Gordon Research Conferences

Alexander M. Cruickshank

The Gordon Research Conferences for the summer of 1972 will be held in New Hampshire and in Wisconsin.

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

It is hoped that each Conference will extend the frontiers of science by fostering a free and informal exchange of ideas among persons actively interested in the subject under discussion. The purpose of the program is to bring experts up to date on the latest developments, to analyze the significance of these developments and to provoke suggestions concerning the underlying theories and profitable methods of approach for scientific research. The review of known information is not desired.

In order to protect individual rights and to promote discussion it is an established requirement of each Conference that no information presented is to be used without specific authorization of the individual making the contribution, whether in formal presentation or in discussion. Scientific publications are not prepared as emanating from the Conferences.

Registration and reservations. Individuals interested in attending the Conferences are requested to send their applications to the office of the director. These applications should be received no later than 2 months prior to the conference.

Applications must be submitted in duplicate on the standard application form which may be obtained from the office of the director. This procedure is important because certain specific information is required in order that a fair and equitable decision on the application may be made. Attendance at each conference is limited to approximately 100 conferees.

The director will submit the applications of those requesting permission to attend a Conference to the committee for that Conference. This committee will review the applications and select the members in an effort to distribute the attendance as widely as possible among the various institutions and laboratories represented by the applications.

A registration card will be mailed to those selected. *Advance registration by mail for each Conference is required and is completed on receipt of the card and the deposit of $30.* This advance deposit is not required from foreign scientists. Checks are to be made payable to the Gordon Research Conferences. The deposit will be credited against the fixed fee for the conference. A registration card not accompanied by the deposit will not be accepted.

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

The Board of Trustees of the conferences has established a fixed fee for resident conferees at each Conference. This fee was established to encourage attendance for the entire Conference and to increase the Special Fund that is available to each Conference chairman for the purpose of assisting conferees who attend a conference at total or partial personal expense with their travel or subsistence expenses, or with both. It is to the advantage of all participants to attend a Conference for the entire week. *The fixed fee will be charged regardless of the time a conferee attends the Conference—that is, for the periods of from 1 to 4½ days. An additional charge per night per person will be made for a room with a private bath or for a single room, if no double rooms or roommates are available.* These rooms will be assigned in the order that applications are received. An additional charge will also be made for rooms occupied more than five Conference nights (Sunday through Thursday).

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

Conferees are expected to live at the Conference location because one of the objectives of the Conferences is to provide a place where scientists can get together informally for discussion of scientific research. When special circumstances warrant a request to live elsewhere permission must be obtained from the director. If the request is approved these nonresident conferees will be charged a registration fee of $65, instead of the resident fee of $50.

Guests. Accommodations are available for guests. (Children must be at least 12 years of age.) All such requests should be made at the time the attendance application is submitted because these accommodations, limited in number, will be assigned in the order that specific requests are received.

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

The charge for room and meals for each guest is $80 for five Conference days. A deposit of $30 is required for each guest reservation. This deposit will be refunded if cancellation is received 2 weeks prior to the Conference.

Pets are prohibited at the Conference site.

Fees:

New Hampshire and Wisconsin

Conferees:		
Fixed Fee		$130
Registration, resident conferee	$50	
Subsistence, including service	80	
Registration (nonresident)		65
Deposit (conferee)		30
Resident guest charges		
Subsistence, including services for 5 conference days		$80
Deposit (guest)		30

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

Program. The complete program for the 1972 Gordon Research Conferences is published in this issue of *Science*. Reprints are available on request.

Membership. Requests for membership in the conferences, or for additional information, should be addressed to: Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, Pastore Chemical Laboratory, University of Rhode Island, Kingston, Rhode Island 02881. Telephone 401-783-4011.

Mail for the office of the director from 12 June to 1 September 1972 should be addressed to: Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, Colby Junior College, New London, New Hampshire 03257. Telephone 603-526-2870.

The program to be presented is as follows:

Science of Adhesion

(New Hampton School)

Harvey Alter, chairman; Frederick M. Fowkes, vice chairman.

21 August. (E. Passaglia, discussion leader): D. V. Keller, "The effects of monolayers on static and dynamic adhesion in metal systems"; C. M. Adams, "Wetting of inorganic surfaces by liquid metals." (R. Myers, discussion leader): T. Alfrey, "Interfacial stresses in adhesion joints: coatings and composites."

22 August. (W. D. Bascom, discussion leader): H. L. Frisch, "Contact angles, wetting and spreading"; A. M. Schwartz, "Dynamic contact angles: measurements and mechanisms of spreading." (H. Corten, discussion leader): A. Gent, "Fracture mechanics of soft adhesive bonds."

23 August. (J. Anand, discussion leader): C. Berg, "Plasticity aspects of fracture of adhesives"; F. W. Fowkes, "Non-destructive measurements of electrostatic adhesion." (G. Hardy, discussion leader): V. Vakula and V. Laureutev, "Molecular kinetic theory of polymer adhesion"; H. Krupp, "Recent results of ultracentrifuge measurements of adhesion forces between small spheres and a flat surface."

24 August. (W. A. Asbeck, discussion leader): S. S. Voyutzky, "Present state of diffusion theory of adhesion"; V. N. Kuleznev, "Segmental solubility of polymers at the interface layer." (D. Fitchman, discussion leader): K. W. Allen, "Moisture and adhesion between some noble metals and polymers"; K. Kendall, "The adhesion of rust."

25 August. (J. D. Ray, discussion leader): W. P. Townsend, "Aspects of metal-polymer adhesion using electroless metal systems"; P. Lindenmeyer, "The use of glass in the diffusion bonding of titanium."

Animal Cells and Viruses

(Tilton School)

Sheldon Penman, chairman; Purnell W. Choppin, vice chairman.

28 August–1 September. R. Perry, "RNA-transcription and processing"; P. Leder, "Translation-specificity and regulation"; D. Baltimore, "Virus models of cell systems"; A. Linnane, "Cytoplasmic organelles and genetics"; D. Brown, "Genetic organization"; J. Bishop, "Sequence frequencies"; G. Sato, "Specialized cell development"; G. Tompkins, "Inducible functions"; H. Green, "Genetic transfer"; G. Guidotti, "Membranes."

Biological Regulatory Mechanisms

(Tilton School)

Frederick C. Neidhardt, chairman; Robert F. Goldberger, vice chairman.

17 July. Regulation of catabolic enzyme formation in bacteria: R. Schleif, and J. Greenblatt, "The *ara* operon"; B. Magasanik, "The *hut* system"; J. Beckwith, "The *lac* operon"; B. de Crombrugghe, "Cyclic AMP and gene expression."

18 July. Regulation of biosynthetic enzyme formation in bacteria (R. Goldberger, discussion leader): B. Ames, "The *his* operon"; J. S. Kovach, H. E. Umberger, "The branched chain amino acid pathway" C. Yanofsky, "The *trp* operon."

19 July. Pathway control by enzyme activity (D. Atkinson, discussion leader): Control of RNA and protein synthesis: P. Dennis, "RNA and growth rate"; R. Lazzarini, "Ribosomal RNA synthesis in permeabilized cells"; M. Cashel, "Regulation, of synthesis of ppGpp."

20 July. Control of RNA and protein synthesis: O. Maaløe, H. Bremer, P. Dennis, A. Koch. Transport systems: G. FerroLuzzi-Ames, M. H. Saier, Jr., "Involvement of the bacterial phosphotransferase system in the control of physiological functions."

21 July. Metabolic compartmentation (R. Davis, discussion leader).

Science and Techonology of Biomaterials

(Tilton School)

Charles A. Homsy, chairman; Adam Wesolowski, vice chairman.

14 August. Biochemical and biomechanical parameters of the skeletal system (P. Walker, chairman): F. Rhinelander, "Physiology of bone—circulatory dynamics"; C. Solomons, "Physiology of bone—clinical research aspects"; R. D. Coutts, "Physiology of bone—effects of compression, distraction and immobilization"; W. C. Allen, "Sequellae from prosthetic replacement"; E. Y. Chao, "Biomechanical design parameters"; D. Tabor, "Bio-lubrication"; M. Semlitsch, "Metals and plastics for artificial joints."

15 August. Prosthetic materials and performance—skeletal system (J. Andrade, chairman): S. Steinemann, "Metal properties and performance of implants for internal fixation—stainless steel and titanium"; H. Amstutz, "Total joint substitution—design and performance"; R. S. M. Ling and A. J. C. Lee, "In situ curing acrylic polymer"; W. Peters, "Zinc polyarylate systems"; H. G. Willert and M. F. Semlitsch, "Histopathology associated with polymers and metals in total hip replacement"; J.

Andrade, "Dacron/silicone rubber systems"; L. Hench and R. Topazian, "Ceramic systems"; C. Homsy and J. Kent, "Composite, compliant systems."

16 August. Prosthetic materials design and performance—caridovascular system (A. Wesolowski, chairman): D. Lyman, "Antithrombogenic surfaces"; E. Nyilas, "Polyurethane/silicone systems"; R. Baier and J. Bokros, "Vitreous carbon"; G. Grode, "Heparinized surfaces." (Don Lyman, chairman): A. Wesolowski, "Arterial grafts"; L. Sauvage, Cardiac valves"; C. Dennis, "Circulatory assist devices."

17 August. Prosthesis design, acceptance and function (C. A. Homsy, chairman): H. Tullos, "Clinical aspects of major joint prostheses"; A. Kantrowitz, "The role of the industrial laboratory"; J. Granowitz, "The role of the manufacturer"; D. Crimmins, "The role of the manufacturer and marketer"; (speaker to be announced), "Implant prosthesis legislation." Heinz Wolff, address.

18 August. Special contributions: A. S. Hoffman, "Grafted hydrogels"; C. D. Armeniades, "Property/structural relations in natural biomaterials." Open forum—all participants. Short papers.

Theoretical Biology and Biomathematics

(Proctor Academy)

Walter J. Freeman, chairman; Jack D. Cowan, vice chairman.

12 June. (C. H. Waddington, discussion leader): M. Jacobson and H. Hirsch, "Models of neuronal plasticity"; W. Rall and J. Rinzel, "Biophysical approach to dendritic spine structure and function." (R. Blumenthal, discussion leader): G. Oster, "Systems and circuit theory in biological energetics"; R. Lefever, "Membrane aspects of dissipative structures"; L. E. Scriven and H. B. Othmer, "Instability and dynamic pattern in cellular networks."

13 June. (M. Goldstein, discussion leader): I. Darian-Smith, "Peripheral neural mechanisms in thermal sensation"; K. Johnson, "Intensity coding in a neural population"; W. Siebert, "Decision theory applied to primary fibers in the auditory system." (M. Locke, discussion leader): R. Gordon, "Color patterns on vertebrates: left-right variation within individuals"; G. W. Nace, "Geographic variation"; S. Gill, "Cellular contribution to pattern formation."

14 June. (L. Demetrius, discussion leader): M. Slatkin, "A model of resource utilization in territorial lizards"; H. Horn, "The adaptive geometry of trees"; N. S. Goel and N. Dyn, "Extinction of colonizing species." (M. V. L. Bennett, discussion leader): A. Selverston, "Quantitative neurogeometries of identifiable cells and their use in modeling a small system"; C. Nicholson, "Theory of field potentials in anisotropic neuronal tissue"; W. R. Adey, "Cerebral neuron as a tissue element in information processing."

15 June. (J. Lubliner, discussion leader): R. Rikmenspoel, "Contractile mechanisms in flagella and cilia"; C. J. Brokaw, "Simulation methods for the study of spermatozoan movement"; B. Goodwin, "Wave propagation and membrane transport in neuroembryological pattern formation." (R. Sokal, discussion leader): F. J. Rohlf, "Clusters and networks in numerical taxonomy"; J. S. Farris, "Cladistic analysis"; G. Estabrook, "Qualitative information for classification and identification."

16 June. (W. J. Freeman, discussion leader): H. B. Barlow, "Single units in perception"; F. W. Campbell and E. Switkes, "Transmission of spatial information through the visual system of the cat and man"; H. Wilson and J. D. Cowan, "Dynamics of neural tissue."

Chemistry and Physics of Biopolymers

(Holderness School)

John Hearst, co-chairman; Walter Kauzmann, co-chairman.

3–7 July. J. Vinograd, D. Lang, R. Davis, "DNA structure"; O. Uhlenbeck, P. B. Moore, "RNA Structure"; J. G. Wetmur, J. Hearst, "DNA renaturation kinetics"; W. Gilbert, J. Wang, G. Felsenfeld, B. Dorman, "DNA-protein interactions"; V. Bloomfield, "Inelastic light scattering studies of protein aggregates and rates of aggregation"; F. Gurd, "C^{13} NMR of proteins"; W. L. Peticolas, "Structure and low frequency motions of nucleic acids and proteins from laser Raman scattering"; M. Raftery, "F^{19} and C^{13} NMR methods for the study of protein conformation"; C. Cantor, "Fluorescence studies on macromolecular assemblies"; J. Sturtevant, "Scanning calorimetry as applied to biopolymers"; D. Wetlaufer, "Kinetics and mechanism of folding of disulfide proteins"; J. Foster, "Reversible changes of disulfide pairing in serum albumin"; J. Steinhardt, "Kinetics of fast reversible conformation changes in serum albumins induced by detergents"; G. Némethy, "Ionic and solvent effects in association equilibria"; B. Matthews, "Atomic structure of thermolysin, a heat-stable protease."

Bones and Teeth, Chemistry, Physiology and Structure of

(Kimball Union Academy)

Aaron S. Posner, chairman; David S. Howell, vice chairman.

10 July. Contributed short papers (send abstracts to David S. Howell, University of Miami School of Medicine, P.O. Box 875 B.A., Miami, Florida 33152). Molecular aspects of mineral-protein interaction (L. J. Richelle, chairman): C. Sachs and A. Bourdeau, "Role of fatty acids in calcium-binding by bovine serum albumin"; N. Blumenthal, "Interactions of amorphous calcium phosphates with mammalian sera"; E. Katz, "Specific structure and function of bone and dentinal collagen"; J. D. Termine, "Molecular spectroscopy of protein-calcium phosphate complexes."

11 July. Non-collagenous proteins in matrices of mineralizing tissues (K. E. Kuettner, chairman): R. J. Winzler, "Concepts in glycoprotein chemistry and metabolism"; V. C. Hascall, "Proteoglycans and glycoproteins of cartilage matrices"; A. Veis, "Conjugated phosphoglycoproteins of mineralizing tissues"; Panel discussion (R. J. Winzler, K. E. Kuettner, V. C. Hascall and A. Veis) and open discussion from the floor, "Glycoproteins and calcification." Proteases (H. M. Fullmer, chairman): B. Toole, "Synthesis and removal of connective tissue"; A. C. Allison, "Lysosomes in calcification": a review; G. Vaes, "Collagenase"; H. M. Fullmer, "Concluding remarks."

