

# Gordon Research Conferences

Alexander M. Cruickshank

The Gordon Research Conferences for the summer of 1985 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.* Indi-

viduals 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. *Deadline for receipt of applications is 3 weeks prior to the conference.*

The Director will submit the applications of those requesting permission to attend a conference to the chairman for that conference. This chairman 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 chairman 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 chairman as a speaker or discussion leader. The money is to be used as an assistance fund only and may be used to contribute toward conferees travel expenses, registration fee and/or subsistence expenses at the conference, or both. Total travel and subsistence expenses usually will not be provided.

The Board of Trustees of the Conferences has established a fixed fee for all resident participants (speakers, discussion leaders, conferees) at each conference. This fee was established to encourage attendance for the entire conference and to provide the Special Fund which is available to each conference chairman. The fixed fee will be charged regardless of the time a participant (speakers, discussion leaders, and conferees) attends a conference—that is, for the periods of from 1 to 4½ days.

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

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

Pets are prohibited at the conference sites.

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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 1985 Gordon Research Conferences is published in *Science*, 1 March 1985. 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 or 401-783-3372.

Mail for the office of the Director from 10 June to 30 August 1985 should be addressed to: Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, Colby-Sawyer College, New London, New Hampshire 03257. Telephone: 603-526-2870.

#### Fixed Conference Fees—1985

<i>New Hampshire</i>	
Conferee (double occupancy)	\$275.00
Nonresident conferee (meals, no room)	\$235.00
Guest (room, meals)	\$185.00

#### Science of Adhesion

##### *New Hampton School*

W. P. Townsend, chairman; T. St. Clair, vice chairman.

19 August. (D. Tabor, discussion leader): P. Luckham, "The role of polymers in modifying surface forces"; P. Pincus, "Polymers at surfaces." V. A. Parsegian, "Measurements of macromolecular forces governing molecular assembly."

20 August. (J. A. Emerson, discussion leader): D. W. Dwight, "Polymer surface modification"; S. Pepper, "Role of physical forces at polymer/metal interface probed by xenon adsorption." C. Duke, "Charge transfer contributions to adhesion: A verifiable prediction."

21 August. (W. Knauss, discussion leader): M. Tirrell, "Dynamics of joining polymer/polymer interfaces"; A. N. Gent, "Weld-line healing in polymer melts." K. M. Liechti, "Crack-growth mechanisms in adhesively bonded joints"; J. T. Aklonis, "Influence of time-dependent volume changes on residual stresses in adhesively bonded joints."

22 August. (J. H. Waite, discussion leader): B. D. Ratner, "Analysis of polyurethane surfaces: Biological implications"; V. Thompson, "Adhesives strategies for bonding to dental structures and alloys." D. Tabor, "Surface science—ancient and modern."

23 August. (T. St. Clair, discussion leader): E. Sacher, "Adhesion in multi-

layer devices"; R. Pike, "Effect of moisture and aging on the performance of structural adhesives: Chemical interactions."

#### Analytical Chemistry

##### *New Hampton School*

T. Hirschfeld, chairman; L. Faulkner, vice chairman.

12 August. The hyphenated methods (C. Yost, chairman); Microprobe and imaging analysis (E. Schweikert, chairman).

13 August. Advances in analytical nuclear magnetic resonance (J. Ackerman, chairman); Mathematical separation of mixtures (B. Kowalski, chairman).

14 August. Optimization of analytical methods (S. Deming, chairman); Data bases and analytical chemistry (M. Delaney, chairman).

15 August. Sensors in analytical chemistry (H. Wohltjen, chairman); Process analytical chemistry (J. Callis, chairman).

16 August. Remote and in-situ analysis (M. Stefaniak, chairman).

#### Analytical Pyrolysis

##### *Holderness School*

Hans-Rolf Schulten, chairman; Robert P. Lattimer, vice chairman.

8 July. Theory of thermal analysis (Henk L. C. Meuzelaar, discussion leader); W. W. Wendlandt, "Thermal analysis, theory and reproducibility"; Tamas Szekely, "Thermal decomposition: Energy supply and reaction." New methodology (Tom A. Milne, discussion leader): Antonius Kettrup, "Differential thermal analysis/thermogravimetry and mass spectrometry"; Piet Kistemaker, "Laser-pyrolysis."

9 July. Fundamentals of biomass degradation and utilization (Kent J. Voorhees, discussion leader): Michael Antal, "Fundamental chemistry of biomass pyrolysis in supercritical solvents"; Thomas B. Reed, "Principles of biomass thermal conversion"; Barbara Krieger, "Principles of engineering in the thermal conversion of biomass." Coal structure (Anna Marzec, discussion leader): Peter Given, "Pyrolysis studies of the contribution of biopolymers in peats to coal structure"; Nick Vanderborgh, "Pyrolysis of model polymers and coal"; Marianne Szabo, "Decomposition of organic structural elements of coal during pyrolysis."

10 July. Fundamentals in polymer pyrolysis (Bob Lattimer, discussion leader): Georgio Montaudo, "Thermal frag-

mentation pathways in condensed polymers"; Mike Grayson, "Presence and future in polymers pyrolysis." Basics and new developments in data analysis (Alice Harper, discussion leader): Willem Windig, "Basics and new developments in data analysis"; Hal Mac Fie, "New advances in the analysis of pyrolysis data."

11 July. Environmental applications of analytical pyrolysis (Shin Tsuge, discussion leader): Kent Voorhees, "Environmental applications of analytical pyrolysis"; W. Kaminsky, "Thermal recycling: Basics and engineering"; Ingo Luederwald, "Catalyzed thermal degradation reactions of polymers." New Horizons (Tobacco, Archaeology) (Tamas Szekely, discussion leader): X. Enzell, "Pyrolysis of tobacco, basics and new analytical results"; G. Wiedemann, "Thermal analysis and archaeology."

12 July. Advances in food sciences (Hans-Rolf Schulten, discussion leader): Colin Gutteridge, "The application of pyrolysis mass spectrometry to microbiological/biotechnological processes"; X. Baltes, "Pyrolysis gas chromatography in food sciences—smoking, caramelization and roasting." Speakers: Ericsson, Fischer, Levy, Kistmaker, Meuzelaar *et al.*

Round-table discussion. Optimization of instrumentation: "Curie point-, laser-, wire-, filament-, foil-, furnace-, pyrolysis." Closing remarks: Bob P. Lattimer.

#### Animal Cells and Viruses

##### *Tilton School*

Bernard N. Field, chairman; Peter M. Howley, vice chairman.

17 June. Virus-cell interactions (Mary Jane Gething, discussion leader): Bernard Fields, Jack Rose, Judy White. Replication of viral genomes (Thomas Kelly, discussion leader): Jerard Hurwitz, Kenneth Berns, Stephen Goff.

18 June. Expression of viral genomes (Aaron Shatkin, discussion leader): Robert Krug, Peter Howley, Bernard Roizman, Bernard Moss, Robert Tjian. Virus-host interactions (Arnold Levine, discussion leader): Connie Cepko, Michael Oldstone, Harald zur Hausen, Rudolf Jaenisch.

19 June. Structure and function of viral proteins (Eckhart Wimmer, discussion leader): Robert Sauer, John Skehel, Alan Smith. Oncogenes (Robert Weinberg, discussion leader): Philip Leder, Michael Wigler, Mariano Barbacid.

20 June. Persistence and latency (Bill Sugden, discussion leader): Michael Botchan, Harold Varmus, Malcolm Martin. Viral transcriptional control elements

(Philip Sharp, discussion leader): George Khoury, William Haseltine, Joseph Nevins.

21 June. Transformation (J. Michael Bishop, discussion leader): Raymond Erikson, Arnold Berk, George Miller.

## **Applied and Environmental**

### **Microbiology**

*Colby-Sawyer College (S)*

J. Gregory Zeikus, chairman; Fred K. Pfander, vice chairman.

### **Ecological and Organismal Trends**

12 August. Exotic microbes and ecosystems (Thomas D. Brock, discussion leader): Ollie H. Tuovinen, "Acidophiles in neglected and exploited environments"; Karl O. Stetter, "New biological features of thermophilic archaeobacteria"; Koki Horikoshi, "Biological and industrial features of alkaphiles." Mixed culture interactions (David C. White, discussion leader): James M. Tiedje, "Anaerobic microbial consortia involved in pollutant metabolism: J. William Costerton, "Microbial consortia within surface biofilms."

13 August. Catabolism of anaerobes (Lars G. Lundahl, discussion leader): Bernard H. Schink, "New ways of degrading compounds and conserving energy by anaerobic bacteria"; Robert Kerby, "Synthetic catabolism of acetogens"; Eva R. Kashket, "Proton motive force and bacterial metabolism." Novel products of biosynthesis (Douglas E. Everleigh, discussion leader): Hamish McArthur, "Biosynthesis of industrially important microbial exopolysaccharides"; Burt D. Ensley, "Genetic manipulation of metabolic operons for new products."

14 August. Enzyme function (Ronald L. Crawford, discussion leader): T. Kent Kirk, "Lignin-degrading enzymes"; D. W. S. Westlake, "Cell-free synthesis of B-lactam antibiotics in streptomyces clavuligerus"; J. Oliver Lampen, "Exoenzyme secretion in bacillus." Enzyme design (Jean E. Brenchley, discussion leader): Emil T. Kaiser, "Design of new active sites in old enzymes"; Robert Wetzl, "Engineering stability into enzymes."

15 August. Microbial and enzyme technology trends (Anthony J. Sinskey, discussion leader): John P. Rosazza, "Microbial and enzymatic transformations in medicinal chemistry"; John Higgins, "Microbes and enzymes in sensors and fuel cells"; Alexander M. Klibanov, "Novo trends and future directions in enzyme technology." Special lecture (Ronald L. Crawford, discussion leader):

Stanley Dagley, "Degradation of carbon compounds in the biosphere."

16 August. Biodegradative prediction trends (Fred K. Pfander, discussion leader): Perry McCarty, "Transformation of halogenated organics in biofilms"; C. P. Leslie Grady, Jr., "Biodegradation kinetics of single compounds in multicomponent feeds"; Gary D. Sayler, "Environmental fate of genetically modified biodegradative strains."

### **Atherosclerosis**

*Kimball Union Academy*

Richard J. Havel, co-chairman; Robert D. Rosenberg, co-chairman.

24-28 June. White cell vessel wall interactions (Michael A. Gimbrone, discussion leader): John M. Harlan, "A monoclonal antibody-defined leukocyte membrane glycoprotein complex mediating adherence"; Michael A. Gimbrone, "Endothelial-dependent mechanisms of leukocyte adhesion"; Peter Henson, "How do leukocytes get through blood vessel walls?" Russell Ross, "Macrophages, growth factors and atherosclerosis"; Michael A. Gimbrone, "Endothelial-dependent mechanisms of leukocyte adhesion." Platelet vessel wall interactions (Jack Hawiger, discussion leader): Dr. Clemenson, "Glyco-protein Ib-von Willebrand's factor interactions"; Jack J. Hawiger, "Receptor-mediated platelet-vessel wall and platelet-platelet interactions"; Dr. Sixma, "Interaction of platelets with adhesive proteins of the vessel wall." Connective tissue elements of the vessel wall (Thomas Wight, discussion leader): Richard O. Hynes, "Fibronectin: A versatile gene for a versatile protein"; Masaki Yanagishita, "Biochemistry and metabolism"; Joseph Madri, "Endothelial cell proteoglycan metabolism: modulation by matrix." Growth mitogens (Stephen Schwartz, discussion leader): Daniel F. Bowen-Pope, "Endogenous growth control by the vessel wall"; Charles Stiles, "Intracellular mediators of the growth response to PDGF"; Richard K. Assoian, "Transforming growth factors in human platelets." Interaction of HDL with cells (Daniel Steinberg, discussion leader): John Oram, "HDL binding to cells. Are there HDL receptors?" George Chacko, "HDL binding to membranes"; Paul Bachorik, "Reversible and irreversible interaction of HDL with hepatocytes"; John Gwynn, "Rat adrenal HDL binding activity and cholesterol uptake"; Yidder Ida Chen, "Processing of HDL in liver and steroidogenic organs"; Ray C. Pittman, "Preferential cellular uptake of cholesteryl esters." New methods for

evaluation of atherosclerotic lesions in vivo (David H. Blankenhorn, discussion leader): Edward Rubenstein, "Transvenous coronary angiography with monochromatic x-rays"; Leon Kaufman, "NMR imaging of atherosclerotic lesions." Transfer of cholesteryl esters in blood plasma, to cell surfaces, and within cells (Christopher J. Fielding, discussion leader): Yechezkiel Stein, "Role of lipoprotein lipase in the transfer of cholesteryl esters"; Donald Zilversmit, "Intracellular and extracellular cholesteryl ester transfer proteins."

### **Atomic Physics**

*Brewster Academy*

Harold Metcalf, chairman; Tom McIlrath, vice chairman.

1 July. Single Rydberg atoms: H. Walther, "Single atom maser"; S. Haroche, "Q.E.D. in a cavity"; J. Eberly, "Atoms in a cavity." Clusters: T. Miller, "Atomic clusters"; L. Bloomfield, "Atomic clusters."

2 July. Atoms in strong fields: D. Harmin, "Theory of Stark effect"; D. Delande or J. C. Gay, "Strong magnetic fields." Ultraviolet generation: S. Harris, "Laser produced plasma"; M. Campbell, "High energy photons."

3 July. Precision tests of fundamental theories (Mark Haugen, discussion leader): F. Raab, "Time reversal"; T. Chupp, "Lorentz invariance"; G. Gabrielse, "Single trapped electron." Ultraviolet spectroscopy: D. Ederer, "Synchrotron spectroscopy"; R. Bergang, "Highly excited two-electron atoms."

4 July. Multiple excitations: R. Freeman, "Planetary atoms"; D. Herrick, "Doubly excited atoms"; C. Clark, "Excited negative ions." Dielectronic recombination: G. Dunn, "Dielectronic recombination in magnesium"; K. LaGuttuta, "Dielectronic recombination in fields."

5 July. Microwave ionization (T. Bergman, discussion leader): Panel discussion; panelists: P. Koch, J. Bayfield, H. Silverstone, T. Gallagher.

### **Bacterial Cell Surfaces**

*Plymouth State College (N)*

Henry C. Wu, co-chairman; Ben Lugtenberg, co-chairman.

1 July. Lipids and polysaccharides (M. J. Osborn, discussion leader): E. P. Kennedy, C. R. H. Raetz, K. Jann, P. Reeves, and P. Rick. Peptidoglycan and cell division (U. Schwarz, discussion leader): J. T. Park, M. Matsushashi, B. G.

Spratt, Y. Hirota, and I. B. Holland.

2 July. Transport (W. Boos, discussion leader): H. Shuman, P. Potsma, G. Ames, and W. N. Konings. Outer membrane proteins: structures, functions and regulation I (V. Braun, discussion leader): M. Inouye, U. Henning, T. F. Meyer, H. Michael, and C. C. Brinton, Jr.

3 July. Outer membrane proteins: Structure, functions and regulation II (H. Nikaido, discussion leader): R. M. Garavito, M. Hofnung, J. Tommassen, and R. E. W. Hancock. Protein export I (L. L. Randall, discussion leader): G. Blobel, W. Wickner, P. C. Tai, and S. Ferro-Novick.

4 July. Protein export II (S. Mizushima, discussion leader): T. Silhavy, R. Ray, and S. Pollitt. Chemotaxis (J. Adler, discussion leader): D. Koshland, Jr., M. Simon, Y. Imae, and J. S. Parkinson.

5 July. Bacterial cell surface and pathogenesis (E. C. Gotschlich, P. H. Mäkelä, R. Silver, and S. Normark.

## **Biocompatibility of Biomaterials**

### *Holderness School*

S. A. Barenberg, chairman; J. M. Anderson, vice chairman.

17 June. (J. D. Andrade, discussion leader): H. Jennissen, "Adsorption hysteresis of proteins"; D. Axelrod, "Surface diffusion mobility of adsorbed proteins"; J. D. Andrade, "Conformational changes upon the adsorption of proteins." Poster session. (J. Brash/M. Gendreau, discussion leaders): L. Vroman, "Protein interactions with solids in contact with plasma in vitro"; T. A. Horbett, "Adsorption of proteins from blood to solids in vitro"; D. E. Brooks, "Adsorption of proteins to red blood cell surfaces"; J. C. Brash, "Composition of protein layers adsorbed from plasma to solids."

18 June. (W. J. Dodds/J. M. Anderson, discussion leaders): U. Ryan, "Endothelial cells"; P. Addonizio, "Platelet interactions at the blood/synthetic interface"; J. Kazura, "Mononuclear and polymorphonuclear cell interactions non-phagocytosible surfaces." Poster session. (S.-W. Kim/A. S. Hoffman, discussion leaders): Jan Feijen, "Albumin-heparin conjugated adsorbed surfaces"; T. Sugitachi, "Urokinase immobilized surfaces"; T. Okano, "PEG grafted surface"; S.-W. Kim, "Prostaglandin in immobilized polymers."

19 June. (J. E. Lemons/P. Ducheyne, discussion leaders): K. DeGroot, "Soft tissue interfaces: Macromolecular architecture"; T. Albrektsson, "Direct bond bonding"; M. Spector, "Electron micro-

scopic studies of cellular reactions to biomaterials." Poster session, hot topics. S. A. Brown/D. F. Williams, discussion leaders): J. Black, "Surface area and metal ion release and transport"; C. Griffin, "Effects of surface area and morphology on implant corrosion"; K. Meritt, "Tissue interface reactions to metals associated with allergy."

20 June. (J. Wilson-Hench/L. L. Hench, discussion leaders): Ulrich Gross, "Fundamental aspects of interfacial reactions between bioactive implants and tissues"; G. Ito/T. Matsuda, "Cell bioactive surface interactions"; T. Yamamuro/T. Kokubo, "Mechanisms of tissue bonding to A-W glass ceramics"; T. Kaneko/M. Ogino, "Quantitative of bone-implant bonding with ultrasonic probe"; Larry Hench, "A quantitative theory of implant surface activity." (S. A. Barenberg, discussion leader): (speaker and subject to be announced).

21 June. (B. D. Ratner/R. E. Baier, discussion leaders): (Speaker and subject to be announced); (speaker and subject to be announced); H. Gucinski, "Bacterial film formation in seawater"; K. Larsson/P. O. Glantz, "Bioadhesion"; J. W. Costerton/A. G. Gristina, "Bacteria adherence to biomaterials."

## **Biological Regulatory Mechanisms**

### *Holderness School*

Nigel D. F. Grindley, chairman; Susan L. Lindquist, co-chairman.

24 June. Positive and negative regulatory circuits (Carol Gross, discussion leader); Nucleic acid/protein interaction in gene expression (Karen Sprague, discussion leader).

25 June. The nucleus (Lee Hartwell, discussion leader); Protein localization and secretion (Gunter Blobel, discussion leader).

26 June. Determination of tissue specificity (Harold Weintraub, discussion leader); Developmental regulation (Joan Rudderman, discussion leader).

27 June. Genome reorganization in gene expression (Melvin Simon, discussion leader); Translational control (Nancy Kleckner, discussion leader).

28 June. Regulation of behavior (Jeffrey Hall, discussion leader).

## **Bones and Teeth**

### *Kimball Union Academy*

Arthur Veis, chairman; Arnold Kahn, vice chairman.

15 July. Calcium Transport. How does calcium move from cell to extracellular

matrix? (Barbara Boyan, discussion leader): Nejat Duzgunes, "Calcium interactions with membrane lipids"; Irving Shapiro, "The role of phosphate ions and phosphorylated compounds in the formation of mineral in growth cartilage"; Discussants: David Kreuter, Edward J. Reith, and Ralph J. Kessler. Cell-matrix interactions (Johan Heersche, discussion leader): Robert Mecham, "Matrix influences in mesenchymal cell differentiation"; Jane Aubin, "Cell expression as influenced by shape changes"; Discussants, Paul Benya, and J.-P. Thiery.

16 July. Models of mineralization: What can be learned from diverse systems? (Stephen Weiner, discussion leader): Steven Mann, "Iron oxide biomineralization in the radula teeth of the limpet 'patella vulgata'"; Mary Marsh, "Phosphoprotein mediated shell mineralization"; Discussants: Heinz Lowenstam, Miles Crenshaw, and Arthur Veis. Stop the press: New topics, selected from the poster presentations (Arnold Kahn, discussion leader):

17 July. Calcification mechanisms in cartilage: Crystal ghosts or matrix vesicles? (William J. Landis, discussion leader): Ermanno Bonucci, "The structural basis of calcification: Collagen fibrils, matrix vesicles, crystal ghosts"; Robin Poole, "Calcification of the cartilage matrix: Chondrocalcin-proteoglycan organization"; Discussants: C. G. Groot, H. C. Anderson, and A. L. Arsenault. Collagen cross-linking in mineralized tissues: Is it related to mineral deposition? (Gerald Mechanic, discussion leader): Elton Katz, "Mineral volume occupancy in bone"; L. C. Bonar, "X-ray and neutron diffraction studies of bone"; Discussants: Mitsuo Yamauchi, David Eyre, Paul Scott, and Al Baynes.

18 July. Genetic disorders of bone and dentin, noncollagenous components and post-translational modification defects (Roger Smith, discussion leader): William Cole, "Noncollagenous proteins in pathological human bone"; M. J. O. Francis, "Abnormal matrix dentin in osteogenesis imperfecta"; Discussants: L. J. Denholm, Yuzo Takagi, Ronald R. Minor, and John Jacobs, "Molecular biology of calcitonin."

19 July. Is calcitonin a calcitropic hormone? (T. J. Martin, discussion leader): M. G. Rosenfeld, "Tissue specific RNA processing of calcitonin and related polypeptides"; Hunter Heath, III, "Calcitonin physiology in humans"; Discussants: Ian MacIntyre and Leonard Deftos.

All participants in the conference are invited to submit posters for the poster session. Abstracts for the posters should

be sent directly to Dr. Arnold J. Kahn, Washington University School of Dental Medicine, 4559 Scott Avenue, St. Louis, Missouri 63110, along with a copy of your application. The original application should go to the Gordon Conference office. Dr. Kahn will choose those posters to be presented orally at the Tuesday evening session.

## Calcium Phosphates

### *Plymouth State College (N)*

Raquel Z. LeGeros, co-chairman; Edgar C. Moreno, co-chairman.

**24 June.** Formation, transformation, inhibition: Synthetic systems (M. D. Francis and J.-C. Heughebaert, discussion leaders): J. L. Meyer, "Calcium phosphate inhibitors"; P.-T. Cheng, "Thermodynamics/kinetics of de novo crystal growth"; R. Kijkowska, "Effect of magnesium on calcium phosphate phases." Discussion of selected posters. Effect of organic molecules: Synthetic systems (A. Boskey and E. D. Eanes, discussion leaders): J. J. Vogel, "Acidic phospholipid bilayer as calcification catalyst"; D. W. L. Hukins, "Influence of phosphoproteins on calcium phosphate phases."

**25 June.** Dissolution/remineralization: Synthetic/biological systems (J. Arends and G. Ingram, discussion leaders): H. C. Margolis, "Dissolution of hydroxyapatite in organic acid buffers"; William Higuchi, "Unifying criteria for dissolution kinetics of synthetic apatite"; L. M. Silverstone, "Fluorides and remineralization phenomena in dental enamel." Properties: Ultrastructural, adsorption, surface chemistry (R. A. Young and A. Gaffar, discussion leaders): G. Daculsi, "Ultrastructural properties of biological/synthetic apatites"; M. Nakagaki, "Adsorption and surface chemistry of apatites."

