Gordon Research Conferences

Alexander M. Cruickshank

The Gordon Research Conferences for the summer of 1984 will be held in New Hampshire.

Purpose. The object and exclusive purpose of the Gordon Research Conferences is to foster and promote education and science by organizing and operating meetings of research scientists with common interests in the fields of chemistry or related sciences for the purpose of discussions and the free exchange of ideas, thereby stimulating advanced thinking in research at universities, research foundations, and industrial laboratories. This type of meeting is a valuable means of disseminating information and ideas to an extent that could not be achieved through the usual channels of publication and presentation at scientific meetings. In addition, scientists in related fields become acquainted and valuable associations are formed that often result in collaboration and cooperative efforts among laboratories. It is hoped that each conference will extend the Frontiers of Science by fostering a free and informal exchange of ideas among persons actively interested in the subject under discussion. The purpose of the program is to bring experts up to date on the latest developments, to analyze the significance of these developments and to provoke suggestions concerning the underlying theories and profitable methods of approach for scientific research. The review of known information is not desired.

Meetings are held in the morning and in the evening, Monday through Friday, with the exception of Friday evening. The afternoons are available for recreation, reading, or participation in discussion groups, as the individual desires.

In order to protect individual rights and to promote discussion it is an established requirement of each conference that no information presented is to be used without specific authorization of the individual making the contribution, whether in formal presentation or in discussion. The recording of lectures by tapes, and so forth and the photography of slides are prohibited.

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

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

The Director will submit the application of those requesting permission to attend a conference to the chairperson for that conference. The chairperson will review the applications and select applicants so as to distribute the attendance as widely as possible among the various institutions and laboratories represented by the applications.

A registration card will be mailed to those selected. Advance registration by mail is required for each conference and is completed on receipt of the registration card and the full fixed fee which is required in *advance of all participants and guests*. The advance payment is also required from scientists arriving in the United States from foreign countries and should be payable through a U.S. bank in U.S. dollars. Checks are to be made payable to the Gordon Research Conferences.

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

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

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

The Board of Trustees of the Conferences has established a fixed fee for all resident participants (speakers, discussion leaders, and conferees) at each conference. This fee was established to encourage attendance for the entire conference and to provide the Special Fund which is available to each conference chairperson. The fixed fee will be charged regardless of the time a participant (speakers, discussion leaders, and conferees) attends a conference—that is, for the periods of from 1 to $4\frac{1}{2}$ days.

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

Cancellation. (A) Conferees: All but $40 of the fixed fee will be refunded if an approved application is canceled not later than 2 weeks prior to the conference. (B) Guests: Accommodations (room and meals) are available for guests. (Children must be at least 12 years of age.) All such requests should be made at the time the attendance application is submitted because these accommodations, limited in number, will be assigned in the order that requests are received. The charge for five conference nights is indicated in the Fixed Conferences Fee schedule. Full refund will be made if cancellation is received 2 weeks prior to the conference; otherwise $40 will be forfeited. Guests are not permitted to attend the conference lectures and discussion groups.

Pets are prohibited at the conference sites.

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

Program. The complete program for the 1984 Gordon Research Conferences will be published in *Science*, 2 March 1984. Reprints are available on request.

Requests for applications to the Conferences or for additional information should be addressed to: Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, Gordon Research Center, University of Rhode Island, Kingston, Rhode Island 02881–0801. Telephone: 401-783-4011 and 401-783-3372.

Mail for the office of the Director from 11 June to 31 August 1984 should be addressed to: Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, Colby-Sawyer College, New London, New Hanpshire 03257. Telephone 603-526-2870.

Fixed Conference Fees–1984

New Hampshire

Conferee (double occupancy)	$235.00
Nonresident conferee (meals, no room)	$195.00
Guest (room, meals)	$175.00

Science of Adhesion

New Hampton School

D. W. Dwight, chairman; W. D. Townsend, vice chairman.

20 August. Polymer surfaces and interfaces (H. R. Thomas, discussion leader): D. Briggs, "Polymer surface chemistry in adhesion"; W. J. van Ooij, "Analytical disection of interphases in bonded materials."

21 August. Interfacial forces (F. M. Fowkes, discussion leader): M. E. Labib, "Donor acceptor properties of solid surfaces"; L. H. Lee, "Fracture energetics of rigid and flexible adhesive joints." Metal surfaces (J. D. Venables, discussion leader): G. Davis, "Surface behavior diagrams: XPS characterization of metal oxides"; M. Natan, "Adhesive bonding to titanium alloys."

22 August. Mechanical behavior (W. S. Johnson, discussion leader): G. Lake, "Studies of the mechanics of the peel adhesion of rubber to metal, glass and rubber"; W. G. Knauss, "Applications of mechanics in adhesion science"; W. Althof, "Creep, recovery, and relaxation of shear loaded adhesive bond lines." Deformation and fracture (L. H. Peebles, discussion leader): T. Dickinson, "Fractoemission"; M. Harris, "Crack growth at the metal/organic interface."

23 August. Adhesive interactions in the biomedical sciences (B. D. Ratner, discussion leader): M. Spector, "Biological tissue attachment of orthopedic implants"; R. E. Beier, "Mechanisms of biological adsorption and adhesion"; M. L. Rudee, "Interfaces between science, engineering, magnetics and medicine."

24 August. Thin films (W. Townsend, discussion leader): S. L. Regen, "Polymer-supported membranes"; T. C. Ward, "Macromolecular physical chemistry applied to adhesive bonds."

Analytical Chemistry

New Hampton School

G. Horlick, chairman; T. Hirschfeld, vice chairman.

13 August. D. J. Douglas, "The development and application of inductively coupled plasma-mass spectrometry"; M. W. Blades, "Excitation mechanisms in the inductively coupled plasma—or—is the ICP turning us into plasma physists"; D. L. Rabenstein, "^{1}HNMR studies of small molecules in intact red blood cells and other tissues."

14 August. B. S. Pons, "New developments in spectroelectrochemistry"; L. R. Faulkner, "Using optical standing waves to determine spatial relationships of species in chemical microstructures"; P. C. Jurs, "Computer assisted structure elucidation by ^{13}C NMR."

15 August. D. Betteridge, "Intelligent instrumentation"; J. N. Little, "Laboratory robotics"; G. D. Owens, "Laboratory robotics—a new automation technology for the analytical laboratory."

16 August. J. V. Hornstein, "Laboratory information management—full integration into the work place"; F. Bauman, "Laboratory information management"; R. W. Arndt, "Management of a project in laboratory automation."

17 August. (Speaker to be announced) "Applications of optical data processing"; G. M. Hieftje, "Lasers as a diagnostic probe for analytical systems."

Animal Cells and Viruses

Tilton School

Thomas Shenk, chairman; Richard Hynes, co-chairman.

18 June. (Bruce Stillman, discussion leader): Joyce Hamlin, Judy Campbell, Abe Worcel, David Livingston, "Chromatin structure and DNA replication." (Bessie Huang, discussion leader): Frank Solomon, David Hirsh, "Cytoplasmic organization."

19 June. (Mary Jane Gething, discussion leader): David Russell, Mark Davis, Ian Trowbridge, Bernard Fields, "Receptors and surface proteins." (Arnold Berk, discussion leader): Keith Yamamoto, Peter Gruss, George Khoury, Susumu Tonegawa, "Transcriptional regulation."

20 June. (Richard Hynes, discussion leader): Elaine Fuchs, H. G. Khorana, E. Lazarides, "Protein structure and function." (Michael Botchan, discussion leader): Stephen Goff, Thomas Shenk, Bill Sugden, Peter Howley, "Viral gene expression."

21 June. (Randy Schekman, discussion leader): Peter Walter, Eddie de Robertis, Douglass Forbes, "Protein synthesis and shuttling." (James Manley, discussion leader): Phillip Sharp, Robert Tjian, Pierre Chambon, "In vitro transcription."

22 June. (Arnold Levine, discussion leader): Earl Ruley, Arthur Levinson, Robert Weinberg, Peter Rigby, "Oncogenes."

Atomic and Molecular Interactions

Brewster Academy

Peter E. Siska, chairman; William J. Meath, vice chairman.

30 July. (W. J. Meath, discussion leader): T. E. Gough, "Infrared spectroscopy of van der Waals molecules"; B. J. Howard, "The use of spectra of van der Waals complexes in the construction of potential energy surfaces"; W. A. Klemperer, "Bonding in van der Waals molecules." (J. J. Valenti, discussion leader): D. H. Levy, "The photochemistry and photophysics of van der Waals molecules"; M. Shapiro, "Interference effects in predissociation of van der Waals molecules."

31 July. (A. P. Hickman, discussion leader): R. M . Martin, "Ionization of molecules and surfaces by excited rare gas atoms"; H. Morgner, "Penning ionization clarified by coincidence measurements"; T. F. George, "Recent advances in the theory of chemi-ionization." (J. M. Parson, discussion leader): I. V. Hertel, "Polarization effects in atom-molecule collisions and reactions."

1 August. (F. F. Crim, discussion leader): J. O. Hirschfelder, "Two-state systems in semiclassical and quantized fields"; P. L. Houston, "State-resolved photodissociation"; K. F. Freed, "Recent advances in the theory of photodissociation." (E. F. Greene, discussion leader): S. J. Sibener, "Molecule-surface forces from scattering measurements"; J. C. Tully, "Trajectory studies of gas-surface interactions."

2 August. (D. G. Truhlar, discussion leader): E. E. Marinero, "H + $D_2 \rightarrow$ HD + D dynamics: Quantum state determination of the reaction products"; D. J. Kouri, "Quantum reactive scattering beyond H + H_2"; B. Liu, "Recent advances in the ab initio calculation of potential energy surfaces." (D. R. Herschbach, discussion leader): J. C. Polanyi, "The spectroscopy of transition states."

3 August. (K. D. Jordan, discussion leader): P. J. Dagdigian, "Collisions of spin-orbit state-selected $Ca(^3P^0)$"; V. E. Bondybey, "Metal cluster spectroscopy and the metal-metal bond."

Basement Membranes

Plymouth State College

Elizabeth D. Hay and Robert G. Spiro, co-chairmen.

18 June. Ultrastructure and development of basement membranes (Marilyn G. Farquhar, discussion leader): Charles P. Leblond, "Identification of ultrastructural components of basement membranes"; Thomas Linsenmayer, "Analysis of basement membrane components with monoclonal antibodies"; Robert L. Trelstad, "Basement membrane disintegration and Mullerian duct regression." Collagen constituents of basement membranes (Klaus Kühn, discussion leader): Paul Bornstein, "How should a collagen molecule be defined? Recent studies of collagens with atypical structures"; Rupert Timpl, "Basement membrane collagens: Structure and biological properties"; John H. Fessler, "Formation and association of basement membrane procollagens."

19 June. Glycoprotein and proteoglycan constituents of basement membranes (Robert G. Spiro, discussion leader): Albert E. Chung, "Some aspects of the organization of laminin and entactin in basement membranes"; Magnus Höök, "Structure of heparin sulfate proteoglycans"; John Hassell, "Structure and interaction of basement membrane proteoglycan"; Antti Vaheri, "Fibronectin and laminin in cellular interactions." Basement membrane biosynthesis (Nicholas A. Kefalides, discussion leader): Brigid Hogan, "Expression of genes for basement membrane components in embryonic cells"; Mark Sobel, "Regulation of basement membrane genes in tumor cells"; Edward Macarak, "Matrix biosynthesis in response to cell injury."

20 June. Basement membrane degradation; relevance to inflammatory and neoplastic states (Andrew H. Kang, discussion leader): Lance A Liotta, "Degradation of basement membranes during angiogenesis and tumor invasion"; Garth L. Nicolson, " Metastatic tumor cell implantation and invasion of vascular basal lamina"; Zena Werb, "Multiple pathways for the degradation of extracellular matrix macromolecules by cells in culture." Basement membranes in disease and aging (David M. Brown, discussion leader): Alfred F. Michael, "Studies on human renal basement membranes"; Bryan D. Myers, "In vivo evaluation of glomerular basement function in disease"; Jean-Michel Foidart, "Anti-basement membrane antibody mediated diseases in man."

21 June. Cell receptors for basement membrane components (R. Colin Hughes, discussion leader): Klaus von der Mark, "Receptors for basement membrane components on muscle cell surfaces"; Stephen Sugrue, "Receptors for basement membrane components on epithelial cell surfaces"; Max Wicha, "Connectin: A cell surface laminin receptor protein that also binds actin"; Alan Rapraeger, "Transmembrane modification of cell behavior involves heparan sulfate proteoglycan." Jack McMahan, "Components of the neuromuscular basement membrane which influence cell surface differentiation."

22 June. Role of basement membranes in morphogenesis (Elizabeth D. Hay, discussion leader): Mary Bunge, "Interrelationships between extracellular matrix and Schwann cell function"; Peter Ekblom, "Role of laminin in differentiation of kidney epithelium"; Merton Bernfield, "Role of basement membranes in gland morphogenesis."

All participants are invited to join in the daily discussions and to bring a poster (one per participant) related to their current work. A poster session will be held in relation to each of the program sessions. Please indicate the title of your contribution and give a brief abstract in your conference application.

Bioelectrochemistry

Tilton School

Arthur A. Pilla, chairman; Howard Wachtel, vice chairman.

30 July. (S. Smith, discussion leader): L. Norton, "Electromagnetics, therapy and experimental and clinical cancer"; H. Leffert, "Cell proliferation: Mitogenic control of ion fluxes and ion pumps"; H. Schwann, "Propagation and absorption of electromagnetic energy in living tissue." (A. Grodzinsky, discussion leader): F. Barnes, "Membranes and molecular interactions with electromagnetic fields"; B. McLeod, "Electromagnetic principles involved in cell and tissue stimulation."

31 July. (A. Kaplan, discussion leader): M. Blank, "Cell surface charge and ion transport across membranes"; C. Myers, "Cell membrane as a target for anti-cancer chemotherapy: Effects of Ca^{2+} flux on intracellular enzymes"; K. Hellman, "Cells of the immune system as biological indicators of electromagnetic field effects." (M. Swicord, discussion leader): A. Chiabrera, "Interactions between ligands and cell surface receptors under electromagnetic exposure"; C. Wenner, "Effect of tumor promotors on Na-K ATPase activity."

1 August. (D. Jones, discussion leader): R. Korenstein, "Electrical and mechanical stimulation of bone cells in vitro"; A. Boynton, "Calcium, protein kinases and cell proliferation"; H. Hennings, "Calcium induced differentiation in mouse epidermal cells." (H. Pohl, discussion leader): M. Cohen, "Ionic factors affecting neuronal regeneration and degeneration"; M. Orgel, "Pulsing electromagnetic field effects on nerve regeneration in the cat."

2 August. (B. Rosenberg, discussion leader): J. Freeman, "Measurement of neuronal growth current with a circularly vibrating microprobe"; M. M. Poo, "Perturbation of neurite growth by pulsatile electrical fields"; B. Sisken, "Pulsing electromagnetic field effects on nerve regeneration in vivo and in vitro." (H. Leffert, discussion leader): R. Tucker, "Intracellular free calcium and the effect of growth factors"; W. Moolenaar, "The effect of growth factors on Na^+/H^+ exchange and cytoplasmic *p*H."

3 August. (L. Norton, discussion leader): L. Glaser, "Platelet-derived growth factor induction of Na^+/H^+ exchange and cytoplasmic alkalinization"; J. Bond, "The influence of membrane surface charge in mediating electromagnetic coupling to biological tissue"; S. Bawin, "Effects of maintained exposure to weak EM fields in regulation of neuro-excitability."

Bioengineering and Orthopedic Science

Proctor Academy

Edmund Y. S. Chao, chairman; Jorge O. Galante, vice chairman.

6 August. (Van C. Mow, discussion leader): David Bradford, A. M. Ahmed, David Eyre, Roby Thompson, "Responses of intervertebral discs in biomechanical and biophysical environment."

(Eric Radin, discussion leader): Alice Maroudas, Van Mow, Derek Cooke, "Physiochemical rheological and immunological properties of synovial cartilage."

7 August. (Tom Andriacchi, discussion leader): Sheldon Simon, Dick Brand, Aurelio Cappozzo, "Functional assessments of the lower extremity joints and the foot." (Gus White, discussion leader): Gunnar Andersson, Richard Smith, "Functional assessments of the spine and upper extremity joints."

8 August. (Bob Johnson, discussion leader): Wayne Akeson, Andrus Viidik, David Butler, Steven Arnosky, "Biology and biochemistry of tendons and ligaments and their responses to mechanical strain." (Savio Woo, discussion leader): Roger Haut, Edward Cabaud, Cyril Frank, "Biology and biomechanics of ligament repair and replacement."

9 August. (Pat Kelly, Toby Hayes, discussion leaders): Gideon Rodan, Sol Pollack, Hari Reddi, Jeff Gorski, "Biological, biochemical and biophysical stimuli for bone remodeling." (Ed Chao, Jorge Galante, discussion leaders): Carl Brighton, Andy Bassett, "The current state of the art and sciences in electrical stimulation of bone and connective tissue."

10 August. (Jack Lewis, Dick Brand, discussion leaders): Zev Rymer, Jim Andrews, "Problems, limitations and potential applications of joint muscle force prediction."

Biological Regulatory Mechanisms

Holderness School

John Roth and Elizabeth Jones, co-chairmen; Nigel Grindley and Susan Lindquist, co-vice chairmen.

18 June. Gene expression (Martin Gellert, discussion leader); Structural protein and the cell cycle (David Botstein, discussion leader).

19 June. Regulation in development (Eric Wieschaus, discussion leader); Global regulatory networks (Susan Gottesman, discussion leader).

20 June. Sex determination and metastable switches (Ira Herskowitz, discussion leader); Genome structure (Carol Newlon, discussion leader).

21 June. Regulation of host-parasite interactions (Ira Herskowitz, discussion leader); Recombination and transposition (Nancy Kleckner, discussion leader).

22 June. Regulation of phenomena involving membranes (Jon Beckwith, discussion leader).

Physics and Physical Chemistry of Biopolymers

Holderness School

John L. Markley and Wilma K. Olson, co-chairmen.

Structure-Function Relationships in Biopolymers

25 June. Understanding the connection between chemistry and structure (William J. Rutter, discussion leader): Jane S. Richardson, "Design criteria for protein structures"; M. Go, "Structural origin of introns"; Neville R. Kallenbach, "Designing nucleic acid structures"; Prospects for the elucidation of structure-function problems (Wilma K. Olson, discussion leader): R. Wolfenden, "Solvent water and enzyme action"; John M. Rosenberg, "Kinked B-DNA in crystalline complex with Eco RI endonuclease"; Peter B. Dervan, "Synthetic sequence specific DNA cleaving molecules."

26 June. Structure-property relationships in biopolymer models (Robert D. Wells, discussion leader): Cornelis Altona, "Conformational analysis of oligonucleotide duplexes by means of 1D and 2D NMR"; Wayne L. Mattice, "Formation of intramolecular antiparallel sheets in proteins and polypeptide models"; Thomas E. Thompson, "Molecular organization of glycosphingolipids in bilayers and biological membranes"; Dynamic behavior as a reflection of chemical composition (Ronald M. Levy, discussion leader): Gary K. Ackers, "Site specific free energy perturbations in proteins"; James C. Wang, "DNA supercoiling and DNA topoisomerases"; Gerhard Wagner, "Dynamics of the basic pancreatic trypsin inhibitor as studied by 2D NMR."

27 June. Detailed structure-function studies (John L. Markley, discussion leader): Michael Laskowski, Jr., "Algorithms for predicting thermodynamic properties of proteins"; Ignacio Tinoco, Jr., "Use of circularly polarized light to study biological macromolecules"; Ken A. Dill, "Structure and function in monolayers, membranes and micelles." Detailed structure-function studies (continued) (Brian Hartley, discussion leader): Olke C. Uhlenbeck, "Specific RNA-protein interactions"; Joseph Kraut, "Directed mutagenesis of dihydrofolate reductase"; Philip S. Low, "Role of erythrocyte band 3 in regulation of membrane peripheral protein interactions."

28 June. Biopolymer interactions (Irwin D. Kuntz, Jr., discussion leader): Wayne A. Hendrickson, "Structural detail in proteins"; K. J. Breslauer, "Thermodynamics of DNA conformational transitions and interactions"; Robert Kaptein, "NMR studies of the lac repressor-operator interaction"; Bruno H. Zimm, "Understanding gel electrophoresis."

29 June. Chemical sequence and supramolecular organization (Victor A. Bloomfield, discussion leader): Jonathan King, "Mutant amino acid sequences influencing the folding pathway of a phage structural protein"; Carl Frieden, "Mechanism of actin assembly"; David Agard, "Three dimensional architecture of the polytene nucleus."

All conference participants who wish to present a poster on their research should include a title and a brief abstract with their conference application.

Bones and Teeth

Kimball Union Academy

John D. Termine, chairman; Arthur Veis, vice chairman.

16 July. Extracellular matrix and bone cell expression (A. Haridara Reddi, discussion leader): speakers, Kenneth G. Mann, Larry W. Fischer, Paul A. Price; discussants, George R. Martin, Louis V. Avioli. Extracellular matrix and bone cell expression (A. Haridara Reddi, discussion leader): selected speakers from submitted abstracts (see below).

17 July. Genetic diseases of bone: Osteogenesis imperfecta (Stephen M. Krane, discussion leader): speakers, Darwin J. Prockop, David Rowe; discussants, Beat Steinmann, William Cole, Pamela Gehron Robey, Jeffrey Banadio. Genetic diseases of bone: Osteopetrosis and hypophosphatemia (Francis H. Glorieux, discussion leader): speakers, Sandy C. Marks, Pierre J. Marie; discussants, Michael D. Fallon, Mark K. Drezner.

18 July. Newer Aspects of vitamin D biology: Cell differentiation (Hector F. DeLuca, discussion leader): speakers, Hector F. DeLuca, Tatsuo Suda, Mark R. Haussler; discussants, Steven L. Teitelbaum, Timothy Kenney Gray. Newer aspects of vitamin D biology and medicine (Hector F. DeLuca, discussion leader): speaker, J. Christopher Gallagher; discussant, Robert Bromage.

19 July. Bone repair and tissue healing (Joseph M. Lane discussion leader): speakers, Marshall R. Urist, Gary R. Grotendorst; discussants, Robert K. Schenk, Karl A. Piez, George Fareed, T. K. Sampath. Heinz A. Lowenstam, "The evolution of biomineralization."

20 July. Cell biology of the osteoclast (Roland Baron, discussion leader): speakers, Gilbert Vaes, Philip Osdoby, Carol V. Gay; discussant, Judith White.

Participants are encouraged to submit abstracts on the topics of the conference for poster presentation during afternoons (5 p.m. to 6 p.m.) preceding the respective sessions. Selected presentations may be chosen for participation in the discussion periods. Send all abstracts to Dr. Arthur Veis, Department of Oral Biology, Northwestern University Dental School, 303 East Chicago Avenue, Chicago, Illinois 60611.

Cancer

Colby-Sawyer College (N)

Carl Nathan, chairman; Eric Stanbridge, vice chairman.

The Cancer Cell: Genotype, Phenotype, and Host Response

20 August. Oncogenes and virally induced tumors in man (P. Duesberg, chairman): M. Barbacid, "Oncogenes in non-heredofamilial human tumors"; S. Aaronson, "Oncogenes in heredofamilial tumor syndromes"; R. Gallo, "Retroviral diseases of man." Oncogene interaction and activation (R. Weinberg, chairman): P. Newbold, "Oncogene-carcinogen interactions"; J. Yunis, "Chromosomal rearrangements and activation."

21 August. Oncogene products and functions (R. Weinberg, chairman): E. Scolnick, "Oncogenes in yeast". M. Spron, "Growth factors and their receptors"; G. Cooper, "Transferrin-like and other products." Suppression of oncogenes (E. Stanbridge, chairman): W. Benedict, "Human cancer due to recessive gene"; A. Goldberg, "Approach to inhibition of tyrosine kinases."

22 August. Bioenergetics (R. Parks, chairman): M. White, "Tumor-specific differences in glucose transport"; P. Pederson, "Differences in hexokinase between malignant/embryonic and normal cells"; L. B. Chen, "Mitochondria in carcinoma cells: Distribution, function and chemotherapy." Control of differentiation (G. Poste, chairman): P. Jones, "Chemotherapeutic agents, carcinogenesis, and methylation"; B. Perussia, "Interferon-gamma and myeloid leukemia."

23 August. Mechanisms of cytotoxicity and suppression (H. Schrieber, chairman): P. Henkart, "Characterization of cytolysins from NK cells and T cells"; H. R. MacDonald, "Transfer of T cell cytotoxic capacity and specificity with liposomes"; G. Cinaciolo, "Suppression of macrophage responses by tumor-derived P15E." Tumor vasculature: Portal for therapy and possible target? (H. Dvorak, chairman): H. Peterson, "Distinctive anatomy and pharmacologic control"; D. Rifkin, "Tumor-endothelial interactions."

24 August. Therapeutic effects of immune products (J. Minna, chairman): R. Levy, "Monoclonal antibodies"; J. Mule, "In vitro–activated and –expanded killer cells"; I. Gresser, "Interferons and anti-interferon antibodies."

Cardiac Inotropic Agents

Holderness School

Tai Akera, chairman; Glenn A. Langer, vice chairman.

11 June. (Ernest Page, discussion leader): Joachim R. Sommer, "Ultrastructure of cardiac muscle cells and bundles: Its functional implications"; Sanford P. Bishop, "Ultrastructure of isolated myocardial cells"; M. Lazdunski, "Na^+/H^+ exchange system of the heart"; (John R. Blinks, discussion leader): Glenn A. Langer, "Mocardial calcium"; S. S. Sheu, "Ionized calcium, its control and influences."

12 June. (August M. Watanabe, discussion leader): Henry I. Yamamura, "Muscarinic cholinergic and calcium channel receptors"; Gary Stiles, "The adrenoceptors"; Erland Erdmann, "Multiplicity of digitalis receptors"; (Arnold M. Katz, discussion leader): Alexandre Fabiato, "Calcium-induced calcium release from the sacroplasmic reticulum"; W. Hasselbach," Calcium release and calcium uptake/pumps."

13 June. (N. Sperelakis, discussion leader): M. Morad, "Mechanisms of calcium-channel blockers"; A. M. Brown, "The "slow channel" currents in single cells"; G. Isenberg, "Calcium-operated channels in myocardial cells." (Richard Tsien, discussion leader): P. Hess, "Calcium agonists: Effects on single cells and single Ca channels"; W. Trautwein, "Single Ca channel: Response to isoproterenol and D-600."

14 June. (Thomas W. Smith, discussion leader): J. Reeves, "The sodium-calcium exchanger"; D. A. Eisner, "Intracellular Ca oscillations in mammalian myocardium"; J. Lederer, "Role of intracellular sodium in the control of tension"; (Theodore M. Brody, discussion leader): Magda Horackova, "The sodium-calcium exchanger"; R. A. Chapman, "Intracellular sodium, sodium-calcium exchanger and intracellular calcium buffers."

15 June. (Arnold Schwartz, discussion leader): A. Scriabine, "Calcium channel agonists as inotropic agents"; Norio Taira, "New inotropic agents"; John R. Solaro, "Cardiac muscle myofilaments as targets of inotropic agents"; H. G. Glitsch, "Active sodium pumping in the heart."

Catalysis

Colby-Sawyer College (N)

Werner O. Haag, chairman; Wolfgang M. H. Sachtler, vice chairman.

25 June. P. Biloen, "Non-steady-state studies of CO/H_2 catalysis"; J. Happel, "Isotopic assessment of fundamental catalytic mechanisms"; B. C. Gerstein, "Application of high resolution solid state NMR to surface chemistry."

26 June. H. S. Gandhi and M. Shelef, "Development of practical catalysts using surface science results"; H. Kung, "The influence of surface and bulk properties on catalysis by oxides"; K. Klier, "Base catalysis in CO/H_2 syntheses: Mechanisms and catalyst structure."

27 June. J. Weitkamp, "Comparison of medium and large-pore catalysis in the bifunctional conversion of naphthenes"; R. Dessau, "Duality of mechanisms in acid catalyzed cracking of paraffins"; J. Haber, "Acid-base catalysis with zeolites and other solids."

28 June. Y. Iwasawa, "Recent developments of tailored metal catalysts"; L. D. Schmidt, "Microstructure of catalyst particles"; B. Haensel (Title to be announced).

29 June. W. W. Sleight, "Methanol oxidation over oxide catalysts"; J. Lyons, "Multiple role of palladium in the liquid phase oxidation of hydrocarbons."

Solid-State Studies in Ceramics

Colby-Sawyer College (S)

David R. Clarke, chairman; George Y. Onoda, vice chairman.

Fracture Processes in Polyphase and Composite Ceramics

30 July. (Ali Argon, discussion leader): Anthony G. Evans, "High temperature creep fracture of polyphase ceramics"; I-Wei Chen, "Creep deformation of multiphase ceramics." (Martin Harmer, discussion leader): Frederick Lange, "Characteristic flaw populations produced during processing of composite

ceramics"; Rishi Raj, "Differential sintering stresses and the formation of cracks."

31 July. (Brian Lawn, discussion leader): Anthony Kelly, "Toughening mechanisms in ceramic composites"; Kevin Kendall, "Interfacial failure in brittle composites." (Katherine Faber, discussion leader): Mike Swain, "Crack propagation in transformation toughened zirconia composites"; David Marshall, "Fracture of ceramic composites."

1 August. (Lutgard DeJonghe, discussion leader): Robert McMeeking, "Crack tip effects in solid electrolytes under electrical and mechanical stress fields"; Anil Virkar, "Solid electrolyte degradation mechanisms." (Dennis Readey, discussion leader): Terrance Michalske, "Slow fracture of ceramics having an intergranular glass phase"; Bruce Bunker, "Chemical effects during the corrosion of silicate intergranular phases."

2 August. Short topical presentations (Richard Tressler, discussion leader). (David Clarke, discussion leader): A. Kelly, "Composite materials: A historical perspective."

3 August. (Karl Prewo, discussion leader): Roderic Lakes, "Deformation of cellular ceramics"; David Green, "Crack propagation in cellular ceramics."

Chemical Oceanography

Kimball Union Academy

William Sackett, chairman; Robert Berner, vice chairman.

13 August. (K. Turekian, discussion leader): K. Turekian, "Isotopic inferences of mantle and crustal processes in ocean water and murine deposits: The osmium isotope signal"; R. O'Nions, "The neodymium isotope signal"; F. Albarede, "The strontium isotope signal." (L. I. Gordon, discussion leader): K. Von Damm, "The chemistry of submarine hydrothermal solutions"; J. Welhan, "Stable isotopes in hydrothermal solutions and gases."

14 August. (P. Quay, discussion leader): P. Quay, "Bomb carbon-14 distributions in the Pacific"; H. Oeschger, "Implications of ice core analyses on carbon cycle modeling"; D. Moore, "Ocean modeling and carbon-14 clocks." (R. Fine, discussion leader): W. Roether, "Tritium distributions in the Atlantic Ocean"; R. Fine, "Tritium distributions in the Pacific and Indian oceans."

15 August. (M. Andrea, discussion leader): P. Ortner, "Dial cycles in sulfur assimilation by marine plankton"; P. Liss, "Production of volatile sulfur compounds in coastal environments"; J. Lovelock, "Sulfur cycling in oxic environments." (R. Garrels, discussion leader): R. Garrels, "Sulfur cycling through geologic time"; R. Berner, "Burial of organic carbon and pyrite sulfur over the last 600 million years."

