louis C. Smith, "Digital imaging microscopy: Time lapse endocytosis of fluorescent lipoproteins by living cells."

29 June. Vascular injury and repair III: Mediators and mechanisms (Michael A. Gimbrone, Jr., session chairperson): Michael A. Gimbrone, Jr., "Overview"; Ira M. Goldstein, "Polymorphonuclear leukocytes and vascular injury"; Russell Ross, "Growth factor interactions with vascular cells; Molecular mechanisms and effects"; Larry D. Witte, "Mevalonate, cell growth and lipoprotein metabolism—novel relationships."

29 June. Poster session II. Regulation of cholesterol metabolism and transport (Robert W. Mahley, session chairperson): Ken Luskey, "Molecular cloning of HMG CoA reductase"; Christopher J. Fielding, "Cholesterol transport in human hyperlipidemia"; Richard St. Clair, "Regulatory pathways controlling cholesterol efflux in pigeon smooth muscle cells with a defective LDL receptor pathway"; Ladislov Dory, "Metabolism of peripheral lymph lipoproteins: Implications for reverse cholesterol transport."

30 June. Genetic regulation of apolipoprotein expression (Godfrey S. Getz, session chairperson): John M. Taylor, "Gene expression of Apo-E biosynthesis"; Jan Breslow, "Structure, function and mutations of the Apo A-I—C-III gene complex"; Jeffrey Gordon, "Biosynthesis of apolipoproteins in human and rat intestine"; Renee Le Boeuf, "Genetic control of high density lipoproteins among inbred mouse strains." Spe-

cial topic speaker: Geoffrey M. Cooper, "Tumor transforming genes."

1 July. Vascular injury and repair IV: Localizing factors (Donald L. Fry, session chairperson): Donald L. Fry, "Overview"; Christopher K. Zarins, "Endothelial integrity, plaque localization and hemodynamic factors"; C. Forbes Dewey, "Unsteady fluid shear and vascular endothelium"; Eric F. Grabowski, "Prostacyclin production by cultured endothelial exposed to controlled levels of shear stress."

Atomic Physics

Colby-Sawyer College (S)

Hugh P. Kelly, chairperson; Harold J. Metcalf, vice chairperson.

4 July. Cooling and trapping of atoms and ions (H. Dehmelt, session chairperson): J. Prodan, "Atomic beam velocity modification using laser light"; V. Letokhov, "Laser cooling of atomic beams and use of cold atoms in atomic physics"; W. Itano, "Spectroscopy of laser cooled and trapped ions"; R. Van Dyck, "A precision measurement of m_p/m_e using stored ion spectroscopy"; G. Werth, "High-resolution microwave spectra from electrodynamically confined ions." New results in spectroscopy (H. Metcalf, session chairperson): S. Chu, "Measurement of the positronium $1\ ^3S_1$–$2\ ^3S_1$ two-photon transition"; G. Dunn, "Electron-Ion collisions; resonances"; S. Haroche, (Title to be announced); W. Parkinson, "Recent laboratory measurements of atomic parameters at the center for astrophysics." P. Dittner, "Dielectronic recombination of high-charge-state heavy ions." Poster session.

5 July. Spin-aligned hydrogen and helium (D. Kleppner, session chairperson): T. Greytak, "Experiments on spin-polarized atomic hydrogen at MIT"; J. Berlinsky and W. Hardy, "Experiments on spin-polarized atomic hydrogen at UBC"; I. Silvera, "Spin polarized atomic hydrogen"; D. Lee, "NMR-induced recombination in spin-polarized hydrogen"; F. Laloé, "Quantum properties of spin-polarized ^{3}He." Collisions in ion traps (R. Marrus, session chairperson): D. Larson, "Spectroscopy of trapped negative ions"; D. Church, "Charge transfer to stored, multi-charged ions"; M. Prior, "Trapped multicharged ion collision studies"; D. Pritchard, "Pushing atoms around with light: The naked truth about dressed atoms"; I. Lindgren, "Laser spectroscopy and many-body calculations."

6 July. Photoionization of atoms (J. Dehmer, session chairperson): R. Freeman, "Laser techniques in the VUV"; A. Starace, "Recent theoretical progress in atomic photoionization"; F. Wuilleumier, "Collisional ionization, photoionization, and autoionization in laser excited atomic vapors"; M. Krause, "The study of atomic vapors with the aid of synchrotron radiation: A horn of plenty"; W. Cooke, "Two-electron atoms." Fusion: Spin-polarized nuclei and charge transfer (J. Cecchi, session chairperson): J. Cecchi, "Spin-polarized fusion: The confluence of atomic, nuclear, and plasma physics"; R. Kulsrud (Title to be announced); W. Happer and R. Knize, "Polarization of nuclear spins by optical pumping"; A. Dalgarno, "Charge transfer of multiply-charged ions at low energies"; C. Bottcher, "Numerical studies of ion-atom collisions at intermediate energies."

7 July. Molecular continuum states (A. Temkin, session chairperson): J. Dehmer, "Resonant processes in molecular photoionization"; V. McKoy, "Studies of molecular photoionization processes"; M. Morrison, "Theoretical techniques for molecular continuum states"; C. Noble "R-matrix methods for molecular continuum states"; L. Collins, "Linear algebraic and optical potential approaches to electron scattering." Banquet talk: (Speaker to be announced), "Cosmology and the early universe."

8 July. Photoionization of atoms and molecules (Session chairperson to be announced): D. Shirley (Title to be announced); C. Greene, "Electron correlations: The long and short of it"; T. Lucatorto, "Vacuum ultraviolet absorption studies on excited atoms and ions"; J. W. McGowan, "Electron recombination in atoms and molecules." J. Berkowitz (Title to be announced).

Bacterial Cell Surfaces

Brewster Academy

Masayori Inouye, co-chairperson; Uli Schwarz, co-chairperson.

4 July. Bacterial invasiveness (E. H. Beachey, session chairperson): E. H. Beachey, "Bacterial invasiveness—introduction"; G. Hazelbauer, "Bacterial chemotaxis"; I. Ofek, "Molecule of recognition mediating bacterial adhesion"; F. Audibert, "Synthetic analogs of bacterial cell walls (muramyl dipeptides) as adjuvants for synthetic vaccines." E. Rosenberg, "Emulsan exopolysaccharides desorb bacteria from hydrophobic surfaces"; S. Nomark, "Genetics of digalacloside binding pili of *Escherichia coli*." L. Leive, "LPS structure, complement activation, phagocytosis, and pathogenesis." Cell division (M. Schaecheter, session chairperson): M. Matsuhashi, "Dynamic aspects of peptidoglycan synthesis." Y. Hirota, "Genetical, functional, and structural properties of the *E. coli* cell division machinery." R. D'Ari, "Division regulation via division inhibition in *E. coli*"; W. Donachie, "Transcriptional organization of a group of division genes"; L. Rothfield; "Membrane-murine interactions in bacterial cell division"; J. Walker, "Transcription of the pbpB gene of *E. coli*."

5 July. Morphogenesis (D. Kaiser, session chairperson): R. Losich, "Spore formation in *Bacillus subtilis*"; A. Newton, "Polar development and surface morphogenesis in caulobacter"; L. Shimkets, "The function of the spoC locus during fruiting body formation in *Myxococcus xanthus*." S. Inouye, "Protein S, a development-specific surface protein of *Myxococcus xanthus*"; L. Shapiro, "Role of membrane biogenesis in the *Caulobacter* cell cycle"; M. Bayer, "Membrane adhesion site." Porins (J. Rosenbusch, session chairperson): J. Rosenbusch, "Structural aspects of porins"; H. Nikaido, "Properties of porin channels"; T. Mizuno, "Osmoregulation of the OmpF ompC gene expression: Characterization of the ompB operon." B. Lugtenberg, "Structure and function of PhoE protein of *E. coli* K-12"; W. Neupert, "Porin of the outer mitochondrial membranes of *Neurospora*"; M. Schwartz, "Use of monoclonal antibodies to study LamB protein structure"; T. Nakae, "Solute selectivity of porin pores of *E. coli* and *Salmonella typhimurium*"; R. Hancock, "Porins in *Pseudomonas aeruginosa*: The large and the small"; U. Henning, "Requirements for the *E. coli* outer membrane protein OmpA to be incorporated into its membrane"; P. Reeves, "TolC, a gene for a minor outer membrane protein which affects outer membrane properties."

6 July. Bacterial toxins (J. Konisky, session chairperson): S. Luria, "Colicins—action, biosynthesis, and regulation"; W. Dallas, "Bacterial toxins, an overview." W. A. Cramer, "*Colicin* El mode of action": S. Bhakdi, "Membrane insertion by staphlococcal alpha-toxin and streptolysin O"; J. J. Donovan, "Diptheria toxin/membrane interaction"; J. Mekalanos, "Genetics of toxin expression in *Vibrio cholerae*"; V. Braun, "Plasmid mutation affecting *Colinin M*." Structure and functions of membrane proteins (D. Oesterhelt, session chairperson): G. Khorana, "Structure and function of bacteriorhodopsin"; K. Duncker, "Function of proline in α-helix"; P. Overath, "Study of integral

membrane proteins: The lesson of lactose permease"; P. Dimroth, "Sodium transport decarboxylases"; K. V. Meyenburg, "Genetics and topography of ATP synthase F_0/F_1"; K. Wirtz, "Phospholipid exchange protein"; G. Feher, "The reaction center of photosynthesis in Rh. spheroides"; J. Ghuysen, "Three-dimensional structure of penicillin binding proteins."

7 July. Active transport (G. Ames, discussion leader): P. Postma, "The PEP: Sugar phosphotransferase system: Regulation of sugar transport"; G. F. Ames, "The histidine transport operon"; W. Epstein, "Analysis of an ATP-driven transport system"; J. S. Hong, "Energetics and reconstitution of glutamine transport in isolated vesicles"; D. Oxender, "Regulation of leucine transport in *E. coli*"; C. Higgins, "Peptide transport systems in *S. typhimurium* and *E. coli*"; B. Muller-Hill, "Lac permease (structure and mutants)." Export of macromolecules I (H. C. Wu, session chairperson): S. Mizushima, "Biosynthesis of lipoprotein in *E. coli*"; M. Osborn, "Mechanism of lipopolysaccharid translocation to outer membrane"; M. Tokunage, "Modification and processing of prolipoprotein in *E. coli*"; J. Ghrayeb, "Assembly and localization of the lipoproteins in *E. coli*"; A., Weissborn, "The biosynthesis of membrane derived oligosaccharides"; C. Raetz, "Metabolism and mitogenic function of monosaccharide lipid A precursors"; J. Neilsen, "Lipoproteins of gram-positive bacteria."

8 July. Export macromolecules II (L. Randall, session chairperson): P. Bassford, "A genetic analysis of protein secretion in *E. coli*"; W. Wickner, "Leader peptidase and M13 procoat: Reconstitution of a membrane assembly event with pure proteins"; L. Randall, "Translocation of nascent periplasm proteins across the cytoplasmic membrane is independent of elongation"; D. Botstein, "Secretion of β-lactamase"; C. Kumamoto, "Genetics of *E. coli* secretory machinery"; D. Oxender, "Use of leucine binding protein to study protein transport"; M. Sarvas, "Export of foreign membrane proteins from *Bacillus subtilis*."

Biological Regulatory Mechanisms

Holderness School

Martin Rosenberg, co-chairperson; Richard Palmiter, co-chairperson.

27 June. Regulation of the immune response (Lee Hood, session chairperson); Gene commitment: DNA modifications and rearrangements (Ira Herskowitz, session chairperson).

28 June. Recombination (Nigel Grindley, session chairperson); Transcription initiation (Steve McKnight, session chairperson).

29 June. Transcription termination and processing (Michael Chamberlin, session chairperson); Protein synthesis, processing, and degradation (Brian Safer, session chairperson).

30 June. Cellular responses to the environment (David Mount, session chairperson); Complex gene systems (Richard Burgess, session chairperson).

1 July. Cellular communication (Ron Evans, session chairperson).

Science and Technology of Biomaterials

Plymouth State College (N)

Walter Zingg, chairperson; Sumner A. Barenberg, vice chairperson.

4 July. Generation of biological activity by interaction of complement protein (Peter N. Madras, session chairperson): Hans Mueller-Eberhard, "The biologic role of the complement system"; Phillip Craddock, "Activation of complement by biomaterials." Hot topics in biomaterials (short submitted papers). (Sumner A. Barenberg, session chairperson).

5 July. Modified surfaces exposed to blood (Rolf Larsson, session chairperson): Marcel Jozefowicz, "Synthetic Heparin-like biomaterials—mechanism of anticoagulant activity and uses in prosthetic devices"; Michael V. Sefton, "Prospects and problems of long-term use of immobilized heparin." Long-term effects (C. Robert Valeri, session chairperson): Yohji Imai, "Long-term interactions between polymeric materials and tissue"; Shun Murabayash, "Blood compatibility of artificial organs for long-term applications."

6 July. Neural prosthesis applications (Gerald E. Loeb, session chairperson): Gerald E. Loeb, "The biophysics of electrical stimulation as applied to a cochlear prosthesis"; P. Hunter-Packham, "Functional neuromuscular stimulation in a mechanically stressful environment"; Kenneth Wise, "Thin film electrode arrays and IC's in vivo." Biomaterials for neural prosthesis (Gerald E. Loeb, session chairperson): Barry Brummer, "Electrochemical charge transfer techniques and their safety"; Donna Basiulis, "The electrical insulation of active devices submerged in saline"; H. Yasuda and Michael Nichols, "Synthesis and properties of plasma polymers, the interaction of polymeric materials and their substrates."

7 July. Materials for direct bonding with bone (J. L. Katz, session chairperson): P. Ducheyne, "The relationship between manufacturing methods and reactivity of bioglasses and apatite"; M. M. Walker, "Osteophilic materials; Interfacial bonding mechanisms." (Walter Zingg, session chairperson): E. Siddall, "Let's think about safety."

8 July. Dental implants (I. A. Mjör, session chairperson): T. Albrektsson, "Titanium implants, clinical and biological aspects"; A. I. Hamilton, "Adaptation of tissue to dental implants of titanium."

Biochemistry and Physiology of Bones and Teeth

Kimball Union Academy

Gideon A. Rodan, chairperson; John Termine, co-chairperson.

18 July. Cellular events in bone remodeling (R. Baron, session chairperson): Chemotaxis and attachment (E. Shiffman, session chairperson): R. Snyderman, "Receptor modulation in leucocyte chemotaxis"; M. Sommerman, "Role of chemotaxis in bone formation"; A. Kahn and S. Teitelbaum, "Cell-matrix recognition." Angiogenesis (E. Shiffman, session chairperson): B. M. Glaser, "Endothelial cell migration and neovascularization"; J. Castellot, "Differentiation dependent stimulation of angiogenesis."

19 July. Control of proliferation (W. A. Peck, session chairperson): Peter Nissley, "Somatomedins"; D. Baylink, "Human bone growth factor"; E. Canalis, "Local regulation of bone growth"; F. Suzuki, "Bone-cartilage growth factor." Bone forming cells (M. Owen, session chairperson): B. Ashton, "Osteogenic differentiation of marrow stromal cells"; R. Majeska, "Osteosarcoma cell lines"; G. W. Bernard, "Mouse and rabbit bone marrow cells"; P. J. Nijweide, "Chick embryo cells."

20 July. Differentiation, molecular mechanisms (Ora M. Rosen, session chairperson): T. J. Martin, "Activation of cyclic AMP dependent protein kinase in bone cells"; S. A. Newman, "Developmentally regulated nonhistone proteins." Phenotype specific macromolecules (M. Tanzer, session chairperson): K. M. Yamada, "Fibronectin"; A. I. Kaplan, "Proteoglycans"; H. E. Conrad, "Collagen and proteoglycan changes during cartilage differentiation."

21 July. The role of prostaglandins in bone remodeling (L. G. Raisz, session chairperson): L. Levine, "Ligand recep-

tor modulation of arachidonic acid metabolism"; S. M. Krane, "Prostaglandins, collagenase and cellular interactions in the synovium"; Kendall Smith, "Cell-cell interaction in the immune system."

22 July. Hypercalcemia of malignancy: Assays for purification of factor(s) (G. R. Mundy, session chairperson): R. Bringhurst, "Bone resorption assay"; A. Steward, "Renal adenylate cyclase"; D. Goltzman, "Cytochemical PTH assay"; K. Ibbotson, "EGF-like transforming growth factor competition"; R. Bockman, "Prostaglandin metabolism"; J. Jacobs, "Recombinant DNA." Participants are invited to submit abstracts on the topics of the conference to Dr. John Termine, Laboratory for Biological Structure, NIDR, 9000 Rockville Pike, Bethesda, Maryland 20205, for posters to be presented during the afternoons (5 to 6 p.m.) preceding the respective sessions. Selected presentations will be chosen for participation in the discussion.

Calcium Phosphates

Plymouth State College (N)

John A. Gray, co-chairperson; Edgard C. Moreno, co-chairperson.

27 June. (R. LeGeros, session chairperson): J. Arends and D. G. A. Nelson, "Lattice parameters of apatitic materials by means of high resolution TEM-fringe techniques"; C. Lacabanne and G. Bonel, "Study of monoclinic-hexagonal transition in apatites by thermostimulating currents." (W. E. Brown, session chairperson): S. S. Hasnain and D. W. L. Hukins, "EXAFS of calcium in biological systems"; R. M. H. Verbeek and J. D. B. Featherstone, "Effect of defects and substitutions on the solubility behavior of synthetic apatites."

28 June. (E. D. Eanes, session chairperson): J. Christoffersen and M. M. Reddy, "Effect of adsorption of small and large molecules on the kinetics of dissolution of hydroxyapatite"; G. Nancollas and M. Tung, "Crystallization mechanisms—growth of octacalcium phosphate." (H. Reddi, session chairperson): R. Wuthier and M. Grynpas, "Mechanisms of endochondral mineral deposition"; W. T. Butler and E. Bonucci, "Bone and dentine proteins and their possible relationship to mineralization."

29 June. (N. Mandel, session chairperson): K. P. H. Pritzker, "Deposition of calcium pyrophosphates"; L. Blomen, "Crystallization in urolithiasis: Calcium oxalate"; L. Smith, "Crystallization in urolithiasis: Calcium phosphates"; J. L. Meyer, "Inhibition of crystallization of calcium phosphate and oxalate." (S. H. Ashrafi, session chairperson): H. C. Slavkin and H. Warshawsky, "Developmental controls of enamel gene expression"; H. Schafer, "X-ray microanalytical demonstration of cellular calcified deposits"; R. Kaufmann, "The use of LAMMA (Laser microprobe mass analyzer) with emphasis on calcium in living cells."

30 June. (J. Yesinowski, session chairperson): B. S. H. Royce, "Photoacoustic spectroscopy and its possible use in the study of calcium phosphates"; W. Landis, "Auger electron and x-ray photoelectron spectroscopy of calcium phosphates"; J. J. Jurinak and W. L. Lindsay, "Effect of calcium phosphates and related compounds on heterogeneous equilibria in soils"; A. Ascenzi, "Calcium phosphates in marine environments." (J. Gray, session chairperson): E. J. Griffith, "Fibrous calcium metaphosphates as asbestos substitutes."

1 July. (E. C. Moreno, session chairperson): L. Chen, "Supersaturation levels in cooling water systems"; Anne Meier, "Microscaling of nonbiological materials in contact with natural fluids"; K. de Groot, "Calcium phosphate ceramics as implant materials." In addition, a poster session will be scheduled as part of the program.

Cancer

Colby Sawyer College (N)

Margaret L. Kripke, chairperson; Carl Nathan, vice chairperson.

22 August. Viral oncogenesis (Peter Duesberg, session chairperson): Michael Wigler, "Transforming genes"; Robert Gallo, "Human leukemia virus and *onc* genes." Multistage carcinogenesis (Leila Diamond, session chairperson): Jerry Williams, "Cancer hypersensitive states"; Stuart Yuspa, "Skin as a model system."

23 August. Cellular interactions (Carl Nathan, session chairperson): Isaiah Fidler, "Mechanisms of macrophage recognition"; Eric Stanbridge, "Role of differentiation in control of tumorigenesis"; Virginia Papaioannou, "Teratocarcinoma cell-embryo interactions." Tumor progression (Gloria Heppner, session chairperson): Robert Kerbel, "Cell fusion as a mechanism in progression"; George Poste, "Models for tumor progression."

24 August. Cancer biology (Alfred Kopf, session chairperson): Wallace Clark, "Adaptive tumorigenesis—adaptive neocytogenesis and cancer formation"; Mark H. Greene, "Precursor lesions in malignant melanoma"; Fritz Anders, "Normal and defective control of an oncogene." Cytogenetics (Sandra Wolman, session chairperson): Rebecca Taub, "Oncogenes among immunoglobulin genes"; Samuel Latt, "Structure-activity relationships in chromosomes."

25 August. Immunology (Margaret Kripke, session chairperson): Aline Van Pel, "Mutagen-induced antigenic variants"; Hans Schreiber, "Tumor antigens and antigenic selection"; Michael Gottlieb, "Acquired immunodeficiency syndrome." Short presentations.

26 August. New approaches for cancer treatment (John Minna, session chairperson): Julia Levy, "Photoimmunotherapy"; Miriam Poirier, "Antibodies to *cis*-platinum"; Michael Hershfield, "Phenotypic conversion by inhibition of adenosine deaminase."

Chemistry of Carbohydrates

Tilton School

Walter A. Szarek, chairperson; Roger W. Jeanloz, vice chairperson.

27 June. (D. Horton, discussion leader): S. Hanessian, "Strategies in synthetic design"; S. M. Hecht, "Recent studies on the synthesis of bleomycin-group antibiotics." (R. W. Jeanloz, discussion leader): D. R. Bundle, "Synthesis and conformational studies on bacterial O-antigens"; C. P. J. Glaudemans, "The binding of polysaccharides to monoclonal immunoglobulins."

28 June. (P. A. Sandford, discussion leader): D. A. Brant, "Realistic molecular modeling of polysaccharide solution conformation"; G. O. Aspinall, "Selective fragmentations of polysaccharides." (D. H. Ball, discussion leader): K. Nakanishi, "Microscale structure determination of oligosaccharides"; V. N. Reinhold, "Fast atom bombardment mass spectrometry of complex carbohydrates."

29 June. (J. N. BeMiller, discussion leader): J. B. Jones, "Enzymes in asymetrics synthesis"; S. Masamune, "Stereochemical control in organic synthesis." (B. Coxon, discussion leader): S. L. Patt, "Structure analysis of carbohydrates via two-dimensional ^{13}C-NMR spectroscopy"; L. D. Hall, "NMR studies of carbohydrates in the solid state."

30 June. (G. Descotes, discussion leader): J. H. van Boom, "Studies directed toward the synthesis of cell wall and membrane components"; W. Pfleiderer, "Modern strategy of oligonucleotide synthesis." (D. J. Walton, discus-

sion leader): V. M. Monnier, "Nonenzymatic glycosylation and browning of proteins in diabetes and aging"; G. W. Jourdian, "Receptor-mediated assimilation and transport of lysosomal enzymes."

1 July. (L. Anderson, discussion leader): Y. Ishido, "Novel aspects in carbohydrate chemistry: Regioselective protection and glycosylation reactions"; P. Sinay, "The chemical synthesis of heparin oligosaccharide fragments." Poster sessions, in which all attendees are encouraged to participate, will be held. The maximum space available for individual posters will be 4 by 8 feet. Materials for presentation of posters will be available at the conference if necessary.

Catalysis

Colby Sawyer College (N)

Gabor Somorjai, chairperson; Werner Haag, vice chairperson.

27 June. W. Keith Hall, "Reactions of simple hydrocarbons over reduced and sulfided molybdena-alumina and related catalysts"; Russell R. Chianelli, "Catalysis by transition metal sulfides"; Leo M. Falicov, "Chemical, electronic and magnetic properties of transition-metal films, overlays, surfaces and interfaces."

28 June. Edith M. Flanigen, "Molecular sieve materials"; John M. Thomas, "New ways of probing the structure of heterogeneous catalysts"; Harald Ibach, "Vibration spectroscopy and model experiments in catalysis."

29 June. Ronald Pierantozzi, "Support and cluster effects on synthesis gas conversion over supported metal clusters"; James A. Dumesic, "Adsorptive and catalytic properties of iron oxides"; Kenzi Tamaru, "Behavior of CO on transition metal catalysts."

30 June. Mary Good, "Progress in catalyst designs; Some examples of success and failure"; H. Juenten Shoennagel, "Rejuvenation chemistry of modern reforming catalysts"; John H. Sinfelt, "Three decades of catalysis by metals."

1 July. Ched A. Tolman, "Olefin hydrocyanation by low valent nickel complexes"; Xiexian Guo, "The recent advance in heterogeneous catalysis in China."

Catecholamines

Procter Academy

Xandra O. Breakefield, chairperson; T. Lloyd, vice chairperson.

1 August. Cloning and expression of catecholamine enzyme gene coding sequences (Barry Kaplan, session chairperson): Larry Kedes, "Molecular genetics of dopamine β-hydroxylase"; Jacques Mallet, "A molecular genetic approach to the study of catecholamines"; Dona M. Chikaraishi, "Control of tyrosine hydroxylase gene expression"; E. Edward Baetge, "Possible existence of a catecholamine enzyme gene family as revealed by gene structure analysis using specific cDNA probes." Using DNA probes to study neuropeptides (Edward Herbert, session chairperson): Richard Sceller, "Egg laying hormone gene family in aplysia"; James Roberts, "In situ hybridization of neuropeptide genes and mRNA"; Michael Comb, "Polypeptide precursor of dynorphin."

2 August. Development of the catecholaminergic phenotype (Miller Jonakait, session chairperson): Gerald D. Maxwell, "Development of adrenergic properties by neural crest cells"; Eric Rubin, "Embryonic development of the superior cervical ganglion in the rat"; G. Miller Jonakait, "Transient expression of the catecholaminergic phenotype in embryonic development"; Cheryl F. Dreyfus, "Development of the locus coeruleus in vitro"; Alain Prochiantz, "Catecholaminergic neurons in mesencephalic cultures: Target organ interactions." Adrenergic receptors (James Roberts, session chairperson): James Roberts, "Regulation of adrenergic receptors by extrinsic factors"; Robert Lefkowitz, "Adrenergic receptor structure and regulation"; Richard Clark, "Desensitization of β receptors in wild type and variant lymphoma cells"; Andre De Lean, "Dopaminergic receptors of anterior pituitary: Studies of agonists and antagonists by computer modeling."

3 August. Membrane dynamics (Fusao Hirata, session chairperson): Robert V. Farese, "Phosphatidyl inositol metabolism"; Eduardo G. Lapetina, "Phosphatidic acid metabolism"; Yoshimi Takai, "Ca^{2+}-dependent kinase and lipid metabolism"; Fusao Hirata, "Phospholipid methylation." Phosphorylation events (Norman Weiner, session chairperson): Norman Weiner, "Cyclic nucleotide levels and tyrosine hydroxylase phosphorylation in PC12 cells"; P. J. Seeley, "Phosphorylation of tyrosine hydroxylase in PC12 cells"; John Haycock, "Phosphorylation of tyrosine hydroxylase in bovine chromaffin cells in culture"; Charles Rubin, "Neural protein kinases."

4 August. Novel inhibitors of catecholamine enzymes (James Coward, session chairperson): Ross Shiman, "Phenylalanine hydroxylase"; Sheldon May, "Dopamine B hydroxylase"; James Coward, "Methyl transferases"; Phillipe Bey, "Monoamine oxidase." Immunocytochemical analyses of neurotransmitter phenotype (Virginia Pickle, session chairperson): J. F. Pujol, "Tyrosine hydroxylase interaction between noradrenergic and serotonergic neurons"; Gladys Teitleman, "Tyrosine hydroxylase: Differentiation and stability of catecholamine phenotype"; Mark Molliver, "Dopamine B hydroxylase in developing cortex"; Charles Ouimet, "Phosphorylated proteins associated with dopamine receptors."