12 July. Cell-matrix interaction (H. C. Slavkin, chairman): H. C. Slavkin, "Introduction"; M. Johnston, "Neural crest cell migrations during embryogenesis: chondrogenesis, osteogenesis and dentinogenesis"; R. Acton, "Immunochemical determinants in cell-matrix interactions." Isolation, structure and function of cells in calcifying tissue (G. Nichols, Jr., chairman): No scheduled papers, open discussion led by chairman. To reserve time for a short contribution in this or the following session send abstract to Dr. Nichols.

13 July. Continuation of previous session. Bone formation (A. S. Posner, chairman): J. T. Irving, "A review of

bone formation theories. Do they have anything in common?"

14 July. Bone transplantation and implantation (M. Bonfiglio, chairman): M. Bonfiglio, "Bone transplant repair: Immunological aspects of allograft and heterograft implants"; K. G. Heiple, "Evaluation of bone transplants"; W. F. Enneking and H. Burchardt, "Quantitation of the reparative processes in cortical bone graft: correlation with mechanical porperties"; C. J. Campbell, "Joint transplantation: clinical implications"; E. M. Lance, "Future prospects for the biological replacement of joints and limbs."

Cancer

(Colby Junior College)

Richmond T. Prehn, chairman; Charlotte Friend, vice chairman.

28 August. (C. Friend, discussion leader): L. Loeb, "Polymerases and cancer"; P. Vogt, "Functions of the viral genome"; F. Rapp, "New developments in viral transformation." (Discussion leader to be announced): J. DiPaolo, "Chemical oncogenesis in culture"; L. Diamond, "Mechanisms of chemical oncogenesis"; J. Leighton, "Tissue organization and differentiation."

29 August. (K. Sanford, discussion leader): J. Folkman, "Capillary growth and cancer"; K. Noonan, "Surface changes in neoplasia"; L. Castor, "Cell contact and cell division." (A. Moscona, discussion leader): G. Slemmer, "Biology of mammary tumors"; J. Fidler, "Some recent work on metastasis"; S. Wood, Jr., "Metastasis."

30 August. (C. McKhann, discussion leader): P. Gullino, "Non-immunological tumor regression"; R. Baldwin, "Tumor antigens—new developments"; N. Trainin, "The efficacy of immune surveillance." (Y. Pilch, discussion leader): T. Borsos, "Non-specific immunological approaches"; C. Deckers, "The interaction of lymphoid cells and tumor cells"; J. Frenster, "The macrophage in tumor immunity."

31 August. (I. Hellström, discussion leader): K. Hellström, "Some new developments in tumor immunology"; K. Ambrose, "Embryonic antigens"; (Speaker to be announced), "Diagnostic tumor antigens." (D. Morton, discussion leader): R. Simmons, "Neurominadase and tumor immunogenicity"; W. Clark, "Natural history of melanoma"; M. Lewis, "Immunology of melanoma."

1 September. (E. Klein, discussion leader): R. Prehn and G. Klein, "General perspectives and miscellaneous observations."

Catalysis

(Colby Junior College)

Hugh F. Harnsberger, chairman; Joseph W. Hightower, vice chairman.

12 June. John H. Sinfelt, "Specificity in catalytic hydrogenation on metals"; Peter B. Wells, "Structure-sensitive hydrogenation over metal catalysts"; Joseph W. Hightower, Dennis L. Milliron and Hideshi Hattori, "Tracer studies of hydrocarbon reactions over synthetic mica-montmorillonite catalysts."

13 June. W. Keith Hall, "Olefin oxidation over metal catalysts"; George C. A. Schuit, "Adsorption and activity during oxidation on oxide catalysts"; Richard J. Kokes and Charles C. Chang, "Hydrogen on zinc oxide catalysts."

14 June. Robert L. Burnett and Thomas R. Hughes, "Mechanism and poisoning of the disproportionation reaction of alkanes with a dual-funcational catalyst system"; Wade L. Callender and S. G. Brandenberger, "Mechanisms of ring-closure and ring-opening over platinum/alumina catalysts"; Robert P. Merrill, W. A. Blanton and K. M. Makar, "Collective electronic interactions in catalysis-reactions over germanium and vanadite spinels."

15 June. John Shapley and James P. Collman, "Catalytic applications of transition metal complexes bound to solid supports"; James C. W. Chien, "Supported catalysts for olifin polymerization"; Kozo Tanabe, "Fundamental problems of catalyst acidity: new hypothesis for acidity of mixed oxides."

16 June. Kamil Klier, "Water on silica and silicate surfaces: adsorption, agglomeration and reactions." Several preliminary reports.

Chemistry and Physics of Cellular Materials

(New Hampton School)

H. George Hammon, chairman; Eberhard A. Meinecke, vice chairman.

14 August. Symposium on toxicology of urethane foam and components (Lester D. Scheel, discussion leader): Carl Dernehl, "Amine accelerators"; George L. Alston, "Urethane application in mines"; Robert J. Athey, "Isocyanates in coating industry"; Verald K. Rowe, "Urethane glycols"; William A. Rye, "Human problems in isocyanate manufacture and use"; Paul F. Woolrich, "The safe handling of isocyanates and polyurethane foam"; Lester D. Scheel, "Immunologic changes following isocyanate exposure"; Sidney Laskin, "Animal inhalation exposure with polyurethane dust."

15 August. (E. A. Meinecke, discussion leader): E. A. Meinecke, "Pneumacel—a new cellular material"; W. H. Bonner, "Part 1, basic technology"; F. H. Fish, Jr., "Part 2, product utilization"; K. C. Frisch, "Novel rigid foam systems."

16 August. (Clifford H. Smith, Jr., discussion leader): David J. Fossey, "Determination of the diffusivity for n-pentane in polystyrene bead foam"; Fred N. Larsen, "Moisture sorption properties of cellular materials"; R. F. T. Stepto, "The statistics of network formation in polyurethanes and polyesters."

17 August. (David L. Skinner, discussion leader): J. M. Buist, "The preparation and performance of isocyanurate foams"; James J. Pitts, Stephen Fuzesi and William R. Andrews, "Trichlorobutylene oxide based flame retardant rigid polyurethane foam"; D. L. Skinner and E. K. Moss, "The molecular design of low flammability foams—modified polyisocyanurates."

18 August. (H. George Hammon, discussion leader): I. N. Einhorn, "The physiological and toxicological aspects of isocyanurate foams and foam systems during fire exposure"; E. A. Meinecke and Ronald C. Clark, "Some viscoelastic properties of elastomeric foams."

Solid State Studies in Ceramics

(Kimball Union Academy)

Arthur H. Heuer, chairman; Norman M. Tallan, vice chairman.

Mechanical Properties of Ceramics

7 August. (N. M. Tallan, discussion leader): F. A. McClintock, "Fracture mechanics"; M. F. Ashby, "Deformation." (R. Gordon, discussion leader): R. M. Thompson, "Atomic physics of fracture"; A. F. McLean and A. Paluszny, "Design with brittle materials—gas turbine engines."

8 August. (W. D. Scott, discussion leader): A. G. Evans, "Application of

fracture mechanics to ceramic problems"; F. F. Lange, "The strength of dense silicon nitride." (R. C. Bradt, discussion leader): M. E. Fine, "Mechanical properties of two-phase ceramic alloys"; D. P. H. Hasselman, "The Griffith criterion, subcritical crack growth and fatigue of ceramics."

9 August. (A. M. Diness, discussion leader): short contributions: R. Rice, D. Green, N. Soga, G. Bansal, D. Buckley, C. Johnson, R. Post and W. Snowden. (N. Soga, discussion leader): C. H. Sholz, "Rock fracture and the mechanism of earthquakes"; D. Berger, "Microstructure control of mechanical properties in hydrated cement."

10 August. (J. S. Reed, discussion leader): B. Ilschner, "Development of creep substructure in MgO"; A. A. Solomon, "Irradiation induced creep in UO_2"; (G. Mayer, discussion leader): C. S. Smith, "Science, ceramics and history."

11 August. (P. Nicholson, discussion leader): S. M. Wiederhorn, "Fracture and deformation of alumina"; G. W. Groves, "Plastic anisotropy in sapphire."

Chemical Oceanography

(Colby Junior College)

Donald W. Hood, chairman; H. Gote Ostlund, vice chairman.

31 July. (W. Stumm, convener): P. Brewer, "Trace metal models in anoxic systems"; R. J. Barsdate, "Chemical speciation and biological processes: interaction with emphasis on mechanisms and significance of complexation." (E. A. Jenne, convener): R. J. Gibbs, "Partitioning of heavy metals between solute and various sediment fractions (adsorbed, particulate, organic metallic, and detrital crystalline)"; F. A. Cross, "Partitioning of heavy metals among biota, water and sediment in estuaries."

1 August. (H. B. Mark, Jr., convener): J. S. Mattson, "Optical determination of surface films"; R. J. Boczkowski, "Electrochemical methods for trace elements." (F. G. Lee, convener): P. J. Kinney, "Application of lasar Raman spectroscopy and high pressure liquid chromatography to the analysis of organics in sea water"; G. Widmark, "Application of gas chromatography and mass spectrophotometry to the analysis of organics in sea water."

2 August. (E. Goldberg, convener): Session title "Halogenated hydrocarbons" (speakers to be announced). (W. D. Garrett, convener): W. G. MacIntyre, "Aging of petroleum films on sea water"; K. Winters, "Natural and manmade hydrocarbons in the oceans."

3 August. (A. Hattori, convener): J. Caperon, "Kinetics of nutrient growth by phytoplankton"; D. W. Menzel, "Nutrient cycles in the sea." (D. W. Hood, convener): Session title "Kinetics of the carbon dioxide system" (speakers to be announced).

4 August. (J. H. Carpenter, convener): V. J. Linnenbom, "Problems of the immediate future."

Applications

Scientists are invited to submit applications for attendance at the Gordon Research Conferences. Application blanks may be obtained by returning the postcard on page 1158C to Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, University of Rhode Island, Kingston, Rhode Island 02881.

Chemistry and Physics of Coatings and Films

(Holderness School)

Robert M. Fitch, chairman, Joseph A. Vasta, vice chairman.

7 August. (H. L. Frisch, discussion leader): R. S. Stein, "Optical studies of the relationships between morphology and properties of films"; A. Rembaum, "Synthesis and properties of cationic polyurethanes"; E. Barrall, "Physical properties of biaxially-oriented films."

8 August. (A. S. Dunn, discussion leader): D. J. Williams, "Morphology and growth of polystyrene latexes"; D. R. Bassett, "Particle morphology of carboxylic emulsion polymers"; J. W. Vanderhoff, "Film formation from polymer latexes: rate of drying."

9 August. (S. Hochberg, discussion leader): J. L. Gardon, "Role of molecular weight in various modern coating technologies"; S. S. Labana, "Use of the electron microprobe in analysis of composites, including coatings"; John Hoffman, "An overview of mechanical and dielectric relaxations in crystalline polymers."

10 August. (R. M. Fitch, discussion leader): J. F. Johnson, "Micro impact testing of coatings and films"; W. Heller, "Competitive adsorption of mixed vapors on active sites of polar and nonpolar macromolecules"; N. Platé (subject to be announced).

11 August. (J. A. Vasta, discussion leader): I. N. Einhorn, "Novel fire-retardant coatings"; J. Lahaye, "Electrodeposition of polymers on metallic electrodes."

Corrosion

(Colby Junior College)

Ray M. Hurd, chairman; J. Paul Pemsler, vice chairman.

24 July. (J. Paul Pemsler, discussion leader): M. A. Streicher, "Improved pitting, intergranular and general corrosion resistance in ferritic stainless steels"; M. Henthorne, "Intergranular corrosion aspects of ferritic stainless steels." (R. W. Staehle, discussion leader): A. P. Bond, "Pitting corrosion of ferritic stainless steels"; R. L. Jones, "Temperature and potential effects in the stress corrosion cracking of stainless steels at 200–300°C."

25 July. (H. H. Uhlig, discussion leader): L. L. Shreir, "The effect of pressure and stress on hydrogen permeation through steel"; A. R. Troiano, "Role of hydrogen embrittlement in stress corrosion cracking." (H. W. Pickering, discussion leader): E. Brauer, "Hydrogen in metals"; B. E. Wilde, "The role of hydrogen in the mechanism of environmentally induced cracking of steels."

26 July. (R. T. Foley, discussion leader): R. R. Annand and E. C. French, "Permeation into steel of corrosion generated hydrogen: inhibited alkaline solutions"; G. W. Simmons, "A study of the passivation of iron using Mossbauer spectroscopy." (H. M. Davis, discussion leader): M. Hepworth, "Electrochemical profiles adjacent to corroding metal surfaces"; P. Swann, "Direct observation of stress corrosion crack tip morphologies."

27 July. (B. Cox, discussion leader): I. Epelboin and M. Garreau, "Mechanism of the anodic dissolution of some metals in anhydrous media"; W. J. James and M. E. Straumanis, "Valency considerations and surface studies of polarized metals using SEM." (J. Kruger, introduction of speaker): H. W. Paxton, "Materials science programs of the National Science Foundation." J. P. Pemsler, mod-

erator): Open forum to explore possible improvements in the format of future corrosion conferences.

28 July. (N. Hackerman, discussion leader): I. Epelboin and M. Keddam, "Impedance methods in the study of multistep reactions: anodic dissolution of iron"; S. Barnartt, "Iron dissolution kinetics: effects of impurities in the metal."

Cyclic AMP

(Kimball Union Academy)

Martin Rodbell, chairman; Theodore W. Rall, vice chairman.

12 June. (M. Rodbell, discussion leader): G. I. Drummond, "Properties of adenylate cyclase from contractile tissues"; G. Levey, "Role of phospholipids in actions of glucagon and catecholamines on heart adenylate cyclase"; M. W. Bitensky, "Photoreceptors and adenylate cyclase"; M. Baudoin, "Mechanism of action of angiotensin II in membranes of smooth muscle cells."

13 June. (M. Schramm, discussion leader): L. Birnbaumer, "Binding and actions of glucagon on liver cell membranes"; R. Lefkowitz, "Properties of catecholamine receptors in heart muscle." (G. A. Robison, discussion leader): M. Schramm, "Catecholamine and cyclic AMP receptors in rat parotid gland and other systems"; S. Jard, "Binding and action of neurohypophyseal peptides and adenylate cyclase in epithelial cells."

14 June. (D. Walsh, discussion leader): O. Rosen, "Properties of cyclic AMP dependent protein kinases"; M. Vaughan, "Properties of cyclic AMP phosphodiesterases." (R. W. Butcher, discussion leader): D. Hepp, "Insulin action on adenylate cyclase in liver and adipose cells"; J. G. T. Sneyd, "Role of phosphodiesterase in the action of insulin."

15 June. (Y. Topper, discussion leader): F. Labrie, "Actions of hypothalamic releasing hormones and of cyclic AMP on anterior pituitary gland"; G. Sato, "Methods for culturing hormone-sensitive cells." (P. Greengard, discussion leader): T. W. Rall, "Re-examination of the second messenger concept."

16 June. (T. W. Rall, discussion leader): R. L. Ney, "The adenylate cyclase of tumors"; A. L. Willis, "The role of aspirin and related drugs on synthesis and actions of prostaglandins."