16 August. (E. Goldberg, discussion leader): E. Goldberg, "Comparative marine chemistries: General aspects"; J. Murry, "Comparative marine sedimentary diagenesis"; J. Bouleque, "Comparative marine chemistries in subenvironments." (D. F. Reid, discussion leader): R. Anderson, "Geochemical mechanisms for removing uranium from sea water"; Y. Nozaki, "Thorium and actinium isotope distributions and implications."

17 August. (P. M. Williams, discussion leader): W. Michaelis, "DOC and organic particle fluxes in the sea"; R. Mantoura, "Riverine DOC: Its contribution to the marine pool"; C. Lee, "Biogeochemical processes affecting organic nitrogen compounds."

Chemical Senses: Taste and Smell

Proctor Academy

Bruce Oakley, chairman; David C. Heckert, vice chairman.

9 July. (Steven Price, discussion leader): John A. DeSimone, "The role of ion transport in gustatory transduction"; Kenzo Kurihara, "Significance of the phase boundary potential in chemoreceptor potentials"; Randall Murphy, "Single ion channel fluctuations in planar lipid membranes containing olfactory epithelium proteins." (Carl Pfaffmann, discussion leader): Nelson Y. Kiang, "The representation of acoustic stimuli in across-fiber models"; Robert Shapley, "Parallel processing of visual information in the nervous systems of cats and monkeys"; Robert W. Rodieck, "Cell types in the vertebrate retina."

10 July. (Robert J. O'Connell, discussion leader): John G. Hildebrand, "Functional organization of insect olfactory pathways"; Michael Meredith, "Olfactory-vomeronasal interactions"; Robert E. Johnston, "Olfactory communication in mammals." (Bruce P. Halperin, discussion leader): Robert J. O'Connell, "Olfactory guided behavior and coding mechanisms"; Marion E. Frank, "Taste discriminability in animals"; Harvey J. Grill, "Taste reactivity as a measure of the neural control of palatability."

11 July. (James T. Kuznicki, discussion leader): Harry Lawless, "Sensory properties of oral chemical irritants"; Bruce P. Halpern, "Coding constraints produced by taste reaction time data"; William S. Cain, "Categorical perception in smell and taste." (Maxwell M. Mozell, discussion leader): Robert C. Gesteland, "Two receptor neuron populations defined by biophysical parameters"; Andre Holley, "Is there evidence for a taxonomy of olfactory receptor cells?"; David V. Smith, "Gustatory neuron types: Converging evidence."

12 July (David V. Smith, discussion leader): George F. Estabrook, "The effect of standardization of response data on grouping of neurons"; Robert W. Rodieck, "Cell classification in the vertebrate retina"; Stephen L. Bieber, "Multivariate analysis of sensory data: a comparison of methods." (Charlotte M. Mistretta, discussion leader): Susan Travers, "Receptive field organization of gustatory neurons in the nucleus of the solitary tract"; Takashi Yamamoto, "Cortical representation of taste"; John W. Scott, "Spatial factors in central olfactory organization."

13 July. (Bruce Oakley, discussion leader): Round-table discussion of sensory coding in taste and smell.

Chemotherapy of Experimental and Clinical Cancer

Colby-Sawyer College (S)

Franco Muggia, chairman; Charles Myers, vice chairman.

23 July. Drug resistance (Bruce Chabner, discussion leader): Victor Ling, "Genetics of drug resistance"; Takashi Tsuruo, "Reversal of acquired resistance to vinca alkaloids and anthracyclines"; Robert Ozols, "Drug resistance in human ovarian cancer cell lines." Biochemical alterations/growth factors (Karl Folkers, discussion leader): Joseph Bertino, "Antifolate resistant cells: Target for new approaches"; Robert Spiegel, "Interferon: Therapeutic implications of effects on tumor cells."

24 July. Action on membranes (Robert Parks, discussion leader): Thomas Tritton, "Effects of anthracyclines"; Kevin Scanlon, "Effects of cisplatin"; John Hickman, "Effects of alkylating agents." New cellular targets (Emil Frei, discussion leader): Kenneth Tew, "The cytoskeleton and nuclear skeleton as targets for drug design"; Kenneth Harrap, "Cytoplasmic enzyme targets."

25 July. Nucleosides (John Montgomery, discussion leader): Edwin Cadman, "The interaction of methotrexate and fluoropyrimidines"; John Hutton, "Phase I/II studies of 2-Fluoro-ara-AMP (Fludarabine)"; David Cooney, "Stud-

ies with tiazofurin." Oxygen effects (Nicholas Bachur, discussion leader): Beverly Teicher, "Potential of perfluorochemical emulsions in cancer therapy"; Lawrence Oberley, "Superoxide dismutase and oxygen metabolism in antitumor activity."

26 July. New drugs and approaches (J. Gordon McVie, discussion leader): Wendell Wierenga, "CC 1065 and analogs as potential anticancer agents"; Malcolm Stevens, "Mitozolamide and its analogs"; Stephen Howell, "Intraperitoneal use of drugs." New monitoring techniques (Rose Ruth Ellison, discussion leader): Charles Myers, "Application of NMR to cancer research"; Paul Kornblith, "PET scanning."

27 July. New biology in clinical concepts (Gerald Mueller, discussion leader): Robert Young, "Impact on diagnosis, staging, and therapy"; Stan Korsmeyer, "Immunoglobulin gene rearrangements and *onc* genes"; Michael McGrath, "Lymphocyte receptors and trafficking in lymphoma."

Physics and Chemistry of Coatings and Films

Plymouth State College (S)

Alfred Rudin, chairman; Loren Hill, vice chairman.

13 August. (James E. McGrath, discussion leader): Peter F. Nicks, "Condensation polymerization in non-aqueous dispersions." (James Woo, discussion leader): A. F. Johnson, "Reactor control for specialty surface coatings materials"; Clyde Hutchins, "Group transfer polymerization polymers that contain reactive functionality."

14 August. (P. Pappas, discussion leader): F. W. Fowkes, "Acid-base interactions of polymers with solvents, fillers and substrates"; D. Briggs, "Experimental aspects of acid-base interactions. Preparation, characterization and adhesion of functionalized polyethylene"; H. P. Schreiber, "Acid-base interactions and properties of film-forming polymers." (Irvin Krieger, discussion leader): J. Schultz, "Interfacial properties of graft polymers at metal surfaces"; Ronald W. Kreis, "The promotion of wet adhesion in latex paints: Role of functional monomers."

15 August. (R. R. Myers, discussion leader): B. K. Appelt, "Calorimetric characterization of negative photoresists"; Robert S. Tu, "Interaction of pigment/binder in magnetic tape coatings." (L. J. Mathias, discussion leader): G. G. Cameron, "Studies of synthetic polymers in bulk, in solution and at interface by the spin label technique"; Lynn W. Jelinski, "Deuterium NMR studies of structure, morphology and dynamics in solid polymers."

16 August. (John Gardon, discussion leader): W. van Ooij, "Corrosion control by organic coatings: Studies of interfacial phenomena using surface analysis techniques." (Mary R. Thomas, discussion leader): R. E. Tirpak, "Aqueous dispersions of cross-linked polyurethanes." (Mary Brodie, discussion leader): J. A. Seiner, "Semisolid latex house paints."

17 August. (Loren Hill, discussion leader): J. A. Simms, "Shift factor determination and use in the correlation of accelerated weathering with Florida exposure"; R. C. Wilson, "Weatherability of automotive topcoats."

Corrosion

Colby-Sawyer College (N)

J. C. Scully, chairman; M. J. Graham, vice chairman.

23 July. (M. J. Graham, discussion leader): K. Hashimoto, "The passivation of amorphous and crystalline metals"; G. T. Burstein, "The passivation and repassivation of some metals." (R. M. Latanision, discussion leader): D. J. Duquette, "The formation and breakdown of passive films on Fe-Cr alloys in the temperature range 20° to 300°C"; R. Newman, "Alloying effects and stability phenomena in the localized corrosion of stainless steels."

24 July. (J. R. Galvele, discussion leader): B. MacDougall, "The formation and breakdown of passive oxide films on nickel in halide solutions"; S. Smialowska, "The pitting mechanism of iron base alloys in chloride-free solutions." (E. D. Verink, discussion leader): G. Thompson, "The growth and composition of anodic films on aluminium"; D. Eadline, "High-frequency dielectric measurements of water in organic coatings"; J. Parks, "Ionic diffusion through organic coating with and without an applied potential."

25 July. (B. E. Wilde, discussion leader): J. R. Galvele, "Anodic dissolution as a rate controlling step in stress corrosion cracking"; T. Murata, "Sulphide cracking of low and high alloy steels." (B. Cox, discussion leader): R. N. Perkins, "Environment sensitive crack growth kinetics"; F. P. Ford, "The practical application of mechanistic aspects of stress corrosion cracking."

26 July. (A. J. Sedriks, discussion leader): J. E. Castle, "The passivation of copper alloys in natural sea water"; F. Mazza, "The influence of trace elements in the corrosion of copper alloys." (J. C. Scully, discussion leader): C. S. Smith, "Corrosion is not always a bad thing?" F. Mazza, "The corrosion of the Horse Statues of St. Marks, Venice."

27 July. (D. D. MacDonald, discussion leader): C. Edeleanu, "Predicting the future"; N. D. Greene, "The use of microprocessor in corrosion control."

Cybernetics

New Hampton School

Leo Steg, chairman; Heinz Von Foerster, vice chairman.

27 August. Fundamentals—circularity, process, variety, observation (Larry Richards, chairman): Heinz Von Foerster, Humberto Maturana, Stuart Umpleby. Organization, autonomy, and autology (Milan Zeleny, chairman): Francisco Varela, Peter Hejl, Lars Lofgren.

28 August. Language, understanding, and hermeneutics (Ernst von Glasersfeld, chairman): Alton Becker, Mark Bickhard. Transaction and interaction in small systems (Fred Steier, chairman): Doreen Steg, Carlos Sluzki, Paul Watzlawick.

29 August. The logic and language of expert systems (Paul Pangaro, chairman): Michael Arbib, Gordon Pask. The role of information in economic activity (Klaus Krippendorff, chairman): Donald Lamberton, Charles Jonscher.

30 August. Methodology in decision-making and policy formulation (John Steinbrunner, chairman): Chris Argyris, Ian Mitroff. Adaptation in complex genetic and neural systems (Stuart Kauffman, chairman): Eugene Yates, Stephen Grossberg.

31 August. Cybernetics and chemistry (Rudolph T. Marcus, chairman): Sam Perone, Ray Carhart.

Cyclic Nucleotides

Tilton School

Jackie D. Corbin, chairman; Lutz Birnbaumer, vice chairman.

11 June. (E. Krebs, discussion leader): E. Reiman, "Homology between the catalytic subunit of phosphorylase kinase and other protein kinases"; G. S. McKnight, "cAMP-dependent protein kinase genes"; T. Steitz, "The crystal structure of the *Escherichia coli* CAP-cAMP complex." The insulin receptor tyrosine protein kinase (O. M. Rosen, discussion leader): T. Hunter, "Tyrosine protein kinase substrates"; R. Erickson, "Phosphorylation-dephosphoryla-

tion events in transformed cells''; D. Garbers, ''Tyrosine phosphorylation in normal tissues.''

12 June. (P. Greengard, discussion leader): M. Bitensky, ''Light-activated retinal rod phosphodiesterase: Role in visual excitation and homology with adenylate cyclase''; I. Walaas, ''Neuron-specific phosphoproteins''; C. Klee, ''Calcineurin; brain specific calmodulin-regulated protein phosphatase.'' (B. Jastorff Bremen, discussion leader): S. Beebe, ''Effects of cAMP analogs in intact cells''; P. Van Haastert, ''The role of cyclic nucleotides during chemotaxis of *Dictyostelium discoideum*''; M. Pall, ''Evolutionary conservation of the cAMP control system in eucaryotes.''

13 June. (Bruce Kemp, discussion leader): T. Kaiser, ''Mechanistic studies on the catalytic action of cyclic nucleotide-dependent protein kinases''; S. Døskland, ''cAMP- and cGMP-dependent protein kinases''; J. Vandenheede, ''Kinase Fa-mediated modulation of protein phophatase activity.'' (J. Exton, discussion leader): P. Blackmore, ''Calcium-cAMP interactions in liver''; D. Denton, ''Role of Ca^{2+} in the hormonal regulation of pyruvate dehydrogenase phosphatase activity in heart and adipose tissue''; T. Soderling, C. Brostrom, M. Brostrom, ''Regulation of liver protein synthesis by calcium; regulation by hormones and calcium of pituitary protein synthesis.''

14 June. Guanine nucleotide binding proteins and adenylate cyclase (A. Gilman, discussion leader): R. Lefkowitz, ''Molecular mechanisms of desensitization of beta-adrenergic receptors''; J. Perkins, ''Internalization of the beta-adrenergic receptor''; E. Ross, ''Interactions between the beta-adrenergic receptor and GTP binding proteins.'' Special lecture: S. Cohen, ''Epidermal growth factor.''

15 June. (J. Dumont, discussion leader): R. Maurer, ''Role of cAMP in prolactin gene expression''; G. Vassart, ''Control of thyroglobulin gene expression by TSH''; R. Hanson, ''Regulation of the gene for *P*-enolpyruvate carboxykinase.''

Dielectric Phenomena

Holderness School

Shiro Matsuoka, chairman; James E. Anderson, vice chairman.

30 July. (John D. Hoffman, discussion leader): John G. Powles, ''Dielectric behavior of liquids by computer simulation''; William A. Steel, ''Rotational dynamics''; Paul Madden, ''Induced phenomena.'' (James E. Anderson, discussion leader): Theodor Dorfmüller, ''Far infrared spectroscopy in liquids, large molecules and polymers.'' Poster session.

31 July. (C. Austin Angell, discussion leader): Graham Williams, ''An empirical relaxation function and the search for its physical basis''; Cornelius Moynihan, ''Dielectric relaxation in ionically conductive glasses''; Gyan P. Johari, ''Physical aging and secondary relaxation in glasses.'' (Frank E. Karasz, discussion leader): Michael G. Clark, ''Dielectric properties of liquid crystals''; G. A. Kenney-Wallace, ''Electro-optics phenomena.''

1 August. (W. James Sarjeant, discussion leader): Eric O. Forster, ''Electrical breakdown in liquid dielectrics''; John J. O'Dwyer, ''High field conduction in dielectric solids''; John Fothergill, ''Stochastic approach to breakdown.'' (Robert Hebner, discussion leader): Markus Zahn, ''Electro-optic field mapping and charge transport in purified water and water/ethylene glycol mixture''; Karl Illinger, ''Cellular diffusion in electric field.''

2 August. (John Pochan, discussion leader): Alan MacDiarmid, ''Polyacetylene, the prototype conducting polymer''; Bryan Street, ''Conducting polymers derived from pyrroles''; Arthur Epstein, ''Conductivity mechanisms and models in polyacetylene.'' (William J. MacKnight, discussion leader): Thomas A. Weber, ''A story of cooperative transitions in polymers.''

3 August. (David W. McCall, discussion leader): Lynn W. Jelinski, ''Identification of local molecular motions in polymer: Solid state deuterium NMR studies''; John Lamb, ''Viscoelastic and ultrasonic properties of liquids and polymer melts''; Takeo Furukawa, ''Piezoelectricity and ferroelectricity in polymers.''

Drug Carriers in Medicine and Biology

Plymouth State College (S)

Carl R. Alving, chairman; George Poste, vice chairman.

9 July. Drug carriers for treatment of infectious diseases—1 (Carl R. Alving, chairman): Carl R. Alving, ''Drug carriers in treatment of protozoan diseases''; Michael W. Fountain, ''Use of drug carriers for treatment of bacterial diseases''; Meir Kende, ''Liposomes as carriers of riboviran and immunomodulators for treatment of Rift Valley Fever.'' Drug carriers for treatment of infectious diseases—2 (Rudolph Juliano, chairman): R. L. Juliano, ''Liposomes as carriers of amphotericin B in treatment of disseminated candidiasis''; Deborah A. Eppstein, ''Use of immunomodulators in treatment of infectious diseases.''

10 July. Drug carriers for chemotherapy of cancer—1 (Isiah J. Fidler, chairman): George Poste, ''Cell biology of cancer''; Isiah J. Fidler, ''Biological response modifiers.'' Drug carriers for chemotherapy of cancer—2 (Demetrios Papahadjopoulos, chairman): Demetrios Papahadjopoulos, ''Ligand-directed targeting''; Eric Mayhew, ''Effects of adriamycin-liposomes on experimental tumors''; Zoltan A. Tökes, ''Membrane directed action of adriamycin.''

11 July. Intravenous and intralymphatic delivery of drug carriers (Garret M. Ihler, chairman): Garret M. Ihler, ''Erythrocyte ghosts as drug carriers''; Claude Nicolau, ''Delivery and expression of liposome-encapsulated insulin gene in vivo''; John N. Weinstein, ''Fate of antibodies in the lymphatic system.'' Nonhematogenous portals for delivery of drug carriers (Robert Langer, chairman): Robert Langer, ''Controlled release systems for polypeptides using diffusion, erosion or magnetic processes''; Joseph Robinson, ''Controlled release of drugs by bioadhesives in the GI tract''; Francis C. Szoka, ''Ocular delivery of liposomes containing antimicrobial agents''; Perry J. Blackshear, ''Insulin delivery by implantable pumps: Progress and problems''; Lynda Sanders, ''Controlled release of LHRH analogs.''

12 July. Immunotoxins, and short discussion of posters (Ellen S. Vitetta, chairman): Ellen S. Vitetta, ''Immunotoxins''; Philip E. Thorpe, ''Immunotoxins.'' During the second half of this session selected authors will make short oral presentations of posters. The challenge of clinical applications (George Poste, chairman): Arthur H. Hayes, ''The regulatory climate from the viewpoint of a recent U.S. Food and Drug Administration Commissioner''; Richard J. Youle, ''Antibody-rictin conjugates in the treatment of graft versus host disease in bone marrow transplants in humans.''

13 July. Drug carrier technology: Opportunities and problems in formulations and medical applications (Thomas Chang, chairman): Thomas M. Chang, ''Microencapsulation, including artificial cells, as drug carriers''; Karl E. Hellström, ''The status of monoclonal antitumor antibodies''; Terry M. Allen, ''Studies on the toxicity of particulate carriers''; Gregory Gregoriadis, ''A simple method for high yield entrapment of drugs into liposomes in the absence of organic solvents, sonication and detergents.''

Drug Metabolism

Holderness School

Robert P. Hanzlik, chairman; Mitchell Cayen, vice chairman.

23 July. Metabolism of nitrogen compounds (Paul Hollenberg, session chairman): Paul F. Hollenberg, "Hemoprotein-catalyzed *N*-dealkylations of aromatic amines"; Douglas Rickert, "The metabolism of monocyclic nitro aromatic compounds"; Fred Kadlubar, "Metabolic activation of carcinogenic aromatic amines by mixed-function oxidases and peroxidases." Agricultural chemicals/insect control agents (David Schooley, session chairman): David Schooley, "Metabolism of a putative neurotransmitter, the pentapeptide proctolin, by insect tissue"; G. Wayne Ivie, "Metabolism of photosensitizing psoralens and its toxicological implications."

24 July. CNS agents (James Hilbert, session chairman): James Hilbert, "Metabolism and pharmacokinetics/pharmacodynamics of Quazepam—a novel thiobenzodiazepine hypnotic"; Tom Baillie, "Toxic metabolites of valproic acid"; Joseph Fenstermacher, "The transport of drugs and other solutes across the blood-brain barrier." Noble metal agents (John Dent, session chairman): John Dent, "The absorption and disposition of organic gold compounds"; Larry Sternson, "Approaches to elucidating the biodegradation of platinum-containing anti-neoplastic agents."

25 July. Toxicological consequences of drug metabolism (Sidney Nelson, session chairman): Sidney Nelson, Acetaminophen-toxicity: Via radical and/or non-radical mechanisms?" Jorge Capdevila, "Cytochrome P-450 and the metabolism of endogenous compounds: Arachidonic acid epoxygenase, a new member of the arachidonate cascade"; Neil Castagnoli, Jr., "Bioactivation pathways of tertiary amines leading to potential neurotoxic species." Application of QSAR methods to pharmacokinetic models and data (Mitchell Cayen, session chairman): Corwin Hansch, "Overview of quantitative structure activity relationships"; Yvonne Martin, "Applications of quantitative structure activity relationships to metabolic disposition phenomena."

26 July. Role of drug metabolism in drug design (Anthony Heald, session chairman): Anthony Theoharides, "Bioactivation of an 8-amino-quinoline compound into potent anti-leishmanial drugs." Richard Welch, "Metabolic and dispositional considerations in the drug discovery process"; Edgar Ulm, "Disposition and metabolism of peptides: Knowledge necessary for the design of peptide drugs." E. J. Ariens, "Pharmacon metabolism: Two sides of the coin."

27 July. Glutathione conjugates (Hugh Sullivan, session chairman): P. van Bladeren, "Formation of reactive intermediates by glutathione conjugation"; J. Stevens, "Biochemistry and toxicology of cysteine-*S*-conjugate metabolism."

Dynamics of Simple Systems in Chemistry and Physics

Brewster Academy

Herschel Rabitz, chairman; Joe Redish, vice chairman.

13 August. (William Reinhardt, discussion leader): Stuart Rice, "Dynamics at micro and macro levels"; Frieder Lenz, "Degrees of freedom in nuclear physics"; (David Hoffman, discussion leader): Ralph Amado, "Data-to-data relations in nuclear physics"; Andy DePristo, "Quantum number scaling theories; origins, applications and future directions."

14 August. (Eric Schmid, discussion leader): Millard Alexander, "Polarization effects in molecular collisions"; Armand Faessler, "The quark model and nucleon-nucleon interaction." (John Zabolitsky, discussion leader): Malvin Kalos, "Quantum Monte Carlo: What is it and who needs it?" James Anderson, "Random walk: A panacea for quantum mechanics."

15 August. (David Herrick, discussion leader): Francesco Iachello, "Dynamic symmetries in nuclei and molecules"; Stephen Berry, "What makes small atoms, molecules and maybe nuclei alike?" (Frank Levin, discussion leader): David Micha, "Scattering by polyatomic targets: A time-correlation function approach"; James Friar, "What are little nuclei made of?"

16 August. (Philip Pechukas, discussion leader): Paul Julienne, "The half collision viewpoint of laser assisted collisions"; Eric Heller, "Semiclassical wave packet dynamics." (Howard Taylor, discussion leader): Alexander Dragt, "Lie algebraic approximation of eternity"; Michael Tabor, "Analytic structure of dynamic systems."

17 August. (Colston Chandler, discussion leader): Benny Gerber, "Dynamics of vibrationally highly excited molecules"; Steven Koonin, "Are nuclei just bags of nucleons?"

Elastomers

Colby-Sawyer College (N)

Dale J. Meier, chairman; Aubert Coran, vice chairman.

16 July. (S. L. Aggarwal, discussion leader): G. Rehage, "Elastic and photoelastic properties of crosslinked liquid crystalline polymers"; G. L. Wilkes, "Properties of new polyisobutylene-based ionomers." (G. Allen, discussion leader): R. S. Stein, "Network homogeneity: Properties and stress-induced crystallization"; W. Gronski, "Deuterium magnetic studies on strained elastomers."

17 July. (H. K. Frensdorff, discussion leader): C. D. Eisenbach, "Segmented polyurethanes: Synthesis and properties of elastomers with monodisperse segments"; R. M. Hedrick, "Nylon block copolymer elastomers." (D. J. Meier, discussion leader): Poster presentations.

18 July. (D. N. Schulz, discussion leader): R. P. Quirk, "New block polymers for higher temperature applications"; N. Tagata, "The direct observation of individual polymer molecules by electron microscopy." (G. Holden, discussion leader): G. B. McKenna, "On the small strain behavior of peroxide-cured natural rubber"; E. M. Valles, "Model networks with dangling chains."

19 July. (R. E. Cohen, discussion leader): R. W. Richards, "Neutron scattering from polystyrene and block copolymer networks"; J. L. Ackerman, "Study of networks using ^{29}Si NMR spectroscopy." (J. E. Mark, discussion leader): R. J. Farris, "Elastomers as working substances in thermodynamic cycles."

20 July. (A. Coran, discussion leader): T. Inoue, "Covulcanization of polymer blends"; G. Hamed, "Autohesion and cohesion of polymers."

Electron Donor Acceptor Interactions

Plymouth State College (N)

E. M. Engler, chairman; J. Miller, vice chairman.

13–17 August. J. L. Bredas, "The role of mobile organic radicals and ions (solitions, polarons, bipolarons) in the transport properties of doped conjugated polymers"; J. Fendler, "Electron transfer and hydrogen generation in surfactant aggregate entrapped colloidal semiconductors"; J. Frommer, "A new phase of conducting polymers: Characterization of conducting polymer solutions"; A. Haim, "Intramolecular electron transfer in inorganic complexes"; N. Hush, "Long-range electron transfer in rigid molecules"; K. Itoh, "A ground-state nonet hydrocarbon as a model for one-dimensional organic ferromagnets"; N. Lewis, "Design of efficient electron transfer processes at semiconductor/liquid interface"; J. Miller, "Fast intramolecular electron transfer over long dis-

tances in rigid molecules''; D. Mobuis, ''Electron donor-acceptor interactions in organized monolayers''; W. E. Moerner, ''Organic photoreactions for frequency domain optical storage''; P. M. Rentzepis, ''Transient species in electron transfer''; H. Scher, ''Photogeneration as molecular process''; H. Staab, ''Studies in intramolecular charge transfer and excimer interactions''; H. Stamm, ''Molecular complexes: Problems in NMR determination of formation constants''; T. Takabe, ''Electron transfer reaction in photosynthetic systems''; T. Tazuke, ''Coulombic and polymer surface effects on photochemical electron transfer reactions''; K. Zachariasse, ''Kinetics of intramolecular exciplex formation.''

Electron Spectroscopy

Brewster Academy

C. R. Brundle, chairman; J. Dehmer, vice chairman.

16 July. Atomic studies: B. Sonntag, ''Photoemission studies of many electron effects in open shell atoms''; G. Wendin, ''Theory of electron correlation effects in atomic photoionization and related processes''; S. T. Pratt, ''Survey of recent multiphoton ionization studies using electron spectroscopy.'' Molecular studies: V. McKoy, ''Photoionization dynamics of molecules: Theory''; T. A. Carlson, ''Photoionization dynamics of molecules: Experiment''; P. Burrow, ''Temporary negative ion states of molecules.''

17 July. Auger spectroscopy: D. Thomas, ''Auger decay using electron-electron coincidence spectra''; E. Umbach, ''Angle-resolved and final state effects in the Auger-spectra of adsorbates.'' Spin-resolved measurements: H. Hopster, ''Energy, angle and spin-resolved photoemission studies of ferromagnetic materials''; F. Meier, ''Spin-resolved photoemission from semiconductors''; U. Heinzmann, ''Angle, energy and spin-resolved photoelectron spectroscopy of atoms, molecules, adsorbates and nonmagnetic solids.''

18 July. Small particles, thin films, surface atoms (1): K. Wandelt, ''Photoemission of adsorbed Xe''; C. Wagner, ''Screening energy effects in thin film and small aggregates.'' Small particles, thin films, surface atoms (2): G. Wertheim, ''B.E. shifts of atoms in small particles''; P. Citrin, ''B.E. shifts of atoms in small particles: A different view''; T. Barr, ''XPS induced loss spectroscopy: A new approach for nonconductive materials.''

19 July. Core and high resolution (vibrational) ELS: F. Netzer, ''Core EELS on rare earths''; W. Ho, ''Time-resolved vibrational spectroscopy of surface dynamics''; J. J. Pireaux, ''HRELS of insulators.'' Positron spectroscopy: L. Hulett, ''Positron spectroscopy—an overview.''

20 July. Surface and interface structure: F. Comin, ''Application of SEXAFS to reactive interfaces''; D. A. Shirley, ''Angle-resolved photoemission extended fine structure''; C. S. Fadley, ''Surface structure from high-energy photoelectron diffraction.''

Environmental Sciences:

Water Interfacial Processes

New Hampton School

Charles R. O'Melia, chairman; Rene Schwarzenbach, vice chairman.

25 June. Air-water interface (Donald Mackay, discussion leader): Donald J. O'Connor, ''Mass transfer in natural systems''; Paul V. Roberts, ''Mass transfer analogies between natural systems and treatment systems''; James F. Pankow, ''Measurement of gas exchange rates by *p*H-dependent laser induced fluorescence (LIF).'' Solid-solution interface (James A. Davis, discussion leader): George A. Parks, ''Cosorption: Mutual influences of inorganic and organic electrolytes and non-iopic solutes on adsorption''; John Westall, ''Adsorption of ionizable organic compounds on natural substances.''

26 June. The solid-solution interface (John Gregory, discussion leader): Cliff Johnston, ''Raman spectroscopy and the aqueous surface chemistry of kaolinite''; Marc A. Anderson, ''Solid characteristics''; Laura Sigg, ''Heavy metal interactions with surfaces: Importance for their transport in natural aquatic systems.'' Precipitation and dissolution (George H. Nancollas, discussion leader): Werner Stumm, ''The role of surface coordination in precipitation and dissolution of mineral phases''; Antonio C. Lasaga, ''Surface chemistry of minerals as an indicator of solution composition during dissolution.''

27 June. Coagulation (E. John List, discussion leader): James R. Hunt, ''Particle aggregate dynamics''; Iraklis A. Valiolis, ''Coagulation: Physical aspects and numerical simulation''; Desmond F. Lawler, ''Flocculation within sedimentation.'' Surface catalysis (James M. Morgan, discussion leader): David F. Ollis, ''Heterogenous catalysis and photolysis''; Michael R. Hoffman, ''Chemical and photochemical catalysis at the water-solid interface.''

28 June. Effects and fate of organic substances (Steven J. Eisenreich, discussion leader): Jerry A. Leenheer, ''Factors affecting persistence of natural organic substances in water''; Peter S. Liss, ''The effect of adsorbed organic matter in controlling the surface charge of suspended particles in natural waters''; Dominic M. DiToro, ''Reversibility and particle concentration effects in heavy metal and organic sorption.'' Microbial attachment (William G. Characklis, discussion leader): Paul R. Rutter, ''The role of polymers in microbial attachment''; Keven C. Marshall, ''Physiological reactions by microorganisms at surfaces.''

29 June. Metal-microorganism interactions (George A. Jackson, discussion leader): John M. Wood, ''Microbial resistance to toxic metal ions''; Francois Morel, ''Trace metal uptake and sorption by phytoplankton''; William Sunda, ''Chemical, photochemical, and biological processes affecting Mn in oceanic surface waters.''

Enzymes, Coenzymes, and

Metabolic Pathways

Kimball Union Academy

John A. Gerlt and JoAnne Stubbe, co-chairmen; John W. Kozarich and C. Dale Poulter, co-vice chairmen.

2 July. Richard N. Armstrong, ''Investigations of the stereoselective behavior of detoxication enzymes''; Perry A. Frey, ''Mechanism of electron and group transfer in α-ketoacid dehydrogenase complexes''; Norman J. Oppenheimer, ''Coenzyme-dehydrogenase interactions''; Christopher T. Walsh, ''Mechanistic studies of amino acid racemases.'' (W. W. Cleland, session chairman): Judith P. Klinman, ''Intermediates (or the lack thereof) in the dopamine-β-monoxygenase reaction''; William J. Ray, Jr., ''How to think about steady state reactions in terms of Gibbs energy profiles.''