**26 June.** Specialized techniques/instrumentation in calcium phosphate research (William Landis and G. Hiral, discussion leaders): A. R. Lodding, "Applications of SIMS to biomineralization studies"; D. G. A. Nelson/Wood, "OCP-apatite interface by high resolution TEM"; E. Etz, "Advances in micro-Raman instrumentation." Matrix/mineral interactions: Biological systems (E. Tonna and M. U. Nylen, discussion leaders): B. Kerebel, "Matrix-mineral interactions in pathological calcifications"; C. Robinson, "Matrix proteins and control on enamel apatite crystal growth."

**27 June.** Calcium phosphate as biomaterials (D. de Groot and P. Ducheyne, discussion leaders): A. Ravaglioli,

## Applications

Scientists are invited to submit applications for attendance at the Gordon Research Conferences. An application blank is on page 1106 and may be submitted to Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, University of Rhode Island, Kingston, Rhode Island 02881.

"Composition, properties, uses of phosphate glasses"; L. Chow, "Chemistry of self-setting apatite cement"; J. F. Osborn, "Cellular reactions to calcium phosphate ceramics." Calcium phosphates in crystal deposition diseases (N. Mandel and B. Finlayson, discussion leaders): G. Boivin, "Mixed CPPD and HAP crystal deposition diseases"; H. Furedi-Milhofer, "Calcium phosphates in calcium oxalate systems."

**28 June.** Calcium phosphates in ecosystems, marine/fresh water environment (G. H. Nancollas and B. Tomazic, discussion leaders): J. Nriagu, "Environmental role of calcium phosphate formation"; Z. Amjad, "Calcium phosphate formation/dissolution in industrial systems"; H. P. Schwarz, "Oxygen isotopic variations in fossil bone apatite and their paleoclimatic interpretations."

Posters relating to session topics will be presented daily, 5 to 6 p.m. (except 28 June) preceding the respective sessions and selected posters will be briefly presented and discussed. Please submit abstracts on or before 10 April 1985 to R. Z. LeGeros, New York University, 345 East 24 Street, New York 10010.

## Cancer

### *Colby-Sawyer College (N)*

Eric J. Stanbridge, chairman; George Poste, vice chairman.

**19 August.** Tumor progression and tumor heterogeneity (Gerald Murphy, discussion leader): G. Heppner, "Cellular heterogeneity in tumor development"; G. Brodeur, "Involvement of oncogenes in tumor progression"; D. Tarin, "Organ colonization by metastatic tumor cells." Genetic theories (John Cairns, discussion leader): R. Schimke, "Role of chromosomal aberrations in cancer"; L. Strong, "Genetic theories of cancer."

**20 August.** Oncogene interactions (Inder Verma, discussion leader): C. Croce, "Molecular genetics of human B-cell lymphomas"; G. Vande Woude,

"Mechanisms of oncogene activation"; G. Yoakum, "Oncogene transfection of human cells." Control of tumorigenic expression (Ruth Sager, discussion leader): H. Klinger, "Somatic cell hybrid analysis of genetic factors regulating malignancy"; W. Cavenee, "Recessive mutant genes predisposing to cancer."

**21 August.** Growth factors (Tony Hunter, discussion leader): R. Erikson, "Protein kinase C"; M. Waterfield, "EGF and PDGF"; C. Stiles, "Regulation of gene expression by platelet-derived growth factor." Tumor-host interactions (George Poste, discussion leader): L. Reid, "Matrix and hormonal regulation of growth and differentiation in cultured cells"; L. Liotta, "Tumor invasion."

**22 August.** Epigenetic considerations (Philip Frost, discussion leader): R. Kerebel, "Methylation and malignancy"; A. Feinberg, "DNA methylation and human cancer"; H. Rubin, "Adaption versus mutation in the generation of cellular diversity." J. Goldie, "Drug and hormone resistance in neoplasia"; W. Greene, "Molecular analysis of the IL-2 receptor."

**23 August.** Differentiation and cancer (Barry Pierce, discussion leader): L. Sachs, "Coupling and uncoupling of differentiation and proliferation"; R. Muller, "Role of c-fos differentiation growth control and transformation"; R. Scott, "Role of differentiation control defects in the initiation of carcinogenesis."

## Carbohydrates

### *Tilton School*

Roger W. Jeanloz, chairman; Hans H. Baer, vice chairman.

**24 June.** (Jeremy P. Carver, discussion leader): Jacques Reuben, "Isotopic multiplets in the  $^{13}\text{C}$ -NMR spectra of carbohydrates with partially deuterated hydroxyl groups"; C. Allen Bush, "Covalent structure and three-dimensional confirmation of oligosaccharides from glycoproteins deduced from  $^1\text{H}$ -NMR spectroscopy and energy calculations." (Cornelius P. J. Glaudemans, discussion leader): Don M. Carlson, "Structural analysis of the gene of the proline-rich glycoprotein."

**25 June.** (Hans H. Baer, discussion leader): Andrew Vasella, "l-Deoxy-l-nitroaldoses and related compounds"; William R. Roush, "Studies in carbohydrate synthesis." (Paul A. Sandford, discussion leader): Alan Darvill, "Plant cell-wall polysaccharides and biologically active oligosaccharides."

**26 June.** (Laurens Anderson, discus-

sion leader): Hans Paulsen, "Problems in oligosaccharide syntheses"; C. D. Warren, "Application of synthetic intermediates to glycoprotein biosynthesis." (Annette Herscovics, discussion leader): Frank Maley, "The use of endoglycosidases in clarifying the structure and function of glycoproteins."

27 June. (Derek Horton, discussion leader): Frank Unger, "Chemistry of lipopolysaccharides of gram-negative bacteria"; Jacques Defaye, "Thiosugars and enzymes." (H. Edward Conrad, discussion leader): Robert D. Rosenberg, "Heparin-like molecules and blood-vessel function."

28 June. (Andrea Vasella, discussion leader): G. W. J. Fleet, "Approaches to the synthesis of alkaloids from carbohydrates"; Richard L. Tolman, "Carbohydrate derivatives in the synthesis of acyclonucleoside substrates for herpes thymidine kinase."

## CO<sub>2</sub> Fixation by Green Plants

### Kimball Union Academy

William L. Ogren, chairman; Gerald E. Edwards, vice chairman.

19 August. (J. A. Bassham, discussion leader): M. D. Hatch, "Pyruvate-Pi dikinase activation/deactivation"; R. G. Jensen, "Rubisco activation"; U. Heber, "Metabolite control of CO<sub>2</sub> fixation." (H. M. Miziorko, discussion leader): T. J. Andrews, "Biochemical reconstitution of rubisco"; C. R. Somerville, "Genetic modification of rubisco."

20 August. (A. R. Portis, Jr., discussion leader): P. Schurmann, "Chloroplastic fructose biphosphate phosphatase"; H. W. Heldt, "Cytosolic fructosebiphosphate phosphatase"; B. B. Buchanan, "Fructose-2, 6-bisphosphate metabolism." (J. A. Berry, discussion leader): M. R. Badger, "Carbon transport in photosynthetic microorganisms"; D. T. Canvin, "Physiology of CO<sub>2</sub> growth response in photosynthetic microorganisms."

21 August. (B. Drake, discussion leader): J. S. Boyer, "Response to water stress"; C. B. Osmond, "Light adaptation"; I. P. Ting, "CAM-cycling." (R. M. Shibles, discussion leader): G. D. Farquhar, "Regulation of CO<sub>2</sub> assimilation"; R. M. Leech, "Chromosomal regulation of Rubisco activity."

22 August. (J. Bennett, discussion leader): A. R. Cashmore, "Light inducible nuclear genes encoding chloroplast proteins"; K. Keegstra, "Role of chloroplast envelope in protein synthesis"; G. W. Schmidt, "Post-translational modification of chloroplast proteins." (W. L. Ogren, discussion leader): G. H. Lor-

imer, "Rubisco activation and reaction mechanisms"; (speaker and subject to be announced).

23 August. (B. N. Smith, discussion leader): R. H. Brown, "C<sub>3</sub>-C<sub>4</sub> photosynthesis: *Panicum*"; R. Chollet, "C<sub>3</sub>-C<sub>4</sub> photosynthesis: *Moricaudia*"; M. S. B. Ku, "C<sub>3</sub>-C<sub>4</sub> photosynthesis *Flaveria*."

Poster sessions, open to all participants, and organized by G. E. Edwards.

## Catalysis

### Colby-Sawyer College (N)

Wolfgang Sachtler, chairman. Edwin Kugler, vice chairman.

24 June. Norman Herron, "Zeolite encapsulated metal complexes as oxidation catalysts"; Younes Ben Taarit, "Rhodium and iridium carbonyl compounds in zeolites: Synthesis, characterization and catalytic properties in CO reactions"; Joe Hightower and Geoffrey Price, "Te-NaX zeolites for dehydrocyclization of *n*-paraffins."

25 June. Richard Lambert, "Moderators, promoters and mechanism in the selective oxidation of ethylene over silver"; Robert Madix, "Activated adsorption on metal surfaces"; Jack Lunsford, "Oxidative dimerization of methane."

26 June. Charles Campbell, "Mechanism of ethylene epoxidation on chlorine and cesium modified silver single crystals"; Rutger van Santen, "Mechanism of olefin oxidation"; Masaru Ichikawa, "Promoting roles of early transition metal oxides in modifying the catalysis of rhodium metal in syngas conversion to oxygenates"; Vladimir Poncet, "Rhodium catalysts for the synthesis of oxygenates; the function of cations."

27 June. Duward Shriver, "Ensemble effects in organometallic CO chemistry"; Friedrich Hoffmann, "Molecular bond weakening on alkali promoted metal surfaces; a surface science approach to heterogeneous catalysis"; Valdimir Haensel, "Creativity and the future of science and technology."

28 June. Roel Prins, "Metal-support interactions between Pt or Rh and Al<sub>2</sub>O<sub>3</sub> or TiO<sub>2</sub>"; Gary Haller, "The role of metal-ion interaction in support and promoter effects on catalysis."

## Catecholamines

### Proctor Academy

Barry Hoffer, chairman; David C. Klain, vice chairman.

29 July. Regulation of catecholamine synthesis, storage and release: Molecular aspects (Norman Weiner, session chairman): Norman Weiner, "Regula-

tion of tyrosine hydroxylase"; Ed Baetge, "Molecular biology of catecholamine synthesizing enzymes"; Charles Rutledge, "Storage and release mechanisms"; Moussa Youdim, "Monamine oxidase"; Richard Orenburg, "Mechanisms of catecholamine release"; Ray Fuller, "Selective amine uptake inhibitors."

30 July. Receptors and transduction (Nancy Zahniser, session chairman): David U. Pritchard, "Alpha adrenergic receptors"; Craig Ventor, "Use of immunological tools"; George Kunos, "Mechanisms of inverse regulation of alpha and beta receptors"; Nancy Zahniser, "Dopamine receptors"; John Perkins, "Mechanisms of rapid receptor down regulation"; Perry Molinoff, "Receptor thermodynamics"; Jim Putney, "Calcium and phosphoinositol."

31 July. In vivo probes (Benjamin S. Bunney, session chairman): Benjamin S. Bunney, "Electrophysiology of dopamine neurons"; Gary Aston-Jones, "Electrophysiology of norepinephrine neurons"; Ralph Adams, "Electrochemistry as an in vivo analytical tool"; Ivan Mefford, "Electrochemistry as a quantitative in vitro tool." Plasticity, development and aging (Ira Black, session chairman): Ira Black, "Development of catecholamine pathways"; Ake Seiger, "Regulation of catecholamine-containing nerve fiber growth"; Fred Gage, "Transplantation of catecholamine-containing neurons"; John Marshall, "Aging and catecholaminergic pathways."

1 August. Neuroendocrinology—adrenergic control of the pineal gland (David Klein, session chairman): David Sugden, "Adrenergic control of cyclic nucleotides"; Pierre Voissin, "Adrenergic control of protein synthesis"; Richard Zigmond, "Phospholipid regulation"; David Klein, "Adrenergic control of indoleamine synthesis." Peptides as catecholamine co-transmitters (Bertil Fredholm, session chairman): Bertil Fredholm, "Overview"; David Jacobowitz, "Anatomical aspects"; Ermino Costa, "Biochemical aspects"; Jan Lundberg, "Pharmacological aspects."

2 August. Catecholamines in neuropsychiatric disease (Irv Kopin, session chairman): Roy Wise, "Catecholamines and substance abuse"; Robert Freedman, "Catecholamines and psychiatric illness"; Irv Kopin, "MPTP and Parkinson's disease in a primate model."

## Cell Contact and Adhesion

### Tilton School

Malcolm S. Steinberg, chairman; Carolyn Damsby, vice chairman.



1 July. Cell-cell adhesion (Caroline Damsky, chairman): Ursula Goodenough, "The sexual agglutinin of *Chlamydomonas*: Aspects of its structure and function at the polypeptide and gene level"; M. Takeichi, "Calcium-dependent cell-cell adhesion molecules"; Melitta Schachner, "Cell-adhesion molecules in the nervous system." Cell matrix (Richard Hynes, chairman): Erkki Ruoslahti, "Structural relationships between fibronectin and its gene"; A. F. Horwitz, "Recent studies using the adhesion-disruptive monoclonal antibody which recognizes a 120- to 160-kD integral membrane adhesion glycoprotein complex"; Rudy Juliano, "Use of adhesion defective mutants to detect multiple mechanisms of cell-matrix adhesion."

2 July. Specialized membrane domains I (Ross Johnson, chairman): Jean-Paul Revel, "Organization of proteins in gap junctions"; Anne E. Warner "Effects of antibodies against gap junctions as probes for studying development"; Malcolm S. Steinberg, "Organization and function of desmosomal proteins." Specialized membrane domains II (Michael Kindler, chairman): U. J. McMahan, "Basal lamina molecules that direct formation of the post-synaptic membrane in regenerating muscle"; Richard Rotundo, "Organization of different acetylcholinesterase forms in muscle and neuronal membranes"; David Wolf, "Fusion and control of membrane regionalization."

3 July. Membrane-cytoskeletal interactions (Keith Burridge, chairman): Benjamin Geiger, "Molecular dissection of cell-cell and cell-substratum focal adhesions"; John Glenney, "Either spectrin-like molecules in non-erythroid cells, or microfilament-membrane associations in microvilli"; Elizabeth Luna, "Actin-membrane interactions in *Dictyostelium*." Cell motility (James Spudich, chairman): D. Lansing Taylor "Visualizing the cytoskeleton in action using fluorescent analog cytochemistry"; Stephen Kron, "In vitro models for an actomyosin motility"; Michael Sheetz, "New insights into the role of microtubules in axoplasmic transport."

4 July. Adhesion-mediated morphogenetic processes. Recognition changes during gastrulation in sea urchin embryos (David McClay, chairman): Urs Rutishauser, "Neural cell adhesion molecules in morphogenesis"; Jean-Paul Thiery "The guidance of neural crest cell migration"; Michael Bastiani, "Insect neuronal development: pattern specification." Open session (Malcolm S. Steinberg, chairman).

5 July. Mechanisms of malignant invasion and metastasis (I. J. Fidler, chairman): Walter Birchmeier, "(title to be

announced)"; Lance Liotta, "(title to be announced)"; Phillip Frost, "DNA hypomethylation in malignancy."

## The Central Nervous System: Neural Development

### Tilton School

Nicholas W. Seeds, chairman; Ruben Adler, vice chairman.

10 June. (Carl Cotman, discussion leader): Regis Kelly, "Specific proteoglycans of the synapses"; Jon Lindstrom, "Probing acetylcholine receptors with monoclonal antibodies"; Mary Kennedy, "Differential expression of a brain calmodulin-dependent protein kinase." (Nicholas Seeds, discussion leader): Melitta Schachner, "Neural specific cell surface antigens in development"; Luis Glaser, "Retinal cell adhesion molecules defined with monoclonal antibodies."

11 June. (Regis Kelly, discussion leader): William Catterall, "Molecular properties and regulation of voltage-sensitive sodium channels"; Andrew Blatz, "Analysis of single ionic channel in mammalian embryonic skeletal muscle"; Julius Axelrod, "Central nervous system: Ion channels and signal transduction." (Antonia Vernadakis, discussion leader): Ruben Adler, "Is there a role for extracellular matrix molecules in the CNS?" U. C. McMahan, "Basal lamina molecules that direct differentiation of the neuromuscular junction."

12 June. (Melitta Schachner, discussion leader): Raymond Lasek, "The role of cytoskeletal polymers in development"; Richard Vallee, "Neuronal microtubule associated proteins: An immunological and biochemical approach"; Ronald Liem, "Intermediate filament proteins in developing neurons and glia." (Paola Timiras, discussion leader): Nicholas Seeds, "Extracellular proteases in neural cell migration"; Denis Monard, "Interaction of a glia-derived inhibitor with neuronal cell membrane proteases."

13 June. (Ruben Adler, discussion leader): Carl Cotman, "Injury induced neurotrophic factors in brain"; Paul Reier, "Neural tissue transplantation and the cell biology of spinal cord injury and repair"; Richard Sidman, "Tubular prosthesis for axonal regeneration." (Luis Glaser, discussion leader): Thomas Abrams, "Activity dependent facilitation: Mechanism for associative learning in aplysia"; Ron McKay, "Molecular features of axon outgrowth in vertebrate and invertebrate nervous systems."

14 June. (Jean Lauder, discussion leader): Lynn Landmesser, "Growth

cone guidance in the chick hindlimb"; Urs Rutishauser, "Cell adhesion molecules in axon pathfinding of vertebrates."

## Solid State Studies in Ceramics

### Plymouth State College (S)

George Y. Onoda, chairman; Brian Lawn, vice chairman.

### Interfacial Forces in Ceramic Processing

29 July. G. Parfitt, "Dispersion in non-aqueous media"; H. K. Bowen, "Interaction energies in concentrated dispersions." A. Bleier, "Chemical/thermodynamical forces in powder consolidation"; I. Aksay, "Microstructure of colloidal solids."

30 July. M. Sacks, "Dispersion and rheology"; R. Cannon, "Competitive adsorption and rheology"; R. Raj, "Cluster formation in dilute suspensions." F. Fowkes, "Wetting and atomic forces"; P. Somasundaran, "Surfactants and wetting behavior."

31 July. J. Pask, "Wetting and spreading at high temperatures"; R. Loehman, "Wetting in complex glass/metal systems." T. Shaw, "Capillary forces in particulate materials"; D. Clarke, "Forces across thin boundary phases."

1 August. R. Dehoff, "Microstructure evolution during sintering"; L. DeJonghe, "Sintering stresses and microstructure." B. Mandelbrot, "Fractals."

2 August. C. Handwerker, "Dihedral angles in final stage sintering"; M. Harmer, "Grain boundary migration."

## Chemotherapy of Experimental and Clinical Cancer

### Colby-Sawyer College (S)

Charles Myers, chairman; Victor Ling, vice chairman.

22 July. 3-D aspects of drug-enzyme interaction: role in new drug development (R. Parks, discussion leader): B. Roth, "3-D structure of dihydrofolate reductase"; C. Bugg and S. Ehlich, "3-D structure of purine nucleoside phosphorylase"; D. Mathews, "Predicting protein 3-D structure." Phospholipids as membrane active antitumor agents (E. J. Modest, discussion leader): L. Daniel, "Mechanistic biochemical studies"; W. Berdel, "Preclinical and clinical studies."

23 July. Drugs and DNA sequence specificity (Susan Horwitz, discussion leader): L. Hurley, "CC-1065 and DNA sequence specificity." Clinical pharmacology of antineoplastic agents (J. M. Collins, discussion leader): J. Kovach,

"Role of animal pharmacology in new drug development"; M. Egorin, "Matching therapeutic conditions in humans and mice."

24 July. Topoisomerase II as a target for VP-16 and intercalators (K. Kohn, discussion leader): K. Kohn, "Topoisomerase II—role in drug induced protein-DNA"; L. Liu, "Topoisomerase II as a target of drug action"; B. Sinha, "Metabolic activation of VP-16." Biochemistry of adriamycin resistance (B. Bachur, discussion leader): R. Felsted, "Role of adriamycin-binding protein in resistance"; B. Batist, "Role of glutathione-S-transferase in drug resistance."

25 July. Tubulin as a target for cancer chemotherapy (R. Luduena, discussion leader): J. Olmstead (subject to be announced); L. Wilson (Subject to be announced); S. Horwitz (subject to be announced). The use of NMR in pharmacology (J. Cohen, discussion leader): (Speaker to be announced), "NMR studies of drug-DNA interaction"; (speaker to be announced), "Definition of protein binding sites by NMR."

26 July. Experimental and clinical basis for the curative treatment of germ cell tumors (F. Muggia, discussion leader): M. Garnick, "Overview of therapeutic results in advanced gonadal and extra-gonadal germ cell tumors treated with chemotherapy"; G. McVie, "Optimal use of cisplatin and platinum analogs"; M. Peckman, "Studies with cell lines and xenographs of seminoma and non-seminomatous tumors."

Posters will be accepted from participants.

## Chronobiology

### *Plymouth State College (S)*

Jerry F. Feldman, chairman; Michael Menaker, vice chairman.

1 July. Molecular genetics of circadian rhythms (Ronald Konopka, discussion leader): Jeffrey Hall, Michael Rosbash, and Michael Young. Circadian rhythms in plants (Ruth Satter, discussion leader): Malcolm Wilkins and Thomas Longan.

2 July. Circadian rhythms in humans (Fred Turek, discussion leader): Franz Halberg, Serge Daan, and Albert Lewy. Ions and membrane phenomena in circadian rhythms (Arnold Eskin, discussion leader): Hideaki Nakashima and Barry Bowman.

3 July. Neuroendocrine aspects of circadian rhythms (Michael Menaker, discussion leader): Joseph Beshares, Eric Bittman, and Bruce Goldman. Cellular and subcellular rhythms (J. W. Hastings,

discussion leader): H.-G. Schweiger and David Lloyd.

4 July. Neurophysiology of vertebrate rhythms (Robert Moore, discussion leader): Elliott Albers, Martha Gillette, and Joseph Takahashi. (Jerry Feldman, discussion leader): Colin Pittendrigh, "The role of circadian organization in photo-periodic timing."

5 July. Neurobiology of invertebrate rhythms (Gene Block, discussion leader): Terry Page, Robert Barlow, and James Truman.

Persons wishing to present posters should write to Dr. Jerry Feldman, Thimann Laboratories, University of California, Santa Cruz 95064.

## Coatings and Films

### *Plymouth State College (S)*

Loren W. Hill, chairman; Irvin M. Krieger, vice chairman.

5 August. (P. E. Pierce, discussion leader): S. P. Pappas, "Latent catalysts for thermoset coatings"; E. W. Meijer, "Reaction mechanisms in high solids coatings." (F. N. Jones, discussion leader): G. M. Carlson, C. M. Neag, and T. Provder, "Chemistry and characterization of cure in blocked isocyanate coatings"; H. P. Higginbottom, "Benzoxazine crosslinkers for coatings."

6 August. (G. Swift, discussion leader): J. B. Enns, "Formation and properties of thermosetting polymers"; H. B. Hopfenberg, "Transport in and physical aging of polymeric glasses." (J. O. Stoffer, discussion leader): J. E. McGrath, "Synthesis and characterization of functionally reactive polymers"; C. E. Hoyle, "Photodegradation of aromatic diisocyanate based polyurethanes."

7 August. (R. M. Fitch, discussion leader): J. W. Vanderhoff, "Characterization of core-shell emulsion polymers"; Y. Sasaki, "New developments in water-borne coatings." (I. M. Krieger, discussion leader): K. L. Hoy, "Separating solubility parameters of polymers into their components"; K. C. Frisch, "Recent investigations on IPN coatings."