Developmental Biology

(Proctor Academy)

Vernon M. Ingram, chairman.

Biochemistry, Genetics, and Cell Biology of Development

10 July. Macromolecule synthesis in embryos (P. R. Gross, chairman): J. B. Gurdon, (subject to be announced); panel discussion on gene amplification. RNA polymerases in development (W. J. Rutter, chairman).

11 July. Biochemical development in specialized systems (V. M. Ingram, chairman): R. A. Rifkind, "Erythropoietin and the regulation of erythroid cell differentiation"; G. M. Tomkins, "Hormonal induction in cell culture"; H. Holtzer, "Mitotic cycle and myogenesis." Organization of the eukaryotic genome (J. G. Gall, chairman): U. Nur, "Chromosomes of mealy bugs."

12 July. Determination of insect development (A. Garen, chairman): T. Rice, "Genetic alterations of the Drosophila egg"; P. Bryant, "Developmental analysis of lethal mutants of Drosophila"; W. Gehring and others, panel discussion. Development of the nervous system (C. Levinthal, chairman): C. Levinthal, "Precision and symmetry in the brains of small animals"; S. Benzer, "Mapping of behavior in Drosophila mosaics."

13 July. Heterokaryons and somatic cell hybrids (B. Ephrussi, chairman): Approaches to developmental problems in lower eukaryotes: (1) cellular slime molds (M. Sussman, chairman): M. Sussman, "Transcriptive and translative control of protein synthesis"; E. Katz, "Genetic analysis of cellular slime mold development"; H. Lodish, "RNA and protein synthesis during development of *Dictyostelium.*"

14 July. Approaches to developmental problems in lower eukaryotes: (2) yeasts (C. S. McLaughlin, chairman): C. S. McLaughlin, "Developmental aspects of yeast cell biology"; J. Culotti, "Genetic control of the yeast mitotic cycle"; M. Esposito, "Genetic control of the yeast meiotic cycle." (3) Acellular slime molds (C. E. Holt, chairman).

Dielectric Phenomena

(Proctor Academy)

David W. McCall, chairman; George Birnbaum, vice chairman.

24 July. (S. Matsuoka, chairman): G. Williams, "Glasses"; G. P. Johari, "Glasses." (R. G. Gordon, chairman): A. D. Buckingham, "Field effects"; J. I. Lauritzen, "Double well model."

25 July. (E. Whalley, chairman): R. H. Cole, "Dipolar solids"; F. H. Stillinger, "Orientation in ice." (A. D. Buckingham, chairman): S. H. Glarum, "Theory of polar fluids"; W. Vaughan, "Polar fluids."

26 July. (G. Birnbaum, chairman): John Barnes. "Neutron studies"; A. D. Franklin, "Ionic crystals"; F. Fong, "Ionic crystals."

27 July. (R. S. Porter, chairman): G. Meier, "Liquid crystals"; E. Carr, "Liquid crystals." (C. P. Smyth, chairman): J. D. Hoffman, "Polymer crystals."

28 July. (W. P. Slichter, chairman): Y. Ishida, "Organic polymers"; R. S. Stein, "Organic polymers."

Drug Metabolism

(Holderness School)

Carl C. Smith, chairman; Eric C. Schreiber, vice chairman.

31 July. Application of specialized methodology.

1 August. Relation of P450 complex to drug metabolism.

2 August. Role of metabolic fate to carcinogenesis and mutagenesis.

3 August. Regulatory applications of metabolic data. Special lecture.

4 August. Extra hepatic and nonmicrosomal sites. (Speakers and titles to be announced.)

Elastomers

(Colby Junior College)

H. Karl Frensdorff, chairman; J. P. Kennedy, vice chairman.

17 July. K. W. Scott, "Ring-opening polymerization of cyclopentene"; M. Hirooka, "New copolymer developments"; R. S. Porter, "Mechanochemistry of amorphous polymers."

18 July. G. Allen, "Recent studies on the properties of networks of controlled structure and molecular motion in the rubbery state"; J. E. Mark, "Theories of rubberlike elasticity and polymer-solvent interactions in swollen networks"; J. L. Koenig, J. R. Shelton and M. M. Coleman, "Sulfur vulcanization of polybutadiene: Raman spectroscopic studies."

19 July. C. J. Carman, "Determination of monomer sequence distribution and stereochemical configuration by ^{13}C NMR"; K.-F. Elgert and H.-J.

Cantow, "Sequences and intramolecular heterogeneity in anionic α-methylstyrene/butadiene and styrene/butadiene copolymers"; J. E. Guillet, "The study of polymer structure by inverse gas chromatography."

20 July. M. Gordon, "Critical scattering techniques for characterization of polymers"; H. Inagaki, "Applicability of TLC to polymer chemistry and its limitation"; W. Feder, "The human circulatory system and its elastomeric properties."

21 July. M. Studebaker, "The problem of homogeneity in laboratory samples and rubber products"; J. F. Smith, "Improvement of strength and elastic properties of vulcanizates by removal of network and structural imperfections."

Electron Donor-Acceptor Interactions

(New Hampton School)

Willis B. Person, chairman; Sherril D. Christian, Russell S. Drago, Peter R. Hammond, Edward M. Kosower and Anthony M. Trozzolo, co-vice chairmen.

7 August. (R. S. Mulliken, discussion leader): J. N. Murrell, "Additivity of charge transfer and other contributions to energy"; S. P. McGlynn, "Intramolecular charge transfer."

8 August. N. Mataga, "Electronic structures and dynamical behaviors of excited EDA systems"; E. A. Chandross, "Exciplexes—the importance of geometry and solvation"; H. Tsubomura, "Chemistry and spectroscopy on some donor-acceptor systems with emphasis on problems involving molecular oxygen"; C. Fyfe, "Reorientation in solid molecular complexes."

9 August. I. Steinberg, "Energy transfer"; D. O. Cowan, "Intervalence exchange"; N. J. Leonard, "Intramolecular spectroscopic interactions"; M. DeLuca, "Mechanisms of bioluminescence of firefly luciferase"; D. Chipman, "Mechanism of oxidation of dihydropyridines"; T. Wilson, "Energy transfer in chemiluminescence."

10 August. Z. G. Soos, "Charge transfer in the solid state"; P. Day, "Charge transfer and the physical properties of mixed valency compounds"; J. H. Sharp, "Photoconductivity of charge transfer complexes."

11 August. A. K. Colter, "Chemical effects of molecular complexing"; T. G. Traylor, "Charge transfer and σ-π conjugation."

Environmental Sciences: Water

(New Hampton School)

Perry L. McCarty, chairman; James N. Pitts, vice chairman.

Ecological and Water Resources Management Models

28 August. (R. J. Benoit, session chairman): R. Thomann, "Goals of water quality models." (R. O'Neill, session chairman): W. E. Cooper and H. Caswell, "Experimental studies for ecological models."

29 August. (O. Loucks, session chairman): N. M. Johnson, "Land management and water quality—the Hubbard Brook study"; G. J. Paulik, "Fishery management models." (J. M. Armstrong, session chairman): D. J. O'Connor, "Applications of water quality models." Afternoon field trip to Hubbard Brook.

30 August. (F. L. Parker, session chairman): K. Stolzenbach, "Models for temperature and other physical factors"; D. P. Loucks, "Water quality management models." (J. C. Liebman, session chairman): L. Ortolano, "Effects of water resources development on the environment."

31 August. (J. Hayden Boyd, session chairman): R. d'Arge, "Structural-institutional models of water planning for the Pecos River"; C. Russell, "Models for land-air-water management." (E. L. Johnson, session chairman): E. Haefele, "Public policy models for water resources management."

1 September. (P. McCarty, session chairman): Reserved for voluntary presentations by the participants.

Enzymes, Coenzymes and Metabolic Pathways

(Kimball Union Academy)

Paul D. Boyer, co-chairman; Thomas C. Bruice, co-chairman; Stephen J. Benkovic, co-vice chairman; Irwin A. Rose, co-vice chairman.

3 July. Cytochromes and non-heme iron proteins—structure and catalysis: R. Dickerson, "Cytochrome c"; F. S. Mathews, "Cytochrome b_2"; J. Kraut, "High potential Fe-protein, cytochrome c_2"; L. H. Jensen, "Rubredoxin"; M. Ludwig, "Flavodoxin"; W. Phillips, "NMR and related approaches"; H. Beinert, "EPR and related approaches."

4 July. Cytochromes and non-heme iron proteins: B. Chance, "Cytochrome interactions"; M. Kamen, "Bacterial heme proteins"; I. Gunsalus, "Non-heme iron protein interactions." Biological oxidations—catalysis and control: M. G. Rossman, "Lactate dehydrogenase—structure and catalysis"; L. Banazak, "Malate dehydrogenase—structure and catalysis"; W. Allison, "Glyceraldehyde-3-P dehydrogenase—new phosphorylations"; K. Bloch, "Acetylenic and allenic enzyme inhibitors."

5 July. Flavin coenzyme function: R. H. Abeles, "Action of flavin coenzymes"; S. Ghisla, "Charge transfer complexes in flavin catalysis"; J. Singer, "Succinate dehydrogenase—catalysis and control." Catalytic mechanisms—metals and protons: R. E. Barnett, "Viscosity and diffusion limited rate steps"; B. Vallee, "Metalloenzymes"; A. S. Mildvan, "Metals in enzyme catalysis"; R. Schowen, "Proton transfer and catalysis"; W. Jencks, "Proton transfer reactions."

6 July. Hydrolytic mechanisms: D. A. Buckingham, "Chelate catalysis of ester and amide hydrolysis"; M. O'Leary, "Heavy atom isotope effects in esterase"; D. Auld, "Mechanistic studies of carboxy peptidase A"; M. Caplow, "Chymotrypsin mechanisms"; L. Fedor, "Carbon acid prototropy and thiol esters." Round table: R. Dickerson, T. C. Bruice, W. Jencks, K. Bloch, I. Gunsalus, "Biological catalysis—prospects and prognostications."

7 July. Lysozyme catalysis: J. Rupley, "Structure-function and lysozyme"; M. A. Raftery, "Lysozyme catalytic carboxyl groups"; B. Dunn, "Lysozyme models"; T. H. Fife, "Acetal hydrolysis and lysozyme."

Food and Nutrition

(Colby Junior College)

R. A. Clayton, chairman; Sanford A. Miller, vice chairman.

14 August. Progress in nutrition education (Horace L. Sipple, discussion leader): E. B. Spindler, "An action program to improve nutrition"; G. M. Briggs, "Approaches to nutrition education in developed countries"; L. J. Tepley, "Approaches to nutrition education in developing countries." Amino acid supplementation of foods (O. L. Kline, discussion leader); V. R. Young, "Protein energy interrelationships and amino acid supplementation"; R. Bressani, "Amino acid supplementation in pediatric nutrition."

15 August. Atherosclerosis (C. R. Treadwell, discussion leader): D.

Kritchevsky, "Dietary effects in experimental atherosclerosis"; J. A. Little, "Human atherosclerosis: interrelationships between lipid, carbohydrate, alcohol and genetic factors." Nutrition and aging (J. L. Yamins, discussion leader): M. H. Ross, "Nutrition and diseases of age—experimental studies"; P. T. Kuo, "Carbohydrate and lipid metabolism."

16 August. The psychophysiology of taste (D. A. M. Mackay, discussion leader): L. Sommerfield, "Studies on natural product taste modifiers"; H. L. Jacobs, "Taste as a biological parameter in the regulation of food intake." Vitamin C (A. A. Albanese, discussion leader): C. Wilson, "Vitamin C metabolism"; Richard B. Hornick, "Efficacy of vitamin C for the common cold."

17 August. Nutrition and mental development (S. A. Miller, discussion leader): R. J. Wurtman, "Malnutrition and brain neurotransmitters"; D. Levitsky, "Malnutrition and learning behavior—animal studies"; M. S. Read, "Malnutrition and learning behavior—human experiences." Food and society: M. Pyke, "Food science and the natural history of the political animal."

18 August. Food processing as an environmental modifier (D. I. C. Wang, discussion leader): R. P. Graham, "Food process modifications to avoid pollution"; R. L. Goldsmith, "Membrane techniques for the treatment of food processing waste."

Friction, Lubrication and Wear

(Wayland Academy)

Bruce W. Kelley, chairman; Robert L. Johnson, vice chairman.

26 June. (D. H. Buckley, discussion leader): A. R. C. Westwood, "The effects of liquids on the machining of solids"; J. A. Schey, "Dry Lubricant characteristics in metal forming."

27 June. (W. O. Winer, discussion leader): K. L. Johnson, "The breakdown of EHD films"; D. Dowson, "Elastohydrodynamics in metal forming—theory and experiment."

28 June. (R. S. Fein, discussion leader): E. E. Klaus, "New developments in the chemical aspects of boundary lubrication"; A. J. W. deGee, "New developments in the material aspects of boundary lubrication"; H. G. Feller, "Friction and wear of gold."

29 June. (R. L. Johnson, discussion leader): D. F. Wilcock, "The future of gas bearings."

30 June. (F. Ling, discussion leader): A. Beerbower and I. L. Goldblatt, "Boundary lubrication and wear models."

Geochemistry

(Holderness School)

Gordon W. Hodgson, chairman; John C. Winters, vice chairman.

14 August. J. C. Winters, keynote speaker, "Microbiology in the development of petroleum"; N. J. L. Bailey, "The bacterial degradation of crude oil"; E. Bray, "A re-examination of normal paraffin distributions"; A. Marzec, "Correlation of crude oils"; E. Peake, "Evolution of petroleum in Arctic sediments."

15 August. B. Balogh, "Stereochemical studies of polycyclic biological markers with ^{13}C Fourier transform nuclear magnetic resonance"; J. Maxwell, "Stereochemistry"; J. M. Hayes, keynote speaker, "Organic cosmochemistry"; Panel discussion: S. Chang—solar wind; J. G. Lawless—mass spectrometry; K. A. Kvenvolden—organic compounds; K. C. Pering—aromatic hydrocarbons.

16 August. G. Eglinton, keynote speaker, "Environmental geochemistry"; W. Henderson, "Sterols, triterpenoid alcohols, amino acids, carbohydrates, hydrocarbons and fatty acids"; B. Simoneit, "Organic geochemistry of the deep sea drilling project cores, legs 5-15"; D. J. Casagrande, "Evolution of homologous porphyrins"; G. Mueller, "Crystallographically oriented particles in oil filled inclusions in fluorides"; A. Nissenbaum, "Biogeochemical studies in hypersaline environment."

17 August. J. Smith, keynote speaker, "Aspects of the distribution and isotopic composition of sulfur in sediments"; W. L. Orr, "The sulfur cycle in estuarine environments"; P. H. Given, "Sulfur forms in peat." Special session for research "quickies": last-minute results from current work in all areas of organic geochemistry.

18 August. A. Nissenbaum, keynote speaker, "Teaching organic geochemistry—an international round table discussion of contributions made by this emerging discipline."

Heart Muscle

(Holderness School)

Steven E. Mayer, chairman; Richard J. Podolsky, vice chairman.