5 August. Techniques for measuring catecholamines and some clinical applications (Raymond Lake, session chairperson): C. Raymond Lake, "Introduction and overview of normal catecholamine values and some new applications in clinical medicine"; Ronald E. Shoup, "Coupling electrochemistry to liquid chromatography for the determination of biogenic amines and metabolites"; Michael Ziegler, "Novel applications of radioenzymatic assays for catecholamines"; Otto Kuchel, "Dopamine: Methodological, physiological and clinical aspects"; Bart Chernow, "Catecholamine applications to medicine's newest subspecialty: Critical care medicine."

Cell Contact and Adhesion

Procter Academy

Jean Paul Revel, chairperson.

27 June. P. Armstrong, "Cell-cell adhesion"; G. Edelman, "Cell-cell adhesion"; M. Kuehlenschmidt, D. Cox, L. Park and S. Roseman, "Cell-cell adhesion"; M. Bernfield, "Cell-substrate adhesion"; M. Bronner-Fraser, "Cell-substrate adhesion"; J. Jamieson, "Cell-substrate adhesion."

28 June. E. D. Hay, "Cell-matrix interaction"; H. Kleinman, "Cell-matrix interaction"; D. McClay, "Cell-matrix interaction"; G. Haemmerli, "Matrix in path processes"; G. Nicolson, "Matrix in pathol processes."

29 June. D. Branton, "Motility"; L. Furcht, "Motility"; R. Goldman, "Motility"; B. Huang, "Motility"; K. Robinson, "Motility."

30 June. E. Lazarides, "Cytoskeleton"; T. Pollard, "Cytoskeleton"; R. Spitzer, "Cytoskeleton"; J. Spudich, "Cytoskeleton"; G. Giuduce and M. Steinberg, "Cell junctions"; D. Goodenough, "Cell junctions."

July 1. H. Gilula, "Gap junctions"; D. Paul, "Gap junctions"; J. P. Revel, "Gap junctions"; N. Unwin, "Gap junctions."

Central Nervous System

Tilton School

Paola S. Timiras, chairperson; Nicholas Seeds, vice chairperson.

Molecular and Cellular Factors Influencing Neural Development

13 June. Genetics (Marshall Nirenberg, discussion leader): Seymour Benzer, "The *Drosophila* nervous system studied with monoclonal antibodies"; Constantino Satelo, "Development of the cerebellar circuitry: Morphological studies using mutant mice and other experimental approaches"; Karl Herrup, "Role of cell lineage in the development of the mammalian CNS." Molecular genetics (Seymour Benzer, discussion leader): William Hahn, "Postnatal expression of genes specifying brain specific mRNAs"; Jacques Mallet, "A molecular genetic approach to the study of neurotransmitters"; James Jackson, "Genes egg snails on."

14 June. Glial development (Antonia Vernadakis, discussion leader): Pasko Rakic, "Emergence of neuronal and glial cell lines in the primate telencephalon"; Sergey Federoff, "Astrocyte cell lineage"; David Carey, "Schwann cell-azon interaction." Neurite outgrowth (Nicholas Seeds, discussion leader): Dennis Bray, "The mechanisms of axonal growth in tissue culture"; Paul Letourneau, "Cytoskeletal elements involved in neurite growth in vitro"; Corey Goodman, "Guidance of neural growth cones during embryonic development."

15 June. Cell recognition (Nicole LeDouarin, discussion leader): Aaron Moscona, "Cell contact-dependent regulation of muller glia phenotype"; Jean-Pierre Changeux, "Selective stabilization of synapses"; Nicholas Seeds, "Cell surface phenomena in brain development." Synaptogenesis (Jean-Pierre Changeux, discussion leader): Marshall Nirenberg, "Regulation of synapse formation"; Andrew Matus, "The role of structural proteins in dendrite and synapse formation"; Ezio Giacobini, "Synaptogenesis in the peripheral autonomic system."

16 June. Cell interaction (Aaron Moscona, discussion leader): Nicole LeDouarin, "New data on the development of the peripheral nervous system"; James Weston, "Environmental effects on neural crest development"; Albert Aguayo, "Neuron-glial interactions: Their role in the regeneration of axons from the adult mammalian CNS." Thyroid hormones (Rita Levi-Montalcini, discussion leader): Esmail Meisami, "The influence of thyroid hormones on development of lipid-protein interaction in neural membranes"; Paola Timiras, "Monoaminergic enzyme activity in neuroblastoma cells after differentiation: Binding and action of thyroid hormones"; Theony Valcana, "T_3 and T_4 metabolism and binding in developing brain tissue."

17 June. Growth factors (Paola Timiras, discussion leader): Rubin Adler, "Trophic factors in visual systems"; Gordon Guroff, "Nerve growth factor: How does it work?" Rita Levi-Montalcini.

Solid State Studies in Ceramics

Plymouth State College (S)

H. Kent Bowen, chairperson; David R. Clarke, vice chairperson.

Scientific Aspects of Processing Ceramics

25–29 July. Ian Burn, "Dispersion of oxide powders in organic liquids"; Paul Calvert, "Attachment of polymers to ceramic surfaces"; Uma Chowdhry, "Understanding surfaces using multiple probes"; Andreas Glaesser, "Microstructure control during sintering"; Andrew Homola, "Controlling particle-particle interactions"; Lisa Klein, "Sol-gel processing"; Gary Messing, "Powders formed from decomposition reactions"; Theo Overbeek, "Electrochemistry of surfaces"; Svante Prochazka, "Case study: Processing transparent mullite"; Dennis Readey, "Atmosphere effects during sintering"; William Rhodes, "Gaseous desorption during prefiring"; Michael Sacks, "The relationship of surface chemistry of dispersions on rheological properties"; George Scherer, "Viscous sintering"; Dietmar Seyferth, "Organometallic precursors"; William van Megan, "The structure of dispersion." Papers for recent results poster session are invited.

Chemotherapy of Experimental and Clinical Cancer

Colby-Sawyer College (S)

Gerald C. Mueller, chairperson; Franco M. Muggia, vice chairperson.

25 July. Oncogenes and oncogene products—roles in cell transformation and potential usefulness as guides in cancer therapy (Gerald C. Mueller, discussion leader): Geoffrey M. Cooper, "Transforming genes in carcinomas and lymphomas"; Mark E. Furth, "Studies of the *ras* gene product in normal and transformed cells"; Raymond L. Erikson, "Studies on transforming gene products of avian sarcoma viruses." Natural factors influencing cell differentiation (Ernest A. McCulloch, discussion leader): Hal E. Broxmeyer, "Role of ion binding glycoproteins, HLA-DR antigenic determinants, and cellular interactions in the regulation of normal and leukemic myelopoiesis"; Malcolm Moore, "Maturation factor therapy in the treatment of malignancies."

26 July. The induction of differentiation by drugs—an approach to chemotherapy (Joseph R. Bertino, discussion leader): Daniel Dexter, "Polar solvents: A novel class of anti-cancer agents"; Paul Kornblith, "Modification of brain tumor cells by differentiating agents"; Alan Sartorelli, "Cell differentiation in response to chemotherapeutic agents." Role of preconditioning regimens in cancer therapy (Emil Frei, III, discussion leader): Marc E. Lippman, "Hormonal modulation of chemotherapy effectiveness"; Donald Keefe, "Metabolic modulation of chemotherapeutic agents."

27 July. Approaches to the therapy of small cell carcinoma of the lung (Franco M. Muggia, discussion leader): Joseph Aisner, "Rationale for a clinical strategy in the treatment of small cell carcinoma of the lung"; Stephen B. Baylin, "Biology and differentiation of human lung cancer"; Desmond Carney, "Cell lines from small cell lung cancer: Growth characteristics and response to radiation and chemotherapy." The role of immune cell modulation in chemotherapy (Paul Carbone, discussion leader): Sheldon Dray, "Immune modulation by cyclophosphamide or melphalan and its effects on the eradication of established tumors"; Marc E. Key, "Synergistic interaction between immunotherapy and chemotherapy."

28 July. Chronic lymphocytic leukemia as a model system in cancer chemotherapy (Kanti R. Rai, discussion leader): Daniel Catovsky, "Clinical aspects of CLL as a model of human lymphoid malignancies and human cancers in general"; Lee Nadler, Lymphocyte phenotyping in CLL"; Ivor Royston, "Monoclonal antibodies as a therapeutic tool." The polyamine pathway as a target in cancer chemotherapy (Robert E. Parks, Jr., discussion leader): Laurence J. Marton, "Difluoromethylornithine as an adjunct to chemotherapy"; Todd M. Savarese, "Methyl thioadenosine metabolism as a potential chemotherapeutic target."

29 July. New aspects of pharmacokinetics and drug delivery (Charles E. Meyers, discussion leader): Jerry Collins, "Pharmacokinetics as a guide to

cancer chemotherapy"; William Plunkett, "Correlation of ara C metabolism with the response in human AML"; Saul Zimm, "Pharmacokinetics of 6-mercaptopurine: A new look at an old agent."

Chronobiology

Colby-Sawyer College (S)

Charles F. Ehret, chairperson; Jerry Feldman, vice chairperson.

Circadian Regulation Along the Neuroendocrine Axis

13 June. Circadian connections to mental illness and sleep disorders: Entertainment and free-run; Role of light (C. F. Ehret, discussion leader): E. D. Weitzman, A. J. Lewy, T. A. Wehr, E. Haus, C. A. Czeisler. Ultradian and infradian linkages to circadian regulation; chronotypically active hormones, drugs and peptides (D. Kripke, discussion leader): L. Morin, W. Tapp, A. Wirz-Justice, D. K. Hayes, S. M. Reppert.

14 June. Neural regulation of circadian rhythms: The suprachiasmatic nucleus (R. Y. Moore, discussion leader): L. E. Scheving, F. Stephan, C. A. Fuller, M. Moore-Ede, G. Groos, C. Eastman. Chronopharmacology and metabolism of circadian pacemakers in vivo and in vitro (M. Katz, discussion leader): A. Eskin, M. Menaker, W. J. Schwartz, G. Block, J. Takahashi.

15 June. Chronotypic regulation by pineal, melatonin, and light, of other endocrine and enzymatic functions in vivo and in vitro (A. H. Meier, discussion leader): F. Halberg, S. Sanchez de la Pena, C. Peraino, N. Horseman, J. A. Elliott. Role of the pineal in circadian control of gonadal and other infradian cycles (R. J. Reiter, discussion leader): I. Zucker, B. Goldman, F. Turek, B. Rusak.

16 June. Entrainment of circadian rhythms in complex systems: Hierarchies of control (L. Edmunds, discussion leader): C. S. Pittendrigh, F. M. Sulzman, A. Borbely, S. Daan. Plenary lecture (C. F. Ehret, discussion leader): J. Aschoff.

17 June. Molecular-genetic and cellular approaches to circadian mechanism (J. Feldman, discussion leader): J. Dunlap, R. Konopka, S. Brody, J. W. Hastings, and C. Johnson.

Poster sessions—Tuesday, Wednesday and Thursday, 3 to 6 p.m., on circadian regulation, cellular and molecular genetics, medical and pharmacological applications, electric field effects, sleep and shift work, animal and plant physiology, and data acquisition and handling. Coordinated by Jerry Feldman, Thinmann Laboratories Biology Department, University of California, Santa Cruz, California 95604.

Applications

Scientists are invited to submit applications for attendance at the Gordon Research Conferences. An application blank is on page 1133 and may be submitted to Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, University of Rhode Island, Kingston, Rhode Island 02881.

Physics and Chemistry of Coatings and Films

Plymouth State College (S)

Percy E. Pierce, chairperson; Alfred Rudin, vice chairperson.

8 August. (F. Louis Floyd, session chairperson): G. D. Parfitt, "Problems in understanding the flocculation of concentrated pigment dispersions"; G. P. Bierwagen, "The critical pigment volume concentration. Concept and its use. An update." (Scott E. Rickert, session chairperson): Peter Kamarchik, "The investigation of pigment orientation in coating films by x-ray diffraction."

9 August. (Clifford Schoff, session chairperson): Werner Funke, "Mechanisms of undercutting and underrusting"; J. L. Gerlock, "Quantification of photodegradation of coatings and films." (Loren Hill, session chairperson): Robert N. Miller, "Coating for retarding fatigue cracking in aluminum alloys."

10 August. (Thomas J. Miranda, session chairperson): S. W. Wong and Kurt Frisch, "Monitoring the catalysis of isocyanate reagents and blocked catalysts"; W. J. Muizebelt, "Kinetics of crosslinking using blocked reagents and blocked catalysts." (Chris Uzelmeier, session chairperson): D. T. Wu, "Viscosity behavior of solvent mixtures-correlations and prediction."

11 August. (Darlene Brezinski, session chairperson): Theodore Provder, "Particle size distribution analysis"; James K. Duffer, "Multiple technique surface analysis—its value as a problem solving tool for coatings." (Seymore Hochberg, session chairperson): Charles M. Hansen, "Advances in solvent technology."

12 August. (Alfred Rudin, session chairperson): Irvin M. Krieger, "Factors which determine the rheology of latex systems"; J. E. Glass, "Influence of extensional deformations on spray and roll performance."

Physiological and Toxicological Aspects of Combustion Products

Colby-Sawyer College (S)

I. N. Einhorn, chairperson; J. W. Clayton, vice chairperson.

15 August. Epidemiological studies of combustion products toxicity (P. W. Smith, discussion leader): E. P. Radford, "The role of combustion products in human injury and death"; W. Kirkham, "Aspects of combustion products toxicity in aircraft accidents"; Fundamentals of respiratory physiology (I. N. Einhorn, session chairperson): Arthur Dubois, "Fundamentals of respiratory physiology." Physiological aspects of smoke and combustion products (I. N. Einhorn, discussion leader): R. Myers, "Carbon monoxide: Field and early in-hospital assessment"; Y. Alarie, "Toxicity of irritants from smoke and fires." (M. L. Grunnet, invited participant).

16 August. Methods for evaluation of combustion products toxicity (G. Hartzell, discussion leader): B. Levin, "Current research in combustion toxicology at NBS"; C. Crane, "Ranking of materials on the basis of combustion product toxicity: Past, present and future." (S. Packham, invited participant). Methods for analysis of combustion products." (K. Sumi, discussion leader): K. J. Voorhees, "Effect of mode of decomposition on the nature of combustion products." Prediction of the formation of combustion products: A. Tewarson, "Methods of prediction of the production of combustion products."

17 August. The relevance of small-scale laboratory protocols to large-scale fires—the assessment of the hazard from combustion products (Clayton Huggett, discussion leader): P. Fardell, "Chemical fingerprinting of fire atmospheres—laboratory scale vs full scale fires"; S. Williams, "Modes of thermal degradation, small-scale toxicity testing of combustion products: Reference to hazards in fires." Animal models for combustion product toxicity protocols (J. Heinemann, discussion leader): F. Coulston, "Animal models in toxicity studies"; D. A. Purser, "Smoke toxicity studies with primates." (G. Hartzell, invited participant): "Toxicity studies with primates: Carbon monoxide, hydrogen chloride, and acrolein."

18 August. Miscellaneous methods for

assessment of combustion products toxicity in hazard analysis (I. Benjamin, discussion leader): E. Smith, "Utilization of rate of heat release measurements in hazard analysis." (W. Christian, invited participant). Combustion products toxicity—new perspectives (J. W. Clayton, discussion leader): Panel discussion. Development of protocols for use in regulation of the hazard attributed to combustion product toxicity (F. Clarke, discussion leader): F. Saito, "Development of a combustion product toxicity protocol for regulatory use"; H. J. Klimisch, "Concept and experience with the DIN method 53436 for determining the relative acute inhalation toxicity of thermal decomposition products."

19 August. Control of combustion products as part of the building regulatory process (P. De Cicco, discussion leader): (R. C. Anderson, J. Bihr, R. Orzel, S. Biegel, invited participants). Techniques for assessment of combustion products toxicology: The future (J. W. Clayton, discussion leader): H. Emmons, "Use of modeling in the assessment of combustion products toxicity hazard."

Corrosion

Colby-Sawyer College (N)

Per Kofstad, chairperson; John C. Scully, vice chairperson.

25 July. Transport processes: N. L. Peterson, "Lattice diffusion in metal oxides"; J. B. Wagner, Jr., "Transport in multiphase inorganic materials." Transport processes in growing scales: A. Atkinson, "Short circuit diffusion in growing scales"; M. Graham, "Oxygen diffusion studies in growing films using the ^{18}O isotope and sims."

26 July. Oxidation of alloys: G. Yurek, "Oxidation of rapidly solidified alloys"; M. Bennet, "Effects of ion implantation on oxidation of alloys." Growth of alumina scales: D. J. Field, "Mechanisms of oxidation of aluminum and aluminum alloys"; R. A. Ramanarayanan, "Al_2O_3-scales on Fe-base ODS alloys."

27 July. Metal-sulfur reactions: S. Mrowec, "Transport processes in metal sulfides and sulfide scales"; D. Young, "Sulphidation of iron and iron-base alloys." Hot corrosion: G. Meier, "Initial stages of hot corrosion at 700°C"; T. R. Griffiths, "Studies of hot corrosion by electron absorption spectroscopy"; A. S. Nagelberg and J. Hamilton, "Raman scattering study of the molten salt attack of ceramics and alloy."

28 July. Carburization: H. J. Grabke, "Carbon transport through oxide scales"; J. Norton, "The carburization behaviour of Fe-Cr-Ni alloys in H_2-CH_4 environments." The blind alley revisited: High-temperature corrosion: Future challenges and opportunities: G. Wood; J. Stringer.

29 July. High-temperature corrosion during creep and erosion: M. Schutze and A. Rahmel, "Cracking and healing of scales during creep of the base metal"; A. V. Levy, "Combined erosion-corrosion behaviour of metals."

Cyclic Nucleotides

Kimball Union Academy

R. W. Butcher, chairperson; Jackie D. Corbin, vice chairperson.

13 June. Adenylate cyclase: Coupling proteins-ADP-ribosylation (G. Alan Robison, session chairperson): Richard Kahn; Gary Bokosh; Lutz Birnbaumer. Cyclic GMP (Ferid Murad, session chairperson): Nelson Goldberg; Don Lewicki; Joachim Schultz.

14 June. Phosphodiesterases (Joel Hardman, session chairperson): Jack Wells; G. Alan Robison; Joe Beavo. Receptors: Structure and function (Richard Clark, session chairperson): Arnold Ruoho; Elliot Ross; Ravi Iyengar.

15 June. Inhibition of adenylate cyclase (Günter Schultz, session chairperson): Karl Jakobs; Lee Limbird; Roger Johnson. Forskolin (Lutz Birnbaumer, session chairperson): Kenneth Seamon; Eva Neer; John Hildebrandt.

16 June. Toxins and cyclic AMP (Martha Vaughan, session chairperson): Stephen Leppla. Pierre DeMeyts.

17 June. Cyclic AMP functions (Jacques Dumont, session chairperson): Peter Baker; Daryl Granner; Peter Davreotis; Robert Rapaport.

Developmental Biology

Proctor Academy

Gerald M. Rubin, co-chairperson; William B. Wood, co-chairperson.

25 July. Oogenesis and embryogenesis (A. Mahowald, session chairperson): K. Kalthoff; T. Schupvback; S. Strome. Pattern formation and cell lineages (C. Nusslein, session chairperson): R. Horvitz; P. Lawrence; D. Weisblat; E. Wieschaus.

26 July. Developmental regulation of specific genes, I and II (S. Tilghman and A. Spradling, session chairpersons): N. Davidson; E. Fyrberg; D. Hirsh; T. Maniatis; E. Meyerowitz.

27 July. Molecular analysis of complex loci in invertebrates (B. Baker, session chairperson): S. Artavanas-Tasakonas; D. Hogness; T. Kornberg; M. Scott. Molecular analysis of complex loci in mammals (L. Hood, session chairperson): D. Baltimore; R. Flavell; P. Leder; H. Lehrer.

28 July. DNA rearrangements in development (G. Rubin, session chairperson): F. Kafatos; A. Klar; A. Spradling. Hormones, neuropeptides, and growth factors (E. Herbert and G. Rosenfield, session chairpersons): N. Birnberg; J. Douglas; R. Scheller.

29 July. Morphogenesis and cell-cell interaction (W. Wood, session chairperson): S. Dutcher; V. Scofield. A general poster session also will be held. Applicants wishing to make presentations should include a brief abstract when applying. Deadline for applications: 15 May 1983.

Drug Metabolism

Holderness School

David W. Yesair, chairperson; Robert P. Hanzlik, vice chairperson.

25 July. Lymphatic and lymph: Their contribution to xenobiotic kinetics (Richard Adamson, session chairperson): L. V. Leak, "General anatomy of the lymphatic system and ultrastructural studies of lymphatic capillaries"; T. Adair, "Function and physiology of the lymphatic system"; M. F. Flessner, "Studies on lymphatic absorption from the peritoneal cavity"; S. M. Sieber, "Role of the lymphatic system in the absorption and distribution of drugs and chemicals"; R. J. Parker, "Liposomal encapsulation as a means of targeting drugs to the lymphatic system"; J. N. Weinstein, "Lymphatic absorption and lymph node localization of monoclonal antibodies."

26 July. Disposition of xenobiotics in the respiratory tract (Kevin Brown, session chairperson): D. L. Swift, "The distribution of inhaled therapeutic aerosols"; D. A. Smith, "The absorption of inhaled hydrophilic acidic drugs"; W. T. Stott, "The comparative absorption of inhaled compounds with varying water solubilities." Natural product metabolism (John D. Duros, session chairperson): N. Bachur, "Reductive metabolism of mitomycin C"; T. K. Shibuya, "How to research the pharmacological aspects of oriental plants—especially tranquilizers and antidepressants"; T. Oki, "Metabolism of anthracycline antibiotics."

27 July. Organic halogen metabolism (M. W. Drag Anders, session chairperson): J. R. Trudell, "Reductive metabo-

lism of halogenated hydrocarbons by cytochrome P-450 in reconstituted phospholipid vesicles: Binding of free radicals to phospholipids". T. MacDonald, "Oxygenation reactions of halogenated hydrocarbons"; V. Ullrich, "Mechanisms of reductive metabolism of halogenated hydrocarbons." Unusual metabolic reactions (Kenneth C. Leibman, session chairperson): F. P. Guengerich, "Reactions of cyclopropyl heteroatoms, heteroatom oxides, and vinyl halides with cytochrome P-450: Probes for the catalytic reaction"; R. P. Mason, "Free radical formation by cytochrome P-450"; J. L. Holtzman, "Aerobic metabolism of nitrofurans."

28 July. Agricultural chemical metabolism (Sandy K. Figdor, session chairperson): T. A. Jacob, "Disposition and metabolism of the avermectins in animals"; G. Paulson, "Animal sulfa drug metabolism: The formation of desaminosulfamethazine"; J. J. Menn, "Pesticide metabolism; degradation, intoxication and function regulation." Prostaglandin metabolism (David Weisblatt, session chairperson): S. Bergstrom, "Prostaglandin overview."

29 July. Arachidonate-dependent drug co-oxygenations (Robert P. Hanzlik, session chairperson): L. J. Marnett, "Biochemistry of arachidonate-dependent co-oxygenations"; T. E. Eling, "Pharmacological and toxicological consequences of arachidonate-dependent reactions." Relevant poster presentations will be scheduled daily.

Dynamics of Gas-Surface Interactions

Plymouth State College (N)

John Yates, chairperson; John Tully, vice chairperson.

1–5 August. The following will speak: S. Andersson; A. Bradshaw; Y. Chabal; R. Madix; W. H. Weinberg; G. B. Fisher; T. Madey; B. Lundqvist; D. Auerbach.

Elastin

Kimball Union Academy

Robert B. Rucker, chairperson; Herbert Kagan, vice chairperson.

15 August. Physical properties and chemical structure of elastin and tropoelastin (Dan W. Urry, discussion leader): L. B. Sandberg; James E. Mark; John Gosline. Post-translational modification of propoelastin (Herbert Kagan, discussion leader): E. Harris; B. Starcher; R. B. Rucker.

16 August. Structure and function of the elastin gene (Jeff Davidson, discussion leader): C. Rich; and J. Rosenbloom; Charles Boyd. Factors that modify elastin gene expression (Joel Rosenbloom, discussion leader): Zena Werb, David Wrenn, C. Franzblau.

17 August. Chemotactic properties of elastin and the interaction of elastin with cells and other macromolecules (Robert Mecham and Robert Senior, discussion leaders): Brian Toole. Components and structure of the elastic matrix (Judy Foster, discussion leader): Barbara Streeten; Steven Karr; Theodore Cleary.

18 August. Elastolytic proteinases: Their properties, sources and interactions (Zena Werb and James Travis, discussion leaders): Michael Banda; James H. McKerrow; James Powers; Raymond McDonald; Jon Sundsmo; Kazuyuki Morihara. Role of elastin in lung growth, lung development, and lung disease (Jerome Brody and Charles Kuhn, discussion leaders): V. Ranga; Gerald Turino.

19 August. Involvement of elastin in vascular tissue atherosclerosis, skin and inherited diseases (Carl Franzblau and Jouni Uitto, discussion leaders): Andrea J. Perejda; Aarne Oikarinen; William Hollander; Leslie Robert. In addition to the program, participants may also submit posters on the topics indicated. Applications should include a title and brief abstract of an anticipated poster presentation with their application.

Elastomers

Colby-Sawyer College (N)

Joginder Lal, chairperson; Dale J. Meier, vice chairperson.

18 July. (R. Ullman, discussion leader): P. J. Flory, "Molecular theory of rubber elasticity"; J. E. Mark, "Recent studies in rubber elasticity." (R. S. Stein, discussion leader): O. Kramer, "Molecular motions in the rubber plateau zone before and after cross-linking"; M. A. Winnik and O. Pekcan, "New luminescence techniques for studying polymer blends and polymer colloids."

19 July. (J. D. Ferry, discussion leader): L. J. Fetters, "Characteristic ratios of model atactic polyolefins and polydienes"; W. W. Graessley, J. Carella, J. Gotro, "Melt rheology and chemical microstructure: Studies on model polydienes and polyolefins." (J. Lal, session chairperson): Highlights of poster presentations: L. Porri, F. Bianchi, M. C. Gallazzi, "Some characteristics of neodymium and praseodymium catalysts for the polymerization of diolefins"; L. H. Tung, G. Y-S. Lo, J. A. Griggs, "Block copolymer preparation via combined anionic and free radical polymerization"; A. Vidal, "EPDM photo cross-linking and characterization of model networks"; R. Vukov and G. J. Wilson, "Factors affecting state of cure in low unsaturation elastomers"; T. Kajiyama, "Blood compatibility and fatigue strength of segmented poly(urethane ureas)"; M. Tirrell, "Dynamics of polymer molecules at interfaces"; N. Nakajima and E. R. Harrell, "A new interpretation of the stress relaxation after cessation of flow"; D. Pearson, "Rheological behavior of branched elastomers"; J. Roovers, "Melt rheology of H-shaped polystyrenes"; J. Visintainer, "Quantitative determination of polymer microstructure using C-13 NMR"; R. F. Bauer and P. T. Hale, "Solubility parameter spectroscopy."

20 July. (L. Porri, discussion leader): L. M. Stephenson, "The nature of stereochemical control in metal catalyzed butadiene polymerization." (J. N. Henderson, discussion leader): H. L. Hsieh, "Some novel diene polymers prepared with lanthanide catalysts." (S. E. Horne, Jr., discussion leader): P. Galli, "High yield catalysts for polyolefins and EPM/EPDM rubber synthesis: A new era in process and product development." (J. L. Koenig, discussion leader): B. E. Eichinger, "Chelate cross-linked elastomers." (T. L. Smith, discussion leader): B. Günesin, D. N. Schulz, J. W. Kang, G. R. Hamed, "Thermally reversible cross-linked elastomers and their blends."

21 July. (D. N. Schulz, discussion leader): C. S. L. Baker and I. R. Gelling, "Epoxidation of natural rubber." (A. Rudin, discussion leader): W. R. Rodgers and A. N. Gent. "Mechano-chemical reactions of elastomers with metals." (D. V. Hillegass, discussion leader): F. A. Pitlick, "Status and need in biomedical elastomers."