3 July. (George L. Kenyon, session chairman): Thomas R. Cech, ''Mechanisms of biological catalysis by RNA''; Paul L. Modrich, ''Mechanisms of the Eco RI DNA restriction and modification enzymes''; Peter Reichard, ''The tyrosyl radical of ribonucleotide reductase''; W. Dean Rupp, ''The UVRABC nuclease, an enzyme that recognizes a wide spectrum of DNA damage.'' (George H. Reed, session chairman): Helmut Beinert, ''The Krebs-cycle enzyme aconitase as an iron-sulfur protein. Implications for the function of the enzyme''; Brian Hoffman, ''Electron nuclear double resonance (ENDOR) of metalloenzymes''; Kenneth N. Raymond, ''The coordination chemistry and mechanisms of microbial iron transport.''

4 July. (Carol Caperelli, session chairman): Thomas C. Bruice, "Mono-oxygen transfer reactions"; Rowena G. Matthews, "Supplying one carbon units for adenosyl-methionine dependent methylations: Catalysis and regulation of the pathway"; K. V. Rajagopalan, "Molybdopterin—the organic component of the molybdenum cofactor." (C. Dale Poulter, session chairman): H. F. Gilbert, "Enzyme regulation by thiol/disulfide interchange"; Christian R. H. Raetz, "Structure and biosynthesis of Gram-negative endotoxin"; Irwin A. Rose, "Reactions with Ubiquitin."

5 July. Stephen J. Benkovic, "Mutagenesis on the dihydrofolate reductase gene"; Alan Fersht, "Dissecting the structure and activity of tyrosyl tRNA synthetase by site-directed mutagenesis"; David Shortle, "A mutational analysis of staphylococcal nuclease"; Ronald Wetzel, "Protein engineering of T_4 lysozyme." (John W. Kozarich, session chairman): Paul A. Bartlett, "Design and synthesis of transition state peptidase inhibitors"; Michael Johnston, "Delivery systems for suicide substrates."

6 July. (William P. Jencks, session chairman): Ronald Breslow, "Approaches to artificial enzymes"; Peter B. Dervan, "Design of sequence specific DNA cleaving molecules"; Julius Rebek, Jr., "New models for enzyme catalysis."

Introduction of Macromolecules in Eukaryotic Cells

Proctor Academy

Frank H. Ruddle, chairman; Mario Capecchi, vice chairman.

25 June. Middle repetitive and transpositional elements (Alan Weiner, convenor): Philip Leder, Michael Liskay, Jacek Skowronski, Warren Jelinek. Gene amplification (George Stark, convenor): Geoffrey M. Wahl, Randal N. Johnson, Frederick Alt.

26 June. Genetic recombination (Mario Capecchi, convenor): George Scangos, Shirleen Roeder. Linkage analysis in man (Ray White, convenor): James Gusella, Luca Cavalli-Sforza, Thomas Shows.

27 June. Genetic transformation of embryos (Frank Costanti, convenor): Richard Mulligan, Ursula Storb, Beatrice Mintz. Genetic transformation in plants (Virginia Walbot, convenor): Carol Rivin, Stephen Rogers, William Scrowcroft.

28 June. Oncogenes—regulation and function (Harold Varmus, convenor): J. Michael Bishop, Edward Scolnick, Hartmut Land. Transfection, expression, and cloning of eukaryotic genes (Frank H. Ruddle, convenor): Alan McClelland, Joseph Goldstein.

29 June. Regulation of eukaryotic gene expression (Shirley Tilghman, convenor): Steven McKnight, Thomas Maniatis.

Extrachromosomal Elements

Colby-Sawyer College (N)

David A. Clayton, chairman; Robert H. Rownd, vice chairman.

6 August. (Nancy C. Martin, discussion leader): David A. Clayton, "Mammalian mitochondrial gene expression"; Allan C. Wilson, "Mitochondrial DNA evolution"; Giuseppe Attardi, "New insights into mitochondrial RNA synthesis and processing in human cells." (Anthony W. Linnane, discussion leader): Ronald A. Butow, "Molecular features of recombination at the yeast mitochondrial 21*S* rRNA gene"; Philip S. Perlman, "Mitochondrial introns in Bakers' yeast."

7 August. (Alan M. Lambowitz, discussion leader): Nancy C. Martin, "Yeast mitochondrial tRNA biosynthesis"; R. J. Schweyen, "Signals and components involved in RNA processing in yeast mitochondria"; Donald J. Cummings, "Site specific excision-amplification in *Podospora*." (Donald J. Cummings, discussion leader): Alan M. Lambowitz, "RNA processing *Neurospora* mitochondria"; Uttam L. RajBhandary, "Mitochondrial genes in *Neurospora*."

8 August. (Allan C. Wilson, discussion leader): Douglas C. Wallace, "Mammalian mitochondrial proteins: Gene assignments and genetic analysis"; Wesley M. Brown, "Comparative sequence analysis of the D-loop region of animal mitochondrial DNAs"; Bruce A. Roe, "Sequence and gene organization of the *Xenopus laevis* mitochondrial genome." (Giuseppe Attardi, discussion leader): David R. Wolstenholme, "The *Drosophila* mitochondrial genome"; Donald T. Dubin, "Mosquito mitochondrial nucleic acid sequences."

9 August. (Ronald A. Butow, discussion leader): Lester Grivell, "Genes for imported mitochondrial proteins"; Anthony W. Linnane, "Mitochondrial genes for H^+-ATPase: Their products and regulation"; Cecilia Saccone, "Mammalian mitochondrial genes." (Robert H. Rownd, discussion leader): Robert H. Rownd, "Plasmid gene amplification": Richard P. Novick, "Countertranscript regulation of plasmid replication."

10 August. (Wesley M. Brown, discussion leader): Bernard Dujon, "New features of yeast mitochondrial introns as revealed by sequence comparisons and new mutations"; William W. Hauswirth, "Intracellular mitochondrial DNA heterogeneity in vivo and in vitro"; Katsuro Koike, "Introduction of rat mitochondrial DNA into cultured mammalian cells." (Piotr P. Slonimski, discussion leader): Alexander Tzagoloff, "Biogenesis of yeast mitochondria"; Piotr P. Slonimski, "Summary and prospects."

Fiber Science

Colby-Sawyer College (N)

R. D. Van Veld, chairman; S. K. Batra, vice chairman.

9 July. Fiber structure and properties (J. Schwartz, discussion leader): Jiro Shimizu, "Mechanisms of fiber structure development studies via ultra high-speed spinning"; Ronald Moore, "Structure origin of high-speed spun polyamide and polyester fiber properties." (H. Herglotz, discussion leader): Ivan Hall, "Role of x-ray diffraction in fiber science—limitations and opportunities."

10 July. Fiber structure—aspects of chain segment mobility (M. Feughelman, discussion leader): Gerhard Heidemann, "Relaxation measurements in glassy and viscoelastic state of synthetic fibers"; Heinrich Zollinger, "Porosity versus segment mobility in dyeing—a differential treatment"; John Hearle, "Problems with structural interpretation of heat setting differences in nylon and polyester."

11 July. Carpet fiber science and technology (A. S. Abhiraman, discussion leader): Peter Leung, "Some aspects of carpet newness"; Walter Lipscomb, "Carpet pathology and immunology"; Garth Carnaby, "Theoretical prediction of carpet durability in laboratory and use conditions."

12 July. Fibrils, fibers and their assemblies (R. W. Dent, discussion leader): Stuart DeJong, "Viscoelastic behavior of wool as a 2-phase composite"; Gerhard Egbers and Peter Ehrler, "Performance of staple fibers—just a matter of spin finish and crimp?" (N. R. S. Hollies, discussion leader): Walter McCron, "Forensic examination of fibers."

13 July. Nonwovens—design and performance (E. Peters, discussion leader): Frank Harris, "Polyester binders and adhesives for fibrous structures and other assemblies"; Clint Felton, "Fibers with stable electric charge—technology, applications, problems."

Poster sessions on Wednesday, 11 July and Thursday, 12 July. Contact R. D. Van Veld, Fiber Surface Research, E. I. du Pont de Nemours & Co., Inc., Kinston, North Carolina 28901.

Foams

Plymouth State College (S)

G. J. Murphy, chairman; M. B. Rhodes, vice chairman.

30 July. (K. Frisch, discussion leader): Kaneyoshi Ashida, "Novel catalysts for isocyanate reactions"; J. M. Gaul and G. L. Statton, "Antioxidants for reduced scorch in urethane foams"; J. P. Kennedy, "Urethane modified polyisobutylene foams"; (M. B. Rhodes, discussion leader): R. J. G. Dominguez, "Amine terminated polyether resins for rim applications"; F. A. Shutov, "Micro- and macrocells in polymer foams."

31 July. (R. K. Prud'homme, discussion leader): D. T. Wasan, "Drainage and stability of aqueous foam films"; Stig Friberg, "Mechanism for the stabilization of hydrocarbon foams"; C. S. Eschbach, "Recent advances in silicone antifoams"; (J. M. Gaul, discussion leader): W. V. Chang, "Computer assisted foaming (CAF)—myth or reality"; W. A. Lidy, "The use of monols to study the chemical and morphological properties of polyurethane foam."

1 August. (P. B. Rand, discussion leader): R. Burley, "Basic foam rheology in microcapillaries"; A. M. Kraynik, "Aqueous foam rheology: Theory and experiments"; R. Prud'homme, "Relations between foam structure and rheology"; (L. C. Reubens, discussion leader): C. L. Lee, "Recent developments in silicone foams"; F. A. Shutov, "Electrostatic properties of foamed polymers."

2 August. (W. A. Lidy, discussion leader): J. A. Kilgour and M. W. Jorgenson, "Silicone surfactant design for molded urethane foam"; A. Zombeck and M. Owens, "Relevance of dynamic surface tension to the stabilization of polyurethane foam by silicone surfactants"; H. J. Kollmeier and G. Burkhardt, "Reaction sequences and the role of surfactant in high resilience foam"; (C. S. Eschback, discussion leader): S. Griffiths, "Shock wave propagation in aqueous foams"; R. Burley, "Use of foams for enhanced oil recovery."

3 August. (R. J. G. Dominquez, discussion leader): J. L. M. Van der Loos, "Recent developments in nylon-6 rim copolymers"; H. R. Gillis, "Relations between hard block composition and thermal properties in polyurethane elastomers"; T. C. Wilkinson, "High density microcellular thermoset polymers."

Fuel Science

New Hampton School

Randall E. Winans, chairman; William H. Calkins, vice chairman.

2 July. Characterization and reactivity of coals (Ronald Liotta, discussion leader): Nikolaos A. Peppás, "Molecular theories and experiments of penetrant (solvent) transport in coal particles"; Leo J. Lynch, "Structure and thermal decomposition: NMR thermal analysis implications"; John C. Crelling, "Applications of fluorescence microscopy and photoacoust microscopy to coal characterization"; Eric M. Suuberg, "Chemical and physical processes in pyrolytic tar formation."

3 July. Thermal chemistry and model compounds (David S. Ross, discussion leader): Marvin Poutsma, "Thermolysis of surface immobilized model compounds"; Stephen E. Stein, "Pyrolysis of polyaromatic molecules"; Donald F. McMillen, "The role of solvent radicals in hydrogen transfer and bond cleavage in coal liquefaction"; J. A. Franz, "Hydrogen abstraction by the 2-allyl benzyl radical from coal-related donors."

4 July. Properties and reactivity of coal and carbon surface (Donald Spitzer, discussion leader): Alan Grint, "XPS characterization of coal"; C. Thomas Ratcliffe, "Adsorption/temperature programmed desorption of surface complexes on carbons"; Fredrich M. Fowkes, "Acid-base properties of surface sites on coal"; Edward M. Arnett, "Thermal chemical comparisons of acid-base properties of coals."

5 July. Chemistry of heavy fossil liquids (Larry L. Anderson, discussion leader): Colin Snape, "Structural analysis of high MW fossil-fuel derived material"; Manuel Francisco, "Identification of acidic and basic functional groups in petroleum residue and cokes"; T. Gold, "Deep earth gas—an energy revolution?

6 July. Selected poster session presentations (William H. Calkins, discussion leader).

Fungal Metabolism

Plymouth State College (N)

Carlene Raper and Jim Van Etten, co-chairmen; Paul Szaniszlo and Bill Timberlake, co-vice chairmen.

16 July. Hydrolytic enzymes from fungi (Shelby, Freer, discussion leader): Michael Gold, "Biochemical and genetic studies on lignin degradation by *Phanerochaete chrysosporium*"; Carl Batt, "Development of a strain of *Saccharomyces cerevisiae* capable of catabolizing xylose"; Benjamin Hall, "Molecular cloning of the gene for *Escherichia coli* xylose and its expression in yeast"; Sharon Shoemaker, "Cloning of the cellulase genes from *Trichoderma reesei*"; Vern Seligy, "Cloning and expression of the cellulase genes from *Schizophyllum commune*."

17 July. Fungal interactions and recognition (Paul Szaniszlo, discussion leader): Noel Keen, "Plant recognition of fungi and other pathogens; molecular mechanisms underlying the interactions"; Richard Calderone, "Interaction of *Candida albicans* with animal cells"; Janet Kurjan, "Function and structure of yeast α-factor genes"; Jeremy Thorner, "Synthesis, glycosylation and proteolytic processing of yeast mating pheromone percursors"; Danton O'Day, "Cell fusion in *Dictyostelium discoidium*: The initiation and termination of zygote formation."

18 July. Cell cycle (John Pringle, discussion leader): Steve Reed, "A genetic and molecular analysis of division control in *Saccharomyces*"; Paul Nurse, "Cell-cycle start genes in *Schizosaccharomyces pombe*"; Keith Gull, "Regulation and function of tubulin genes during the cell cycle in *Physarum polycephalum*"; Ron Morris, "Cell cycle mutants and microtubule function in *Aspergillus*"; Dave Boststein or Peter Novick, "Functions of actin, tubulin, and interacting proteins during the *Saccharomyces* cell cycle"; John Pringle, "Morphogenesis during the *Saccharomyces* cell cycle."

19 July. Development and gene expression (Bob Ullrich, discussion leader): Francois Lacroute, "Mechanism of action of two transcriptionally acting regulatory proteins of the yeast pyrimidine pathway"; Michael Hynes, "Structure and regulation of amdS gene of *Aspergillus nidulans*"; Brent Heath, "Mechanisms of fungal mitosis"; Michele Heath, "The relationship between morphogenesis and pathogenesis in rust fungi"; Joe Kuc, "Fungal regulation of gene expression in plants as a determinant of disease resistance."

20 July. Extrachromosomal genomes in fungi (Paul Lemke, discussion leader): Karl Esser, "Plasmids in fungi; occurrence, structure, function and biotechnological relevance"; Don Cummings, "Site-specific excision of mitochondrial DNA during senescence in *Podospora*"; Alan Lambowitz, "Defective mitochondrial DNA's and mictochondrial plasmids in *Neurospora*."

Hemostasis

Proctor Academy

R. L. Nachman, chairman; K. Mann, vice chairman.

18 June. Platelet-induced cellular proliferation (T. Deuel, discussion leader): T. Deuel, "PDGF: Function in normal

and transformed cells''; J. Huang, ''PDGF: Regulation of function by plasma proteins and cell surfaces''; C. Stiles, ''PDGF: Regulation of gene expression''; A. Roberts, ''Transforming growth factor activity in platelets.'' Plasminogen activator regulation (D. Rifkin, discussion leader): D. Rifkin, Overview: J. Wun, ''Placental inhibitor of plasminogen activator''; R. Silverstein, ''Plasminogen thrombospondin interactions''; R. Levin, ''Aspirin inhibits plasminogen activator activity in vivo.''

19 June. Platelet function: Ca^{2+} ions, phosphoinosotide breakdown and protein phosphorylation (R. J. Haslam, discussion leader): R. J. Haslam, ''Diacylglycerol formation and protein phosphorylation in permeablized platelets''; T. J. Rink, ''Consequences of agonist-receptor complex formation: Generation of 2nd messengers''; E. J. Lapetina, ''Relevance of phospholipase C and protein kinase C in platelet responses''; J. L. Daniel, ''Platelet protein phosphorylation in stimulus-response coupling.'' Factor V and factor VIII biology (T. Zimmerman, discussion leader): T. Zimmerman, Overview: C. Fulcher, ''Structure and function of VIII: C''; D. Fass, ''Alterations in factor VIII during factor X activation''; M. Nesheim, ''Factor V and prothrombin activation''; I. Maruyama, ''Regulation of protein C activation by factor V.''

20 June. Platelet membrane glycoproteins (D. Phillips, discussion leader): D. Phillips, ''Structural studies of platelet glycoprotein''; T. Detwiler, ''Interactions of thrombin with platelet glycoprotein''; L. L. Leung, ''Thrombospondin and platelet aggregation''; R. M. Albrecht, ''Relationship of surface receptors to cytoskeletal structures.'' Megakaryocytes (E. Rabellino, discussion leader): E. Rabellino, ''Human megakaryocytopoiesis''; M. Long, ''Phosphodiesters as potentiating factors in megakaryocyte development''; P. Shick, ''Megakaryocyte lipids and coagulant proteins''; L. Solberg, ''Megakaryocytopoiesis in vitro.''

21 June. Angiogenesis: B. Zetter, Overview: M. Banda, ''Angiogenesis and wound healing''; R. Auerbach, ''Immune angiogenesis''; M. Klagsbrun, ''Purification of endothelial cell growth factors.'' Atherosclerosis: A four headed monster (G. Majno, discussion leader).

22 June. Molecular genetics (D. Fowlkes, discussion leader): D. Fowlkes, ''Regulation of fibrinogen synthesis''; R. McGilivray, ''Prothrombin and protein C''; E. Sadler, ''The plasminogen gene''; T. Ny, ''Structure and function of the plasminogen activator gene''; S. Lord, ''Fibrinogen expression.''

Chemistry of Heterocyclic Compounds

New Hamptom School

William K. Moberg, chairman; Peter Beak, vice chairman.

9–13 July. P. Beak, ''Heterocyclic species along reaction pathways: Structure of reactive intermediates and transition states''; J. P. Dusza, ''An approach to the synthesis of fused nitrogen-containing heterocycles''; G. W. J. Fleet, ''Approaches to alkaloids from carbohydrates''; A. Franke, ''Ortho-substituted 2-phenylimida zolines: Versatile building blocks in heterocyclic chemistry''; G. W. Gokel, ''The chemistry of lariat ethers''; Y. Kishi, ''Natural product synthesis''; E. Konz, ''Beta-chlorovinyl aldehydes as intermediates for the synthesis of heterocycles''; L. I. Kruse, ''Stereoelectronic control of aromatic electrophilic substitution: Principles and application to the synthesis of 3,4-carbocyclic bridged indoles''; J. L. LaMattina, ''Novel synthesis of C-acylated five-membered heterocycles''; P. D. Magnus, ''Recent advances in the synthesis of complex heterocycles''; M. Nakagawa, ''Synthesis of tryptoquivalines''; H.-H. Otto, ''1,2-thiazetidine dioxides, a new old class of heterocycles''; J. E. Powell, ''Heterocyclic nitroenamines''; S. L. Schreiber, ''Oxygen heterocycles as vehicles in organic synthesis''; A. B. Smith, III, ''A unified synthetic strategy for casbene and the lathyrane diterpenes''; H. Stegelmeier, ''Intramolecular heterodiene synthesis of alpha, beta-unsaturated carbonyl compounds and azadiene derivatives''; K. Steliou, ''Heteroatoms in organic synthesis: Diels-Alder additions of S_2''; I. J. Turchi, ''Heterocyclic synthesis involving ring transformations of oxazoles''; E. Vogel, ''Nitrogen heterocycles based on annulenes.''

Time has also been reserved for six 10-minute short talks. All attendees are welcome to submit an abstract to the chairperson, either with their application or on arrival at the conference, for consideration.

Research at High Pressure

Kimball Union Academy

Jiri Jonas, chairman; Neil W. Ashcroft, vice chairman.

25 June. (J. W. Shaner, discussion leader): N. C. Holmes, ''Spontaneous Raman scattering in shocked water''; J. R. Asay, ''Measurement of material properties to Mbar pressures using time-resolved shock wave techniques''; S. C. Schmidt, ''Molecular energy transfer in shock-compressed condensed phase materials; experimental approach.'' (A. Sawaoka, discussion leader): M. Ross, ''Ultrahigh pressure and temperature shock-wave studies''; F. Bauer, ''Ferroelectric properties of polyvinylidene fluoride, PVF_2: Behavior under dynamic compression and shock wave action.''

26 June. (D. B. McWhan, discussion leader): Roy G. Gordon, ''Theoretical studies of pressure-induced phase transitions of ionic solids''; R. A. LeSur, ''Theory of the electronic and crystal structures of molecular systems at high pressure''; R. G. Munro, ''Molecular dynamic simulations of solids at high pressures.'' (W. B. Daniels, discussion leader).

Poster session—themes: High pressure standards; New experimental techniques and results.

27 June. (J. Schirber, discussion leader): N. J. Trappeniers, ''Phase transitions in solid methane under high pressure''; D. Jerome, ''The role of pressure in organic superconductivity''; L. J. Azevedo, ''Magnetic properties of organic superconductors at high pressure''; R. N. Hazen, ''Compression mechanism in mineral-like compounds.'' (H. G. Drickamer, discussion leader): G. A. Samara, ''Recent advances in the study of structural phase transitions at high pressure''; A. L. Ruoff, ''Insulator to conductor transition in barium chalcogenides.''

28 June. (B. Baranowski, discussion leader): R. von Eldik, ''Applications of volume profiles in the elucidation of mechanisms of chemical reactions in solutions''; J. Schroeder, ''Aspects of the recombination and photolytic cage effects of halogens in gases and liquids under high pressures;'' M. F. Nicol, ''Photochemistry of aromatic molecules at high pressures.'' (E. Whalley, discussion leader): M. Buback, ''Quantitative high-pressure, high-temperature spectroscopy applied to the study of ethylene polymerization''; Y. Ducommun, ''High resolution NMR studies of solutions at high pressures.''

29 June. (F. Hensel, discussion leader): E. F. Skelton, ''Variable temperature high-pressure studies using synchrotron radiation''; D. Wohlleben, ''Pressure dependence of a fractional valence of rare earth systems''; R. L. Ingalls, ''X-ray absorption studies at high pressure.''

High-Temperature Chemistry

Brewster Academy

Karl E. Spear, chairman; Donald L. Hildenbrand, vice chairman.

An application blank for attendance at the Gordon Research Conferences may be found on page 981. A summary of the program is on pages 962 and 963.

23 July. (W. Weltner, discussion leader): A. W. Castleman, "Clusters: formation, reaction and properties." (J. Gole, discussion leader): E. Schumacher, "High-temperature chemistry and properties of clusters." (C. Kolb, discussion leader): C. Alkemade, "Chemistry and spectroscopy of metals in flames and shock waves." (M. Drake, discussion leader): P. Schenck, "Optogalvanic spectroscopy of high-temperature species in flames."

24 July. (R. Schoonmaker, discussion leader): J. Tully, "Molecular dynamics at surfaces." (M. Frisch, discussion leader): R. Hall, "Kinetics of surface reactions utilizing laser excitation of the surface"; R. Lambert, "Surface chemistry of the metal-halogen interface: Structure, reactivity, and kinetics." (R. Hauge, discussion leader): D. Olander, "Transient vaporization of refractory solids by laser pulse heating." Recent advances in high-temperature chemistry (D. Hildenbrand, session leader).

25 July. (J. Leitnaker, discussion leader): H. Wiedemeire, "Vapor transport processes under micro-gravity conditions: Thermodynamics, mass transfer, and morphology aspects." (F. Kohl, discussion leader): D. Rosner, "CVD consequences of vapor phase boundary layer phenomena in nonisothermal systems." (K. D. Carlson, discussion leader): E. Zubler, "Chemical transport processes in lamps." (G. Rosenblatt, discussion leader): J. Drowart, D. Hildenbrand and J. Hastie, "Complex problems in the interpretation of mass spectrometric data of a complicated chemical system: Example system of arsenic-oxygen." Recent advances in high-temperature chemistry (D. Hildebrand, session leader).

26 July. (K. Komarek, discussion leader): Z. Munir, "Influence of an electric field on evaporation kinetics." (L. Brewer, discussion leader): D. Peterson, "Actinide vaporization and bonding correlations." (P. Gilles, discussion): L. Brewer, "Serious systematic errors in high-temperature equilibrium measurements."

27 July. (M. Blander, discussion leader): M. Rand, "High-temperature thermochemistry of condensed phase equilibria." (M. L. Saboungi, discussion leader): A. Pelton, "Modeling phase equilibria in oxide and salt systems." (P. Potter, discussion leader): Y. A. Chang, "Thermodynamic modeling and phase diagram calculation/prediction of binary and higher order systems."

Holography and Optical Information Processing

Plymouth State College (S)

James C. Wyant, chairman; Steven Case, vice chairman.

11–15 June. The conference will include the following topics: Computer generated holograms; Holographic interferometery; Optical computing; Optical signal processing; Displays; Speckle; Matrix-oriented processing; Robotics; Optical disc; Incoherent to coherent interfaces; Image restoration; and new applications in industry, medicine, and defense.

A partial listing of invited speakers follows: Adolph Lohmann, "Experiment in optical parallel logic"; David A. B. Miller, "Optical bistability"; P. Hariharan, "Holographic phase shifting interferometry"; Toyohiko Yatagai, "Applications of computer-generated hologram to 3-D displays and optical testing"; Brent Baxter, "3-D displays"; Ravindra Athale, "Optical matrix processors, architectures, and hardware"; Robert Sprague, "Optical disks"; Armand R. Tanguay, Jr., "Electrooptic spatial light modulation"; Gary Bjorklund, "Frequency domain optical storage using spectral hole burning"; Timothy Strand, "Optical range sensing"; Christopher Dainty, "Information processing at low light levels using dynamic speckle"; Emmett Leith, "Image processing with incoherent light"; Poohsan Tamura, "3-D digital data acquisition: Simple robotic vision"; Fred Leonberger, "Optical interconnects for VLSI."

Hormone Action

Kimball Union Academy

C. Ronald Kahn and Suzanne Bourgeois, co-chairmen.

5 August. Plenary lecture: Russell F. Doolittle, "Similar amino acid sequences: chance or common ancestry?"

6 August. Hormonal mechanisms in reproductive endocrinology (Stanley Korenman, chairman): P. Michael Conn, "Mechanism of action of GnRH"; Aaron Hsueh, "Intragonadal hormone control mechanisms"; Ollie A. Janne, "Androgen regulation of ornithine decarboxylase gene expression"; Wayne Bardin, "The opiomelancortin precursor and testicular function." Adenylate-cyclase linked responses (Lutz Birnbaumer, chairman): Michael Rosenblatt, "Inhibition of parathyroid hormone action in vivo: Design of synthetic hormone antagonists"; Marc G. Caron, "Reconstitution of an adenylate-cyclase responsive system"; Alan M. Spiegel, "G-protein mutants in man."

7 August. Mechanism of action of steroid hormones (Gordon Ringold, chairman): Martin Rosenberg, "Positive control of transcription": Allan Munck, "Glucocorticoids actions on lymphokines and other stress mediators"; Miguel Beato, "Interaction of steroid receptors with hormonally regulated genes." Hormonal control of growth and differentiation (Charles Rubin, chairman): Charles D. Stiles, "Regulation of gene expression by platelet-derived growth factor"; Mitch Villeral, "Ion flux and control of growth"; Arnold Kahn, "Vitamin D and control of differentiation in HL-60 cells."

8 August. Insulin and insulin-like growth factors (Jesse Roth, chairman): Yoko Fujita-Yamaguchi, "Structure and properties of the purified insulin receptor"; Morris F. White, "The insulin receptor as a protein kinase"; Daryl K. Granner, "Effect of insulin on gene transcription"; Ira D. Goldfine, "Direct effects of insulin at the nucleus." Hormones and cancer (William L. McGuire, chairman): Marc Lippman, "Estrogen-regulated genes in human breast carcinomas"; Richard Assoian, "Transforming growth factors: New peptides in platelets acting through EGF receptors"; Thomas Deuel, "PDGF structure and growth-promoting activity in normal and transformed cells."

9 August. Thyroid hormones and phospholipids (Marvin Gershengorn, chairman): Alan Goodridge, "Regulation of the avian malic enzyme gene in hepatocytes in culture: A model for analyzing the action of thyroid hormone"; John D. Baxter, "Mechanism of thyroid hormone action"; Thomas F. J. Martin, "Diglyceride and calcium as dual second messengers in TRH action"; John R. Williamson, "Alpha 1 and vasopressin action on calcium mobilization and phosphoinositide metabolism in liver." New techniques in the study of hormone action (William Schrader, chairman): Mark M. Davis, "Isolation of genes encoding T-cell specific membrane associated products"; Jean-Claude Sodoyez, "In vivo imaging of the hormone-receptor interaction."

10 August. Gene commitment and the hormone response (Jeffrey Rosen, chairman): Bert O'Malley, "Structural considerations for regulation of gene expres-

sion''; John B. E. Burch, ''Chromatin structure and vitellogenin gene expression in the chicken''; Gordon Hager, ''Glucocorticoid regulation of MMTV transcription on amplified episomes: Alterations in chromatin structure accompanying hormone induction.''

Immobilized Systems in Biotechnology

Holderness School

Harold E. Swaisgood, chairman; G. P. Royer, vice chairman.

13 August. (G. P. Royer, discussion leader): J. Halpern, ''Mechanism of asymmetric catalysis''; K. B. Sharpless, ''Selective abiological catalysis''; E. T. Kaiser, ''Semisynthetic enzymes: Design and preparation.'' (D. Litman, discussion leader): R. J. Bergeron, ''Cycloamylase substrate binding''; T. T. Ngo, ''Use of enzymes as amplifying labels in biochemical assays.''

14 August. (D. Litman and W. H. Scouten, discussion leaders): J. F. Studebaker, ''On-line adsorption of pathological molecules from blood plasma''; T. S. Parker, ''Physiological aspects of LDL-cholesterol lowering by extracorporeal immunoadsorption in man''; Am M. Klibanov, ''Enzyme-catalyzed processes in organic solvents.'' (W. H. Scouten, discussion leader): J. Tramper, ''Biocatalytic production of (chiral) alkene oxides''; P. Bradelius, ''Production of secondary products by immobilized plant cells.''

15 August. (H. R. Horton, discussion leader): R. Jaenicke, ''Folding and assembly of oligomeric enzymes''; J. H. Harrison, ''Immobilized enzymes—a means of investigating interacting enzymes''; I. M. Chaiken, ''Using affinity chromatography to study protein recognition and structural transitions''; V. Kasche, ''Are subunits of oligomeric enzymes catalytically active—can immobilization provide an unambiguous answer?''

16 August. (A. H. Nishikawa, discussion leader): K. Mosbach and L. Bülow, ''Immobilization techniques applied to genetic engineering''; B. P. Wasserman, ''Restriction enzyme immobilization on cationic colloidal silica microbeads''; R. M. Cook, ''Preparation and use of immobilized synthetic DNA fragments.'' (J. Bonaventura, discussion leader): F. Wagner, ''Relevance of the metabolic status of immobilized cells for biotechnological processes''; H. J. Vogel, ''Noninvasive in vivo NMR studies of the metabolism of immobilized cells''; B. Mattiasson, ''Microenvironmental effects on metabolic behavior of immobilized cells-A hypothesis.''

17 August. (M. Wilchek, discussion leader): R. G. Lawton, ''Let's crosslink: Transfer photoactivating and *p*H cleavable reagents.''

Immunochemistry and Immunobiology

Plymouth State College (N)

Malcolm L. Gefter, chairman; Michael J. Bevan, vice chairman.