17 July. Cross-bridge contraction mechanisms (Francis D. Carlson, session chairman): Robert Simmons and A. C. Nolan. Effects of drugs on ionic currents in excitation (J. M. Ritchie, session chairman): R. D. Tsien and B. Hille. This session will deal with the effects of drugs on ionic currents in excitable membranes, especially kinetic characteristics of membrane ionic permeability. Emphasis will be on tetradotoxin and adrenergic agents.

18 July. Contractile proteins (M. Morales, session chairman): Y. Tonomura. The basic problem in this area is to relate the biochemical and structural properties of the contractile proteins to the contraction mechanism and to the physiology of intact muscle cells. Activation processes in muscle cells (R. J. Podolsky, session chairman): H. Fozzard. Recent studies on the mechanism whereby calcium is released from the sarcoplasmic reticulum will be considered.

19 July. Ion transport and contractility (A. Weber, session chairman): C. Ashley and J. Blinks. Light emission by the photoprotein, aequorin, properties of the calcium transport system and electrical and mechanical activities of muscle fibers will be correlated. Ion transport and drug action (H. Reuter, session chairman): A. Schwartz and E. Page. This session will deal with basic properties of membrane transport of Na, K, Ca, and Mg ions in cardiac muscle and with the effects of drugs on these transport mechanisms.

20 July. Cardiac glycosides (N. C. Moran, session chairman): H. Lullman and S. Dutta. The concept that the positive inotropic effect of cardiac glycosides is dependent on the contractile state of the myocardium will be considered along with the role of binding and metabolic conversion in the action of these agents on cardiac muscle. Nucleic acid and protein synthesis in heart and skeletal muscle (H. Morgan, session chairman): M. Rabinowitz and A. Rich. Protein synthesis will be discussed in terms of availability of substrates, enzymes and nucleic acids involved in peptide bond formation, hormonal and other actions on chain initiation and elongation. Interaction of control by hormones and substrates with effects on tension development represent one of the major problems in muscle biochemistry.

21 July. Cyclic nucleotides and cardiac contraction (S. E. Mayer, ses-

sion chairman): A. Wollenberger, B. Sobel and J. Hardman. The major problem here is the role of cyclic nucleotides on metabolic and physiological responses to autonomic agents. Specific topics that will be discussed are the localization and characterization of the enzymes of synthesis and degradation of cyclic nucleotides; the action of these agents on contractility, and the possible role of phosphoproteins in excitation-contraction coupling and the action of cyclic AMP in ion transport.

Heterocyclic Compounds, Chemistry of

(New Hampton School)

Walter Lwowski, chairman; Albert I. Meyers, vice chairman.

26 June. P. A. S. Smith, "Nitrene routes to and from heterocycles"; James A. Deyrup, "Heterocyclic syntheses with isocyanides"; Harry Dounchis, "Trimers of aroyl isocyanides."

27 June. Egon Fahr, "Valence isomerism of three and four-membered ring systems containing nitrogen"; Short contributions; Kenneth Shepard, "3-Aminopyrazine-carboxylic acids, synthesis and reactions."

28 June. H. C. Van der Plas, "Hetarynes"; John A. Zoltewicz, "Reactive intermediates in liquid ammonia"; Owen Webster, "Oligomers of hydrogen cyanide."

29 June. Michael P. Doyle, "Reactions of nitrosonium and nitronium ions with organic compounds"; Pius A. Wehrli, "Synthetic aspects of fremy salt oxidations"; Short contributions.

30 June. William A. Mock, "Cycloaddition and eliminations in the sulfolene series"; Waldemar Adam, "Novel peroxide heterocycles."

High Pressure, Research at

(Holderness School)

William B. Daniels, chairman; Harry G. Drickamer, co-chairman.

19 June. Intermolecular forces (C. A. Swenson, session chairman): Charles S. Smith, "Repulsive interaction of closed shell ion cores in ionic crystals"; J. A. Barker, "Heuristic potentials in dense molecular phases"; J. A. Van Vechten, "Application of the dielectric theory of covalent bonding to high pressure phenomena." Electronic structure I (D. Bloch, session chairman): Ian Spain, "Anisotropy of the electronic properties of graphite"; G. A. Samara, "Pressure and temperature studies of the dielectric properties of ionic crystals"; William Paul, "Properties of amorphous semiconductors at high pressure."

20 June. Electronic structure II (J. A. Krumhansl, session chairman): Henry Offen, "Luminescence of organic molecules at high pressures"; H. G. Drickamer, "New electronic ground states in systems at high pressure"; J. E. Schirber, "Electronic structure transitions." Spectroscopic studies of fluids (J. Van Kranendonk, session chairman): J. Jonas, "Nuclear magnetic resonance studies in liquids at high pressures"; J. M. Worlock, "Raman scattering from simple dense fluids"; H. L. Welsh, "Pressure induced infrared spectrum of H_2; applications to molecular dynamics of dense media."

21 June. Phase transitions (A. M. H. Levelt-Sengers, session chairman): W. J. Camp, "The electrical properties of supercritical metallic fluids"; N. J. Trappeniers, "Cooperative phenomena at the order-disorder transformation in the ammonium halides at high pressure"; W. B. Streett, "Phase equilibrium in binary gas mixtures at pressures to 10Kb." Materials syntheses (D. B. McWhan, session chairman): A. Jayaraman, "Pressure induced 4-f electron delocalization in samarium chalcogenides"; J. C. Joubert, "The high pressure phases of transition metal oxides and oxy-hydroxides"; (speaker to be announced), "Recent advances in geochemistry."

22 June. High pressure chemistry (E. Whalley, session chairman): R. Hentz, "Pressure dependence of properties of the solvated electron"; T. J. Ahrens and E. S. Gaffney, "Optical studies of chemical bonding in oxides subjected to shock waves." Biochemical effects (W. B. Daniels, session chairman): W. J. Kauzmann, "Biological effects of high pressure."

23 June. Recent advances in high pressure technique (D. Lazarus, session chairman): R. S. Hawke, "A method of isentropically compressing materials to pressures of several megabars." Assorted speakers presenting short "Technique Notes."

High Temperature Chemistry

(Proctor Academy)

K. Douglas Carlson, chairman; Gerd M. Rosenblatt, vice chairman.

7 August. Electron spectroscopy (J. Berkowitz, session chairman): W. L. Jolly, "Inorganic applications of photoelectron spectroscopy"; M. O. Krause, "X-ray photoelectron spectroscopy of high temperature compounds"; J. Berkowitz, "Photoelectron spectroscopy and chemical bonding of high temperature molecules."

8 August. Solids and materials (E. D. Cater, session chairman): H. F. Franzen, "Structural chemistry of metal-rich sulfides and related compounds"; J. C. Phillips, "Ionicity of the chemical bond in crystals"; S. Iijima, "Electron microscope imaging of non-stoichiometric compounds"; J. S. Anderson, "Developments in ideas on non-stoichiometric compounds."

9 August. Kinetics and mechanisms (F. T. Greene, session chairman): H. Gg. Wagner, "Kinetics of combustion processes"; J. T. Kummer, "Chemical aspects of automotive emission control"; H. M. Saltsburg, "Molecular beam studies of high temperature gas-surface interactions"; R. E. Stickney, "Kinetics of surface reactions: local equilibrium thermodynamic considerations."

10 August. Matrix isolation (W. Weltner, Jr., session chairman): J. S. Ogden, "Infrared spectroscopy of matrix isolated species"; J. S. Shirk, "Raman and laser fluorescence in matrices"; W. Weltner, Jr., "ESR of matrix isolated molecules."

11 August. Extreme conditions (L. S. Nelson, session chairman): E. U. Franck, "Critical phenomena in metals"; D. E. Rosner, "Gas-metal reactions at elevated temperatures."

Holography and Coherent Optics

(Proctor Academy)

H. J. Caulfield, chairman; B. J. Thompson, vice chairman.

17 July. (R. H. Powell, discussion leader): R. E. Brooks, "Holographic interferometry"; J. M. Burch, "Interferometric effects." (H. M. Smith, discussion leader): J. C. Urbach, "Hologram materials."

18 July. (J. B. DeVelis, discussion leader): T. Jeong, "Three dimensional displays"; J. N. Latta, "Holographic optical elements." (W. T. Cathey, discussion leader): B. J. Thompson, "Coherence and holography."

19 July. (E. N. Leith, discussion leader): G. Wade, "Acoustic holography"; G. Tricoles, "Microwave holography." (J. C. Wyant, discussion leader): A. W. Lohmann, "Computer generated holograms."

20 July. (M. E. Cox, discussion leader): R. F. von Ligten, "Holographic microscopy"; J. D. Trolinger, "Holography of small particles." (J. W. Goodman, discussion leader): K. S. Pennington, "Optical image processing."

21 July. (W. T. Maloney, discussion leader): W. J. Hannan, "Holographic storage of two-dimensional images"; A. Kozma, "Holographic digital memories."

Hydrocarbon Chemistry

(Proctor Academy)

Paul G. Gassman, chairman; Howard E. Simmons, vice chairman.

19 June. C. S. Foote, "Mechanism of addition of singlet oxygen to olefinic substrates"; P. R. Story, "A comprehensive mechanism of ozonolysis"; F. Johnson, "Allylic strain: stable conformations with bulky axial groups."

20 June. D. M. Grant, "C-13 magnetic resonance and molecular structure of hydrocarbons"; E. Wenkert, "CMR spectral analysis of terpenes"; E. Hedaya, "Cyclopentadienyl radical: an important reactive intermediate."

21 June. G. M. Whitesides, "Studies in transition metal organometallic chemistry." Open session for short contributions from attendees. W. R. Moore, "Strained molecules derived from cyclopropylidenes."

22 June. S. W. Staley, "The bicyclo [6.1.0] nonatriene problem"; L. A. Paquette, "Unsaturated propellanes, neutral bishomoaromatics, and the negative cope transition state"; A. J. Parker, "The E2C mechanism of elimination reactions."

23 June. J. K. Kochi, "Structural and conformational studies of transient hydrocarbon and related (main group) radicals in solution by ESR"; E. K. Fields, "Reactions of free radicals from pyrolysis of nitro compounds."

Immunochemistry and Immunobiology

(Tilton School)

Herman N. Eisen, chairman; Leonard Herzenberg, vice chairman.

Soluble and Membrane-Bound Immunoglobulins

26–30 June. Genetics and evolution of immunoglobulins I. Genetics and evolution of immunoglobulins II. Active sites of antibodies. Three-dimensional structure of immunoglobulins. Membrane-bound immunoglobulins on lymphoid cells I. Membrane-bound immunoglobulins on lymphoid cells II. Cell modifications resulting from interactions of membrane-bound immunoglobulins. Lymphatic tumors of immunological significance. Cell-cell interactions at the membrane level.

Immuno-Electron Microscopy

(Wayland Academy)

Sydney S. Breese, Jr., chairman.

31 July. Protein chemistry of antibody-labeling. (B. F. Erlanger, discussion leader): P. Nakane, L. A. Sternberger; Immuno-ferritin preparation. (K. C. Hsu, discussion leader): A. Vogt.

1 August. Immuno-ferritin (viral applications). (C. Morgan, discussion leader): C. Howe, S. S. Breese, Jr. Immuno-ferritin (tissue applications). S. Dales, discussion leader): G. A. Andres, M. Polley.

2 August. Workshop session (immuno-ferritin). (S. S. Breese, Jr., discussion leader): K. C. Hsu, G. A. Andres; Immuno-enzyme techniques (peroxidase). (S. Avrameas, discussion leader): P. J. Hoedemaeker, R. Vernier. Cytochrome (J. P. Kroehenbuhl, discussion leader).

3 August. Immuno-enzyme technique workshop. (P. Nakane, discussion leader): G. B. Pierce; Hybrid antibody technique. (T. Aoki, discussion leader): C. Stackpole.

4 August. Unlabeled antibody enzyme technique: Immunizing markers and tracers. B. Pernis (ferritin), S. Avrameas (peroxidase).

Infrared Spectroscopy

(Kimball Union Academy)

Otto Schnepp, chairman; Ian M. Mills, vice chairman.

14 August. High Resolution Spectroscopy: R. G. Brewer, "Nonlinear infrared spectroscopy and transient coherent effects"; Takeshi Oka, "Two photon spectroscopy using infrared lasers." Tunable infrared lasers: A. Mooradian, "Tunable infrared lasers"; C. K. N. Patel, "Tunable infrared Raman lasers and their applications to physics and chemistry."

15 August. Vibrational and electronic relaxation: P. Rentzepis, "Relaxation of polyatomic molecules in the pico- and nanosecond range"; J. Jortner, "Electronic and vibrational relaxation in large molecules." Chemical reactions induced by lasers: S. H. Bauer, "Chemical reactions induced by infrared lasers."

16 August. Raman effect: S. P. S. Porto, "Breakdown of Raman selection rules"; H. J. Bernstein, "Resonance Raman spectroscopy." Fourier spectroscopy: P. Connes, "Fourier spectroscopy."

17 August. Large molecules and polymers: W. L. Petticoals, "Structure and dynamics of biological micromolecules from laser Raman spectroscopy"; T. Miyazawa, "Vibrations of polymer chains and crystals." Conformational analysis: S. Lifson, "Consistent vibrational and conformation analysis"; Herbert Strauss, "Far infrared spectroscopic studies of the conformations of ring molecules."

18 August. Microwave spectroscopy: R. A. Beaudet, "Recent molecular structure studies on carboranes by microwave spectroscopy"; L. H. Scharpen, "Broad band microwave spectroscopy and its application to the study of molecular structure and conformational isomerism."

Chemistry at Interfaces

(Kimball Union Academy)

Paul Becher, chairman; Stanley G. Mason, vice chairman.

24 July. Liquid-liquid/liquid-solid interfaces (T. Fort, Jr., chairman): G. L. Gaines, Jr., "Immiscibility and interfacial effects between polymer liquids"; S. Ross, "Repulsion and attraction of particles due to wetting or non-wetting by the medium"; R. E. Johnson, Jr., "The adhesion of particles to surfaces immersed in non-aqueous liquids."

25 July. Rheology of disperse systems (P. Sherman, chairman): M. M. Cross, "Viscosity/shear rate/concentration relations for disperse systems"; I. M. Krieger, "Rheology of hard-sphere dispersions"; B. W. Barry, "The self-bodying action of mixed emulsifiers."

26 July. Light scattering (M. Kerker, chairman): R. H. Marchessault, "Light scattering by cellulose, starch and polymeric solids"; L. W. Richards, "Multiple scattering calculations for technology"; B. R. Ware, "Measurement of the electrophoretic mobilities and diffusion coefficients of charged macromolecules in solution by light scattering."

27 July. Gel permeation chromatography (J. Cazes, chairman): J. N. Little, "An introduction to GPC and its application to surface and colloid chemistry"; R. Felter, "The influence of tem-

perature on molecular weight distribution of PVC adsorbed on calcium carbonate"; H. Small, "Hydrodynamic chromatography."