22 July. (G. Holden, discussion leader): Ph. Teyssié, G. Broze, R. Fayt, R. Jérôme, "Halatotelechelic polymers: Phase structuration and rheological properties of ion-containing elastomers. (R. S. Porter, discussion leader): I. A. Abu-Isa and M. E. Myers, Jr., "Effect of solvent structure on the swelling of elastomers in alcohol-fuel mixtures."

Electron Distribution and Chemical Bonding

Plymouth State College (N)

G. A. Jeffrey, chairperson; M. D. Newton, vice chairperson.

11–15 July. F. K. Larsen, "Diffraction studies of light hexagonal close-packed

metals Be, Mg''; J. R. Schneider, ''Interpretation of experimental charge and momentum densities in Cu and Be''; G. Will, ''Electron distribution and chemical bonding in boron atoms''; H. Feuss, ''Electron distribution in anions and hydrated salts''; D. Schwarzenbach, ''Electron densities in some simple inorganic substances''; K. Hermansson and J. O. Thomas, ''An X-N study of $Al(NO_3)_3 \cdot 9D_2O$ at 85 K''; P. Becker, ''Spin properties of NO radicals using polarized neutron techniques''; K. Yvon, ''Charge density studies of metal-metal bonds in titanium oxides, carbide and nitride''; C. Kruger, ''Charge-density studies in transition metal ligand bonds and their implications in catalysis''; Y. Saito, ''Charge-density distributions in transition metals and their compounds''; B. N. Figgis, ''Spin distributions as aids to defining metal-ligand bonding in transition metal complexes''; J. D. Dunitz, ''The absence of bonding electron densities in some types of bond''; F. Hirshfeld, ''Elusive bonding densities in organic molecules''; K. Fischer. ''Use of synchrotron radiation in electron density studies''; J. Moore, ''Fourier analysis of (e,2e) momentum densities as a means to describing chemical bonding''; P. Coppens, ''Evaluating applications of charge density studies''; D. Feil, ''Promises, problems and pitfalls in electron density analysis of hydrogen-bonding organic structures''; R. F. W. Bader, ''Definition and characterization of bonds in terms of electron distribution''; R. F. Stewart, ''Experimental electrostatic potentials and chemical functionality''; D. W. J. Cruickshank, ''The role of d-functions in ab initio computations of electron densities for molecules containing N and S''; W. Kuhs, ''Anharmonicity in thermal motions. A critical comparison of the available formalism''; C. Scheringer, ''The evaluation of dipole moments and bond charges of molecules from diffraction data''; E. N. Maslen, ''The influence of weak bonds and intermolecular forces on charge density.''

Elementary Particle Interaction

Proctor Academy

Paul Grannis, chairperson.

8 August. Cosmology and particle physics. Proton decay; grant unification.

9 August. Very high energy hadron collisions. Tests of electroweak theory.

10 August. Rare decays. Diffractive phenomena.

11 August. High energy e^+e^- collisions (PEP/PETRA). Intermediate energy e^+e^- collisions (CESR/DORIS/SPEAR).

12 August. Open for new results.

Energy Coupling Mechanisms

Procter Academy

Peter L. Pedersen, chairperson; Roderick Capaldi, vice chairperson.

15 August. Electron transport and proton pumps: (A) Structure and motion of electron transport components (Sidney Fleischer, session chairperson): Sidney Fleischer, ''Introduction and overview—structure and motional characteristics of lipid and protein components of membranes''; Roderick Capaldi, ''Structure and function of cytochrome oxidase''; Charles Hackenbrock, ''Lateral diffusion and electron transfer in the mitochondrial inner membrane.'' (Shelagh Ferguson-Miller, poster discussion leader). Electron transport and proton pumps: (B) What is a redox-linked proton pump? (A. R. Crofts, session chairperson): A. R. Crofts, ''Introduction and overview—possible mechanisms for proton pumps''; Ronald Fisher, ''Mitochondrial transhydrogenase: A redox-linked proton pump''; Les Dutton, ''Electrogenic reactions in the bc_1 complex.'' (Angelo Azzi, poster discussion leader).

16 August. Cation translocating ATPases: (A) Structure and function (Ernesto Carafoli, session chairperson): Ernesto Carafoli, ''Introduction and overview—comparative aspects of cation motive ATPases''; Robert Fillingame, ''The H^+-ATPase of *Escherichia coli*''; Andre Goffeau, ''The H^+-ATPase of fungal plasma membranes.'' (John Walker, poster discussion leader). Cation translocating ATPases: (B) How do they couple ATP hydrolysis to cation transport? (R. Brian Beechey, session chairperson): R. Brian Beechey, ''Introduction and overview''; William Jencks, ''Coupling and energetics of the calcium ATPase''; Charles Tanford, ''Mechanism of free energy transduction in active ion transport.'' (Mario Amzel, discussion leader).

17 August. Light driven proton pumps (Janos Lanyi, session chairperson): Janos Lanyi, ''Introduction and overview—halorhodopsin, a second light-driven pump in *Halobacterium halobium*''; Gobind Khorana, ''Recent work on bacteriorhodopsin''; B. A. Melandri, ''Localized interactions in the coupling mechanisms of energy transducing membranes.'' (Dieter Oesterhelt, poster discussion leader). Proton coupling: What is the relative importance of bulk phase versus membrane phase protons? (Albert Lehninger, session chairperson): Albert Lehninger, ''Introduction and overview''; R. J. P. Williams, ''Sites and paths for protons associated with membranes''; Catia Sorgato, ''Phenomenology of the localized proton gradient in mitochondrial membranes.'' (David Nicholls, discussion leader).

18 August. How do biological systems make ATP? (Peter L. Pedersen, session chairperson): Peter L. Pedersen, ''Introduction and overview—some major unanswered questions about ATP synthesis''; Alan Senior, ''*E. coli* mutant ATPase''; Paul Boyer, ''What we know and don't know about ATP synthesis.'' (Youssef Hatefi, poster discussion leader). Special tribute to a leader in the field of bioenergetics.

19 August. How do biological systems regulate the synthesis and hydrolysis of ATP? (C. P. Lee, session chairperson): C. P. Lee, ''Introduction and overview''; Lars Ernster, ''Regulation of mitochondrial ATP synthesis in relation to other energy-linked functions''; David Harris, ''The ATPase inhibitor protein from ox heart mitochondria—structure and mode of action.'' (E. C. Slater, poster discussion leader).

Environmental Sciences: Air Biogeochemical Cycles and the Atmosphere

New Hampton School

Ralph J. Cicerone, chairperson; Robert C. Harriss, vice chairman.

20 June. Geological processes (C. C. Delwiche, session chairperson): R. M. Garrels, ''Geological cycling between oceans, atmosphere and sediments''; R. A. Berner, ''Carbonate-silicate geochemical cycle and its effect on atmospheric and oceanic CO_2 and climate.'' (R. M. Garrels, session chairperson): W. S. Broecker, ''Glacial to interglacial changes in ocean-atmosphere chemistry''; Eric Barron, ''Atmospheric composition and the geologic record: The perspective from climate modeling.''

21 June. Atmospheric processes (F. S. Rowland, session chairperson): R. A. Rasmussen, ''Trace-gas concentrations and secular trends''; R. E. Dickinson, ''Trace gases: Climatic effects.'' (W. L. Chameides, session chairperson): S. C. Liu, ''Tropospheric ozone''; P. J. Crutzen, ''The pre-industrial troposphere.''

22 June. Biological emissions and processes (R. F. Weiss, session chairperson): M. Andrae, ''Emissions of organic sulfur and organometallics from natural systems''; S. C. Wofsy, ''Sources of

atmospheric halocarbons and nitrous oxide." (S. C. Wofsy, session chairperson): G. L. Hutchinson, "Nitrogen cycle and nitrogeneous gases in agricultural ecosystems"; D. H. Ehhalt, "Emissions of biogenic and fossil hydrocarbons."

23 June. Atmosphere-surface exchange (session chairperson to be announced): H. M. Liljestrand, "Precipitation scavenging"; C. Davidson, "Dry deposition and resuspension of particles." (Bruce Hicks, session chairperson): W. G. N. Slinn, "Surface fluxes, atmospheric cycles and residence times."

24 June. Unifying concepts in biogeochemical-cycle research (R. C. Harriss, session chairperson): J. E. Lovelock or to be announced, "Gaia"; M. B. McElroy, "The global environment."

Enzymes, Coenzymes, and Metabolic Pathways

Kimball Union Academy

Perry A. Frey, co-chairperson; Rowena G. Matthews, co-chairperson; Joanne Stubbe, vice chairperson; John Gerlt, vice chairperson.

4 July. (W. W. Cleland, session chairperson): J. Kozarich, "Mechanism and stereochemistry of carboxymuconic acid metabolism"; J. Fisher, "New rexox chemistry of the anthracycline antibiotics"; J. Villafrance, "Mechanistic investigations of dopamine B hydroxylase"; W. Orme-Johnson, "Structural studies on cholesterol side chain cleavage enzyme-substrate complexes." (A. Mildvan, session chairperson): G. Reed, M. D. Tsai, "NMR, chirality, enzymes, and membranes"; D. Gorenstein, "Proton and fluorine NMR spectroscopy of transition state analogs binding to serine proteases."

5 July. (M. Wimmer, session chairperson): W. P. Jencks, "Energetics and coupling of the calcium ATPase"; P. D. Boyer, "Probes of catalytic cooperativity between enzyme subunits"; H. Penefsky, "Reaction mechanism of soluble mitochondrial ATPase". (F. Wedler, session chairperson): S. Pilkis, "6-Phosphofructo 2-kinase/fructose 2, 6-bisphosphatase from rat liver: Isolation of a phosphorylated intermediate"; N. Meadow, "Regulation of sugar transport by bacterial phosphotransferase system"; G. Kuehn, "Regulation of ornithine decarboxylases by reversible phosphorylation: An example of an end product–mediated protein kinase reaction."

6 July. C. Thorpe, "Flavoproteins in fatty acid oxidation: Recent developments"; J. Knowles, "Problems in the Shikimate pathway"; S. Benkovic. (C. Walsh, session chairperson): D. Santi, "The bifunctional dihydrofolate reductase and thymidylate synthetase in protozoa"; D. Hupe "Hypoxanthine-guanine phosphoribosyltransferase from *Ineria tenella*"; H. Saz, "Energy generation in the anaerobically functioning mitochondria of parasitic helminths".

7 July. (R. Abeles, session chairperson): J. Richards, "Advances in B_{12} enzymology: Propanedioldehydratase, subunit structure and use of kinetic isotope effects to study mechanism"; J. Halpern, "Mechanistic aspects of coenzyme B_{12}-dependent reactions: Organometallics as free radical precursors"; J. Stubbe, "Mechanism of adenosylcobalamine ribonucleotide reductase." (G. Kenyon, session chairperson): R. Hay, "Molecules involved in the import of enzymes into mitochondria."

8 July. (J. Gerlt, session chairperson): A. Kossiakoff, "Applications of neutron diffraction to the study of protein structure"; J. Wall, "Mass distribution in macromolecular complexes"; L. Brown.

Epithelial Differentiation and Keratinization

Tilton School

W. L. Epstein, chairperson; H. Baden, vice chairperson.

8 August. Epidermal gene action (E. Fuchs, moderator): E. Fuchs, "Keratin genes and pseudogenes"; D. Roop, "Mouse keratin cDNA's"; K. Ward, "Wool keratin cDNA's." Structural proteins (H. Baden, moderator): I. Scott, "Degradation of high molecular weight proteins"; M. Steinberg, "Desmosomal proteins"; J. Kubilus, "Envelope proteins."

9 August. Cell surface molecules (I. A. Bernstein, moderator): I. A. Bernstein, "Lectins and epidermal cell separation"; E. Dabelsteen, "Cell surface glycoconjugates"; P. Elias, "Proteolipids and the barrier." (Submitted posters, W. L. Epstein.)

10 August. Cell attachment and adhesion (M. Karasek, moderator): D. Gospodarowicz, "Attachment factors"; L. Liotta, "Laminin receptor"; L. Diaz, "Autoantibody probes"; F. Grinnell, "Cell adhesive factors." Proteases and inhibitors in differentiation (K. Fukuyama, moderator): D. Rifkin, "Skin proteinase inhibitors"; Y. Ishibashi, "In vitro changes in cell adhesion"; G. Lazarus, "Regulation of serine proteinases"; D. Perez, "Skin cysteine proteinase and inflammation."

11 August. Retinoids, carcinogenesis and differentiation (S. H. Yuspa, moderator): U. Lichti, "Retinoid effects"; S. Astrin, "Promoter insertion mechanisms"; S. Schlagel, "Papova virus effects." New technology (G. Rogers, moderator).

12 August. New vistas (L. Goldsmith, moderator): M. Holick, "Vitamin D precursor metabolism in skin"; B. Eckert, "Organizing centers for intermediate filaments"; C. Barnstable, "Complex organization in relation to neuroectodermal structures."

A poster session will be held Tuesday evening, 9 August. Posters will be selected from abstracts sent to W. L. Epstein, Department of Dermatology, University of California, San Francisco, California 94143. Those relevant to evening sessions will be displayed separately before the intended session for discussion.

Extrachromosomal Elements

Tilton School

Richard P. Novik, chairperson; David Clayton, vice chairperson.

4 July. Expression I (F. Dubnau, session chairperson): D. Dubnau, "Translational attenuation and the regulation of erythromycin-induced drug resistance"; S. Leong, "Origin and expression of plasmid-borne symbiotic nitrogen fixation genes"; W. Reznikoff, "Regulation of Tn10-encoded tetracycline resistance"; T. Foster, "Control of expression of mercury resistance." Eukaryotic organelle gene expression (R. A. Butow, session chairperson): R. Butow, "Expression of yeast mitochondrial genes"; P. Perlman, "Roles of intron sequences in RNA splicing"; N. Martin, "Transfer RNA gene expression in yeast mitochondria"; U. RajBhandray, "Mitochondrial genes in *Neurospora crassa*"; A. Lambowitz, "Mitochondrial plasmids in *Neurospora crassa*"; L. Willmitzer, "Expression of tDNA in plant tumor cells."

5 July. Special transposable and control elements (S. Roeder, session chairperson): J. Palmer, "Evolution and organization of plant cytoplasmic genes"; S. Roeder, "Transposable elements in yeast"; R. Karess, "Structural and functional studies of P elements in *Prosophilia*"; P. Starlinger, "Controlling element ds. at the locus of *Zea mays*"; J. Strathern, "Transfer of DNA from HM to mat loci." Control of transposition (E. Murphy, session chairperson): M. Syvanen, "Tn5"; N. Kleckner, "Tn10"; E. Murphy, "Tn554"; N. Grindley, "Gamma-delta resolvase: A regulatory and recombinational protein"; R. Har-

shey, "A switch in the transposition products of coliphage mu."

6 July. Control of plasmid replication (K. Nordstrom, session chairperson): H. Masukata, "Initiation of ColEl DNA replication and its regulation"; S. Molin, "Control of replication of plasmid R1"; R. Novick, "Copy control mechanism for plasmid pT181"; G. Cesarini, "Control of ColEl replication"; J. Broach, "Control elements in yeast 2 micron plasmid replication." Eukaryotic cytoplasmic gene elements (M. Rush, session chairperson): M. Rush, "Mammalian cytoplasmic small circular DNA's"; D. Clayton, "Organization and in vitro transcription of mammalian mitochondrial DNA"; W. M. Brown, "Evolution of mammalian mitochondrial DNA"; R. Hallick, "Organization and in vitro transcription of chloroplast genes"; N. Gillham, "Cooperative assembly of chloroplast ribosomes from nuclear and cytoplasmic subunits."

7 July. Partitioning and its control (D. R. Helinski, session chairperson): S. Hiraga, "Plasmid partitioning and another new mechanism for plasmid maintenance"; S. Austin, "The partition mechanism of P1 plasmids"; K. Nordstrom, "Partitioning of plasmid R1"; V. Zakian, "Behavior of linear plasmids in yeast." Extrachromosomally determined transport systems (J. Kupersztoch, session chairperson): J. Kupersztoch, "Excretion of *Escherichia coli* enterotoxins"; S. Silver, "Plasmid-coded transport mechanisms: Mercury in, arsenate and cadmium out"; W. Goebel, "Genetic, biochemical and pathogenetic aspects of *E. coli* hemolysins"; S. Levy, "Plasmid- and chromosome-mediated tetracycline resistances."

8 July. Genetic exchange mechanisms (K. Ippen-Ihler, session chairperson): K. Ippen-Ihler, "Genetics and biochemistry of F pilus formation"; D. Clewell, "Conjugation in *Streptococcus faecalis*"; S. Lofdahl, "Molecular events in plasmid transduction"; T. Kieser, "Biology of streptomyces plasmids."

Fertilization and the Activation of Development

Colby-Sawyer College (S)

Frank J. Longo, chairperson; Meredith Gould-Somero, vice chairperson.

1 August. Sperm structure and activation I (Edward M. Eddy, discussion leader): Daniel S. Friend, "Diversity in the composition and structure of guinea pig sperm membranes"; Christian Sardet and Danielle Carre, "Sperm chemotaxis in Siphonophores"; Dale D. Hoskins, "The mechanism of action of forward motility protein." Sperm activation II (Bennett M. Shapiro, discussion leader): Jane Rogers, "Metabolic requirements of the acrosomal reaction"; Stanley Meizel, "Biochemical events important to the mammalian sperm acrosome reaction"; Motonori Hoshi, "Participation of sperm proteases in fertilization."

2 August. Gamete recognition and binding I (Victor D. Vacquier, discussion leader): W. Steven Adair, "Purification and properties of *Chlamydomonas* sexual agglutins"; William J. Lennarz, "Characterization of the sea urchin receptor for sperm"; Michael Edidin, "Changes in the lipid organization of the egg plasma membrane at fertilization. Some implications for membrane structure and for early development." Gamete recognition and binding II (Jerry L. Hedrick, discussion leader): Michael G. O'Rand and Bayard Storey, "Reactions between sperm and zona pallucida leading to fertilization in the mouse"; Bonnie S. Dunbar and Paul Wassarman, "Egg surface glycoproteins that regulate mammalian fertilization."

3 August. Egg activation—ionic/electrical changes (Meredith Gould-Somero, discussion leader): Richard Nuccitelli, "Frog sperm-egg fusion: Voltage dependence and ionic currents"; Laurinda A. Jaffe, "Studies of the mechanism of the electrical polyspermy block"; David Epel, "Ca_2^+ release and Ca_2^+ function at fertilization of sea urchin eggs"; Edward L. Chambers, "Activation and fertilization in the voltage clamped sea urchin egg: Sperm entry is suppressed both at positive and negative potentials." Egg activation—cortical/cytoskeletal changes (David R. Burgess, discussion leader): David Begg, "Changes in cortical actin organization associated with microvillar formation"; Thomas E. Schroeder, "Cortical changes during oocyte maturation"; Lionel I. Rebhun and Gregory Fisher, "The initiation of endocytosis during membrane remodeling as an early event in the activation of sea urchin eggs"; Douglas E. Chandler.

4 August. Sperm chromatin changes (Frank J. Longo, discussion leader): Rod Balhorn, "Chromatin structure in mammalian sperm"; Dominic Poccia, "Activation of the sperm nucleus following fertilization"; Manfred J. Lohka and Yoshio Masui, "Behavior of sperm nuclei in amphibian oocyte cytoplasm and in its cell-free preparations"; Barry R. Zirkin, "Factors involved in the dispersion of sperm chromatin during mammalian fertilization." Perspectives of fertilization: Alberto Monroy, "Fertilization: Uncertain certainties and certain uncertainties."

5 August. Egg activation—changes in macromolecular synthesis (William R. Jeffrey, discussion leader): David Nishioka, "Uptake and processing of nucleosides in activated eggs"; Merrill B. Hille, "Translational control in sea urchins: The role of ribosomes"; M. M. Winkler, "Changes in cellular energy charge and the activation of metabolism at fertilization."

In addition to the program as presented above, participants are encouraged to submit posters on the topics being considered. The posters will be displayed throughout the meeting. Applications should include a title and brief abstract or outline of anticipated poster presentations.

Fiber Science

Colby-Sawyer College (N)

M. T. Watson, chairperson; R. D. VanVeld, vice chairperson.

11 July. High-performance fibers (Roger S. Porter, discussion leader): A. J. McHugh, "Formation of fibrous crystals in flowing polymer melts and solutions"; John R. Collier, "Melt-processed ultrastrength fibers and films"; H. A. Davis, "Questions concerning the prediction of fiber tensile properties from structure measurements."

12 July. High-performance fibers (J. W. S. Hearle, discussion leader): Darrell H. Reneker and Jacob Mazur, "Defects that transport polymer chains"; S. L. Hsu, "Structure and properties of high modulus, high strength fibers." (H. L. LaNieve, discussion leader): Edward M. Wu, "Statistical correlation of the strengths of fiber-reinforced composites and their constituent fibers-theory and experiment."

13 July. Surface properties of fibers (L. Rebenfeld, discussion leader): J. P. Wightman, "Surface characterization of fiber-reinforced composites"; Eckhard Schollmeyer, "Surface effects in dyeing of polyester fiber." Properties of fibers and fabics (L. Rebenfeld, discussion leader): Brian Farnworth, "Heat flow through clothing insulation, dry and wet."

14 July. Properties of fibers and fabrics (J. H. Dusenbury, discussion leader): Mary A. Morris, "Relationship of comfort to fabric properties of clothing"; (Fred Fortess, discussion leader): S. Kawabata, "Development of objective system of fabric mechanical properties and

fabric hand"; (M. T. Watson, discussion leader): Norman R. S. Hollies, "Night vision and fabric optical properties."

15 July. Properties of fibers and fabrics (R. D. VanVeld, discussion leader): David S. Brookstein and John Skelton, "Interactive structural effects of free water movement in fibrous assemblies." Fiber processing (R. D. VanVeld, discussion leader): John J. Thwaites, "The mechanics of friction twisting reassessed."

Fluids in Permeable Media

Tilton School

F. I. Stalkup, chairperson; J. J. Taber, vice chairperson.

25 July. Flow mechanisms and rock structure (L. Lake, session chairperson): N. C. Wardlaw, "Waterflood efficiency and mobilization of residual oil in unconsolidated and consolidated porous media"; I. Chatzis, "Blob size distributions as a function of capillary number in water-wet porous media"; K. K. Mohanty, "Modeling and understanding multiphase flow in porous media"; G. Mason, "A pore space model with measurable parameters and its application to the movement of oil blobs"; L. Levien, "Use of computer tomography to monitor fluid flow processes in porous media"; F. A. L. Dullien, "3-D pore structure of a sandstone—the distribution of the wetting and the non-wetting phase in the pore space"; J. Harrell, "Densitometric analysis of pore geometry in reservoir rocks"; H. T. Davis, "Effect of wettability on relative permeabilities and capillary pressures."

26 July. Phase behavior, structure, and rheology of microemulsions (J. J. Taber, session chairperson): S. J. Salter, "Optimizing surfactant molecular weight distribution"; K. Schmitt, "Probing micellar structure by NMR: Interaction between hexanol and a brine tolerant surfactant"; L. J. Magid, "Light structure and microemulsion phase behavior"; L. E. Scriven, "Phase behavior and rheological properties of surfactant/alcohol/oil/brine system"; W. H. Wade, "The interplay of factors affecting the liquid crystal/microemulsion phase transition and their influence on solubilization parameter at optimum"; A. M. Bellocq, "An interpretation of the phase diagrams of microemulsions"; C. A. Miller, "Phase behavior of aqueous surfactant solutions with small amounts of added oil".

27 July. Displacement mechanisms and phase behavior in CO_2 flooding (W. Yellig, session chairperson): R. Ehrlich, "Laboratory and field studies of the effect of mobile water on CO_2 flood residual oil saturation"; C. Bardon, "Influence of diffusion phenomena on enhanced oil recovery by CO_2 injection"; F. M. Orr, Jr., "Visual observation of the displacement of crude oil by carbon dioxide"; S. L. Wellington, "Measurement of CO_2 diffusion rate through a precipitate at an oil-water interface"; L. W. Holm, "Effect of oil composition on phase relations and miscibility pressure with CO_2"; P. K. Kilpatrick, "Phase and interfacial tension behavior of carbon dioxide–water–hydrocarbon systems"; R. B. Grigg, "Phase behavior studies of recombined reservoir fluids with displacement gases"; E. L. Claridge, "Experimental and computational study of competition between sweep efficiency and oil remobilization in tertiary CO_2 flooding."

28 July. Fluid flow instability and mobility control (S. Jones, session chairperson): G. Chauveteau, "Polymer solution flow through porous media: Effects of depletion and adsorption layers on the effective viscosity and polymer velocity"; R. D. Shupe, "Polymer retention in native state cores"; R. S. Seright, "Thermal stability of EOR polymer solutions"; T. J. T. Spanos, "Some visual illustrations of flow in permeable media"; G. J. Hirasaki, "Mechanisms for the mobility of foam in porous media"; N. F. Djabbarah, "Mobility control of CO_2 by the in-situ generation of foam"; J. P. Heller, "Generation of foam-like dispersions"; V. Hornof, "Instability in low tension displacements in porous media."

29 July. Mechanisms of alkaline flooding; rock-fluid interactions (H. Y. Jennings, session chairperson): R. C. Nelson, "Alkali flooding—a special case of surfactant flooding"; C. J. Radke, "Electrical double layer effects in the alkaline dissolution of silica"; L. W. Harbert, "Low interfacial tension relative permeability"; K. O. Meyers, "Multiphase flow with ion exchange in porous media."

Food and Nutrition

Colby-Sawyer College (N)

Walter L. Clark, chairperson; Daniel Farkas, vice chairperson.

The Second Green Revolution

8 August. (Maximizing availability of high quality plant food products via genetic engineering and more efficient food processing for optimal nutrition.) Genetic engineering technologies and food production: R. J. Moshy, general chairperson. R. J. Moshy, "Introduction." (G. Kidd, session chairperson): O. Gamborg, "Potentials of plant cell biotechnology"; D. A. Evans, "New hybrids by protoplast fusion"; A. Szalay, "Molecular genetics of symbiotic nitrogen fixation." (G. Kidd, session chairperson): R. Beachy, "Prospects for genetic engineering with seed storage protein"; T. C. Hall, "Enhancing bean proteins by genetic engineering."

9 August. The food processing industry recombinant DNA technology (R. J. Moshy, session chairperson): M. S. Swaminathan, "Potential for increasing yields and nutritional quality of cereals via genetic engineering"; R. Kleese, "Prospects for genetic engineering in corn"; "Chromosomal locations of genes that control wheat endosperm proteins." "Genetic engineering and single cell production"; G. Stewart, "Genetics in baking, brewing and wine making—yeast as a cloning agent."

10 August. Implications of genetic engineering (D. Linebeck, session chairperson): R. W. Hardy, "Implications to the food industry"; G. Wilson, "Genetic engineering of enzymes"; D. Jackson, "Genetic engineering of food additives." New food formulation/processing/packaging (W. L. Clark, session chairperson): L. B. Rockland, "Food formulation including fortification"; D. Farkas, "New food processes."

11 August. New food formulation/processing/packaging (D. Farkas, session chairperson): "Use of microprocessors in food processing"; M. Salame, "Transport phenomena in packaging materials"; A. Brody, "New developments in food packaging." (W. L. Clark, session chairperson): C. Lang, "Of mosquitos, mice, and men: Frontiers of nutrition and aging."

12 August. Control of immunity and aging (C. Lang, session chairperson): C. Lang, "Glutathione and aging"; R. H. Weindruch, "Dietary restriction and its effects on immunity and aging"; L. B. Rockland, "Nutritional properties of reducing diets."

Free Radical Reactions

Holderness School

Marvin Poutsma, chairperson; Ned Porter, Vice chairperson.