8 August. (G. P. Bierwagen, discussion leader): T. A. Strivens, "Use of acoustic emission in characterizing degradation of coatings"; M. Oosterbrok, "Fundamentals of impact phenomena in coatings systems." (J. W. Prane, discussion leader): S. E. Rickert, "Single crystal coatings: High technology applied to coatings and coating processes."

9 August. (J. A. Vasta, discussion leader): C. K. Schoff, "Cationic electro-deposition of primers over zinc coated

steel"; R. J. Barsotti and C. Scopazzi, "Correlation of application and appearance with rheological measurement."

## Corrosion

### *Colby-Sawyer College (N)*

Michael J. Graham, chairman; Bryan E. Wilde, vice chairman.

22 July. Early stages of oxidation (B. E. Wilde, discussion leader): H.-J. Grabke, "Adsorbed states and oxide nucleation on metals"; G. J. Yurek, "Early stages of oxidation/sulphidation of chromium and chromium-bearing alloys." Surface-analytical techniques in corrosion research (G. C. Wood, discussion leader): J.-C. Pivin, "Electronic structure of oxide films as determined by surface techniques"; D. F. Mitchell, "Some popular misconceptions in surface analysis related to corrosion research."

23 July. Adhesion and interfaces I (B. Phipps, discussion leader): R. A. McKee, "Adherence properties of thin films and coatings"; P. W. Tasker, "Structure, transport and impurity segregation at interfaces in nickel oxide." Adhesion and interfaces II (B. Cox, discussion leader): L. W. Hobbs, "Electron microscopy studies of metal/oxide and metal/sulphide interface structures"; J. G. Smeggil, "A novel viewpoint on protective scale adherence."

24 July. Oxidation and sulphidation of alloys I (D. L. Douglass, discussion leader): K. Przybylski, "Effect of yttrium on the mechanism of growth of chromia scales on chromium and chromium-bearing alloys"; M. J. Bennett, "Application of Raman, TEM, and other ion-based techniques to oxidation problems." Oxidation and sulphidation of alloys II (R. A. Perkins, discussion leader): F. H. Stott, "Mechanism of penetration and breakdown of oxide scales in sulfur-containing environments"; G. H. Meier, "Behavior of chromia, alumina and silica-forming systems in mixed environments."

25 July. Hot corrosion (F. S. Pettit, discussion leader): K. Luthra, "Low temperature hot corrosion: Mechanisms and possible solutions"; J. L. Smialek and N. S. Jacobson, "Hot corrosion of silicon carbide: part I, chemical mechanism; part II, microstructural and strength effects." (K. N. Strafford, discussion leader): B. D. Barker, "Corrosion and conservation of artifacts recovered from the 'Mary Rose'."

26 July. Erosion/corrosion and wear (P. Hancock, discussion leader): J. Stringer, "The interaction of corrosion



and erosion at high temperatures"; H. Leidheiser, Jr., "Abrasive wear of anodized aluminum."

## Crystal Growth

### *Plymouth State College (S)*

F. Rosenberger, chairman; A. L. Gentile, vice chairman.

15 July. Surfaces: Equilibrium and diffusion (F. Rosenberger, discussion leader): G. H. Gilmer, "Simulation of crystal-vapor interfaces"; C. Jayaprakash, "Rounded equilibrium shapes and roughening"; G. Ehrlich, "Surface diffusion." Surfaces: Structure and kinetics (K. A. Jackson, discussion leader): L. D. Marks, "Surface structure of small particles and thin films on the atomic scale"; H. J. Meyer, "Molecular beam investigations of vapor growth kinetics."

16 July. MBE and heterostructures (B. A. Joyce, discussion leader): T.-S. Kuan, "TEM studies of AlGaAs/GaAs interfaces"; H.-D. Shih, "MBE growth of GaAs/AlGaAs heterojunctions and their morphology"; J. C. Bean, "MBE of Ge and Si strained layer heterojunctions." Crystal-melt interfaces (W. A. Tiller, discussion leader): B. Mutaftchiev, "Structure and growth resistance of solid-melt interfaces"; J. H. Bilgram, "Solid-liquid interface layers."

17 July. Interface dynamics and stability (R. F. Sekerka, discussion leader): D. T. J. Hurle, "Melt-solid interface response"; R. A. Brown, "Finite amplitude morphological stability"; W. R. Wilcox, "Morphological stability in solution growth." Fluid dynamics modeling (W. E. Langlois, discussion leader): K. M. Kim, "Czochralski fluid flow modeling and experiments"; R. A. Brown, "Bridgman modeling and comparison with experiments."

18 July. Gallium arsenide (R. K. Willardson, discussion leader): A. S. Jordan, "Ways and means of improving the crystalline perfection of GaAs"; H. V. Winston, "Growth and behavior of low dislocation indium-alloyed GaAs"; R. N. Thomas, "Magnetic field CZ growth of GaAs and Si." Silicon (O. J. Marsh, discussion leader): K. E. Benson, "Effect of growth parameters on the properties of large diameter CZ silicon"; G. A. Rozgonyi, "Dynamic nature of silicon during processing."

19 July. Mercury cadmium telluride, synthesis (A. L. Gentile, discussion leader): J.-S. Chen, "Defect chemistry of HgCdTe"; H. F. Schaake, "Solid-state recrystallization and LPE of HgCdTe"; R. C. Pastor, "Low-temperature synthesis of high-temperature compounds."

## Developmental Biology

### *Proctor Academy*

Allan Spradling, chairman; Robert Horvitz, vice chairman.

22 July. Oogenesis (Joan Ruderman, discussion leader): Doug Melton, Bill Wood, Christiane Nusslein, Mike Wormington. Genes regulating development I (Thom Kaufman, discussion leader): Walter Gehring, David Hogness, Michael Wilcox, Kelley Tachell.

23 July. Genes regulating development II (Robert Horvitz, discussion leader): Harold Weintraub, Kathryn Andersen, Herbert Jäckle, Johns Sulston. Sex determination (Ira Herskowitz, discussion leader): Jonathan Hodgkin, Tom Cline, Bruce Baker, David Botstein.

24 July. Genome remodeling during development (Elizabeth Blackburn, discussion leader): David Baltimore, Meng-Chao Yao, Nina Agabian. Gene regulation I (Allan Spradling, discussion leader): Frank Costantini, Steve Rodgers.

25 July. Gene regulation II (Steve McKnight, discussion leader): Robert Tjian, Carl Parker, Max Birnstein, Sandy Johnson. Cell-cell interactions (Richard Hynes, discussion leader): Norton Gilula, Urs Rutishauser, Jeremy Brockes.

26 July. Developmental neurobiology (Richard Scheller, discussion leader): Seymour Benzer, Michael Rosbash, Steve Burdon, Gerry Rubin.

## Drug Metabolism

### *Holderness School*

Mitchell N. Cayen, chairman; Neal Castagnoli, Jr., vice chairman.

22 July. Sex differences in drug metabolism (Ina B. Snow, discussion leader): Ina B. Snow, "Sex differences in renal transport and reabsorption from the bladder"; Dene Ryan, "Sex differences in phase I xenobiotic metabolism"; Gerard J. Mulder, "Sex differences in xenobiotic conjugation." Design of tissue selective prodrugs requiring metabolic activation (Neal Castagnoli, Jr., discussion leader): Leif A. Svennson, "Cascade esters and built-in hydrolysis brakes—prerequisites for the design of prodrugs with high presystemic stability"; Nicholas Bodor, "Metabolism based drug design."

23 July. Disposition of herbicides and fungicides (Julius J. Menn, discussion leader): F. Dana Hess, "Herbicide absorption, transport and mode of action in plants"; D. Stuart Frear, "Metabolism and disposition of herbicides in plants"; Hugh D. Sisler, "Fungicide metabolism and mode of action." Pharma-

cogenetics: Molecular aspects (Grant R. Wilkinson, discussion leader): Bert N. LaDu, Jr., "Cloning the pseudocholinesterase gene"; Diane Unberhauer, "Characterization of human cytochrome P-450's involved in oxidative polymorphisms."

24 July. Drug metabolism in the skin (Gabriela Nicolau, discussion leader): James R. Fouts, "Freshly isolated skin cells: Metabolism of xenobiotics in different cell types"; David R. Bickers, "Role of the cytochrome P-450 dependent monooxygenase in the epidermis"; Gabriela Nicolau, "First pass metabolism in the skin following topical administration of viprostol, a synthetic PGE<sub>2</sub> prostaglandin." Metabolism of environmental chemicals (Hazel B. Matthews, discussion leader): I. Glenn Sipes, "Metabolism and disposition of halogenated xenobiotics"; Peter Fu, "Metabolic activation of nitropolycyclic aromatic hydrocarbons."

25 July. Toxicology of bound residues (Anthony Y. H. Lu, discussion leader): Anthony Y. H. Lu, "The importance of mechanistic metabolism studies in the evaluation of bound residue formation"; Peter Wislocki, "Toxicity evaluation of bound residues"; F. Peter Guengerich, "Formation of DNA adduct from reaction of dihaloethane and glutathione: Mechanism and toxicological implications." (Mitchell N. Cayen, discussion leader): Bruce N. Ames, "Carcinogens, anticarcinogens and human risk."

26 July. Automation in the bioanalytical laboratory (Joseph O. Malbica, discussion leader): Wolfgang Lindner, "Column switching techniques in the isolation of metabolites"; David Garcia, "Robotics in the study of drug metabolism as applied to complex assay methodology."

## Dynamics of Gas-Surface Interactions

### *Colby-Sawyer College (S)*

J. C. Tully, chairman; S. J. Sibener, vice chairman.

29 July. (T. E. Madey, discussion leader): W. Ho, "Dynamics of molecular dissociation on surfaces"; R. Ryberg, "Energy and phase relaxation of adsorbate vibrations on metal surfaces"; R. R. Cavanagh, "Vibrational relaxation at surfaces: time resolved results." G. D. Kubiak, "Recombinative desorption dynamics: H<sub>2</sub>, D<sub>2</sub>/Cu (110, 111)."

30 July. (W. H. Weinberg, discussion leader): J. T. Yates, Jr. "Spectroscopic studies of surface kinetic processes"; P. J. Feibelman, "Theory of adsorption in the low coverage limit." M. Boudart,

"Single crystals: standards of catalytic activity."

31 July. (M. J. Cardillo, discussion leader): R. B. Hall, "Laser induced desorption as a real-time probe of surface reactions"; P. C. Stair, "Laser desorption studies of surface diffusion"; J. C. Hemminger, "Laser desorption Fourier transform mass spectrometry studies of adsorbates on metal surfaces." G. Ertl, "Temporal and spatial self-organization in gas-surface interactions." Poster session.

1 August. (D. J. Auerbach, discussion leader): S. T. Ceyer, "Dynamics of molecular chemisorption"; G. Comsa, "Thermal helium scattering from disordered surfaces: A new approach in surface dynamics"; C. T. Rettner, "Molecular beam studies of dissociative chemisorption." P. J. Estrup, "Effects on surface kinetics of substrate structural changes." Poster session.

2 August. (J. D. Doll, discussion leader): G. Scoles, "IR spectroscopy at the surface of molecular clusters"; U. Landman, "Dynamical processes at surfaces and small clusters."

## Elastin

### Kimball Union Academy

Herbert M. Kagan, chairman; Robert P. Mecham, vice chairman.

12 August. Macromolecular organization and function (Dan W. Urry, discussion leader): L. B. Sandberg, "Primary structure of chick tropoelastin"; J. Mark, "Molecular models for elastin networks"; D. W. Urry, "Mechanism of elasticity of the repeating pentapeptide sequence in elastin"; Discussant: L. Gotte. Elastin-Matrix interactions (Robert B. Rucker and Edward G. Cleary, co-discussion leaders): E. G. Cleary, "Elastin tissue deposition and matrix interrelationships: role of microfibrils"; Discussants: M. Gibson, J. Foster, R. B. Rucker, "Posttranslational modification of elastin"; Discussants: H. Kagan, J. Fanning, I. Pasquali-Ronchetti.

13 August. Structure and expression of the elastin gene (Joel Rosenbloom, discussion leader): K. Yoon, "Structure of the bovine elastin gene"; J. Rosenbloom, "Comparative species analysis of the elastin gene"; Savio Woo, "Structure and expression of the  $\alpha 1$  antiprotease gene." Regulation of elastin biosynthesis (Jeffrey Davidson, discussion leader): J. Davidson, "Developmental regulation of elastin synthesis"; R. P. Mecham, "Hormonal and matrix influences on elastin metabolism"; Discussants: C. Franzblau, C. Boyd, R. Rucker.

14 August. Proteolysis of the elastin matrix: elastases and their inhibitors (Aaron Janoff, discussion leader): M. Banda, "Macrophage elastase"; E. J. Campbell, "Elastases and elastase inhibitors of human monocytes"; W. Hornebeck, "Smooth muscle cell (fibroblast) elastase"; R. Carrell, "Alpha-1 proteinase inhibitor: endogenous regulator of PMN elastase." Immunology of elastin; in vitro models of elastogenesis (Judith A. Foster, discussion leader): V. Damiano, "Immunolocalization of intracellular elastin at the electron microscopic level; E. G. Cleary, "Studies on elastic fiber formation during development"; R. Mecham, "Tissue culture—an in vitro model for elastogenesis."

15 August. Elastin in the normal and diseased lung (Carl Franzblau, discussion leader): I. Mandl, "Lung elastin and disease"; G. Snider, "Experimental observation of human neutrophil elastase in hamsters"; J. Travis, "Structural studies on neutrophil elastase and cathepsin G." Poster session (Ines Mandl, discussion leader): Attendees are encouraged to present posters on their studies related to the major topics on this conference.

16 August. Elastin in vascular disease skin and inherited disease (Fred W. Keeley and Jouni J. Uitto, co-discussion leaders): F. W. Keeley, "Elastin production in vascular tissues under normal and pathological conditions"; J. J. Uitto, "Elastic fibers in cutaneous diseases"; J. M. Davidson, "Defective elastin metabolism in cultured human fibroblasts."

## Elastomers

### Colby-Sawyer College (N)

A. Y. Coran, chairman; J. E. Mark, vice chairman.

15 July. B. Gunesin, discussion leader): R. E. Cohen, "Crazing in rubber-modified plastics"; E. J. Kramer, "Ion-beam analysis of polymer-polymer interdiffusion." (R. Kruse, discussion leader): G. Allen, "Neutron scattering studies on motion and mixing in elastomers"; A. J. Tinker, "Polymer blends and the role of interfacial adhesion."

16 July. (K. Baranwal, discussion leader): A. G. Veith, "Tire wear: The influence of Tg, composition, and environmental factors"; R. P. Lattimer, "Mechanisms of antiozonant protection." (E. N. Kresge, discussion leader): Michael J. Doyle and Donald G. Young, "Fatigue crack propagation in elastomeric compounds"; J. E. Mark, "In situ filling of elastomers."

17 July. (K. W. Scott, discussion lead-

er): N. Tschoegl, "Time-dependent moderately large deformations of elastomers"; O. Kramer and W. Batsberg, "Neutron scattering spectra of relaxing chains"; C. Picot and J. Bastide, "(I) Polymer network structure by small angle neutron scattering; (II) a neutron scattering study of networks containing labeled paths." (R. S. Stein, discussion leader): J. Koberstein, "Microdomain structure and phase mixing in polyurethanes"; W. J. MacKnight, "Segmented polyurethanes with monodisperse hard segments."

18 July. (S. L. Aggarwal, discussion leader): W. R. Hertler, "Group transfer polymerization"; A. Imai, "Molecular design for the improvement of rolling resistance of butadiene rubbers"; Ph. Teyssie, "Further developments in the synthesis of block copolymers and their applications to emulsions and blends." (A. Y. Coran, discussion leader): B. Kastein, "Men who stretched rubber."

19 July. (J. E. Mark, discussion leader): A. I. Medalia, "Reinforcement by carbon black"; E. Meinecke, "A theory to predict extrudate swell from viscoelastic dynamic measurements."

## Elementary Particle Interaction

### Proctor Academy

Harold Ogren, chairman; Ian Hinchcliffe, vice chairman.

12 August.  $e^+e^-$  interactions (B. H. Ford, discussion leader). pp collisions (A. Savoy-Navarro, discussion leader).

13 August. Cosmology (Keith Olive, discussion leader). Fixed target experiments (Carl Bromberg, discussion leader).

14 August. Supersymmetries (Larry Hall, discussion leader). Non-accelerator physics (Steve Ahlen, discussion leader).

15 August. Future facilities (Alvin Tollestrup, discussion leader). Electroweak, QCD topics (Howard Habel, discussion leader).

16 August. New results (I. Hinchcliffe, discussion leader).

## Energy Coupling Mechanisms

### Holderness School

R. A. Capaldi, chairman; A. E. Senior, vice chairman.

1 July. (A. Azzi, discussion leader): B. Trumpower, "The  $bc_1$  complex of *Paracoccus*"; R. Gennis, "Cytochromes in the *Escherichia coli* electron transport chain"; N. Sone, "Cytochrome oxidase in PS3." (S. Ferguson-Miller, discussion

leader): D. Beattie, "The bc<sub>1</sub> complex of yeast"; R. Bisson, "Cytochrome oxidase in slime mold."

2 July. (P. Boyer, discussion leader): H. Penefsky, "Mechanism of ATP hydrolysis"; M. Futai, "Genetic studies of F<sub>1</sub> ATPase"; G. Shafer, "Structure of F<sub>1</sub> ATPase," (M. Klingenberg, discussion leader); W. Epstein, "Na<sup>+</sup>K<sup>+</sup> transport systems"; R. Kaback, "Lac permease."

3 July. (L. Ernster, discussion leader): Y. Hatefi, "Mechanism of ATP synthesis probed with inhibitors"; W. Sebald, "Structure of the proton channel"; G. Cox, "Genetic studies on the proton channel." (A. Goffeau, discussion leader): G. Rudnick, "H<sup>+</sup> pumping ATPase in platelets"; C. Slayman, "H<sup>+</sup> pumping ATPase in *Neurospora*."

4 July. (A. Crofts, discussion leader): H. Michel, "Reaction center structure"; G. Hauska, "bc<sub>1</sub> complex in photosynthetic bacteria"; M. Okamura, "Kinetics of electron transfer in bacterial reaction centers." (R. Capaldi, discussion leader): A. Tzagoloff, "The mitochondrial genome."

5 July. (E. Carafoli, discussion leader): B. Chance, "Mitochondrial myopathies studied by NMR"; H. Baum, "Mitochondrial involvement in primary biliary cirrhosis"; A. Lehninger, "Defect in complex I of the respiratory chain."

## Environmental Sciences: Air

### New Hampton School

W. L. Chameides, chairman; V. A. Mohnen, vice chairman.

24 June. Potential effects of atmospheric oxidants on forest ecosystems (V. A. Mohnen, discussion leader): A. Johnson, "Eastern U.S. forests"; E. Cowling, "Overview of German forest damage." Effects of atmospheric oxidation on biospheric processes (M. Caldwell, discussion leader): W. Fuhs, "Plant physiology"; R. Guderian, "Effects of atmospheric oxidants on vegetation."

25 June. Tropospheric ozone: Observations (H. Levy, discussion leader): J. Logan, "The climatology of tropospheric ozone"; I. Galbally, "A southern hemispheric view of tropospheric ozone." Tropospheric ozone: Transport and photochemistry (E. Danielson, discussion leader): A. Tuck, "Stratospheric-tropospheric exchange of ozone"; J. Fishman, "The contribution of local and regional chemical processes to the global tropospheric ozone budget."

26 June. Tropospheric OH (F. Rowland, discussion leader): D. Crosley, "OH measurements: Past, present and

future"; C. Stevens, "OH concentration trends based on isotopic studies of atmospheric methane." Tropospheric peroxy species (P. Crutzen, discussion leader): A. Lazrus, "Peroxide measurements in rain, clouds and air." D. Mihelcic, "Tropospheric HO<sub>2</sub> and RO<sub>2</sub>: measurements and theory."

27 June. N<sub>x</sub>O<sub>y</sub> species (S. Penkett, discussion leader): H. Singh, "PAN and organic nitrogen species"; B. Ridley, "Recent measurements of NO<sub>x</sub> species in the remote troposphere." Nighttime N<sub>x</sub>O<sub>y</sub> chemistry (D. Davis, discussion leader): J. Noxon, "Measurements of NO<sub>3</sub> at night"; J. Seinfeld, "The theory of nighttime N<sub>x</sub>O<sub>y</sub> in the urban and regional atmosphere."

28 June. Surface and interfacial oxidation (S. Schwartz, discussion leader): R. Zika, "Oxidative processes in surface waters"; T. Graedel, "Oxidative processes on materials: The restoration of the Statue of Liberty."

## Enzymes, Coenzymes and Metabolic Pathways

### Kimball Union Academy

C. Dale Poulter, co-chairman; John W. Kozarich, co-chairman; George H. Reed, co-vice chairman; Norman J. Oppenheimer, co-vice chairman.

8 July. (P. A. Bartlett, session chairman): A. R. Battersby, "Biosynthesis of the pigments of life"; H. G. Floss, "Biosynthesis of some microbial natural products"; S. J. Gould, "Recent discoveries in antibiotic biosynthesis"; R. J. Parry, "Recent investigations of the biosynthesis of nitrogen-containing natural products." (J. Stubbe, session chairman): H. G. Wood, "The central role of the nickel enzyme, CO dehydrogenase, in the autotrophic synthesis of acetate"; C. T. Walsh, "Nickel-dependent enzymes in the biogenesis of natural gas."

9 July. (G. H. Reed, session chairman): W. W. Cleland, "The use of isotope effects to determine enzyme mechanisms"; D. Dunaway-Mariano, "Mechanistic features of enzyme mediated phosphoryl group transfer"; F. M. Raushel, "Partitioning of intermediates in the argininosuccinate synthetase reaction"; V. L. Schram, "Mechanisms and transition state structures for acid and enzyme catalyzed N-glycoside hydrolysis of AMP." (N. J. Oppenheimer, session chairman): J. M. Rosenberg, "3 A structure of a DNA Eco RI endonuclease complex"; J. L. Markley, "Multinuclear magnetic resonance studies of enzyme-bound intermediates"; A. S. Mildvan, "NMR studies of the mechanism of

ATP-utilizing enzymes: Adenylate kinase and DNA polymerase."

10 July. (F. Eckstein, session chairman): J. R. Knowles, "Tinkering with the catalytic residues of triose phosphate isomerase: What can we learn?" G. A. Petsko, "Yeast triose phosphate isomerase: Mechanistic studies by x-ray crystallography and site-specific mutagenesis"; E. T. Kaiser, "The use of site-directed mutagenesis in probing active site and structural features in alkaline phosphatase"; J. A. Gerlt, "Staphylococcal nuclease: Probes of mechanism and structure." (G. L. Kenyon, session chairman): P. R. Schimmel, "Selecting for mutations which give higher catalytic power"; S. M. Hecht, "Protein biosynthesis with misacylated tRNA's"; J. Ofengan, "tRNA-ribosome interactions."

11 July. (R. G. Matthews, session chairman): J. J. Villafranca, "Mechanistic and structural studies of glutamine synthetase"; P. A. Pascal, "Mechanistic studies of  $\alpha$ -ketoacid dioxygenases"; J. M. Schwab, "Stereochemistry and mechanisms of enzyme catalysis"; J. K. Barton, "DNA site recognition and modification using chiral metal complexes." (R. N. Armstrong, session chairman): M. Y. Karpeisky, "Structural aspects of substrate specificity and catalytic selectivity of RNases"; W. P. Jencks, "How are protons removed from carbon?"

12 July. (J. S. Jorns, session chairman): J.-M. Lehn (subject to be announced): H. R. Kaback, "Studies on a biological energy transducer: lac permease from *E. coli*"; G. Rudnick, "Neurotransmitter transport mechanism."