2 July. Expression of immunoglobulin genes in vivo (Martin Weigert, discussion leader): Cesar Milstein, ''Diversification of antibodies to 2-phenyloxazolone''; Klaus Rajewsky, ''From antibody structural genes to the antibody repertoire''; Patricia Gearhart, ''Somatic mutation in anti-phosphorylcholine antibodies''; Stephen H. Clarke, ''The Structure of antibodies to influenza hemagglutinin.'' Expression of immunoglobulin genes in genetically engineered environment (Sherrie L. Morrison, discussion leader): Matthew D. Scharff, ''Somatic mutation in immunoglobulin genes''; Vernon Oi, ''DNA sequence involved in gene regulation''; Yehudit Bergman, ''Expression and regulation genes transfected into B and T cell lines''; Susumu Tonegawa, ''Immunoglobulin and IA gene enhancers.''

3 July. B cell development and activation (Ellen Vitetta, discussion leader): Paul Kincade, ''Factors effecting B lymphocyte formation''; John C. Cambier, ''Early events in B cell activation''; Ellen Vitetta, ''Polyclonal versus antigen-specific activation of B cell''; Warren Strober, ''T cells which regulate IgA expression in B cells''; Judy Layton, ''Lymphokine-mediated isotype switching to IgG_1 in murine B cells.'' MHC genes structure and expression (Jonathan Seidman, discussion leader): Iwona Stroynowsky, ''Mouse MHC genes''; Steven Burakoff, ''Cloned MHC and viral genes as probes of cell mediated immunity''; Jack Strominger, ''Human MHC genes''; David Chaplin, ''Molecular organization and expression of murine class II genes.''

4 July. T cell differentiation (Michael J. Bevan, discussion leader): Richard G. Miller, ''In vitro development of T cell repertoire''; Rhodri Ceredig, ''Mouse embryonic thymus development: Studies using flow microfluorometry''; Jonathan Sprent, ''Thymic restriction''; Irving L. Weissman, ''Import and export.'' T cell receptor (John Kappler, discussion leader): Phillippa Marrack, ''The MHR-restrictor on human and murine T cells''; Mark Davis, ''Isolation of the T cell receptor genes''; James P. Allison, ''Molecular and genetic characterization of the T cell receptors''; Ellis L. Reinherz, ''Human T cell receptor.''

5 July. Macrophages (Ronald H. Schwartz, discussion leader): Kenneth Rock, ''Antigen presentation of Ir gene controlled copolymers''; Jonathan Ashwell, ''Antigen presentation by resting B cells''; Howard Grey, ''Antigen processing and presentation by B cells''; David Beller, ''Evaluating the signals from antigen presenting cells.'' Lymphokines (William Paul, discussion leader): Thomas R. Malek, ''Structure and function of the murine interleukin II receptor''; Herman Wagner, ''Signal of requirements for the differentiation of cytotoxic T lymphocytes''; William Paul, ''Regulation of B cell growth and differentiation''; Charles Sidman, ''B cell maturation factor.''

6 July. Cell surface receptors (Michael Brown, discussion leader): Michael Brown, ''Lipoprotein receptors and the molecular basis of receptor-mediated endocytosis''; Ari Helenius, ''Receptor-mediated entry of viruses into cells''; Elliott Ross, ''Biochemical functions of β-adrenergic receptors''; Ora M. Rosen, ''Structure and function of the insulin receptor.''

Inorganic Chemistry

Brewster Academy

G. P. Pez, chairman; S. J. Lippard, vice chairman.

6 August. Synthesis and chemistry of zeolites (D. E. W. Vaughan, discussion leader): S. T. Wilson, ''Aluminophosphate molecular sieves: A study in templating of microporous oxide frameworks''; Z. Gabelica, ''High silica zeolite synthesis: Nucleation and growth mechanisms of ZSM-5''; G. D. Stucky, ''Solid-state chemistry of molecular sieves: Framework reactions.'' Layered compounds (J. W. Johnson, discussion leader): A. Clearfield, ''Chemistry and catalytic properties of organic derivatives of layered group 4B phosphates''; T. J. Pinnavaia, ''Recent advances in the design and characterization of pillared clay catalysts.''

7 August. Enclosure complexes (S. J. Lippard, discussion leader): A. Sargeson, ''Synthesis and reactivity of macropolycyclic aza cryptates''; S. R. Cooper, ''Macro-mono, bi- and tri-cycles as ligands: Complexes with permanent voids.'' Theory in inorganic chemistry (J. W. Lauher): M. B. Hall, ''Unusual features in metal-metal bonded dimers and clusters; J. K. Burdett, ''A completely new way to look at the structures of molecules and solids.''

8 August. New inorganic materials (J.

N. Armor, discussion leader): L. V. Interrante, The conversion of metal-organic compounds to refractory ceramics: Organoaluminosilanes as precursors to mullite"; P. Morgan, "Inorganic synthesis for modern ceramic materials"; G. C. Farrington, "Synthesis of multi-valence cation beta-aluminas: Ion transport structure and property relationships." Hydrogen and hydrides (A. P. Ginsberg, discussion leader): P. Sermon, "Reversible formation of hydrogen-metal bronzes: Dynamic and structural aspects"; P. Vergamini, "Pulsed neutron techniques as applied to single crystal, powder and inelastic scattering measurements (short talk)"; G. J. Kubas, "Characterization of the first examples of molecular hydrogen complexes (short talk)."

9 August. Cluster compounds: Synthesis and reactivity (H. Kaesz, discussion leader): G. Longoni, "New hydride, oxide and carbide carbonyl metal clusters"; G. Doyle, "Some new reversible copper (I) complexes of carbon monoxide, alkenes, and alkynes"; J. Passmore, "Novel iodo-chalcogen polyatomic cations." Cluster compounds (R. Finke, discussion leader): D. A. Davenport, "Opprobium: Occurrence, preparation, properties and uses"; W. G. Klemperer, "Reaction chemistry of polyoxoanion surface oxygens."

10 August. Catalysis (S. A. Butter, discussion leader)" K. Klier, "Solid catalysts and mechanisms for synthesis involving C–C, C–O, C–H, and C–N bond formation"; B. R. James, "The use of group VIII metal complexes for catalytic oxidation and oxygen transfer reactions."

Chemistry at Interfaces

Kimball Union Academy

H. T. Davis, chairman; R. A. Mackay, vice chairman.

23 July. Surface forces (Jaye Mann, session leader): S. Marcelja, "Theory of surface forces"; A. Parsegian, "Solvation forces"; P. Low, "Forces between clay particles." (R. A. Mackay, session leader): D. Henderson, "Statistical mechanics of double layers at metal-electrolyte interfaces." Quickie presentations for discussions.

24 July. Surface forces and spontaneous assembly (D. F. Evans, session leader): L. Magid, "Small angle scattering of organized assemblies"; P. Mukerjee, "Ion binding and micellar solutions"; S. McLaughlin, "Electrostatic potentials adjacent to membranes." (S. Salter, session leader): B. Ninham, "Theory of self-aggregation." Quickie presentations for discussion.

25 July. Chemistry at bilayers (W. Miller, session leader): J. Thomas, "Photochemistry at colloidal interfaces"; J. Zasadzinsky, "Electron microscopic characterization of polymerized liposomes and vesicles"; D. O'Brian, "Polymerization of vesicles." (J. Gold, session leader): M. Seul, "Substrate-supported layers of phospholipsids"; G. Kovacs, P. Vincentt, "Possible device applications of Langmuir-Blodgett films." Quickie presentations for discussion.

26 July. Foams and emulsions (J. Cayias, session leader): H. Princen, "Rheology of foams and emulsions"; A Falls, "Flow of foams in porous media"; D. Weaire, "Two-dimensional polydisperse foams as a model of grain growth in metals." (J. Trend, session leader): D. Mobius, "Chemistry in monolayers."

27 July. Foams and emulsions (P. Becker, session leader): M. Clausse, "Complex liquids with amphiphilic components: phase and transport properties"; S. Friberg, "The role of liquid crystals in foam and emulsion stability"; D. Siegel, "Thin film surfactant rupture mechanism and foam and emulsion stability."

Poster session coordinator—R. Mackay. Posters will be accepted from any participants. The posters will be displayed all week. Anyone wanting to give a poster presentation, please send R. Mackay the title of the poster so he can make space available. A poster presentation should take no more than 4 feet by 6 feet of space.

Quickie presentation coordinators—H. Davis and R. Mackay. During the evening sessions 4-minute presentations are invited. The time limit will be rigidly adhered to and ample discussion time will be encouraged between the quickies. Those wishing to schedule a quickie presentation before the conference, please notify H. Davis of the topic and evening session of preference. During conference, those deciding to give impromptu quickies will schedule these with R. Mackay.

Ionic Channels in Muscle and Other Excitable Tissues

Colby-Sawyer College (S)

Clay M. Armstrong, chairman; Christopher Miller, vice chairman.

13 August. Basic mechanism of ion movement through channels (Bertil Hille, discussion leader): P. Lauger, "Conformational transitions and dynamics of ion movements in channels" P. Jordan, "Influence of pore structure on the energetics of ion permeability"; D. Levitt, "Nernst-Planck continuum modeling of ion channels"; A. Naumov, "Drug-induced change in ionic selectivity"; Sodium channels: Biochemistry and reconstitution (Robert Barchi, discussion leader): R. Barchi, "Molecular properties and functional reconstitution of the mammalian muscle sodium channels"; W. Catterall, "Biochemistry of the rat brain sodium channel"; R. Levinson, "Biochemical aspects of eel sodium channels"; R. French, "Sodium channels in planar bilayers."

14 August. Sodium channels: Electrophysiology (Christopher Miller, discussion leader): R. Aldrich, "Activation and inactivation of single Na^+ channels"; R. Horn, "Gating of single Na^+ channels"; W. Gilly, "Threshold channels: A new kind of sodium channel"; E. Moczydlowski, "STX derivative blocking of batrachonoxin-activated Na^+ channel"; J. Z. Yeh, "Discrete block of Na^+ channels by 9-amino acridine"; Electrophysiology of secretory cells (E. Neher, discussion leader): E. Neher, "Ionic channels and secretion"; O. Petersen, "Hormonal and nervous control of cation channels in exocrine cells"; A. Marty, "Ion channels in rat lacrimal glands"; F. Cohen, "The role of Ca and osmosis in membrane fusion."

15 August. Sensory receptors (P. Mueller, discussion leader): W. Hagins, "Calcium as a diffusible messenger in visual excitation"; E. Pugh, "Are protons an intermediary in visual transduction?"; J. Hudspeth, "The transduction process of vertebrate hair cells"; P. Mueller, "Effects of mechanical stress on bilayers"; Structure and cloning of ionic channels (C. F. Stevens, discussion leader): R. Stroud, "Recent advances in our understanding of the ACh receptor's three-dimensional structure"; M. White, "Designer channels: Use of site-directed mutagenesis to alter ACh receptor structure"; W. Huse, "Cloning sodium channels: Current status."

16 August. Chemically activated channels (D. Colquhoun, discussion leader): J. H. Steinbach, "Single-channel studies of agonist action on nicotinic receptors in cultured BC3-Hl cells"; D. C. Ogden, "Agonist efficacy and synaptic efficiency studied by single-channel recording at the adult frog neuromuscular junction"; A. Noma, "The potassium channel activated by muscarinic acetylcholine receptors in the nodal tissues of the heart"; M. Montal, "Reconstitution of chemically activated ion channels in artificial lipid bilayers"; Potassium channels (K. Mag-

leby, discussion leader): F. Bezanilla, "Measurements of macroscopic currents, gating currents, and single-channel currents from potassium channels"; G. Yellin, "Flickering block of calcium-activated potassium channels"; K. Magleby, "Time-dependent burst structure of calcium-activated potassium channels."

17 August. Calcium channels. (S. Hagiwara, discussion leader): R. Tsien, "Single calcium channels in heart cells and neurons"; L. Byerley, "Survival and selectivity of Ca channels in snail ganglia"; R. Matteson, "Evidence for two types of calcium channels in GH3 cells;" Y. Sukuhishima, "Monovalent and divalent cation interactions in calcium channels."

Chemistry and Physics of Isotopes

Kimball Union Academy

William Saunders, chairman; Alexander Van Hook, vice chairman.

11 June. (Max Wolfsberg, Wolfgang Witschell, discussion leaders): Warren J. Hehre, "Graphical methods for the analysis of molecular vibrations"; Takanobu Ishida, "Ab initio calculations on liquid fluoromethanes in relation to vapor pressure isotope effects." (Etienne Roth, discussion leader): John H. Ralston, "Applications of heterogeneous catalysis for hydrogen isotope separation."

12 June. (Joseph San Filippo, discussion leader): Joseph San Filippo, "The significance of the temperature dependence of the KIE associated with selected atom-transfer reactions"; Richard Schowen, "Transition state structure and temperature dependence of the kinetic isotope effect"; Timothy Wildman, "Golden Rule treatment of hydrogen-transfer reactions." (Robert Clayton, discussion leader): Mark Thiemens, "Mass independent isotopic fractionation of oxygen"; Samuel Epstein, "Interstellar organic matter in meteorites."

13 June. (A. Jerry Kresge, discussion leader): T. B. McMahon, "Fractionation factors in the gas phase"; R. A. More O'Ferrall, "Fractionation factors—a new look"; Omar A. ElSeoud, "NMR determination of fractionation factors for aqueous ions." (W. W. Cleland, discussion leader): William Saunders, "The effect of deuterium substitution on other deuterium isotope effects. Calculations"; Jeffrey Hermes, "The effect of deuterium substitution on other deuterium isotope effects. Experimental results."

14 June. (Marion O'Leary, discussion leader): H. L. Schmidt, "Heavy-atom isotope effects in enzymatic reactions"; Marilyn Estep, "Nitrogen isotope variations in amino acids"; Marion O'Leary, "Carbon isotope fractionations in biological processes." (V. J. Shiner, Jr., discussion leader): Arthur Fry, "Isotope effects in elimination and addition reactions"; Heinz Koch, "Proton transfer associated with addition and elimination."

15 June. (Alexander Van Hook, discussion leader): George Kabalka, "New methods for synthesizing isotopically labeled compounds for chemical and medical research"; Jean Jouzel, "Use of water isotopic species to study atmospheric processes."

Lasers in Medicine and Biology

Kimball Union Academy

Gaetano Salvatore, David H. Sliney, co-chairmen; Kenneth Jacobson, vice chairman.

9 July. Laser beam delivery systems (Sidney S. Charschan, discussion leader): Norman Goldblatt, "New fiber optic delivery systems"; Max Epstein, "Mechanical laser beam delivery systems"; Rocco LaBraico, "Requirements from the surgeon's viewpoint." Laser ultrafast spectroscopy (Peter Rentzepis, discussion leader): William Parsons, "Photosynthesis studies"; Peter Rentzekis, "Rhodopsin kinetics."

10 July. Biological studies at the cellular level (Kenneth Jacobson, discussion leader): Michael Berns, "Laser microsurgery of cells"; Scott Cram, "Chromosome analysis and sorting by fluorescence activation"; David Kessel, "Cellular photosensitization." Laser photochemotherapy (Alessandra Andreoni/Carlo Sacci, discussion leaders).

11 July. Laser interaction mechanisms with tissue (John Parrish, discussion leader): Franz Hillenkamp, "Do thresholds exist for thermal and photochemical interactions?"; John Parrish, "Laser target specificity in vivo"; David H. Sliney, "Unpredicted threshold data—mathematical model flaws." Cardiovascular applications of lasers (George Abella, discussion leader): Douglas K. Dew, "Vascular anastomosis by laser irradiation"; Richard Spears, "Laser photochemotherapy in vessels"; Michael Isner, "Laser effects upon small vessels."

12 July. (Reginald Birngruber, discussion leader): Martin A. Mainster, "Photodisrupters"; John Marshall, "Optimum wavelengths for retinal photocoagulation"; Stephen L. Trokel, "Excimer laser surgery of ocular tissues." Laser biostimulation—does it exist? (Michael W. Berns, discussion leader): T. I. Karu, V. S. Letokhov, "Biological action of low intensity visible monochromatic light"; J. Walker, "Clinical studies of pain relief."

13 July. Future studies and outlook (Gaetano Salvatore, discussion leader): Ulrich Weiss, "Future outlook for photochemotherapy"; M. L. Wolbarsht, "Optimizing laser surgery—thermal and ablative"; Gaetano Salvatore, "Needed research."

Lipid Metabolism

Kimball Union Academy

W. Virgil Brown, chairman; Richard Pagano, vice chairman.

18 June. (Heiner Greten, discussion leader): Thomas Olivecrona, "Regulation of lipoprotein lipase in mammalian tissue"; Andre Bensadoun, "Synthesis of lipoprotein lipase by adipocytes"; Virgil Brown, "Hepatic postheparin lipase in humans and other primates." (Shlomo Eisenberg, discussion leader): Shlomo Eisenberg, "Effects of lipid transfers on VLDL metabolism"; Joyce Gibson, "The transfer of apolipoproteins during VLDL hydrolysis"; Paul Roheim, "The transfer of APO AIV among lipoproteins."

19 June. (Richard Jackson, discussion leader): Verne Schumaker, "Primary structural studies on apolipoprotein B"; Alan Cardin, "Specific degradation of APO B by human plasma and tissue kallikreins"; David Atkinson, "Reassembly of APO B with lipids: Models for LDL." (Daniel Steinberg, discussion leader): Urs Steinbrecher, "Endothelial cell modification of LDL"; Joseph Witztum, "Structural features of LDL affecting its catabolism"; Joseph Goldstein, "Molecular genetics of the LDL receptor."

20 June. (Richard Havel, discussion leader): Henry Ginsberg, "The conversion of VLDL to LDL: Kinetic studies in man"; James Shepherd, "The metabolism of VLDL subfractions of differing density"; Richard Havel, "VLDL remnant metabolism." (Willi Stoffel, discussion leader): Jan Breslow, "The gene for apolipoprotein AI and CIII"; Jeffrey Gordon, "The nucleotide sequence of rat pre pro apo AI and pre apo AIV mRNA"; John Taylor, "The gene for apolipoprotein E."

21 June. (Bryan Brewer, discussion leader): Richard Gregg, "Genetic variants in the metabolism of apo AI"; John Oram, "The HDL receptor of extraheptatic cells"; Daniel Steinberg, "Molecu-

lar mechanisms that may be involved in HDL cholesterol transport." Frank Lindgren, "The ultracentrifuge and the definition of lipoproteins."

22 June. (Alan Fogelman, discussion leader): Zena Werb, "Regulation of apolipoprotein E secretion by the macrophage in vivo and in culture"; Brian J. VanLenten, "Receptors mediating cholesterol ester accumulation in macrophages"; Michael Rosenfeld, "Role of the monocyte in the development of atherosclerotic lesions in WHHL and cholesterol fed rabbits."

Liquid Crystal Polymers

Colby-Sawyer College (S)

Robert W. Lenz, chairman; Roger S. Porter, vice chairman.

9 July. (P. Morgan and J. Kops, discussion leaders): S. L. Kowlek, "Thermotropic LC polyesters"; W. J. Jackson, "LC copolyesters"; A. C. Griffin, "New main chain polymer liquid crystals." (S. Huang and M. G. Polk, discussion leaders): E. Chiellini, "Optically active main chain thermotropic polymers"; J.-I. Jin, "Thermotropic main polyesters with flexible spaces."

10 July. (R. Gilbert and B. Wunderlich, discussion leaders): A. Blumstein, "Structure-property correlations in thermotropic polyesters"; A. Sirigu, "Mesophasic properties of linear LC copolymers"; J. Blackwell, "X-ray studies of thermotropic aromatic copolyesters." (R. Blumstein and H. Finkelmann, discussion leaders): C. Noel, "Characterization of liquid crystaline mesophases"; G. Hardy, "Side chain LC polymers."

11 July. (N. Koide and J. Magill, discussion leaders): R. Zentel, "New types of LC polymers"; G. Strobl, "Dielectric relaxation in side chain LC polymers"; G. Kothe, "Nuclear spin-label studies of LC polymers." (R. B. Mayer, discussion leader): W. R. Krigbaum, "Phase diagrams of nematogen systems"; E. T. Samulski, "Alkyl chain flexibility in polymeric LC's."

12 July. (D. B. dePre and R. S. Stein, discussion leaders): G. Rehage, "Physicochemical properties of side chain polymer LC's"; G. C. Berry, "Rheological studies on solutions of mesogenic rodlike polymers"; T. Asada, "Rheo-optical studies on lyotropic polymer LC's." (R. S. Porter, discussion leader): P. Flory, "Recent advances in the theory of liquid crystallinity in polymers."

13 July. (D. Baird and K. Wissbrun, discussion leaders): L. Chapoy, "Prospects for photoelectric LC polymers"; V. Frosini, "Viscoelastic properties of thermotropic polymers"; T. G. Ryan, "Applications of thermotropic polyesters."

Lysosomes

Plymouth State College (S)

Elizabeth Neufeld, chairman; Ari Helenius, vice chairman.

Molecular Approaches to Lysosomes and Related Organelles

25 June. Receptors for endocytosis (J. Goldstein, chairman): J. Goldstein, "An overview"; M. Brown, "Mutations of the LDL receptor"; K. Drikamer, "Amino acid sequence of some carbohydrate-binding receptors"; J. Baenziger, "Ligand specificities of mammalian lectins." Organelles of endocytosis (A. Hubbard, chairman): A. Hubbard, "Immunological approaches to isolation of endosomes"; M. Willingham, "The morphologic pathway of endocytosis and exocytosis in cultured cells"; D. Branton, "Protein interactions in coated vesicles"; H. Lodish, "Recycling of the transferrin and asialoglycoprotein receptors"; S. Silverstein, "Ecto-ATPase, transmembrane potential and phagocytosis"; D. Albertini, "Endosome-lysosome interaction."

26 June. Mechanism of acidification (E. Racker, chairman): E. Racker, "The proton pump of coated vesicles"; I. Mellman, "Acidification of the endocytic pathway"; D. Schneider, "Proton pump activity of lysosomes and related structures;" W. Sly, "Role of acidification in transport to lysosomes." Viruses, toxins and invasive parasites as probes for transport events (A. Helenius, chairman): A. Helenius, "Role of prelysosomal vacuoles in virus entry"; A. Robbins, "Pleiotropic mutations that affect both entry and exit of viruses"; S. Olsnes, "Uptake of polio virus and of toxic proteins"; E. Pfefferkorn, "Interaction of parasites with the vacuoles of the endocytic pathway."

27 June. Lysosomal enzymes (O. Touster, chairman): O. Touster, "Effect of swainsonine on lysosomal enzymes"; K. Paigen, "Recombinant DNA studies of β-glucuronidase"; R. Ganchow, "Cloning the mouse gene for β-glucuronidase"; A. Erickson, "Carboxyterminal processing of lysosomal enzymes"; R. Dimond, "Mutations in D. discoideum affecting lysosomal enzymes"; H. Freeze, "Structural studies of oligosaccharides on lysosomal enzymes of D. discoideum." Biogenesis of lysosomes and their contents (S. Kornfeld, chairman): S. Kornfeld, "Pathways of enzymes to lysosomes"; W. Brown, "Localization of the manose 6-phosphate receptor by electron microscopy"; L. Rome, "Role of coated vesicles in transport of newly synthesized lysosomal enzymes"; R. Schekman, "Transport of carboxypeptidase Y in yeast."

28 June. Mechanism of exocytosis (J. Rothman, chairman): J. Rothman, "Protein transport in the Golgi"; M. J. Gething, "In vitro mutagenesis of viral spike glycoprotein for studies of exocytosis"; R. Kelly, "Studies of peptide hormone sorting by genetic transformation"; H. Gainer, "Role of secretory vesicles in the processing of hormones"; P. Peterson, "Ligand-induced transport of membrane and secreted proteins." G. Ashwell, special lecture.

29 June. Heritable diseases of lysosomal function (E. Neufeld, chairman): E. Neufeld, "Molecular studies of β-hexosaminidase defects"; K. Sandhoff, "Activator proteins for glycosphingolipids and their role in the sphingolipidoses"; K. von Figura, "Stabilization of genetically altered asrylsulfatases with leupeptin"; H. Galjaard, "Stabilizing protein for β-galactosidase and its absence in combined β-galactosidase/neuraminidase deficiency disease"; J. Barranger, "Genetic studies of β-glucocerebrosidase."

Conferees are invited to present posters, which will be displayed throughout the conference. Abstracts, in duplicate, should be submitted to Dr. Ari Helenius, Section of Cell Biology, Yale University School of Medicine, P.O. Box 3333, New Haven, Connecticut 06510.

Magnesium in Biochemical Processes and Medicine

Plymouth State College (S)

Burton M. Altura, chairman; Michael P. Ryan, vice chairman.

6 August. Magnesium and the heart (Mildred S. Seelig, discussion leader): Brian Woodward, "Effects of magnesium on arrhythmias in the rat heart"; Per Jynge, "Magnesium deficiency and tolerance to ischemia in rat heart"; David Lehr and Giancarlo Guideri, "Role of magnesium in myocardial injury, ventricular fibrillation and sudden cardiac death." Role of magnesium in regulating the peripheral circulation (Francis J. Haddy, discussion leader): Gerard A. Charbon, "Magnesium as a second messenger in local vasodilatation"; Burton M. Altura and Bella T. Altura, "Magnesium, stress and regulation of the microcirculation."

7 August. Magnesium, arrhythmias

and angina (Robert Whang, discussion leader): Pekka Puska, "Role of magnesium and other minerals in hypertension in a high coronary risk area; results from the North Karelia Project"; Lloyd T. Iseri, "Magnesium in arrhythmias"; Leon Cohen, "Magnesium therapy in Prinzmetal angina." Magnesium, stress and hypertension (Burton M. Altura, discussion leader): Harmut Ising, "Magnesium metabolism and stress reactions"; J. G. Henrotte, "Blood magnesium levels in type A and type B behavior"; Thomas Dyckner, "Role of magnesium in hypertension."

8 August. Renal aspects, electrolytes, diuretics and magnesium metabolism (Gerald F. Di Bona, discussion leader): Gary A. Quamme, "Renal magnesium transport"; Klaus W. Beyenbach, "Cellular aspects of renal magnesium transport"; Michael P. Ryan, "Effects of diuretics on renal handling of magnesium." Cellular and fetal aspects of magnesium metabolism (Warren E. C. Wacker): Grame M. Walker, "Magnesium as a fundamental regulator of the cell cycle"; Theo Günther, "Fetal and maternal magnesium metabolism."

9 August. Methods for assessing Mg in cells, tissues and body fluids (John R. Marier, discussion leader): W. Simon, "Design and application of selective magnesium electrodes"; Christopher Fry, "Measurement and regulation of intracellular Mg in cardiac muscle"; Ronald J. Elin, "Determination of Mg in blood mononuclear cells"; Michael R. Wills, "Comparison of methodology for Mg in routine clinical practice." Magnesium in ischemia, shock and trauma (E. B. Flink, discussion leader): Nachman Brautbar, "Mechanisms of skeletal muscle myopathy revolving around Mg"; Irshad H. Chaudry, "Effects of ATP · $MgCl_2$ on organ blood flows and function following shock and ischemia."

10 August. Mg^{2+} transport, compartmentation and importance in muscle contraction (Stanley Wallach, discussion leader): Keith D. Garlid, "Mg^{2+} regulated ion transport pathways in mitochondria"; Michael E. Maguire, "Mg^{2+} transport and distribution in lymphoma cells"; Jagdish Gulati, Mg^{2+} and regulation of skinned muscle fibers"; Guy Salama, "Mg^{2+} permeability and transport in sarcoplasmic reticulum."

There will also be poster discussion groups chaired by poster discussion leaders. Abstracts, 300 to 400 words in length, double-spaced, on any of the above themes are invited and should be submitted with the application form. Those of highest interest will be selected for presentation and discussion.

Magnetic Resonance in Biology and Medicine

Tilton School

Philip Aisen, chairman; Paul Ellis, vice chairman.

6 August. High resolution NMR—proteins and nucleic acids (A. Redfield, discussion leader): D. Patel, "DNA conformation in solution"; P. Lu (subject to be announced); M. Weiss (subject to be announced). Oxygen and oxygen radicals (H. Swartz, discussion leader): J. Hyde, "Spin-label oximetry"; R. Mehlhorn, "Detection of oxygen radicals."

7 August. NMR of metals (discussion leader to be announced): P. Ellis, "Studies of Cd-protein interactions"; R. Gupta, "^{23}Na NMR studies of intact cells and tissues"; R. Bryant, "Ca and Mg NMR." Photosynthesis (discussion leader to be announced): J. Norris, "Photosynthetic reaction center"; P. O'Malley, "Radical intermediate in photosystems II."

8 August. Bioinorganic applications (N. Chasteen, discussion leader): J. Peisach (subject to be announced); T. Vanngard (subject to be announced); T. Kreilick (subject to be announced). Relaxation processes (discussion leader to be announced): H. Stapleton, "Raman relaxation and fractals"; S. Koenig (subject to be announced).

9 August. NMR imaging (L. Crooks, discussion leader): P. Lauterbur (subject to be announced); B. Chance (subject to be announced); G. Hollan, "Whole-body tomography and spectroscopic imaging." Poster presentations.

10 August. NMR in living systems (discussion leader to be announced): R. Shulman (subject to be announced); R. Bendall, "RF inhomogeneities for sampling localization"; A. Maudsley, "Chemical shift imaging."

Mammilian Gametogenesis and Embryogenesis

Proctor Academy

Robert P. Erickson, chairman; Roger A. Pedersen, vice chairman.

20 August. Recombinant DNA and the testes (Herbert Stern, discussion leader): Norman B. Hecht, "Regulation of expression of haploid-specific genes"; Charles Hart, "Male meiotic sterility due to insertional mutagenesis"; Tome Wilkie, "Altered male transmission ratios due to insertional mutagenesis"; John R. McCarrey, "Cloning of the testes specific isozyme of phosphoglycerate kinase." Genetics of oogenesis (Terry G. Baker, discussion leader): John Eppig, "Regulatory processes and genetics of oocyte maturation"; Jimmy Spearow, "Genetic control of ovulation rate"; Judith Kimble, "Genetic control of oogenesis in a highly determinate organisms, *C. elegans*."

21 August. t-Alleles in development and spermatogenesis (Nina Hillman, discussion leader): Lee M. Silver, "Cloning of *t*-region sequences"; Hirokazu Fujimoto, "A spermatid cDNA clone with altered expression in a *t*-allele"; Jean-Louis Guenet, "Sterility factors in *Mus* intraspecies crosses and their possible relationship to the *I/t* complex"; Dorothea Bennett, "Genetics of *t*-allele transmission ratio distortion." Biochemical characterization of spermatogenesis (Anthony Bellvé, discussion leader): Vidar Hansson, "Hormone regulation of Sertoli cell function and maintenance of germ cell viability"; Abraham Kierzenbaum, "Spermatogenesis in vitro"; Lynne A. Ierardi, "Purification and characterization of the synaptonemal complex"; Marvin Meistrich, "Histone transitions in mammalian testes."

22 August. Macromolecular synthesis during oogenesis (Robert P. Erickson, discussion leader): Jurrien Dean, "Protein biosynthesis during oogenesis: The three sulfated glycoproteins of the zona pellucida"; Franco Mangia, "Regulation of oocyte protein synthesis by coupled cells"; Virginia N. Bolton, "The importance of stored mRNA for early embryogenesis"; Rosemary Bachvarova, "Storage of various RNA species in mouse eggs." Cell lineage and commitment in mouse embryogenesis (Richard Garnder, discussion leader): Martin Johnson, "The relationship between cell polarity, cell lineage, and cell potency in preimplantation embryos"; Janet Rossant, "Cell lineage studies using recombinant DNA markers"; Roger A. Pederesen, "Cell allocation in early mouse embryogenesis as studied by microinjection of horseradish peroxidase"; Davor Solter, "Cell commitment studies by nuclear transplantation."