13 June. (F. D. Greene, discussion leader): D. R. Arnold, "Substituent effects on radicals and radical-like intermediates"; J. Pacansky, "Vibrational spectra and ab initio studies on alkyl free

radicals." D. F. McMillen, "Implications of recent measurements for azoalkane decomposition mechanisms."

14 June. (J. A. Kampmeier, discussion leader): D. D. Tanner, "Reduction by electron transfer–hydrogen abstraction or hydride transfer"; R. A. Rossi, "Reactions of free radicals with nucleophiles." R. Sustmann, "Stereoisomerization of allyic radicals."

15 June. (J. A. Wilt, discussion leader): D. A. Dougherty, "New organic biradicals and related species"; H. D. Beckhaus, "Role of hydrophobic interactions in selectivity of radical termination reactions." W. G. Bentrude, "Some new aspects of the free radical chemistry of organophosphorus systems."

16 June. (N. A. Porter, discussion leader): E. G. Janzen, "Applications of spin trapping in micelles"; T. Mill, "Oxidation chemistry of vitamin E and other phenols in bilayers and solution." J. M. McBride, "Single crystal techniques for studying free radical reactions."

17 June. (M. L. Poutsma, discussion leader): D. Griller, "Recent results in free radical and carbene chemistry"; J. J. Kurland, "A kinetic-mechanistic model of butane oxidation."

Fuel Science

New Hampton School

Leon M. Stock, chairperson; Randall E. Winans, vice chairperson.

4 July. Conversion chemistry (F. Dee Stevenson, session chairperson): Gabor A. Somorjai, "Catalytic gasficiation of carbon at low temperatures"; Peter R. Solomon, "Coal pyrolysis"; David S. Ross, "Coal conversion in aqueous systems"; R. E. Winans, "The Argonne Premium Coal Sample Program."

5 July. Coal diagenesis (Wesley Bonds, session chairperson): (Maurice Schnitzer, "The chemistry of the humic acids"; C. Blaine Cecil, "Geologic controls on the quality and occurrence of coal"; Patrick G. Hatcher, "Organic geochemical processes during coalification: New ideas eminating from studies using solid state ^{13}C NMR."

6 July. Structure and reactivity (Neil F. Woolsey, session chairperson): B. S. Ignasiak, "Applications of reductive alkylation"; Ron Liotta, "Manipulations of cross links in coal"; John W. Larsen, "Role of hydrogen bonding in structure of bituminous coal"; Douglas Keller, "Ultrafine coal."

7 July. Separation and analysis (Cheryl K. Rofer-DePoorter, session chairperson): Carl V. Wood, "Analysis of coal molecules by mass spectrometry–mass spectrometry"; Milton L. Lee, "Applications of capillary supercritical fluid chromatography in the analysis of coal molecules"; Allen J. Bard, "Semiconductor photoelectrochemical systems for the production of fuel and electricity."

8 July. Discussion of selected poster session topics (Randall E. Winans, session chairperson).

Scientific Basis and Applications of Genetic Toxicology Bioassays

Colby-Sawyer College (S)

C. A. Schreiner, chairperson; D. Krahn, vice chairperson.

27 June. DNA adducts (I. B. Weinstein, session chairperson): I. B. Weinstein, "Overview of carcinogens DNA adducts and their use as markers in molecular epidemiology"; A. Jeffrey, "Structures of DNA adducts formed by derivatives of polycyclic carcinogens"; M. Poirier, "Immunoassays for carcinogen DNA adducts"; K. Randerath, "A versatile and highly sensitive postlabeling method for detecting carcinogen DNA adducts." Mutational spectra in bacteria and man (W. Thilly, session chairperson): J. R. Miller, "Lac I gene in *Escherichia coli*"; T. Skopeck, "C-1 gene, lambda phage of *E. coli*"; W. Thilly, "Mutational spectra of human B. lymphoblastoid cells."

28 June. Beyond mutagenesis—other endpoints (A. Sivak, session chairperson): A. R. Malcolm, "Inhibition of metabolic cooperation in V79 cells"; A. Braun, "In vitro teratogen assay system"; J. C. Barrett, "Induction of cell transformation by chemicals." Primary DNA damage (B. Bridges, session chairperson): C. Tong, "Unscheduled DNA synthesis"; M. Bradley, "Alkaline elution technique"; D. Kram, "Sister chromatid exchange"; B. Bridges, "Predictive reliability of DNA damage." Panel discussion: "Significance of primary DNA damage."

29 June. Human monitoring: Research (R. Albertini, session chairperson): R. Albertini, "Prescreening: The issue of susceptibles"; G. Brewen, "Population monitoring: How sound are the methods"; G. Ommen, "Risk assessment: Disease is the endpoint." Human monitoring: Hazard evaluation (M. Legator, session chairperson): M. Legator, "Approaches"; S. Wolman, "Human data and decision-making"; R. Cumming, "Factors in risk equation."

30 June. Genotoxic endpoints (F. DeSerres, session chairperson): F. Zimmermann, "Mutagenicity or mutagenic potential"; F. DeSerres, "Relevance of organism specific genetic endpoints"; R. Tennant, "Prospective and retrospective uses of genetic toxicity data." Genotoxic and nongenetoxic events: Criteria and regulatory implications (R. Albert, session chairperson). Government research (M. Waters, session chairperson): The Environmental Protection Agency's GENE-TOX Program: Accomplishments, concerns and future directions. A. A. Aulette, "Introduction to the EPA GENE-TOX program"; D. Brusick, "Current status of assays use"; V. A. Ray, "Analysis of the GENE-TOX data base according to chemical class"; S. Nesnow, "Mutagenicity/carcinogenicity correlation"; L. Russell, "Genetic risk assessment." Discussion. Panel discussion: GENE-TOX coordinating committee representatives: A. Auletta, D. Brusick, S. Nesnow, L. Russell, F. DeSerres, M. Waters.

Glass

New Hampton School

Cornelius T. Moynihan, chairperson; James E. Shelby, vice chairperson.

8 August. Structural relaxation and the glass transition: S. Rekhson, "The glass transition and secondary relaxations"; I. M. Hodge, "Analysis of enthalpy relaxation near Tg in glassy polymers"; H. S. Chen, "Sub-Tg structural relaxation in glass in materials"; F. Spaepen, "Relaxation and mass transport in metallic glass"; G. W. Scherer, "Structural relaxation in rapidly quenched glasses."

9 August. Viscous flow and other irreversible processes: S. Brawer, "Viscosity of melts and glasses"; R. Zallen, "Application of percolation theory to the glass transition"; G. Sigel, "Physical aging of optical fiber waveguides"; I. Gutzow, "Irreversible processes in glass."

10 August. Ionic motion and relaxation: A. K. Jonscher, "Universal dielectric response of solids"; P. Bray, "NMR studies of ionic motion in glass"; C. A. Angell, "Computer simulation of ionic dynamics in glass"; G. H. Frischat, "Ionic transport mechanisms in glass."

11 August. Ionic transport: N. L. Peterson, "Alkali ion transport in glass"; H. L. Tuller, "Fast ionic conduction in glass"; M. D. Ingram, "The mixed alkali effect."

12 August. Ionic transport: R. H. Doremus, "Mechanism of reaction with water and proton transport in glass"; E. N.

Boulos, "Precise electrical conductivity measurements in glass melts." A poster session will be scheduled to permit any conferee to present recent results in the area of glass science and engineering.

Glycoproteins and Glycolipids

Holderness School

Harry Schachter, chairperson; Edward L. Kean, vice chairperson; Charles C. Sweeley, vice chairperson.

1 August. *N*-Glycosyl oligosaccharides in three dimensions (Jeremy Carver, session chairperson): Jeremy Carver, "The relation of three dimensional structure to function in the *N*-linked oligosaccharides"; I. A. Wilson, "The structure and role of the carbohydrate moieties of influenza virus hemagglutinin"; Hans Vliegenthart, "High resolution proton NMR studies on the *O*-glycosidic carbohydrate chains of glycoproteins." Metabolic control of dolichol pyrophosphate oligosaccharide synthesis and factors controlling distribution of high mannose and complex oligosaccharides (Edward L. Kean, session chairperson): Edward L. Kean, "The influence of dolichol phosphate-mannose on GlcNAc-lipid formation"; Phillips W. Robbins, "Asparagine-linked protein glycosylation and its regulation"; Daniel Carson and W. J. Lennarz, "Regulation of glycoprotein synthesis during embryogenesis"; L. Lehle, "The biosynthesis and possible role of *N*- and *O*-linked oligosaccharide chains of yeast mannoproteins"; John J. Lucas, "Regulation of lipid mediated glycosylation during differentiation"; Roger K. Bretthauer, "Effects of phospholipids on the synthesis of dolichol pyrophosphate *N*-acetylglucosamine in lung microsomes."

2 August. Inhibition of *N*-glycosyl oligosaccharide processing (Annette Herscovics, session chairperson): Alan D. Elbein, Rick Saul and Y. T. Pan, "Inhibition of glycoprotein processing by plant indolizidine alkaloids"; Oscar Touster, "The effect of swainsonine on glycoprotein biosynthesis and on tissue mannosidase levels"; Ralph T. Schwarz, "Inhibition of protein glycosylation and glycoprotein processing"; Annette Herscovics, "Effect of 1-deoxynojirimicin on glycoprotein biosynthesis." Synthesis of blood group Ii oligosaccharides by glycosyltransferases (Dirk Van Den Eijnden, session chairperson): Dirk Van Den Eijnden, "Identification, partial purification and characterization of two *N*-acetylglucosaminyltransferases from Novikoff tumor cells and ascites fluid"; James Rearick and S. Kornfeld, "Partial purification and characterization of a *N*-acetylglucosaminyltransferase from a mouse lymphoma cell line"; Roger A. Laine, "Alterations of the sugar linkages in the erythroglycan fraction after ouabain-induced erythroid differentiation in K-562 cells"; Don M. Carlson, "Identification and characterization of *N*-acetylglucosaminyltransferases from drug stimulated rat parotid glands"; Inka Brockhausen and H. Schachter, "*N*-acetylglucosaminyltransferases involved in mucin synthesis"; S. Basu and M. Basu, "Characterization of a glycolipid *N*-acetylglucosaminyltransferase from mouse lymphoma tumors."

3 August. Glycosyltransferases and glycosidases (Don M. Carlson, session chairperson): Don M. Carlson, "Studies on UDP-GAL: GlcNAc 3β-galactosyltransferase"; James C. Paulson, "Sialylation of *N*-asparagine-linked oligosaccharides"; Roland Schauer, "Multiple forms of sialic acid, metabolic and biological significance"; R. L. Hill, "Monoclonal antibodies to glycosyltransferases"; Dirk Van Den Eijnden, "Sialyltransferase substrate specificities." Mucin structure and function (Jan Forstner, session chairperson): Adrian Allen, "Gastrointestinal mucus—structure and function"; Jan Forstner, "Heterogeneity in the structure of intestinal mucin"; David Gold, "Immunochemical studies on colonic mucin"; Eugene Davidson; Gordon Forstner.

4 August. Structure and function of proteoglycans (John R. Baker, session chairperson): John Baker, "Introduction"; Dick Heinegard, "Cartilage proteoglycans and matrix proteins"; Ted Oegema, "Distribution and role of phosphate esters in proteoglycans"; Lars-Ak Fransson, "Structure and properties of proteo-dermatan and heparan sulfates." Sub-Golgi compartments (E. Regoeczi, session chairperson): E. Regoeczi, "Endocytosis of glycoproteins by liver"; Graham Warren, "Structural and functional dissection of the Golgi complex." Biosynthesis of proteoglycans (Nancy Schwartz, session chairperson): Nancy Schwartz, "Intracellular events in proteoglycan synthesis"; Lennart Rodén, "Polymer modifications in heparin synthesis"; H. Edward Conrad, "Structure and synthesis of chondroitin sulfate." Invited poster session. Structure and function of glycosphingolipids (Charles C. Sweeley, session chairperson): Heinz Egge, "Potential of fast atom bombardment mass spectrometry in the structural elucidation of glycoconjugates"; Akira Makita, "Glycolipid abnormality in the brain of gangliosidoses—involvement of globo series"; Karl-Anders Karlsson, "Glycolipid structures as receptors for bacterial infection at mucosal surfaces"; Roger Laine, "Mannosyl-inositol-phosphoryl-ceramid (MIPC) and a related substance from yeast: Complete characterization." All participants are encouraged to join in the daily discussions and to bring posters. Due to limited space, we must restrict the number of posters to one per participant.

Hemostasis

Proctor Academy

T. S. Edgington, chairperson; R. Nachman, vice chairperson.

20 June. Cellular initiation of coagulation (T. S. Edgington, session chairperson): V. Ewan, "Monoclonal antibody identification of monocyte tissue factor"; D. Fair, "Expression of monocyte factor VII"; L. Goodnough, "Bovine aortic endothelial cells produce an inhibitor of human blood monocyte procoagulant activity." Molecular initiation (A. Kaplan, session chairperson): M. Silverberg, "Initiation of contact activation"; R. Bach, "Cooperative binding of factor VIII to tissue factor."

21 June. Assembly mediated propagation of coagulation pathways (Y. Nemerson, session chairperson): D. Stern, "Factor IX binding to endothelial cells"; D. Fass, "Factor VIII"; B. Burri, "Factor VIII—interactions"; P. Tracy, "Assembly of the prothrombinase complex on monocytes." Regulation: I. Protein C cofactors (C. Esmon, session chairperson): N. Esmon, "Free versus cellular thrombomodulin"; F. Walker, "Structure and regulating function of protein S"; B. Dahlbock, "Protein S complex formation with C4b binding protein."

22 June. Regulation: II. Protease inhibitors (R. Rosenberg, session chairperson): J. Marcum, "Regulation of AT-III action"; W. Owen, "Regulation of the AT-III: Thrombin interaction"; K. Suzuki, "Activated protein C inhibitor." Interactions at the cell surface (R. Nachman, session chairperson): B. Coller, "Biology of fibrinogen and vWF receptors"; E. Jaffe, "Beta adrenergic receptor on endothelial cells"; L. Curtiss, "Lipoprotein: Platelet interactions"; C. Bianco, "The fibronectin receptor."

23 June. Cellular adhesion mechanisms (M. Ginsberg, session chairperson): T. Peterson, "Primary structure of fibronectin"; J. Lawler, "Structure-function relationships of thrombosporidin"; D. Walker, "Mechanism of poly-

merization of von Willebrand factor multimers"; D. Mosher, "Metabolism of matrix molecules in vitro." Cytoskeleton, the cell surface and extracellular interactions: J. Hartwig, "Organization of cortical cytoplasm and possible mechanisms of interaction with cell membranes"; R. Hynes, "Cell-matrix interactions."

24 June. Platelet: Vessel wall interactions (H. Weiss, session chairperson): F. Booyse, "Interaction of platelets with subendothelium synthesized in vitro"; J. Sixma, "Adhesive proteins in platelet: Vessel wall interaction"; D. Meyer, "Is only a single vWF locus required for platelet adhesion?"

Heterocyclic Chemistry

New Hampton School

Albert Padwa, chairperson; William Moberg, vice chairperson.

11–15 July. Waldemar Adam, "Dioxetanes: Fun and frustration"; Steven Baldwin, "Organic synthesis with furan derivatives"; Philip DeShong, "Application of heterocyclic compounds in the total synthesis of natural products"; Frank Fowler, "Pericyclic reactions of activated carbon-nitrogen double bonds"; Paul Gassman, "New applications of (2,3)-sigmatropic rearrangements to the synthesis of heterocycles"; David Hart, "Reactions for use in alkaloid synthesis"; James Heck, "Novel heterocyclics as potential topological mimics of beta-lactam antibiotics"; Thomas Hoye, "Heterocycles as vehicles for synthesis"; Ross Kelly, "Recent advances in organic synthesis using heterocycles"; Martin Kuehne, "New developments in biomimetic syntheses of indole alkaloids"; Steven Martin, "General strategies for the synthesis of naturally occurring heterocycles"; Albert Meyers, "Alkylation of heterocycles via their α-amino carbanions"; Toshio Mukai, "Chemistry of 1,4-diazapentalene and related compounds"; Charles Rees, "New structures and reactions in nitrogen-sulfur heterocyclic chemistry"; Manfred Regitz, "(Diazomethyl) cyclopropenes in heterocyclic synthesis"; William Ripka, "Applications of computer graphics to synthetic design in heterocyclic systems"; Ulrich Schollkopf, "Asymmetric synthesis of amino acids via heterocyclic intermediates"; Arthur Schultz, "Intramolecular dipolar cycloaddition and new applications of triazoline and pyrazoline photochemistry"; Joseph Tufariello, "Synthesis of alkaloids using nitrone methodology"; Milan Uskokovic, "Stereoselective synthesis of natural products using heterocycles"; Albert Van Leusen, "Use of heterocycles to modify steroid molecules"; Harry Wasserman, "New methods for the synthesis of macrocyclic lactones and lactams"; David Williams, "Strategies for stereocontrol in the synthesis of oxygen-containing heterocycles."

Hormone Action

Kimball Union Academy

William T. Schrader, co-chairperson; Hebert H. Samuels, co-chairperson; C. Ronald Kahn, co-vice chairperson; Suzanne Bourgeois, co-vice chairperson.

7 August. Plenary lecture: Richard Axel, "The endocrinology of aplysia."

8 August. Steroids and gene expression (John Baxter, session chairperson): Albrecht Sippel, "Specific protein-DNA interaction in the chicken lysozyme gene region"; Gordon Ringold, "Gene transfer of glucocorticoid responses"; Ed Milgrom, "Regulation of uteroglobin gene expression"; Gary Firestone, "Glucocorticoid regulation of protein processing." Insulin and insulin-like growth factors (Frances Finn, session chairperson): Michael Czech, "Receptors for insulin-like growth factors"; Matt Rechler, "Function of MSA"; C. Ronald Kahn, "The growth-promoting action of insulin."

9 August. Prolactin (Priscilla Dannies, session chairperson): Marvin Gershengorn, "TRF regulation of prolactin secretion"; Henry Friesen, "Prolactin regulation of casein genes." Neuropeptides and pituitary hormones (P. M. Conn, session chairperson): Ed Herbert, "Regulation of opioid peptide gene expression"; Jahn Pawelek, "Function of melanocyte-stimulating hormone"; Ron Evans, "Neurobiology of growth hormone genes."

10 August. Genetic variants of hormone action (E. Brad Thompson, session chairperson): Suzanne Bourgeois, "Determinants of glucocorticoid sensitivity in lymphoid cell lines"; Lutz Birnbaumer, "Adenyl cyclase structure studies using cyclase variants"; Michael Gottesman, "Protein kinase variants in CHO cells"; Harvey Herschman, "Mitogen specific-specific variants in 3P3 cells." Gene regulatory proteins (J. R. Tata, session chairperson): Tom Steitz, "CAP protein interactions with DNA"; Herb Samuels, "T_3 receptors in cultured cells."

11 August. Hormones and calcium (A. R. Means, session chairperson): Joel Habener, "Parathyroid hormone gene structure and expression"; Mark Haussler, "The vitamin D receptor"; Carter Bancroft, "Regulation of the prolactin gene by calcium and hormones"; M. G. Rosefeld, "Calcitonin mRNA processing." Structure of active genes (Bert W. O'Malley, session chairperson): Gary Felsenfeld, "Chromatin structure"; Mary Harper, "Chromosomal localization of single-copy genes by in situ hybridization."

12 August. Reproductive endocrinology (Benita Katzenellenbogen, session chairperson): James H. Clark, "A DNA-binding receptor component"; John Katzenellenbogen, "Affinity probes for estrogen receptors"; Gerald Cunha, "Stromalepithelial interactions in hormone responsiveness"; Kathyrn Horwitz, "Progesterone receptors in human breast tumor cells."

Implantable Auditory Prostheses

Tilton School

Robert L. White, chairperson; Dennis H. Klatt, vice chairperson.

22 August. Auditory percepts elicited by cochlear stimulation: Robert V. Shannon, F. Blair Simmons, Donald K. Eddington.

23 August. Speech discrimination results with cochlear stimulation: Earl D. Schubert. Electrophysiologic and psychophysical observations under cochlear stimulation: Mark White.

24 August. Auditory physiology and speech encoding: Eric D. Young, Charles Liberman. Feature extraction and speech perception: Dennis H. Klatt.

25 August. Perceptual aspects of speech recognition: Louis D. Braida, Michael Studdert-Kennedy. Tactile aids for speech discrimination: James M. Pickett.

26 August. Discussion of speech encoding strategies: Robert L. White.

Inorganic Chemistry

Brewster Academy

Alan H. Cowley, chairman; Guido Pez, vice chairman.

Reactive Intermediates in Inorganic Chemistry

8 August. Transition metal clusters as reactive intermediates (G. Stucky, discussion leader): M. H. Chisholm, "Metal-metal multiple bonds as inorganic functional groups"; R. D. Adams, "Synthesis and reactivity of higher nuclearity clusters"; H. D. Kaesz, "Formation and transformation of reactive intermediates in transition metal cluster chemistry."

Actinides as reactive intermediates (J. L. Atwood, discussion leader): T. J. Marks, "New organometallic chemistry with actinide elements"; J. W. Gilje, "Carbon-carbon bond formation at the uranium-carbon multiple bond."

9 August. Main-group compounds as reactive intermediates (R. W. Parry, discussion leader): R. J. Lagow, "Structure and reactivity of polylithium compounds"; H. Nöth, "Boron species of low coordination number as reaction intermediates"; N. C. Norman, "Synthesis and reactivity of compounds with phosphorus-phosphorus double bonds"; R. T. Paine, "Phosphenium ions as reactive intermediates." Transition metal compounds as reactive intermediates I. (G. Pex, discussion leader): W. A. Herrmann, "Organometallic chemistry of simple hydrocarbons"; D. F. Shriver, "Metal carbides as reactive intermediates."

10 August. Transition metal compounds as reactive intermediates II (J. P. Fackler, discussion leader): H. Bock, "Optimization of (heterogeneously catalyzed) gas reactions using photoelectron spectroscopy"; C. A. Tolman, "Hydrocarbon oxidation by transition metal complexes"; T. J. Collins, "Perspectives in the development of selective oxidizing agents"; A. Sen, "Role of transition metal alkyls and acyls in the catalytic carbonylation of olefins." Main-group compounds as reactive intermediates II (R. J. Lagow, discussion leader): J. C. Martin, "Organo-nonmetallic chemistry: Frozen transition states"; D. D. Des Marteau, "Carbon-nitrogen multiple bonds as reactive intermediates in flourinated compounds."

11 August. Lanthanides as reactive intermediates (T. J. Marks, discussion leader): W. J. Evans, "Reactivity of organolanthanide hydrides"; R. A. Andersen, "*Bis*(pentamethylcyclopentadienyl)ytterbium as an electron transfer agent toward organic, inorganic, and organometallic compounds"; J. L. Atwood, "Structural aspects of organolanthanide reactivity." Organometallic reactive intermediates I (H. D. Kaesz, discussion leader): J. A. Fackler, "Monmeric and dimeric ylid complexes;" D. Seyferth, "Bridge design and construction: a chemistry project for an engineering school"; or "All about $Fe_2(CO_6)$ complexes with organosulfur ligan bridges."

12 August. Organometallic reactive intermediates: R. J. Puddephatt, "Reactive intermediates in the chemistry of alkyl and hydride derivatives of platinum"; P. P. Power, "The use of bulky groups for preparing reactive intermediates"; R. Haushalter, "Synthesis of new inorganic and metallic solids from zintl anion intermediates."

Inorganic Geochemistry

Holderness School

Antonio Lasaga, co-chairperson; Bruce Marsh, co-chairperson.

Quantification of Petrologic Processes

22 August. Fluid mechanics of magma (Harry Hardee, session chairperson): Frank Spera, "Convection and eruption mechanics in silicic systems"; Bruce Marsh, "Crystallinity in convecting magmas." Observations of magma dynamics (Wes Hildreth, session chairperson): A. R. McBirney, "Skaergaard intrusion: A fluid mechanical case history"; A. T. Irvine, "Formation of stillwater and Bushveld Pt-Pd ore zones by double diffusive magma mixing."

23 August. Crystal growth and diffusion in melts (Eric Dowty, session chairperson): Donald Uhlmann, "Crystallization of silicates"; David Walker, "Soret separation of silicate species." (Gary Lofgren, session chairperson): Steve Brawer, "Molecular dynamics calculations on melts"; Norman Gray, "Textural variations within small feeder dikes."

24 August. Solid processes—crystals and glasses (Steve Huebner, session chairperson): Bruno Giletti, "Status of diffusion measurements in geological materials and a forecast of attainable geological applications"; Jim Kirkpatrick, "High-resolution nuclear magnetic resonance spectroscopy of glasses." Bonding in minerals (Joseph V. Smith, session chairperson): Gerry Gibbs, "Quantum mechanical calculations of bonding in minerals"; Gordon Brown, "Applications of synchrotron radiation to geochemical problems: Solutions, crystals, glasses and melts."

25 August. Water-rock interactions (Harold Helgeson, session chairperson): Jack Schott, "Dissolution kinetics of silicate minerals"; Jim Leckie. Metamorphism-metasomatism (Jim Thompson, session chairperson): Derrill Kerrick, "Computer-generated metamorphic phase equilibrium topologies"; Doug Rumble, "Models of stable isotope fractionation during metamorphism."

26 August. Instrumentation (George Rossman, session chairperson): David Veblen, "Submicron petrology: Transmission electron microscopy and analysis"; John Armstrong, "The ion microprobe as a quantitative tool in geology: Capabilities and limitations for isotopic and trace element analysis."

Chemistry at Interfaces

Kimball Union Academy

L. Benjamin, chairperson; H. T. Davis, vice chairperson.

25 July. Surface science of heterogeneous reactions (G. C. Allen, session chairperson): J. M. White, "Measurement of reaction rates using surface techniques"; A. Joshi, "Interfacial reactions and diffusion in metals"; G. C. Allen, "Electron spectroscopy at metal oxide interfaces"; T. Barr, "Fluid induced surface layers and interfaces." Direct measurement of surface forces: R. H. Ottewill.

26 July. Chemomechanical weakening (J. D. Dunning, session chairperson): A. R. C. Westwood, "Aquamechanical effects in non-metals"; S. M. Wiederhorn, "Electrostatic interactions during crack growth"; G. E. McGuire, "Surface interactions between metals"; J. D. Dunning, "Chemoweakening of geologic materials in surface active environments"; D. B. Schmidt, "Effects of drilling mud characteristics on drilling rate."

27 July. G. A. Parks, "Electrolyte adsorption, surface free energy and electrical double layer interaction on quartz"; R. Thompson, "Atomic processes at crack tips." Transitions in bulk and surface phases (R. G. Laughlin, discussion leader): B. Pethica, "Absolute surface manometry—transitions in monolayers"; D. F. Hager, "Two-dimensional phase transitions at oil-water interfaces"; R. G. Laughlin, "Phase studies by diffusive interfacial transport."

28 July. M. Kahlweit, "Role of critical phases in the phase behavior of water-oil-surfactant systems." Micelles and microemulsions (R. Mackay, session chairperson): B. Ninham, "Recent developments in molecular forces and their implications for association colloids"; D. Fennel Evans, "Thermodynamics and transport properties of aqueous micelles above 100°C"; R. Mackay, "Reactions in microemulsions."

29 July. J. E. Desnoyers, "Thermodynamics of micelles, mixed micelles and microemulsions"; E. Ruckenstein, "Origin of middle phase microemulsions and of its structure-theory."

Ion Containing Polymers

Plymouth State College (S)

L. J. Guilbault, chairperson; W. J. MacKnight, vice chairperson.

1 August. Synthesis and applications (G. A. Campbell, session chairperson): J. M. Noonan, "Synthesis and charac-

An application blank for attendance at the Gordon Research Conferences may be found on page 1133. A summary of the program is on pages 1116 and 1117.

terization of selected polyester ionomers"; J. Hodgkin, "Synthesis of new chelating polymers for metal-specific resins"; A. Blumstein, "Matrix polymerization on polyelectrolyte backbones"; A. B. LaConti, "Development of electrochemical devices based on integrally bonded electrode/solid polymer electrolyte membranes"; A. Rembaum, "Structure of polyaldehyde microspheres and applications in biology and medicine."