## Epithelial Differentiation and Keratinization

### Tilton School

Howard P. Baden, chairman; Lowell Goldsmith, vice chairman.

5 August. Intermediate keratin filaments (Dennis Roop, discussion leader): Dennis Roop, "Organization of keratin genes"; Elaine Fuchs, "Factors modulating expression of keratin genes"; Werner Franke, "Differential expression of keratins in epithelial tissue." Intermediate keratin filaments (Peter Steinert, discussion leader): Tung-Tien Sun, "Monoclonal antibody studies of keratin expression"; submitted posters: posters will be selected from abstracts sent to H. P. Baden, Department of Dermatology, Massachusetts General Hospital, Boston, Massachusetts 02114.

6 August. The cornified envelope and desmosomes (Werner Franke, discussion leader): Marcia Simon, "An in vitro

analysis of the assembly of the cornified envelope"; Pamela Cowin, "Desmosomal structure and function at the molecular level"; Lowell Goldsmith, "A high molecular weight form of epidermal transglutaminase." Metabolic pathways that regulate epithelial differentiation (Vincent Ziboh, discussion leader): Luigi DeLuca, "Vitamin A and epithelial differentiation: Biochemical mechanisms"; Vincent Ziboh, "Phospholipid and anachondonic acid metabolism by murine keratinocytes: Possible role in cellular proliferation and differentiation.

7 August. Non-mammalian keratins (Roger Sawyer, discussion leader): Roger Sawyer, "Regulation of keratinization in birds"; George Rogers, "Molecular organization of scale and feather keratin"; Lucas Landmann, "Keratinization in reptiles." Submitted posters.

8 August. Growth and differentiation of keratinocytes in cell culture (Barbara Gilchrest, discussion leader): Lorne B. Taichman, "Influence of keratinocyte culture environment on withdrawal from cell cycle and differentiation"; Leonard Milstone, "Influence of cell density on behavior of cultured keratinocytes"; Barbara Gilchrest, "Positive and negative growth modulators of cultured keratinocytes." Carcinogenesis (Lowell Goldsmith, discussion leader): Mark Steinberg, "Modulation of keratin and oncogenes by SV40"; Eileen Friedman, "Multistage human colon carcinoma development."

9 August. The immunologic function of the keratinocyte (Daniel Sauder, discussion leader): Daniel Sauder, "Inflammatory and immunologic functions of epidermal cytokines"; Raymond Daynes, "The effect of UV radiation on epidermal cytokines."

Poster sessions will be held on Monday evening, 5 August, and Wednesday evening, 7 August, at which time the presenters will be present at their posters.

## Fertilization and the Activation of

### Early Development

#### Holderness School

Meredith Gould, chairman; Jerry Hedrick, vice chairman.

12 August. Molecular nature of receptors in sperm-egg envelope interactions (Barry Shur, discussion leader): Norka Ruiz-Bravo, "The sperm receptor form *S. purpuratus* eggs: A cell surface proteoglycan-like molecule"; Edward Carroll, Jr., "Sea urchin egg vitelline envelope sperm receptor and modulation of its activity during fertilization"; Harvey

Florman, "The nature of the mouse egg's sperm receptor"; Diana Myles, "Function of the migrating PH-20 antigen in guinea pig sperm binding to the zona pellucida." What are the sites and initiators of mammalian sperm acrosome reactions? (Stanley Meizel, discussion leader): Prudence Talbot, "Sperm passage through the cumulus"; Jim Cummins, "Cumulus penetration and the hamster sperm acrosome reaction in vivo and in vitro"; Patricia Saling, "Mouse sperm components that participate in the acrosome reaction"; J. Michael Bedford, discussant.

13 August. How can we learn more about the molecular basis for sperm-egg plasma membrane fusion? (Laurinda A. Jaffe, discussion leader): Margaret Kielian, "Membrane fusion proteins of enveloped animal viruses"; Charles Glabe, "Fusagenic properties of sea urchin sperm binding"; John Lynn, "Sperm-induced membrane depolarization in the eggs and oocytes of the sea urchin facilitates sperm entry." Use of monoclonal antibodies to study sperm-egg fusion (Paul Primakoff, discussion leader). Changes in intracellular free  $\text{Ca}^{2+}$  levels at egg activation and their significance (Richard Steinert, discussion leader): Roger Tsien, "Molecular strategies for measuring and manipulating intracellular calcium"; conference participants: Roles of free calcium as a signal in the processes of fertilization and activation of development; Lionel Jaffe, discussant.

14 August. Role of phosphoinositide metabolites in initiating development (Michael Whitaker, discussion leader): Paul Turner, "Phosphoinositide metabolites and activation of sea urchin eggs"; Alan Lau, "C-SRC related tyrosine kinase activity and sea urchin egg activation"; William Busa, "Calcium responses to  $\text{IP}_3$  injection in frog eggs." Controls of sperm motility and the acrosome reaction (Motonori Hoshi, discussion leader): Joseph Tash, "Mechanism of calcium and cyclic AMP action in the control of sperm function"; Wallis Clark, Jr., "Control of the two phase acrosome reaction in sperm of marine shrimp."

15 August. Control of protein synthesis and messenger RNA utilization in oocyte and egg activation (Merrill Hille, discussion leader): James Maller, "Protein phosphorylation and translation control of amphibian oocyte maturation"; Alina Lopo, "Translational regulation after fertilization in sea urchin eggs"; Douglas Melton, "The localization and function of maternal RNA's in developing eggs"; Sheldon Segal, "Pop-

ulation growth: Challenge to biological research."

16 August. Cytoplasmic rearrangements after fertilization and their developmental significance (Richard Elinson, discussion leader): Mitsuki Yoneda, "Autonomous cyclic changes in the cytoplasm after fertilization"; William Jeffrey, "Generation of molecular and supramolecular patterns by the egg cytoskeleton"; Stanley Scharf, "A role for microtubules in *Xenopus* egg axis determination."

In addition to the program above, participants are encouraged to bring posters. Posters will be displayed throughout the meeting. Applications for the meeting should include a title and a brief abstract or outline of anticipated poster presentations.

### Fiber Science

#### Colby-Sawyer College

Subhash K. Batra, chairman; Judd Schwartz, vice chairman.

8 July. Fiber/polymer characterization (Raymond E. Fornes, discussion leader): Lynn W. Jelinsky, "Deuterium NMR—a new method for characterizing fibers and polymers"; Rajai H. Atalla, "Solid-state studies on cellulose using Raman spectroscopy and CP/MAS  $^{13}\text{C}$ -NMR." Fiber/polymer characterization (Fred Forstess, discussion leader): Hiromichi Kawai, "Characterization and assessment of polymer orientation."

9 July. High-speed fiber spinning (Menachem Lewin, discussion leader): Koh-ichi Iohara, Shinji Ohwaki, Yasuhiro Murase, "Necking behavior and structure formation during high-speed spinning of poly(ethylene) terephthalate (PET)"; David Salem, Ronald Moore, Dieter Weigman, "X-ray analysis of high-speed spun yarns." Fiber-science in microbiology (Ludwig Rebenfeld, discussion leader): John J. Thwaites, N. H. Mendelson, "On the mechanics of fiber-like bacteria."

10 July. Fibrous structure formation (Bhuvnesh C. Goswami, discussion leader): Hans W. Krause, "Air as working medium in spinning and weaving"; Joachim Lunenschloss, Karl J. Brockmann, "Mechanism of the OE-friction spinning." Fiber-reinforced composites (David Brookstein, discussion leader): Edward M. Wu, "On the statistical aspects of fiber-reinforced composite fracture."

11 July. Fiber-property modification (Solomon P. Hersch, discussion leader): Hilda Guttman, M. Lewin, "Porofication of synthetic fibers by sorbed halo-

gens: Changes in structure and properties"; Heinz Herlinger, Dieter Bechter, "Modification of surface properties of fibers relative to spinning, textile finishing, pigment printing, and bonding (fiberwebs)." Tribute to the past (Stanley Ross, discussion leader): John Skelton, "Textiles in history: The first seven thousand years."

12 July. End-use performance evaluation (Lynn Penn, discussion leader): Stanley Backer, "Mechanics of rope deterioration"; Joseph Banbaji, I. Pinsky, "On the more generalized theory of the pull out (from an elastic matrix) test and its applications."

## Fluids in Permeable Media

### Tilton School

Joseph J. Taber, chairman; Stanley C. Jones, vice chairman.

22 July. Rock structure and characterization (Frank McCaffery, discussion leader): Robert Ehrlich and Catherine McCreech, "A strong transfer function links thin-section data to reservoir physics"; A. H. Thompson and A. J. Katz, "Ionic and fluid transport in porous rocks"; H. H. Yuan and B. F. Swanson, "An apparatus for pore examination (APEX)." Rock structure and fluid distribution (H. Ted Davis, discussion leader): J. C. Melrose, "Capillary pressure measurements at low wetting phase saturation"; R. W. Wunderlich, "Imaging of wetting and non-wetting phase distribution in porous media."

23 July. Fluid distribution and wettability (Norman Morrow, discussion leader): N. C. Wardlaw, "The effects of contact angle and pore-throat topology on snap-off and the entrapment of oil during waterflooding"; Roland Lenormand, "Two-phase flow experiments in a two-dimensional etched network"; J. Heaviside, C. I. Nicholls, and C. J. J. Black, "Improved insight into core displacement mechanism using gamma ray attenuation techniques." Relative permeability (Stanley C. Jones, discussion leader): Myoung Joon Oak and Robert Ehrlich, "Development and application of a new x-ray absorption method for three-phase relative permeability measurement"; K. M. Ng and M. R. Hopkins, "Liquid-liquid relative permeability."

24 July. Displacement stability (Henry J. Ramey, discussion leader): Scott Wellington, "Demonstration of the effect of mobility control surfactants for CO<sub>2</sub> floods by computerized axial tomography"; G. M. Homsy and C.-T. Tan, "Stability of miscible displacements

with dispersion"; K. K. Mohanty, "Two-dimensional study of unstable flow in sandstones." Displacement mechanisms (Paul Willhite, discussion leader): Herbert L. Stone, "Mechanisms in WAG floods"; Jerry Novosad, "Laboratory studies of chemical flooding in stratified cores"; Guy Chauveteau, "Influence of adsorption and retention on polymer flow through permeable media."

25 July. Displacement mechanisms (Nigel Bailey, discussion leader): Lance O'Steen and L. W. Holm, "Time-dependent flow behavior during immiscible displacement in porous media"; David L. Tiffin, "A mechanistic study of gravity assisted CO<sub>2</sub> flooding"; H. C. Lau, "Mechanisms of steam foam flow through porous media." Rock dissolution (Adrian Todd, discussion leader): R. A. Greenkorn, "The effect of leaching on mixing in heterogeneous porous media"; H. Scott Fogler and Mark L. Hoefner, "Studies on carbonate acidizing using metal injection casting"; S. G. Sayegh and F. F. Krause, "Rock-brine interactions during carbon dioxide flooding."

26 July. Injected fluids (L. W. Holm, discussion leader): Ronald L. Reed and Maura C. Puerto, "Configuration of certain surfactants at the oil/brine interface"; Robert S. Schechter, Joseph C. Hoskins, and Nancy Leazer, "The role of surfactant charge on surfactant adsorption on mineral surfaces"; Robert L. Robinson, Jr., "Phase compositions, phase densities and interfacial tensions in CO<sub>2</sub> + hydrocarbon systems"; J. Mike Brown, "Dynamic polymer retention in porous media."

## Fractals

### Hawthorne College

Benoit B. Mandelbrot, chairman; Ray Orbach, vice chairman.

15 July. Michael V. Berry "Diffraction from fractal dust"; Robin B. Stinchcombe (subject to be announced); Jean Vannimenus, "Self-avoiding walks on fractal lattices." Itamar Procaccia, "Universality in the Mandelbrot set of mode blockings"; James E. Martin, "Fractal structure of some old and new materials."

16 July. Amnon Aharony (subject to be announced); Antonio Coniglio, "Fractal approach to random superconductor networks"; Yuval Gefen (subject to be announced); Nihat Barker (subject to be announced); Shlomo Alexander, "Properties of fractal surfaces."

17 July. Raoul Koppelman, "Reaction

kinetics on fractals: experiments and simulations"; Mostafa A. El Sayed, "Fractals from energy transfer studies"; Uri Even, "Direct energy transfer on fractal structures." John J. Kozak, "Stochastic flows on lattices of fractal valences"; Joseph Klafter, "Chemical reactions on fractal structures."

18 July. Geoffrey King, "Earthquakes: their fractal aspects in time and space"; Jacques Peyriere, "Multiplicative chaos and the Mandelbrot measures"; Michael Barnsley, "Fractals generated by the dynamics of iteration." Harvey Sher, "Lattice green's function approach to diffusion limited aggregation"; Hans-Otto Peitgen, "Phase transitions and Mandelbrot sets."

19 July. Cyprian Foias, "Fractal dimension and asymptotic degrees of freedom in turbulence"; Erik Siggia, "Fractal aspects of turbulence"; John Bendler, "Fractal time and molecular motion in polymers, glasses and proteins."

## Free Radical Reactions

### Holderness School

Ned Porter, chairman; David Griller, vice chairman.

10 June. (B. Fraser-Reid, discussion leader): Sir Derek Barton, "New free radical reactions of synthetic value"; A Beckwith, "Methods and mechanisms of free radical reactions." (C. Walling, discussion leader): J. Berson, "Non-kekule molecules."

11 June. (G. Keck, discussion leader): B. Giese, "Selectivity and synthetic application of C-C bond-forming reactions via radical addition to alkenes." G. Stork, "Free radical reactions in the synthetic of natural products." (J. Wilt, discussion leader): H. Viehe, "Captodative radicals in synthesis."

12 June. (R. Neuman, discussion leader): W. Adam, "Laser photochemical generation of diradicals"; M. Paddon-Row, "Structure and theory of free radicals." (R. Neuman, discussion leader): D. Hart, "Free radical cyclizations in natural product synthesis"; D. Little, "Diyl trapping reactions."

13 June. (D. Griller, discussion leader): G. Russell, "Nucleophilic substitution reactions involving electron transfer"; S. Nelsen, "Olefin cation radical chemistry." (D. Griller, discussion leader): R. Neuman, "Stepwise homolysis of symmetric *cis*-azoalkenes"; J. Wilt, "Reactivities and selectivities of silicon-containing carbon-centered radicals."

14 June. (N. Porter, discussion leader): L. Marnett, "Mechanisms of hydro-

peroxide reactions with iron complexes"; G. Burton, "Antioxidants in vitro and in vivo."

## Fuel Science

### New Hampton School

William H. Calkins, chairman; Larry L. Anderson, vice chairman.

1 July. (Eric Suuberg, discussion leader): Michael Frenklach, "Chemical reaction mechanism of soot formation"; Hartwell F. Calcote, "Ionic mechanisms of soot formation." (Eric Suuberg, discussion leader): Richard C. Flagan, "Studies of char combustion mechanisms using synthetic chars"; Robert H. Esenhigh, "A tractable rate equation for char combustion."

2 July. (James Speight, discussion leader): B. Durand, "Structure of kerogens in petroleum source rocks, oil shales and coals"; Michael Siskin, "Structural characterization of Green River oil shale kerogen." (James Speight, discussion leader): Steven R. Larter, "Application of analytical pyrolysis to characterization of source rock kerogen"; John F. McKay, "Characterization of Green River oil shale kerogen by supercritical extraction."

3 July. (Peter H. Given, discussion leader): J. W. de Leeuw, "Coal structure by pyrolysis GC/MS"; Robert Botto, "Characterization of natural and synthetic coal macerals"; Douglas Brenner, "Mechanical characterization of coals above their glass transition." (Peter H. Given, discussion leader): Patrick G. Hatcher, "Geochemistry of gelification during the early stages of coal formation"; Harold Schobert, "Geochemistry of sporonite in lignite."

4 July. (Thomas G. Squires, discussion leader): Leon M. Stock, "The nature and chemistry of organic sulfur compounds in coal"; Duane Nichols, "Coal sulfur characterization by programmed temperature reduction"; Robert B. LaCount, "Coal sulfur characterization by programmed temperature oxidation." (W. H. Calkins, discussion leader): Christopher Bernabo, "The status and outlook for acid deposition research."

5 July. (Larry Anderson, discussion leader): Selected poster session presentations.

## Genetic Toxicology Bioassays

### Colby-Sawyer College (S)

David F. Krahn, chairman; William G. Thilly, vice chairman.

10 June. Aneuploidy: New methods for the study of mechanisms (R. Julian Preston, discussion leader): (speakers and subjects to be announced). (R. Julian Preston, discussion leader): R. Julian Preston, "Mechanisms of induction of chromosome alterations by radiation and chemicals"; R. S. K. Chaganti, "Chromosome alterations/oncogenes/cell transformation."

11 June. (Jeffrey C. Miller, discussion leader): Robert P. P. Fuchs, "Mutational specificity of *N*-2-aminofluorene derivatives"; Franklin Hutchinson, "Mutational spectra of lambda phage." (Jeffrey C. Miller, discussion leader): David Levin, "Development of *Salmonella* tester strains for studies of mutational mechanisms"; Jeffrey C. Miller, "Mechanisms underlying mutational spectra."

12 June. Applications of flow cytometry in genetic toxicology (Frederick B. Oleson, Jr., discussion leader): Jerry L. Hudson, "Gene mutation/DNA repair"; L. Scott Cram, "Karotype instability/chromosome aneuploidy"; Joe W. Gray, "DNA damage/chromosomal translocation." (John A. Heddle, discussion leader): John A. Heddle, "New approaches to the detection of mutation in vivo"; Roger Giese, "Measuring DNA adducts with electrophore labelling-GC."

13 June. (Richard J. Albertini, discussion leader): Alec A. Morley, "Patterns of mutations in human T cells in vivo"; Kendall C. Smith, "Interleukin-2 and the clonal growth of human T cells"; Richard J. Albertini, "Characterization of 6-thioguanine resistant human T cell mutants." Leonard S. Lerman, "Exploration of sequence variance through effects of helix stability."

14 June. Michael Gough, "Public interest in human genetic toxicology"; Jamie Scott, "Analysis of mouse immunoglobulin genes by heteroduplex denaturing behavior"; Richard M. Myers, "Mutation rate measurements in human populations with gradient denaturing gel electrophoresis."

## Glass

### New Hampton School

James E. Shelby, chairman; Joseph Simmons, vice chairman.

5-9 August. Surface analysis: Carlo G. Pantano, "Chemical analysis of glass surfaces"; William A. Lanford, "MeV ion beam analysis of glasses: ionic and molecular transport near glass surfaces." Surface structure: Stephen H. Garofalini, "Molecular dynamics simulations of silicate glass surfaces"; Keith D. Keefer, "Application of fractal geom-

etry to structure of silica gels." Aqueous corrosion: Donald S. Goldman, "Relationship between structure and chemical durability of glasses in aqueous solutions"; Bruce C. Bunker, "Effects of molecular structure on glass dissolution"; Carol M. Jantzen, "Effect of oxidation potential on glass corrosion." Stress corrosion: Terry Michalske, "Surface reactions on glass and their relationship to slow fracture"; Stephen W. Freiman, "Chemical interactions during crack growth." Corrosion II: Catherine J. Simmons, "Corrosion of fluoride glasses"; Malcolm D. Ingram, "Chemical degradation of glasses in high temperature batteries"; Hans Bach, "Experiments on the reactivity of glass surfaces." Bonding on surfaces: Jack J. Mecholsky, "Bonding to glass surfaces: How do we measure success?" Gary M. Nishoika, "Thermodesorption of water from glass fiber surfaces." Fibers: J. D. Rush, "Effects of hydrogen diffusion and reaction in optical fibers"; Caroline J. Scott, "Protective coatings for silica glass fiber surfaces"; Rolf Bruckner, "Properties and structure of glass fibers induced by fiber drawing conditions." Fibers II: William LaCourse, "Surface viscosity of glass fibers"; Prabhat K. Gupta, "Influence of forming environments on pristine fiber tensile strength."

## Glycoproteins and Glycolipids

### Brewster Academy

Charles Sweeley, chairman; Philip Stahl, vice chairman.

26 August. (Armando Parodi, discussion leader): Vernon Reinhold, "Oligosaccharide processing: Molecular characterization"; Rosalind Kornfeld, "Characterization of an ER  $\alpha$ -mannosidase"; Paul Atkinson, "Synthesis and processing of rotavirus glycoproteins in the rough endoplasmic reticulum." (Akira Kobata, discussion leader): Dirk van den Eijnden, "Biosynthesis of polylactosaminoglycans: Initiation, elongation, branching and terminations"; Carlos Hirschberg, "Mechanisms of glycosylation in the golgi apparatus and the rough endoplasmic reticulum."

27 August. (Philip Stahl, discussion leader): Alan Schwartz, "Sorting and recycling of asialoglycoprotein ligand and receptor"; Ronald Schauer, "Membrane galactose and sialic acid regulate the recognition of erythrocytes by macrophage"; Leonard Rome, "Multiple pathways utilizing coated vesicles for transport of macromolecules." (Stuart Kornfeld, discussion leader): Stuart Kornfeld, "Identification of a second



man-6-P receptor"; Martin Snider, "Transport of cell surfaces glycoproteins to the Golgi complex following endocytosis."

28 August. (Sen-Itiroh Hakomori, discussion leader): Stephan Ladisch, "Cell surface shedding, and immunoregulatory properties, of gangliosides"; Bruce Macher, "Human leukocyte glycosphingolipid antigens recognized by anti-myeloid monoclonal antibodies"; James Dennis, "Poly N-acetylactosamine sequences on tumor cell glycoproteins and metastasis." Phillip Robbins, "Yeast mutants in cell wall synthesis"; Peter Albersheim, "*Rhizobium* polysaccharides: Do they function in symbiosis?"

29 August. (Nathan Sharon, discussion leader): James Paulson, "Molecular basis of influenza virus receptor specificity and selection of receptor variants"; Karl Karlsson, "Recognition of host cell glycolipids by microorganisms"; Steven Rosen, "Carbohydrates as recognition determinants in lymphocyte recirculation." (Jack Silver, discussion leader): Jack Silver, "Structure and function of the thy-1 glycoprotein"; Donald Carlson, "Studies on the proline-rich protein gene families: Protein, messenger RNA and gene structural analyses and homologies of human, rat and mouse."

30 August. (Charles Sweeley, discussion leader): Subhash Basu, "Biosynthesis of blood group-active glycosphingolipids"; Glyn Dawson, "Regulation of glycolipid synthesis in neural tissue"; Yoshitaka Nagai, "Induction of disialganglioside GD<sub>3</sub> in rat cultured cells by the adenovirus E1A gene."

## Gravitational Effects in Materials

### Separation Processes and Living Systems

#### Colby-Sawyer College (S)

Leo Steg, chairman; Martin Glicksman, vice chairman.

19 August. (Sam Coriell, discussion leader): G. B. McFadden, "Double diffusive convection and interface instability during alloy solidification"; Robert A. Brown, "Convection, segregation and interface morphology in crystal growth"; James S. Langer, "The role of microgravity in testing theories of dendritic growth." (Martin Glicksman, discussion leader): John Perepezro, "Containerless processing of undercooled melts"; Taylor Wang, "Thermophysical property measurement using acoustic levitation under terrestrial and microgravity conditions"; David J. Larson, "Directional solidification under microgravity conditions."

20 August. (F. Rosenberger, discus-

sion leader): R. B. Lal, "TGS solution growth during SL-3 mission"; L. Vandenberg, "Mercuric iodide vapor growth on SL-3"; R. J. Nauman, "Semiconductor growth in space." (John Anderson, discussion leader): Simon Rosenblatt, "Interfacial flows"; James Melcher, "Continuum electro mechanics."