23 August. Cell associations and interaction during spermatogenesis (Irving B. Fritz, discussion leader): Werner Schulze, "The double helical organization of spermatogenesis in the human seminiferous tubule"; Marta Vojtíšková, "The blood testes barrier and autoimmune orchitis"; Peter F. Hall, "The production of metabolites for germ cells by cultured Sertoli cells"; Steven Wolpe, "Use of monoclonal antibodies to study cell interactions in the testes." Oocyte development and maturation (Robert Moor, discussion leader): A. Rees Midgley, Jr., "Pulsatile signaling in

oogenesis''; George Thomas, ''Phosphorylation of proteins during meiotic maturation in *Xenopus* oocytes''; Florence P. Haseltine, ''Hormonal and follicular fluid component correlates of oocyte maturation.''

2 August. Mutants and molecules in the pre-implantation embryo (Salome Gluecksohn-Waelsch, discussion leader): Klaus Harbers, ''Insertional mutagenesis and the generation of developmental mutants''; Azim Surani, ''Manipulation of the genetic constitution of eggs and embryogenesis''; Charles J. Epstein, ''The effect of mutations and altered dosage of genes on development.''

Mammalian Genital Tract

Plymouth State College (N)

Stanley R. Glasser, chairman; John McLachlan, vice chairman.

9 July. Are hormone responses of reproductive tract receptor mediated? (Benita S. Katzenellenbogen, discussion leader): James H. Clark, ''Steroid receptor research: a critical review''; Barry M. Markaverich, ''Estrogen receptors and endogenous inhibitors''; Patricia Donohoe, ''Müllerian duct regression''; Malcolm Parker, ''Expression of steroid binding protein genes.'' Alternate models for steroid hormone action (Carlos Sonnenschein, discussion leader): Roy Smith, ''Differential regulation of cell proliferation and steroid receptor concentration''; Howard Bern, ''Mouse vaginal and uterine epithelial cell''; Ann Soto, ''Negative control of estrogen dependent cell proliferation.''

10 July. Proliferation vs. differentiation and/or growth (George Stancel, discussion leader): Len Martin, ''Hormonal responses of endometrial stem cells''; Helen Padykula, ''Endometrial renewal in primates''; Clara Szego, ''Preproliferative responses in hormonally stimulated cells.'' (Brian Heap, discussion leader): Kenneth Korach, ''Role of multiple nuclear receptor interaction in cell proliferation''; F. B. P. Wooding, ''Binucleation: trophoblast differentiation''; Michael J. Soares, ''Transformation of ectoplacental cone: trophoblast differentiation.''

11 July. Cell-cell interactions (Gerald Cunha, discussion leader): Leland Chung, ''Tissue interactions and prostatic growth''; Charles M. McGrath, ''Epithelial-stromalhormonal interactions''; Fernand LeRoy, ''Blastocyst response to epithelial-stromal interactions.'' Immunology of the reproductive tract (Kenneth Tung, discussion leader): Charles R. Wira, ''Endocrine control of a female genital tract secretory immune system''; Stephen C. Bell, ''Immunobiology of the decidua''; Anthony R. Bellve, ''Monoclonal antibody probes for spermatogenesis and embryogenesis.''

12 July. Immunology of the reproductive tract (Susan Heyner, discussion leader): David A. Clark, ''Suppressor cells and success of pregnancy''; Thomas J. Gill III, ''Immunogenetics of placental antigens''; Thomas G. Wegmann, ''Immunological barrier function of the placenta.'' Extracellular microenvironments (R. Michael Roberts, discussion leader): Barry Bavister, ''In vivo vs. in vitro environments for sperm/egg interaction''; Joseph Tash, ''Second messenger regulation of sperm motility''; Angie Rizzino, ''PDGF-like factors and early mammalian development.''

13 July. Abnormal growth and differentiation (John McLachlan, discussion leader): Robert H. Rice, ''Keratinocyte estrogen receptors''; Stuart Aaronson, ''Oncogenes: role in growth factor expression during differentiation.''

Medicinal Chemistry

Colby-Sawyer College (N)

Edward C. Hermann, chairman; John G. Topliss, vice chairman.

30 July. Adenosine receptors (Ray A. Olsson, chairman): Ray A. Olsson, ''Cardiovascular adenosine receptors''; James A. Bristol, ''Chemical and pharmacological studies on some new adenosine agonists and antagonists''; Thomas V. Dunwiddie, Electrophsiological and behavioural actions of adenosine analogs.'' Recent advances in antiviral chemotherapy (Mark A. McKinlay, chairman): Guy D. Diana, ''Inhibitors of viral uncoating: A new class of antipicornavirus agents''; John D. Karkas, ''Mechanism of action of antiherpetic nucleoside analogs''; Myron Levin, ''Clinical evaluation of antiherpetic agents.''

31 July. Modulators of the arachidonic acid cascade (Hans-Jurgen Hess, chairman): Roger Dickenson, ''Design and synthesis of selective thromboxane synthetase inhibitors''; Peter Sprague, ''7-Oxacycloheptene analogs with specific thromboxane A_2 antagonist activity'' (other speakers to be announced). Design of antitumor agents based on mechanism of action (John S. Driscoll, chairman): Wayne K. Anderson, ''Structural factors influencing the antitumor activity of bis-carbamoyloxymethylated heterocycles''; Victor E. Marquez, ''Inhibition of inosine monophosphate dehydrogenase (IMPD) by nicotinamide-adenosine dinucleotide analogs. Structure-activity relationships''; Hollis D. Showalter, ''Substituted anthra [1,9-cd]pyrazol-6-(2H)-ones as novel broad spectrum anticancer agents.''

1 August. Newer approaches to antidiabetic therapy (Richard J. Mohrbacher, chairman): Albert Chang, ''Modulators of insulin receptor sensitivity''; G. Tutwiler, ''Metabolic intervention: Inhibition of fatty acid oxidation''; Peter Kador, ''Aldose reductase inhibition''; (speaker to be announced), ''B-agonists as antidiabetic agents.'' Special topics in medicinal chemistry (William F. Johns, chairman).

2 August. Osteoporosis (Lawrence G. Raisz, chairman): Gideon A. Roden, ''Bone formation at the cellular level''; Lawrence G. Raisz, ''Pathogenesis, prevention and therapy of osteoporosis''; Michael F. Holick, ''New approaches to the treatment of osteoporosis: Vitamin D, parathyroid hormone and calcitonin.'' General session (Irving J. Greenglatt, chairman): Philip J. Klass (title to be announced).

3 August. Recent advances in antiarrhythmic drugs (Harvey R. Kaplan, chairman): John Somberg, ''New antiarrhythmic drugs—clinical perspectives''; Mitchell Steinberg, ''Clofilium-like class II and indecanide-like class I_c antiarrhythmic agents—pharmacology and structure-activity relationships''; Richard Verrier, ''Animal models—predictability.''

Metal-Insulator-Semiconductor Systems

Tilton School

Howard C. Card, chairman; Edward H. Nicollian, vice chairman.

16 July. Structural and chemical properties of interfaces in MIS systems (Joseph Maserjian, discussion leader): F. Ponce, ''TEM imaging of the atomic structure of Si/insulator interface''; L. C. Feldman, ''Atomic structure at Si interfaces by ion scattering''; C. W. Magee, ''SIMS characterization of silicon and SiO_2 materials.'' Heterojunction MIS structures (Marvin White, discussion leader): T. W. Hickmott, ''AlGaAs—the ideal dielectric''; A. Kastalsky, ''Novel hot-electron real space transfer devices.''

17 July. Hot carriers and radiation effects (Richard Barker, discussion leader): T. P. Ma, ''Radiation and hot carrier effects—an overview''; P. V. Dressendorfer, ''Overview of radiation hardness of oxides''; D. J. DiMaria, ''Electron heating in SiO_2.'' Quantum Hall effect

(Frank Fang, discussion leader): S. Luryi, "The ordinary quantum Hall effect"; J. Quinn, "The fractional quantum hall effect."

18 July. Studies of Si-SiO_2 interfaces by electron spin resonance (Edward Poindexter, discussion leader): E. H. Poindexter, "An overview of ESR studies"; K. Brower, "EPR of interface and bulk defects in Si/SiO_2"; B. Henderson, "Optical and spin-dependent recombination effects at Si/SiO_2 interfaces." Contributed papers (Edward Nicollian, discussion leader).

19 July. Carrier injection and resonant tunneling (Frank Feigl, discussion leader): J. Shappir, "Hot carrier injection into MIS interfaces"; R. Koch and A. Hartstein, "Measurements of resonant tunneling in SiO_2 from atomic scale localized states." Late news papers/discussion. MIS device physics (Steven Lyon, discussion leader): R. Van Overstraaten, "MIS device physics—a status report"; K. Hess, "Transient transport at semiconductor heterojunction interfaces."

20 July. Modification of Si-SiO_2 interfaces (Don Young, discussion leader): P. J. Grunthaner, "The structure of the Si-SiO_2 interface and its chemical modifications studied by x-ray photoemission"; M. Fischetti, "The importance of the anode field in controlling the generation of donor states at the Si-SiO_2 interface."

Late newspapers/discussion and conference wrap-up.

Methanogenesis

Tilton School

W. H. Orme-Johnson, chairman; C. T. Walsh, vice chairman.

Biochemistry and Molecular Biology of Methanogenic Bacteria

20 August. Methanogens as archaebacteria (C. Walsh, session chairman): C. Woese, K. Stetter, A. Macario, O. Kandler. Molecular biology (C. Woese, session chairman): W. Zillig, A. Bock, F. Klink, G. Bertani.

21 August. Cofactors (W. H. Orme-Johnson, session chairman): R. Wolfe, A. Pfaltz, R. Thauer. Metabolism and carbon assimilation (L. Daniels, session chairman): G. Fuchs, G. Zeikus, G. Gottschalk.

22 August. Enzymic process—I (L. Mortenson, session chairman): C. Walsh, G. Vogels, M. Roberts, D. Fahrney. Enzymic processes—II (L. Lungdahl, session chairman): W. H. Orme-Johnson, T. Stadtman, R. Ferry, L. Lungdahl.

Applications

Scientists are invited to submit applications for attendance at the Gordon Research Conferences. An application blank is on page 981 and may be submitted to Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, University of Rhode Island, Kingston, Rhode Island 02881.

23 August. Bioenergetics (R. Thauer, session chairman): D. Sprott, K. Sauer, J. Lancaster, D. Bachofen. Special lecture (R. Wolfe, session chairman): H. Wood.

24 August. Genetics (G. Walker, session chairman): J. Koniskey, J. Reeve, A. Klein, D. Leisinger.

Microbiological Safety of Foods

Plymouth State College (S)

Don F. Splittstoesser, chairman; F. F. Busta, vice chairman.

16 July. Regulation of growth in clostridia (Myron Solberg, discussion leader): H. P. Blaschek, "Genetic transfer systems"; Thomas Montville, "Environmental influence on phenotypes." Regulation of toxin production in clostridia (F. F. Busta, discussion leader): Myron Solberg, "Nutritional regulation"; R. G. Labbe, "Enterotoxin synthesis during sporulation."

17 July. Gastrointestinal immunity (D. L. Archer, discussion leader): Nathaniel F. Pierce, "Gastrointestinal immune mechanisms"; R. K. Chandra, "Nutritional impact of diarrheal disease"; Andrew Geczy, "Intestinal pathogens, HLA and autoimmune disease." Detection of foodborne pathogens (Walter Hill, discussion leader): Renee Fitts, "DNA probes."

18 July. Genetics of food fermentation microorganisms (T. R. Klaenhammer, discussion leader): C. Gonzalez, "The pedicocci"; B. Chassy, "Genetics and molecular biology of the lactobacilli"; M. Shimizu-Kadota, "Molecular events during transition of temperate to lytic phage in *Lactobacillus casei*." Genetics of food fermentation microorganisms (Patricia Walsh, discussion leader): T. R. Klaenhammer, "Mechanisms of bacteriophage resistance in lactic streptococci"; L. McKay, "Genetic transfer systems within lactic streptococci."

19 July. Toxic principles in *Basidiomycetes* (L. Beuchat, discussion leader): Donald M. Simons, "Poisonous mushrooms and mushroom poisons"; Bela Toth, "Mushroom hydrozines—carcinogenicity and mutagenicity." Pat B. Hamilton, "Mycotoxins in the environment."

20 July. Nitrite mechanisms (A. W. Kotula, discussion leader): J. N. Hansen, "Mechanism by which nitrite inactivates spores"; Daren Cornforth, "Interaction of nitrite with iron sulfur proteins in *Clostridium botulinum*."

Microbial Toxins and Pathogenesis

Plymouth State College (N)

Barbara H. Iglewski, chairman; Randall K. Holmes, vice chairman.

30 July. (Tai Phang-Chen, discussion leader): H. Wu, "Protein secretion: an overview;" W. Goebel, "Secretion of hemolysins of *E. coli* and *B. cereus*"; S. Hardy, "Biosynthesis and secretion of *E. coli* enterotoxin." (Stanley Falkow, discussion leader): M. So, "Genetic regulation of antigenic variation of *N. gonerrhea* pili"; S. Normark, "Genetic studies of bacterial adherence factors."

31 July. (Vincent A. Fischetti, discussion leader): J. Scott, "Molecular genetics of group A streptococcal M. protein"; R. Curtiss, III, "Genetic analysis of *S. mutans* virulence"; D. Clewell, "Conjugation in streptococci." (John Iandolo, discussion leader): P. Pattee, "Applications of Tn916 to genomic mapping in *S. aureus*"; R. Novick, "Plasmid determinants of virulence in staphylococcus."

1 August. (Charlotte Parker, discussion leader): J. Moss, "Regulation of eucaryotic adenylate cyclase"; M. Tamura, "The structure and function of pertussin toxin." (Stephen Leppla, discussion leader): E. Hewlett, "Intoxication of mammalian cells by bordetella extra cytoplasmic adenylate cyclase"; A. Friedlander, "Effects of anthrax toxin components on macrophage."

2 August. (Randall Holmes, discussion leader): R. Finkelstein, "Structure and activity of *E. coli* LT toxin"; Y. Takeda, "Structure and activity of *E. coli* ST toxin"; A. O'Brien, "Shiga and related enterotoxins." (Discussion leader to be announced): M. Levine, "Current status of immunization against enterotoxic diarrheas"; S. Formal, Honorary Lecture: "The role of serendipity in the pathogenesis of shigellosis."

3 August. (R. John Collier, discussion leader): G. Schoolnik, "Structural analysis of pili of the gonococcus"; E. Westbrook, "Three dimensional structure of a dimeric form of diptheria toxin"; D. McKay, "X-ray crystalographic analysis of *P. aeruginosa* toxin A."

Program Summary, Gordon Research Conferences,

Date	Colby-Sawyer College (N), New London	Colby-Sawyer College (S), New London	New Hampton School, New Hampton	Kimball Union Academy, Meriden	Tilton School, Tilton
11–15 June	Tribology	UV/Visible Multiphotons and Dissociation Processes	Nucleic Acids	Isotopes, Chemistry and Physics of	Cyclic Nucleotides
18–22 June	Nuclear Chemistry	Thermosetting Polymers	Photoconductivity and Related Phenomena	Lipid Metabolism	Animal Cells and Viruses
25–29 June	Catalysis	Synthetic Membranes	Environmental Science: Water	High Pressure, Research at	*Temperature Stresses in Plants
2–6 July	Polymers	Theoretical Biology and Biomathematics	Fuel Science	Enzymes, Coenzymes and Metabolic Pathways	Nuclear Proteins, Chromatin Structure and Gene Regulation
9–13 July	Fiber Science	*Liquid Crystal Polymers	Heterocyclic Compounds, Chemistry of	Lasers in Medicine and Biology	Nuclear Structure Physics
16–20 July	Elastomers	Thin Organic Films and Solid Surfaces	Organic Reactions and Processes	Bones and Teeth, Chemistry, Physiology and Structure of	Metal-Insulator-Semiconductor Systems
23–27 July	Corrosion	Chemotherapy of Experimental and Clinical Cancer	Natural Products	Interfaces, Chemistry at	Quantum Solids and Fluids
30 July–3 August	Medicinal Chemistry	Ceramics, Solid-State Studies in	Statistics in Chemistry and Chemical Engineering	Toxicology	Bioelectrochemistry
6–10 August	Extrachromosomal Elements	Pyrrole Compounds	Water and Aqueous Solutions, Chemistry and Physics of	Hormone Action	Magnetic Resonance in Medicine and Biology
13–17 August	Separation and Purification	Ionizing Channels in Muscle and Other Excitable Membranes	Analytical Chemistry	Chemical Oceanography	Plasma Chemistry
20–24 August	Cancer	Origin of Life	Adhesion, Science of	Photosynthesis, Biochemical Aspects of	*Methanogenesis
27–31 August			*Cybernetics, Fundamentals of	Nondestructive Evaluation	

*New conferences

1984 Schedule—New Hampshire

Proctor Academy, Andover	Holderness School, Plymouth	Brewster Academy, Wolfeboro	Plymouth State College (N), Plymouth	Plymouth State College (S), Plymouth
Plant Molecular Biology	Inotropic Agents: Positive and Negative	Physical Organic Chemistry	*Proteoglycans	Holography and Coherent Optics
Hemostasis	Biological and Regulatory Mechanisms	Radical Ions	Basement Membranes	Proteolytic Enzymes and Their Inhibitors
Eucaryotic Cells, Introduction of Macromolecules Into	Biopolymers, Physics and Physical Chemistry of	Radiation Chemistry	Stereochemistry	Lysosomes
Molecular Biology, Diffraction Methods in	Muscle: Contractile Proteins	Renewable Resources, Chemical and Materials from	Immunochemistry and Immunobiology	Mutagenesis
Chemical Senses: Taste and Smell	Particle-Solid Interactions	Microstructure Fabrication, Chemistry and Physics of	Mammalian Genital Tract	Drug Carriers in Biology and Medicine
Polymer Physics	Photonuclear Reactions	Electron Spectroscopy	Fungal Metabolism	Microbiological Safety of Food
Physical Metallurgy	Drug Metabolism	High-Temperature Chemistry	Purines, Chemistry and Physics of	Pulmonary Biology
Modeling of Flow in Permeable Media	Dielectric Phenomena	Atomic and Molecular Interactions	Microbial Toxins	Foams
Bioengineering and Orthopedic Science	Plant Senescence	Inorganic Chemistry	Solid State Chemistry	Magnesium in Biochemical Processes and Medicine
Organometallic Chemistry	Immobilized Systems in Biotechnology	Dynamics of Simple Systems in Chemistry and Physics	Electron Donor Acceptor Interactions	Coatings and Films
Mammalian Gametogenesis and Embryogenesis	Organic Geochemistry	Vibrational Spectroscopy		

Chemistry and Physics of Microstructure Fabrication

Brewster Academy

Fabrian Pease, chairman; Evelyn Hu, vice chairman.

9 July. (Evelyn Hu, discussion leader): T. Fulton, "Brush fire lithography"; H. Ahmed, "Electron beam fashioning of silicon devices." (H. Smith, discussion leader): G. Hanson, "Localization of field ion emission using adsorbed hydrogen."

10 July. (H. Ahmed, discussion leader): G. Willson, "Recent advances in organic resist chemistry"; A. Rosencweig, "Thermal wave microscopy and related techniques." (G. Willson, discussion leader): H. Smith, "Patterning and crystalline film formation"; R. Carpenter, "Ultrahigh resolution transmission electron microscopy."

11 July. (Discussion leader to be announced): M. Geis, "Ion beam induced etching"; S. Pang, "Dry etching induced damage in GaAs and silicon." (E. D. Wolf, discussion leader): D. Edel, "Microfabrication technology and neural implants"; D. Tuckerman, "Heat sinking microstructures."

12 July. (T. Everhart, discussion leader): G. Iafrate, "Physics of lateral quantum well devices"; W. D. Skocpol, "Single interface traps and quantum conduction in narrow silicon MOSFET's"; J. Bean, "Silicon super lattice structures." (Ken Bean, discussion leader); (Speaker and subject to be announced).

13 July. (W. D. Skocpol, discussion leader): A. Lamola, "The relevance of biology in computing technologies."

Modeling of Flow in Permeable Media

Proctor Academy

T. N. Narasimhan, chairman; Irving Fatt, Mary Wheeler and Herbert G. Weinstein, vice chairmen.

30 July. (Irving Fatt, chairman): Joel L. Bert, "Mass transport in connective tissues"; Paul A. Witherspoon, "Fluid flow in fractured media"; Harold C. Helgeson, "Chemical transport in hydrothermal systems." (Irving Fatt, chairman): John R. Philip, "Two- and three-dimensional flows in unsaturated soil: New results"; Shlomo P. Neuman, "Recent trends in parameter estimation."

31 July. (J. R. Philip, chairman): Frank Richter, "Models for melt segregation"; Harry Hardee, "Geothermal convection above magma bodies"; Kevin O'Neill, "Freezing induced transport and ice segregation in granular soils." (Harold C. Helgeson, chairman): Robert W. Gillham, "Reactive chemical transport in unconsolidated materials"; T. A. Hewett, "Rock alteration by convective motions."

1 August. (Herbert Weinstein, chairman): John Wheeler, "Modeling combustion fronts"; Jahan Noorishad, "Coupled thermal-hydraulic-mechanical pheonomena in fractured rocks"; Alan Weiser, "Reservoir simulation on an arbitrary fixed grid." (Herbert Weinstein, chairman): Thom Potempa, "Mobility weighting in the numerical simulation of steam flooding."

2 August. (Mary Wheeler, chairman): Richard E. Ewing, "Finite element discretization for simulation of porous media flow"; Peter Sammon, "Time-stepping schemes and related aspects of reservoir simulation"; John Bell, "Control of numerical diffusion in finite different methods for reservoir simulation." (Mary Wheeler, chairman): Ian Duff, "The solution of large sparse asymmetric matrices by direct methods"; John Wallace, "Preconditioned generalized conjugate gradient method for petroleum reservoir simulation."

3 August. (T. N. Narasimhan, chairman): Lynn Gelhar, "Stochastic analysis of transport in permeable media"; William A. Jury, "Field calibration and verification of solute transport models for unsaturated soil."

Diffractions Methods in Molecular Biology

Proctor Academy

Robert Fletterick, chairman; Ray Salemme, vice chairman.

2 July. New structures: macromolecular interactions (Robert Huber, session chairman): T. A. Steitz, J. Diesenhofer. Protein folding (D. Eisenberg, session chairman): J. Thornton.

3 July. Refinement, methods and structure determination (A. Wlodawer, session chairman): J. Sussman, G. Brayer. DNA binding proteins co-crystals (C. Pabo, session chairman): T. Richmond, J. M. Rosenberg.

4 July. Imaging methods: large structures and electron microscopy (R. Stroud, session chairman): D. Agard, R. Kornberg, R. Milligan, W. Chu.

5 July. Building and analysis of new protein structures (J. Kraut, session chairman): E. Vilafranca, R. Wetzel. Developments in structural analysis (M. F. Perutz, session chairman): A. Klug.

6 July. Flexible molecules (R. Harrison, session chairman): R. Burnett. Poster sessions. Fran Jurnak.

Muscle: Contractile Proteins

Holderness School

Ralph G. Yount, chairman; David Hartshorne, vice chairman.

2 July. Myosin; gene and protein sequences (Marshall Elzinga, chairman): Actin; structure and function (Carolyn Cohen, chairman).

3 July. Myosin architecture (Ralph G. Yount, chairman): Regulation of contraction (David Hartshorne, chairman).

4 July. Correlation of biochemistry with physiology (David Trentham, chairman): Cross-bridge structure and function (Hugh Huxley, chairman).

5 July. Dynamics of contractile systems (Robert Simmons, chairman): Discussion of selected posters.

6 July. Summary session (Andrew F. Huxley, chairman).

Participants interested in presenting a poster should send a copy of their abstract with their application forms and duplicate copy to Dr. D. Hartshorne, Muscle Biology Group, University of Arizona, Tucson, Arizona 85721. Please indicate which session (or sessions) seems most appropriate for exhibiting the poster.

Mutagenesis

Plymouth State College (S)

John W. Drake, chairman; Lawrence A. Loeb, vice chairman.

2 July. Alkylation mutagenesis (Tomas Lindahl, discussion leader): Anthony E. Pegg, "Alkylation repair in vivo"; Peter B. Karran, "Alkylation repair in vitro." Mismatch correction (Maurice S. Fox, discussion leader): Jean Pierre Claverys, "Mismatch repair in *S. pneumoniae* transformation"; A-Lien Lu, "Mismatch repair in vitro."

3 July. Cellular mechanisms in mutagenesis (Graham C. Walker, discussion leader): Harrison Echols, "Pol III fidelity control"; Lawrence A. Loeb, "Depurination and mutagenesis"; Graham C. Walker, "SOS processing." The phage T4 *WXY* system (Teiichi Minagawa, discussion leader): John W. Drake, "Properties of *X* and *Y* mutants"; Timothy Formosa, "Enzymology of *uvsX* protein."

4 July. Ultraviolet mutagenesis (Franklin Hutchinson, discussion leader): Richard D. Wood, "UV mutagenesis of phage λ"; Jeffrey H. Miller, "UV mutagenesis in the *E. coli lacI* gene"; Roeland M. Schaaper, "UV mutagenesis in *E. coli* uvr^+ and uvr^-." Mutagenesis in alternative DNA structures (Lynn S.

Ripley, discussion leader): (Speaker and subject to be announced).

5 July. Replication fidelity (Lawrence A. Loeb, discussion leader): Miroslav Radman, "Pyrophosphate exchange and nucleotide selection"; Thomas A. Kunkel, "Mutagenic specificities of purified polymerases." Late-breaking developments (Myron F. Goodman, discussion leader): (Speaker and subject to be announced).

6 July. Eukaryotic mutagen specificity (Barry W. Glickman, discussion leader): William C. Summers, "Mutagenesis of a shuttle vector in mammalian cells"; Fred Sherman, "Mutagenesis in the yeast *cycl* gene." Poster sessions are open to all attendees, but an abstract should be submitted to the chairman at the time of application.

Natural Products

New Hampton School

Paul Wender, chairman; John Partridge, vice chairman.

23–27 July. David Cane, "Stereochemical studies of natural product biosynthesis"; Jim Collman, "Molecular engineering and biomimetic chemistry"; Rick Danheiser, "Annulation approaches to carbocyclic and heterocyclic compounds"; Steve Hanessian, "Total synthesis of natural products: the chiron approach"; Sid Hecht, "Naturally occurring DNA interactive agents"; Ken Houk, "Theoretical studies of stereoselective organic reactions"; Minoru Isobe, "Synthetic studies on okadaic acid"; Koji Nakanishi, "Biorganic studies on visual pigments and bacterial rhodopsin"; Larry Overman, "New strategies for the synthesis of azacyclic natural products"; Clark Still, "Stereochemical control in natural product synthesis"; Barry Trost, "Selectivity in organic synthesis"; Larry Truesdale, "Unnatural prostanoid synthesis"; Dave Walba, "Stereocontrol in oxygen heterocycle synthesis"; Fred Ziegler, "Sigmatropic rearrangements as a route to acyclic diastereoselection."

Nondestructive Evaluation

Kimball Union Academy

Gordon S. Kino, chairman; Robert E. Green, Jr., vice chairman.

27 August. Tomography (Gerald J. Posakony, discussion leader): Lee A. Feldkamp, "Three-dimensional x-ray computed tomography for NDE"; Louis Testardi, "Measurement of temperature in steel." Synthetic aperture acoustic imaging (R. Bruce Thompson, discussion leader): Volker Schmitz, "Analyzing internal or surface breaking cracks by LSAFT"; D. Kent Peterson and Simon D. Bennett, "Real-time synthetic aperture imaging."

28 August. Composites (Michael Buckley, discussion leader): Joseph S. Heyman, "Quantitative characterization graphite epoxy composite materials; damage assessment"; William Pardee, "Ultrasonic cure monitoring of composites." Measurement associated with stress (H. N. G. Wadley, discussion leader): Ronnie K. Miller and H. I. Ringermacher, "Source quantitative acoustic emission in metals and composites"; K. Allen, "Texture independent measurement of stress with ultrasonics."

29 August. Neutron scattering (J. Routbort, discussion leader): A. K. Rhyne, "Nuclear scattering techniques"; Stuart MacEwen, "Stress measurement with neutrons." Measurement of silicon devices (Peter Cannon, discussion leader): Kumar Wickramasinghe, "Application of scanning differential phase contrast microscopy to silicon inspection"; J. S. Batchelder, "Inspection and measurements in advanced silicon fabrication."

30 August. Acoustic microscopy (Butrus T. Khuri-Yakub, discussion leader) Jun-ichi Kushibiki and Noriyoshi Chubachi, "Material characterization by acoustic microscopy"; Robert G. Gilmore, "Acoustic microscopy." (Eric A. Ash, discussion leader): Arden L. Bement, "NDT problems in manufacturing."

31 August. Pulsed acoustic measurements (Donald O. Thompson, discussion leader): Morris G. Silk, "Recent results on acoustic diffraction measurements of defects;" R. Saglio, "Conception and utilization of focused transducers: French experience in this field."

Nuclear Chemistry

Colby-Sawyer College (N)

J. B. Natowitz, chairman; L. L. Riedinger, vice chairman.

18 June. (J. Huizenga, discussion leader): S. Landowne, "Sub-barrier fusion"; K. Hildenbrand, "Mass drift, past fission and fission in asymmetric heavy ion reactions"; I. Zvara, "Heavy element research at DUBNA." (C. Ngo, discussion leader): T. Awes, "Fission of heavy ion projectiles"; S. Wald, "Experiments with the plastic box, a 4π charge particle detector."

19 June. (J. M. Alexander, discussion leader): J. H. K. Ho, "Particle probes of nuclear properties"; W. Lynch, "Noncompound particle correlations in intermediate energy heavy reactions"; D. Hilscher, "Neutron emission in fusion-fission reactions." (Discussion leader to be announced): L. Sobotka, "Large fragment evaporation"; J. M. Loiseaux, "The SARA research program."

20 June. (J. Wilczynski, discussion leader): S. Austin, "The NSCL research program"; D. Guerreau, "The GANIL research program"; N. Frascaria, "Resonances in heavy ion reactions." (Discussion leader to be announced): V. Viola, "Momentum transfer in heavy ion collisions"; J. Galin, "Deexcitation of very highly excited nuclei."

21 June. (Discussion leader to be announced): W. Friedman, "Projectile framentation"; P. Braun-Munzinger, "Pion emission near the absolute threshold"; M. G. Mustafa, "Predictions and parts of the rotating finite range model for heavy ion induced fission." (L. Riedeinger, discussion leader): U. Merbold or B. Lichtenberg, "Science on the space shuttle."

22 June. (Discussion leader to be announced): P. Siemens, "Phase changes in nuclei"; H. G. Ritter, "Collective effects in relativistic nuclear collisions"; C. Chasman, "The physics of relativistic collisions, plans for the AGS."