2 August. Ionomer membranes (T. Gierke, session chairperson): G. B. Tanny, "Studies on sulfonated polysulfones: A permselective ionomer"; W. J. MacKnight, "Rigorous studies of transport in idealized ion exchange membranes"; H. L. Yeager, "Transport properties and permselectivity of perfluorinated ionomer membranes"; M. Pineri, "Ionomer membranes structure: Ion exchange group concentration and ionic domain size."

3 August. Solution properties and characterization (S. R. Turner, session chairperson): W. B. Russel, "Polyelectrolytes in solution: From random coil to rigid rod"; P. Ander, "Counterion and coion interactions with electrolytes in aqueous solutions"; N. Ise, "Ordering of macroins and polymer latices in solution as studied by small-angle x-ray scattering and by microscopy"; C. P. Woodbury, Jr., "Statistical mechanics of counterion condensation in polyelectrolyte systems." Poster session.

4 August. Solid state properties and characterization (G. L. Wilkes, session chairperson): A. Eisenberg, "Miscibility enhancement via ionic interactions"; R. A. Weiss, "Non-equilibrium behavior of ionomers." Round table discussion.

5 August. Solid state properties and characterization (G. L. Wilkes, session chairperson): W. M. Risen, Jr., "Spectroscopic studies of ionomers and their reactions"; S. L. Cooper, "X-ray analysis of ion-containing polymers: SAXS and EXAFS."

Ion Exchange

Plymouth State College (N)

Howard S. Sherry, chairperson; Irving M. Abrams, vice chairperson.

18 July. Fundamentals of ion exchange (Jacob A. Marinsky, session chairperson): George Boyd, "Interpretation of ion exchange properties using the manning condensation model"; Eric Hogfeldt, "Equilibria in non-ideal systems"; Russell Petterson, "Thermodynamics of ion exchange in microcrystals of hydrous oxides"; Kurt Bunzl, "Kinetics of ion exchange."

19 July. Ion exchange properties of zeolites (John D. Sherman, session chairperson): Richard M. Wallace, "Fundamental properties of zeolites that are important for radioactive waste treatment"; Rodney P. Townsend, "Thermodynamics of ternary ion exchange in zeolites"; Pochen Chu, "Ion exchange properties of ZSM-5"; Richard M. Barrer, "Ion exchange and isomorphous replacement in zeolites and feldspars."

20 July. Ion exchange in analytical chemistry (Gabriella Schmuckler, session chairperson): Michael J. Hudson, "Use of coordinating polymers in hydrometallurgy"; R. M. Cassidy, "Separation of lanthanides by HPLC." Ion exchange for drinking water and water reuse (Dennis Clifford, session chairperson): Wolfgang Hoell, "Partial demineralization of drinking water combined with the use of carbon dioxide as regenerant"; Dennis Clifford, "The structure of resins as it affects the uptake of polyprotic acids such as chromic, carbonic, arsenic, and so forth."

21 July. Ion exchange properties of clay minerals (Adrian Cremers, session chairperson): Garrison Sposito, "Ternary cation exchange in clay minerals"; Oscar Talibudeen, "Calorimetry of ion exchange reactions of the phyllosilicates in relation to their properties and composition"; Andre Maes, "How to make cesium high selectivity sites in montmorillonite." Special lecture: Calvin C. Calmon, "The history of ion exchange." Elections. Poster session.

22 July. Industrial applications (George Crits, session chairperson): Howard L. Simpson, "Applications of ion exchange resins in glucose/fructose separations"; E. C. Hitz, "Innovative ion exchange at Three Mile Island nuclear station."

The Direct Action of Ionizing Radiation on Macromolecules

Plymouth State College (S)

Ellis S. Kempner, chairperson; A. Bohm, vice chairperson.

15 August. Physics of radiation action and target theory: Jurgen Huttermann, Ernest Pollard, Mitio Inokuti, Robert Wood. Experimental procedures (Joan Harmon, session chairperson): Chan Jung, William McLaughlin, Michel Poitier, John Cuppoletti, David Parkinson.

16 August. Target analysis of enzymes (Sandra Erickson, session chairperson): Clive Ellory, Donald Fluke, Matthew Lo, Shelagh Ferguson-Miller. Chemistry of radiation interactions: Ffrancon Williams (to be announced), (to be announced), Michael Simic.

17 August. Radiation effects on synthetic polymers (session chairperson to be announced). George Bohm, B. J. Lyons, Joseph Silverman, Ronald Salovay. Target analysis of cell surface complexes (Harry Haigler, session chairperson): Werner Schlegel, Joan Harmon, Thor Nielsen, Stephane Swillens, B. R. Martin.

18 August. Energy transfer in macromolecules (Ellis Kempner, session chairperson): James Guillet and Charles Swenberg (to be announced). Historical perspective of radiation action studies: E. Pollard, M. Dole, A. Charlesby.

19 August. Workshops: Donald Fluke, "Temperature"; Ellis Kempner, "Interchain and intrachain energy spread"; Harry Haigler, "Receptors and regulated enzymes"; H. Kaback, "Transport in reconstituted liposomes."

Physics and Chemistry of Laser Diagnostics in Combustion

Plymouth State College (S)

David R. Crosley, chairperson; Alan C. Eckbreth, vice chairperson.

18 July. Fluorescence spectroscopy (Keith Schofield, discussion leader): Hajime Akimoto, David R. Crosley, Robert J. Cattolica. CARS: Current status (Anthony Kotlar, discussion leader): Robert Hall, D. A. Greenhalgh, Brigitta Attal.

19 July. Absorption and tomography (Anthony Dean, discussion leader): Ronald Hanson, Hratch Semerjian, Robert Byer. Measurements under turbulent conditions (Normand Laurendeau, discussion leader): Larry Goss, Marshall Lapp, John Daily, Robert Dibble.

20 July. CARS: Problem areas (Albert Harvey, discussion leader): Larry Rahn, Alan Eckbreth, Richard Chang. Fluorescence collisional effects (Paul Dagdigian, discussion leader): Robert Lucht, M. J. Cottereau, Edward Lee.

21 July. New methods (Richard Teets, discussion leader): Rajendra Gupta, Roger Farrow, Stephen Harris. Imaging methods (Ray Smith, discussion leader): Sune Svanberg, Marshall Long.

22 July. Ionization detection (Terry Cool, discussion leader): Kermit Smyth, John Goldsmith, Ming Chang Lin.

Liquid Crystals

Brewster Academy

Robert B. Meyer, chairperson; Alfred Saupe, vice chairperson.

27 June. Novel systems: L. Liebert, "Ferronematics—stable suspensions of magnetic grains in a nematic phase"; G. A. Jeffrey, "Carbohydrate liquid crystals." R. Oldenbouig, "Light scattering studies of the liquid crystalline phase in virus solutions." Macromolecular phases: G. Maret, "Virus nematics"; E. Samulski, "Nematic interactions in gels."

28 June. Microemulsions and lyotropic phases: J. Huang, "Structure and properties of a microemulsion near a critical point"; S. Safran, "Theory of the phase behavior of microemulsions." Microemulsions and lyotropic phases: D. Langevin, "Light scattering studies of the interfacial structure and energy in microemulsions"; W. Gelbart, "Phase equilibria in lyotropic liquid crystals."

29 June. Discotic and smectic phases: H. Gasparoux, "New materials exhibiting novel smectic and discotic phase behavior"; A. M. Levelut, "X-ray studies of new discotic and smectic materials." Discotic and smectic phases: R. Pindak, "The nature of melting in thin free-standing liquid crystal films"; P. S. Pershan, "X-ray studies of smectic ordering at the free surface of a liquid crystal."

30 June. Smectic ordering: J. Prost, "Frustration induced phases in polar smectic liquid crystals"; J. Walker, "Frustrated spin gas model for doubly re-entrant liquid crystals." Smectic ordering: J. Toner, "Soundproofing with soap: Dynamical consequences of the breakdown of hydrodynamics in smectic A liquid crystals."

1 July. Cholesteric blue phases: M. Marcus, "The cholesteric blue phases: three-dimensional orientation lattices"; S. Shtrikman, "Theory of the stability of cholesteric blue phases." First group of posters on display Monday and Tuesday. Second group of posters on display Wednesday and Thursday.

Chemistry and Physics of Liquids

Holderness School

G. Stell, chairperson; J. Levelt Sengers, vice chairperson.

15–19 August. Transport and structure of various suspensions (J. M. Deutch, discussion leader): B. U. Felderhof, "Transport and dielectric properties of disordered two-phase media"; H. Brenner, "Flow of structured suspensions"; C. Taupin, "Properties of microemulsions." Polymerization and related phenomena (H. E. Stanley, discussion leader): R. Ziff, "Kinetic approach to the sol-gel transition, aerosol coagulation, antibody-antigen interaction, and galactic clustering"; B. Chu, "Experimental results on some polymer systems"; J. C. Wheeler, "Equilibrium polymerization as a critical and tricritical phenomena." Dynamic phenomena in liquids (D. J. Evans, discussion leader): J. Keizer, "Some general results on irreversible thermodynamics of the liquid state, including applications to chemical reactions in solution"; I. de Schepper, "New neutron scattering data for argon and their significance." The liquid-state environment I (H. L. Friedman, discussion leader): J. T. Hynes, "Chemical reactions in solution; an overview"; Jeri Jonas, "NMR as a probe: Rate constants and pressure"; Kent Wilson, "Picosecond spectroscopy as a probe: Photodissociation of iodine"; G. Fleming, "Rate constants and viscosities; photoisomerization studies." The liquid-state environment II (Peter Wolynes, discussion leader): B. Berne, "Solvent effects on quantum degrees of freedom"; K. Eisenthal, "Picosecond laser studies of intra-molecular motion in liquids." Equilibrium structure of molecular and ionic fluids (G. S. Rushbrooke, discussion leader): P. Rossky, "New results for the interaction site model"; B. Jancovici, "The two-dimensional one-component plasma. Some exact results"; J. B. Enderby, "Neutron diffraction studies of structure for a variety of liquids." Surfaces and interfaces: B. Widom, "An overview: The wetting transition, surface tension, and the crystal-liquid interface"; Reports and discussion on surface research (various speakers). Poster session on interfaces and surfaces. Progress reports. I. Metastability, spinodal decomposition and nucleation (W. Goldburg, discussion leader): J. D. Gunton, "Metastable and unstable states in liquids." II. On liquid mixtures (J. Rowlinson, discussion leader): J. M. Kincaid, "Polydispersivity." The program will include additional poster sessions.

Magnetic Resonance

Brewster Academy

Robert L. Vold, chairperson; Alexander Pines, vice chairperson.

20 June. Nuclear spin dynamics: R. R. Ernst, "Magnetization and coherence transfer"; D. P. Weitekamp, "Coherent enhancement of spectral resolution in many level systems"; B. C. Sanctuary, "Multipole formulation of NMR." Spin decoupling; J. S. Waugh, "Broadband decoupling"; M. H. Levitt, "Composite pulse decoupling."

21 June. Polymer dynamics: H. W. Spiess, "Deuteron NMR studies of molecular dynamics in glassy polymers, liquid crystalline polymers and polymer model membranes"; J. Schaefer, "Polymer motion from ^{13}C dipolar rotational spin echoes." Phase transitions: R. Blinc, "NMR in incommensurate phases"; R. A. Wind, "The use of dynamic nuclear polarization in solid state NMR research."

22 June. Electron spin dynamics: J. S. Hyde, "X-band spin label experiments with a loop gap resonator"; L. Kevan, "Electron spin echo modulation studies of radicals on surfaces"; M. Bowman, "Electron spin echo measurements of nuclear quadrupole couplings in free radicals." Magnetic resonance on surfaces: C. Dybowski, "Investigations of supported metal catalysts with magnetic resonance"; T. M. Duncan, "Characterization of carbidic deposits on methanation catalysts with ^{13}C NMR."

23 June. Liquid crystals: Z. Luz, "Studies of dynamic processes in molecules dissolved in liquid crystals"; J. W. Emsley, "Pretransitional phenomena studies by deuterium NMR"; J. H. Freed, "Molecular dynamics of liquid crystals by ESR"; J. Jeener, "Spin the thermodynamics."

24 June. Biological applications of magnetic resonance: M. Bloom, "The study of membranes using NMR"; A. Hoff, "ADMR: A new probe of electronic interactions between pigments"; J. Markley, "Heteronuclear two-dimensional NMR of proteins."

Mammary Gland Biology

Colby-Sawyer College (N)

H. Allen Tucker, chairperson; Pietro Gullino, vice chairperson.

13 June. Structure and evolution of milk protein genes (J. M. Rosen, discussion leader): Li Yu-Lee, "Rat casein gene family"; R. K. Craig, "Guinea pig and human milk protein genes"; P. Quasba, "Rat α-lactalbumin gene organization: Comparisons with chicken lysozyme gene structure"; L. Hennighausen, "Whey acidic protein gene: A novel murine milk protein." Hormonal requirements for expression of milk protein genes (Y. J. Topper, discussion leader): L. M. Houdebine, "Identification of the putative prolactin intracellular relay stimulating β-casein gene transcription"; M. R. Banerjee, "Mechanism of multiple steroid and polypeptide

hormone modulation of milk protein gene expression''; Y. J. Topper, ''Role of steroid hormones and insulin in mammary epithelial development.''

14 June. Metastases (P. Gullino, discussion leader): L. Liotta, ''Attachment and destruction of basement membrane by metastasizing tumor cells''; G. Yogeeswaran, ''The role of tumor cell surface and shed sialoglycoproteins and glycosphingolipids in metastasis''; F. Wheelock, ''Dormant metastases in human cancers.'' The extracellular matrix and cytokeratins in mammary cell growth and differentiation (B. B. Asch, discussion leader): H. Furthmayr, ''Organization of basement membrane macromolecules''; W. R. Kidwell, ''Role of the extracellular matrix in normal and neoplastic mammary cell growth''; B. B. Asch, ''Differential expression of keratins by mammary cells in vivo and in vitro.''

15 June. Membrane dynamics and receptor function (B. K. Vonderhaar, discussion leader): J. Dave, ''Interrelations of membrane microviscosity, prolactin receptors and prostaglandins''; M. E. Costlow, ''Prolactin receptor regulation in cultured rat mammary tumor cells''; D. Flint, ''Reciprocal changes in insulin binding to mammary epithelial cells and adipocytes.'' Cells in milk (M. J. Paape, discussion leader): P. Outteridge, ''The role of lymphocyte and macrophage cell populations in protection of the ruminant mammary gland against infection''; A. E. Beer, ''The cellular components of milk, their immunological benefits and hazards to the suckling recipient.''

16 June. The Golgi apparatus and microtubules (N. J. Kuhn, discussion lead-

Program Summary, Gordon Research Conferences

	Colby-Sawyer College (N) New London	Colby-Sawyer College (S) New London	New Hampton School New Hampton	Kimball Union Academy Meriden	Tilton School Tilton
13–17 June	Mammary Gland Biology	Chronobiology	Nucleic Acids	Cyclic Nucleotides	Central Nervous System
20–24 June	Nuclear Chemistry	Plasma Physics	Environmental Sciences: Air	Lipid Metabolism	Animal Cells and Viruses
27 June–1 July	Catalysis	Genetic Toxicology Bioassay, Scientific Basis and Application of	Proteins	Atherosclerosis	Carbohydrates
4–8 July	Polymers	Atomic Physics	Fuel Science	Enzymes, Coenzymes and Metabolic Pathways	Extrachromosomal Elements
11–15 July	Fiber Science	*Reverse Osmosis and Ultrafiltration	Heterocyclic Compounds, Chemistry of	Polyamines	Polymer/Colloids
18–22 July	Elastomers	*Spectroscopy of Matrix-Isolated Species	Organic Reactions and Processes	Bones and Teeth, Chemistry, Physiology and Structure of	Metal Hydrides, Formation and Properties of
25–29 July	Corrosion	Chemotherapy of Experimental and Clinical Cancer	Natural Products	Interfaces, Chemistry at	Fluids in Permeable Media: Physics and Chemistry
1–5 August	Medicinal Chemistry	Fertilization and Activation of Development	Statistics in Chemistry and Chemical Engineering	Toxicology and Safety Evaluations	Muscle
8–12 August	Food and Nutrition	Aerobiology	Glass	Hormone Action	Epithelial Differentiation
15–19 August	Separation and Purification	*Combustion Products, Chemistry and Toxicological Aspects of	Analytical Chemistry	Elastin	Nuclear Structure Physics
22–26 August	Cancer		Adhesion, Science of	Thermosetting Polymers	*Implantable Auditory Prostheses

*New conferences—1983

er): N. J. Kuhn, "Golgi membrane permeability and its implications"; D. Dylewski, "Membrane flow during protein and lipid secretion"; R. F. Loizzi, "Hormonal control of microtubules." H. F. DeLuca, "Vitamin D metabolism in reproduction and lactation"; (H. A. Tucker, discussion leader).

17 June. Biological effects of estrogens on the mammary gland (K. B. Horwitz, discussion leader): (Speaker to be announced), "Multiple estradiol-sensitive effector pathways in regulation of hormones-responsive breast cancer growth"; D. A. Sirbasku, "Estromedins"; J. H. Clark, "Estrogen and antiestrogen action." Submissions for poster display throughout the conference are invited.

Medicinal Chemistry

Colby-Sawyer College (N)

Ruth R. Levine, chairperson; M. Arnold Davis, vice chairperson.

1 August. The arthritides—NSAI drugs from laboratory to patient (Edward H. Wiseman, session chairperson): Ivan G. Otterness, "Predictive value of animal models"; Anthony Ford-Hutchinson, "Metabolites of arachidonic acid: Messengers of inflammatory responses"; Steven Abramson, "The role of the neutrophil"; James S. Goodwin, "The modulation of immune responses by non-steroidal anti-inflammatory drugs"; Donald T. Walz, "Disease modifying drugs"; Leon Sokoloff, "Is osteoarthritis an inflammatory disease?" Mary Betty Stevens, "Drug treatment of the arthritides."

2 August. Learning, memory, and ag-

1983 Schedule—New Hampshire

Proctor Academy Andover	Holderness School Plymouth	Brewster Academy Wolfeboro	Plymouth State College (N) Plymouth	Plymouth State College (S) Plymouth
Plant Molecular Biology	Free Radical Reactions	Physical Organic Chemistry	*Trichothecenes: Chemistry, Mycology and Toxicology	Space Plasma Physics
Hemostasis	Physical Metallurgy	Magnetic Resonance	Molecular Pharmacology	Plant Cell and Tissue Culture
Cell Contact and Adhesion	Biological Regulatory Mechanisms	Liquid Crystals	Calcium Phosphates	Periodontal Diseases
Phagocytes	Solids, Chemistry and Physics of	Bacterial Cell Surfaces	Biomaterials, Science and Technology of	Structural Macromolecules: Collagen
*Molecular Membrane Biology	Analytical Pyrolysis	Micellar and Macromolecular Catalysis	Electron Distribution and Chemical Bonding	Point and Line Defects in Semiconductors
Organic Photochemistry	Membranes and Transport Phenomena	Neural Plasticity	Ion Exchange	Laser Diagnostics in Combustion
Developmental Biology	Drug Metabolism	Microbiological Degradation	Quantitative Structure Activity Relationships	Ceramics, Solid State Studies in
Catecholamines	Glycoproteins and Glycolipids	Nonlinear Optics	Dynamics of Gas-Surface Interaction	Ion-Containing Polymers
Elementary Particle Interaction	Aging, Biology of	Inorganic Chemistry	Parasitism, Immunological and Molecular Aspects of	Coatings and Films, Chemistry and Physics of
Energy Coupling Mechanisms	Liquids, Chemistry and Physics of	Quantum Solids and Fluids	Red Cells	*Ionizing Radiation on Macromolecules, Direct Action of
*Nondestructive Evaluation	Inorganic Geochemistry	Molten Salts		

ing (Thomas H. Crook, session chairperson): Thomas H. Crook, "Cognitive disorders in the aged: New frontiers"; Barry Reisberg, "Clinical symptoms"; Ray T. Bartus, "Animal models"; Henry I. Yamamura, "Neurochemical changes"; Thomas H. Crook, "Therapeutic approaches." New concepts in the treatment of depression (Claude DeMontigny, session chairperson): Silvio Garrattini, "Molecular pharmacological aspects"; Friedolin Sulser, "Desensitization of forebrain neurons"; Claude DeMontigny, "Enhancement of 5-HT neurotransmission by antidepressant treatment. Electrophysiological and clinical studies."

3 August. Emerging peptide medicinal biology (Tobias O. Yellin, session chairperson): Jerry D. Gardner, "CCK receptor antagonists"; P. Michael Conn, "New approaches toward controlling fertility"; Domenico Regoli, "New approaches for studying substance-P analogues"; Henry I. Mosberg, "Delta-opiate receptor agonists." Allosteric and cooperative effect in medicinal chemistry (Peter J. Goodford, session chairperson): P. J. Goodford, "Cooperative mechanisms of drug action"; A. J. Hopfinger, "Cooperative conformational transitions."

4 August. Isotopes in medicinal chemistry (Arnold A. Liebman, session chairperson): David Samuel, "Staboe isotopes in biomedical research"; Raymond E. Counsell, "Organ-specific compounds labelled with gamma emitters"; Alfred P. Wolf, "Positron emitters as in vivo labelling agents." Special lecture (Irving J. Greenblatt, session chairperson): Ethel Tobach, "On being social: People and other animals."

5 August. Special topics in medicinal chemistry (Franz Waldeck, session chairperson). This session will include recent and important developments. Subjects to be announced.

Membrane Lipid Metabolism

Kimball Union Academy

Christian R. H. Raetz, chairperson; W. Virgil Brown, vice chairperson.

20 June. Physical properties and lipid polymorphisms in model membranes: Peter Cullis, "Modeling of biological membranes"; Graham Shipley, "Structure and interaction in membrane lipid bilayers"; Thomas Thompson, "Organization of glycospingolipids in phosphatidylcholine bilayers." Reconstitution of functional membrane proteins into model bilayers: Robert Fillingame, "Proton translocating ATPase of *Escherichia coli*"; Ronald Kaback, "The lac carrier protein: From membrane to molecule"; H. Gobind Khorana, "Light transducing retinal-based pigments."

21 June. Molecular biology of membrane lipid synthesis in bacteria and yeast: William Dowhan, "In vitro synthesis and membrane association of lipid biosynthetic enzymes"; Eugene Kennedy, "Osmotic regulation and the biosynthesis of membrane-derived oligosaccharides"; Susan Henry, "Genetic regulation of phospholipid synthesis in yeast." Biogenesis of bacterial membrane lipoproteins and lipopolysaccharides: Henry Wu, "Post-translational modification of pro-lipoprotein in *E. coli*"; Shoji Mizushima, "Biogenesis of membrane lipoproteins in *E. coli*"; Ernst Rietschel, "Structure and conformation of lipid A"; Kuni Takayama, "Structure and metabolism of monosaccharide lipid A precursors"; Discussion: Christian R. H. Raetz and Kuni Takayama, "Mitogenic function of lipid A precursors."

22 June. Secretion and targeting of membrane proteins in simple organisms: Peter Model, "Localization of filamentous phage protein"; Tom Silhavy, "Genetic analysis of protein export in *E. coli*"; Jonathan Beckwith, "Genetics of the secretory apparatus in *E. coli*"; Randy Dimond, "Secretory mutants in *Dictyostelium discoideum*." Uptake and intracellular translocation of membrane lipids: Sam Kaplan, "Phospholipid metabolism and localization in *Rhodospseudomonas sphaeroides*"; Karel Wirts, "Properties and function of phospholipid transfer proteins"; Mary Jane Osborn, "Mechanism of lipopolysaccharide translocation in *Salmonella*"; Richard Pagano, "Intracellular translocation and metabolism of fluorescent lipid analogs."

23 June. Biochemistry and somatic cell genetics of membrane sterols: Peter Edwards, "Studies on the synthesis, degradation and mRNA levels of HMGCoA reductase"; Daniel Chin and Joe Goldstein, "Molecular cloning of HMGCoA reductase"; Robert Simoni, "Cholesterol metabolism in compactin resistant animal cells"; Michael Sinensky, "Somatic cell genetic analysis of the regulation of mevalonate biosynthesis." Function of membrane lipids and proteins in cellular development: Ronald Schnaar, "Immobilized glycolipids support carbohydrate-specific cell adhesion"; William Lennarz, "Glycoprotein synthesis and embryonic development"; Lucy Shapiro, "Role of membrane biosynthesis in *Caulobacter* cell differentiation."

24 June. Lipid function: Konrad Bloch, "A novel metabolic role for membrane-associated sterols"; Hector DeLuca, "Biochemistry of the vitamin D endocrine system"; Robert Farese, "Phosphatidylinositol metabolism in the action of hormones and neurotransmitters"; Phil Majerus, "Mechanisms of eicosanoid precursor uptake and release in animal cells." There will be space for a limited number of invited posters at this conference.

Membranes and Transport Phenomena

Holderness School

Alan Finkelstein, chairperson; Adrian Parsegian, vice chairperson.

18 July. Structure of membrane transport proteins (Jack Kyte, session chairperson): Arthur Karlin, "Functional roles of the subunits of the acetylcholine receptor"; Giovana Ferro-Luzzi Ames, "The histidine transport operon"; Nigel Unwin, "Structure and transitional states of the cell-cell channel." Protein insertion into membranes (Harvey Lodish, session chairperson): Peter Walter, "Initial events in protein translocation across the endoplasmic reticulum"; Donald Engelman, "Insertion and folding of membrane proteins"; Rick Hay, "Different mechanisms of protein import into mitochondria."

19 July. Reconstitution of channels into lipid bilayers (Christopher Miller, session chairperson): Robert Barchi, "Ionic fluxes and selectivity in a purified reconstituted sodium channel"; Gunther Boheim, "Channel forming proteins reconstituted in planar bilayers below lipid phase transition temperature"; Roberto Coronado, "Properties of the fast potassium channels from lobster nerve reconstituted in planar bilayers." Posters. Bacterial chemotaxis (Julius Adler, session chairperson): Howard Berg, "Flagellar rotation and its chemotactic control"; Daniel Koshland, "Information processing in chemotaxis"; Robert Macnab, "Processing of different classes of tactic stimuli in bacteria."

20 July. Modulation of ionic channels in synaptic plasticity (James Schwartz, session chairperson): Steve Siegelbaum, "Modulation by serotonin and cyclic AMP of potassium channels involved in facilitation"; Irwin Levitan, "Modulation of neuronal ion channels by phosphorylation"; Michael Berridge, "Phosphatidylinositol metabolism and ionic signalling." Exocytosis, secretion, and fusion (Qais Al-Awqati, session chairperson): Tom Reese, "Reorganization of lipid bilayers in the region of fusion"; Ian Simpson, "Mechanism of glucose transporter translocation to the plasma membrane in response to insulin";

Derek Knight, "The requirements for exocytosis in permeable adrenal medullary cells."

21 July. Epithelia (Joseph Handler, session chairperson): James Wade, "Role of vesicle fusion in regulation of epithelial membrane transport"; Arthur Finn, "Interaction between apical and basolateral membranes in tight epithelia"; Bernd Lindemann, "Transport through apical sodium channels."

22 July. Transport through lipid bilayers (Paul Mueller, session chairperson): Stephen Slatin, "The channel formed in planar bilayer membranes by C-terminal fragments of colicin El"; Stuart McLaughlin, "Proton transport through the bilayer-solution interface"; James Hall, "Structure and function of alamethicin and its analogues in lipid bilayers."

Metal Hydrides

Tilton School

G. G. Libowitz, chairperson; H. K. Birnbaum, vice chairperson.

18 July. Experimental methods to elucidate nature of metal hydrides (A. F. Andresen, discussion leader): J. J. Rush, "Recent applications of neutron scattering in metal-hydrogen systems." (J. J. Murray, discussion leader): D. Shaltiel, "Study of hydrides by the thermal desorption technique." (R. G. Barnes, discussion leader): A. Weiss, "Proton NMR in metal hydrides."