28 July. Contributed papers (S. G. Mason, chairman).

Chemistry and Physics of Isotopes

(Holderness School)

F. S. Rowland, chairman; Francis T. Bonner, vice chairman.

26 June. (J. Dubrin, discussion leader): A. Kupperman, "Threshold reactions of hydrogen and deuterium atom"; L. Spicer, "Isotope effects in hot reactions of halogen atoms"; J. Muckerman, "Dynamic isotope effects in the reactions of fluorine atoms with H_2, HD and D_2." (V. Gold, discussion leader): M. Saunders, "NMR studies of equilibrium deuterium isotope effects"; C. Johnson, "Effects of quantum mechanical tunneling on NMR line shapes."

27 June. (R. Weston, discussion leader): S. Epstein, "Isotopic compositions of H, C, O, and Si in lunar samples"; A. Truesdell, "Effects of ionic hydration on oxygen isotope fugacity in salt solutions"; G. Jancsó, "Theory of isotope effects: minimax methods." (R. Silbey, discussion leader): W. Siebrand, "Theory of isotope effects on radiationless transitions"; E. C. Linn, "Deuterium isotope effects on the fluorescence of aromatic molecules."

28 June. (E. Halevi, discussion leader): F. Bruner, "Isotopic separations by gas chromatography"; S. Bauer, "Dependence of energy transfer efficiencies on isotopic composition"; T. W. Martin, "Evidence for the existence of H_3O and D_3O hydronium radicals." (J. O'Neil, discussion leader): H. Diamond, "^{237}Np, ^{236}U and other actinides in lunar samples"; R. Clayton, "Pressure effects on isotopic exchange equilibria."

29 June. (B. Murr, discussion leader): H. Kwart, "Kinetic deuterium isotope criterion"; D. Sunko, "Isotope effects in solvolysis reactions: conformational studies and medium effects"; J. Jewett, "Remote secondary deuterium isotope effects in solvolysis reactions." (F. Bonner, discussion leader): Session for contributed papers.

30 June. (M. Wolfsberg, discussion leader): H. Friedman, "Solvent isotope effects in water and in methanol"; V. Gold, "Solvent isotope effects in mixtures of methanol-*h* and methanol-*d*."

Lasers in Medicine and Biology

(Kimball Union Academy)

Donald E. Rounds, chairman; Frederick Brech, vice chairman.

26 June. Current advances in laser technology (Frederick Brech, chairman): Frederick Brech, introductory remarks; Jack Wilson, "Advances in laser technology; Benjamin B. Snavely, "Dye lasers." Holography in Medicine (George W. Stroke, chairman): George W. Stroke, "Image sharpening by holography"; Byron B. Brenden, "Acoustical holography in medicine"; Aaron Klug, "New methods for three-dimensional electronmicroscopy."

27 June. Lasers in cellular research (Michael W. Berns, chairman): Marvin A. Van Dilla, "Cell analysis and sorting with high-speed flow systems and laser excitation"; Kenneth W. Marick, "Laser microprobe analysis for elemental determinations"; Michael W. Berns, "Laser microbeams and cell function"; Donald E. Rounds, "Wavelength-specific cellular effects with high and low energy laser systems." Advances in photochemistry and photobiology (John Jagger, chairman): Angelo A. Lamola, "Photochemistry"; John Jagger, "Photobiology."

28 June. Clinical applications of lasers (Leon Goldman, chairman): Thomas Polyani, "Instrumentation for CO_2 laser surgery"; M. Stuart Strong, Claude Hobeika, "Investigative maxillofacial surgery with the CO_2 laser"; James Fidler, R. Hoefer, "Investigative liver surgery with the CO_2 laser"; R. J. Rockwell, Jr., "Instrumentation for Nd YAG laser surgery"; Gunther Nath, "Transmission optics"; James Fidler, "Animal surgery with Nd YAG lasers"; Leon Goldman, "Clinical applications of the Nd YAG laser." Panel discussion on the pathophysiological effects of lasers in the treatment of retinal disease (Lloyd Aiello, chairman): H. Christian Zweng, Robert Peabody, Francis L'Esperance, Arnall Papz, Toichiro Kuwabara.

29 June. (George M. Wilkening, chairman): Ralph H. Stern, "Laser applications to dentistry"; Panel discussion on laser safety (George M. Wilkening, moderator): A. Vassiliadis, "Models of laser damage in biologic systems"; M. O. Ts'O, "Pathologic models of light damage in a retina." Theoretical models in laser pathology (Jude R. Hayes, chairman).

30 June. Short unannounced papers on current laser studies (Donald E. Rounds, chairman).

Lipid Metabolism

(Kimball Union Academy)

Erwin H. Mosbach, chairman; William J. Lennarz, vice chairman.

19 June. (D. Steinberg, discussion leader): J. M. Dietschy, "The determination of passive permeation of steroids and lipids across the intestinal brush border"; W. J. Simmonds, "Aqueous dispersion of lipids as a rate-limiting factor in absorption." (A. A. Kandutsch, discussion leader): V. W. Rodwell, "Regulation of mammalian HMG-CoA reductase"; S. Shefer, "Intestinal HMG-CoA reductase."

20 June. (E. Feldman, discussion leader): D. W. Foster, "The regulation of ketogenesis and its relation to cholesterol biosynthesis"; R. M. Glickman, "Formation and composition of lymph chylomicrons." (E. H. Ahrens, Jr., discussion leader): S. M. Grundy, "Regulation of secretion of biliary lipids in man"; D. M. Small, "Bile acid metabolism and bile composition in the primate."

21 June. (N. B. Myant, discussion leader): A. F. Hofmann, "Disturbances in the enterohepatic circulation of bile acids in man"; G. Salen, "The Achilles heel and cholestanol." (G. Vahouny, discussion leader): B. Borgström, "Colipase"; F. Mattson, "Metabolism of polyol esters."

22 June. (R. J. Havel, discussion leader): R. I. Levy, "Studies on lipoprotein apoprotein metabolism: an approach to understanding lipid transport and its disorders"; A. M. Gotto, Jr., "Lipoprotein determinants of plasma lipid transport." (W. J. Lennarz, discussion leader): DeW. S. Goodman, "Vitamin A transport in plasma: metabolic regulation, chemical and clinical studies."

23 June. (A. Scanu, discussion leader): H. A. Eder, R. B. Rombauer, Paul S. Roheim and Lewis I. Gidez, "The metabolism of the apoproteins of rat lipoproteins"; R. L. Hamilton, "Synthesis and secretion of nascent plasma lipoproteins."

Lysosomes

(Proctor Academy)

Gerald Weissmann, chairman; S. E. Malawista, co-chairman.

Immunity and Tissue Injury

3 July. Antigen processing (Zanvil Cohn, chairman): Ralph Steinman, Emil Unanue, Joel Goodman, A. A. Gottlieb.

Breakdown of antibodies and fibrous proteins (C. deDuve, chairman): J. Lospalluto, G. Lazraus, A. Janoff.

4 July. Antibodies and release of mediators (S. E. Malawista, chairman): Irwin Lepow, Peter Ward, K. Frank Austen, H. Z. Movat. Immunologic release of lysosomal enzymes (A. C. Allison, chairman): P. Henson, R. Zurier.

5 July. Cellular immunity: Macrophages and lymphocytes (R. A. Good, chairman): John Sheagren, Bertran Zbar, William Elkins, R. T. McCluskey. Factors released by lymphocytes (B. Bloom, chairman): John David, William E. Bowers.

6 July. Antibodies and lysosomes (J. G. Hirsch, chairman): Andre Trouet, Alan Barrett, Honor B. Fell, Charles P. Holland. Roundtable: Is the "Suicide sac" concept still tenable? (A. B. Novikoff, chairman): A. C. Allison, G. Weissmann, B. F. Trump.

7 July. The effect of drugs on lysosomal functions (G. Weissmann, chairman): Louis Ignarro, Henry Bourne, Anthony Willis, S. E. Malawista.

Medicinal Chemistry

(Colby Junior College)

Clement A. Stone, chairman; William J. Wechter, vice chairman.

7 August. The prospects for gene therapy (R. D. Owen, discussion leader): R. D. Owen, "Backgrounds for gene therapy"; M. Siniscalo, "Human cell hybridization"; C. Merril, "Genetic transduction with human cells"; A. G. Knudson, "Gene therapy: how might it contribute to medicine"; S. Rogers, "Medicinal chemistry and the prospects for gene therapy."

8 August. Synthesis and biology of the prostaglandins (J. E. Pike, discussion leader): B. Samuelsson, L. S. Wolfe, J. Fried, R. Pappo, N. A. Nelson and P. Crabbe.

9 August. Cyclic-AMP (S. Hess, discussion leader): R. Robins, "Analog synthesis"; C. A. Free, "Biological activities of cyclic-AMP derivatives"; J. J. Voorhees, "Role of cyclic-AMP in the control of proliferation and differentiation of cells"; P. Greengard, "Cyclic-AMP and neural function." New drugs: W. Schaper, "Lidoflazine"; R. R. Tuttle, "Design of a drug for the treatment of acutely depressed cardiac con-

Program Summary, Gordon Research Conferences 1972

	Colby Junior College New London, N.H.	**New Hampton School New Hampton, N.H.**	**Kimball Union Academy Meriden, N.H.**
12–16 June	Catalysis	Nucleic Acids	Cyclic AMP
19–23 June	Polymers	Proteins	Lipid Metabolism
26–30 June	Nuclear Chemistry	Heterocyclic Compounds, Chemistry of	Lasers in Medicine and Biology
3–7 July	Textiles: Fibrous materials	Radiation Chemistry	Enzymes, Coenzymes and Metabolic Pathways
10–14 July	Scientific Information Problems in Research	Statistics in Chemistry and Chemical Engineering	Bones and Teeth, Chemistry, Physiology and Structure of
17–21 July	Elastomers	Organic Reactions and Processes	Structural Macromolecules: Collagen
24–28 July	Corrosion	Natural Products	Interfaces, Chemistry at
31 July–4 Aug.	Chemical Oceanography	Solids, Chemistry and Physics of	Toxicology and Safety Evaluations
7–11 Aug.	Medicinal Chemistry	Electron Donor-Acceptor Interactions	Ceramics, Solid State Studies in
14–18 Aug.	Food and Nutrition	Cellular Materials, Chemistry and Physics of	Infrared Spectroscopy
21–25 Aug.	Separation and Purification	Adhesion, Science of	Thin Films
28 Aug.–1 Sept.	Cancer	Environmental Sciences: Water	Metal-Insulator-Semiconductor Systems

* Weeks not available

tractility" (speakers and subjects to be announced).

10 August. Reverse transcriptase (F. R. Nichol, discussion leader): W. A. Carter, "Blockade by streptovaracin"; R. D. Gallo, "Role in normal and neoplastic lymphocytes"; P. Sensi, "Rifamycins." Acupuncture as a therapeutic tool in modern China (speaker to be announced).

11 August. Diagnostics (A. P. McKee, discussion leader): A. P. McKee, "The implication of hepatitis-associated-antigen for diagnosis, prophylaxis, and therapy"; C. Liu, "Identifying antigen during acute stage of infectious disease and its relationship to early therapy"; A. Ferrari, "Automated laboratory medicine: Where is it taking us? What can we expect from it?"

Metal-Insulator-Semiconductor Systems

(Kimball Union Academy)

R. J. Jaccodine, chairman.

28 August. Theoretical status of surface models (J. Zemel, C. N. Berglund, discussion leaders): R. Greene, "The theory of the surface potential in the presence of discrete charges"; J. Brews, "Lateral inhomogeneities on Si-SiO_2 interfaces"; W. Engeler, "Experimental and theoretical studies on surface charge transport."

29 August. Double layer structures (H. E. Nigh, G. Warfield, discussion leaders): J. G. Simmons, "Effects of traps in MOS and MNOS systems"; J. Scott and M. Woods, "Degradation mechanisms in bistable MNOS transistors"; J. T. Clemens, E. F. Labuda and C. N. Berglund, "Double layer studies Al_2O_3-SiO_2."

30 August. Ionic transport and ion migration (K. H. Zaininger, discussion leader): E. Kooi, D. Breed, "Chlorine (and other impurities) and charge-trapping in SiO_2 samples prepared in the presence of HCl"; T. H. DeStefano, "The effect of alkali ions on the spacial homogenity of semiconductor-insulator interfaces"; A. G. Revesz, "Structural defects and their relation to transport properties of non-crystalline SiO_2 films."

31 August. Quantum effects and charge couple devices (C. Mead, P. Stiles, discussion leaders): P. Stiles, "Studies of two dimensional quantum effects"; C. Mead, "Charge coupled device physics."

New Hampshire and Wisconsin

Tilton School Tilton, N.H.	**Proctor Academy Andover, N.H.**	**Holderness School Plymouth, N.H.**	**Wayland Academy Beaver Dam, Wis.**
Physical Metallurgy	Biomathematics, Theoretical Biology and	*	*
Plasma Physics	Hydrocarbon Chemistry	High Pressure, Research at	*
Immunochemistry and Immunobiology	Polymer Physics	Isotopes, Chemistry and Physics of	Friction, Lubrication and Wear
Space, Chemistry and Physics of	Lysosomes	Biopolymers, Chemistry and Physics of	Nuclear Proteins, Chromatin Structure and Gene Regulation
Radical Ions	Developmental Biology	Molecular Pathology	Organometallic Chemistry
Biological Regulatory Mechanisms	Holography and Coherent Optics	Heart Muscle	Quantum Solids and Fluids, Dynamics of
Nuclear Structure Physics	Dielectric Phenomena	Molecular Collisions, Dynamics of	Nonlinear Optics
Odor and Flavor, Chemistry and Psychophysiology of	Microbial Toxins	Drug Metabolism	Immuno-Electron Microscopy
Paper, Chemistry and Physics of	High Temperature Chemistry	Coatings and Films, Chemistry and Physics of	Tetrapyrroles, Chemistry and Biology of
Biomaterials, Science and Technology of	Particle-Solid Interactions	Geochemistry	*
Numerical Data of Science and Technology	Postharvest Physiology	Water and Aqueous solutions, Physics and Chemistry of	*
Animal Cells and Viruses	Plasma Chemistry	*	*

1 September. Radiation effects in insulators (R. J. Strain, discussion leader): C. W. Gwyn, "Damage due to ionizing radiation"; D. V. McCaughan, "Damage due to energetic particles."

Microbial Toxins

(Proctor Academy)

Samule J. Ajl, chairman.

31 July. Bacterial protein toxins (discussion leader to be announced): "Present status of the field" (speaker to be announced); P. F. Bonventre, "Microbial toxin product vs. true microbial toxin"; "Lysogeny in bacteria as related to toxin production" (speaker to be announced).

1 August. Bacterial protein toxins (A. W. Bernheimer, discussion leader): A. W. Bernheimer, "Cytolytic bacterial toxins: Interactions with membranes"; "Tissue culture and bacterial protein toxins" (speaker to be announced); J. J. Bullen, "Role of bacterial toxins in host-parasite relationships."