Nuclear Proteins, Chromatin Structure and Gene Regulation

Tilton School

E. M. Bradbury, chairman; D. E. Olins and A. Olins, co-chairmen.

2–6 July. A. Rich, "DNA polymorphism and enhancers"; M. L. Birnstiel, "Genome organization"; A. Klug, "Nucleosome structure"; A. Olins, "Higher order chromatin structures"; W. W. Franke, "Nonchromatin nuclear structures"; H. Weintraub, "Active chromatin"; R. G. Roeder, "Transcription"; A. Stein, "Chromatin assembly and replication"; J. A. Steitz, "RNA processing." Participants also include: V. G. Allfrey, P. Chambon, M. J. Holland, K. E. Van Holde, G. Felsenfeld, P. Leder, and H. G. Zachau.

Nuclear Structure Physics

Tilton School

Steven E. Koonin, chairman; Charles Glashauser, vice chairman.

9 July. Nuclear measurements of the properties of elementary particles: S. Freedman, "New measurements of the neutron decay"; R. McKeown, "A

search for free fractionally charged particles"; Heavy ion collisions near the kinematic and dynamic limits: "Pion production in low-energy heavy ion collisions"; M. Beckerman, "Sub-barrier fusion."

10 July. Deep-inelastic electron-nucleus scattering: R. Arnold, "The A-dependence of inelastic structure functions"; "What we learn from the EMC effect"; The implications of nucleon sub-structure: "Topological models of the nucleon and the strong interaction"; "Quark models of the hadrons."

11 July. New techniques for studying the giant resonances: F. Bertrand, "Photon and neutron decays of the giant resonances"; T. Taddeucci, "Spin transfer in (p,n) reactions and the Gamow-Teller strength function"; High-resolution inelastic electron scattering: "Recent experimental results"; "Theoretical interpretation."

12 July. Ultra-relativistic heavy-ion collisions: "Experimental results from the nuclei in the ISR"; L. McLerran, "Formation and properties of the quark-gluon plasma."

13 July. Anti-proton annihilation and positron creation: N. Digiacomo, "$\bar{p}$ annihilation in nuclei: First results from LEAR"; "Spontaneous positron creation in heavy-ion collision."

Nucleic Acids

New Hampton School

Robert Tjian and Tom Cech, co-chairman.

11 June. Development and differentiation (Mary Lou Pardue and Robert Horvitz, session chairmen): Alan Spradling, Walter Gehring, Kim Nasmyth. Structure-function relationships in DNA and RNA (Norman Pace, session chairman): Richard Dickerson, Peter Moore, Harry Noller, John Rosenberg, Andrew Wang.

12 June. DNA replication and recombination (Thomas Kelly, session chairman): Robert DiFrancesco, Jerard Hurwitz, Richard Kolodner, Arthur Kornberg, Katherine Welsh. DNA rearrangements and transposition (Alan Weiner, session chairman): Jonathan Leis, Susanna Lewis, Shirleen Roeder, Rodney Rothstein, Maxine Singer.

13 June. Regulation of transcription-promoters, enhancers and activators (Keith Yamamoto, session chairman): Pierre Chambon, B. de Crombrugghe, William McClure, Masamuri Muramatsu, Charles Weissman. Control of gene expression (Gerald Fink, session chairman): Leonard Guarante, Jim Posakony, Jeff Roberts, Philip Youderian.

14 June. RNA processing and splicing (Christine Guthrie, session chairman): Max Birnstiel, Michael Green, Walter Keller, Philip Sharp, Piotr Slonimski. Termination and translation of messenger RNA (Raymond Gestland, session chairman): John Gallant, Emanuel Murgola, David Peabody, and Robert Schneider.

15 June. Chromosomes, centromeres and telomeres (Tom Petes, session chairman): Elizabeth Blackburn, John Carbon, Larry Klobutcher, Jack Szostack.

Organic Geochemistry

Holderness School

Keith A. Kvenvolden, chairman; Robert H. Reitsema, vice chairman.

20 August. The biogeochemical carbon cycle (D. J. Des Marais, discussion leader): R. A. Berner, "Burial of organic carbon and pyrite sulfur over Phanerozoic time"; J. M. Hayes, "Redox balances in early carbon cycles"; D. J. Des Marais, "Magmatic contributions to the carbon cycle." Fluxes of organic molecules in modern environments (R. S. Oremland, discussion leader): M. Andreae, "Fluxes of valatile organosulfur compounds to the atmosphere"; C. S. Martens, "Carbon cycling in an organic-rich sediment: Cape Lookout Bight, North Carolina"; N. Blair, "Carbon isotope biogeochemistry of recent sediments."

21 August. Biomarker applications (W. K. Seifert, discussion leader): J. Rullkotter, "Biological marker composition in crude oils—relation to bulk hydrocarbon generation"; G. W. M. Lijmbach, "Geochemistry of crude oils and source rocks in Oman"; W. K. Seifert, "The incorporation of petroporphyrins into biomarker source correlation problems"; S. E. Palmer, "Biomarker characterization of lacustrine oils and source rocks." Biomarker fundamentals (P. Albrecht, discussion leader): R. Alexander, "Some diterpenoid biomarkers in petroleum"; P. Albrecht, "Novel aspects of microbial influences in early diagenetic transformations."

22 August. Limits of the occurrence of oil and gas (G. E. Claypool, discussion leader): J. E. Zumberge, "Biomarker distributions and evidence for oil generation at low thermal maturity"; D. Waples, "The oil deadline: Comparison between empirical data and theory"; J. W. Valley, "Can methane be generated or preserved in the lower crust during metamorphism?" Biogeochemistry of extreme environments (B. R. T. Simoneit, discussion leader): J. A. Baross, "Microbial life in oceanic hot vents"; A. Saliot, "Organic matter in the hydrothermal systems at 13°N, East Pacific Ocean."

23 August. Geochemistry of humic substances (P. G. Hatcher, discussion leader): J. I. Hedges, "Lignin composition of humic substances"; E. M. Perdue, "Analytical constraints on the structural features of humic substances"; R. Ishiwatari, "Recent experimental studies on the formation of humic substances in lacustrine sediments." Macromolecular structures of organic matter (D. J. Casagrande, discussion leader): P. H. Given, "The role of cellulose and lignin as inputs to coalification"; G. Maciel, "Application of solid state NMR in the geochemistry of macromolecules"; L. Stock, "Structural elements of Illinois coals."

24 August. Application of analytical pyrolysis in organic geochemistry (K. E. Peters and S. Larter, discussion leaders): R. P. Philip, "Distribution of biomarkers in source rocks as determined by micro-scale pyrolysis techniques combined with gas chromatography/mass spectrometry"; J. K. Whelan, "Use of programmed pyrolysis in examination of recent and ancient marine sediments"; M. D. Lewan, "Laboratory simulation of burial maturation of hydrous pyrolysis."

Posters are encouraged. Contact Dr. R. H. Reitsma, Marathon Oil Company, P.O. Box 269, Littleton, Colorado 80160.

Organic Reactions and Processes

New Hampton School

Martin A. Schwartz, chairman; Vasken Paragamian, vice chairman.

16 July. (Discussion leader to be announced): K. Barry Sharpless, "New asymmetric processes"; Larry L. Miller, "Bioorganic electrochemistry." (Discussion leader to be announced): Clayton H. Heathcock, "Recent results in alkaloid synthesis."

17 July. (Discussion leader to be announced): Robert K. Boeckman, Jr., "Synthetic methodology for, and applications to, the synthesis of complex molecules"; Ellis K. Fields, "Thermal and photochemical reactions of disubstituted maleic anhydride." (Discussion leader to be announced): Ei-ichi Negishi, "New metal-promoted cyclization and annulation reactions."

18 July. (Discussion leader to be announced): Lanny S. Liebeskind, "Organic synthesis with transition metals"; Barry B. Snider, "Lewis acid induced carbon-carbon bond forming reactions of alkenes." (Discussion leader to be an-

nounced): Philip D. Magnus, "Cobalt-silicon reagents in synthesis."

19 July. (Discussion leader to be announced): Kenneth J. Shea, "Synthesis and synthetic applications of bridgehead alkenes"; Louis S. Hegedus, "Photolytic reactions of group VI transition metal carbenes in organic synthesis." (Discussion leader to be announced): David L. Coffen, "From cascade to cash flow: Practical routes to a clinically interesting prostaglandin."

20 July. (Discussion leader to be announced): Bruce E. Maryanoff, "The Wittig reaction: Stereochemical idiosyncrasies and mechanistic investigations"; Albert Padwa, "New applications of dipolar cycloaddition chemistry to the synthesis of heterocycles."

Organometallic Chemistry

Proctor Academy

Jack Faller, chairman; Duane Dombek, vice chairman.

13 August. Bonding in organometallics (R. McKinney, discussion leader): Thomas Albright, R. McKinney, Joseph Lauher. Stereochemistry and mechanisms (Jack Faller, discussion leader): Brice Bosnich, Jack Halpern.

14 August. Alkane activation by homogeneous systems (Jennifer Quirk, discussion leader): William Graham, Robert Crabtree, Robert Bergman. Oxidation in systems with metal-carbon bonds (James Lyons, discussion leader): Mark Andrews, Brian James, M. David Curtis.

15 August. Reactions in metal clusters (Phillip Garrou, discussion leader): Wayne Gladfelter, Michael Green. Catalysis with lanthanide and actinide system (Tobin Marks, discussion leader): Patricia Watson, R. Andersen.

16 August. Organometallics in organic synthesis (Howard Alper, discussion leader): Anthony Pearson, S-I Murahashi, M. Brookhart. Advances in main group organometallics (David Singleton, discussion leader): Alan Cowley, O. T. Beachley.

17 August. Catalysis by organometallics (Duane Dombek, discussion leader): A. Sen, R. Eisenberg, Lazlo Marko.

Origin of Life

Colby-Sawyer College (S)

Sherwood Chang, chairman; J. William Schopf, vice chairman.

20 August. Early evolution (Sherwood Chang, discussion leader): James Kasting "Theoretical constraints on the prebiotic environment with emphasis on the early atmosphere"; Ward Watt, "The transition from prebiotic to biotic evolution." Round-table discussion: Relationships between geological, chemical and biological evolution. Membranes—I: Structure and function (Janos Fendler, discussion leader): Andrew Janoff, "The simplest functional membranes inferred from biological systems"; Sunney Chan, "Properties of artificial membranes relevant to biotic and prebiotic systems."

21 August. The beginnings of biological catalysis (David White, discussion leader): Russell Doolittle, "The earliest proteins: Reconstructions from contemporary amino acid sequences"; Norman Pace, "Polynucleotides as catalysts." Round-table discussion: The prebiotic transition from chemical to biological catalytic. Membranes—II: Origin and evolution (David Deamer, discussion leader): Thomas Thompson, "Interactions of peptides with lipid bilayer membranes." Round-table discussion: Development and assembly of primitive functional membrane attributes.

22 August. Bioenergetics—I: The geochemical and biological records (Lawrence I. Hochstein, discussion leader): John M. Hayes, "The geochemical record of bioenergetics"; Thomas Wilson, "Speculations on the origins of bioenergetics." Round-table discussion: What evidence from natural systems provides constraints on the origin(s) of bioenergetics? Bioenergetics—II: Primitive energy transduction systems (Herrick Baltcheffsky, discussion leader): Harold Morowitz, "The Mitchell mechanism and the origin of life." Round-table discussion: Development of bioenergetic systems from prebiotic energy sources.

23 August. Replication and translation—I. The biological record (Robert D. MacElroy, discussion leader): Paul Schimmel, "Structure and evolution of transfer RNA synthetases"; Carl Woese, "Structure in 16*S* ribosomal RNA." Round-table discussion: Secondary and tertiary structures of proteins and nucleic acids: Implications for evolution of recognition and translation mechanisms. Replication and translation—II. Model systems (David Usher, discussion leader): Leslie Orgel, "A chemical model for replication"; James C. Lacey, Jr., "Chemical models for coding and translation"; Donald M. Crothers, "Symmetry constraints on genetic coding."

24 August. Self-organization of living systems (Hyman Hartman, discussion leader): Peter Schuster, "Mechanism of polynucleotide evolution"; A. Graham Cairns-Smith, "Low-tech life forms." Round-table discussion: Sherwood Chang, "Problems and prospects for the future."

Posters accepted for session topics.

Particle-Solid Interactions

Holderness School

S. Thomas Picraux, chairman; Walter M. Gibson, vice chairman.

9 July. (J. A. Davies, discussion leader): C. Varelas, "Auger emission and structural studies"; J. R. MacDonald, "Orientation effects in ion induced auger." (J. E. E. Baglin, discussion leader): J. S. Williams, "Beam-induced chemistry due to electronic excitation."

10 July (I. Stensgaard, discussion leader): M. Aono "Low-energy ion scattering studies of surfaces"; R. M. Tromp, "Channeling and blocking at surfaces"; C. Cohen, "Scattering at steps on surfaces." (D. S. Gemmell, discussion leader): J. C. Kimball, "Crystal-assisted elementary processes"; K. Maier, "Pion decay blocking."

11 July. (P. Sigmund, discussion leader): M. K. Knotek, "Electron/photon induced particle emission"; N. Itoh, "Two-hole mechanisms of laser sputtering"; R. D. Macfarlane, "Ion-induced desorption." (B. R. Appleton, discussion leader): W. K. Chu, "Channeling and resonance effects in superlattice structures"; L. C. Feldman, "Ion scattering at interfaces."

12 July. (J. U. Andersen, discussion leader): Z. Vager, "Foil-excited Rydberg states"; K. Dybdal, "Capture and loss of inner shell electrons"; J. S. Briggs, "Capture phenomena." (E. Merzbacher, discussion leader): P. K. Haff, Particle interactions with planetary surfaces."

13 July. (N. H. Tolk, discussion leader): N. Winograd, "Emitted particles and laser excitation"; T. F. George. "Laser-enhanced charge transfer and resonance fluorescence"; D. M. Newns, "Ground and excited state formation by electron pickup at surfaces."

Photoconductivity and Related Phenomena

New Hampton School

M. Abkowitz, chairman; M. Wrighton, vice chairman.

18 June. (J. Tauc, discussion leader): B. Wilson, "Time-resolved photoluminescence in a-Si:H"; T. Orlowski, "Photogeneration mechanisms in molecularly doped polymers"; S. Rackovsky, "Theory of geminate recombination as a molecular process." (C. Graun, discussion

leader): J. Tauc, "Trapping and tunneling in amorphous semiconductors"; H. Bässler, "Time-dependent geminate pair dissociation and recombination in anisotropic and disordered systems."

19 June. (H. Scher, discussion leader): C. Braun, "Picosecond studies of time-resolved geminate recombination"; J. Perlstein, "Electric field dependent photogeneration properties of boron diketonate doped polymer films"; M. Silver, "Geminate recombination and high band mobility in a-Si." (M. Pope, discussion leader): T. McGill, "Man-made materials with tailored photoconductivity props"; M. Scharfe, "Optimal design of Xerographic photoreceptors."

20 June. (M. Abkowitz, discussion leader): D. Adler, "Density of localized states and defects in amorphous chalcogendies and silicon alloys"; C. H. Seager, "Polysilicon as a model for photoconductivity in polycrystalline semiconductors." (M. S. Wrighton, discussion leader): R. W. Murray, "Combining spatial and chemical design of polymer coated electrodes"; A. J. Bard, "On the design of integrated chemical systems for photoelectrochemistry."

21 June. (A. J. Bard, discussion leader): G. Woodall, "The use of photoelectrochemistry in Ga-As technology"; A. J. Nozick, "Novel aspects of semiconductor photoelectrodes and colloids." (Discussion leader to be announced); F. E. Williams, "Photoconduction, semiconduction, luminescence."

22 June. (R. C. Hughes, discussion leader): M. Kastner, "Photoconductivity as a spectroscopy of localized states"; J. Markovics, "Xerographic spectroscopy." (Discussion leader to be announced).

Photonuclear Reactions

(Dedicated to the memory of Dr. Peter Axel, University of Illinois, 1923–1983)

Holderness School

J. L. Matthews, chairman; J. L. Friar, vice chairman.

16 July. D. Sprung, "Recent advances in the deuteron problem"; G. Matone, "Disintegration of the deuteron with polarized photons"; W. W. Sapp, Jr., "Photodisintegration of the deuteron at intermediate energies"; D. Lehman, "Photonuclear reactions in few-body systems."

17 July. J. M. Cavedon, Electron scattering on few-body systems at high momentum transfer"; E. B. Shera, "Probing nuclear properties with muons"; J. Heisenberg, "Electron scattering from discrete nuclear states"; J. S. O'Connell, "Deep inelastic electron scattering"; E. Jans, "High-resolution (e,e'p) experiments."

18 July. A. Nathan, "Nuclear photon scattering"; U. Kneissl, "Recent results on photofission"; A. M. Saruis, "Theory of photonucleon knockout reactions"; "Theory of photopion production on nuclei"; T. Reichelt, "Pion photoproduction on ^{3}H and ^{3}He."

19 July. R. P. Redwine, "Photon-and pion-induced reactions in the delta region"; L. Ray, "Intermediate energy proton-nucleus scattering"; "Quark scaling and electron scattering"; E. Sayre, "Applications of nuclear techniques to fine arts and archeology."

20 July. S. Kowalski, "Polarized electron physics and polarized jet target technology"; N. deBotton, T. W. Donnelly, J. Friedrich, "Round-table discussion: Future possibilities in electro-magnetic nuclear physics."

Biochemical Aspects of Photosynthesis

Kimball Union Academy

Richard A. Dilley, chairman; Gerald Babcock, vice chairman.

20 August. Membrane structure, molecular (P. Loach, discussion leader): L. Bogorad, "Pigment proteins"; W. A. Cramer, "Structure of b cytochromes." G. Feher, K. Sauer, H. Zuber, W. Widger, S. Katoh. Supramolecular structure (D. W. Krogmann, discussion leader): L. Sherman, "Organization of membrane components"; C. Arntzen, "Thylakoid organization." J. Barber, R. Berzborn, E. Gantt, A. Staehelin, B. Anderson.

21 August. Proton gradients (P. H. Homann, discussion leader): J. Nagle, "Theory of proton transport"; B. A. Melandri, "Localized and delocalized proton gradients." Y. de Kouchkovsky, B. Jackson, W. Junge, S. Scheiner, S. Theg. Phosphorylation (E. Moudrianakis, discussion leader): P. Gräeber, "Electric fields and proton gradients in ATP formation"; D. Ort, "Initial events in ATP formation." R. Kraayenhof, M. Nishimura, U. Schreiber, Y. Shakak, W. Vredenberg.

22 August. Coupling factor (N. Shavit, discussion leader): G. Hammes, "Possible mechanisms for CF_1 function"; H. Strotmann, "Regulation between ATP synthesis and hydrolysis." C. Carmeli, P. Boyer, Z. Gromet-Elhanan, R. McCarty, P. Pederson, B. R. Selman. Photosystem II (G. Cheniae, discussion leader): G. Babcock, "Manganese and PS II function"; N. Murata, "Membrane proteins and PS II function." B. Diner, Y. Inoue, H. Akerlund, G. Renger, C. Yocum, S. Izawa.

23 August. Electron transfer, Q-cycles, P-515 (A. Trebst, discussion leader): G. Hauska, "Characterization of the cytochrome b/f complex"; J. Whitmarsh, "Electron transfer in the cytochrome b-FeS protein region"; A. Crofts, "Electron transfer and plastoquinones." G. Hind, W. H. Haehnel, P. Joliot, R. Malkin, P. Siegenthaler, A. W. Rutherford. (L. Dutton, discussion leader): C. Wraight, "Electron and proton transfer in bacteria." D. O'Keefe, P. Rich.

24 August. Regulation of thylakoid function (J. Bennett, discussion leader): P. Horton, "Protein kinases in chloroplast membranes"; I. Ohad, "Regulation of enzymatic activities in chloroplasts"; J. Biggins, "Regulation in algal systems." D. Kyle, J. P. Thornber, R. Vallejos, R. Herrmann, J. Briantais.

Physical Metallurgy

Proctor Academy

D. de Fontaine, chairman; W. Nix, vice chairman.

23 July. (B. L. Györffy, discussion leader): F. Ducastelle, "Ising model ground states of alloys and electronic structure"; F. Gautier, "Phase stability and local order in transition metal alloys, competition between magnetic and chemical interactions." (A. J. Freeman, discussion leader): J. S. Faulkner, "Alloy theory and applications"; A. Gonis, "Self-consistent cluster theories for substitutionally disordered alloys."

24 July. (R. Kikuchi, discussion leader): L. M. Falicov, "Theoretical studies of short-range order properties in binary alloys"; J. M. Sanchez, "Alloy phase equilibria: Beyond mean field." (J. W. Cahn, discussion leader): J. P. Gaspard, "Short-range order in alloys: A Monte Carlo approach"; F. Larche "Effect of stress on thermodynamics of alloys."

25 July. (T. Eguchi, discussion leader): W. Selke, "Long-period commensurate and incommensurate structures"; G. Van Tendeloo, "Long-period superstructures in alloys, an approach by electron microscopy." (T. Tsakalakos, discussion leader): K. Urban, "Spinodal ordering in Hi_4Mo and related alloys"; G. Martin, "Phase stability under irradiation: Ballistic and other effects."

26 July. (V. Vitek, discussion leader): N. Rivier, "The structure of glass from a topological viewpoint"; M. Kléman, "Structural properties in amorphous materials." (D. de Fontaine, discussion

Applications

Scientists are invited to submit applications for attendance at the Gordon Research Conferences. An application blank is on page 981 and may be submitted to Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, University of Rhode Island, Kingston, Rhode Island 02881.

leader): A. Guinier, "Simple science: What is essential in the structure of matter."

27 July. (S. C. Moss, discussion leader): H. Yamauchi, "Electron density functional approach to properties of metals and alloys"; J. de Hosson "Order-disorder transitions in ternary alloys."

Physical Organic Chemistry

Brewster Academy

Joseph J. Gajewski, chairman; Jordan J. Bloomfield, vice chairman.

11 June. (Joseph J. Gajewski, discussion leader): Maitland Jones, Jr., "Reaction of carbenes with strained sigma bonds"; Joseph B. Lambert, "When carbenes aren't carbenes"; John E. Baldwin, "Stereochemical studies of some hydrocarbon thermal rearrangements"; Thomas J. Barton, "Rearrangement of reactive intermediates in organosilicon chemistry"; Wolfgang R. Roth, "Hydrocarbon thermochemical kinetics."

12 June. (John B. Grutzner, discussion leader): David M. Grant, "Carbon-13 chemical shift tensors—a 3D look at the world of organic chemistry"; Jacob Schaefer, "Chemical bond labeling and double-cross polarization NMR"; Michael T. Melchior, "Characterization of complex solids by multinuclear high resolution NMR"; N. Y. Chen, "Acid catalysis by shape selective zeolites."

13 June. (John E. Bartmess, discussion leader): Nico M. M. Nibbering, "Mechanistic studies of organic ion/molecule reactions in the gas phase"; Terry B. McMahon, "Gas phase ion-solvent interactions"; William J. Middleton, "Chemistry of fluorocarbon anions." (Steven A. Benner, discussion leader): Peter B. Dervan, "Design of sequence specific DNA cleaving molecules"; Gary B. Schuster, "Piocosecond laser spectroscopic investigations of organic reactive intermediates."

14 June. (John E. Bartmess, discussion leader): Glenn A. Russell, "Nucleophilic substitution reactions involving electron transfer"; Mark G. Roelofs, "Mechanism of the Jensen oscillator: Catalyzed oxidation of benzaldehyde with dioxygen." (John T. Groves, discussion leader): Paul G. Gassman, "The use of ESCA in the characterization of stable and transient transition metal complexes."

15 June. (Jordan J. Bloomfield, discussion leader): John T. Groves, "Metal catalyzed activation of oxygen and nitrogen"; Steven G. Boxer, "Magnetic field effects and reaction mechanisms in photosynthesis."

Plant Molecular Biology

Proctor Academy

Robert B. Goldberg, chairman; Elaine M. Tobin, vice chairman.

11 June. Expression of foreign genes in transformed cells (Tim Hall, session chairman): Tim Hall, "Phaseolin expression in differentiated tobacco tissues transformed via Ti-plasmid vectors"; Rob Fraley, "Introduction, inheritance, and expression of foreign genes in plants"; Jeff Schell, "Expression of foreign genes in plants"; Michael Bevan, "A new vector molecule for gene expression in plant cells." Molecular biology of *Agrobacterium* plasmids (Eugene Nester, session chairman): Eugene Nester, "Genes controlling interaction of agrobacteria with plant cells"; Rob Schilperoot, "Studies of the Ti-plasmid based binary plant vector system"; Stan Gelvin, "Transfer and integration of the Ti plasmid"; Marc Van Montagu, "Ti-plasmid mediated gene transfer."

12 June. Molecular biology of viroids and viruses (Tom Guilfoyle, session chairman): Tom Guilfoyle, "In vitro transcription and replication of the CaMV genome in nuclear lysates"; George Bruening, "Processing of the multimeric forms of satellite RNA of tobacco ringspot virus"; Heinz Sanger, "Relationship between viroid structure and pathogenicity and its functional implications"; Bob Symons, "Comparative replication of viroids, virusoids, and satellite RNA's." Molecular biology of organelle genomes. (Sam Levings, session chairman): Sam Levings, "Transcription in maize mitochondria"; David Lonsdale, "The structure of maize mitochondrial genomes"; Lawrence Bogorad, "Maize plastid genes and their expression"; Chris Sommerville, "In vitro mutagenesis of RuBP carboxylase."

13 June. Structure and expression of genes involved in nitrogen fixation (Desh Pal Verma, session chairman): Desh Pal Verma, "Regulation of soybean nodulin genes"; Sharon Long, "*Rhizobium* genes required for host plant infection"; Fred Ausabel, "Control of symbiotic genes"; John Shine, "Nitrogen-fixation gene structure and expression." Gene expression in plant development (Bob Goldberg, session chairman): Bob Goldberg, "Organization and expression of soybean seed protein genes"; Ralph Quatrano, "Regulation of gene expression during cereal grain maturation"; Bill Park, "Regulation of potatin genes in potato"; Leon Dure, "Gene sets expressed in cotton seed embryogenesis."

14 June. Light regulation of gene expression (Elaine Tobin, session chairman): Elaine Tobin, "Phytochrome control of plant gene expression"; Peter Quail, "Autoregulation of phytochrome gene expression"; Bill Taylor, "Mechanisms of light regulation in maize"; Nam-Hai Chua, "Light-regulation of a pea carboxylase gene in transformed cells." Nuclear gene structure and function (Brian Larkins, session chairman): Brian Larkins, "Regulation of zein gene expression"; Richard Flavell, "Genetic variation within wheat multigene families"; Richard Meagher, "Organization of soybean actin genes"; Joe Key, "Organization and expression of soybean heat shock genes."

15 June. Mobile genetic elements (Michael Freeling, session chairman): Michael Freeling, "Transposition of Mul sequences in maize"; Heinz Saedler, "Transposable elements in *Antirrhinum majus*"; Steven Evola, "The nature of tissue culture induced mutation in maize"; Sam Kelly, "Transposable elements in maize."

Plant Senescence

Holderness School

Larry D. Noodén, chairman; John E. Thompson, vice chairman.

6 August. General perspectives (John Harper, discussion leader): Richard Gruelich, Brian Chabot, Richard C. Harwick. Metabolic regulation (Vern Wittenbach, discussion leader): Urs Feller, Kenneth V. Thimann.

7 August. Membranes and cell organization (Judith St. John, discussion leader): Phillips Matile, John E. Thompson, Howard Thomas. Molecular biology (James Baker, discussion leader): Colin Brady, Harold Woolhouse.

8 August. Whole plant senescence (Larry Noodén, discussion leader): John Pate, Peter Davies, Peter Neumann.

Seed aging (James Anderson, discussion leader): Daphne Osborne, James Priestley.

9 August. Comparative aspects—senescence and stress (Meryl Christiansen, discussion leader): Peter J. Quinn, Guy Thompson, Shimon Mayak. Forum on key issues (Harold Woolhouse and Shang Fa Yang, organizers).

10 August. Practical applications (Louis Nickell, discussion leader): Abraham Halevy, B. W. Poovaiah, Roger Romani.

Tuesday a.m.–Thursday p.m. poster session. All participants are encouraged to contribute posters.

Plasma Chemistry

Tilton School

Terry A. Miller, chairman; Ward Roman, vice chairman.

13 August. Fundamental plasma processes (P. Fauchais and Y. Horiike, discussion leaders): Emil Pfender, "Overview of the scientific base in thermal plasmas"; Art Phelps, "Electron collisions with gases of interest to plasma processing." Diagnostics (R. Saykally and W. Lindinger, discussion leaders): Alan Eckbreth, "Optical diagnostics applicable to thermal plasmas"; Richard Gottscho, "Diagnostics in RF plasmas."

14 August. Ions in plasmas and on surfaces (K. Miyake and J. Schmitt, discussion leaders): S. Matsuo, "Ions and Plasmas"; Norm Tolk, "The interaction of electrons, ions, and photons with surfaces." Solidification and deposition (M. Boulos and B. Waldie, discussion leaders): Paul Siemers, "Rapid solidification and plasma deposition for fabrication of metal structures"; Diran Apelian, "Melting and solidification phenomena in rapid solidification and plasma deposition."

15 August. Plasma synthesis/processing (D. McRae and C. B. Zarowin, discussion leaders): Stan Veprek, "Plasma chemistry of the silicon hydrogen system vis à vis the properties of deposited films"; Richard Munz, "Recent developments and trends in thermal plasma chemical processing." Nontraditional etching and deposition (R. Osgood and V. Donnelly, discussion leaders): J. Cook, "Plasma-less etching"; P. Hargis, "Laser plasma etching of semiconductor materials"; R. Srinivasen, "Ablative photodecomposition of organic polymers by UV laser radiation."

16 August. Large-scale thermal plasmas (T. Meyer and D. Tuma, discussion leaders): N. A. Barcza, "Design and application of large-scale thermal plasma reactors in the field of pyrometallurgy"; J. Szekeley, "Thermal plasma reactor modeling."

17 August. Symposium on F,F_2, XeF_2 etching (G. Turban, discussion leader): panelists: D. Flamm, R. d'Agostino, A. E. deVries, F. Houle, J. Mucha, I. Plumb, K. Suzuki.

Polymer Physics

Proctor Academy

E. A. DiMarzio, chairman; H. Yu, vice chairman.

16 July. Tests of reptation (E. A. DiMarzio, discussion leader): W. W. Graessley, "Viscoelasticity via reptation"; K. Kremer, "Computer modeling of reptation." (A. J. Kovacs, discussion leader): M. F. Schlesinger, "Nonexponential decay in glasses: Intermittent diffusion reaction model"; C. W. Frank, "Experimental fluorescence methods for following dynamics of polymers."

17 July. Poster session. Crack formation and healing (E. Passaglia, discussion leader): E. J. Kramer, "Crack and craze formation"; R. P. Wool, "Crack healing."

18 July. Polymer adsorption (K. Binder, discussion leader: J. M. H. M. Scheutjens, "Theoretical and experimental results on selective adsorption from polymer solutions"; A. Takahashi, "Experimental study of adsorption of macromolecules on surfaces." Polymer interface problems (E. Helfand, discussion leader): P. Pincus, "Theory of surfaces"; M. Tirrell, "Measurement of forces between polymer surfaces."

19 July. Crystal-amorphous interface (H. G. Zachmann, discussion leader): M. Mansfield, "Computer modeling of crystal-amorphous surface"; D. Y. Yoon, "Molecular morphology and interphase chain packing in semicrystalline polymers." Block copolymer/spinodal decomposition (I. C. Sanchez, discussion leader): J. Noolandi, "Surfactant activity of block copolymers"; H. L. Snyder, "Phase separation dynamics."