19 July. Factors affecting phase changes (A. C. Switendick, discussion leader): Y. Fukai, "Factors that determine the relative phase stabilities of B.C.C. metal-hydrogen systems." (D. G. Westlake, discussion leader): J. Hauck, "Structure effects and phase changes in transition metal hydrides." (J. F. Lynch, discussion leader): T. B. Flanagan, "Hysteresis."

20 July. (H. Wenzl, discussion leader): C. K. Hall, "Stalking the electronic and elastic interactions between hydrogen atoms in a metal." Interactions of hydrogen with unusual materials (J. J. Reilly, discussion leader): J. Corbett, "Metallic hydrides as conventional metal compounds: Some zirconium PES evidence." (A. Percheron-Guegan, discussion leader): P. G. Dickens, "Hydrogen insertion compounds of transition metal oxides."

21 July. (A. J. Maeland, discussion leader): M. Hirabayashi, "States and locations of hydrogen in non-crystalline alloys and oxides." (B. S. Berry, discussion leader): L. R. Kirchheim, "Solubility and diffusivity of hydrogen and resistivity and volume changes due to hydrogen in amorphous $Ti_{67}Ni_{33}$." General lecture: W. E. Wallace, "Metal hydrides: Complexities and capabilities."

22 July. Surface effects (L. Schlapbach, discussion leader): M. Strongin, "Hydrogen on metal surfaces and its influence on bulk uptake"; M. Mintz, "Scattering of neutral and charged particles from hydride surfaces."

There will be a poster session on Thursday evening, 21 July, following Dr. Wallace's lecture. Doctors G. D. Sandrock and S. Suda will be co-chairpersons of this session.

Micellar and Macromolecular Catalysis

Brewster Academy

J. K. Thomas, chairperson; D. Whitten, vice chairperson.

11 July. P. Fromherz, "Structural concepts in micelles and macroemulsions"; R. Zana, "Studies of critical phenomena in micelles and macroemulsions by ultrasound, T-jump, P-jump and stopped flow techniques"; B. Chu, "Light scattering studies in micelles and macroemulsions"; L. Magid, "Neutron scattering studies of micelles and microemulsions."

12 July. B. Lindman, "Structural studies of organic colloids by NMR"; L. Gierasch, "NMR studies of normal and reversed micelles with peptide solubilizates"; S. Friberg, "Micellar solutions, microemulsions and liquid crystals . . . the importance of molecular interactions"; D. O. Shah, "Design of microemulsion systems with different microstructures."

13 July. J. Holzwarth, "Inorganic electron transfer reactions in micellar systems"; C. N. Sukenik, "Selective catalysis of organic reactions by aqueous micelles"; E. Sackman, "Application of fluorescent probes to evaluate microstructure and molecular motion in organized biological systems"; D. F. O'Brien, "Reconstitution of light amplification systems in bilayer membranes."

14 July. H. Ringsdorf, "Reaction aspects of polymeric vesicles, mixed vesicles and surface reactions"; T. Kunitake, "Fluorocarbon bilayers, spectral control, and specific dye binding to bilayers; Reaction control by phase separation"; E. Matijevic, "Preparation and properties of inorganic colloids." A. Henglein, "Photocatalysis by inorganic colloids."

15 July. J. Fendler, "Advances and problems in colloid-catalysis reactions." Poster sessions each day as appropriate.

Microbiological Degradation

Brewster Academy

Joseph J. Cooney, chairperson; J. Gregory Zeikus, vice chairperson.

25 July. (Carol D. Litchfield, discussion leader): Fred E. Brinckman, "Speciation and molecular topology as predictors of microbial uptake of metals"; Simon D. Silver, "Plasmid-mediated resistances to mercury, organomercurials, arsenic, cadmium and silver." (Douglas Eveleigh, discussion leader): Joan W. Bennett, "Genetics and biosynthesis of aflatoxins."

26 July. (John D. Walker, discussion leader): Gabriel Bitton, "Toxicity testing using microorganisms"; Frederic C. Pfaender, "Effects of environmental variables on pollutant biodegradation." (William E. Gledhill, discussion leader): Alan R. White, "Visual characterization of cellulose degradation by fungal enzymes."

27 July. (Al W. Bourquin, discussion leader): Ralph Mitchell, "Interaction of biofilms with surfaces"; J. W. Costerton, "The role of adherent populations in degradation." (George E. Pierce, discussion leader): A. M. Chakrabarty, "Plasmids in the biodegradation of chlorinated compounds."

28 July. (Michael P. Shiaris, discussion leader): William R. Finnerty, "New insights into hydrocarbon metabolism"; Carl E. Cerniglia, "Transformation of polycyclic aromatic hydrocarbons and related compounds by fungi, cyanobacteria, and intestinal microflora." (Joseph J. Cooney, discussion leader): Edwin A. Dawes, "Magic and mystery through the ages."

29 July. (Arnold L. Demain, discussion leader): Al W. Bourquin, "Research needs and directions in microbiological degradation: Panel discussion"; Carol D. Litchfield. Poster sessions will be held on Tuesday and Wednesday from 4:00 to 6:00 p.m., and after the evening session. Those wishing to present posters should submit a brief abstract by 15 May 1983 to G. E. Pierce, Battelle Memorial Institute, 505 King Avenue, Columbus, Ohio 43201.

Molecular Membrane Biology

Proctor Academy

James E. Rothman, chairperson; Michael S. Brown, vice chairperson.

11–15 July. Membrane structure at high resolution (Donald Engelman, session chairperson): Richard Henderson, Hartmot Michel, Jurg Rosenbusch. Protein sorting: Enzymology and signals

(James Rothman, session chairperson): Rick Hay, Stuart Kornfeld, Richard Marchesi, Jack Rose, Peter Walter, William Wickner. Intracellular protein transport (Barbara Pearse, session chairperson): Daniel Branton, Daniel Louvard, David Sabatini, Kai Simons, Randy Schekman, Graham Warren. Protein translocation (George Palade, session chairperson): Jonathan Beckwith, Gunter Blobel, Bernard Davis, Tom Rapoport. Control of membrane fusion processes (Ari Helenius, session chairperson): V. Adrian Parsegian, William Sly, Warren Strittmatter, Donald Wiley. Lipids in cell regulation and organization (Mark Bretscher, session chairperson): Phillip Majerus and Thomas Thompson. Lipoprotein receptors, endocytosis, and cell regulation (Michael Brown, session chairperson): Joseph Goldstein. Biochemistry of receptor activation and signal transmission (Harvey Lodish, session chairperson): Stanley Cohen, Alfred Gilman, Daniel Koshland. Compartmentation in the nucleus (Roger Kornberg, session chairperson): Larry Gerace and Nigel Unwin. Poster sessions will also be organized. If interested in presenting a poster, please indicate this in the application and include a brief summary of what will be presented.

Molecular Pharmacology

Plymouth State College (N)

Gerald Fischback, chairperson; Regis Kelly, vice chairperson.

20–24 June. Structure and synthesis of ACh receptors: Subunit structure and organization in the lipid bilayer; identification and cloning of genes that code for receptor subunits; kinetics of receptor synthesis and degradation (Arthur Karlin, session chairperson): Stephen Heinemann; John Merlie; Jon Lindstrom. Organization of receptors in target cell membranes: Lateral mobility of receptor protein, local insertion of newly synthesized receptors, extracellular and cytoplasmic molecules that alter membrane receptor distribution (Stanley Froehner, session chairperson): Miriam Salpeter; Monroe Cohen; Robert Block. Chemical activation of ion channels: Kinetics of receptor activation and inactivation (desensitization) studied by rapid flux and rapid binding techniques and by single channel recording; receptor function following reconstitution (Jonathan Cohen, session chairperson): Vincent Dionne; David Tank; Alain Trautman; Bertil Hille. Molecular properties of voltage sensitive sodium channels: Purification and reconstitution of sodium channels, gating kinetics and sodium channels revealed by single channel measurements, localization and ultrastructure of sodium channels (William Catterall, session chairperson): Charles Stevens; Mark Ellisman; (To be announced). Drug modulation of voltage sensitive ion channels: Calcium activated potassium channels and their regulation by adrenergic agonists, by serotonin, by cyclic AMP and by the catalytic subunit of adenyl cyclase, cholinergic and peptide modulation of potassium channels (Roger Nicoll, session chairperson): Stephen Smith; Kathleen Dunlap; Harald Reuter; Paul Adams. The role of guanosine triphosphate binding protein in receptor activation: Genetic analysis of cyclase mediated responses, characterization of GTP binding proteins that mediate inhibitory responses, role of GTP in photoreceptor transduction, reconstruction of cyclase-mediated responses (Henry Bourne, session chairperson): Bernard Fung; Eva Neer; David Manning; Michael Schramm. The role of protein phosphorylation in regulation of excitable membranes: Phosphorylation mediated drug and synaptic responses in single *Aplysia* neurons; the role of protein phosphorylation in rod outer segments, muscarinic receptor induced phosphorylation in heart muscle (Irvin Levitan, session chairperson): Leonard Kaczmarek; Deric Bownds; H. Criss Hartzell; Jose R. Lemos. Peptide-receptor mechanisms: The role of intracellular Ca pools in the TRH receptor activation, EGF receptor activation by antibodies, receptor recycling, somatostatin mediated inhibition, peptide affects on pancreatic membrane phospholipids, peptide mediated changes in adenyl cyclase (Richard Miller, session chairperson): Patricia Hinkle; Kristie King; Caroline Pace; Ole Peterson; Howard Tager. Special lecture: Michael Czech, "Insulin receptors: Purification and identification of a unique intracellular mediator."

Molten Salts and Metals

Brewster Academy

O. J. Kleppa, chairperson, J. R. Franz, vice chairperson.

22 August. J. E. Enderby, "The structure of ionic liquids"; R. Evans, " 'Charge-ordering' and the structure of some semiconducting liquid alloys"; A. B. Bhatia, "Concentration fluctuations and short range order in regular and compound forming molten alloys"; H.-J. Guntherodt, "Electronic properties of liquid alloys, semiconductors, glasses."

23 August. F. Hensel, "The nature of the critical point phase transition in liquid metallic systems: New experimental information"; L. Turkevich and M. H. Cohen, "The nature of the phase transitions in fluid mercury: New theoretical results"; W. W. Warren, Jr., "Magnetic effects in low density metals"; E. D. Crozier, "EXAFS of disordered systems"; M. Brooker, "Raman spectroscopy of molten salts: Old ideas, new techniques."

24 August. D. Oxtoby, "Theory of freezing of molten salts and metals"; C. A. Angell, "Emulsion calorimetry, conductimetry, and neutron scattering studies of the homogeneous nucleation phenomenon in molten salts"; S. A. Rice, "Structure of the liquid-vapor interphase of metals"; J. H. R. Clarke, "Computer simulation of molten salt interphases."

25 August. G. Mamantov, "Electrochemistry in molten salts"; R. Osteryoung, "Electrochemical and chemical studies in ambient temperature chloroaluminate ionic liquids"; H. A. Øye, "Scientific aspects of aluminum electrolysis."

26 August. K. H. Stern, "Electrodeposition of refractory metals and refractory compounds from molten salts"; J. R. Selman, "Kinetics and mass transfer in molten carbonate fuel cells." Several informal poster sessions will be held. Participants interested in contributing to one of these sessions should send the title to the chairperson, O. J. Kleppa, 5640 South Ellis Avenue, Chicago, Illinois 60637; telephone: 312-962-7198. Papers will be considered for presentation up to the time of the conference.

Control of Muscle Contraction

Tilton School

Lee D. Peachey, co-chairperson; Avril V. Somlyo, co-chairperson; David MacLennan, co-chairperson; Makoto Endo, co-chairperson.

1 August. Methods for measuring intracellular calcium and membrane potentials (John Blinks, session chairperson). T-system and timing of first events detected by various methods (Lee D. Peachey, session chairperson).

2 August. T-SR coupling (Wolf Almers, session chairperson). SR composition, potential and physiology of release (W. Knox Chandler, session chairperson).

3 August. Myoplasmic calcium; physiology (Antonio Scarpa, session chairperson). Sarcoplasmic reticulum-pumps-permeabilities (Anthony Martonosi, session chairperson).

4 August. Sarcoplasmic reticulum-Ca-

release (David MacLennan, session chairperson). Ca and Mg binding and rate constants of troponin, parvalbumin and other proteins (John Gergely, session chairperson).

5 August. Contractile protein function (Richard Podolsky, session chairperson).

Natural Products

New Hampton School

Pat N. Confalone, chairperson; Paul A. Wender, vice chairperson.

25 July. Introduction and welcome: Paul A. Bartlett, "Electrophilic cyclization: Stereocontrol in cyclic and acyclic systems"; Michael J. Green, "Recent advances in the chemistry of the veratrum alkaloids"; Tohru Fukuyama, "Synthetic studies toward naphthyridinomycin."

26 July. Paul A. Grieco, "Synthetic studies on quasinoids"; M. Ross Johnson, "The design and synthesis of cannabinoids with potential therapeutic utility"; K. C. Nicolaou, "Progress in the total synthesis of natural products."

27 July. Steven Gould, "Bioorganic studies with stable isotopes"; William Rastetter, "Genetic engineering: Applications and promise for the chemical industry"; Wolfgang Oppolzer, "Recent stereo-controlled syntheses of cyclic natural products."

28 July. Samuel Danishefsky, "Recent findings in organic synthesis"; Lester L. Shipman, "Molecular modeling by computer graphics"; Yoshi Kishi, "Natural products synthesis."

29 July. Craig Townsend, "Biosynthetic and biomimetic studies of natural products."

Cellular and Molecular Aspects of Neural Plasticity

Brewster Academy

Bruce S. McEwen, chairperson; Adrian Dunn, vice chairperson.

18 July. The central theme of discussion will be the long-term (minutes to years) modification of brain structure and chemistry brought about by environmental factors such as experience and hormones. Developmental processes and models will be considered, as well as basic mechanisms in cell and molecular biology. Synaptic rearrangements in development (Dale Purves, session chairperson): Wess Thompson, Jeff Lichtman, Carla Shatz, Pasko Rakic, Dale Purves. Synapse formation and elimination will be considered as a developmental mechanism. Applicability to plasticity in the adult CNS and PNS will be considered. Morphological and functional plasticity (Louis Irwin, session chairperson): Fernando Nottebohm, Bill Greenough, Barry Horwitz. This session will focus on morphological and functional alterations of cortical and subcortical structures as a result of visual input, enriched environment, and the hormonal and experiential factors involved in song learning in songbirds.

19 July. Neurobiology of invertebrate plasticity (Tom Carew, session chairperson): Dan Alkon, Chris Sahley, Eric Kandel, James Schwartz. Molluscan preparations have for years proven to be extremely valuable for synaptic physiological, biophysical, and biochemical studies. More recently, some of these preparations have been shown to be excellent for studies of a variety of forms of learning. This session will focus on recent advances in molluscan preparations towards a behavioral, physiological and biochemical analysis of learning. Molecular events and plastic processes in defined hippocampal systems (Aryeh Routtenberg, session chairperson): Kesimir Krnjevic, Tomothy Teyler, Gary Lynch, Oswald Steward. Because of the rigid lamination of hippocampal cell types and its ordered topographic projections, it is feasible to study, at the molecular level, plastic processes-memory, long-term synaptic potentiation, sprouting and synaptic turnover in an anatomically defined mammalian system shown to be concerned with information storage.

20 July. Simple system strategy (Jim Truman, session chairperson): Graham Hoyle, Chip Quinn, Dick Thompson, David Cohen. A simple systems strategy aimed at an analysis for the neural mechanisms of learning has proven extremely useful in a number of both invertebrate and vertebrate models. The focus of this session will be on the diversity of experimental approaches that have been successfully applied to this question. Hormones as modulators of neural plasticity (Bruce McEwen, session chairperson): Donald Pfaff, Tom Rainbow, Michael Browning, Willem Gispen, Adrian Dunn. Steroid, monoamine and peptide hormones are potent modulators of neuronal function. This session will discuss recent advances in clarifying the biochemical and cellular mechanisms by which such hormones and related neuroactive substances alter neuronal properties.

21 July. Mechanisms for plasticity of cell surface and spines (Kathleen Sweadner, session chairperson): Tetsuro Kono, Lee Rubin, John Anderson, Dennis Landis. The organization of cell surface components and the shape of the cell can be influenced by extracellular and intracellular proteins and organelles. This session will examine mechanisms and models for the supramolecular control of transport proteins, receptors, and dendritic spine shape. Molecular genetics and neural plasticity (Steven Arch, session chairperson): Ed Herbert, Richard Scheller, Jim Roberts. Molecular biology has already opened new doors for the understanding of gene structure, organization and regulation. This is well-illustrated for protein and peptide hormones—the families of genes which produce them and the regulatory aspects of hormone action on gene expression and the variation of processing of prohormones. These aspects will be examined in the context of their application to mechanisms underlying certain forms of neural plasticity.

22 July. Studies of neural activity, cognitive function and memory in primates (Bernard Agranoff, session chairperson): Patricia Goldman-Rakic, Mike Phelps, Larry Squire, Ray Bartus. In spite of the difficulties in studying complex brain function, particularly in primates, remarkable progress has occurred on a number of fronts: neuroanatomy, especially of the associational cortex; functional studies of blood flow and oxygen/glucose utilization using the noninvasive technique of PET scanning: and analysis and manipulation of learning and recall using retrograde amnesia and cholinergic drugs.

Nondestructive Evaluation

Proctor Academy

H. Thomas Yolken, chairperson.

22 August. (W. Sachse, session chairperson): H. N. G. Wadley, "Acoustic emission for the characterization of stress changes in materials"; R. E. Greene, Jr., "Acoustic emission source location and characterization." (K. Goebbels, session chairperson): G. S. Kino, "Changes in acoustic attenuation and velocity due to scattering from microstructure"; R. B. Thompson, "Influences of microstructural variations on the acoustoelastic measurement of stress."

23 August. (R. von Gutfeld, session chairperson): C. B. Scruby, "Characterization of laser generated ultrasonic waves"; C. A. Calder, "Use of laser generator ultrasonics." (A. Evans, session chairperson): J. R. Wertmann, "The use of small neutron scattering to detect microstructural changes"; W. A. Theiner, "The determination of micro-

structure by micromagnetic NDT methods."

24 August. (R. L. Thomas, session chairperson): A. Rosencwaig, "Applications of thermal-wave methodology to NDE"; G. A. D. Briggs, "Acoustic microscopy for materials studies." (J. E. Gubernatis, session chairperson): J. D. Achenback, "Recent analytical results for ultrasonic scattering by cracks"; L. Adler, "Experimental results on ultrasonic scattering from discontinuities and surfaces."

25 August. (T. G. Kincaid, session chairperson): B. A. Auld, "Eddy current methods for flaw detection and characterization"; C. V. Dodd, "The theoretical basis for design consideration in eddy current tests." (D. O. Thompson, session chairperson): R. C. McMaster, "Principles for broad improvements in NDE."

26 August. (C. Vest, session chairperson): E. A. Ash, "New optical detection methods for NDE"; H. Kreitlow and Werner Jüptner, "Recent developments of optical holography in the field of nondestructive evaluation"; speaker to be announced, "Optical detection of surface acoustic waves."

Nonlinear Optics and Lasers

Brewster Academy

Aram Mooradian, chairperson; Michael M. T. Loy, vice chairperson.

1–5 August. S. Akhmanov, "Nonlinear optics of excited molecules"; L. Rothberg and N. Bloembergen, "Collision induced zeeman coherence"; R. Brewer and R. DeVoe, "A new optical technique for detecting NMR"; S. D. Smith, "Dynamics of giant nonlinearities in semiconductors"; H. Walther, "Molecular surface interactions by laser induced fluorescence"; A. Yariv, "Four-wave coupling, oscillation, and pumpless phase conjugation in photo-refractive media"; "Quantum mechanical noise in semiconductor lasers"; J. P. Taran, "Vibrational excitation of H_2 molecules formed in the UV photolysis of H_2CO"; F. Shimizu and H. Takuma, "Subnatural width spectroscopy by laser phase switching"; P. A. Wolff, "Nonlinear studies of picosecond relaxation in semiconductors"; D. Chemla, "Nonlinear optics in multiple quantum well materials grown by MBE"; D. Auston, "Novel picosecond diagnostics of materials and devices"; C. V. Shank, "Femtosecond technology and applications"; R. Shen, "Nonlinear optics of surfaces and absorbates."

Nuclear Chemistry

Colby-Sawyer College (N)

David Ward, chairperson; J. B. Natowitz, vice chairperson.

20 June. (R. M. Diamond, discussion leader): I. Yang-Lee, "Spin and temperature dependence of nuclear properties from spin-spectrometer studies"; P. J. Nolan, "Nuclear structure at high spin using the total-energy suppressed array at Daresbury." (A. Arima, discussion leader): K. W. Schmid, "The monster: Microscopic nuclear structure calculations with spin and number-projected quasi-particle determinants."

21 June. (J. O. Newton, discussion leader): N. R. Johnson, "Effect of rotation alignment on nuclear collectivity from lifetime measurements"; G. B. Hagemann, "Spectroscopy in some odd-Z rare earth nuclei"; R. Bengtsson, "The impact of deformation changes on the rotational band structure in nuclei." (L. L. Riedinger, discussion leader): D. Habs, "Results from the Heidelberg spin spectrometer"; B. Barrett, "The IBA model, its formulation and application."

22 June. (E. F. Zganjar, discussion leader): W. Reisdorf, "Production of very heavy elements: What does it tell us about the limits of nuclear stability and fusibility"; G. Walter, "Study of particle-hole states in neutron rich nuclei $19 \leq Z \geq 21$ at Isolde." (L. Grodzins, discussion leader): H. E. Mahnke, "Quadrupole moments of high spin isomeric states"; G. D. Sprouse, "Magnetic moments of fission isomers."

23 June. (P. Vogel, discussion leader): G. Leander, "Intrinsic reflection asymmetry in nuclei"; M. Gai, "Algebraic description of alpha cluster states"; I. Ahmad, "Octupole deformation in the ^{229}Pa ground state"; R. R. Chasman, "Octupole correlations and octupole deformations in light actinides"; F. Reiss, "Structure of ^{218}Ra." (J. B. Natowitz, discussion leader): P. G. Hansen, "X-rays, internal bremsstrahlung and mass of the electron neutrino"; G. Karl, "The fundamental structure of matter."

24 June. (J. M. Irvine, discussion leader): C. Ellegaard, "News from the (^{3}He,t) experiment at SATURNE"; E. Grosse, "Production of ¶° in nucleus-nucleus collisions at energies far below the nucleon-nucleon threshold."

Nuclear Structure Physics

Tilton School

Sam M. Austin, chairperson; Steven E. Koonin, vice chairperson.

15 August. Exotic phenomena in high energy nuclear collisions: M. Gyulassy, "The formation of quark-gluon plasma via nuclear collisions"; W. Heinrich, "Experimental evidence on anomalons"; R. P. Scharenberg, "Nuclear fragmentation as a critical phenomenon—evidence from high energy proton-nucleus collisions." The nature of nuclear material: R. Stock, "Experimental determination of the nuclear equation of state at high density"; John W. Harris, "Energy and momentum flow in nucleus-nucleus collisions—is there a nuclear hydrodynamics?"

16 August. Nuclear structure at high excitation: D. Cline, "On the complete determination of collective structures by Coulomb excitation"; (speaker to be announced), "Results from the Heidelberg crystal ball"; K. Tanabe, "The cranked shell model and the evolution of nuclear shapes with spin." Independent-particle structure of nuclei: (speaker to be announced), "Deep-hole and high-particle states in the nucleus"; B. Frois, "On the validity of the shell model in the nuclear interior"; S. L. Blatt, "Radiative capture reactions above the giant dipole resonance."

17 August. The structure of spin excitations in nuclei: C. Glashausser, "Observations of spin transfer stength with high energy hadrons"; (speaker to be announced), "Quenching of the nuclear spin operator"; G. Bertsch, "On the distribution of Gamow-Teller strength." Advances in nuclear astrophysics: W. C. Haxton, "New approaches to the solar neutrino problem"; (speaker to be announced), "Anomalies in the isotopic distributions of Ag and Pd and nuclear processing by the solar wind"; (speaker to be announced), "Nuclear physics and supernova explosions."

18 August. Relativistic effects in nuclear structure and scattering: B. C. Clark, "Dirac phenomenology for elastic scattering"; C. M. Shakin, "Relativistic many body theories." General interest session.

19 August. Elementary particles in the nucleus: (speaker to be announced), "The structure of hypernuclei—A's and Σ's in the nucleus"; R. L. Jaffe, "Nuclear physics with antiprotons"; (speaker to be announced), "Dependence of quark structure functions on target mass."

Nucleic Acids

New Hampton School

Arthur Landy, co-chairperson; Sung-Ho Kim, co-chairperson.

13 June. DNA-protein interaction: Structure and biochemical studies (Paul Modrich, session chairperson). RNA-protein interactions (Joan Steitz, session chairperson).

14 June. Mechanisms of transcription regulation (Phillip Sharp, session chairperson). DNA and RNA structure in solid and solution states (Richard Dickerson, session chairperson).

15 June. Higher order structure of DNA and its biological functions (Martin Gellert, session chairperson). DNA rearrangement (Nancy Kleckner session chairperson).

16 June. RNA rearrangement (John Abelson, session chairperson). Recent innovations in nucleic acid research (Donald Crothers, session chairperson).

17 June. Nucleic Acids: Biology (Elizabeth Blackburn, session chairperson).

Organic Photochemistry

Proctor Academy

Samir Farid, chairperson; Peter J. Wagner, vice chairperson.

18 July. (Albert Weller, discussion leader): Kevin S. Peters, "Pulsed laser photoaccoustic calorimetry of metastable species"; Hiroshi Masuhara, "Picosecond laser photochemistry of molecules and molecular aggregates in solution." (Ted R. Evans, discussion leader): Lewis E. Brus, "Time-resolved Raman scattering studies of reaction intermediates."

19 July. (A. Paul Schaap, discussion leader): Donald R. Arnold, "Radical ions in photochemistry"; Anthony Ledwith, "Radical cations in photochemically induced polymerization and cyclodimerization." (Jack Saltiel, discussion leader): Marye Anne Fox, "Mechanistic aspects of heterogeneous photocatalysis."

20 July. (Gary B. Schuster, discussion leader): Laren Tolbert, "Charge redistribution in photoexcited carbanions." (Jean Kossanyi, discussion leader): Richard S. Givens, "Usual reactivity and novel application of functional group photochemistry."

21 July. (Harris D. Hartzler, discussion leader): Edwin A. Chandross, "Design of deep U.V. photoresist." (Peter J. Wagner, discussion leader): Jim W. Longworth, "On light, colors, and the origins of spectroscopy."

22 July. (Richard A. Caldwell, discussion leader): Klaas Zachariasse, "Intramolecular excimer formation in the singlet and triplet state."

Organic Reactions and Processes

New Hampton School

William F. Brill, chairperson; Martin A. Schwartz, chairperson.

18 July. H. Kagan, "Lanthanides in organic synthesis"; Anne M. Hudrlik, "Silicon in organic synthesis"; Manning P. Cooke, Jr., "New approaches to conjugate addition reactions"; Ramanij Goswami, "Tin-lithium exchanges, homoenolate dianions."

19 July. Ulf Dolling, "A diflunisal process via palladium catalyzed aryl coupling"; B. Bogdanovic, "Catalytic activation of magnesium and lithium, applications in organic synthesis and hydrogen storage"; Edward M. Kosower, "Synthesis and properties of bimanes (1,5-diazabicyclo[3.3.0]octadienediones)"; Robert A. Volkman, "Lewis acid activated imines in synthesis."

20 July. Alexander M. Klibanov, "The use of enzymes for the separation of isomers of organic molecules"; J. Rebek, Jr., "Binding forces and catalysis"; Pietro Tundo, "Gas-liquid phase-transfer catalysis." Discussion of topics from posters.