2 August. Bacterial protein toxins (discussion leader to be announced): "Cholera toxins" (speaker to be announced); "Chemistry of diphtheria toxin" (speaker to be announced); D. A. Boroff, "Botulinum toxin."

3 August. Bacterial protein toxins (S. P. Halbert, discussion leader): S. P. Halbert, "Streptolysin O"; "Anthrax toxin" (speaker to be announced); M. S. Bergdoll, "Staphylococcal toxins."

4 August. Microbial toxins—overview (E. Ribi, discussion leader): E. Ribi, "General characteristics of bacterial endotoxins"; L. J. Berry, "Metabolic effects of bacterial endotoxins"; "Biosynthesis of O-antigens" (speaker to be announced).

Dynamics of Molecular Collisions

(Holderness School)

Sheldon Datz, chairman; James L. Kinsey, vice chairman.

24 July. (D. R. Herschbach, discussion leader): Y. T. Lee, "Chemically reactive collisions of neutral molecules." (W. A. Chupka, discussion leader): T. L. Bailey, "Reactive scattering of ions"; R. S. Berry, "Ion-ion recombination."

25 July. (R. N. Zare, discussion leader): K. R. Wilson, "Photo dissociation"; J. Kasper, "Photodissociative chemical lasers." (E. Rothe, discussion leader): J. P. Toennies, "Collisional dissociation"; R. N. Compton, "Chemi-ionizing collisions."

26 July. (E. F. Greene, discussion leader): T. F. Moran, "Inelastic scattering and energy transfer." (E. A. Mason, discussion leader): U. Buck, "Potential energy functions from elastic scattering measurements"; M. Klein, "Use of microscopic potential functions in determination of bulk transport properties."

27 July. (J. C. Polanyi, discussion leader): H. F. Schaffer, "*A Priori* calculations of potential energy surfaces for simple chemical reactions"; J. C. Tully, "Effects of potential surface crossings on chemical reactions." (J. L. Kinsey, discussion leader): N. H. Tolk, "Quantum mechanical interference effects in atomic collisions"; S. Datz, "Inner shell collision chemistry."

28 July. (W. H. Miller, discussion leader): R. D. Levine, "Quantum and classical theories of molecular collision dynamics."

Molecular Pathology

(Holderness School)

David Korn, chairman, Earl P. Benditt, vice chairman.

Coordination and Control of Cell Division

10 July. Prokaryotes A (C. E. Helmstetter, session chairman): "The bacterical cell cycle"; Chromosome replication and segregation in bacteria"; "The concept of the bacterial segregation unit." Prokaryotes B (David Korn, session chairman): "Studies with bacterial mutants—DNA systhesis, cell division, cell membrane."

11 July. The eukaryotic cell cycle (R. Baserga, H. Swift, session chairmen): "Definition of the eukaryotic cell cycle"; "Chromosome replication in eukaryotes." Mechanisms of mitosis A (K. Bensch, session chairman): "The primitive mitotic mechanisms in eukaryotes"; "The role of the centriole."

12 July. Mechanisms of mitosis B (B. Brinkley, session chairman): "Structure and chemistry of the microtubule"; "Function of the mitotic spindle." Cytokinesis and partition of cell organelles (D. Marsland, session chairman): "Relationship between mitosis and cytokinesis"; "Microfilaments"; "Effects of drugs on mammalian cell division."

13 July. Coordination of the eukaryotic cell cycle (L. Hartwell, R. T. Johnson, session chairmen): "Genetic analysis of the cell cycle"; "Somatic cell hybrids." Chromosomal evolution in normal and neoplastic cells A (G. M. Martin, session chairman): "Somatic segregation"; "Chromosomal control of malignancy."

14 July. Chromosomal evolution in normal and neoplastic cells B (P. Nowell, chairman): "Chromosomal instability and neoplasia"; "Clonal evolution in human leukemia"; "Tumor virus genes in 'normal' cells."

Natural Products

(New Hampton School)

John W. ApSimon, chairman; Arnold Brossi, vice chairman.

24–28 July. The following persons have been invited to speak: S. Agwell, R. Cooper, P. Deslongchamps, Y. Kishi, N. J. Leonard, G. Saucy, S. R. Johns, R. V. Stevens, E. Wenkert.

Nonlinear Optics

(Wayland Academy)

G. D. Boyd, chairman; J. H. Marburger, co-vice chairman; Sven R. Hartman, co-vice chairman.

24–28 July. "Nonlinear materials, parametric effects and theories of nonlinear susceptibilities"; UV and X-ray nonlinearities"; "Nonlinear optics in fibers and films"; "Picosecond pulses and nonlinear propagation"; "Transient nonlinear effects and saturation spectroscopy"; "Catastrophic nonlinear effects (damage)." Discussion leaders and speakers: R. L. Byer, J. M. Yarborough, G. D. Boyd, R. K. Chang, H. Mahr, J. Jerphagnon, D. A. Kleinman, B. F. Levine, C. L. Tang, R. W. Hellwarth, S. E. Harris, J. F. Young, S. L. McCall, P. J. Mallozzi, R. H. Stolen, P. K. Tien, R. A. Andrews, J. A. Giordmaine, D. H. Auston, A. M. Glass, A. Laubereau, E. L. Hahn, R. Friedberg, J. Hall, J. H. Marburger, Y. R. Shen, A. J. Glass, M. Bass, C. Giuliano, C. Flytzanis, A. Yariv, R. G. Smith, T. Haensch, R. L. Carman, J. A. Fleck, Jr.

Nuclear Chemistry

(Colby Junior College)

Marshall Blann, Chairman; Eugene Eichler, vice chairman.

26 June. J. R. Huizenga, "Dependence of the nuclear level density on single particle structure"; L. G. Moretto, "Effects of shells and pairing

on statistical nuclear properties"; G. Temmer, "Probing the nuclear continuum at high excitation by the crystal blocking technique"; Y. LeBeyec, "Reactions induced by Kr ion beams."

27 June. U. Mosel, "Calculations of fission potenital energy surfaces with the two center shell model"; H. C. Britt, "Determination of fission barrier parameters from analysis of shape isomer and direct reaction-fission correlation results"; L. Milazzo-Colli, "New approaches in preequilibrium decay."

28 June. "Monte Carlo calculations of reactions of relativistic heavy ions" (speaker to be announced); P. B. Price, "Search for new mechanisms in reactions of relativistic heavy ions with heavy targets"; S. Katcoff, "Fission induced by 2.1, 3.9 and 29 GeV ^{14}N ions."

29 June. G. D. Harp, "Effects of finite lifetimes of the T=3/2, J=3/2 isobar on intranuclear cascade studies of low energy pion induced nuclear reactions"; R. Klapisch, "In beam mass spectrometry." New results from Mariner 9 Mars orbiter. V. I. Goldanskii, "Chemistry of positronium and mesic atoms."

30 June. W. Greiner, "Quantum electrodynamics of strong fields and possible tests in heavy ion physics." Discussion leaders: N. Cindro, E. Gadioli, T. Mayer-Kuckuk, I. Slaus, D. Sperber, Z. Szymanski. Additional topics in fission, high energy and heavy ion reactions are to be added to this program.

Nuclear Proteins, Chromatin Structure and Gene Regulation

(Wayland Academy)

George R. Shepherd, co-chairman, R. D. Cole, co-chairman.

3 July. Histones—comparative studies (R. D. Cole and D. T. Lindsay, session chairmen): L. H. Cohen, R. J. DeLange, R. Chalkley and G. H. Dixon.

4 July. Histone modifications—nuclear protein metabolism (G. C. Mueller and G. R. Shepherd, session chairmen): T. W. Borun, G. S. Stein, L. Goldstein, T. A. Langan, V. G. Allfrey and W. K. Paik.

5 July. Non-histone nuclear proteins —activation of chromatin (T. Y. Wang and R. Baserga, session chairmen): T. C. Spellsberg, L. J. Klinsmith, R. Baserga, P. R. Libby and T. Hamilton.

6 July. Chromatin—preparation, reconstruction and gene products (V. G. Allfrey and L. S. Hnilica, session chairmen): J. Bonner, J. Paul, B. McCarthy and G. P. Georgiev.

7 July. Chromatin structure (G. Fasman, session chairman): E. M. Bradbury and G. Felsenfeld.

Nuclear Structure Physics

(Tilton School)

Joseph B. McGrory, chairman; R. Sherr, vice-chairman.

24 July. T. T. S. Kuo, "Folded diagrams and effective interactions and operators"; R. Y. Cusson, "Light nuclei systematics with large basis deformed projected Hartree-Fock calculations"; L. Zamick, "Renormalization of one-body operators"; J. L. C. Ford, "Nuclear hexadecapole moments."

25 July. D. Koltun, "Investigations of nuclear structure with mesons"; S. Sobottka, "Studies of short-range correlations with (π, 2N)-reactions"; A. Faessler, "Nature of low-lying 0+ states in light nuclei and the multiconfiguration-Hartree-Fock theory"; G. T. Garvey, "Two-nucleon pick-up reactions on closed-shell-plus-two-particle nuclei."

26 July. V. Gillet, (subject to be announced); D. G. Kovar, "Heavy ion transfer reactions with a high resolution spectrometer"; J. R. Nix, "Recent calculations of fission barriers for heavy and superheavy nuclei"; M. Harvey, "Binary cluster description of nuclear fission."

27 July. R. Broglia, "Nuclear spectroscopy with heavy ion transfer reactions"; D. Rowe, "Nuclear structure studies with equations-of-motion techniques"; General interest talk on astrophysics.

28 July. A. W. Sunyar, "High spin states populated in (heavy ion, Xn)-reactions"; M. Baranger, "Microscopic theory of collective motion."

Nucleic Acids

(New Hampton School)

Harrison Echols, co-chairman; Robert Haselkorn, co-chairman; Maxine Singer, vice chairman.

12–16 June. N. Cozzarelli, "Bacterial and viral DNA replication *in vivo*"; M. Gefter, "Bacterial and viral DNA replication *in vitro*"; A. J. Clark, "Genetic recombination in bacteria and phage"; J. Hearst, "Structure and replication of chromosomes"; E. P. Geiduschek, "Bacterial and viral transcription *in vivo* and its regulation"; J. Roberts, "Bacterial and viral transcription *in vitro*"; Mary Edmonds, "Eukaryotic transcription *in vivo*"; J. Sambrook, "Eukaryotic transcription *in vitro*: forward and reverse transcriptases"; P. Leder, "Protein synthesis."

Numerical Data of Science and Technology

(Tilton School)

Ralph Hultgren, chairman; Daniel R. Stull, vice chairman.

21 August. Data of biological systems (Irving Fatt, discussion leader): Edward C. DeLand and Philip L. Altman.

22 August. Value judgment (Daniel R. Stull, discussion leader): Donald D. Wagman.

23 August. Factors involved in critical evaluation (Howard White, discussion leader). "Utilization of computerized abstracts in data center operations" (Joseph Hilsenrath, discussion leader).

24 August. An evaluator's view of nonstoichiometric compounds or can too much freedom be understood (Edmund Storms, discussion leader). Talk will concern the operations of the Food and Drug Administration—title not yet chosen (John Jennings, discussion leader).

25 August. (Speakers and subjects to be announced).

Chemistry and Psychophysiology of Odor and Flavor

(Tilton School)

Irwin Hornstein, chairman.

31 July. Neural basis of odor quality discrimination (D. G. Moulton, session leader). Olfactory receptor mechanisms (R. C. Gesteland, session leader).

1 August. Recognition of chemical signals at the cellular level. A critical look at odor theories. (L. M. Beidler, session leader).

2 August. Odor and flavor analysis (D. Forss, session leader). Sensory evaluation (H. G. Schultz, session leader).

3 August. Computer evaluation of analytical and sensory data in flavor studies (J. Powers, session leader). Chemicals for sensory experiments (E. L. Wick, session leader).

4 August. Cultural food patterns (R. M. Pangborn, session leader).

Organic Reactions and Processes

(New Hampton School)

Robert W. Murray, chairman; Warren W. Kaeding, vice chairman.

17 July. J. C. Martin, "Sulfuranes and related hypervalent species in organic chemistry"; A. Fava, "The mechanistic value of the Bronsted coefficients. Nucleophilic substitutions at the sulfur atom"; C. H. DePuy, "Stereochemistry of cyclopropane ring-cleavage by electrophiles."

18 July. W. Kirmse, "Aliphatic diazonium ions, their precursors and products"; A. Cairncross and O. Webster, "Hydrogen cyanide chemistry"; R. C. Storr, "Novel 1,2,3,-triazaheterocyclic chemistry."

19 July. E. Wasserman, "Macrocycles and metathesis"; P. R. Story, "The synthesis of macrocyclic compounds"; A. S. Kende, "Isomerizations and fragmentations in alicyclic systems."

20 July. C. J. Collins, "Recent work on 'memory effects' during the amine-nitrous acid reaction"; M. Saunders, "Rearrangement mechanisms of stable carbonium ions in solution"; N. S. Aprahamian, "Mechanism and solvent effects in olefin-aldehyde cooxidation: a selective process for propylene oxide."

21 July. Contributed papers by conferees.

Organometallic Chemistry

(Wayland Academy)

Howard Alper, chairman; Dietmar Seyferth, vice chairman.

10 July. J. Halpern, "Mechanisms and synthetic applications of oxidative addition reactions"; G. W. Parshall, "Activation of aromatic C-H bonds by transition metal complexes"; P. Pino, (subject to be announced.)

11 July. L. F. Dahl, "Synthesis, structure and bonding of organometallic cluster systems: A unified MO model rationalizing the drastic effect of antibonding electrons on molecular geometries of metal cluster systems"; D. Seyferth, "New chemistry of organocobalt cluster compounds"; E. C. Ashby, "Mechanism and stereochemistry of organometallic alkylation reactions."

12 July. J. J. Eisch, "Rearrangements of main group organometallic compounds"; G. S. Zweifel, "The chemistry of organoboranes and organoalanes derived from alkynes"; M. L. H. Green, "Organo-molybdenum compounds in organic synthesis."

13 July. J. K. Kochi, "The role of free radicals in organometallic reactions"; M. Rosenblum, "Reactions of organometallic cations and anions—applications to organic synthesis"; W. A. G. Graham, "Mechanisms of exchange and isomerization reactions in silicon-transition metal complexes"; G. P. Chiusoli, "Syntheses of organic acids on transition metal catalysts under mild conditions."

14 July. Short papers by Conference members.

Chemistry and Physics of Paper

(Tilton School)

Derek H. Page, chairman; Donald C. Johnson, vice chairman.

7 August. (B. Leopold, discussion leader): A. A. Robertson, "Modification of the mechanical behavior of paper by the addition of synthetic polymers"; G. Guiroy, "Acrylamide grafted pulps"; V. E. Stannett, "Modification of lignin by graft polymerization."

8 August. (J. Luce, discussion leader): A. de Ruvo, "The influence of temperature and humidity on the viscoelastic properties of single pulp fibres and paper"; F. El-Hosseiny, D. H. Page and K. Winkler, "The stress-strain properties of single wood pulp fibres." Session of spontaneous short contributions.