20 July. Exactly solvable problems in polymers (H. Yu, discussion leader): M. Muthukumar, "Exact results on single self-avoiding chain statistics"; F. W. Wiegel, "Entanglements in polymers: Some exact solutions and computer simulations."

Polymers

Colby-Sawyer College (N)

F. E. Bailey, chairman; N. M. Bikales, vice chairman.

2 July. (L. W. Shacklette, discussion leader): D. L. Venezky, "Electroactive polymers: Past, present and future"; F. Wudl, "Recent advances in conducting and nonconducting polymers." (E. M. Pearce, discussion leader): N. Ogata, "New electron and ion conductive polymers derived from polycondensation reactions."

3 July. (G. E. Wnek, discussion leader): R. L. Elsenbaumer, "Developments in conducting polymers;" C. T. White, "Properties of electroactive polymers explained and predicted by theoretical treatments." (B. C. Anderson, discussion leader): W. R. Hertler, "Group transfer polymerization"; D. S. Breslow, Richard P. Geer, Harry W. Blunt, "New RIM system based on dicylopentadiene."

4 July. (R. M. Ottenbrite, discussion leader): B. M. Culbertson, "Oxazoline monomers and polymer formation reactions"; L. D. Taylor, "Synthesis and solution properties of a variety of different water-soluble polymers." (S. J. Huang, discussion leader): E. J. Vandenberg, "Polymerization of glycidol and its derivatives: A new rearrangement polymerization"; D. C. Neckers, "Polymer-based sensitizers for photooxidations.

5 July. (S. C. Israel, discussion leader): C. D. Eisenbach, "Fluorescent polymers: Influence and implication of polymer structure and dynamics on the spectral behavior of fluorescent dye molecule"; M. J. Bowden, "Chemistry of resist materials for fine-line lithography"; D. J. Williams, "Polymeric materials with large optical nonlinearities." (O. Vogl, discussion leader) H. J. Cantow, "Synthesis and C-13 NMR characterization of medium and large rings, their identifiable conformation and their relation with the re-entry model of single crystal polyethylene."

6 July. (N. M. Bikales, discussion leader): M. T. Raetzch, "Continuous thermodynamics of polymer mixtures; G. Allegra, "Solution dynamics of polystyrene and polydimethylsiloxane: A rigid and a flexible chain. Comparison with neutron scattering results."

There will be a poster session chaired by N. M. Bikales on Monday at 4:00 p.m., 2 July.

Proteoglycans

Plymouth State College (N)

Klaus E. Kuettner, chairman; Vincent C. Hascall, vice chairman.

11 June. Structure (Lawrence Rosenberg, discussion leader): Dick Heinegard, "Classes of proteoglycans"; Tim Hardingham, "Interactions of proteoglycans"; Ted Oegema, "Phosphorylation

of proteoglycans." Core protein (John Gregory, discussion leader): James Christner, "Cyanogenbromide peptides from cartilage proteoglycans"; Jean Pierre Perin, "Sequence from core protein of cartilage proteoglycans"; Charles (Harold) Pearson, "Protein core of dermatan-sulfate proteoglycans."

12 June. Biosynthesis (Nancy Schwartz, discussion leader): James Kimura, "Synthesis of cartilage proteoglycan"; Koji Kimata, "Proteoglycans in chick limb bud differentiation"; Peter Prehm, "Mechanisms of hyaluronate biosynthesis"; Roger Mason, "Regulation of hyaluronate biosynthesis." Morphology and immunology (Eugene Thonar, discussion leader): Ernst Hunziker, "Ultrastructure of proteoglycan in cartilage"; Robin Poole, "Immunocytochemistry of proteoglycans in cartilage"; Bruce Caterson, "Monoclonals of proteoglycans in cartilage."

13 June. Heparin/heparan sulfate proteoglycans (Lennart Roden, discussion leader): Magnus Hook, "Cell surface heparan sulfate proteoglycan"; Masaki Yanagishita, "Intracellular metabolism"; Ulf Lindahl, "Biosynthesis of heparin." Heparan sulfate in cell biology (Richard Stevens, discussion leader): Richard Margolis, "Proteoglycans in nervous tissue"; Regis Kelly, "Proteoglycans in secretory vesicles and synapsis."

14 June. Noncartilage proteoglycans (Arnold Caplan, discussion leader): Anders Malmstrom, "Small dermatan-sulfate proteoglycan"; John Hassell, "Corneal proteoglycan"; Tom Wight, "Smooth muscle proteoglycans." Proteoglycans in arthritic disease (Vincent Hascall, discussion leader): (Karl Meyer, honorary chairman), Helen Muir.

15 June. Proteoglycan metabolism (workshop) (Dennis Lowther, discussion leader): Jennifer Tyler, "Catabolism"; Christopher Handley, "Regulation."

Abstract for poster session or short paper discussion presentations should be sent to: Vincent C. Hascall, Ph.D., NIH-NIDR, Building 30, Room 106, Bethesda, Maryland 20205 *before* 1 May 1984.

Proteolytic Enzymes and Their Inhibitors

Plymouth State College (S)

Aaron Janoff, chairman; Elliott N. Shaw, vice chairman.

18 June. Sequence of renin (T. Inagami, discussion leader): T. Blundell, "Three-dimensional structure of aspartyl proteinases"; M. N. G. James, "Aspartic proteinase binding and proteinase inhibitors: Towards a catalytic mechanism"; D. Rich, "Synthetic and mechanistic studies of tight-binding enzyme inhibitors." Mechanistic differences between serine and thiol proteinases (L. Polgar, discussion leader): R. Abeles, "Enzyme-activated synthetic inhibitors of proteases"; E. Shaw, "New types of synthetic inhibitors for thiol proteases"; M. Zimmerman, "Approaches to the design of irreversible inhibitors of leukocyte elastase"; J. C. Powers, "Mechanism-based inhibitors of leukocyte elastase and other serine proteases."

19 June. New approaches for quantifying plasma proteinase inhibitor-proteinase complexes (P. C. Harpel, discussion leader): R. D. Feinman, "Alpha 2-macroglobulin update"; J. C. Travis, "Mechanism of action of the alpha l-proteinase inhibitor class of plasma antiproteinases"; J. Bieth, "Regulation of proteolytic activity by protein proteinase inhibitors: Theoretical and experimental findings." Protein inhibitors of cysteine proteinases (A. Barrett, discussion leader); M. Laskowski, "Relationship between amino acid sequence and inhibitory activity of proteinase inhibitors"; D. D. Cunningham, "Protease nexins: Cell-secreted proteins which mediate binding, uptake and degradation of serine proteases."

20 June. Recent developments in the field of coagulation (C. M. Jackson, discussion leader): A. Kaplan, "Initiation of intrinsic coagulation-kinin pathway in man"; J. Stenflo, "Protein "C": A new regulator of clotting"; M. K. Pangburn, "Unique mechanisms of protease formation and inhibition in the alternative pathway of complement." Role of plasminogen activator in ovulation and embryo implantation (S. Strickland, discussion leader): D. Collen, "Tissue-type plasminogen activator: Biological and thrombolytic properties"; L. Ossowski, "Role of plasminogen activator in metastasis."

21 June. (A. Janoff, discussion leader): T. Murachi, "Calcium-activated thiol proteinases"; J. Larner, "Proteases as secondary messengers"; A. Hershko, "The ATP-ubiquitin pathway of intracellular protein catabolism"; P. Wolfe, "Structure of leader peptidase from *Escherichia coli*." Hormonal processing (E. Reich, discussion leader): A. C. Palmenberg, "Proteolytic processing of picornaviral polyprotein"; J. McKelvy, "Processing of neuropeptides in the central nervous system"; D. F. Steiner, "Summarizing commentator."

22 June. Recombinant DNA techniques: Applications to proteinase biology (G. Long, discussion leader): S. L. C. Woo, "Human alpha l-proteinase inhibitor genes"; W. J. Rutter, "Redesigning proteins: site-directed in vitro mutagenesis of serine protease genes."

Pulmonary Biology

Plymouth State College (S)

Jerome S. Brody, chairman; Peter H. Henson, vice chairman.

Cell-Cell Interactions

23 July. (David M. Center, discussion leader): David M. Center, "Chemoattraction of lymphocytes"; Dean D. Metcalfe, "Mast cell modulation of lymphocyte effector function." Poster session. Sharon Wahl, "Lymphocyte modulation of fibroblast function"; Steven D. Rosen, "Lectins as modulators of cell-cell adhesion."

24 July. (Peter H. Hensen, discussion leader): Una S. Ryan, "Endothelial modulation of inflammatory cell traffic"; Marcia Tonneson, "Neutrophil-endothelial interactions"; Michael A. Gimbrone, Jr., "Lymphocyte-endothelial interactions." Poster session. Stephen M. Schwartz, "Endothelial-smooth muscle interactions"; Siamon Gordon, "Cell surface markers and macrophage biology."

25 July. (Charles D. Scher, discussion leader): Manjusri Das, "Transfer of epidermal growth factor receptors: biology and applications"; David A. Clemmons, "Biosynthesis of a somatomedin-like peptide by human fibroblasts"; Peter Bitterman, "Modulation of lung fibroblast proliferation by growth factors." Poster session. Charles D. Scher, "Regulation of BALB/C-3t3 cell by the platelet derived growth factor." Special topic: Jacob Finkelstein, "The wines of New York—wine tasting."

26 July. (Barry T. Smith, discussion leader): Brad Benson, "Surfactant approtein"; Leonard Pinsky, "Sex differences in lung maturation"; Harold C. Slavkin, "Cell interactions in lung maturation." Poster session.

27 July. (Jerome S. Brody, discussion leader): Brian S. Spooner, "Involvement of proteoglycans in salivary gland morphogenesis"; Max S. Wicha, "Matrix modulation of mammary epithelial differentiation."

Purines, Pyrimidines and Related Compounds

Plymouth State College (N)

Yung-chi Cheng, chairman; Leroy B. Townsend, vice chairman.

Introduction: J. Montgomery.

23 July. New developments in the

An application blank for attendance at the Gordon Research Conferences may be found on page 981. A summary of the program is on pages 962 and 963.

chemistry and biochemistry of purines and related compounds. (Discussion leader, R. E. Parks, Jr.): W. Pfleiderer, P. Arogs, "Finding structural similarity without the aid of sequence homology with a concentration on nucleotide binding domains"; L. L. Bennett, Jr., "Developments in purine biochemistry related to the mode of action of analogs."

Poster session–posters will be attended from 7:30 to 9:30 p.m. and then remain on display until the Wednesday evening poster session.

24 July. New developments in the chemistry and biochemistry of pyrimidines and related compounds. (Discussion leader, J. J. Fox): A. Weiss, T. Traut, "Regulation of enzymes in pyrimidine metabolism by ligand induced change in polymerization"; R. E. Handschumacher, "Pyrimidine nucleoside metabolism: Some new physiological and pharmacological manipulations."

New developments in the chemistry and biochemistry of nucleotides and polynucleotides. (Discussion leader, J. Moffatt): M. Ikehara, "Synthesis and expression of genes for some proteins"; P. Torrence, "The current status of research on the 2′,5′-oligoadenylate system"; P. S. Miller, "Inhibition of nucleic acid function by oligonucleoside methylphosphonates."

25 July. New nucleoside analogs under clinic try for cancer chemotherapy. (Discussion leader, R. K. Robins): W. Plunkett, "Metabolism, action, and clinical experience of 2-floro-ara-A"; David Cooney, Linda Wotring (subject to be announced). Old anticancer nucleoside analog, new visit. (Discussion leader, Bruce Chabner): E. Cadman, "How are fluoropyrimidines cytotoxic?" D. Kufe, "Ara C."

26 July. Current progress in antiparasitic chemotherapy. (Discussion leader, G. Elion): C. C. Wang, "Purine and pyrimidine metabolism in trichomonas and giardia; potential targets for chemotherapy"; T. Krenitsky, "Nucleoside analogues as antoparasitic agents."

Current status of analytical methods and techniques (NMR, MS, HPLC, and so forth) in the purine and pyrimidine field. (Discussion leader, K. Schram): C. Bugg, S. Ealick, "Three-dimensional structure of human erythrocytic purine nucleoside phosphorylase"; J. McCloskey, "Current finding on the use of fast-atom bombardment (FAB) and liquid chromatography–mass spectrometry (LC-MS) of nucleosides and nucleotides."

27 July. Current progress in antiviral chemotherapy. (Discussion leader, E. DeClercq): W. Prusoff, J. Drach, J. Verheyden (discussion to be announced).

Chemistry and Biology of Pyrroles

Colby-Sawyer College (S)

Kevin M. Smith, chairman; Shigeru Sassa, vice chairman.

6 August. Porphyrins in therapy (Martha Kreimer-Birnbaum, chairman): Thomas J. Dougherty, "Photodynamic therapy of cancer"; Neville R. Pimstone, "Tumor localization of uroporphyrin." Porphyrins in disease (Michael R. Moore, chairman): James P. Kushner, "Genetic polymorphism and gene-gene interactions in porphyria cutanea tarda"; William O. Whetsell, Jr., "Phorphyrin-heme biosynthesis in organotypic cultures of mammalian nervous tissue"; David Green, "Hematin coagulopathy."

7 August. Porphyrin and metalloporphyrin chemistry (Anthony H. Jackson, chairman): Alan L. Balch, "Reactions of metals with *N*-substituted and *N,N′*-disubstituted porphyrins"; Hisanobu Ogoshi, "Perfluoroalkylporphyrins and their metal complexes"; Michel Momenteau, "Chemical controlled axial coordination in iron porphyrins." Photosynthetic pigments (Stanley B. Brown, chairman): Raymond J. Abraham, "Porphyrin anisotropy in NMR as a geometrical probe: Applications to structure and complexation phenomena involving metalloporphyrins and chlorophylls"; Samuel I. Beale, "Biosynthesis of bilins in plants and algae"; Wolfhardt Rudiger, "Photochemistry of the tetrapyrrole moiety of phytochrome."

8 August. Heme proteins: Mode of action (David Dolphin, chairman): John T. Groves, "Reactive metalloporphyrin species related to peroxidase and cytochrome P450"; Lowell P. Hager, "Chemistry of peroxidase compound I"; William Orme-Johnson, "Mechanistic aspects of steroid hydroxylation by cytochrome P450." Reconstituted heme proteins (Teddy G. Traylor, chairman): Gerd N. LaMar, "Mechanism of the heme-apoprotein reaction and the role of transitory and equilibrium heme rotational disorder in b-type hemoproteins"; M. Almira Correia, "Structural and functional reconstitution of hepatic cytochrome P450"; Takashi Yonetani, "Cobalt porphyrin–substituted hemoglobin."

9 August. Enzymes on the biosynthetic pathway—I (Rosalia B. Frydman, chairman): George H. Elder, "Uroporphyrinogen decarboxylase: normal and abnormal forms"; Gerald S. Marks, "Inhibition of ferrochelatase by dihydropyridines and other heteroaromatic compounds"; Andrew G. Smith, "Hepatic porphyria induced in inbred mouse strains by hexachlorobenzene and 2,3,7,8-tetrachlorodibenzo-*p*-dioxin." Enzymes on the biosynthetic pathway—II (Shigeru Sassa, chairman): Mohinder K. Sardana, "Tryptophan pyrrolase: its function and the role in heme metabolism"; James R. Mattoon, "Use of recombinant DNA in investigating biosynthesis of porphyrins and heme proteins."

10 August. Heme breakdown (Goro Kikuchi, chairman): Ann Smith, "Heme transport to the liver"; Seiyo Sano, "Reaction mechanism of the enzymic or chemical oxidation of α-meso-oxyprotohemin-IX to biliverdin-IXα"; Benjamin Frydman, "The bilverdin-reductase isozymes: Substrate specificity and properties."

Poster sessions. In charge: Shigeru Sassa, The Rockefeller University Hospital, 1230 York Avenue, New York 10021-6399.

Quantum Solids

Tilton School

M. Brian Maple, chairman; Patrick A. Lee, vice chairman.

23 July. (T. H. Geballe, discussion leader): F. Steglich, "Superconductivity of $CeCu_2Si_2$"; Z. Fisk, "Heavy fermion superconductivity of uranium compounds"; P. Fulde, "Superconductivity in Kondo Lattice systems." (P. B. Allen, discussion leader): H. R. Ott, "Heavy electrons in metals"; C. M. Varma, "Theory of heavy fermion superconductivity."

24 July. (Discussion leader to be announced). S. von Molnar, "Magnetic field driven metal-insulator transition"; G. A. Thomas, "Metal-insulator transition in phosphorus doped silicon"; M. Ma, "Theory of metal-insulator transition." (M. Tachiki, discussion leader): W. J. L. Buyers, "Neutron studies of moment suppression and spin relaxation in magnetic and superconducting actinide systems"; P. Coleman, "Large degeneracy approach to the mixed valence problem."

25 July. (Discussion leader to be announced): R. C. Dynes, "Metal-insulator transitions in alloys"; A. F. Hebard, "Superconductivity in highly disordered thin films"; H. Fukuyama, "Theory of disordered superconductors." (D. J. Scalapino, discussion leader): L. J. Sham, "Superconducting transition temperatures for non-phonon mechanisms"; J. Hirsch, "Superconductivity through an excitonic mechanism: numerical simulation studies."

26 July. (B. D. Dunlap, discussion leader): B. Batlogg, "Anomalous superconducting behavior of $Ba(Pb,Bi)O_3$"; I. Schuller, "Superconductivity and artificial superlattices"; P. M. Chaikin, "High magnetic field anomalies in quasi-one dimensional organic systems." (Discussion leader to be announced): K. Von Klitzing, "Current status of the quantized Hall effect."

27 July. (D. Haldane, discussion leader): D. C. Tsui, "Fractional quantized Hall effect-experiment"; R. B. Laughlin, "Theory of quantized Hall effect"; B. I. Halperin, "Theory of quantized Hall effect."

Radiation Chemistry

Brewster Academy

R. W. Fessenden, chairman; M. C. Sauer, Jr., vice chairman.

25 June. (R. A. Holroyd, discussion leader): C. L. Braun, "Picosecond geminate charge pair recombination"; W. F. Schmidt, "Photoconductivity of nonpolar liquids and solutions induced by UV light." (J. M. Warman, discussion leader): S. Lipsky, "Ionizing transitions in nonpolar liquids."

26 June. (L. M. Dorfman, discussion leader): N. V. Klassen, "Pulse radiolysis studies of (non-aromatic) hydrocarbon cations." (D. C. Walker, discussion leader): Y. Tabata, "Study of ionization and excitation of hydrocarbons using a new picosecond pulse radiolysis system." (J. L. Magee, discussion leader): J. A. Laverne, "Radiation chemistry studies of track effects with ^{7}Li, ^{9}Be, ^{11}B and ^{12}C ions."

27 June. (M. D. Newton, discussion leader): J. R. Miller, "Electron tunneling in glasses and liquids." (P. W. Percival, discussion leader): R. G. Lawler, "Concentration effects in ESR spectra of transient radicals." (S. Gordon, discussion leader): G. N. R. Tripathi, "Time-resolved resonance Raman spectroscopy of free radicals and excited states"; R. Wilbrandt, "Resonance Raman spectroscopy of excited states and free radicals."

28 June. (P. Neta, discussion leader): P. Wardman, "Redox properties of free radicals and the kinetic consequences." (D. Meisel, discussion leader): A. Harriman, "Catalyzed decay of porphyrin radical cations in aqueous solution." (M. C. Sauer, Jr., discussion leader): Poster session.

29 June. (J. F. Ward, discussion leader): D. Schulte-Frohlinde, "Chemistry of radiation-induced cell death." (M. A. J. Rodgers, discussion leader): W. A. Bernhard, "The uses of single crystal ESR to predict free radical events in the solid state radiation chemistry of DNA."

Radical Ions

Brewster Academy

Francon Williams, chairman; Paul J. Krusic, vice chairman.

18 June. (Glen A. Russell, discussion leader): Timothy Clark, "The molecular orbital theory of radical ions and their reactivity"; Martyn C. R. Symons, "Radical cations: A survey"; Athelstan L. J. Beckwith, "Applications of *o*-alkenylaryl radicals as mechanistic probes." (Stephen W. Feldberg, discussion leader): Jean-Michel Savéant, "Electron transfer induced reactions. The electrochemical approach"; Marye Anne Fox, "Generation of radical cations on surfaces."

19 June. (Cheves Walling, discussion leader): Joseph F. Bunnett, "Reactions initiated and terminated by solvated electrons"; Michael Szwarc, "Recombination of radical anions and fate of solvated electron-cation pairs"; J. C. Martin, "Ligand structure and reactivity of open shell nonmetallic species." (Robert C. Dunbar, discussion leader): W. Carl Lineberger, "Laser spectroscopy of gas phase radical anions"; Richard J. Saykally, "Laser absorption spectroscopy of molecular ions."

20 June. (Tadamasa Shida, discussion leader): Lon B. Knight, Jr., "Generation and trapping of radical cations in rare gas matrices at 4 K"; Edwin Haselbach, "Photochemistry of radical ions"; Machio Iwasaki, "Structures and reactions of radical cations of alkanes and related compounds in low temperature matrices." (Hans Bock, discussion leader): Keith F. Preston, "Paramagnetic transition metal carbonyls"; Theodore L. Brown, "Physical properties and reactivity patterns among transition metal carbonyl radicals."

21 June. (Henry J. Shine, discussion leader): James V. Crivello, "The photochemical generation of cation radicals and their use in cationic polymerization"; Hans Bock, "One-electron transfer reactions under aprotic conditions"; Jane E. Frommer, "Conducting polymeric solids and solutions." (Paul J. Krusic, discussion leader): Contributed papers.

Conferees wishing to submit papers for the short talks and poster sessions should forward the title and abstract of each contribution to Paul J. Krusic, Central Research Department, Experimental Station, E. I. du Pont de Nemours & Company, Inc., Wilmington, Delaware 19898.

22 June. (Jack Fajer, discussion leader): Klaus Möbius, "Electron-nuclear multiple resonance detection and characterization of short-lived radicals in photobiology and photochemistry"; James R. Norris, "Paramagnetic events in the initial steps of the photosynthetic process."

Chemicals and Materials from Renewable Resources

Brewster Academy

Rajai H. Atalla, chairman; Robert C. Eckert, vice chairman.

2 July. (A. D. French, discussion leader): D. L. VanderHart, "Solid state ^{13}C NMR spectra of celluloses"; M. Takai, "A new look at the chain polarity problem of cellulose." (D. L. VanderHart, discussion leader): J. St. John Manley, "The ultrastructure of cellulose fibers: Some new aspects."

3 July. (D. Delmer, discussion leader): J. P. Joseleau, "Plant cell wall polysaccharides"; N. S. Thompson, "Recent developments in hemicellulose utilization." (W. Lonsky, discussion leader): D. Sebera, "Current problems in conservation of cellulosic materials."

4 July. (S. Hosoya, discussion leader): H. Nimz, "The isolation of lignins from wood"; D. Robert, "Structural ^{13}C NMR studies of lignin and lignin-like materials from flash autohydrolysed wood." (T. Kirk, discussion leader): H. Chum and D. Dimmel, "Electron transfer reactions in lignin and pulping chemistry."

5 July. (R. C. Eckert, discussion leader): T. K. Kirk and H. M. Chang, "Chemistry and biochemistry of fungal degradation of lignin"; G. J. Leary, "Morphological distribution of lignin." (J. St. John Manley, discussion leader): R. H. Atalla, "Symmetry and form in plants."

6 July. (D. C. Johnson, discussion leader): G. Meshitsuka, "Structural inhomogeneity of lignin in wood cell walls"; J. L. McCarthy and J. F. Yan,

"Depolymerization of lignins; theory and experiment."

A poster session will be held 3 July; abstracts should be submitted to R. H. Atalla, The Institute of Paper Chemistry, P.O. Box 1039, Appleton, Wisconsin 54912. A special fund will be available for support of participation by selected junior investigators.

Separation and Purification

Colby-Sawyer College (N)

Carel J. van Oss, chairman; George E. Keller II, vice chairman.

13 August. Chromatographic separations (Csaba Horvath, discussion leader): Georges Guiochon, "Preparative scale chromatography, theory and practice"; Phyllis Brown, "Ion-pair chromatography of nucleotides"; Brian Bidlingmeyer, "Advances in HPLC"; Zone melting: Eli Grushka, "Regelation zone melting."

14 August. Membrane separations I, novel applications of solid membranes (Eli Ruckenstein, discussion leader): Cees A. Smolders, "Pervaporation of alcohol-water mixtures"; H. Strathmann, "Electrodialysis with bipolar membranes"; Leonard T. Hodgins, Harry Gregor, "Evaluation and properties of novel hydrophillic membranes." Membrane separations II, liquid membranes: Reed Izatt, "Facilitated transport of cations in liquid membranes"; Richard Noble, "Gas separation through liquid membrane-containing carriers."

15 August. Separation by destabilization of bubbles or particles (Douglas Fuerstenau, discussion leader): Douglas Fuerstenau, "Small particle flotation methods"; Joseph D. Henry, Jr., "novel approaches in particle removal from nonaqueous liquids"; Felix Sebba, "Bubble entrained floc flotation." Extraction with supercritical fluids: (James Christensen, discussion leader): James Christensen, "Supercritical fluids: Thermodynamics of mixing near the critical point"; Ray Robey, "Development of industrial processes with supercritical fluids, applied to foods and natural products."

16 August. Electrophoretic separations at one and zero G (Robert Snyder, discussion leader): Robert Snyder, "Zero G electrophoresis: Applications and spin-offs"; Wayne Lanham, "Zero G electrophoretic separations during recent shuttle flights"; Milan Bier, "Scaling-up of isoelectric focusing." Distillation (Robert Long, discussion leader): James Fair, "New developments in distillation practice."

17 August. Adsorption (Judson King, discussion leader): Judson King, "Recovery of polar organics from aqueous solution by solvent-regenerated adsorption"; John D. Sherman, "New applications of molecular sieves for bulk liquid separations."

Solid State Chemistry

Plymouth State College (N)

Hugo F. Franzen, chairman; Donald Murphy, vice chairman.

6 August. (J. Longo, discussion leader): A. Jacobson, "Chemical modification of layered transition metal oxides"; A. Wold, "Preparation and characterization of transition-metal compounds for Fischer-Tropsch reduction of CO"; M. Greenblatt, "Preparation and electronic properties of quasi two-dimensional molybdenum bronzes." (J. Greedan, discussion leader): W. Worrell, "Solid electrolytes and electrochemical sensors"; W. Weppner, "Kinetics in ternary systems."

7 August. (H. Wiedemeier, discussion leader): H. G. von Schnering, "New aspects on zintl polycompounds"; W. Bronger, "The correlation between crystal structure and magnetic properties of ternary metal chalcogenides"; R. McCarley, "Metal clusters in metal oxide systems." (J. Corbett, discussion leader): G. Stucky, "Chemistry of open framework materials"; R. Haushalter, "New amorphous metallic spin glasses from the oxidation of zintl anions."

8 August. (N. Bartlett, discussion leader): F. DiSalvo, "Properties of ternary compounds containing early transition metals"; P. Day, "Neutron scattering and optical spectroscopy on ionic ferromagnets"; J. Rouxel, "New low dimensional compounds in the field of transition metal chalcogenides." (J. Honig, discussion leader): F. Jellinek, "Copper-containing sulfides and selenides"; C. Haas, "Studies of the chemical bond in solids by photoelectron spectroscopy."

9 August. (A. Cheetham, discussion leader): M. O'Keeffe, "Oxide crystal chemistry"; B. Hyde, "An alternative novel view of some ionic-mineral crystal structures"; L. Eyring, "Chemical reactions in thin films at interfaces." (D. Murphy, discussion leader): Short contributions.

10 August. (D. Cahen, discussion leader): B. Parkinson, "Solid state information from photoelectrochemical measurements"; A. Ellis, "Luminescent properties of semiconductor electrodes."

Statistics in Chemistry and Chemical Engineering

New Hampton School

Park M. Reilly, chairman; Robert G. Easterling, vice chairman.

30 July. (J. S. Hunter, discussion leader): G. E. P. Box, "Experimental design in quality improvement"; (J. F. Lawless, discussion leader): R. D. Cook, "Regression diagnostics with nonlinear models."

31 July. (D. W. Bacon, discussion leader): G. E. Blau, C. N. Park, "Statistical interfaces in the development of new agricultural products"; (John Bailar, discussion leader): John van Ryzin, "Recent results in dose response modeling with applications to risk assessment."

1 August. (J. F. MacGregor, discussion leader): C. M. Crowe, "Reconciliation of chemical process flow rate measurements"; (Hermann Sahrmann, discussion leader): D. M. Bates, D. G. Watts, "Improved estimation procedures for multi-response kinetic models."

2 August. (Lewis Sheiner, discussion leader): Darryl Katz, "Implementation and evaluation of stochastic control strategies for pharmacokinetic systems"; (D. D. McLean, discussion leader): David Rippin, "Experiences with experimental design and regression packages for chemical engineering models."

3 August. (W. G. Hunter, discussion leader): Lane Bishop, "Modeling dose-response relation for occupational lead exposure."

Stereochemistry

Plymouth State College (N)

M. R. Uskokovic, chairman; C. H. Heathcock, vice chairman.

25 June. W. C. Still, "Stereochemical control and synthesis"; S. Schreiber, "Studies in stereochemical control"; A. Meyers, "Asymmetric carbon-carbon bond forming reactions"; D. Burgess, "Trajectory analysis-nucleophylic attack on π-systems."

26 June. S. Hanessian, "Organic synthesis with chiral building blocks"; R. Kellogg, "Chiral pyridinium salts and dihydropyridins and their role in ligand transfer reactions"; C. Johnson, "Sulfoximine mediated production of optically pure substances"; R. Deslongchamps, "Concept of strategy in organic synthesis."

27 June. L. Ghosez, "Asymmetric-[2+2]cycloadditions"; K. Koga, "De-

sign of novel asymmetric synthesis and its applications"; J. Whitesell, "New perspectives in asymmetric induction"; A. Smith, "Total synthesis of phyllanthocin and related antitumor agents"; D. Sternbach, "Intramolecular cycloaddition routes to natural products."

28 June. L. Overman, "New stereocontrolled methods for natural products total synthesis"; H. Wynberg, "Are chiral catalysts unique?" B. Maryanoff, "Isoquinoline unnatural products"; A. Marquet, "Stereochemistry of the vitamin K–dependent carboxylation"; P. Wovkulich, "Regio- and stereoselectivity of the formaldehyde ene reactions."

29 June. D. Walba, "Synthesis and stereochemistry of molecular knots, links, and Möbius strips"; D. Collum, "Transition metal-mediated stereocontrol in organic chemistry"; A. Moscowitz, "Vibrational circular dichorism: theoretical background and some interpreted examples."

Synthetic Membranes

Colby-Sawyer College (S)

John A. Quinn, chairman; Alan S. Michaels, vice chairman.

25 June. Membrane applications in biotechnology (B. A. Solomon, session leader): K. M. Ulmer, "Biotechnology: State of the art"; S. F. Karel, S. B. Libicki, P. M. Salmon, and C. R. Robertson, "Mass transport in tubular membrane bioreactors"; G. Belfort, G. L. Altshuler and D. M. Dziewulski, "Continuous hybridoma growth and monclonal antibody production in a hollow fiber reactos"; S. P. Fulton and B. A. Solomon, "Hollow fiber membranes as supports for ion exchange and affinity chromatography." R. S. Langer, "Controlled release of macromolecules—current status and future prospects."