21 August. (A. Berlad, discussion leader): Forman B. Williams, "Microgravity combustion processes—theoretical"; H. B. Palmer, "Microgravity combustion processes—experimental." (Geoffrey V. F. Seaman, discussion leader): Paul Todd, "Role of microgravity in electrophoretic separation processes"; Milan Bier, "Effect of gravity on isoelectric focussing"; Robert Snyder, "Two polymer aqueous phase partition in microgravity."

22 August. (R. Young, discussion leader): George Malacinsky, "Response of animal systems to gravity"; Allen Brown, "How plants use gravity"; J. Gressel, "Plant gravity receptors." (R. Doremus, discussion leader): Delbert Day, "Microgravity and glass"; R. Doremus, "Some microgravity glass experiments."

23 August. (L. Steg, discussion leader): Martin Barhartz, "Some new materials experiments"; R. Feuerbacher, "Some physics"; M. Moldover, "Critical point phenomena."

## Hemostasis

#### Proctor Academy

Kenneth G. Mann, chairman; Thomas F. Deuel, vice chairman.

17 June. Hemostasis and thrombosis: are current hypotheses consistent with clinical data? (Oscar D. Ratnoff, chairman): Oscar D. Ratnoff, "PTA deficiency"; John H. Griffin, "Proteins and inherited thrombolytic disease"; Douglas Triplett, "Paradoxes in our understanding of the intrinsic and extrinsic pathways of blood coagulation." Endothelial interactions with the clotting cascade (Whyte Owen, chairman): Whyte Owen, "Regulation of thrombin"; David Stern, "Assembly of the factor X activation site on the surface of the vascular endothelium"; James Marcum, "Heparin-like molecules and the non-thrombogenic properties of the vascular endothelium."

18 June. Thrombolysis: theoretical aspects and practical applications (Desire Collen, chairman): Desire Collen, "Thrombolytic properties of tissue plasminogen activator and prourokinase"; Victor J. Marder, "Thrombolytic therapy: expectations and reality"; Alan J. Tifenbrunn, "Clinical experience with

tissue plasminogen activator for coronary thrombolysis." The role of the endothelium in the regulation of plasminogen activation (David Loskutoff, chairman): David Loskutoff, "The fibrinolytic system of cultured endothelial cells: deciphering the balance between plasminogen activation and inhibition"; David Stump, "Biochemical and biological properties of prourokinase"; Bjorn Wieman, "A fast inhibitor of tissue plasminogen activator in plasma."

19 June. Platelet receptors (Jack Hawiger, chairman): Jack Hawiger, "Platelet receptors for adhesive macromolecules"; Robert W. Colman, "Platelet ADP receptors"; Lee F. Limbird, "Human platelet alpha<sub>2</sub>-adrenergic receptors: mechanisms linking receptor occupancy to platelet secretion." Genetic polymorphisms in coagulation factors (Gerald Crabtree, chairman): Gerald Crabtree, "Organization of the protein C gene in normal and protein C deficient individuals"; Stelios Antonarakis, "DNA polymorphisms and mutations in the factor VIII gene"; Darryl Stafford, "Human factor IX and its variance."

20 June. Factor VIII in humans and animals with inhibitors (Alan R. Giles, chairman): Harold R. Roberts, "Factor VIII inhibitors: a critical analysis of the evidence for factor VIII inhibitor bypassing activity"; Leon Hoyer, "Immunochemical properties of human anti-factor VIII"; Alan R. Giles, "Assessment of factor VIII bypassing action in vitro in an animal model of hemophilia"; Ulla Hedna, "Clinical evaluation of factor VIII bypassing activity of factor VII concentrates." Hans Mueller-Eberhard, "Protein-protein interactions in the complement system"; Richard J. Feldman, "Building models of proteins."

21 June. Protein S, complement and coagulation (Charles T. Esmon, chairman): Charles T. Esmon, "Modulation of protein S function by components of complement systems"; Bjorn Dahlback, "Regulation of protein S anticoagulant function by C4b-binding protein"; Thomas S. Edgington, "Clonal analysis of the regulation of monocyte tissue factor gene expression."

## Heterocyclic Chemistry

#### New Hampton School

Peter Beak, chairman; Ronald Gam-mill, vice chairman.

8-12 July. H. Alper, "Synthesis and chemistry of heterocycles via transition metal catalysis"; A. G. M. Barrett, "Recent advances in heterocyclic natural product chemistry"; J. I. Cadogan,

"Control and chaos in gas-phase fragmentations"; D. J. Chadwick, "Directed metallation in heteroaromatic chemistry"; S. E. Denmark, "Intramolecular heterodiene [4 + 2]-cycloadditions"; D. Evans, "Studies in acyclic stereo-control"; R. Heckendorn, "Novel heterocycles by the malonic ester variation of the Japp-Klingemann reaction"; A. Holmes, "Synthesis of naturally occurring oxygen heterocycles"; C. R. Johnson, "Unnatural heterocycles and vice versa"; I. Lantos, "Dihydroisoquinoline ring expansions"; L. Lee, "Synthesis of heterocycles from 3-aminoacrylates"; D. Liotta, "Synthesis and reactivity of oxygenated heterocycles"; B. H. Lipshutz, "Heterocycles as intermediates in organic synthesis"; D. Powell, "A new, efficient regio-selective synthesis of aryl-2-chloropyridines"; J. Sanchez, "Synthetic studies of naphtharidines"; R. R. Schmidt, "Directed lithiation of functionally substituted vinylic compounds—versatile intermediates in heterocyclic synthesis"; I. Shinkai, "Stereo-controlled synthesis of new 1-methylcarbapenem antibiotics"; V. Snieckus, "Amide metalation tactics for heterocyclic synthesis."

It will be possible for participants to present posters during the conference.

## Hormonal Carcinogenesis

### *New Hampton School*

Jonathan J. Li, co-chairman; Satyabrata Nandi, co-chairman.

25 August. Mortimer B. Lipsett, "What should we expect of a hormone?"

26 August. (Gerald Mueller, discussion leader): David Sirbasku, "Estrogens in cell proliferation"; Carlos Sonnenschein and Ana Soto, "Role of estrogens in cell proliferation"; George M. Stancel, "Estrogen control of uterine DNA synthesis"; Jack Gorski, "Role of estrogen receptors in cell proliferation." (Pentti K. Siiteri, discussion leader): Erlio Gurpide, "Hormonal effects on human endometrial cells"; Pentti K. Siiteri, "Endocrine abnormalities and high risk in estrogen associated cancers."

27 August. (Satyabrata Nandi, discussion leader): Jose Russo, "Cell kinetics in mammary carcinogenesis"; Mels Sluysen, "Origin of hormone-independent mammary tumors in mice"; Walter Imagawa, "In vitro regulation of mammary cell growth"; Satyabrata Nandi, "Cellular origin of hormone-dependent and -independent mammary tumors." (P. Narasimha Rao, discussion leader): Robert H. Purdy, "Mechanisms and

pathways of catechol estrogen formation"; Toshio Nambara, "Conjugates in biotransformation and activity of estrogens."

28 August. (Jack Fishman, discussion leader): Peter H. Jellinck, "Control of catechol estrogen formation and covalent interaction with macromolecules"; Jack Fishman, "16 $\alpha$ -hydroxyestrone: A potential reactive intermediate in estrogen carcinogenesis"; Sara Antonia Li, "Regulation of catechol estrogens: Effect on estrogen carcinogenesis." (Manfred Metzler, discussion leader): Manfred Metzler, "Reactive carcinogenic intermediates in the metabolism of stilbene estrogens"; Gisela H. Degen, "Possible role of prostaglandin synthase in estrogen-induced neoplasia."

29 August. (Jean-Pierre Raynaud, discussion leader): Jean-Pierre Raynaud, "Stereochemistry and receptor specificity of estrogens"; Kenneth Korach, "Receptor binding by reactive DES intermediates"; Jonathan J. Li, "Hormonal and carcinogenic activities: Structural requirements for estrogen tumorigenicity." (Jonathan J. Li, discussion leader): Hadley Kirkman, "The hamster in hormonal tumorigenesis"; John K. Klicka, "Modification of estradiol metabolism in hamster liver and kidney microsomes."

30 August. (John A. McLachlan, discussion leader): John A. McLachlan, "Estrogen-induced cell transformation: Receptor and nonreceptor-mediated events"; J. Schlessinger, "EGF receptor, V-erb-B oncogene, and cell proliferation."

## Hormone Action

### *Kimball Union Academy*

Marc E. Lippman, co-chairman; C. Wayne Bardin, co-chairman.

4 August. Plenary guest lecture—George Khoury.

5 August. Analysis of steroid hormone response systems (Suzanne Bourgeois, chairman): M. Parker, "Androgen regulation of gene expression"; B. O'Malley, "Steroid hormone regulation of chick oviduct protein"; J. Gustafsson, "Glucocorticoid regulated genes"; D. Shapiro, "Regulation of vitellogenin genes and MSP transcription and mRNA stability." Coupling of hormonal signals to intracellular events (A. Spiegel, chairman): R. Lefkowitz, "Adenylate cyclase-coupled adrenergic receptors"; J. Robishaw, "The role of G protein"; P. Coffino, "Hormonal regulation of ornithine decarboxylase."

6 August. Novel systems for the study of hormone action (Marie Monaco,

chairman): M. Lehrman, "The VLDL receptor"; R. Needleman, "Atrial peptides"; D. LeRoith, "Promiscuous peptides"; T. Eisner, "Pheromones—a case study." Calcium modulation of hormone action (A. Means, chairman): H. Korchak, "Calcium and neutrophil function"; J. Exton, "Hormonal control of cell calcium"; P. Greengard, "Calcium regulation of specific protein phosphorylation."

7 August. Hormones and cancer (Benita Katzenellenbogen, chairman): M. Rechler, "Biosynthesis and action of the IGF's"; K. Gabbay, "Cloning the IGF-I gene"; G. Todaro, "Tumor growth factors"; I. Verma, "Oncogenes and growth factors." Organization and retrieval of genetic information (E. B. Thompson, chairman): R. Evans, "Cloning structure of the human glucocorticoid receptor"; J. Catterall, "Multigene systems: Hormonal and genetic regulation of the (Gus) complex."

8 August. Regulation of receptors (J. Clark, chairman): F. Auricchio, "Regulation of hormone binding of estrogen receptors"; J. Cidlowski, "Regulation of glucocorticoid receptors"; J. Harmon, "Genetic analysis of glucocorticoid receptors"; W. Pike, "Vitamin D receptors." New methodologies (M. Sherman, chairman): C. Cantor, "Analysis of large fragments of DNA"; C. Bancroft, "Protein DNA interaction."

9 August. The interaction of receptor with the genome (W. Schrader, chairman): G. Schutz, "DNA sequences of the chicken lysozyme gene required for steroid regulation and receptor binding"; T. Spelsberg, "Acceptor sites"; D. Toft, "Progesterone receptor anatomy"; G. Ringold, "Multiple mechanisms by which glucocorticoids regulate gene expression."

## Immunochemistry and Immunobiology

### *Plymouth State College (N)*

Michael J. Bevan, chairman; Ronald H. Schwartz, vice chairman.

15 July. (John Cambier, discussion leader): Philip Rosoff, "Regulation of lymphocyte activation and differentiation by membrane transport systems"; John Imboden, "Mechanism of transmembrane signaling by the antigen receptor/T3 complex"; Kathleen Kelly, "Transcriptional activation events resulting from transmembrane signaling in lymphocytes"; John Cambier, "Differential transmembrane signaling during activation of small B cells." (Alfred Singer, discussion leader): E. Jenkinson, "Stem cell-stromal cell interactions in

thymus development"; L. Samuelson, "Biochemical events associated with T cell activation"; Irv Weissman, "Lymphocyte receptors and development."

16 July. (Ursula Storb, discussion leader): Fred Alt, "Regulation and expression of Ig heavy chain variable genes"; George Köhler, "Specific IgM production by gene transfer"; David Baltimore, "Expression of transgenic heavy chains"; Rebecca O'Brien, "Expression and somatic mutation of  $\alpha$   $\kappa$ -transgene." (Jonathan Sprent, discussion leader): Harald von Boehmer, "The thymus and T cell tolerance"; Darcy Wilson, "GVH resistance: A model for T cell tolerance"; Kevin Lafferty, "Tolerance induction in adult animals."

17 July. (Patricia Jones, discussion leader): Ronald Germain, "Molecular genetic analysis of Ia structure and function"; Jonathan Seidman, "Structure/function relationships of MHC antigens"; Iwona Stroynowski, "Exon shuffling of class I genes and effects on expression and function." (Mark David, discussion leader): Yueh-hsiu Chien, "T cell receptor gene structure and expression, part I"; Susumu Tonegawa, "T cell receptor gene structure and expression, part II"; Philippa Marrack, "T cell receptor biochemistry and serology."

18 July. (Ronald Schwartz, discussion leader): Matthias Wabl, "Hypermutation in a pre-B cell line"; Stephen Hedrick, "Gene elements involved in the generation of T cell receptor diversity"; GeKee Sim, "The role of mutation in T cell receptor diversity"; Martin Weigert, "The genetic control of antibody diversity." (Michael Bevan, discussion leader): Robert Weinberg, "Oncogenes and multi-stage carcinogenesis"; C. Stiles, "Regulation of gene expression by platelet-derived growth factor."

19 July. (John Kappler, discussion leader): Charles Sidman, "Comparison of lymphokine activities: Sources and assays"; H. Robson MacDonald, "Growth and differentiation factors for B and T cells"; Warren Leonard, "Molecular analysis of the human IL-2 receptor."

#### **Implantable Auditory Prostheses**

##### *Tilton School*

Donald K. Eddington, chairman; John Heinz, vice chairman.

19 August. (Robert Shannon, discussion leader): Edward Cudahey, "Review of performance of the house ear implant using speech-like material"; Laurel Dent, "Comparison of speech processing strategies for single and multiple

channel, scala tympani implants"; Ingeborg Hochmair-Desoyer, "Vienna cochlear prosthesis: Speech understanding in quiet and in noise." (Mark White, discussion leader): Stuart Rosen, "An overview of work from the EPI group."

20 August. (Ingeborg Hochmair-Desoyer, discussion leader): Donald K. Eddington, "Speech recognition with a multichannel cochlear implant"; Mark White, "Psychophysics and speech recognition of subjects with a multichannel electrode"; Robert Bilger, "Perceptions of speech with cochlear implants." (Stuart Rosen, discussion leader): Robert Shannon, "Models of threshold and loudness for electrical stimulation"; Sigfried Soli, "Speech perception by cochlear implantation: A characterization of the information provided by current speech processing."

21 August. (William Rabinowitz, discussion leader): Brian Moore, "Psychophysics of single channel stimulation and its relevance to speech coding"; Robert Bilger, "Necessary psychophysical tests for the evaluation of cochlear implants." (Rainer Klinke, discussion leader): Bertrand Delgutte, "Implications of studies of speech coding in the auditory nerve for cochlear implants"; Raimond Winslow, "Vowel discrimination based on rate response of auditory nerve fibers."

22 August. (Bertrand Delgutte, discussion leader): Christopher Van den Honert, "Spatial and temporal activity patterns of electrically stimulated auditory nerve fibers"; Rainer Klinke, "Single fiber responses to electrical cochlear stimulation." (Christopher Van den Honert, discussion leader): Charles Finley, "An integrated field-neuronal model of intercochlear stimulation"; Blake Wilson, "Coding strategies for multichannel prostheses."

23 August. (Blake Wilson, discussion leader): Francis Spelman, "Model of current spread in the inner ear"; Neil Cotter, "Model of basic processes for an auditory prosthesis."

#### **Inorganic Chemistry**

##### *Brewster Academy*

Stephen L. Lippard, chairman; Norman Sutin, vice chairman.

##### **Reactions of Small Molecules with Inorganic Complexes, Clusters and Materials**

5 August. Chemistry of single carbon-containing fragments (Harry B. Gray, discussion leader): Mark S. Wrighton, "Bicarbonate reactions at chemically derivatized electrodes"; John Cooper, "Carbon dioxide activation"; Carlo

Floriani, "Bifunctional activation of C-1 molecules"; Albert Chan, "New chemistry of carbon monoxide."

6 August. Chemistry in and involving water (Norman Sutin, discussion leader): Thomas Meyer, "Redox processes in and involving water"; Jacqueline Barton, "DNA cleavage by chiral transition metal ions"; Debra Dunaway-Mariano, "Use of chiral metal nucleotide complexes to study enzyme mechanisms"; Avi Bino, "New inorganic ligands derived from water."

7 August. Oxygen and sulfur chemistry (Jim Lyons, discussion leader): Richard Holm, "Soluble metal-sulfide clusters"; Ed Stiefel, "Inorganic and bioinorganic chemistry of metal-sulfur clusters"; Dimitri Coucouvanis, "New early transition metal-sulfur chemistry"; Kenneth Karlin, "Copper-dioxygen chemistry: Reversible binding and activation."

8 August. New chemistry of transition metal-nitrogen compounds (Richard A. Walton, discussion leader): F. Albert Cotton, "Reactions of M-M bonds with two- and three-atom unsaturated functionalities"; Richard R. Schrock, "High oxidation state molybdenum and tungsten dinitrogen complexes"; Derek A. Davenport, "Opprobrium: Occurrence, preparation, properties and use."

9 August. Small molecule reactions in zeolites and in the gas phase (Stephen J. Lippard, discussion leader): Chad Tolman, "Activation of small molecules by metal ions in zeolites"; Ben Freiser, "Reactions of metal cluster ions in the gas phase."

#### **Inorganic Geochemistry of Hydrothermal Ore Deposits**

##### *Proctor Academy*

David A. Crerar, co-chairman; George H. Brimhall, co-chairman.

5 August. Felsic magmas and ore genesis (C. Wayne Burnham, discussion leader): Marco Einaudi, "Evidence bearing on the magmatic origin of metals in felsic plutonic hydrothermal systems"; Shunzo Ishihara, "Felsic magmatism and ore genesis in East Asia." Mafic magmas and ore genesis (Anthony J. Naldrett, discussion leader): Ian Campbell, "The role of convection in the formation of magmatic ore deposits"; Stephen J. Barnes, "Experimental studies on magmatic oxide deposits."

6 August. Chemistry of hydrothermal systems, I. Metal transport and speciation (Hans P. Eugster, discussion leader): Scott Wood and David Crerar, "Chemical controls on the solubility of ore-forming minerals"; Terry M. Sew-

## Program Summary, Gordon Research Conferences,

Date	Colby-Sawyer College (N), New London	Colby-Sawyer College (S), New London	New Hampton School, New Hampton	Kimbal Union Academy, Meriden	Tilton School, Tilton
10-14 June	Plasma Physics	Genetic Toxicology Bioassay, Scientific Basis and Application of	Nucleic Acids	Second Messengers and Protein Phosphorylation	Central Nervous System
17-21 June	Nuclear Chemistry	Mycotoxins	Proteins	Lipid Metabolism	Animal Cells and Viruses
24-28 June	Catalysis	Mammary Gland Biology	Environmental Sciences: Air	Atherosclerosis	Carbohydrates
1-5 July	Polymers	*Molecular Genetics	Fuel Science	Polyamines	Cell Contact and Adhesion
8-12 July	Fiber Science	Reverse Osmosis and Ultrafiltration	Heterocyclic Compounds	Enzymes, Coenzymes and Metabolic Pathways	Polymer Colloids
15-19 July	Elastomers	Laser Diagnostics in Combustion, Chemistry and Physics of	Organic Reactions and Processes	Bones and Teeth	Metal Hydrides, Formation and Properties of
22-26 July	Corrosion	Chemotherapy of Experimental and Clinical Cancer	Natural Products	Interfaces, Chemistry at	Fluids in Permeable Media
29 July- 2 August	Photosynthesis, Physicochemical Aspects of	Dynamics of Gas Surface Interaction	Statistics in Chemistry and Chemical Engineering	Mechanisms of Toxicity	Muscle: Excitation- Contraction Coupling
5-9 August	Medicinal Chemistry	Ion Containing Polymers	Glass	Hormone Action	Epithelial Differentiation and Keratinization
12-16 August	Separation and Purification	Applied and Environmental Microbiology	Analytical Chemistry	Elastin	Nuclear Structure Physics
19-23 August	Cancer	*Gravitational Effects in Materials and Separation Processes	Adhesion, Science of	CO <sub>2</sub> Fixation of Green Plants	Implantable Auditory Prostheses
26-30 August			*Hormonal Carcinogenesis	*Population Biology and Evolution of Microbes and Their Accessory Elements	

\*New conferences

# 1985 Schedule—New Hampshire

Proctor Academy, Andover	Holderness School, Plymouth	Brewster Academy, Wolfeboro	Plymouth State College (N), Plymouth	Plymouth State College (S), Plymouth	Hawthorne College, Antrim
Plant Molecular Biology	Free Radical Reactions	Physical Organic Chemistry	Quantum Solids and Fluids	Water and Solute Exchange in the Micro-vasculature	
Hemostasis	Biocompatibility and Biomaterials	Magnetic Resonance	Molecular Pharmacology	Plant Cell and Tissue Culture	
Space Plasma Physics	Biological Regulatory Mechanisms	Liquid Crystals	Calcium Phosphates	Periodontal Diseases	
Phagocytes	Energy Coupling Mechanisms	Atomic Physics	Bacterial Cell Surfaces	Chronobiology	
Molecular Membrane Biology	Analytical Pyrolysis	Molecular Energy Transfer	Point and Line Defects in Semi-conductors	Structural Macromolecules: Collagen	*Three-Dimensional Electron Microscopy of Macromolecules
Organic Photochemistry	Membranes and Transport Phenomena	Micellar and Macromolecular Catalysis	Immunobiology and Immuno-chemistry	Crystal Growth	*Fractals
Developmental Biology	Drug Metabolism	Neural Plasticity	Quantitative Structure Activity Relationships	Oscillations and Dynamic Instabilities in Chemical Systems	*Spin Polarized Quantum Systems
Catecholamines	Thermosets	Nonlinear Optics	Parasitism, Immunological and Molecular Aspects of	Ceramics, Solid State Studies in	Organometallic Chemistry
Inorganic Geochemistry	Physical Metallurgy	Inorganic Chemistry	Red Cells	Coatings and Films	Reactive Polymers, Ion Exchangers and Adsorbents
Elementary Particle Interaction	Fertilization and Activation of Development	Molecular Electronic Spectroscopy	Solids, Chemistry and Physics of	Radiation Chemistry of Macromolecules	
Origin of Life	Liquids, Chemistry and Physics of	Molten Salts and Liquid Metals			
	*Superconducting Films	Glycoproteins and Glycolipids			

ard, "Spectroscopic studies of Fe(II) and Fe(III) chloride complex equilibria in hydrothermal solutions." Chemistry of hydrothermal systems, II. Kinetics and physical chemistry (Hubert L. Barnes, discussion leader): Antonio C. Lasaga, "Quantifications of surface chemistry of minerals and applications to water-rock interactions"; John Frantz, "Raman spectroscopy of transition metals in hydrothermal systems."

7 August. Fluid flow and chemical kinetics in magmatic hydrothermal systems (Harold C. Helgeson, discussion leader): Peter Lichtner, "Chemical reactions and fluid flow in hydrothermal ore deposits"; Dennis Norton, "Thermal induced stresses in hydrothermal ore deposits." Modeling and analysis of flow and chemical transport in low temperature environments (T. N. Narasimhan, discussion leader): Grant Garvin, "The role of transient fluid flow in stratabound ore genesis"; Aric Cunningham and George Brimhall, "Flow and geochemical modeling of weathering sulfide systems."