9 August. (Discussion leader to be announced): J. Swanson, "Some theoretical aspects of internal sizing"; A. F. Button and F. C. Beall, "Effect of wet strength resin on interfibre bonding as measured by a sonic velocity technique"; J. Marton, "Starch at the wet end: chemical and physical effects."

10 August. (D. Johnson, discussion leader): P. Luner and R. D. Cardwell, "Thermal stability of papers and pulps"; E. L. Back, "Fundamentals of fire retardency"; J. Mardon, "The wet web strength of paper."

11 August. (D. H. Page, discussion leader): R. Raman, "Electrical conduction mechanism in cellulosic materials." Session of spontaneous short contributions.

Particle-Solid Interactions

(Proctor Academy)

Walter L. Brown, chairman; Ernest V. Kornelsen, vice chairman.

14 August. (E. Merzbacher, discussion leader): W. Lichten, "Inelastic processes in ion-atom collisions"; N. Tolk, "Light from ion-solid and atom-solid collisions." (S. Datz, discussion leader): A. Knudson, "Fine structure in X-ray energy spectra arising from ion-solid collisions"; P. Sigmund, "The contribution of recoil target atoms to measured X-ray yields in ion-solid collisions."

15 August. (J. Davies, discussion leader): F. Saris, "X-ray studies of the charge state of ions in a solid"; H. Betz, "Charge states of energetic heavy ions in solids." (L. C. Feldman, discussion leader): M. E. Ebel, "Charge exchange and charge states of fast ions in solids"; W. Brandt, "Electron pick-up on ion emergence from solids."

16 August. (G. Dearnaley, discussion leader): C. P. Bhalla, "Stopping power in solids as related to inelastic collisions of isolated atoms." (E. Bøgh, discussion leader): W. F. Van der Weg, "Charge exchange in ion scattering at surfaces"; T. M. Buck, "Charge states in light ion surface scattering."

17 August. (W. Whaling, discussion leader): W. S. Bickel, "Optical emission differences from beams excited by solids and gases." (M. W. Thompson, discussion leader): W. Heiland, "Surface topography from ion scattering."

18 August. (B. R. Appleton, discussion leader): J. Golovchenko, "Planar and axail channeling"; J. Bøttiger, "Multiple scattering."

Physical Metallurgy

(Tilton School)

Karl T. Aust, chairman; Ali S. Argon, vice chairman.

Properties and Effects of Grain Boundaries

12 June. Properties of grain boundaries: D. A. Smith, "Field-ion and electron microscopy studies"; M. E. Glicksman, "Energy considerations"; H. Gleiter, "Mobility."

13 June. Properties of grain boundaries (continued): T. R. Anthony, "Interaction with defects"; M. B. Kasen, "Electrical resistivity and segregation"; D. F. Stein, "Impurity segregation studies using auger emission."

14 June. Effects of grain boundaries: M. F. Ashby, "Mechanical effects"; K. Lücke, "Annealing effects"; R. B. Nicholson, "Precipitation and superplasticity."

15 June. Effects of grain boundaries (continued): D. L. Johnson, "Sintering of ceramics and metals"; M. Metzger, "Intergranular corrosion"; C. S. Smith, special guest speaker, "Interfaces in general."

16 June. C. Goux, "Computer studies and comparison with experiments." Short presentations.

Plasma Chemistry

(Proctor Academy)

Gerald Smolinsky, chairman; Michael M. Shahin, vice chariman.

28 August–1 September. J. M. Deckers, "The production of atoms and simple radicals in a glow discharge"; B. H. Mahan, "Ion-molecule reactions in gas discharges"; G. G. Tibbetts, "Absorption by metals of plasma created species"; H. Yasuda, "Glow discharge polymerization of organic compounds"; K. G. Mayham, "Glow discharge polymers and their potential use in living organisms"; J. R. Hollahan, "The synthesis in a glow discharge of complex organic molecules from inorganic gases"; J. E. Drake, "Inorganic synthesis with electric discharges"; C. S. Stokes, "Chemistry in a high temperature plasma jet"; R. H. Hansen, "Interaction of organic polymer surfaces with plasma discharges"; E. Molinari, "Inorganic chemistry in a plasma"; M. J. Vasile, "The use of a quadrapole mass spectrometer to diagnose a glow discharge reaction"; M. Burton, "A comparison of radiation and electric discharge chemistry."

Please note that two evenings have been reserved for short submitted papers. If you wish to present a paper, please indicate this on your application form and give your telephone number and the title of the paper.

Plasma Physics

(Tilton School)

Carl Oberman, chairman; Alan DeSilva, vice chairman.

19 June. (P. Rutherford, chairman): F. Hinton, "Neoclassical transport coefficients"; P. Reynolds, "Status of experimental verifications of neoclassical theory." (I. Alexeff, chairman): E. Weibel, "Theory vs. experiment on anomalous R. F. current penetration"; J. Hosea, "Anomalous current penetration in low β toroidal discharges."

20 June. (A. Hasegawa, chairman): M. Porkolab, "Anomalous HF heating and evidence for participation of parametric instabilities"; R. Cohen, "Current experimental status of ionospheric heating experiments." (W. Kruer, chairman): J. DeGroot, "On the penetration of intense EM radiation into an inhomogeneous plasma"; E. Valeo, "Status of nonlinear theory of parametric instabilities."

21 June. (K. Ogilvey, chairman): C. Kennel, "Plasma turbulence in the ionosphere and magnetosphere"; T. Northrop, "Nonthermal fields and particles upstream from the bow shock." (D. Papadoupolis, chairman): W. Feldman, "Electron and ion thermal energy transport in the solar wind"; D. Forslund, "Theory of the microstructure of the earth's bow shock."

22 June. (H.-J. Kunze, chairman): S. Hamberger, "Experimental observations of anomalous resistance"; A. Hirose, "Ion heating turbulence." (C. Wharton, chairman): N. A. Krall, "Theoretical models of anomalous resistivity"; W. Manheimer, "Weak turbulence theory of anomalous resistivity." (S. Hamberger, chairman): Contributions of participants from the U.S.S.R.

23 June. (F. Hinton, chairman): T. Dupree, "Non analytic effects and plasma transport"; H. Okuda, "Nonclassical diffusion."

Polymer Physics

(Proctor Academy)

Anton Peterlin, chairman; Stephen Prager, vice chairman.

26 June. (S. Prager, session chairman): A. B. Metzner, "Elongation flow of polymer systems"; J. L. Lumley, "Drag reduction in turbulent flow by polymer additives"; A. J. Pennings, "Crystallization from stirred solutions." (D. H. Reneker, session chairman): A. Keller, "Crystallization phenomena."

27 June. (E. H. Andrews, session chairman): S. S. Sternstein, "Normal and shear stress yielding in amorphous polymers"; D. Hull, "Morphology of fracture surfaces of polymer solids." (J. R. Knox, session chairman): R. S. Stein, "Mechanisms of plastic deformation of crystalline polymers"; P. H. Geil, "Morphology of drawing."

28 June. (D. W. McCall, session chairman): N. G. McCrum, "Relaxation phenomena in polymer solids"; I. M. Ward, "Anisotropy of mechanical properties in oriented polymers." (J. F. Hoffman, session chairman): Discussion on actual topics of polymer physics not included in the lecture program.

29 June. (R. K. Eby, session chairman): E. W. Fischer, "Polymerization in crystals"; A. J. Kovacs, "Single crystals of poly(ethylene oxide) grown from melt"; G. S. Yeh, "Thermal reversibility of long period in stretched rubber." (A. Peterlin, session chairman): J. L. Koenig, "LASER-Raman scattering"; H. G. Olf, "Accordion type mode of polyethylene crystal vibration."

30 June. (H. D. Keith, session chairman): E. Baer, "Structure and property relationships in collagen"; P. Ingram, "Morphology and fracture of cotton fibers."

Polymers

(Colby Junior College)

Irving Skeist, chairman; Herbert Morawetz, vice chairman.

19 June. (Koichiro Hayashi, discussion leader): Charles G. Overberger, "Recent advances in polymer chemistry"; Joseph P. Kennedy, "Investigation of alkyl aluminum-initiated cationic polymerization of model compounds." (Otto Vogl, discussion leader): Takeo Saegusa, "The polymerization and copolymerization of 2-oxazoline."

20 June. (John K. Stille, discussion leader): W. Ring, "Charge transfer effects in copolymerization of multicomponent systems in the absence of complexing agents"; Masaaki Hirooka, "Alternating copolymerizations of vinyl monomers through complex formation"; Shigeo Tazuke, "Photosensitized charge transfer polymerization"; Calvin E. Schildknecht, "Monomer structures, stereoregulation and crystallizability in vinyl and allyl polymers."

21 June. (Paul W. Morgan, discussion leader): Joseph Zimmerman, "Reinforcement factors in fibers from block copolyamides and polyamide blends"; Robert W. Lenz, "Crystallization-induced reactions of copolymers." (Samuel C. Temin, discussion leader): Dusan C. Prevorsek, "Structure of nylon and PET as shown by diffusion and viscoelastic effects"; S. E. B. Petrie, "Volume and enthalpy relaxation in amorphous polymers."

22 June. (Eli M. Pearce, discussion leader): H.-J. Cantow, "Sequence length distribution of ethylene-propylene copolymers"; N. Uri, "Metal chelates as antioxidants and UV stabilisers

for polyolefins and other polymers." (Seymour Newman, discussion leader): C. B. Bucknall, "Quantitative studies of toughening mechanisms in rubber-modified plastics."

23 June. (Jerry Miron, discussion leader): Alexander Tkac, "The structure of active centers of low-pressure polymerization catalysts studied by ESR spectroscopy"; John E. Frederick, "Rayleigh line spectroscopy of polymers"; S. Y. Hobbs, "On the optical detection of thermal transitions in high polymers."

Postharvest Physiology

(Proctor Academy)

David R. Dilley, chairman; James M. Lyons, vice chairman.

21 August. (P. H. Heinze, discussion leader): S. P. Burg and D. Loyd Hunter, "Recent advances in postharvest commodity preservation technology." (C. A. Eaves, discussion leader): L. L. Claypool and L. L. Morris, "Product quality maintenance—role of temperature, O_2, CO_2 and ethylene."

22 August. (Elmer Hansen, discussion leader): J. B. Biale and R. J. Romani, "A critical evaluation of the respiratory climacteric." (H. K. Pratt, discussion leader): M. Leiberman and H. Imaseki, "Ethylene biosynthesis and action in developmental physiology."

23 August. (J. M. Lyons, discussion leader): W. B. McGlasson and M. Faust, "Physiological disorders—a chilling injury and other metabolic aberrances." (D. H. Dewey, discussion leader): J. W. Eckert and L. Van Denberg, "Postharvest pathology—etiology and control."

24 August. (M. J. C. Rhodes, discussion leader): Colin Brady and G. E. Hobson, "Biochemistry of ripening and senescence." (W. Thomson, discussion leader): N. F. Haard and C. Lance, "Developmental changes in cellular organelles and enzyme activity."

25 August. (L. Rappaport, discussion leader): S. Gazit and A. C. Leopold, "Hormonal control of growth and development."

Proteins

(New Hampton School)

Gerald M. Edelman, co-chairman; Guido Guidotti, co-chairman; John A. Schellman, co-vice chairman; Russell F. Doolittle, co-vice chairman.

Interactions between Proteins and Other Molecules

19 June. Protein-protein interactions in small systems. Are there enzymes with only one actvie site at a time and does negative cooperativity exist? (F. H. Westheimer, chairman): S. Bernhard, "Liver alcohol dehydrogenase has kinetically non-equivalent sites"; H. Gutfreund, "Only *E. coli* alkaline phosphatase has non-equivalent sites"; W. B. Stallcup, "Several enzymes have 'half-of-the-sites' reactivity." How can one study interacting enzyme systems? (G. G. Hammes, chairman): K. Kirschner, "Temperature jump and other methods for fast reactions"; A. Chrambach, "Isoelectric focusing."

20 June. Protein-protein interactions in large systems. The organization of large systems (D. L. D. Caspar, chairman): C. Cohen, "Muscle"; U. R. Laemmli, "Bacteriophage T4"; D. J. DeRosier, "α-ketoglutarate dehydrogenase enzyme complex." Non-covalent bonds in protein interactions (F. M. Richards, chairman): S. A. Hawley, "Protein folding as a phase transition and anticoncept in protein chemistry." R. Lumry, "The role of water in protein substrate interaction."

21 June. Protein-lipid interactions and membrane enzymes. Are there well specified interactions between proteins and lipids? A. M. Scanu, "Plasma lipoproteins": J. A. Reynolds or C. Tanford, "Protein-lipid interactions"; D. L. D. Caspar, "The location of the proteins in myelin membranes." Membrane-embedded enzymes (J. H. Wang, chairman): J. C. Skou, "$(Na^+ + K^+)$-dependent ATPase involved in ion transport"; D. H. MacLennan, "Ca^{++}-dependent ATPase from sarcoplasmic reticulum."

22 June. Protein-carbohydrate interactions and cell surfaces. How do lectins interact with cell surface carbohydrates and affect the membrane? (L. Sachs, chairman): G. M. Edelman, "The structure of lectins"; M. M. Burger, "The interactions of lectins with cell surfaces"; M. S. Bretscher, "Molecules at the cell surface."

23 June. Glycoproteins. The structure and function of some cell-surface glycoproteins. "R. J. Winzler, "The structure of glycoproteins and of an erythrocyte membrane glycoprotein"; G. Ashwell, "The interaction of glycoproteins with the cell surface"; R. A. Reisfeld, "Human histocompatibility antigens."

Dynamics of Quantum Solids and Fluids

(Wayland Academy)

Bertrand I. Halperin, chairman; R. O. Pohl, vice chairman.

17–21 July. Excitations in disordered systems. Electronic states and properties of metallic and semiconducting alloys, liquids and glasses. Vibrational and magnetic excitations in alloys and glasses. P. W. Anderson, F. C. Brown, W. J. L. Buyers, J. S. Faulkner, W. A. Phillips, R. O. Pohl, M. Pollak, and D. Weaire.

Radiation Chemistry

(New Hampton School)

J. K. Thomas, chairman; R. A. Holroyd, vice chairman.

3 July. (A. Kupperman, discussion leader): M. Inokuti, "Loss of energy by electrons to matter." (G. Meisels, discussion leader): J. Warman, "The capture and moderation of electrons by molecules."

4 July. (S. Lipsky, discussion leader): W. H. Hamill, "Characteristic energy losses of slow electrons in molecular and ionic solids." (J. Willard, discussion leader): P. Yuster, "Radiolysis of alkali halide crystals."

5 July. (C. Klots, discussion leader): A. Weller, "The recombination of ions leading to chemiluminescence"; (S. Siegel, discussion leader): M. Ottolenghi, "Laser photolysis."

6 July. (J. W. Hunt, discussion leader): J. H. Baxendale, "Relaxation of molecules around electrons. A pulse radiolysis study"; G. Beck, "Picosecond luminescence measurements." (H. Schwarz, discussion leader): G. Barker, "Anomalies in electron capture kinetics revealed by the study of electrochemical photo-currents."