21 July. Paul D. Bartlett, "Stereochemistry and mechanisms in pi systems"; Marye Ann Fox, "Organic electrocatalysis on tailored electrode surfaces"; Max Gergel, "One jump ahead–explosions and bills (35 years in the small chemical business)."

22 July. S. W. Polichnowski, "Acetic anhydride via methyl acetate carbonylation"; Allan Borror, "Kinetics and mechanisms of alkaline fragmentation leading to 1,3-disulfones."

Parasitism

Plymouth State College (N)

Anthony Cerami, chairperson.

8–12 August. Helminth biochemistry (Howard Saz, session chairperson): Ernest Bueding, Ben Harris, Carmen Fiorvanti. Molecular pharmacology of parasites (C. C. Wang, session chairperson): James Bennett, Daniel Santi, Alan Fairlamb, C. C. Wang. Mechanisms of killing of intracellular parasites (Steven Meshnick, session chairperson): John Eaton, Elmer Pfeffercon, Carol Nacy, Richard Pearson, Emil Skamene. Developmental adaptations of parasites to the host environment (Alan Sher, session chairperson): Richard Carter, Dennis Dwyer, Diana Pratt, Donald Harn, Jeffrey Williams, Alan Sher. The molecular biology of trypanosomes and leishmania (Paul Englund, session chairperson): Larry Simpson, Paul Englund, John Donelson, Richard Williams, Andre Bernards. Lymphokines and parasites (Heinz Remold, session chairperson): Yolande Buchmuller, Stephanie James, David Wyler, Alain Dessain. Characterization and function of parasite antigens (Ruth Nussenzweig, session chairperson): Mercio Pereira, Fidel Zabala, Peter David, Meta Strand, Frank Richards. Immune response of humans to parasites (Eric Ottesen, session chairperson): Daniel Colley, Anthony Butterworth, André Capron, Rabia Hussain, Jack Remington.

Periodontal Diseases

Plymouth State College

A. H. Melcher, chairperson; Robert Genco, vice chairperson.

27 June. Tooth support (D. C. A. Picton, session chairperson): B. Berkovitz, "Structure and function of periodontium"; D. C. A. Picton, "Discussion"; R. Linden, "Vascular effects on the function of periodontal ligament"; B. Moxham, "Discussion"; D. C. A. Picton, "Short-term changes in resting position of teeth"; B. Moxham, "Discussion." Inflammation (N. S. Taichman, session chairperson): R. A. Clark, "Leukocyte oxygen metabolism as a determinant in inflammation"; N. S. Taichman, "Discussion"; D. A. Chambers, "Potential regulatory mechanisms in the homeostasis of the periodontium"; G. Armitage, "Discussion"; B. Shenker, "A critical evaluation of role of lymphocytes in periodontal inflammation"; J. Clagett, "Discussion."

28 June. Digestion of collagen (J. Sodek, session chairperson): John Reynolds, "Enzymes in digestion of collagen"; J. Sodek, "Discussion"; W. Beertsen, "Phagocytosis in digestion of collagen"; J. Sodek, "Discussion"; L. Golub, "Clinical detection of collagen destruction"; D. Deporter, "Discussion." Natural history of periodontal disease (Max Goodson, session chairperson): Anne Haffajee, "Disease activity as a basis for understanding the natural history of periodontal disease"; Harald Loe, "Discussion"; Jan Egelberg, "The effect of therapy on altering disease"; Steven Offenbacker, "Discussion"; Ernie Hausmann, "Assessment of periodontal disease activity by radiography"; Marjorie Jeffcoat, "Discussion."

29 June. Design of investigations of periodontal diseases (Max Listgarten, session chairperson): Max Listgarten, "An introduction to the problems in cur-

rent design of clinical investigations of periodontal disease." S. S. Socransky, "Identifying relevant data"; Alan M. Polson, "Discussion"; Edith Morrison, "Statistical approach to investigation of periodontal disease"; Larry Laster, "Discussion." Experimental new attachment of periodontium (A. H. Melcher, session chairperson): A. H. Melcher, "Development of orientated fiber systems"; D. M. Brunette, "Discussion"; T. Karring, "Biological basis of new attachment"; Knut Selvig, "Discussion"; A. Polson, "Mechanism of new attachment"; S. Nyman, "Discussion."

30 June. Reattachment of periodontium following disease (Jan Lindhe, session chairperson): Jan Lindhe, "Loss and gain of attachment following periodontal therapy in humans"; J. Egelberg, "Discussion"; J. Caton, "Experimental reattachment after periodontal therapy"; S. Nyman, "Discussion"; Max Crigger, "Clinical use of citric acid"; P. Robinson, "Discussion." (R. Genco, session chairperson): H. A. Zander, "Evolution of periodontal therapy."

It is intended to hold a poster session in addition to the formal program. Prospective conferees who would like to present current work in the form of a poster are invited to submit abstracts to the chairperson of the conference at the following address: MRC Group in Periodontal Physiology, 4384 Medical Sciences Building, University of Toronto, Toronto, Ontario, Canada M5S 1A8.

Phagocytes

Proctor Academy

Thomas P. Stossel, chairperson; Marco Baggiolini, vice chairperson.

4–8 July. Molecules guiding phagocytes (chemotactic factors) and eliciting recognition of objects to be ingested (opsonins) (S. C. Silverstein, session chairperson): T. E. Hugli, M. M. Frank P. Levine, D. Mosher. Receptors on phagocytes for chemotactic factors and opsonins (M. M. Frank, session chairperson): S. Silverstein, D. Fearon, J. Unkeless, E. J. Goetzl. Signals generated in phagocytes following membrane perturbation (J. Gallin, session chairperson): G. Weissmann, D. Romeo, P. D. Lew, R. Snyderman. The movements of phagocytes (T. Stossel, session chairperson): S. E. Malawista, K. Weber, J. Oliver, J. Hartwig, Secretory products of phagocytes (C. Nathan, session chairperson): R. Flower, F. Hirata, W. Scott, H. Colten. Cytocidal, digestive and growth-promoting activity of phagocytes (C. Nathan, session chairperson): P. Elsbach, M. Baggiolini, M. Zimmerman, R. Ross. Oxygen-dependent toxicity of phagocytes (M. Baggiolini, session chairperson): C. Nathan, S. Klebanoff, J. Repine, C. Cochrane. The phagocytic respiratory burst (M. L. Karnovsky, session chairperson): B. Babior, H. Cohen, D. Schneider, D. Hafeman. There will be a poster session.

Physical Metallurgy

Holderness School

Neil Paton, chairperson; Didier De Fontaine, vice chairperson.

High Temperature Deformation

20 June. Microstructure development (chairperson to be announced): M. Hatherly, "Generation of microstructure during high temperature deformation"; J. Jonas and T. Sakai, "A new model for dynamic recrystallization"; H. Gottstein, "Dynamic recrystallization of single crystals." (J. Hirth, session chairperson): J. Humphreys, "The evolution of microstructure during dynamic recrystallization"; R. Raj, "Grain size distribution effects on high temperature flow."

21 June. High temperature flow (J. Rice, session chairperson): H. Mecking, F. Kocks, "Solution hardening and strain hardening at elevated temperatures"; A. Ghosh, "Strain localization and instability in high temperature flow"; G. Fitzsimons, "Multiaxial deformation." (S. Hecker, session chairperson): C. Hartley, "Structural basis for constitutive equations"; D. Shockey, "Measurements of dynamic constitutive equations at high strain rates."

22 June. High temperature fracture (M. Stowell, session chairperson): R. Bricknell, D. Woodford, "Environmental effects on high temperature deformation and embrittlement"; A. Argon, "Cavitation in high temperature deformation"; J. Rice, "Constraint effects on cavitation." (P. Wray, session chairperson): Suzuki, "Embrittlement of steels occurring between 600–1000°C"; L. Cuddy, "Chemistry, processing and microstructure effects in high temperature flow and fracture of steels."

23 June. Multiphase systems (W. Nix, session chairperson): M. Suery, "Flow of liquid solid systems"; H. Exner and E. Arzt, "Elevated temperature powder consolidation"; C Liu, "Mechanical properties of ductile intermetallic alloys."

24 June. High temperature flow and fracture (N. Paton, session chairperson): K. Ono, "Acoustic emission at elevated temperature"; C. Hamilton, "Effect of hydrostatic pressure on cavitation"; J. C. Williams and J. E. Allison, "Elevated temperature fatigue crack growth in titanium alloys"; D. Lloyd, "Influence of second phase on high temperature deformation of aluminum alloys." Poster sessions: P. Wray, "Dirichlet networks for characterization of non-regular dispersions"; J. K. Gregory and W. D. Nix, "Flow in an ultrafine grain nickel base alloy"; R. Wright, "Deformation of polycrystalline Nb_3SN"; M. H. Yoo, "Small-angle neutron scattering study of high temperature deformation and fracture. Other contributions invited.

Physical Organic Chemistry

Brewster Academy

Tadamichi Fukunaga, chairperson; Joseph J. Gajewski, vice chairperson.

13 June. (Bruce E. Smart, discussion leader): David M. Walba, "The THYME polyethers: Host-guest chemistry and stereochemical topology"; Anthony J. Arduengo, III, "The chemistry of 1,2,3,4-tetrakis (triflouromethyl) cyclopentadienylidene." (Dan Farcasiu, discussion leader): Richard R. Schrock, "The preparation and reactions of tungsten alkylidene and alkylidyne complexes"; Patricia L. Watson, "Fundamental C-C and C-H activation processes mediated by lanthanide metals."

14 June. (Jordan Bloomfield, discussion leader): Hideki Sakurai (Title to be announced); William B. Farnham, "Hypervalent organosilicon chemistry." (Donald Kelsey, discussion leader): Clifford E. Dykstra, "New molecules, reactions, and new details of bonding from rigorous theoretical study of electronic structure"; John Bartmess, "The chemistry of bare and mono-solvated carbanions in the gas phase"; Stuart W. Staley, "Structural, spectroscopic, and chemical studies of three-membered ring compounds."

15 June. (George M. Kramer, discussion leader): Emanuel Vogel, "Bridged annulenes: A new chapter in aromatic chemistry"; Sho Itoh (Title to be announced); Lawrence T. Scott, "Quinones of azulene and homoazulene: Theory and reality." (Michael R. Detty, discussion leader): Iwao Tabushi, "Title to be announced"; Edwin A. Chandross, "New photoresist systems for photolithography in the deep ultraviolet."

16 June. (Martin Saunders, discussion leader): Bernd Giese, "Temperature effects on the selectivity of radicals and carbenes"; Marye Anne Fox, "Directed reactivity of radical ions." (Joseph J. Gajewski, discussion leader): Edgar

Heilbronner, "Some problems of UV-photoelectron spectroscopy of organic compounds." Contributed papers.

17 June. (Lawrence T. Scott, discussion leader): George M. Kramer, "Hydride transfer and olefin isomerization reactions as tools to characterize liquid and solid acid catalysts"; Curt Wentrup, "Carbenes, nitrenes, and HCN-dimers."

Plant Cell and Tissue Culture

Plymouth State College (S)

Ian Sussex, chairperson; Ronald L. Phillips, vice chairperson.

20 June. Protoplast-mediated transfer of organelles and genes (Maureen Hansen, session chairperson): Pal Maliga; Maureen R. Hansen; Peter M. Gresshoff; Tina L. Barsby; Robert B. Horsch. Mutant selection and expression at the cellular level (Roy Chaleff, session chairperson): Jack M. Widholm; John King; Roy S. Chaleff.

21 June. Mutant selection and expression at the cellular level (Carole Meredith, session chairperson): Mary K. Berlyn; John H. Duesing; Carole P. Meredith. Mechanisms and processes in regeneration from cultured cells (Keith Walker, session chairperson): David A. Evans; Andrew N. Binns; Roberta H. Smith; Keith A. Walker.

22 June. Genetic stability and instability during regeneration (Ed Green, session chairperson): Indra K. Vasil; Murray W. Nabors; C. Edward Green; Russell L. Malmberg. Genome variability from cultured cells (Tom Orton, session chairperson): Thomas J. Orton, Thomas J. McCoy, Michael D. Bennett.

23 June. Expression of secondary product synthesis in cultured cells and plants (Fred Constabel, session chairperson): Frederick Constabel; Brian E. Ellis; Sinclair Mantell.

24 June. Biochemical and molecular markers of specific cell differentiational states (Renee Sung, session chairperson): Z. Renee Sung; Forrest H. Fuller; Graham G. Henshaw. Poster sessions will be held each day. Additional speakers will be selected from those presenting posters. Applicants should indicate whether they will present a poster and the title on their application for the conference.

Plant Molecular Biology

Proctor Academy

Brian Larkins, chairperson; Robert B. Goldberg, vice chairperson.

13 June. The molecular biology of plant pathogens (Bill Timberlake, session chairperson): Bill Timberlake, "Gene regulation during sporogenesis"; Clarence Kado, "Genes that specify host range in *Agrobacterium tumefaciens*"; Steven Free, "Genetic control of extracellular hydrolases in *Neurospora crassa*." Plant viruses (Andy Jackson, session chairperson): E. M. J. Jaspars "Alfalfa mosaic virus"; George Bruening, "Satellite of tobacco ringspot virus"; Bob Owens, "Construction and analysis of infectious recombinant DNA clones containing potato spindle tuber viroid."

14 June. Photosynthesis I—Expression of chloroplast genes (Laurence Bogorad, session chairperson): Laurence Bogorad, "Chloroplast genes"; G. A. van Arkel, "Cyanobacterial transformation systems"; Gregory Clark, "Regulation of photosynthetic membrane synthesis by oxygen in *Rhodopseudomonas capsulata*." Photosynthesis II—Nuclear genes regulating chloroplast functions (Bill Taylor, session chairperson): Bill Taylor, "Developmental regulation of nuclear genes encoding photosynthetic proteins"; Elaine Tobin, "Phytochrome regulation of nuclear genes for chloroplast proteins"; Pamela Dunsmier, "Structure and organization of photosynthetic protein genes."

15 June. Nuclear gene structure and expression I (Bob Goldberg, session chairperson): Bill Park, "The patatin proteins of potato tubers"; David Anderson, "Cloning of genes encoding potato tuber proteins." Nuclear gene structure and expression II (Mike Murry, session chairperson): Mike Murry, "Phaseolin gene chromatin structure"; Bill Thompson, "Chromatin structure of ribosomal genes"; Linda Walling, "Transcriptional regulation of soybean seed protein gene expression."

16 June. Gene transformation and genetic engineering (Mary-Del Chilton, session chairperson): Mary-Del Chilton, "Use of mini and micro-Ti plasmids as vectors"; Jacque Tempe, "Ri plasmids as vectors for genetic engineering"; Paul Hooykaas, "Use of Ti and Ri plasmids as vectors for genetic engineering"; Jean Pierre Hernalsteins, "Transformation of plant protoplasts by *Agrobacterium tumefaciens*." Plant cell culture and regeneration (Roy Chaleff, session chairperson): Roy Chaleff, "Application of plant cell culture to molecular biology"; Robert Horsch, "Cell culture: Considerations for genetic engineering"; Ed Green, "Cell culture of crop plants."

17 June. Mitochondria (C. S. Levings, session chairperson): C. S. Levings, "Plasmid-like DNA's in mitochondria"; David Lonsdale, "Organization of the mitochondrial genome of *Zea mays*"; Graeme Reid, "Import of nuclear coded proteins into yeast mitochondria."

Plasma Physics

Colby-Sawyer College (S)

James Drake, chairperson; J. Jenson, vice chairperson.

Confinement and Stability of Finite β Tokamaks

20 June. (Discussion leader to be announced): J. Dunlap, "MHD fluctuations in ISX B"; K. McGuire, "Fishbone oscillations in PDX"; R. Stambaugh, "MHD fluctuations in high β DIII discharges." (S. Zweben, discussion leader): D. Robinson, "MHD oscillations in ECRH heated plasmas"; C. Surko, "Edge turbulence in finite β and H regimens of tokamak plasmas"; E. Mazucatto, "Microwave scattering measurements in PDX."

21 June. (Discussion leader to be announced): J. Dunlap, K. McGuire, R. Stambaugh, D. Robinson, "Discussion of MHD signatures in finite β tokamaks"; R. Moore, "Ideal MHD stability of DIII discharges"; J. Manickam, "Ideal MHD stability of PDX. (Discussion leader to be announced): J. Hastie, "Ideal anistropy driven modes"; J. Ramos, "Second region of stability of ideal kink and ballooning modes"; M. Chance, "Equilibrium and stability of bean-shaped tokamaks."

22 June. (Discussion leader to be announced): F. Wagner, "Improved confinement and high β_p in neutral beam heated divertor discharges of asdex"; M. Murakami, "Confinement in high current ISXB discharges"; (Speaker to be announced), "The impact of MHD oscillations on confinement in DIII"; F. Marcus, "Confinement in transport in high β discharges in DIII." (G. A. Navrital, discussion leader): (Speaker to be announced), "Transport in the ECRH heated T-10 tokamak"; S. Wolfe, "Confinement in alcator discharges"; T. Ohkawa, "Characteristics of edge plasmas in tokamaks."

23 June. (R. Parker, discussion leader): S. Kaye, "Transport analysis of neutral beam injected discharges in PDX"; J. Hugil, "Confinement scaling in dite"; M. Murakami and D. Overskei, "Discussion of confinement in ohmic and auxiliary heated tokamaks." (H. R. Strauss, discussion leader): A. H. Glasser, "Linear theory of resistive ballooning modes in a torus"; B. Carreras,

"Nonlinear saturation of resistive ballooning modes: A comparison with ISXB observations"; D. Monticello and R. Izzo, "Simulations of resistive instabilities and fast ion ejection during fishbone oscillations."

24 June. (J. D. Callen, discussion leader): T. M. Antonsen, "Nonlinear reduced Braginskii equations"; N. Sauthoff and P. Rutherford, "Discussion of the successes and failures resistive MHD in modeling tokamak discharges."

Point Defects, Line Defects and Interfaces

Plymouth State College (S)

P. M. Petroff, chairperson; J. W. Corbett, vice chairperson.

11 July. Structure of extended defects and interfaces (J. Spence, discussion leader): M. Gibson, "Structure of interfaces and interfacial dislocations in silicon-metal systems"; W. Gibson, "Ion channeling studies of metal-semiconductor interfaces"; D. Cherns, "Dislocation climb processes in semiconductors." Point defects and complexes in bulk Si and GaAs (M. Stoneham, discussion leader): A. Zunger, "Theory of transition elements in Si and III–V compounds"; C. A. Ammerlann, "New experimental results on transition elements in Si and GaAs."

12 July. Point defects and complexes (bulk and interfaces) (G. Watkins, discussion leader): T. S. Shi, "Hydrogen in Si"; A. Chantre, "Quenched in defects in laser annealed Si"; D. V. Lang, "Studies of dangling bonds at interfaces using spin dependent DLTS." Oxygen in Si (J. R. Patel, discussion leader): M. Stavola, "Oxygen diffusion in Si"; P. Wagner, "Evolution of oxygen related complexes in Si"; A. Bourret, "Early stages of oxygen precipitation in Si."

13 July. Point defects in compound semiconductors (bulk and interfaces) (J. Schneider, discussion leader): E. Weber, "EPR and PL studies of antisite defects in GaAs"; G. Bachelet, "Theory of antisite defects in GaAs and GaP"; T. Kennedy, "EPR studies in GaP." Defects in semiconductor interfaces (T. McGill, discussion leader): G. Roubloff, "Bonds and structure at silicon—silicide interfaces"; R. H. Williams, "Schottky barrier formation and interfacial reactions in metal III-V interface."

14 July. Electron-lattice interaction (H. Quiesser, discussion leader): M. Schlüter. "Migration mechanisms and recombination enhanced processes in semiconductors"; K. Maeda, "Recombination enhanced glide of dislocation in III–V compounds semiconductors"; H. Alexander, "Photoplastic effects in Si"; After banquet speaker.

15 July. Degradation mechanism (Ikoma, discussion leader): H. Temkin, "Optically induced degradation in quaternary compounds"; K. Kondo, "Gradual degradation and deep levels in III–V compound semiconductor devices." *Poster Session*: A poster session is also planned for participants who wish to present recent, new results. To reserve space, please give the poster title and an outline of the contents in the application. A selection will be made if there are too many posters.

Polyamines

Kimball Union Academy

Anthony E. Pegg, chairperson; David R. Morris, vice chairperson.

11 July. Polyamine oxidases (N. Seiler, session chairperson): U. Bachrach, "Overview and nomenclature of polyamine oxidases"; N. Seiler, "Pathways to putreanine, isoputreanine and related amino acids"; D. M. L. Morgan, "Human serum polyamine oxidase." Polyamine-mediated protein kinases: Effects on transcription and translation (S. Jacob, session chairperson): S. Jacob, "Polyamine-mediated protein kinase in human autoimmunodiseases"; R. K. Sharma, "Mechanism of inhibition of protein kinase 380 by polyamines: implications in the regulation of eukaryotic protein synthesis"; G. D. Kuehn, "Calcium-calmodulin modulation of autophosphorylation by polyamine-dependent protein kinase"; K. Ahmed, "Stimulation of protein kinase reactions by polyamines, is it dependent on the enzyme or the substrate."

12 July. Enzymology of polyamine biosynthesis (H. Tabor, session chairperson): C. Tabor, "Ornithine decarboxylase of yeast: genetics and regulation"; S. Hayashi, "Regulatory mechanism of hepatic ornithine decarboxylase"; D. R. Morris, "Regulation of S-adenosylmethionine decarboxylase"; S. S. Cohen, "Spermidine synthesis in healthy and virus-infected cabbage leaf protoplasts." Methylthioadenosine (H. G. Williams-Ashman, session chairperson): D. A. Carson, "Deficient metabolism of methylthioadenosine by malignant cells in vitro and in vivo"; A. Ferro, "The fate and function of 5′-methylthioadenosine"; T. M. Savarese, "The use of salvage pathways for the components of 5′-methylthioadenosine for the activation of antimetabolites."

13 July. Inhibitors of polyamine biosynthesis (P. P. McCann, session chairperson): A. J. Bitonti, "Inhibition of polyamine biosynthesis in bacteria and consequent effects on cell growth"; A. W. Galston, "Stress induced activation of arginine decarboxylase in plants and its inhibition by difluoremethylarginine"; C. J. Bacchi, "Effects of difluoremethylornithine on the metabolism of hemoflagellate protozoa." Polyamines and MGBG: Effects on neoplastic growth (J. Jänne, C. W. Porter, session chairperson): L. J. Marton, "Effect on polyamine depletion on the cytotoxicity of cancer chemotherapeutic agents"; G. D. Luk, "Growth-inhibitory effects of DFMO on human tumor cells"; C. W. Porter, "Uptake and mechanism of action of MGBG": A. Kallio, "Systemic use of DFMO/MGBG in various cancer models"; K. Kapyaho, "Use of polyamine antimetabolites in psoriasis."

14 July. Mutations affecting polyamine metabolism (C. W. Tabor, session chairperson): H. Tabor, "Studies on polyamine-free mutants of *Escherichia coli*: An effect of polyamines on translation in vivo"; P. Coffino, "Mouse lymphoma cells that overproduce ornithine decarboxylase"; I. E. Scheffler, "Chinese hamster cell variants (mutants) which either overproduce or completely lack ornithine decarboxylase activity"; E. Holtta and P. Pohjanpelto, "Polyamine dependence of CHO cells deficient in arginase activity." Polyamine-nucleic acid interactions (V. Bloomfield, S. S. Cohen, session chairpersons): V. Bloomfield, "Influence of polyamines on DNA dynamics and interactions"; R. B. Loftfield, "The influence of polyamines in discrimination between tRNA's.

15 July. Polyamines and differentiation (T. Oka, session chairperson): K. Y. Chen, "Possible role of polyamines in the differentiation of mouse neuroblastoma cells"; F. Suzuki, "Role of polyamines in expression of the differentiated phenotype of chondrocytes in culture"; M. H. Park, "'Hypusine: Biosynthesis and cellular function." The program will also include posters. Persons wishing to contribute a poster should send an abstract of no more than 20 lines to Dr. D. R. Morris, Department of Biochemistry, SJ70, University of Washington, Seattle, Washington 98195 and indicate on their conference application their interest in presenting a poster.

Polymer Colloids

Tilton School

John W. Vanderhoff, chairperson; Ritchie Wessling, vice chairperson.

11 July. M. Krieger, "Rheology of sterically stabilized polymer colloids in nonaqueous media"; J. E. Glass, "Rheology of pigmented-latex systems containing polymeric surfactants"; C. A. Silebi, "Structure formation in thickened latex systems"; Y. J. Shih, "Latex particle surface reactions."

12 July. R. H. Ottewill, "Swelling of latex particles by monomer"; J. Ugelstad "Swelling of latex particles and large-particle-size monodisperse latex particles"; G. Reinisch, "Mechanism of emulsion polymerization of vinyl chloride."

13 July. D. C. Blackley, "Mechanical destabilization of natural rubber latexes"; A. Klein, "Formation of coagulum in emulsion polymerization"; R. M. Fitch, "Interactions among particles: Surface change effects."

14 July. B. W. Greene, "Surface characterization of styrene-butadiene latexes"; H. J. Yue, "NMR characterization of latex polymers"; B. Kronberg, "Adsorption of ionic and nonionic emulsifiers on the surfaces of colloidal particles."

15 July. F. Candau, "Polymerization in inverse microemulsions"; M. S. El-Aasser, "Inverse emulsion polymerization of acrylamide."

Polymers

Colby-Sawyer College (N)

Eli M. Pearce, chairperson.

4 July. Electro- and photoactive polymers (Nathan D. Field, session chairperson): M. Litt, "New electrically active polymers"; F. Ciardelli, "Conformational changes induced by light in photochromic polymers." Organometallic polymers (K. J. Wynne, session chairperson): J. E. McGrath, "Organosiloxane copolymers"; R. H. Baney, "Organometallic polymers to ceramic materials."

5 July. Polymer synthesis (David A. Tirrell, session chairperson): O. Vogl, "Polymer optical activity based on molecular asymmetry"; T. J. Katz, "Initiating acetylene and cyclic olefin polymerization with metal-carbenes." (S. Huange, session chairperson): N. Ogata, "Synthesis and some properties of new functional polymers."

6 July. Polymer blends (Manfred Katz, session chairperson): T. K. Kwei, "Polymer compatibility through hydrogen bonding"; A. Eisenberg, "Miscibility enhancement via ionic interactions." (S. Israel, session chairperson): D. Paul, "Miscible blends resulting from halogen ester interactions."

7 July. Polymer characterization and structure (N. Bikales, session chairperson): S. Marajver, "Spectroscopic studies of polymers at high pressure"; F. Karasz, "Characterization of rigid polymers by quasi-elastic light scattering"; Do Y. Yoon, "Nematic order of semiflexible polymers." Natural polymers (F. E. Bailey, session chairperson): R. Marchessault, "Carbohydrate polymers: Nature's high performance materials."

8 July. Polymer degradation (H. J. Langer, session chairperson): P. Rejamanova, "Synthetic polymers containing enzymatically degradable bonds"; W. H. Starnes, "Polyvinyl chloride degradation"; A. Schindler, "Polymerization and degradation of alphatic polyesters." There will be a poster session on Monday afternoon, 4 July, chaired by F. E. Bailey.

Proteins

New Hampton School

Jane Richardson, co-chairperson; John Rupley, co-chairperson.

27 June. The protein surface and function I (John Rupley, session chairperson): John Moult, "Water around proteins"; Don Wiley, "Bound carbohydrate"; Gerard de Hass, "Lipid interactions." The protein surface and function II (Joseph Kraut, session chairperson): John Abelson, "Site-specific mutagenesis"; Steven Clarke, "Epimerases"; Brian McCarthy, "Engineering new proteins."

28 June. The protein interior: Hydrogens (Wayne Hendrickson, session chairperson): Anthony Kossiakoff, "Neutron diffraction and H exchange"; Kurt Wuthrich, "Structures by proton NMR"; Andrew McCammon, "H in dynamics calculations"; Barry Honig, "Proton transfer reactions." The protein interior: Domains and motions (I. D. Kuntz, session chairperson): Martin Karplus, "Overview of dynamic simulations"; Enrico Gratton, "Domains and compressibility"; "Gates."