8 August. Fluids and massive sulfide deposits (Tomas Paces, discussion leader): Steven D. Scott, "Hydrothermal processes at active oceanic spreading centers and their relation to ancient massive sulfide deposits"; Neil Williams, "New insights into the geochemistry of Fe, Pb, and Zn in the HYC deposits of MacArthur River, Australia." Isotopic studies and ore-forming processes (Hugh P. Taylor, discussion leader): Hiroshi Ohmoto, "Transport and deposition of sulfur and metals in hydrothermal systems: Constraints from isotopes, thermodynamics and kinetic data on minerals and fluid species"; Donald De Paulo, "Isotopic studies bearing on the sources of ore-bearing magmas in the western U.S.A."

9 August. Crustal scale geochemistry and geochemical cycles (Robert Garrels, discussion leader): Robert Berner, "The sulfur-carbon system over Phanerozoic time"; Michael Arthur, "Secular global variations in ocean chemistry and generation of sedimentary ore deposits."

## Chemistry at Interfaces

### Kimball Union Academy

Raymond Mackay, chairman; Adrian Parsegian, vice chairman.

22 July. Featuring dynamic processes at interfaces, dynamics at surfaces (W. Conner, discussion leader): Edwin Heilweil, "Picosecond vibrational relaxation of adsorbates at colloidal interfaces"; Edwardo Wolfe, "Oscillatory behavior

on catalytic surfaces"; William Curtis Conner, "Inter-phase transport on heterogeneous solid surfaces." (Lloyd Abrams, discussion leader): Geoffrey Allen, "Dynamic morphology: Scanning ion microscopy"; Terry Baker, "The changing morphology of supported alloys."

23 July. Raman spectroscopy at interfaces (George Schatz, discussion leader): Richard Van Duyne, "Surface enhanced Raman spectroscopy (SERS) of composite materials"; Allan Creighton, "SERS of metal colloids"; Olvai Siiman, "Enhanced Raman spectroscopy of dye molecules on colloidal Ag and Au." (Milton Kerker, discussion leader): Alexander Wokaum, "Characterization of catalyst surfaces by enhanced Raman spectroscopy" Louis Brus, "Resonance Raman studies of photochemistry at colloidal semiconductor surfaces."

24 July. Random processes in surfactant systems (J. Adin Mann, discussion leader): H. Ted Davis, "Percolation processes"; Lawrence R. Pratt, "Monte Carlo calculation of surfactant aggregates"; Harvey Scher, "Random processes at interfaces." (Lee Turkevich, discussion leader): Michael Green, "Fluctuation spectroscopy"; Donald Feki, "The influence of brownian diffusion of dispersion stability."

25 July. Application of fractals to colloids and surfaces (Arthur Adamson, discussion leader): Benoit Mandelbrot, "Introduction to fractals"; Peter Pfeifer, "Fractal surfaces at the molecular range"; David Weitz, "Fractal description of colloidal aggregation." (Yossi Klafter, discussion leader): Paul Meakin, "Cluster-cluster aggregation"; Dale Schaefer, "Origin of fractal structure in amorphous."

26 July. Fractals/microemulsions (Marc Claussé, discussion leader): J. Michael Drake, "Molecular dynamics on porous surfaces"; Stephen Prager, "Voronoi modeling of microemulsions"; Robert Good, "Anomalous sedimentation in middle phase microemulsions."

Those wishing to present a poster should contact Adrian Parsegian, Department of Health and Human Services, National Institutes of Health, Bethesda, Maryland 20205.

## Ion-Containing Polymers

### Colby-Sawyer College (S)

W. J. MacKnight, chairman; J. Tan, vice chairman.

5 August. (Robert J. Statz, discussion leader): D. F. Shriver, "Ion transport in inorganic polymers"; J. Smid, "Ion

transport in organic polymers"; G. T. Davis, "Ion transport in polyethylene oxide complexes." (C. McCormack, discussion leader): C. Martin, "Luminescence probe studies of ionomers"; J. E. McGrath, "Synthesis of ionomers."

6 August. (S. R. Turner, discussion leader): J. P. Kennedy, "Synthesis of polyisobutylene-based sulfonate ionomers"; G. Wilkes, "Structure and properties of polyisobutylene-based sulfonated ionomers"; R. W. Lenz, "Synthesis of sulfate halato-telechelic ionomers." (R. J. Powell, discussion leader): Poster session. M. M. Coleman, "Spectroscopic studies of ion clustering in solution."

7 August. (M. Pineri, discussion leader): R. Jerome, "Synthesis of halato-telechelics"; C. Williams, "Morphology of halato-telechelics"; J. M. D. Coey, "Magnetic measurements in halato-telechelics." (V. McBrierty, discussion leader): R. W. Lundberg, "Solution behavior of sulfonated ionomers"; G. Berry, "Light scattering studies of rod-like or multiply broken macroions."

8 August. (S. L. Cooper, discussion leader): T. Record, "Cation DNA interaction"; N. Ise, "Ordering of ionic solutes in dilute solutions"; A. Jamieson, "Equilibrium and transport properties of comb-like ionomers in solution." (R. Longworth, discussion leader): P. M. Norling, "History of Surlyn."

9 August. (J. Tan, discussion leader): D. Tirrell, "Polyelectrolytes as modifiers of bilayer membrane properties"; D. Shultz, "Newer sulfonate polymers and applications."

## Physics and Chemistry of

### Laser Diagnostics in Combustion

#### Colby-Sawyer College (S)

Alan C. Eckbreth, chairman; Ronald K. Hanson, vice chairman.

15 July. (John W. Dailey, discussion leader): David R. Croley, "Fluorescence spectroscopy—fundamental issues"; Jurgen Wolfrum, "Fluorescence spectroscopy—fundamental issues"; Edward Lee, "Fluorescence spectroscopy—fundamental issues." (Gregory Rosasco, discussion leader): Richard E. Teets, "CARS—fundamental issues"; Larry A. Rahn, "CARS—fundamental issues."

16 July. (John E. M. Goldsmith, discussion leader): Kermit C. Smyth, "Multiphoton excitation techniques"; Terrill Cool, "Multiphoton excitation techniques"; Sune Svanberg, "Multiphoton excitation techniques." (Robert W. Dibble, discussion leader): Ronald



K. Hanson, "Two-dimensional imaging"; Robert J. Cattolica, "Two-dimensional imaging."

17 July. (Albert B. Harvey, discussion leader): Jean-Pierre Taran, "CARS—measurements"; Roger L. Farrow, "CARS—measurements"; Douglas A. Greenhalgh, "CARS—measurements." (Yehiam Prior, discussion leader): Richard Miles, "New techniques"; Michael D. Fayer, "New techniques."

18 July. (Anthony M. Dean, discussion leader): Normand Laurendeau, "Laser-induced fluorescence—measurements"; Katherina Kohse-Hoinghaus, "Laser-induced fluorescence—measurements"; Marie Joseph Cottureau, "Laser-induced fluorescence—measurements." (Michael Drake, discussion leader): Lynn A. Melton, "Two-dimensional imaging"; Marshall Long, "Two-dimensional imaging."

19 July. (M.-C. Lin, discussion leader): Marshall Lapp, "Surface/solids diagnostics"; Lawrence Goss, "Surface/solids diagnostics"; Richard K. Chang, "Surface/solids diagnostics."

## Lipid Metabolism

### Kimball Union Academy

Richard E. Pagano, chairman; Vernon Schumaker, vice chairman.

17 June. Physical chemistry of lipids (Alan Kleinfeld, chairman): Donald Small, "The physical properties of lipids—from alkanes to phospholipids"; David Wolf, "Probing the lateral organization of membrane lipids"; David Schachter, "Lipid fluidity of the individual hemileaflets of human erythrocyte membranes"; Daniel Friend, "Cholesterol (polyene-sterol) localization in natural membranes." Lipid metabolism/enzymology, session I (Dennis Vance, chairman): Patrick Choy, "Regulation of phosphatidylcholine biosynthesis in mammalian hearts"; Ki-Han Kim, "Regulation of fatty acid synthesis"; George Carman, "Phospholipid biosynthesis in *Saccharomyces cerevisiae*"; Chris Raetz, "Genetic analysis of CDP-DG metabolism in *E. coli*."

18 June. Lipid metabolism/enzymology, session II (Morris Kates, chairman): John Cronan, "Metabolic function of a protein-lipid interaction"; Robert Gorman, "Leukotriene B<sub>4</sub> receptor isolation and characterization"; Wolfgang Schneider, "The LDL receptor—structural insights"; Karl Hostetler, "Regulation of lysosomal phospholipid catabolism." Inositol lipids (Mabel Hokin-Neaverson, chairman): B. W. Agranoff, "Polyphosphoinositides in the nervous system"; C. Peter Downes, "Inositol

lipids and signal transduction"; Robert Bell, "Diacylglycerols function as intracellular regulators of protein kinase C"; Lewis Cantley, "Oncogenes and polyphosphoinositides."

19 June. Lipid transfer between membranes (Henry Pownall, chairman): K. W. A. Wirtz, "Mode of action of the phosphatidylcholine transfer protein"; J. W. Nichols, "Molecular mechanisms of lipid transfer"; Mike Phillips, "Cholesterol efflux from cells." Lipid translocation of cells (T. E. Thompson, chairman): Robert Simoni, "Intracellular transport of cholesterol from the endoplasmic reticulum to the plasma membrane"; E. A. Dawidowicz, "Intracellular transport of lipids in *Acanthamoeba*"; Gerrit van Meer, "Lipid movement after implantation into the plasma membrane of living cells"; Richard G. Sleight and Richard E. Pagano, "The use of fluorescent lipid analogs in defining lipid transport pathways."

20 June. Ether lipids (Fred Snyder, chairman): Donald Hanahan, "Biochemical nature of platelet-activating factor interaction with cells"; Robert Wykle, "Interrelationship of arachidonate metabolism and platelet-activating factor"; Amiya K. Hajra, "Ether lipid metabolism in peroxisomes"; H. van den Bosch, "The Cerebro-Hepato-Renal (Zellweger) Syndrome: An inborn error of ether lipid biosynthesis." Liposomes (John Weinstein, chairman): Carl Alving, "Antibodies to phospholipids, lipid bilayers, and liposomes"; Andrew Janoff, "Structural specificity of anti-lipid antibodies"; Demetrios Papahadjopoulos, "Ligand-directed targeting of liposomes: New strategies for enhancing cytoplasmic delivery of liposome contents."

21 June. Glycolipids/sphingolipids (Shimon Gatt, chairman): L. D. Bergelson (subject to be announced); Sarah Spiegel, "Probing the dynamics and functions of gangliosides using fluorescent gangliosides"; Victor Ginsburg, "Glycolipid differentiation antigens detected by monoclonal antibodies"; Konrad Sandhoff, "Role of activator proteins in sphingolipid metabolism."

Participants who wish to present posters should include titles and brief abstracts with their conference applications.

## Liquid Crystals

### Brewster Academy

A. Saupe, chairman; R. Pindak, vice chairman.

24 June. W. H. de Jeu, "On the origin of smectic layering"; P. Pershan, "The

surface structure of liquids and liquid crystals from x-ray deflectivity"; G. Aeppli, "The onset of hexatic order in liquid crystals." D. L. Johnson, "Nematic director dynamics near the smectic A phase transition"; G. Grinstein, "Dislocation loop theory of the nematic-smectic A-smectic C multicritical point."

25 June. R. Shashidhar, "Experimental studies of polymorphism in polar mesogens"; C. R. Safinya, "Recent high resolution x-ray studies of discotic and polar smectics"; T. C. Lubensky, "Structure and phase transitions in liquid crystals with competing length scale." N. A. Clark, "Surface memory effects in liquid crystals"; J. W. Goodby, "Recent advances in ferroelectric liquid crystals."

26 June. H. M. McConnell, "Structure of lipid monolayer crystals"; W. Helfrich, "Fluctuation forces in lecithin bilayers." P. Pieranski, "Crystal growth and forms of cholesteric blue and helicoidal phases"; D. W. Berreman, "Order and biaxiality variations in dislocations and thin cells."

27 June. M. M. Labes, "Cholesteric and nematic lyomesophases"; J. A. Lister, "Structure and x-ray scattering from micellar liquid crystals." H. Ringsdorf, "Synthesis, structure and properties of liquid crystalline polymers."

28 June. L. Luz, "NMR studies of discotic liquid crystals."

## Physics and Chemistry of Liquids

### Holderness School

J. M. H. Levelt Sengers, chairman; D. Chandler, vice chairman.

19 August. (R. D. Mountain, discussion leader): H. C. Anderson, "Analytic and computer simulation theories of the glass transition"; Th. Dorfmüller, "Dynamics of glass formation in complex liquids"; L. M. Torell, "Short-time relaxation processes in glass-forming silver-iodide-rich ionic liquids." (B. J. Alder, discussion leader): E. G. D. Cohen, "Hydrodynamics extended to the molecular level"; C. B. Harris, "Picosecond studies of chemical reactivity and molecular dynamics of simple reactions in liquids."

20 August. (J. C. Wheeler, discussion leader): D. S. Cannell, "Tricritical phenomena in fluid mechanics"; C. M. Knobler, "Tricritical phenomena in fluids—phase equilibria, light scattering, and interfaces; new experiments"; J. Thoen, "Phase transitions in liquid crystals." (Discussion leader to be announced): A. Vrij, "Light-scattering and

small-angle x-ray and neutron scattering of concentrated colloidal silica dispersions in a non-polar solvent"; B. J. Ackerson, "The effect of external fields on interparticle order on colloidal liquids."

21 August. (S. H. Chen, discussion leader): W. M. Gelbart, "Theory of liquid-crystallinity in surfactant solutions"; L. J. Magid, "Small-angle neutron scattering studies of micellar solutions near phase boundaries"; J. S. Huang, "The study of microemulsion structure." (S. C. Greer, discussion leader): D. Langevin, "Microemulsion aspects in interfacial properties, transport phenomena, critical behavior"; J. M. J. van Leeuwen, "Gravitational effects on critical phenomena."

22 August. (B. Widon, discussion leader): M. H. W. Chan, "Thermodynamic studies of two-dimensional melting and liquid-vapor transitions of physisorbed monolayers"; M. R. Moldover, "Optical studies of wetting layers"; H. T. Davis, "How liquids spread on solids." (J. M. H. Levelt Senger, discussion leader): W. I. Goldberg, "Experimental studies of periodic spinodal decomposition." Invited posters.

23 August. (J. S. Rowlinson, discussion leader): F. H. Stillinger, "Topography of potential hypersurfaces and their implications for liquids"; S. A. Rice, "The liquid-solid transition."

Posters will be on display from 5 to 6 p.m. and Monday to Wednesday evenings. Participants wishing to present posters should send a title and a three-line abstract to Professor D. Chandler, Department of Chemistry, University of Pennsylvania, Philadelphia, Pennsylvania 19104; telephone: 215-898-3077. A special session of invited posters will be part of the Thursday evening program.

## Magnetic Resonance

### *Brewster Academy*

A. Pines, chairman; C. Yannoni, vice chairman.

17-21 June. A. Abragam, "Nuclear magnetic ordering"; R. Blinc, "Dynamics of incommensurate chaotic and random systems"; J. Doane, "NMR of asymmetric motion in liquid crystals"; L. Dalton, "Exotic magnetic resonance techniques applied to one-dimensional systems"; R. Ernst, "Transient spin excitation in NMR, ESR and NQR"; D. Esteve, "Dipolar relaxation and Brownian motion"; R. Freeman, "Schemes for localized NMR excitation using B<sub>1</sub> inhomogeneity"; E. Hahn, "Investigations of NMR with the SQUID Rf amplifier"; P. Hakonen, "NMR studies on textures

and vortices in rotating superfluid helium-3"; W. Happer, "NMR studies of noble gases highly polarized by spin exchange laser pumping"; D. Lee, "Magnetic resonance in spin polarized hydrogen: Spin waves and spin diffusion"; K. McLauchlan, "Magnetic resonance studies of transient radicals and transient radical pairs"; K. Moebius, "CIDEP-enhanced-ENDOR—a novel technique for the characterization of transient radicals"; J. Norris, "Time domain electron magnetic resonance"; R. Richardson, "Surface spin coupling in liquid helium-3"; J. Reimer, "NMR studies of thin-film semiconductors"; M. Schwoerer, "Charge carriers in conducting organic crystals"; C. Slichter, "NMR studies of molecules adsorbed on dispersed metals"; H. Stapleton, "A fractal model of electron spin relaxation in biopolymers"; N. Sullivan, "NMR studies of the orientational ordering of diatomic molecules in two dimensions: A fluctuation-induced phase transition for N<sub>2</sub>/graphite"; R. Tycko, "Fixed point method of NMR excitation"; D. van Ormondt, "Parametric spectrum analysis of time domain signals in magnetic resonance."

## Mammary Gland Biology

### *Colby-Sawyer College (S)*

Pietro M. Gullino, chairman; Barbara K. Vonderhaar, vice chairman.

24 June. Hormonal control of gene expression in mammary gland (Edward B. Thompson, chairman): Scott Supowitz, "Hormonal control of hybrid prolactin—CAT genes transfected into recipient cells"; Donald Coffey, "The role of the nuclear matrix in gene expression"; Henri Rochefort, "A 52,000-dalton estrogen regulated protein secreted by cultured breast cancer cells"; Edward B. Thompson, "Control of the prolactin and growth hormone genes in cultured pituitary cells and hybrids." Lipogenesis and mammary fat pad (Satyabrata Nandi, chairman): Stuart Smith, "Lipogenesis in mammary gland"; Pentti K. Siiteri, "Estrogen biosynthesis in adipocytes"; Bruce M. Spiegelman, "Differentiation of adipocytes."

25 June. Oncogenes and mammary tumors (Mariano Barbacid, chairman): Michel Wigler, "Isolation of new oncogenes from human mammary carcinoma cells"; Roel Nusse, "Activation of cellular oncogenes by insertional mutagenesis in murine mammary cancer"; Mariano Barbacid, "The role of oncogene activation in mammary tumors induced by chemical carcinogens"; Gordon Rin-

gold, "Steroid receptors: structure and function in normal and neoplastically transformed cells." Multifunctional proteins of the extracellular matrix (Michael Pierschbacher, chairman): Michael Pierschbacher, "Cell adhesion to extracellular matrix"; Mina Jahan Bissell, "Regulation of mammary cell behavior by cell-matrix interaction"; Garth L. Nicolson, "Tumor cell-basement membrane adhesion and degradation."

26 June. Mammary gland development and morphogenesis (Barbara Vonderhaar, chairman): Charles W. Daniels, "Mammary duct elongation and differentiation during branching morphogenesis"; Philip Rudland, "Stem cells in rat mammary development and cancer"; Jose Russo, "New perspectives in the development of the mammary gland"; Patricia H. Hand, "Phenotypic heterogeneity in human breast tissues as defined by monoclonal antibodies." Active constituents of milk (Margaret C. Neville, chairman): Kenneth D. Brown, "Properties of polypeptide growth factor in ruminant mammary secretion"; Margit Hamosh, "Lipases in human milk: role in milk fat production and fat digestion"; Charles Isaacs, "Sulphydryl oxidase: A skim-milk-membrane bound enzyme."

27 June. Epithelial cell polarity (Ian Mather, chairman): G. Parry, "Protein secretions and membrane synthesis in cultured mammary epithelial cells"; W. W. Franke, "The cytoskeleton in mammary epithelial cells"; J.-P. Kraehenbuhl, "Biogenesis of the receptor for polymeric IgA"; I. H. Mather, "Markers for the surface domains of mammary epithelial cells." Anita Roberts, "Transforming growth factors: Bifunctional modulators of cell phenotype."

28 June. The prolactin gene family and mammary gland function (R. Michael Akers, chairman): Charles S. Nicoll, "Evidence for the involvement of insulin-like growth factors/somatomedins in the growth-promoting action of prolactin on its target organs: The synlactin hypothesis"; Robert Collier, "Placental lactogen and growth hormone in mammary gland metabolism"; R. Bremel, "Isolation and characterization of bovine placental lactogen"; R. Michael Akers, "Lactogenic hormone regulation of mammary gland function in ruminants."

## Mechanisms of Toxicity

### *Kimball Union Academy*

Michael A. Gallo, chairman; Marshall Steinberg, vice chairman.

29 July. Glutathione and reactive intermediates (Donald Reed, discussion leader): Martin Smith, "One electron changes and glutathione's protective role: Similarity to vitamin E"; Donald Reed, "Role of GSH in cellular protection"; Brian Ketterer, "GSH transferases and peroxidases: Protective role in conjugation of aromatic amines"; Serine Lau, "GSH and bromobenzene conjugation: One electron changes and bioactivation."

30 July. (Steven Aust, discussion leader): Tuula Thunberg, "Effect of TCDD on vitamin A status"; Karl Rozman, "Effect of TCDD on thyroxine"; Steven Aust, "Effect of TCDD on hormones and essential vitamins."

31 July. (Steven Cohen, discussion leader): Steven Cohen, "Cholinergic tolerance after repeated exposures to organophosphate anticholinesterases"; Wolf D. Dettbarn, "Organophosphate anticholinesterase neuropathies"; John G. Clement, "Aliesterase as a detoxification mechanism for organophosphates"; T. Roy Fukuto, "Toxicology and mode of delayed toxic action of O,S,S-trimethyl phosphorodithioate and related cpds."

1 August. (Flossie Wong-Stahl, discussion leader): Flossie Wong-Stahl, "Oncogenes and tumor biogenesis"; Kenneth Marca, "Involvement of the myc gene in plasmacytoma"; Thomas Deuel, "PDPS and activation of oncogenes"; Renate Kimbrough (subject to be announced)."

2 August. (Robert Dixon, discussion leader): Andres Negro-Dilar, "Reproductive endocrinology of progesterone"; Francis A. Kimball, "Possible untoward effects of progesterone agonists and antagonists."

Posters and abstracts on research in relevant areas are strongly encouraged.

## Medicinal Chemistry

### Colby-Sawyer College (N)

John G. Topliss, chairman; Hans-Jurgen Hess, vice chairman.

5 August. New horizons in central nervous system research (Barrie Hesp, chairman): L. L. Iversen, "Neuropeptides: Basis of a future psychopharmacology?"; Leslie Riblet, "Anxiolytic drugs: Perspectives for the future"; Solomon Snider, "Novel receptor strategies for psychotropic drug development." Protein growth factors (W. J. Pledger, chairman): W. J. Pledger, "Growth factors and the regulation of cellular proliferation"; H. L. Moses, "Transforming growth factors"; D. R. Clemmons,

"Growth control of vessel wall cell types."

6 August. Renin inhibition (Daniel H. Rich, chairman): Clark Smith, "Conformational approaches to renin inhibitors"; Joshua Boger, "Proteolytically stable renin inhibitors"; Anthone F. Lever, "Renin inhibitors in vivo." Atrial peptides with important biological actions (Edward H. Blain, chairman): Mary Anna Napier, "Identification and characterization of specific high affinity receptors for atrial natriuretic peptides"; Phillip Needleman, "Pharmacological characterization of the atriopeptins: structure-activity relationships."

7 August. New developments in the area of Ca<sup>2+</sup> channel ligands (David J. Triggle, chairman): M. Spedding, "Pharmacological and biochemical approaches to the determination of Ca<sup>2+</sup> channel ligand activity"; A. Scriabine, "New structures active at Ca<sup>2+</sup> channels"; David J. Triggle, "Structure-activity relationships: Mechanisms and basis for selectivity of action." Aldose reductase inhibitors and diabetic complications (Michael G. Page, chairman): Nancy J. Hutson, "Biochemistry and pharmacology of aldose reductase inhibitors"; David Brittain, "Structure-activity relationships in new chemical classes of aldose reductase inhibitors."