7 July. (R. Holroyd, discussion leader): Contributed papers.

Radical Ions

(Tilton School)

M. Thomas Jones, chairman; Henry J. Shine, vice chairman.

10 July. George S. Hammond, "Radical ions in high energy radiation chemistry"; Leon M. Dorfman, "Fast reaction studies of electron and proton transfer reactions of aromatic radical anions"; Paul Kebarle, "Reactions of radical ions in the gas phase"; Ralph C. Dougherty, "Anionic equilibria and psuedo-equilibria in the gas phase."

11 July. Allen J. Bard, "Reactions of electrogenerated radical ions producing excited states"; Ted Kuwana, "Studies on electrochemically generated intermediates"; A. Ledwith, "Reactions of ion radicals produced by activation of donor-acceptor systems"; Pieter Zandstra, "Faraday effect of coronene radical ions."

12 July. Ernest Warhurst, "ESR studies of rate processes and equilibria involving alkali metal ion pairs with radical anions in solution"; Neil M. Atherton, "Recent ESR and ENDOR studies of radical ions and ion-pairs"; A. H. Reddoch, "Intermolecular perturbation of EPR spectra of aromatic radicals."

13 July. Ed Janzen, "Factors influencing β-fluorine hyperfine splitting in radical anions and nitroxides"; E. Wasserman, "EPR of small triplet states"; Michael Szwarc, "Studies of rate of change of conformation by ESR."

14 July. Donald B. Chestnut, "Spin correlated ion radical solids"; Brian M. Hoffman, "Magnetic excitation in radical crystals."

Scientific Information Problems in Research

(Colby Junior College)

Madeline M. Henderson, chairman; Russell J. Rowlett, Jr., vice chairman.

10 July. David G. Hays, keynote speaker, "The languages of information handling systems for science"; Winifred Sewell, "Language problems of task-oriented systems." (Jane J. Robinson, discussion leader): Language analysis.

11 July. (Susan Artandi, discussion leader): Indexing and retrieval languages. (Martha E. Williams, discussion leader): Vocabulary control.

12 July. (Phyllis B. Baxendale, discussion leader): Computer-aided indexing and retrieval. (Ronald L. Wigington, discussion leader): Computer programming languages.

13 July. (William S. Budington, discussion leader): Foreign language materials. James Bostain, "Linguistics as an art."

14 July. (James E. Rush, discussion leader): Output forms and languages.

Separation and Purification

(Colby Junior College)

James E. Cochran, chairman; Norman N. Li, vice chairman.

21 August. Carel J. van Oss, "Cell separation methods"; Alfred Polson, "Glycol fractionation methods"; H. H. Weetall, "Enzymes immobilized on inorganic carriers—preparation and application."

22 August. Charles E. Myers, "Separation of mercury from sediments." "Membrane separations" (speakers to be announced).

23 August. Y. Ito, "Hi-speed countercurrent chromatography"; Robert E. Hurst, "Separation of metabolites from body fluids with countercurrent chromatography"; Lyman C. Craig, "Solution parameters involved in separations by partition.

24 August. Charles Pidacks, "Modern high-speed analytical chromatography—preparative capabilities"; J. F. K. Huber, "High-speed liquid chromatography theory"; Kenneth C. Hickman, "Ultra-pure water."

25 August. Environmental and pollution subjects (speakers to be announced).

Chemistry and Physics of Solids

(New Hampton School)

Marvin L. Cohen, chairman; Gunther K. Wertheim, vice chairman.

High Energy Spectroscopy of Solids

31 July–4 August. The conference will be concerned with information obtained about bonds, bands, and other one-electron and many-electron effects in metals, insulators, semiconductors, transition metal compounds, etc., using ESCA, soft X-rays, uv spectra, X-ray Compton profiles, positron annihilation, photoemission, Auger spectroscopy, many-body theory, one-electron theory, etc. A partial list of speakers includes: S. Berko, F. C. Brown, M. L. Cohen, S. Doniach, D. E. Eastman, P. Eisenberger, D. W. Fischer, H. D. Hagstrum, D. J. Nagel, P. M. Platzman, Y. Petroff, J. C. Phillips, D. A. Shirley, N. V. Smith, J. C. Tracy, and G. K. Wertheim.

Chemistry and Physics of Space

(Tilton School)

Peter M. Millman, chairman; John O'Keefe, vice chairman.

The differentiation and the fractionation of the elements in the evolution of the solar system—a study of the nature of the interface between the volatile-rich and the volatile-poor material.

3 July. Interplanetary dust. C. L. Hemenway, "Cosmic dust from the sun"; J. B. Hartung, "Interplanetary dust and lunar microcraters." Space molecules and cometary meteoroids. W. D. Watson, "The formation of molecules on grains in space"; A. F. Cook, "The physical structure of cometary meteoroids"; I. Halliday, "The chemical composition of cometary meteoroids."

4 July. Comets. Z. Sekanina, "Cometary dynamics"; D. A. Mendin, "Cometary atmospheres." The meteoritic complex. J. T. Wasson, "Nebular fractionation effects in meteoritic material" J. W. Larimer, "Cosmothermometry and cosmobarometry."

5 July. The meteoritic complex (continued). G. Arrhenius, "Conceptual limits and physical requirements for fractionation and condensation in space. The asteroids. C. R. Chapman, "Mineralogy of asteroids." The lunar crust. I. Adler, "The Apollo 15 and 16 X-ray fluorescence orbital experiment"; J. A. Wood, "Structure and evolution of the lunar crust."

6 July. The Mars-Jupiter interface. H. Masursky, "A preliminary geological look at Mars from Mariner 9"; J. S. Lewis, "Jupiter and its satellites." Short papers on Conference theme. Speakers and subjects to be organized at the Conference.

7 July. Problems of origin and evolution. P. W. Gast, "The chemical composition and chemical structure of the moon"; L. Grossman, "Elemental fractionation during nebular condensation."

Statistics in Chemistry and Chemical Engineering

(New Hampton School)

Fred C. Leone, chairman; Otto Dykstra, Jr., vice chairman.

10 July. Calibration: Henry Scheffé. Statistical process control: John MacGregor.

11 July. The nature of statistical evidence in the study of lung cancer: Marvin Kastenbaum, Byron Wm. Brown, Jr. Acquisition and interpretation of water quality data: Ralph D. Harkins.

12 July. Nonlinear analysis in chemistry: Herman Wold, Svante Wold. Cluster analysis: Joseph Kruskal.

13 July. Model building: M. J. Box. Simulation: John S. Ramberg.

14 July. Design for dynamic systems: George M. Minich.

Structural Macromolecules: Collagen

(Kimball Union Academy)

Russell Ross, chairman; Darwin Prockop, co-chairman.

17 July. Chemistry and structure of collagen (Klaus Kuhn, discussion leader); Crosslinks in collagen (Paul Gallop, discussion leader).

18 July. Molecular packing of collagen (Andrew Miller, Art Veis, discussion leaders); Collagen biosynthesis-enzymatic steps (Darwin Prockop, discussion leader).

19 July. Collagen biosynthesis—intermediate forms (P. Bornstein, discussion leader); Elastic fibers (Russell Ross, discussion leader).

20 July. Biological role of connective tissue in development and morphogenesis (Robert Trelstad, discussion leader); Degradation and turnover of collagen (Art Eisen, John Harper, discussion leaders).

21 July. Pathophysiology of connective tissue (Ted Harris, discussion leader).

Chemistry and Biology of Tetrapyrroles

(Wayland Academy)

Lyonel G. Israels, chairman; June Lascelles, vice chairman.

7 August. Pyrrole chemistry: D. Mauzerall, D. Dolphin, P. George, C. Weiss. ALA and PGB biosynthesis: D. Shemin, S. Granick, D. Doyle, G. Kikuchi.

8 August. Heme biosynthesis: L. Bogorad, B. Frydman, E. Levin, U. Meyer. Porphyia—experimental and clinical: C. J. Watson, A. Kappas, G. Marks, G. Sweeney.

9 August. Mitochondrial and microsomal heme proteins: R. Estabrook, D. Wilson, E. Margoliash. Iron transport: B. Burnham, N. Brot, G. A. Snow.

10 August. Control of globin synthesis by tetrapyrroles: M. Rabinowitz, E. Herbert, T. Hunt, S. Wainwright. Bile pigment chemistry: R. Troxler, A. Bennet, A. Jackson, H. Jansen.

11 August. Bile pigment metabolism. R. Schmid, A. McDonagh, J. D. Ostrow.

Textiles: Fibrous Materials

(Wayland Academy)

Arnold M. Sookne, chairman; Harry R. Billica, vice chairman.

3 July. W. O. Statton, "Setting of polyamides and polyesters"; L. R. Rebenfeld, "Response of fibers to nonreactive chemical environments."

4 July. Ralph McGregor, "Sorption equilibria in ionic dyeing systems"; Max Feughelman, "Mechanical hysteresis of wool fibers and its relationship to molecular structure."

5 July. N. R. S. Hollies, "Roles of moisture and surface properties in the comfort of clothing"; H. R. Billica, "Fabric appearance factors."

6 July. P. Grosberg, "Relationships between structure and other properties of woven compared with knitted fabrics"; R. H. Butler, G. E. R. Lamb and D. C. Prevorsek, "The influence of fiber properties on the wrinkling behavior of fabrics."

7 July. J. W. S. Hearle and A. R. Bunsell, "Fatigue of textile fibers."

Thin Films

(Kimball Union Academy)

John B. Hudson, chairman; Helmut Poppa, vice chairman.

The Film—Substrate Interface

21 August. (T. E. Hutchinson, discussion leader): J. R. Schrieffer, "Physical and chemical nature of bonds at interfaces"; R. A. Hoffman, "Nature and origin of stresses at interfaces." (P. A. Tick, discussion leader): B. Perrson, "Equilibrium configuration of polyatomic clusters on surfaces."

22 August. (H. Poppa, discussion leader): A. K. Green, "The influence of defects and impurities on the nucleation and growth of oriented films by evaporation"; H. F. Winters, "The influence of surface properties on the characteristics of reactively sputtered films." (J. B. Hudson, discussion leader): A. Y. Cho, "Electrical properties of molecular beam apitaxial GaAs and the effect of the film-substrate interface."

23 August. (R. A. Hoffman, discussion leader): D. L. Feucht, "Formation and properties of thin, vapor-grown layers of Ge on GaAs and GaAs on Ge"; P. J. Besser, "Stress and strain in heteroepitaxial magnetic oxide films." (J. F. Freedman, discussion leader): P. Chaudhari, "Stress relief in thin films."

24 August. (A. Yelon, discussion leader): E. Kooi, "The Si-SiO_2 interface"; H. Juretschke, "Conduction electron scattering at charged metal-insulator interfaces." (R. B. Marcus, discussion leader): C. A. Mead,

"Fundamental limitations of microelectronic devices."

25 August. (F. A. Mayadas, discussion leader): D. F. Barbe, "The determination of the density of states in thin films by small signal capacitance-conductance measurements on metal-insulator-semiconductor structures"; J. E. Goell and R. M. Standley, "Integrated optical circuits—the interface problem."

Toxicology and Safety Evaluations

(Kimball Union Academy)

Leon Golberg, chairman; Harold C. Grice, vice chairman.

31 July. Subcellular organelles in toxicology (James W. Newberne, discussion leader): A. C. Allison, "The significance of the lysosome in toxicology"; Rajender Abraham, "New directions in lysosome research." (Harold M. Peck, discussion leader): Harry V. Gelboin, "The role of aryl hydrocarbon hydroxylase in polycyclic hydrocarbon toxicity and carcinogenesis."

1 August. Carcinogenesis and mutagenesis (William D'Aguanno, discussion leader): Charles Heidelberger, "Cell culture tests for the carcinogenic and mutagenic potential of chemicals"; William Lijinsky, "Evaluation of the safety of amines, including drugs, that might interact with nitrite in the gut." (D. J. Kilian, discussion leader): Walderico M. Generoso, "Evaluation of genetic hazards of chemicals in mice."

2 August. Sensitization to chemicals: problems and prospects (Francis N. Marzulli, discussion leader): Henry C. Maguire, "The bioassay of contact allergens in the guinea pig"; Howard I. Maibach, "Human predictive patch testing: problems and validations." (Fred H. Snyder, discussion leader): Donald L. Opdyke, "New concepts of sensitization potential." (Merrill W. Chase, principal discussant.

3 August. Adverse effects of inhaled materials (R. J. Rubin, discussion leader): Yves Alarie, "Investigation of the mechanism of sensory irritation by inhaled chemical agents"; Robert J. Stephens, "The early and long-term response of lung tissue to low levels of nitrogen dioxide and ozone." (Leon Golberg, discussion leader): Vaun A. Newill, "Critical environmental health issues of concern to the Environmental Protection Agency."

4 August. (Harold C. Grice, discussion leader): George C. Cotzias, "Susceptibility to manganese intoxication."

Physics and Chemistry of Water and Aqueous Solutions

(Holderness School)

Harold L. Friedman, chairman; George J. Safford, vice chairman.

21 August. (B. E. Conway, session chairman): M. Newton, "Energetics and configurations of $(H_2O)_n$ with proton excess or defect. Implications for proton mobility in water"; D. Irish, "Measurement of 'ultrafast' proton transfer; G. Morand, "Measurement of the hall effect in very dilute solution." (G. Walrafen, session chairman): W. A. P. Luck, "Advantages of near IR for determination of the structure of water and aqueous solutions"; J. Desnoyers, "Heat capacities of dilute electrolyte solutions."

22 August. (H. G. Hertz, session chairman): R. H. Wood, "Electrolytes in water and *N*-methylacetamide"; E. G. Finer, "Relaxation studies of hydration of polar molecules"; I. Page, "Neutron scattering from water and aqueous solutions." (H. S. Frank, session chairman): S. A. Rice, "Solid amorphous water"; A. Ben-Naim, "Hydrophobic interaction in water-alcohol mixtures."

23 August. (G. J. Safford, session chairman): C. T. Moynihan, "Electrical and mechanical relaxations in electrolyte solutions"; K. Hallenga, "The dielectric relaxation of water influenced by hydrophobic groups." (A. Narten, session chairman): W. A. Van Hook, "Solvent-isotope effects in thermodynamic excess function in aqueous solutions"; F. H. Stillinger, "Recent developments in molecular dynamics studies of models for aqueous systems."

24 August. (R. L. Kay, session chairman): K. P. Mishchenko, "Thermodynamics of electrolyte solutions in mixed aqueous-nonaqueous solvents"; I. D. Kuntz, "Hydration of proteins"; R. G. Bryant, "Nuclear magnetic resonance of water protons in protein crystals." (R. Lumry, session chairman): M. Zeidler, "Recent NMR relaxation studies in aqueous solutions."

25 August. (W. Y. Wen, session chairman): R. Pottel, "Dielectric relaxation in aqueous systems of biological interest"; J. Muenter, "Spectra and properties of water dimers in gas phase."