29 June. Transducing proteins: Membranes (Richard Cone, session chairperson): Robert Stroud, "Acetylcholine receptor structure"; George Hess, "Acetylcholine receptor chemistry"; Michael Garavito, "3-D crystals of membrane proteins." Transducing proteins: Muscle (David Trentham, session chairperson): William Cook, "High-resolution calmodulin structure"; Ralph Yount, "Labelling myosin active sites"; "Myosin structure."

30 June. Protein archeology: Evolution and folding (Georg Schulz, session chairperson): Robert Fletterick, "Correlations of exons with protein structure"; Oleg Ptitsyn, "Folding of random sequences." Images and concepts of proteins (Frederic Richards, session chairperson): Cyrus Chothia, "History and influences"; "Examples from computer graphics."

1 July. Protein-nucleic acid interactions (Brian Matthews, session chairperson): Gary Ackers, "Modelling of repression"; Mark Ptashne, "Positive and negative control by repressors"; "Nucleic acid binding proteins: New structures." Poster session chairman: Frances Jurnak.

Quantitative Structure Activity Relationships

Plymouth State College (N)

Stefan H. Unger, chairperson; Richard D. Cramer, III, vice chairperson.

25 July. Statistical methods (Svante Wold, session chairperson): Rainer Franke, "Topological pharmacophores"; Michael Pleiss, "Non-parametric statistical methodology"; Herman Wynne, "Factor analysis, receptor binding, and opiates"; Susan Schiffman, "Physiocochemical correlates of taste and smell quality: A multidimensional scaling approach." Poster session (Hugo Kukinyi, session chairperson).

26 July. Modelling—calculation methods (Arnold Hagler, session chairperson): Peter Kollman, "Relation of quantum and 'classical' mechanics"; Norman Allinger, "Molecular mechanics—recent advances"; Vincent Madison, "Monte Carlo methods and peptide solvation"; Richard Dammkoehler, "Systematic search methods." Modelling—interactive graphics (Robert Langridge, session chairperson): Arthur Olson, "Calligraphic molecular modelling"; Keith Davies, "Raster molecular modelling"; Corwin Hansch, "Graphics and QSAR."

27 July. Dihydrofolate reductase (DHFR)—experimental structure studies (Anton Hopfinger, session chairperson): Gordon Roberts, "Recent NMR studies of DHFR"; Vivian Cody, "Antifolates, crystal structures, and graphics"; Martin Poe, "Molecular modelling in design of DHFR and renin inhibitors"; Barbara Roth, "Molecular modelling to determine SAR with DHFR inhibitors." Poster session (Donald Boyd, session chairperson).

28 July. Methods of "shape" correlation (Michael Tute, session chairperson): Todd Wipke, "Characterization of molecular shape"; Robert Pearlstein,

"CHEMLAB and molecular shape analysis"; Margaret Wise, "GABA reuptake, DYLOMMS, and graphics"; Yvonne Martin, "Diuretics, QSAR, and graphics." Applications of molecular modeling (Garland Marshall, session chairperson): Delos DeTar, "Computation of steric effects on reaction rates"; Graham Smith, "Merck macromolecular graphics and the mechanism of thermolysin"; Michael Liebman, "Design of colchicine-like antitumor agent."

29 July. Lipophilicity and drug action (Manfred Wolff, session chairperson): Robert Pearlman, "Chymotrypsin inhibitors: Theoretical prediction"; Samuel Yalkowsky, "Prediction of solubilities"; Hans van der Waterbeemd, "Hydration factor as a correction in hydrophobic fragment systems."

Quantum Solids and Fluids

Brewster Academy

R. E. Prange, chairperson; B. Maple, vice chairperson.

15 August. Valence fluctuations (T. V. Ramakrishnan, session chairperson): J. W. Wilkins, "Theoretical overview"; D. Wohlleben, "Experiments on mixed valence." (T. Penney, session chairperson): G. Crabtree, "Fermi liquid aspects"; R. Parks, "Cerium based systems."

16 August. Valence fluctuations (P. W. Anderson, session chairperson): J. W. Allen, "Photoemission, kondo lattice"; O. Gunnarsson, "Large orbital degeneracy model." Itinerant magnetism (H. Mook, session chairperson): V. Korenman, "Fluctuating band model"; K. Ziebeck, "Neutron results."

17 August. Itinerant magnetism (T. Moriya, session chairperson): V. Heine, "Theory, magnetovolume effects"; H. Hasegawa, "Alloy analogy approach"; C. Rau, "Polarized electron pickup"; A. S. Arrott, "Dynamics near T_c." Magnetism and superconductivity (K. Levin, session chairperson): J. Lynn, "Neutron scattering"; H. R. Ott, "Thermal properties"; M. Tachiki, "Theory."

18 August. Density waves and superconductivity (W. M. Walsh, Jr., session chairperson): J. B. Torrance, "The $(TMTSF)_2X$ systems"; D. Jerome, "Organic superconductors"; C. Varma, "Charge density waves and superconductivity." Dynamics of charge density waves (R. Fleming, session chairperson): G. Gruner, "Experimental overview"; P. Monceau, "Experiments on charge density waves."

19 August. Dynamics of charge density waves (J. R. Tucker, session chairperson): J. Bardeen, "Zener tunnelling theory"; D. Fisher, "Classical theory."

Red Cells

Plymouth State College (N)

Samuel Lux, co-chairperson; Philip Leder, co-chairperson.

15 August. The transferrin receptor and iron transport (Paul Seligman, session chairperson): Howard Sussman, "Isolation and structure of the transferrin receptor"; Ian Trowbridge, "Regulation of the transferrin receptor in relation to cellular proliferation"; Richard Klausner, "Receptor-mediated endocytosis of the transferrin receptor and the uptake of iron." Structure of the globin genes and their evolution (Oliver Smithies, session chairperson): Oliver Smithies, "The human globin loci and some strange happenings"; Marshall Edgell, "The globin genes"; Allan Wilson, "Globin gene evolution."

16 August. Red cell membrane skeletal proteins (Vincent Marchesi, session chairperson): David Speicher, "The structure and function of human erythrocyte spectrin"; Vann Bennett, "Red cell membrane skeletal protein analogues in nonerythroid cells." Gene regulation, expression and processing (Vernon Ingram, session chairperson): Frank Grosveld, "Promotor activity and modulation"; James Darnelle, "Beta globin transcription unit definition and transcriptional control"; Gary Felsenfeld, "Globin genes and chromatin."

17 August. Pathophysiology of red blood cell membranes (Stephen Shohet, session chairperson): Jiri Palek, "Membrane skeletal defects in hereditary spherocytosis and elliptocytosis"; Marguerite M. B. Kay, "Changes in membrane proteins with red cell ageing"; Russell Howard, "Interactions of the red cell and malarial parasites." Inherited diseases and the state of gene transfer (Bernard Forget, session chairperson): David Weatherall, "Alpha thalassemia"; Stuart Orkin, "Beta thalassemias"; Frank Constantini, "Gene transfer."

18 August. Erythropoiesis (Arthur Nienhuis, session chairperson): David Nathan, "Cell-cell interactions in erythropoiesis"; George Stamatoyannopoulos, "Fetal hemoglobin switching." Keynote address. Edward Scolnick, "Ras oncogenes in retroviruses and tumors."

19 August. Pathogenesis of sickle cell disease (Ronald Nagel, session chairperson): H. Franklin Bunn, "Intracellular polymerization of sickle hemoglobin"; Robert Hebbel, "Interactions of sickle cells with capillary endothelium"; Bertram Lubin, "Alterations in phospholipid organization in sickle cell disease." In addition to the program presented above, poster sessions will be held daily Monday through Thursday. All applicants are encouraged to participate. A title and a brief abstract or outline of the anticipated poster presentation should be submitted with the application or mailed to: Dr. Samuel E. Lux, Division of Hematology-Oncology, Children's Hospital Medical Center, 300 Longwood Avenue, Boston, Massachusetts 02115.

Reverse Osmosis and Ultrafiltration

Colby-Sawyer College (S)

Murugan Malaiyandi, chairperson; Srinivasa Sourirajan, vice chairperson.

11 July. Interactions at membrane-solution interfaces (A. Zelman, discussion leader): S. Sourirajan, "The surface force–pore flow model for RO and UF separations"; L. Zeman, "Anatomy of an UF membrane and parameters affecting performance." Mechanism of transport in RO (P. Blais, discussion leader): W. Pusch, "Membrane structure and water structure in RO membranes"; A. Zelman, "Precision characterization of RO"; J. K. Beasley, "Theory of water transport in RO membranes."

12 July. Physicochemical aspects of RO separations (M. Malaiyandi, discussion leader): E. S. K. Chian, "Physicochemical principles or organic separation"; D. Bhattacharya, "Recovery and water reuse with low pressure thin film composite membranes." Recovery and removal of trace organics from aqueous systems (E. S. K. Chian, discussion leader): M. Malaiyandi, RO separation characteristics of environmental contaminants and their physicochemical properties"; J. K. Smith, "Removal and concentration of trace organics from surface waters."

13 July. Pore size and its distribution (S. Sourirajan, discussion leader): K. Kamide, "Characterization of pore size distribution of polymer membranes"; T. Matsuura, "Average pore size and pore size distribution of RO, UF membranes." Principles of membrane fouling (W. G. Light, discussion leader): R. Probstein, "Colloidal membrane fouling in RO systems"; H. Blanch, "Hollow fiber bioreactors for bacterial cell cultures."

14 July. Membrane structure and fab-

rication (L. Zeman, discussion leader): R. E. Kesting, "Evolution of ionomeric dry RO membranes"; S. Krause, "Polymer solution thermodynamics and application to membrane equilibria." Membrane structure and fabrication (T. Matsuura, discussion leader): A. Allegressa "Composite membranes: Effects of manufacturing variables on membrane properties"; R. Benson and D. J. Lyman, "New developments in block copolymer membranes."

15 July. Biophysical and biochemical applications of RO technology (J. K. Beasley, discussion leader): E. Klein, "Membranes for protein and carbohydrate separations: Theory and problems"; E. F. Casassa, "Statistics of confined polymer chains"; P. Blias, "From desalination to dialysis: Design of macromolecules for specific separations."

Separation and Purification

Colby-Sawyer College (N)

Phillip C. Wankat, chairperson; Carel J. Van Oss, vice chairperson.

15 August. Biochemical and affinity separations (Alan Michaels, discussion leader): Stuart Builder, "Purification of proteins from genetically engineered organisms"; Allen Zelman, "The membrane pouch"; Bo Mattiasson, "Ultrafiltration affinity purification"; Eugene Sulkowski, "Purification of proteins by chromatography: Hydrophobic interaction, dye, metal chelate and glass."

16 August. Adsorption (George Keller, discussion leader): Alan Myers, "Separation of gas and liquid mixtures by adsorption: The effect of surface heterogeneity"; Shivaji Sircar, "Nonisothermal surface barrier model for estimation of gas sorption kinetics"; George Keller, "New cyclic gas adsorption processes"; Richard Rice, "Adsorptive-distillation."

17 August. Preparative and large-scale chromatography (Armand de Rossett, discussion leader): Daniel Tondeur, "Irreversibilities and performances in transient separations"; P. E. Barker, "Developments in chromatographic refining for the separation and purification of organic mixtures"; John Dingerdissen, "Large-scale preparative liquid chromatography"; Robert Hutton, "Preparative high-performance liquid chromatography: Multigram scale laboratory separations and large-scale process separations."

18 August. Extraction (Lanny Robbins, discussion leader): Goran Schill, "Chromatographic and extractive separations of organic compounds by ion pair technique"; Henry Sawistowski, "Mass transfer with interfacial reaction in solvent extraction"; Carl Hansen, "Aspects of the application of solvent extraction to the separation and purification of nonferrous metals."

19 August. Absorption and distillation (Ralph Weiland, discussion leader): Robert Adler, "Acid gas removal by liquid CO_2 absorption, triple point crystallization and in situ refrigerant absorbent"; Richard Mah, "Distillation with secondary reflux and vaporization." Poster session: Tuesday 5 to 6 p.m. Open to all participants. Short talks: Wednesday evening. Three or four short talks will be selected.

Chemistry and Physics of Solids

Holderness School

J. M. Cowley, co-chairperson; J. M Rowell, co-chairperson.

Structures and Properties of Spatially Limited Solid Systems

4 July. (S. C. Moss, discussion leader): J. L. Hutchison, "High resolution electron microscopy of ordering in crystals"; C. H. Chen, "Direct observations of microstructure in CDW phase transitions by TEM"; S. Amelinckx, "Ordering in thin films of alloys"; S. L. Sass, "Diffraction studies of grain boundaries." (W. F. Brinkham, discussion leader): T. M. Rice, "Conductivity of ID fermion systems"; D. C. Tsui, "The quantized Hall effect."

5 July. (J. C. H. Spence, discussion leader): R. Labusch, "Peierls transitions in dislocation cores"; J. R. Chelikowsky, "Periodic structures along dislocation lines"; J. Bevk, "Size effects in ultrafine filamentary composites." (P. M. Eisenberger, discussion leader): D. E. Moncton, "X-ray diffraction studies of 2D phase transformations"; M. Wortis, "Thick film absorption phenomena: layering, melting, roughening and all that."

6 July. (W. Krakow, discussion leader): K. Takanayagi, "Imaging of surface superstructures"; M. Lagally, "LEED studies of surface ordering"; G. Bergmann, "2D magnetic ordering." (M. V. Klein, discussion leader): P. F. Liao, "Surface enhanced Raman spectroscopy"; D. B. Tanner, "Anomalous for infrared absorption in small particle systems."

7 July. (A. Howie, discussion leader): K. Heinemann, "Electron microscopy of small particles"; L. Marks, "Structure and surface energy losses of particles"; J. B. Cohen, "X-ray diffraction and EXAFS of catalyst particles." (T. H. Geballe, discussion leader): R. Sinclair, "Atomic motion on surfaces and crystal defects"; R. B. Frankel, "Magnetic navigation in bacteria."

8 July. (A. Freeman, discussion leader): K. Sattler, "The physics of microclusters"; C. P. Slichter, "NMR of metal particles."

Space Plasma Physics

Plymouth State College (S)

Stanley D. Shawhan, chairperson; Thomas J. Birmingham, vice chairperson.

Outstanding Problems in the Magnetosphere-Ionosphere-Atmosphere System

13 June. (G. Siscoe, discussion leader): T. Hill, "Coupling processes in the M-I-A system"; C. Russell, "Magnetopause magnetic structure"; G. Paschmann, "Plasma entry." (A. Hasegawa, discussion leader): D. Williams, "Ion beams in the plasma sheet"; H. Singer, "PI-2 pulsations and substorms."

14 June. (R. Schunk, discussion leader): R. Chappell, "Plasma characteristics of inner magnetosphere"; R. Wolf, "Electrodynamics of M.-I. coupling"; W. Burke, "Plasma sheet at low altitude." (A. Nishida, discussion leader): J. Burch, "Plasma and wave characteristics of the cusp"; R. Gendrin, "Wave-particle interactions and ionosphere-magnetosphere exchange processes."

15 June. (G. Rostoker, discussion leader): S. Akasofu, "Nature of auroral substorms"; F. Mozer, "Auroral field line processes"; N. Hershkowitz, "Laboratory double layers." (N. Maynard, discussion leader): "P. Kintner, "Ionospheric turbulence"; R. Greenwald, "Radar observation of ionospheric and magnetospheric motions."

16 June. (D. Rees, discussion leader): R. Roble, "Thermospheric response to solar and magnetospheric inputs"; J. Luhmann, "Mesospheric motions and correlated aurora"; H. Volland, "Atmospheric electricity." (M. Walt, discussion leader): L. Frank, "Global auroral dynamics"; W. Imhof, "X-ray production from precipitating particles."

17 June. (T. Birmingham, discussion leader): P. Palmadesso, "Global magnetospheric computer modeling"; G. Haerendel, "Magnetospheric tracing by chemical releases"; S. Shawhan, "Active wave and particle perturbations of the ionosphere."

Spectroscopy of Matrix-Isolated Species

Colby-Sawyer College (S)

Lester Andrews, chairperson; Martin Moskovits, vice chairperson.

18 July. Vladimir E. Bondybey, "Electronic spectra and photophysics of molecular ions in rare gas solids"; Lon Knight, "Techniques for the trapping of molecular cation radicals in neon matrices at 4 K for ESR investigation." Tadamasa Shida, "High energy radiation can be harnessed to provide useful spectroscopic information on radical ions"; Orville L. Chapman, "Applications of matrix isolation to problems in organic chemistry."

19 July. Dieter Gruen, "What's metallic about metal diatomics"; Derek M. Lindsay, "ESR of matrix isolated metal clusters." Robert Hauge, "Matrix isolation studies of photoassisted insertion of M and M_2 species into C–H, C–F, and C–C bonds"; Steve Ogden, "High temperature inorganic molecules in matrices."

20 July. Paul N. Schatz, "The study of matrix isolated species using magnetic circular dichroism"; Roger Grinter, "MCD of matrix-isolated atoms and molecules." Dieter M. Kolb, "Photoelectron spectroscopy and synchrotron radiation absorption studies of matrix isolated metal atoms and clusters"; N. Schwenter, "Vacuum ultraviolet spectroscopy of matrix-isolated molecules."

21 July. Henri Dubost, "Dynamics of vibrational excitations in matrix isolated molecules"; Eric Weitz, "Vibrational energy transfer and relaxation processes in matrix-isolated CH_3F." George C. Pimentel, "Cool it, baby."

22 July. Hs. H. Gunthard, "New techniques and aspects of matrix spectroscopy"; Josef Michl, "Secondary ion mass spectrometry of low temperature solids."

Statistics in Chemistry and Chemical Engineering

New Hampton School

John A. Cornell, chairperson; Park M. Reilly, vice chairperson.

1 August. (William J. Hill, session chairperson): Ronald R. Hocking, "Regression diagnostics—some new ideas." (Ray A. Waller, session chairperson): Harry F. Martz, "Empirical Bayes approach to control of chemical processes."

2 August. (Toby J. Mitchell, session chairperson): Gerald J. Hahn, "Challenges in experimental design with chemical engineering applications." (William R. Schucany, session chairperson): Robert G. Easterling, "Statistical uncertainty analysis."

3 August. (John W. Gorman, session chairperson): Peter W. M. John, "Experiments with mixtures involving process variables." (Stuart L. Beal, session chairperson): Elliot M. Landaw, "Optimal sampling designs for parameter estimation in pharmacokinetic models."

4 August. (Andrew F. Siegel, session chairperson): Peter J. Huber, "Interactive data analysis: Strategy and methods." (William G. Hunter, session chairperson): Andre I. Khuri, "Response surface designs for multiple response systems."

5 August. (Agnes M. Herzberg, session chairperson): Paul A. Tukey, "Graphical methods for data analysis."

Applications

Scientists are invited to submit applications for attendance at the Gordon Research Conferences. An application blank is on page 1133 and may be submitted to Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, University of Rhode Island, Kingston, Rhode Island 02881.

Structural Macromolecules: Collagen

Plymouth State College

Ronald G. Crystal, chairperson; Bjorn R. Olsen, co-chairperson.

4 July. Structure of extracellular matrix components (collagens, adhesion proteins, proteoglycans) I (Bjorn R. Olsen, session chairperson): Klaus Kuhn, "Interstitial collagens"; Rupert Timpl, "Basement membrane collagen, intimacollagen and laminin." Structure of extracellular matrix components (collagens, adhesion proteins, proteoglycans) II (George Martin, session chairperson): Kenneth Yamada, "Fibronectin"; Magnus Hook, "Proteoglycans."

5 July. Assembly of extracellular matrix (Hynda Kleinman, session chairperson): John McDonald, "Fibronectin's role in collagen organization and deposition by fibroblasts"; Heinz Furthmayr, "Basement membrane structure and assembly"; Erkki Ruoslahti, "Attachment of cells to extracellular matrix." Degradation of extracellular matrix (A. Eisen, session chairperson): H. Nagase, "Biosynthesis and secretion of procollagenase"; Carlo Mainardi, "Degradation of type IV and type V collagens by collagenases." H. Tschesche, "Structure and function of natural inhibitors as antagonists of collagenase activity."

6 July. Control of connective tissue matrix production (Helga Boedtker, session chairperson): David Hirsch, "Regulation of nematode cuticle collagen genes"; Benoit de Crombrugghe, "Regulation of vertebrate interstitial collagen genes." Chemotaxis and replication of connective tissue–producing cells (Stephen Krane, session chairperson): Gary Grotendorst, "Chemotaxis and wound healing"; Charles Scher, "Control of replication of fibroblasts."

7 July. Proliferative fibrotic and neoplastic diseases (Ronald Crystal, session chairperson): Joseph Madri, "The growth behavior of endothelial cells on different collagen types"; Stephen Rennard, "Fibrotic lung disorders." Chautauqua from Piscataqua (Robert Trelstad, session chairperson).

8 July. Hereditary diseases of connective tissue (Paul Bornstein, session chairperson): Darwin Prockop, "Mutations in the genes for type I procollagen and their consequences in man"; Peter Byers, "Molecular mechanisms of heritable disorders of collagen metabolism."

Thermosetting Polymers

Kimball Union Academy

John K. Gillham, chairperson; Allan Schultz, vice chairperson.

21 August. Chairman's social hour and mixer.

22 August. (Clayton A. May, discussion leader): John K. Gillham, "Time-temperature-transformation (TTT) diagrams: Cure, properties and degradation of thermosetting systems"; David H. Kaelble, "Computer-aided cure management." (Allan R. Schultz, discussion leader): Christopher W. Macosko, "Cure rheology of model thermosetting systems"; R. Bruce Prime, "Thermal analysis of thermosetting materials."

23 August. (Ivan J. Goldfarb, discussion leader): Karel Dusek, "Geietion and network structure of polyepoxide/polyamine systems"; John M. Barton, "Use of DSC for studying the cure kinetics of epoxy resins." Special afternoon session: Poster presentations. (Sanford S. Sternstein, discussion leader): Roberto J. J. Williams, "A model for phase-separation during thermoset polymerization": Louis T. Manzione and J. S. Osinski, "Evaluation and optimization of reactive polymer processing."

24 August. (David H. Kaelble, discus-

sion leader): Frank N. Kelley and J. D. LeMay, "Physical properties and structural characterization of epoxy networks"; S. Sternstein, "Inhomogeneous swelling phenomena in composites." Special afternoon session: Poster presentations. (Armand F. Lewis, discussion leader): Eric S. W. Kong, "Effects of enthalpy and volume relaxation processes on the mechanical integrity of network epoxies and their carbon–fiber-reinforced composites"; Stephen D. Senturia, "Cure monitoring and post-cure evaluation of thermosets with low-frequency dielectric measurements."

25 August. (Garth L. Wilkes, discussion leader): James P. Bell, "Epoxy resin heterogeneities: Nodules and rubber particles"; James E. McGrath and Garth L. Wilkes, "Elastomeric polysiloxane-modified epoxy networks." Banquet and business meeting. (John K. Gillahm, discussion leader): John E. Sohn, "Development of an elastomer-modified epoxy coating material"; John T. Quinlivan, "Thermoset resins: Applications and needs in the commercial aircraft industry.

26 August. (Frank Kelley, discussion leader): A. J. Kinloch and S. J. Shaw, "Toughened epoxies: Mechanics of deformation and fracture"; Donald L. Hunston and W. D. Bascom, "Effects of formulation on the failure behavior of rubber-modified epoxies."

Toxicology and Safety Evaluations

Kimball Union Academy

Robert Scala, chairperson; Frank N. Dost, vice chairperson.

1 August. Study of toxicant action at the cellular level—active oxygen (Michael A. Gallo, discussion leader): Stephen D. Aust, "Lipid peroxidation—a mechanism of toxicity"; Wayne M. Levin, "Cytochromes P450—strain and tissue differences in the rat and possible functional consequences." Bruce A. Freeman, "Superoxide effects."

2 August. Study of toxicant action at the tissue/organ level (Frank G. Standaert, discussion leader): William J. Waddell, "Pharmacokinetics of fetus and placenta"; Jeanne M. Manson, "Initial cellular reactions in birth defects." Gabriel L. Plaa, "Nontumor effects of toxicants on the liver."

3 August. Study of toxicant action at the whole animal level (Robert W. Naismith, discussion leader): John G. Babish, "Role of stressors, especially nutrition in modifying toxicant and detoxifying systems"; Ronald B. Herberman, "Toxicology of monoclonal antibodies/hybridomas." H. Locksley Trenholm, "Mycotoxins."

4 August. Study of toxicant action at the population level (A. Wallace Hayes, discussion leader): Philip S. Guzelian, "Use of biochemical and molecular genetic approaches"; Michael J. Rosenberg, "Surveillance of reproductive outcomes in the population." Robert E. Gosselin, "A clinical study."

5 August. Underlying concepts of risk assessment (Frank N. Dost, discussion leader): David G. Hoel, "Problems in trans-species extrapolation"; Jeremiah Lynch, "Setting workplace exposure limits."

Trichothecenes: Chemistry, Mycology and Toxicology

Plymouth State College (N)

R. M. Eppley, chairperson; C. J. Mirocha, vice chairperson.

13 June. Mycology—occurrence and significance of trichothecene-producing fungi (P. Mislivec, discussion leader): P. E. Nelson, T. A. Toussoun, W. Marasas. Production of trichothecenes by fungi (A. Ciegler, discussion leader): Y. Ueno, J. D. Miller.

14 June. Chemistry—structure and synthesis (W. R. Roush, discussion leader): Ch. Tamm; B. B. Jarvis. Analytical methods (A. E. Pohland, discussion leader): P. M. Scott, C. W. Thorpe; S. Swanson.

15 June. Analytical methods—mass spectral, immunoassay and other detection methods (G. Bennett, discussion leader): F. S. Chu; J. A. Sphon and J. Gilbert. Natural occurrences of the trichothecenes in foods and feeds worldwide (R. M. Eppley, discussion leader): J. I. Pitt, D. D. Xuda, R. V. Bhat, T. Yoshizawa (short presentations).

16 June. Toxicology—metabolic fate and mode of action (C. J. Mirocha, discussion leader): T. Yoshizawa and C. S. McLaughlin. Toxicity and pathophysiology (S. Watson, discussion leader): R. W. Wannemacher, Jr., and D. L. Bunner.

17 June. Mechanism and kinetics of toxicity (W. Buck, discussion leader): P. M. Newberne, and R. M. G. Hamilton; R. Cole. Scheduled poster sessions will be coordinated with the formal program. All participants are invited to present a poster related to their current work. Please include the title of your poster, the applicable program session, and a brief outline or abstract with your conference application. Participants are encouraged to prepare to participate in the open discussion periods.

GORDON RESEARCH CONFERENCES

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

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Conference on _____ Date: _____
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Name: (Please Print) _____ Location _____

Organization: _____

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Zip Code

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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, and this information is essential.

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Conferee (double occupancy)	**$230.00**
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3. **Non-resident conferees are expected to eat all meals in the Conference Dining Room and, therefore, the Fixed Fee for non-residents includes the full meal charge.**
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PAYMENT:

The full fixed fee will be required IN ADVANCE of ALL PARTICIPANTS AND GUESTS. Attendance and/or accommodations will NOT be reserved unless this fee is paid 3 weeks prior to the Conference. Foreign participants will also be required to pay Gordon Research Conferences in advance in U.S. dollars payable through a U.S. bank. The full fixed fee is charged to all regardless of length of stay at a Conference.

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. Guests are not permitted to attend the conference lectures and discussion sessions. Each member of the Conference agrees to these regulations when registration is accepted

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Tel: (401) 783-4011 0r (401) 783-3372
Office—Summer Schedule
Colby-Sawyer College
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(603) 526-2870

Signature _____

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RECEIPT OF THIS APPLICATION WILL NOT BE ACKNOWLEDGED