8 August. Trends in antibiotics research (Robert B. Morin, chairman): Franco Parenti, "The glycopeptide antibiotics"; Martin Gellert, Mechanism of action of quinolone antibacterials on DNA gyrase"; John Domagala, New developments in quinolone antibacterials—a mechanism based approach"; Phillip K. Peterson, "Where antibiotics fail patients." General session (Irving J. Greenblatt, chairman): Jonathan D. Brodie, "Application of positron emission tomography (PET) in the study of psychiatric disorders."

9 August. Special topics in medicinal chemistry (Charles A. Harbert, chairman).

## Membranes and Transport Phenomena

### Holderness School

Adrian Parsegian, chairman; Qais Al-Awqati, vice chairman.

### Transport in Biological Membrane and Lipid Bilayers

15 July. Channel structures (Lee Makowski, chairman): Nigel Unwin, "Three-dimensional maps of the acetylcholine receptor"; Richard Henderson, "Bacteriorhodopsin structure"; Bonnie Wallace, "Crystal structure of gramicidin."

Lessons from the directed mutation of membrane proteins (Charles Stevens, chairman): Ronald Kaback, "Lac Permease"; Mark Tanouye, "Electrophysiological characterization and cloning of K channel mutants in *Drosophila*."

16 July. Control of transport (Kenneth Spring, chairman): Michael Whitaker, "Inositol trisphosphate, calcium release, and the osmotic regulation of exocytosis"; Reiner Gregor, "Control of single channel function in renal tubules"; John Ding-E Young, "Macrophage IgG Fc receptor as a ligand-dependent ion channel." Posters.

17 July. Lessons from the cloning of transport protein (Harvey Lodish, chairman): Ronald Kopito, "Band III anion channels from red blood cells"; Ramon Seranno, "The ATP proton pump from yeast vacuole"; Robert Guy, "Channel structures inferred from protein sequence." Interactions and distribution of proteins involved in transport (Gerald Ehrenstein, chairman): Kuni Iwasa, "Interactions between Na channels in neuroblastoma cells"; Ernest Wright, "Structure-function relations of the Na/glucose cotransporter."

18 July. Fusion and secretion (Peter Rand, chairman): Judith White, "Site-specific fusion mutants of influenza hemagglutinin"; Illani Atwater, "The control of insulin secretion by intracellular and membrane processes"; Malcolm Broderick, "Morphological changes in mast cell granules during secretion." Expression and targetting of channel proteins (Qais Al-Awqati, chairman): Enrique Rodriguez-Bolan, "Polarity in the insertion of membrane proteins"; Ricardo Miledi, "Expression of messenger RNA coding for receptors in oocytes."

19 July. Characteristics of single channels (Christopher Miller, chairman): Richard Tsien, "Gating and conduction of Ca channels"; Douglas Eaton, "Mechanism of amiloride block of single apical Na channels"; Alan Finkelstein, "Transport properties of colicins and other toxins modified by site-directed mutagenesis."

## Metal Hydrides

### Tilton School

H. K. Birnbaum, chairman; J. Reilly, vice chairman.

15 July. (Discussion leader to be announced): M. Daw, "Theory of hydrogen on transition metal surfaces"; R. Cavanagh, "Hydrogen on small metal particles; structure and dynamics from neutron scattering"; R. Stulen, "Experi-

mental studies of hydrogen adsorption on transition metal surfaces." (Discussion leader to be announced): K.-H. Rieder, "Atomic beam scattering investigations of the interaction of hydrogen with metal surfaces."

16 July. (Discussion leader to be announced): K. Christmann, "Interaction of hydrogen with metal surfaces"; H. Zabel, "Hydrogen in artificially modulated structures"; K.-M. Ho, "First principles investigation of metal-hydrogen interactions in transition metal hydrides." (Discussion leader to be announced): I. Anderson, "The dynamics of hydrogen in yttrium."

17 July. (Discussion leader to be announced): A. Granato, "Low-temperature ultrasonic response of niobium containing hydrogen in the normal and superconducting state"; A. Weidinger, "Measurements of hydrogen diffusion using the method of perturbed angular correlation"; F. Besenbacher, "Interactions of hydrogen with defects in metals: Trap binding enthalpies and hydrogen site location." (Discussion leader to be announced): B. Lengeler, "The trapping of hydrogen by impurities in alloys as studied by x-ray adsorption spectroscopy."

18 July. (Discussion leader to be announced): R. C. Bowman, "Proton NMR studies of diffusion and electronic properties of amorphous transition metal hydrides"; B. Berry, "Solution and diffusion of hydrogen in amorphous metals"; D. Richter, "Hydrogen dynamics in amorphous metals."

19 July. (Discussion leader to be announced): R. Kirchheim, "Measurements and Monte Carlo simulations of hydrogen diffusion in amorphous metals"; J. Peisl, "The local structure of fast-moving hydrogen as investigated by diffuse neutron scattering"; J. Reilly, "Properties of metal-hydride suspensions."

#### Micellar and Macromolecular Catalysis

##### *Brewster Academy*

David G. Whitten, chairman; Frederic M. Menger, vice chairman.

15 July. (J. Fendler, discussion leader): H. T. Tien, "Electronic processes in bilayer lipid membrane"; D. Mauzerall, "Electron transfer across the lipid-bilayer water interface." (D. O'Brien, discussion leader): S. Regen (subject to be announced); E. Sackman (subject to be announced).

16 July. (D. G. Whitten, discussion leader): A. Barraud, "Molecular ma-

chineries in Langmuir-Blodgett films"; D. Möbius, "Molecular organization and chemical reactivity at the air-water interface." (R. MacKay, discussion leader): A. Braun (subject to be announced); D. Jager (subject to be announced).

17 July. (R. Moss, discussion leader): N. Porter, "Free radical reactions in molecular aggregates"; D. Gutsche, "Weak interactions between host and guest molecules in micellar and non-micellar systems." (F. M. Menger, discussion leader): C. A. Bunton, "How specific are specific salt effects on micellar reactions?" J. B. F. N. Engberts, "Water catalyzed ester and amide hydrolysis in micelles, polymers and surfactant-polymer complexes."

18 July. (G. M. Wyman, discussion leader): K. A. Zachariasse, "Spectroscopic tools to investigate micellar and membrane structure"; F. H. Quina, "The role of ion binding in micellar catalysis." (Y. Murakami, discussion leader): C. O'Connor, "Esterase activity of human milk lipase catalyzed by micelles and proteins"; S. Shinkai, "Switch-functionalized systems."

19 July. (J. K. Thomas, discussion leader): M. A. Fox, "Designed three-dimensional environments for electron exchange"; J. H. Fuhrhop, "Vesicle membrane from bolaamphiphiles."

#### Molecular Electronic Spectroscopy

##### *Brewster Academy*

G. J. Small, chairman; D. H. Levy, vice chairman.

12-16 August. Smaller molecules and ions: G. Herzberg, "Rydberg transitions in Rydberg molecules"; W. C. Lineberger, "Sub-Doppler spectroscopy of molecular ions"; R. J. Saykally, "Studies of protonated molecules by laser velocity modulation spectroscopy and dynamical processes in the condensed phase I: G. Fleming, "Dynamics of energy transfer in photosynthetic light harvesting arrays"; K. Sauer, "Excitation transfer and charge separation in photosynthetic light reactions"; K. K. Rebane, "Some aspects of photochemical hole burning in molecular spectroscopy and data processing", Spectroscopy and dynamical processes in the condensed phase II: R. M. Hochstrasser, "Non-linear spectroscopic techniques in the study of spectra and dynamics"; C. B. Harris, "Picosecond studies of cage dynamics and vibrational relaxation of simple chemical reactions in solution"; D. Wiersma, "Ultrafast relaxation and dephasing in solids as studied by (sub)-

picosecond accumulated photon echo spectroscopy"; E. Ippen, "Femtosecond dephasing studies"; H. P. Trommsdorf, "Optical studies of proton tunneling in molecular crystals". Beam spectroscopy of aggregates: A. W. Castleman, Jr., "Shedding light on molecular and metallic clusters"; V. E. Bondebey, "Studies of metal clusters in effusive and supersonic beams"; B. Soep, "Spectroscopy of reacting van der Waals complexes". Relaxation processes in isolated molecules: K. Yoshihara, "Intramolecular energy flow and chemical transformation in isolated S<sub>1</sub> and S<sub>2</sub> benzene"; E. W. Schlag, "Sub-Doppler high resolution spectroscopy and primary radiationless processes"; E. C. Lim, "Some aspects of intramolecular vibrational relaxation". Spectroscopy and the transition state from a dynamical point of view: J. L. Kinsey, "Spectroscopy of transition states: Photons emitted during photodissociation"; E. J. Heller, "Molecular spectroscopy from a dynamical point of view".

Additional speakers and sessions, as well as discussion leaders will be announced later. The program will include poster sessions.

#### Molecular Energy Transfer

##### *Brewster Academy*

Paul L. Houston, chairman; Stephen R. Leone, vice chairman.

8 July. Intramolecular relaxation, unimolecular processes and radiationless transitions (chairman to be announced): Martin Quack, "Overview: Time-dependent intramolecular dynamics and statistical mechanics"; Alan Knight, "Rotational specificity in intramolecular relaxation processes." (Chairman to be announced): Casey Hynes, "Intramolecular energy flow and overtones: Relaxation and reaction"; Robert Field, "Ergodic spectra, isomerization, and quantum state specificity by high-resolution spectroscopy." Vibrational and rotational relaxation of ions (chairman to be announced): Eldon Ferguson, "Vibrational relaxation of small positive ions in low-energy collisions with neutrals"; Peter Toennies (subject to be announced). Poster session I.

9 July. Molecular energy transfer in the gas phase (chairman to be announced): Fleming Crim, "Overview: a selective overview of gas-phase energy transfer"; George Flynn, "Infrared diode laser probes of dynamic processes in molecules." (Chairman to be announced): David Micha, "Collisional en-

ergy transfer into polyatomic molecules"; Ron Gentry, "Kinetic energy dependence of state and mode specific vibrational excitation in molecular collisions." Molecular energy transfer in the gas phase (Steve Davis, chairman): Klaas Bergmann, "Recent advances in vibrational-rotational energy transfer studies in Na<sub>2</sub>-X collisions including pure M<sub>j</sub> selection"; Rick Heidner, "Energy transfer in the excimer photoinitiated NF<sub>2</sub>/H<sub>2</sub> system." Poster session I continued.

10 July. Alignment, orientation, and spin-orbit effects (chairman to be announced): John Simmons, "Overview: vector correlations in collision processes"; Peter Andresen, "Spin-orbit and A-doublet transitions in the rotational excitation of the <sup>2</sup>II molecules OH and NO." (Chairman to be announced): Millard Alexander, "Polarization effects in inelastic collisions of electronically excited atoms and molecules"; Ingolf Hertel, "Alignment, orientation, and spin-orbit effects in atom-atom and ion-atom collisions." Inelastic versus reactive events (chairman to be announced): Thom Dunning, "Overview"; Karl Kleinermanns (subject to be announced); Eli Pollak (subject to be announced). Poster session II.

11 July. Energy transfer in condensed phases (chairman to be announced): Andre Tramer (subject to be announced); Eric Weitz, "Energy transfer in doped rare gas solids." (Chairman to be announced): Gerald Small, "Ultrafast donor to acceptor electronic energy transfer via polaritons in molecular crystals"; Chuck Harris, "Picosecond studies of caging and vibrational relaxation of simple chemical reactions in liquids." Energy transfer in condensed phases (chairman to be announced): C. Bradley Moore, "Vibrational energy transfer; perspectives and recent results." Poster session II continued.

12 July. Energy transfer at surfaces (chairman to be announced): Reinhard Schinke (subject to be announced); John Stephenson, "Vibrational deactivation of surface OH chemisorbed on SiO<sub>2</sub>"; Benny Gerber, "Energy transfer and dissociation in molecular impact on single crystal surfaces."

## Molecular Genetics

*Colby-Sawyer College (S)*

Savio L. C. Woo, chairman; Frank H. Ruddle, vice chairman.

1 July. Molecular genetics of hemoglobinopathies (Stuart Orkin and Haig Ka-

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An application blank for attendance at the Gordon Research Conferences may be found on page 1106. A summary of the program is on pages 1084 and 1085.

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zazian, discussion leaders): Tom Maniatis, "A novel approach to detect point mutations in mammalian genes"; Bernard Forget, "Mutations that enhance fetal hemoglobin gene expression"; Oliver Smithies, "Site-specific integration of globin gene in cultured cells." Molecular biology of blood clotting factors (Earl Davie, discussion leader): Richard Lawn, "The human factor VIII gene and classic hemophilia"; Jeff Murray, "Polymorphisms in the genes of plasminogen and fibrinogen."

2 July. Molecular basis of metabolic disorders in man (Elizabeth Neufeld, discussion leader): Tom Caskey, "Molecular basis of HPRT mutations and expression"; Darwin Prockop, "Mutations in collagen genes and their consequences in man"; Joseph Goldstein, "LDL receptor mutations and hypercholesterolemia." The human gene map and the genetics of cancer (Tom Shows, discussion leader): Stuart Aaronson, "Involvement of oncogenes in human neoplastic process"; Philip Leder, "Activation of c-myc oncogene and cancer."

3 July. Gene transfer into cells: Tissue-specific expression and regulation (Shirley Tilghman, discussion leader): Frank Grosvelt, "Globin gene expression in friend cells"; Rudi Grosschedl, "Expression of immunoglobulin genes in cells and mice"; Michael Walker, "Insulin gene expression in pancreatic  $\beta$  cells." Gene transfer into mammalian embryos and animals (Frank Costantini, discussion leader): Erwin Wagner, "Embryo transformation using retroviral vectors"; Richard Palmiter, "Foreign oncogenes and tumorigenesis in transgenic mice."

4 July. Linkage analysis of human genetic disorders (David Botstein, discussion leader): Jean-Marc LaLouel, "Mathematical considerations in the establishment of a linkage map of the human genome"; Raymond White, "Linkage probes of the human genome"; James Gusella, "Linked DNA markers to Huntington's chorea." Homologous recombination and site-directed integration of transferred genes (Raju Kucherlapati, discussion leader): Charles Radding, "Network of DNA and RecA protein are intermediates in homologous

pairing"; Mario Capecchi, "Targeting genes into mammalian genome."

5 July. Prospects of gene therapy (Paul Berg, discussion leader): Richard Mulligan, "Retroviral vectors for gene transfer to mammalian cells and animals"; David Martin, "Gene transfer and potential therapy for immunodeficiency diseases"; Reiner Storb, "Bone marrow transplantation as therapy for selected genetic and malignant diseases."

## Molecular Membrane Biology

*Proctor Academy*

Mark S. Bretscher, co-chairman; Donald M. Engelman, co-chairman; Randy Schekman, vice chairman.

8-12 July. Membrane structure at high resolution (Donald Engelman, chairman): Peter Colman, Richard Henderson, Hartmut Michel, and Don Wiley, "High resolution studies of membrane proteins of biological interest." Membrane structure at low resolution (Richard Henderson, chairman): Nigel Unwin, Mu-Min Poo, "Low resolution studies of membrane assemblies, and fluid character of membranes, especially of acetylcholine receptor." Membrane assembly (Eugene Kennedy, chairman): Gunther Blobel, Gottfried Schatz, Peter Walter, and William Wickner, "Molecular mechanisms by which proteins are inserted into, and fold up correctly in, a membrane during biosynthesis, and how proteins are secreted through membranes." Transport and sorting mechanisms (Marilyn Farquhar and William Sly, chairmen): Stuart Kornfeld, Harvey Lodish, James Rothman, David Sabatini, Randy Schekman, and Kai Simons, "Transport of newly synthesized proteins through the cell, the nature and roles of modifications (especially carbohydrate); sorting of proteins to their final destination (such as lysosomes, or the apical/basolateral surfaces of epithelial cells)." Coated vesicles (George Palade, chairman): Barbara Pearse, "How receptors are connected to clathrin, and low resolution e.m. structure." Endocytic cycle (Mark Bretscher, chairman): Michael Brown, Stanley Cohen, Joseph Goldstein, Ari Helenius, Ann Hubbard, Richard Pagano, and Mark Bretscher, "Studies on specific receptors, the pathways they take through the cell, and how this may relate to locomotion." Evening lecture (chairman to be announced): Daniel Branton, "Comparison of what is known in this area between animals and plants." Endocytic cycle (Michael Brown, chairman).

## Molecular Pharmacology

*Plymouth State College (N)*

William A. Catterall, chairman; Henry Bourne, vice chairman.

### Mechanisms of Membrane Signal Transduction

17 June. Regulation of adenylate cyclase (Daniel R. Storm, chairman): Daniel R. Storm, "Catalytic unit of adenylate cyclase"; Alfred Gilman, "Guanyl nucleotide regulatory proteins and adenylate cyclase"; Gary Johnson, " $\beta$ -Adrenergic activation of adenylate cyclase." Receptors, phosphatidylinositol, and calcium (James W. Putney, chairman): Robin Irvine, "Generation and messenger function of inositol phosphates"; John Williamson, "Inositol phosphates and protein kinase C as hormone effector mechanisms"; Thomas J. Martin, "TRH-regulated phospholipase C in pituitary cells"; Howard Rasmussen, "Second messenger functions of calcium and diacylglycerol."

18 June. Membrane signal transduction proteins (Henry Bourne, chairman): Henry Bourne, "GTP-binding signal transduction proteins"; John Northrup, "GTP-binding proteins and insulin action"; Arthur Levinson, "Functional and genetic studies of *ras* proteins"; Jeremy Nathans, "Molecular genetic analysis of rhodopsin function." Desensitization and down-regulation of receptor responses (John Perkins, chairman): John Perkins, "Down regulation of  $\beta$ -adrenergic receptors"; Palmer Taylor, "Agonist-induced desensitization of nicotinic acetylcholine receptors"; M. Daniel Lane, "Post-translational processing and turnover of insulin and epidermal growth factor receptors"; Gilbert Ashwell, "Internalization of the asialoglycoprotein receptor."

19 June. Receptor-activated ion channels (Eric Barnard, chairman): Eric Barnard, "Application of mRNA and cDNA techniques to analysis of ion channel structural requirements in the nicotinic ACH and GABA receptors"; Michael Raftery, "Nicotinic ACH receptors—signaling to and through their channels"; Robert Stroud, "Topological studies of the ACH receptor ion channel." An additional presentation on single-channel analysis of GABA receptor function will be added. Voltage-sensitive ion channels (William A. Catterall, chairman): William A. Catterall, "Molecular properties of  $\text{Na}^+$  and  $\text{Ca}^{2+}$  channels"; Irwin Levitan, "Modulation of  $\text{Ca}^{2+}$ -activated  $\text{K}^+$  channels by phosphorylation"; Richard Miller, "Calcium channels in neurons";

Robert Dunn, "Molecular genetics analysis of the sodium channel."

20 June. Mechanisms of neuropeptide action (Werner Klee, chairman): Werner Klee, "Purification and molecular properties of delta-opiate receptors"; Terry Reisine, "Somatostatin action in pituitary"; John Exton, "Mechanisms of vasopressin action"; Robert MacDonald, "Modulation of ion conductance in central neurons by opioids." Receptor internalization in signal transduction: The LDL receptor (Joseph Goldstein, keynote lecturer).

21 June. Growth factors and tyrosine phosphorylation (Ora Rosen, chairman): Ora Rosen, "Growth factors and tyrosine phosphorylation"; Michael Bishop, "Use of *Drosophila* to probe structure and function of tyrosine protein kinase"; Lewis Cantley, "Tyrosine kinases: The phospholipid connection"; S. Hanafusa, "Genetic dissection of *src* kinase"; Stephen Reed, "Protein kinases in growth regulation in yeast."

Prospective conferees are encouraged to submit a brief poster abstract with their application and to present a poster at the conference.

## Molten Salts and Liquid Metals

*Brewster Academy*

Judy R. Franz, chairman; Gleb Mamantov, vice chairman.

19 August. Electron localization in molten salts and liquid metals (W. W. Warren, Jr., discussion leader): Aneesur Rahman, "Electron solvation in molten alkali halides"; Werner Freyland, "Electron localization and metal-non-metal transition in metal-molten salt solutions"; Peter Wolynes, "Liquid structure and localization phenomena." Structure of molten salts and liquid metals (H. Ruppersberg, discussion leader): J. Hafner, "Electronic origin of chemical short-range order in liquid alloys"; Josette Dupuy, "Metal-molten salts: Thermodynamics and structural behavior."

20 August. Room temperature molten salts (C. A. Angell, discussion leader): C. A. Angell, "Novel approaches to the formation"; John Wilkes, "Structural aspects of room temperature molten salts"; B. Gilbert, "Recent developments in room temperature melts." Thermodynamics of molten salts and liquid metals (O. Kleppa, discussion leader): Ferdinand Sommer, "Thermodynamic properties of liquid alloys"; Milton Blander, "Analyses and predictions of the thermodynamic properties of sil-

cates and other ordered liquids: Empiricism and theory."

21 August. Molecular dynamics and lifetimes (M. Parrinello, discussion leader): E. W. J. Mitchell, "The dynamics of simple molten salts: Neutron and light-scattering"; Marie-Louise Saboungi, "Structures of complexing ionic melts from molecular dynamics calculations"; F. Taulelle, "Ionic motion in chloroaluminates." Chemistry and physics of magnesium production (Harald Oye, discussion leader): Noel Jarrett, "Principles and practices of magnesium smelting"; Donald Sadoway, "Magnesium electrolysis: A case study of a liquid metal in molten salts."

22 August. The effects of clustering (Friedrich Hensel, discussion leader): John Hernandez, "Electrical conductivity and cluster formation in hot, dense Hg, Cs, and Rb vapors"; Manfred Kappes, "Characterization of gas phase metal clusters"; Frank di Salvo, "Solutions formed from solid compounds containing metal clusters." Phase transitions: Freezing (Robert Evans, discussion leader): David Oxtoby, "The freezing of molten salts"; John Perepezko, "The freezing of undercooled liquids."

23 August. Applications of molten salts to high temperature metal processing (Roberto Marassi, discussion leader): Douglas Inman, "Interfacial structure and electrochemical reactions in molten salts"; Sidney White, "Solution chemistry, electrode chemistry, and their synergism in electroplating molybdenum"; (speaker to be announced) "Past, present, and future of the steel industry."

Poster sessions will be held each evening after the formal session is completed.

## Muscle: Excitation-Contraction Coupling

*Tilton School*

Guiseppe Inesi, chairman; Stephen G. Baylor, vice chairman.

29 July. Calcium control mechanisms in biology (H. Reuter, chairman). Early events in EC coupling (R. Adrian and L. Peachy, chairmen).

30 July. Mechanism of T-SR coupling (K. Chandler, chairman). Ionic changes in SR and myoplasm (D. Allen and S. Baylor, chairmen).

31 July. Permeability of the SR membrane (G. Meissner, chairman). The SR ATPase (W. Hasselbach and M. Bertram, chairmen).

1 August. Isolation and characteriza-



tion of proteins involved in EC coupling (A. Caswell, chairman). Comparative studies of EC coupling (P. Gage and G. Dubyak, chairmen).

2 August. Ca/Mg binding proteins in muscle (J. Potter, chairman).

## Natural Products

### New Hampton School

John J. Partridge, chairman; Frederick E. Ziegler, vice chairman.

22 July. Introduction and welcome (John J. Partridge, chairman): Philip D. Magnus, "A progress report on the total synthesis of the dimeric indole alkaloid, vinblastine"; Robert A. Volkmann, "Boron trifluoride-activated imines in pharmaceutical chemistry"; Bruce A. Pearlman, "A new method for the synthesis of olefins from sulfones and its application to 9-deoxy-9-methylene-16, 16-dimethylprostaglandin E<sub>2</sub> (Metene-prost®)"; A. Richard Chamberlin, "Stereo-selective reactions from a new synthesis of erythronolide A seco acid."