26 June. Membranes in electrochemical technology (R. E. W. Jansson, session leader): R. P. Buck, "Charged interfaces and liquid membranes"; H. L. Yeager, "Permselectivity and the mechanism of ion transport in perfluorinated ion membranes"; K. Woodward, "The impact of new membrane materials on the chlor-alkali industry"; A. M. Yacynych, "Immobilized enzyme chemically modified electrodes as analytical sensors"; S. Visaisouk, "Power generation from seawater using membranes"; L. R. Faulkner, "Polymer modified electrodes."

27 June. Modeling/analyses of membrane transport (J. L. Anderson, session leader): E. A. Mason, "Use of transport measurements to deduce membrane structure"; E. D. Glandt, "Equilibrium partitioning of macrosolutes in small pores"; W. M. Denn, "Restricted transport through porous membranes." Selected short presentations. Submit abstracts to Dr. Edward L. Cussler, Department of Chemical Engineering and Materials Science, University of Minnesota, 421 Washington Avenue, S.E., Minneapolis, Minnesota 55455.

28 June. Membranes for chemical sensing/information acquisition systems (J. S. Schultz, session leader): S. Suzuki, "Membrane based biosensors"; D. S. Daniel, "Membranes in thin film disposable analytical elements"; H. Frieser, "Design of membranes for electrochemical sensing devices"; S. Mansouri and J. S. Schultz, "Optodes for sensing metabolites." Plenary lecture: R. M. McConnell, "Physical, chemical and immunochemical properties of monolayers."

29 June. Membrane preparation: Composites/monolayers/microfabrication (J. D. Swalen, session leader): H. Ringsdorf, "How do we bridge the gap between membrane biology and polymer science?" A. F. Garito, "Polymeric monolayers"; G. G. Roberts, "Electrical transport studies of monolayer films."

Temperature Stress in Plants

Tilton School

M. J. Burke, chairman; S. J. Wallner, vice chairman.

25 June. Whole plant responses I (Conrad J. Weiser, discussion leader): Lawrence V. Gusta, "Winter hardiness in herbaceous crop plants"; Ed L. Proebsting, "Winter hardiness of horticultural tree crops"; James M. Lyons, "Chilling stress." Whole plant responses, II (Olle Bjorkman, discussion leader): Joseph A. Berry, "The role of the membrane in plant adaptation to high temperature stress"; Steven C. Wiest, "Probabilistic incidence of high leaf temperatures and some resultant molecular repercussions."

26 June. Water and temperature stress (Michael J. Burke, discussion leader): Alan P. MacKenzie, "Physical properties of water and the freezing of tissue"; Milon F. George, "Deep undercooling of plant parts"; Jiwan Palta, "Membrane transport parameters: An approach to study the mechanism of freezing injury and cold acclimation." Membranes and temperature stress (James M. Lyons, discussion leader): Peter L. Steponkus, "Low temperature freezing stress and the cell membranes"; Joe Wolfe, "Biophysical properties of plant membranes during freezing"; Jasbir Singh, "Membrane organization in the frozen and dehydrated state."

27 June. Cellular and molecular aspects of temperature acclimation (A. Carl Leopold, discussion leader): Jean F. Chabot, "Membrane damage and chilling injury in seeds and pollen"; John K. Raison, "Molecular mechanisms of membrane acclimation I"; Guy A. Thompson, Jr., "Molecular mechanisms of membrane acclimation II." Molecular and osmotic aspects of temperature, salt and dehydration stress (Ray A. Bressan, discussion leader): Norman P. A. Huner, "Restructuring of photosynthetic components during growth and development at cold hardening temperatures"; P. Michael Hasegawa, "Osmotic adjustment."

28 June. Sources and roles of ice nuclei in plant undercooling and frost injury (Steven E. Lindow, discussion leader): C. B. Rajashekar, "Undercooling, ice nucleation, and freezing tolerance of plants in the laboratory and field"; Susan S. Hirano, "Quantitative aspects of undercooling and ice nucleation active bacteria"; Julie Lindemann, "Airborne inoculum sources of INA bacteria." Modification of bacterial ice nucleation and plant undercooling (Chris D. Upper, discussion leader): Steven E. Lindow, "Biogenic ice nuclei and ecological strategies"; Nicholis J. Panopoulos, "Genetic techniques to control undercooling of plants."

29 June. Heat shock proteins, the cell wall and temperature stress (Joe L. Kay, discussion leader): Janice Kimpel, "Heat shock proteins in plants"; Stephen J. Wallner, "Extracellular polysaccharides and temperature stress response."

Theoretical Biology and Biomathematics

Colby-Sawyer College (S)

Alan S. Perelson, chairman; Nancy Kopell, vice chairman.

2 July. (Temple Smith, discussion leader): Allan Maxam, "DNA elements that regulate and relocate genes"; Walter Goad, "Problems of sequence analysis and higher order codes in DNA"; Michael Zuker, "Analysis of secondary structure in nucleic acids." (Simon Levin, discussion leader): Bruce Levin, "Evolutionary implications of new developments in molecular biology"; Sally Zigmond and D. Lauffenburger, "Leukocyte chemotaxis mechanisms of sensory detection and adaptation."

3 July. (Ralph Nossal, discussion leader): Albert Goldbeter, "Models for adap-

tation in sensory systems based on receptor modification"; Carla Wofsy, "Models for receptor mediated endocytosis"; Hans Othmer, "A model for signal relay and adaptation in *Dictyostelium*." (Robert Miura, discussion leader): Walter Heilegenberg, "Sensory processing in electric fish"; Rudolfo Llinas, "Rebound excitation as the physiological basis for tremor: A biophysical study of the oscillatory properties of mammalian central neurons in vitro."

4 July. (Stuart Hastings, discussion leader): Avis Cohen and Philip Holmes, "Swimming in lamphrey: A neuronal central pattern generator"; Illani Atwater and John Rinzel, "Bursting behavior in insulin secreting B-cells." (Stuart Kauffman, discussion leader): John Campbell, "How do snails create the patterns on their shells?"

5 July. (Thomas McMahon, discussion leader): Stephen Wolfram, "Cellular automata and the generation of complex patterns"; Jim Murray, "Mechanical models in morphogenesis"; George Oster and Gary Odell, "Mechanics of the cytoskeleton." (L. N. Howard, discussion leader): Mark Bitensky, "The vertebrate rod: A photon activated membrane switching array."

6 July. (Stephen Childress, discussion leader): Charles Peskin, "Photon noise and the design of the retina"; Richard Skalak, "Hair cell transduction."

Thermosets

Colby-Sawyer College (S)

Allan R. Shultz, chairman; Garth L. Wilkes, vice chairman.

18 June. (Robert J. Bertsch, discussion leader): Lester H. Sperling, "The dependence of interpenetrating polymer network morphology on synthetic detail"; William P. Gergen, "Noncovalent interpenetrating networks." Lester H. Sperling, discussion leader): Kurt C. Frisch, "'Recent developments on interpenetrating polymer networks with charge groups"; William J. Schultz, "The nonaqueous dispersion polymerization of acrylic rubbers in epoxy resins."

19 June. (Allan R. Schultz, discussion leader): Scott MacDonald, "Current research on negative photoresists"; Johann G. Kloosterboer, "Photopolymerization of acrylates for high precision replication processes: The making of video discs." (Frank N. Kelly, discussion leader): C. P. Wong, "Silicone integrated circuit encapsulants: Chemistry and properties"; Derek T. Turner, "Network components of dental composite materials."

20 June. (John K. Gillham, discussion leader): Sheik A. Zahir, "Recent advances in bismaleinimide chemistry"; Tito Serafini, "PMR polyimides: Novel high-temperature resistant matrix resins." (Clayton A. May, discussion leader): Ivan J. Goldfarb, "Acetylene-terminated resins"; James C. Seferis, "Kinetic analysis of cure in thermosetting resins."

21 June. (James C. Seferis, discussion leader): Antonio Apicella, "Moisture sensitivity of amine-cured expoxy resins"; James D. Miller, "Tailoring interfacial chemistries in polymer composites." Poster session (Richard J. Hinrichs, chairman). (Arnold F. Marcantonio, discussion leader): Margaret E. Roylance, "The effect of moisture on the in-plane properties of Kevlar/epoxy composites"; Roger Stonier, "Thermoset composites in a high-performance automobile."

22 June. (Garth L. Wilkes, discussion leader): H. Thomas Hahn, "The effect of matrix properties on compressive failure mechanisms in composites"; Christopher Henkee, "Network considerations in the deformation of glassy polymers."

Thin Films and Solid Surfaces

Colby-Sawyer College (S)

John A. Thornton, chairman; Gerald D. Swalen, vice chairman.

16 July. (G. K. Whener, discussion leader): Gert Ehrlich, "Film growth—an atomic picture"; J. E. Greene, "The effects of ion/surface interactions on film growth"; John H. Thomas, III, "Plasma treatment of surfaces." (Samuel Broydo, discussion leader): A. C. Adams, "Plasma deposition of inorganic films"; H. F. Winters, "Ion induced chemical reactions in etching environment."

17 July. (J. L. Vossen, Jr., discussion leader): Richard Osgood, Peter Brewer and Heinz Gilgen, "Photon-assisted dry processing"; Francis Houle, "Mechanisms of laser-assisted etching of silicon"; George Celler, "Lateral epitaxial growth of silicon from the melt with laser and incoherent light sources." (L. R. Reif, discussion leader): Bernard Meyerson, "Surface science diagnostics of the low-pressure chemical vapor deposition process"; Paul McLeod, "Low-pressure MOCVD."

18 July. (M. H. Francombe, discussion leader): C. B. Duke, "Atomic geometry of semiconductor interfaces"; S. Nakahara, "Thin film microstructure"; S. V. Krishnaswamy and M. H. Francombe, "Microstructure of sputtered films and its relationship to microwave resonator properties." (W. D. Westwood, discussion leader): P. S. Vincett, "Structural singularities and property optimization in thin films"; Meir Bartur, "Thin film solid state intereactions."

19 July. (D. M. Mattox, discussion leader): Ralph Dawson, "MBE growth of strained-layer superlattices"; Thomas Tiedje, "Amorphous semiconductor superlattices"; Colin E. C. Wood, "Novel device structures formed by new deposition technologies." (J. H. Judy, discussion leader): Mark H. Kryder, "Deposition and properties of magnetic thin films used in memory and storage technologies."

20 July. (Eric Kay, discussion leader): H. C. Siegmann, "Surface magnetic spectroscopy with spin polarized electrons"; Robert Wilson, "Scanning tunneling microscopy: resolution, range and reality"; Joseph Jasinski, "Detection of transient chemical species in plasma and CVD environment by laser spectroscopy."

Toxicology and Safety Evaluations

Kimball Union Academy

Frank N. Dost, chairman; Michael A. Gallo, vice chairman.

30 July. Reversibility—irreversibility (Richard Parent, discussion leader): John Lechner, "Use of human tissues and cells for toxic substance and carcinogenesis studies"; Benjamin Trump, "Ion regulation, the cytoskeleton and cell injury"; J. K. Reddy, "Reversible and irreversible changes in liver."

31 July. Renal mechanisms in toxicity (Bruce Fowler, discussion leader): Adnan Elfarra, "Renal processing of glutathione conjugates. Role in nephrotoxicity"; Bruce Fowler, "Roles of high affinity cytosolic and nuclear ligands in mediating metal-induced kidney cell injury"; George Kaloyanides, "Pathogenesis of aminoglycoside nephrotoxicity: Role of drug-phospholipid interaction."

1 August. Mechanisms of neurotoxicity (H. E. Lowndes, discussion leader): Doyle Graham, "Mechanisms of neurotoxicity. The molecular pathology of neurofilamentous neuropathies"; Herbert E. Lowndes, "Electrophysiological correlates and mechanisms in neurotoxicity"; Rudy Richardson, "Current understanding and future needs in assessing the phosphorylation state of neuropathy target esterase. (NTE): usefulness in understanding neurons and risks to their health."

2 August. Skin (Anne Wolven-Garrett, discussion leader): Robert Bronaugh, "New concepts for in vitro percutaneous absorption studies"; Gordon Flynn, "Assessment of skin barrier integrity."

3 August. (Michael Gallo, chairman): Jochen Schacht, "Molecular mechanism of drug-induced hearing loss"; Kyle Rarey, "Morphological assessment of effects of ototoxic agents."

Tribology

Colby-Sawyer College (N)

Lavern D. Wedeven, chairman; J. Kannel, vice chairman.

11 June. (J. Kannel, discussion leader): D. Rigney, "What's going on during unlubricated sliding wear?"; O. Vingsbo, "Laboratory testing of abrasive wear." (S. Ramalingam, discussion leader): F. Kennedy, "Mechanics of wear particle generation"; L. Keer and H. Cheng, "Experimental and theoretical analysis of contact fatigue."

12 June. (W. Wilson, discussion leader): A. W. J. DeGee, "Failure mechanisms in mixed film lubricated contacts"; K. C. Ludema, "Oxides on sliding surfaces." (E. Klaus, discussion leader): H. Okabe, "Advances in boundary film lubrication"; S. Hsu, "Tribochemistry—the link between chemistry and physics."

13 June. (W. Ruff, discussion leader): I. Singer, "Role of surface chemistry and microstructure in friction and wear of metals"; W. Bartz, "Influence of lubrication and additives." (Lavern D. Wedeven, discussion leader): Commodore Hopper, "Future possibilities: Hardware, software and people."

14 June. (F. Lockwood, discussion leader): M. Gardos, "Future of high-temperature rolling element bearing lubrication"; T. Quinn and W. O. Winer, "Thermal aspects of wear in high-temperature sliding contacts." (L. Wedeven, discussion leader): W. Glaeser, "Role of surface in the study of basic wear mechanisms"; L. Wedeven, "Discussion of ceramics and high temperature tribology."

15 June. (F. Ling, discussion leader): S. Cohen, "Tribology in manufacturing processes"; H. Czichos, "Investigations of wear mechanisms of polymers."

Poster sessions—Tuesday and Thursday, 3:00 to 5:00 p.m.

Supply names of authors and brief abstract to Vice Chairman J. Kannel, North Carolina State University, P.O. Box 7910, Raleigh, North Carolina 276910.

UV/Visible Multiphoton Ionization and Dissociation Processes

Colby-Sawyer College (S)

Steven D. Colson, chairman; Karl Welge, vice chairman; Patricia M. Dehmer, vice chairman.

11 June. (S. D. Colson, discussion leader): P. M. Johnson, "The spectra and dynamics of triplet states using MPI"; M. A. El-Sayed, "Picosecond studies of dynamics in MPI-dissociation mass spectroscopy"; W. A. Chupka, "Very high resolution spectroscopic studies of highly excited states in small molecules." (S. D. Colson, discussion leader): Poster session.

12 June. (J. Cooper, discussion leader): P. Lambropolous, "Multiphoton autoionization: Line shapes and photoelectron angular distributions under strong laser excitation"; C. Bottcher, "Classical and quantal theories of multiphoton dissociation"; R. D. Levine, "Path selective theory of MPD fragmentation patterns." (P. M. Dehmer, discussion leader): R. N. Compton, "Collisional studies using MPI spectroscopy"; M. Ito, "Two-color multiphoton ionization spectroscopy in supersonic jets"; M. White, "Spectroscopy and ionization dynamics of molecular excited states by photoelectron spectroscopy."

13 June. (P. Lambropolous, discussion leader): The following individuals will discuss the photophysics of atoms under intense laser excitation, T. Gallagher, G. Mainfray, K. Welge. (P. M. Johnson, discussion leader): J. P. Reilly, "Ions and excited state neutral species studied by laser photoelectron spectroscopy"; K. Kimura, "Resonant MPI photoelectron spectroscopy and its application to molecules"; E. Grant, "MPI spectroscopy of fluxional molecules."

14 June. (V. Vaida, discussion leader): R. Bernstein, "MPI-fragmentation of toluene clusters"; M. N. R. Ashfold, "Molecular predissociation dynamics revealed through multiphoton ionization spectroscopy"; E. W. Schlag, "Multiphoton mass spectra of metastables." (T. Baer, discussion leader): C. Wittig, "Photodissociation dynamics"; P. Hackett, "MPD of molecules studied by MPI of atoms"; P. Esherick, "Raman-enchanced ionization spectroscopy."

15 June. (W. A. Chupka, discussion leader): P. M. Dehmer, "Multiphoton ionization as a probe of electronic structure of small molecules"; S. Anderson, "MPI-PES of small molecules"; M. van der Wiel, "Decay mechanisms of autoionizing states studied by MPI."

Vibrational Spectroscopy

Brewster Academy

Cherry A. Murray, chairman; Richard B. Miles, vice chairman.

20 August. (C. V. Shank, discussion leader): Peter Esherick, "Ionization detected Raman spectroscopy"; W. Klemperer, "Highly excited vibrational levels of polyatomic molecules and chaos, or van der Waals molecules"; P. J. Hargis, Jr., "Trace gas detection by U.V. spontaneous Raman spectroscopy, flame and C.V.D. monitoring applications"; B. Green, "Femtosecond time-resolved multiphoton ionization techniques and applications." (Juergen Eckert, discussion leader): John White, "Inelastic neutron scattering spectroscopy: Hydrogen in metals, intercalates, solid state physics." Poster session A.

21 August. (Horia Metiu, discussion leader): Daniel Aurbach, "Energy transfer at surfaces"; Michael Loy, "Energy transfer at surfaces"; Ralph Weston, "Vibrational excitation and chemical reactions produced by UV laser photolysis in gas phase"; Hans Gunthard, "Vibrational energy transfer in matrix isolated molecules, isomerizations and selective chemistry by vibrational excitation"; W. Kaiser, "Ultrashort vibrational relaxation properties of polyatomic molecules in liquids." Poster session B.

22 August. (R. P. Van Duyne, discussion leader): P. Avouris, "Electron energy loss spectroscopy of adsorbates on metals"; J. Hemminger, "Raman scattering and HREELS of charge-transfer complexes on surfaces"; Y. Chabal, "High resolution FTIR spectroscopy of H on silicon and germanium"; A. Campion, "Surface Raman spectroscopy without enhancement." (M. J. Cardillo, discussion leader): R. B. Doak, "Inelastic He scattering from surface phonons and adsorbate vibrational modes." Poster session C.

23 August. (R. Hester, discussion leader): B. Hudson, "Resonance Raman scattering"; W. H. Woodruff, "Low temperature resonance Raman scattering of protein systems"; E. Heller, "What can we learn about forces and dynamics from Raman spectroscopy?"; L. Nafie, "Vibrational circular dichroism." (I. Chabay, discussion leader): K. Wilson, "Vibrations in liquids." Poster session D.

24 August. (Vladimir Bondybey, discussion leader): T. P. Martin, "Calculations and experiment: Infrared spectra of ionic microclusters"; Herman Godfried, "In situ spontaneous Raman spectra of Ar_2 dimers in a molecular beam"; W. Schulze, "Vibrational spectra of microclusters in matrix isolation."

Water and Aqueous Solutions

New Hampton School

J. E. Desnoyers, chairman; S. H. Chen, vice chairman.

6 August. Structure of water (M. Klein, discussion leader): S. A. Rice, "A review of theoretical models of water"; B. Berne, "Quantum effects on the structure of water"; R. Watts, "Infrared spectroscopy and structure of small clusters of water molecules." Solute-solvent interactions (D. Chandler, discussion leader): H. C. Andersen, "Molecular dynamic simulations of hydrophobic hydration"; A. Ben-Naim, "Thermodynamics of solvation of simple solutes—a new approach to an old problem."

7 August. Supercooled water and aqueous solutions (J. Texeira, discussion leader): P. A. Egelstaff, "Neutron scattering of water below room temperature"; H. E. Stanley, "Mysterious behavior of supercooled water"; R. J. Speedy, "Solute effects in supercooled water." Ion-ion interactions (H. L. Friedman, discussion leader): P. Rossky, "Integral equation approaches to the structure of ionic solutions"; G. N. Patey, "Theoretical predictions of equilibruim and dynamic properties of aqueous electrolyte solutions."

8 August. Water near interfaces (A. Angell, discussion leader): A. Parsegain, "Molecular hydration forces"; S. Marcelja, "Surface-induced structure in water and in electrolytes"; D. K. Ross, "Interactions of water with surfaces and their associated counter ions." Properties of aqueous solutions (C. Jolicoeur, discussion leader): F. Wanderlich, "Dynamical behaviour and hydrodynamic of electrolytic solutions"; G. Zundel, "Solvate structures of hydrogen-bonded systems and the dissociation of acids."

9 August. Phase equilibria and critical phenomena (S. H. Chen, discussion leader): M. Kahlweit, "Phase equilibria and tricritical points in quaternary liquid systems"; S. Safran, "Phase transitions of structure in microemulsions"; J. Wheeler, "Phase transitions in H-bonded systems." Poster sessions (S. H. Chen, chairman). Special lecture (J. E. Desnoyers, discussion leader): C. Richardson, "Measurement of the thermodynamic properties of supersaturated aqueous solutions using single droplet levitation."

10 August. Structure and stability of micelles (D. F. Evans, discussion leader): K. Dill, "Interaction among amphiphilic molecules in water"; W. Gelbart, "Micelle structure and phase transitions in aqueous soap solutions."

BOOKS RECEIVED

(Continued from page 925)

Mild Hypertension. Recent Advances. Franz Gross and Toma Strasser, Eds. Raven, New York, 1983. xvi, 429 pp., illus. $45. From a symposium, Bürgenstock, Switzerland, Sept. 1982.

Mineral Deposits of the Alps and of the Alpine Epoch in Europe. Hans-J. Schneider, Ed. Springer-Verlag, New York, 1983. xvi, 402 pp., illus. $42.50. Special Publication No. 3 of the Society for Geology Applied to Mineral Deposits. From a symposium, Berchtesgaden, Germany, Oct. 1981.

Mountains of the Middle Kingdom. Exploring the High Peaks of China and Tibet. Galen Rowell. Sierra Club Books, San Francisco, 1983 (trade distributor, Random, New York). xvi, 191 pp., illus. $40.

Naturalist on Watch. Alton A. Lindsey. Merry Lea Environmental Learning Center, Goshen College, Goshen, Ind., 1983. viii, 220 pp., illus. $10; paper, $4.75.

Neural Tissue Transplantation Research. Robert B. Wallace and Gopal D. Das, Eds. Springer-Verlag, New York, 1983. xii, 243 pp., illus. $42.50. Proceedings in Life Sciences. From a symposium, Los Angeles, 1981.

Organometallic Compounds. Synthesis, Structure, and Theory. Bernard L. Shapiro, Ed. Published for the IUCCP by Texas A&M University Press, College Station, 1983. xxviii, 481 pp., illus. $35. From a symposium, College Station, Tex., April 1983.

Origins of Intelligence. Infancy and Early Childhood. Michael Lewis, Ed. 2nd ed. Plenum, New York, 1983. xvi, 535 pp. $29.50.

Paleoethnobotany of the Kameda Peninsula Jomon. Gary W. Crawford. University of Michigan Museum of Anthropology, Ann Arbor, 1983. xiv, 200 pp., illus. Paper, $8. Anthropological Papers, No. 73.

Pascal Programming. A Beginner's Guide to Computers and Programming. Chris Hawksley. Cambridge University Press, New York, 1983. xiv, 188 pp., illus. $24.95; paper, $9.95.

Psychological Perspectives on the Self. Vol. 2. Jerry Suls and Anthony G. Greenwald, Eds. Erlbaum, Hillsdale, N.J., 1983. xii, 287 pp. $29.95.

The Psychology of Discipline. Darwin Dorr, Melvin Zax, and Jack W. Bonner, III, Eds. International Universities Press, New York, 1983. xvi, 263 pp. $27.50.

The Psychology of Learning and Motivation. Advances in Research and Theory. Vol. 16. Gordon H. Bower, Ed. Academic Press, New York, 1982. xvi, 286 pp., illus. $32.50.

Psychonephrology 2. Psychological Problems in Kidney Failure and Their Treatment. Norman B. Levy *et al.*, Eds. Plenum, New York, 1983. xvi, 296 pp., illus. $29.50. From a conference, New York, Oct. 1981.

Psychosomatic Medicine. Theoretical, Clinical, and Transcultural Aspects. Adam J. Krakowski and Chase P. Kimball, Eds. Plenum, New York, 1983. xviii, 830 pp., illus. $95. From a congress, Montreal, Sept. 1981.

Pulmonary Diseases. Clinicopathological Correlations. K.-M. Müller, Ed. Springer-Verlag, New York, 1983. x, 304 pp., illus. $62.50. Current Topics in Pathology, 73.

Quantitative Plant Ecology. P. Greig-Smith. 3rd ed. University of California Press, Berkeley, 1983. xiv, 359 pp., illus. $38.50; paper, $22. Studies in Ecology, vol. 9.

Quantum Optics, Experimental Gravity, and Measurement Theory. Pierre Meystre and Marlan O. Scully, Eds. Plenum, New York, 1983. xii, 701 pp., illus. $95. NATO Advanced Science Institutes Series B, vol. 94. From an Institute, Bad Windsheim, Germany, Aug. 1981.

The Quantum Theory of Light. Rodney Loudon. 2nd ed. Clarendon (Oxford University Press), New York, 1983. xiv, 393 pp., illus. $59.95; paper, $24.95.

Racing Alone. A Visionary Architect's Quest for Houses Made with Earth and Fire. Nader Khalili. Harper and Row, New York, 1983. x, 241 pp. $14.95.

Readings in Tumor Virology. Harold Varmus and Arnold J. Levine, Eds. Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y., 1983. xx, 1133 pp., illus. Paper, $39.50.

Research Ethics. Kåre Berg and Knut Erik Tranøy, Eds. Liss, New York, 1983. xviii, 413 pp. $68. Progress in Clinical and Biological Research, vol. 128. From a symposium, Oslo, Aug. 1982.

Residue Reviews. Residues of Pesticides and Other Contaminants in the Total Environment. Vol. 89. Francis A. Gunther and Jane Davies Gunther, Eds. Springer-Verlag, New York, 1983. x, 213 pp. $28.

The Reticuloendothelial System. A Comprehensive Treatise. Vol. 5, Cancer. Ronald B. Herberman and Herman Friedman, Eds. Plenum, New York, 1983. xx, 356 pp., illus. $45.

Reviews in Biochemical Toxicology, 5. Ernest Hodgson, John R. Bend, and Richard M. Philpot, Eds. Elsevier, New York, 1983. xii, 415 pp., illus. $60.

Robots in Manufacturing. Key to International Competitiveness. Jack Baranson. Lomond, Mt. Airy, Md., 1983. xii, 152 pp. $32.50.

A Safe Place of Work. D. W. B. James. Butterworths, Boston, 1983. viii, 115 pp., illus. $19.95.

Scattering Theory for Many-Body Quantum Mechanical Systems. Rigorous Results. Israel Michael Sigal. Springer-Verlag, New York, 1983. iv, 132 pp. Paper, $8. Lecture Notes in Mathematics, vol. 1011.

Schott Guide to Glass. Heinz G. Pfaender. Revised and expanded by Hubert Schroeder. Van Nostrand Reinhold, New York, 1983. xii, 179 pp., illus. $14.95.

Science and Law. An Essential Alliance. William A. Thomas, Ed. Westview, Boulder, Colo., 1983. xii, 168 pp. $16.50. Reprinted from *Science* and the *American Bar Association Journal*.

Sculptured Surfaces in Engineering and Medicine. J. P. Duncan and S. G. Mair. Cambridge University Press, New York, 1983. x, 378 pp., illus. $79.50.

Secondary Metabolism and Differentiation in Fungi. J. W. Bennett and Alex Ciegler, Eds. Dekker, New York, 1983. xiv, 478 pp., illus. $69.75. Mycology Series, vol. 5.

Shale Oil Upgrading and Refining. Stephen A. Newman, Ed. Butterworth, Boston, 1983. viii, 287 pp., illus. $19.95. An Ann Arbor Science Book. Based on a symposium, Nov. 1982.

Shamans, Mystics and Doctors. A Psychological Inquiry into India and Its Healing Traditions. Sudhir Kakar. Beacon, Boston, 1983. x, 308 pp. Paper, $9.95. Reprint, 1982 edition.

Short-Term Counseling. Guidelines Based on Recent Research. Irving L. Janis. Yale University Press, New Haven, Conn., 1983. xiv, 230 pp. $27.50; paper, $8.95.

Singer's Lock. The Revolution in the Understanding of Weather. Part 1. Oscar Singer. Illustrated charts by Daniel Bender. Singer Press, Los Angeles, 1983. xvi, 336 pp. $19.95.

Software for Computer Control 1982. G. Ferrate and E. A. Puente, Eds. Published for the International Federation of Automatic Control by Pergamon, New York, 1983. xii, 528 pp., illus. $145. From a symposium, Madrid, Oct. 1982.

Sphingolipid Biochemistry. Julian N. Kanfer and Sen-itiroh Hakomori. Plenum, New York, 1983. xiv, 485 pp., illus. $59.50.

Statistics on Spheres. Geoffrey S. Watson. Wiley-Interscience, New York, 1983. xii, 238 pp., illus. Paper, $21.50. University of Arkansas Lecture Notes in the Mathematical Sciences, vol. 6.

Stimulants. Neurochemical, Behavioral, and Clinical Perspectives. Ian Creese, Ed. Raven, New York, 1983. x, 350 pp., illus. $45.

Stochastic Processes. Formalism and Applications. G. S. Agarwal and S. Dattagupta, Eds. Springer-Verlag, New York, 1983. vi, 324 pp., illus. Paper, $16.50. Lecture Notes in Physics, vol. 184. From a school, Hyderabad, India, Dec. 1982.

Stonehenge Complete. Christopher Chippindale. Cornell University Press, Ithaca, N.Y., 1983. 296 pp., illus. $29.50.

The Structural Basis of Neurobiology. Edward G. Jones, with a chapter by Leon Weiss. Elsevier, New York, 1983. Variously paged, illus. Paper, $19.95. Reprinted from *Histology* (1983).

The Sun Is Feminine. A Study on Language Acquisition in Bilingual Children. Traute Taeschner. Springer-Verlag, New York, 1983. xii, 246 pp., illus. $39. Springer Series in Language and Communication, vol. 13.

The Use of Human Cells for the Evaluation of Risk from Physical and Chemical Agents. Amleto Castellani, Ed. Plenum, New York, 1983. xii, 809 pp., illus. $110. NATO Advanced Science Institutes Series A, vol. 60. From an institute, Pisa, Aug. 1981.

Utilization of Mammalian Specific Locus Studies in Hazard Evaluation and Estimation of Genetic Risk. Frederick J. de Serres and William Sheridan, Eds. Plenum, New York, 1983. x, 341 pp., illus. $45. Environmental Science Research, vol. 28. From a workshop, Research Triangle Park, N.C., March 1982.

Vocal Fold Physiology. Contemporary Research and Clinical Issues. Diane M. Bless and James H. Abbs, Eds. College-Hill Press, San Diego, Calif., 1983. xvi, 466 pp., illus. Paper, $39.50. From a conference, Madison, Wis., June 1981.

Whole Body Computerized Tomography. Practical Image Analysis. Otto Henning Wegener. Karger, Basel, 1983. Variously paged, illus. $49.25. Translated from the German edition.

Will America Sober UP? Allan Luks. Beacon, Boston, 1983. x, 215 pp. $14.95.

Women in Science. Portraits from a World in Transition. Vivian Gornick. Simon and Schuster, New York, 1983. 172 pp. $15.95.

Zoosporic Plant Pathogens. A Modern Perspective. S. T. Buczacki, Ed. Academic Press, New York, 1983. x, 352 pp., illus. $54.50.