23 July. Martin Demuth, "Total synthesis of natural products: Applications of light-induced reactions"; Amos B. Smith III, "Total synthesis of the latrunculins and other architecturally novel natural products"; Kenner C. Rice, "Chiral opioid total synthesis in the study of structure and function of the opioid receptor-endorphin system."

24 July. John W. Westly, "Polyether antibiotic structure and biosynthesis"; Kyriacos C. Nicolaou, "Total synthesis of polyether antibiotics"; Rolf Scheffold, "Vitamin B<sub>12</sub>-mediated electrosynthesis of natural products"; Richard H. Schlesinger, "An examination of the reaction of vinylogous urethane enolates with aldehydes."

25 July. Pat N. Confalone, "Intramolecular (3 + 2) dipolar addition reactions and the total synthesis of natural products"; Yasufumi Ohfuné, "Synthetic studies on the macrocyclic peptide antibiotic, echinocandin C"; Bruce Ganem, "Progress in bioorganic research."

26 July. David V. Collum, "The organic chemistry of some transition metals"; Stuart L. Schreiber, "Remote acyclic diastereoselection."

One or more informal poster sessions will be held. Participants interested in contributing to the poster session should indicate this on their application. A poster title and a one to three page abstract should then be sent by 8 July to Professor Frederick E. Ziegler, Department of Chemistry, Yale University, New Haven, Connecticut 06520.

## Molecular and Cellular Aspects of Neural Plasticity

### Brewster Academy

Adrian Dunn, chairman; Jim Truman, vice chairman.

22 July. Factors affecting the duration of the critical period in the visual system (Caria Shatz, discussion leader): Takuji Kasamatsu, "Background review of the role of biogenic amines in developmental plasticity"; Nigel Daw, "Effects of deprivation and the role of catecholamines"; Max Cynader, "Extension of the critical period by dark rearing"; Michael Stryker, "The role of activity in the formation of ocular dominance columns." Phosphoinositides as second messengers: Michael Berridge, "Inositol triphosphate: A uniquely flexible second messenger."

23 July. Formation of new functional circuits (Richard Zigmond, discussion leader): Albert Aguayo, "Regenerative growth in the mammalian CNS"; Fred Gage, "Formation of new neural connections by CNS tissue transplants"; Fernando Nottebohm, "Formation of new neural connection by new neurons generated in adult brains." Methods of assessing changes of neural connectivity (Dale Purves, discussion leader): Monte Westerfield, "Monitoring the outgrowth of motor neurons with long-lived fluorescent dyes"; Jeff Lichtman, "Monitoring changes in presynaptic motor terminals by stimulus-induced uptake of fluorescent probes."

24 July. Regulation of neurotransmitter and hormone receptors (Bruce McEwen, discussion leader): Kevin Catt, "Up and down regulation of receptors in CNS and pituitary"; Ken Kellar, "Regulation of CNS monoamine receptors"; Gail Handelman, "Peptide receptor regulation by peptides in ontogeny"; Ron de Kloet, "Peptide regulation of CNS glucocorticoid receptors." Modulators of simple neuronal systems (James Truman, discussion leader): Alan Selverston, "Modulation of rhythmic motor output in the lobster stomatogastric system"; Edward Kravitz, "Roles of peptides and of amines in the modulation of behavior in the lobster."

25 July. Molecular model of learning (Tom Carew, discussion leader): Tom Abrams, "Roles of Ca<sup>2+</sup> and adenylate cyclase in a mechanism for associative learning in *Aplysia*"; Michel Baudry, "Modulation of neurotransmitter receptors as a mechanism for LTP and learning in the hippocampus"; Juan Acosta-Urquidí, "Modulation of K<sup>+</sup>-channels via Ca<sup>2+</sup>-calmodulin-dependent phos-

phorylation as a mechanism of memory"; Marge Livingston, "Why some flies can't learn: The biochemistry of *Drosophila* learning mutants." Role of biogenic amines and endogenous opioids in neuroplasticity (Eric Stone, discussion leader): Adrian Dunn, "Interaction between catecholamines and opioids in the CNS"; Jim McGaugh, "Interaction of adrenergic and opioid systems in behavioral plasticity"; Bruce Pappas, "Effects of early lesions of the noradrenergic system on neuroplasticity."

26 July. Molecular aspects of nerve growth (Bernard Agranoff, discussion leader): Mark Willard, "Changes in the molecular state of neurons during development and regeneration"; Pate Skene, "Phylogenetic conservation and developmental regulation of growth-associated proteins"; Larry Benowitz, "The expression of membrane proteins during regeneration of the goldfish optic nerve."

## Nonlinear Optics and Lasers

### Brewster Academy

Paul F. Liao, chairman; Dan Grischowsky, vice chairman.

29 July–2 August. J. Bokor, "Time resolved VUV photoemission from surfaces"; T. F. Heinz, "Nonlinear optics studies of surface reconstruction"; H. Walther, "Laser selective studies of surfaces"; J. Zyss, "Nonlinear optics of organic fiber crystals"; M. Raymer, "Quantum statistics of stimulated Raman scattering"; D. H. Auston, "MM-wave spectroscopy with femtosecond pulses"; D. A. B. Miller, "Room temperature excitons: Physics and applications"; A. Nurmikko, "Excitons, polarons and quantum wells with semimagnetic semiconductors"; Y. Petroff, "Free electron lasers"; A. Huang, "Optical computers: Facts and fiction"; J. Feinberg, "Phase locking of lasers with phase conjugation"; R. R. Freeman, "Cluster formation and studies with lasers."

## Nuclear Chemistry

### Colby-Sawyer College (N)

L. L. Riedinger, chairman; V. Viola, vice chairman.

17 June. (J. L. Wood, discussion leader): K. Heyde, "Shell model and collective model studies of intruder states in nuclei." A. E. L. Dieperink, "Collective magnetic dipole transitions in deformed nuclei"; I. Hamamoto, "Triaxial shapes

and electromagnetic properties of high-spin states."

18 June. C. Baktash, "Shape changes at high spin and temperature in the light rare-earth nuclei"; R. M. Diamond, "High-spin states from the Berkeley array." (J. D. Garrett, discussion leader); J. C. Lisle, "Experimental data from Daresbury: Evidence for loss of pairing"; R. Broglia, "Pairing vibrations in rapidly rotating nuclei."

19 June. (P. J. Nolan, discussion leader): J. H. Hamilton, "Nuclei far from stability: New techniques and structure information"; C. J. Lister, "New regions of deformation: New physics?" M. W. Guidry, "Transfer reactions and high-spin structure"; J. J. Gaardhøje, "Nuclear structure at high temperature studied via giant resonances."

20 June. R. R. Chasman, "Octupole and cluster model description of the heavy elements." D. C. Hoffman, "A LEAP into the future"; M. S. Turner, "The earliest moments of the universe."

21 June. (V. Viola, discussion leader): C. K. Gelbke, "Formation and decay of localized regions of high excitation in intermediate energy nucleus-nucleus collisions."

## Nuclear Structure Physics

### Tilton School

Charles Glashauser, chairman; Malcolm Harvey, vice chairman.

12 August. A. Richter, "Experimental evidence for new low-lying collective modes"; F. Osterfeld, "Does the delta quench Gamow-Teller strength in (p,n) and (p,p') reactions?" R. Vinh-Mau, "Effects of nucleon structure on the nucleon-nucleon interaction"; W. Van Oers, "Test of charge symmetry breaking in neutron-proton elastic scattering."

13 August. G. Miller, "Searching for hidden color components of nuclear wave functions with pion-nucleus double charge exchange reaction"; D. Ashery, "A better understanding of pion absorption in nuclei"; W. G. Lynch, "Statistical and space-time aspects of intermediate energy nucleus-nucleus collisions."

14 August. J. Shepard, "A direct approach to inelastic scattering"; W. Van Orden, "Relativistic calculations of longitudinal and transverse (e,e') response functions"; H. Wieman, "Compression and expansion in relativistic nucleus-nucleus collisions"; J. Cugnon, "Cascade model calculations of relativistic nucleus-nucleus collisions."

15 August. S. Kowalski, "New physics with polarized electrons"; (Speaker to be announced), "(General interest presentation)."

16 August. D. Garreta, "Elastic and inelastic scattering of antiprotons at LEAR"; P. Barnes, "Recent results in hypernuclear spectroscopy."

## Nucleic Acids

### New Hampton School

Olke C. Uhlenbeck, co-chairman; John Abelson, co-chairman.

10 June. Nucleic Acid structure (J. Wang, discussion leader): O. Kennard, "Crystal engineering and structural investigation of DNA fragments containing base pair mismatch"; A. Redfield, "NMR studies of nucleic acids"; A. Rich, "Z DNA and related matters." Protein-nucleic acid interactions (R. Sauer, discussion leader): S. Harrison, "Structure of the 434 repressor-operator complex"; J. Rosenberg, "Structure of the Eco R1 endonuclease-DNA complex."

11 June. DNA replication and repair (G. Walker, discussion leader): P. Modrich, "Mismatch repair in vitro"; C. Georgopolus, "Heat shock proteins in  $\gamma$  replication"; T. Steitz, "Structure of DNA polymerase I." DNA transposition and recombination (N. Cozzarelli, discussion leader): C. Radding, "Intermediates in homologous pairing promoted by recA protein"; K. Mizuuchi, "Mechanisms of transposition of bacteriophage Mu"; N. Kleckner, "Mechanism of regulation of Tn 10 transposition."

12 June. Transcription (W. McClure, discussion leader): C. Gross, "The heat shock response in *E. coli*"; C. Parker, "Transcription of drosophila heat shock genes in vitro"; R. Roeder, "Eukaryotic transcription factors and mechanism." Gene regulation (T. Maniatis, discussion leader): S. McKnight, "Eukaryotic promoters"; R. Tjian, "Control of initiation of eukaryotic transcription"; M. Ptashne, "Repressor-operator interaction"; K. Yamamoto, "Hormonal control of gene expression."

13 June. Protein synthesis (H. Noller, discussion leader): M. Yarus, "Translational function of tRNA"; P. Walter, "Transport of peptide precursors through the ER membrane." Methods in nucleic acids research (F. Blattner, discussion leader): L. Hood, "Microchemical instrumentation"; R. Mulligan, "Retrovirus vectors."

14 June. RNA processing (M. Green, discussion leader): M. Birnstein, "3' end

processing mediated by U7 RNP"; J. Steitz, "SnRNPs", S. Altman, "Enzymatic action of an RNA in RNA processing."

## Organic Photochemistry

### Proctor Academy

Peter Wagner, chairman; Heinz Roth, vice chairman.

15 July. (H. Roth, discussion leader): J. Miller, "Distance, energy and solvent effects on rates of electron transfer reactions"; W. Rettig, "Kinetics of charge separation produced by synchrotron radiation." (G. Closs, discussion leader): J. Kochi, "Ion pairs by charge transfer excitation"; C. Jones, "Gas phase laser photochemistry of gold and copper compounds."

16 July. (K. Schaffner, discussion leader): W. Dauben, "Wavelength dependent organic photochemistry"; L. Paquette, "Substituent control of regioselectivity in the di- $\pi$ -methane photorearrangement of dual channeled substrates." (P. Kropp, discussion leader): S. Cristol, "Rearrangements involving photogenerated 'carbocations'"; F. Saeve, "Redox and photochemical behavior of sulphonium salts."

17 July. (R. Caldwell, discussion leader): Y. Ito, "Photochemistry of meta- and para-substituted aromatic polycarbonyl compounds"; J. C. Scaiano, "Chemistry of laser generated intermediates." (H. Morrison, discussion leader): H. Zimmerman, "Recent advances in exploratory and mechanistic organic photochemistry of some bichromophoric systems."

18 July. (J. Saltiel, discussion leader): K. Tokumaru, "An experimental approach to the elucidation of potential energy surfaces of triplet olefins"; F. Wilkenson, "Diffuse reflectance laser flash photolysis"; E. Reichmanis, "Radiation sensitive materials. Chemistry and processes for lithographic applications."

19 July. (D. Eaton, discussion leader): P. Mazzochi, "Photochemical reactions of aromatic imides"; J. Mattay, "Chemistry involving photoinduced charge separation"; A. P. Schaap, "Consensitized electron-transfer photooxygenation."

All participants are invited to present one poster for presentation throughout the week. Several will be chosen just prior to the meeting for oral presentation. Please send abstracts to the chairman at the Chemistry Department, Michigan State University, East Lansing, Michigan 48824.

## Organic Reactions and Processes

### *New Hampton School*

Vasken Paragamian, chairman; Louis S. Hegedus, vice chairman.

15 July. T. J. Barton, "Generation, rearrangements and synthetic uses of organosilicon reactive intermediates"; T. V. Rajanbabu, "Activation of silyl enol ethers for unusual carbon-carbon bond formations"; D. N. Harpp, "Organ-sulfur transformations using metal-sulfur derivatives"; C. R. Johnson, "Synthetic methodology involving organotin compounds."

16 July. A. R. Katritzky, "Some recent advances in the understanding of heterocyclic reactivity"; R. Olofson, "'4CE'ing some ACE's: Bridges between reagents-reactions and industrial processes"; A. Hassner, "Vinyl azides: Versatile synthons."

17 July. R. M. Williams, "New carbon-carbon bond forming reactions via electrophilic glycine derivatives"; W. T. Reichle, "Heterogeneous, vapor-phase aldol catalysts based on synthetic anionic clay minerals"; C. A. Maryanoff, "Reactions of oxidized thioureas with nucleophiles."

18 July. R. G. Salomon, "Recent developments in stereocontrolled syntheses"; H. Greuter, "Toward multifunctional small rings; selective conversion of reactive cyclobutane derivatives"; W. H. Rastetter, "Recombinant DNA technology: Status and prospects."

19 July. P. A. Aristoff, "Intramolecular Wittig reactions in the synthesis of prostacyclin analogs"; W. D. Wulff, "Transition metal carbene complexes in organic syntheses."

Poster sessions will be held if there is sufficient interest.

## Organometallic Chemistry

### *Hawthorne College*

Duane Dombek, chairman; Maurice Brookhart, vice chairman.

29 July. (Discussion leader to be announced): M. L. H. Green (subject to be announced); P. M. Maitlis (subject to be announced); C. P. Casey, "Heterobimetallic complexes linked by heterodifunctional ligands." (Discussion leader to be announced); D. L. Lichtenberger, "Electronic factors in organometallic reactivity: Photoelectron spectroscopy and theory"; B. E. Bursten, "Molecular orbital studies on the reactivity of organometallic hydrides and related species."

30 July. (Discussion leader to be an-

nounced): J.-E. Backvall (subject to be announced); L. S. Liebeskind, "Transformations of stoichiometric transition metal compounds of use in organic synthesis"; A. Yamamoto (subject to be announced). (Discussion leader to be announced); J. E. Lyons, "Recent advances in palladium-catalyzed liquid phase oxidation"; T. J. Collins (subject to be announced).

31 July. (Discussion leader to be announced): S. W. Polichnowski, "Transition metal catalyzed carbonylation of methyl acetate"; M. Y. Darensbourg, "Heterobimetallic hydrides: Models for mixed metal catalysts?". (Discussion leader to be announced); M. F. Lappert (subject to be announced); W. R. Roper, "Multiple bonds between group 8 metals and phosphorus or carbon."

1 August. (Discussion leader to be announced): S. A. R. Knox, "Organic chemistry of di- and tri-nuclear metal centers"; R. R. Schrock, "Recent results in the chemistry of metal-carbon multiple bonds; heterobimetallic complexes relevant to reduction of CO"; I. P. Rothwell, "Early transition metal organometallic chemistry associated with aryloxide ligands." (Discussion leader to be announced); D. A. Davenport, "On the comparative unimportance of the inductive effect in physical organic chemistry."

2 August. (Discussion leader to be announced): W. D. Jones, "Mechanistic features of C-H bond activation processes"; J. R. Norton, "Proton transfer reactions in organometallic chemistry"; H. E. Bryndza, "The synthesis and reactivity of metal-oxygen and metal-nitrogen bonds of group 8 metals."

## Origin of Life

### *Proctor Academy*

David A. Usher, chairman; James Ferris, vice chairman.

19 August. (Sherwood Chang, discussion leader): Michael F. A'Hearn, "Cometary chemistry"; Sherwood Chang, "Meteorites and asteroids"; Christopher McKay, "Satellites of the outer solar system." (James Ferris, discussion leader); Stanley Miller, "Current status of the prebiotic synthesis of small molecules"; Eric Herbst, "Gas phase production of complex molecules in interstellar clouds."

20 August. (David Desmarais, discussion leader): Jim Pollack, "Zones of habitability in the inner solar system"; James C. G. Walker, "Oxidation-reduction balance on the early earth"; John

Edmond, "Oceanic hydrothermal activity." (Discussion leader to be announced); Eugene Perry, "Do Precambrian sediments preserve a detailed sulfur isotope record?" Samuel Epstein, "Stable isotopes and the early history of the earth."

21 August. (Andrew H. Knoll, discussion leader): Andrew H. Knoll, "The geological record of early evolution"; George E. Fox, "Molecular phylogeny"; John Olson, "The origin of photosynthesis." (Harold P. Klein, discussion leader); David Desmarais, "Carbon isotopes biogeochemistry of cyanobacterial mats and stromatolites"; David Chapman, "Perspectives on oxygen and biochemical evolution."

22 August. (George E. Fox, discussion leader): Michael Gray, "Polyphyletic origins of mitochondria"; Don Mills, "RNA phage evolution"; Roy Jensen, "New prospects for deducing the evolutionary history of metabolic pathways in prokaryotes." (Geoffrey Zubay, discussion leader); James Ferris, "Primitive photochemical reactions"; Pierre Laszlo, "Catalysis of organic reactions by clay."

23 August. (David W. Deamer, discussion leader): David W. Deamer, "Lipid-like material from the Murchison meteorite"; (speaker to be announced), Thomas Haines, "Candidates for primitive bilayer membranes."

## Oscillations and Dynamic Instabilities in Chemical Systems

### *Plymouth State College (S)*

Richard M. Noyes, chairman; John Ross, vice chairman.

22 July. Pattern formation (John J. Tyson, organizer); wave propagation (Milos Marek, organizer). New oscillatory reactions (Irving R. Epstein, organizer).

23 July. Effects of periodic perturbations (Friedemann W. Schneider, organizer); coupled oscillators (Bard Ermentrout, organizer). Chaotic behavior—experiment and theory (John L. Hudson, organizer).

24 July. Instabilities in biochemical systems (Benno Hess, organizer); Instabilities in living organisms (Paul E. Rapp, organizer). Short presentations (Kenneth Showalter, organizer).

25 July. Fluctuations near critical points (Joel E. Keizer, organizer); thermodynamic and statistical effects on transitions (John Ross, organizer). Global bifurcation theory (Eusebius Doedel, organizer).

26 July. Instabilities in heterogeneous catalysis (Roger A. Schmitz, organizer); constraints on permissible chemical behavior (Richard M. Noyes, organizer).

## Parasitism

### *Plymouth State College (N)*

Daniel G. Colley, chairman; C. C. Wang, vice chairman.

29 July. (Anthony E. Butterworth, discussion leader): Andrew Wilkins, "Immune responses in human schistosomiasis hematobia"; Graham Brown, "Immune responses during human malaria"; Willy Piessens, "Immunological studies in human filariasis." (Tony Stretton, discussion leader): Carl Johnson, "Anatomical and biochemical characterization of identified neurons in nematodes"; Martin Chalfie, "Genetic aspects of *Caenorhabditis elegans* neurons."

30 July. (Allen Cheever, discussion leader): James Howard, "Immunopathogenic mechanisms in leishmaniasis"; Adolpho Martinez-Paloma, "Pathogenesis of amoebic infections"; Allen Cheever, "Pathogenic mechanisms during schistosomiasis." (S. Michael Phillips, discussion leader): Tom Nutman, "Helper T cell clones in filariasis"; Pat Lammie, "Involvement of T cell clones in schistosome granulomas."

31 July. (C. C. Wang, discussion leader): Buddy Ullman, "Genetic analysis of purine metabolism in *Leishmania donovani*"; Roberto Decampo, "Free particle intermediates involved in the antiparasitic actions of drugs"; Cy Bacchi, "Polyamines and chemotherapy of kinetoplastida." (Carlos Gitler, discussion leader): Carlos Gitler, "Macrophage-parasite membrane interactions"; W. B. Gratzer, "Erythrocyte-malaria membrane interactions."

1 August. (E. Pfefferkorn, discussion leader): Thomas McCutchan, "The use of mung bean nuclease in cleavage and cloning of malarial genes"; Richard Carter, "Targets of malaria-transmission-blocking immunity"; Simeon Pollack, "Iron and malaria parasite." (Tony Allison, discussion leader): Robin Anders/John Dame, "Molecular genetics and malarial antigens"; Bernard Moss, "Immunization strategies using animal virus vectors."

2 August. (John Donelson, discussion leader): John Boothroyd, "Discontinuous transcription in trypanosomes"; Les Vander Ploeg, "Chromosomal rearrangements in *Trypanosoma brucei*"; Epeinne Pays, "Segmental gene conversion of VSG genes in trypanosomes."

## Periodontal Diseases

### *Plymouth State College (S)*

Robert J. Genco, chairman; A. Polson, vice chairman.

24 June. Connective tissue metabolism in wound healing and tissue destruction (Anthony Melcher, chairman): Roy Page, "Heterogeneity of fibroblasts and collagen types in the periodontium"; discussion, Anthony Melcher. Sharon Wahl, "Inflammatory cell-mediated alterations in connective tissues"; discussion, Henning Birkedal-Hansen. Victor Terranova, "Mechanisms of cell migration and attachment in the regeneration of periodontal tissues"; discussion, Alan Polson. Bacteria in periodontal diseases: Jørgen Slots, "Recent findings on bacterial specificity in human periodontitis and bacterial enzymes as possible virulence factors"; Jan Carlsson, "Proteinase in the virulence of periodontopathogens"; discussion, Stephen Mergenhagen. Joseph Zambon, "Rapid methods of detection of periodontopathogens—findings in clinical and epidemiological studies"; discussion, Kenneth Kornman.

25 June. Acquisition of the periodontal microflora (Richard Ellen, chairman): Michael Levine, "Acquisition of the supragingival flora—role of salivary factors"; discussion, Richard Ellen. John Cisar, "Bacterial surface structures involved in adherence and colonization of oral tissues"; discussion, Katsuji Okuda. Christian Mouton, "Colonization factors of *B. gingivalis* and other periodontopathogens"; discussion, Fuminobu Yoshimura. Host responses in periodontal diseases (Robert Genco, chairman): Thomas Van Dyke, "Neutrophil abnormalities in localized juvenile periodontitis: Biochemical and genetic aspects"; discussion, Richard Ranney. Mark Wilson, "The antibody-complement-neutrophil axis in host defense against periodontopathic bacteria"; discussion, Norton Taichman. Martin Taubman, "Immunoregulation in periodontal diseases: Studies in rats and men."

26 June. Measurement of periodontal disease activity (Paul Goldhaber, chairman): Ernest Hausmann, "Application of computer-assisted image analysis of clinical radiographs"; discussion, Richard Webber. (Speaker to be announced), "Clinical methods of measurement of disease activity"; Marjorie Jeffcoat, "Use of bone-seeking radiopharmaceutical uptake as an indicator of active alveolar bone loss"; discussion, Klaus Nuki. Active treatment directed to eliminating or reducing the periodontopathic micro-

flora (Max Goodson, chairman): Bengt Rosling, "Mechanical and topical antimicrobial treatments; new approaches"; discussion, Max Goodson. Lorne Golub, "Systematic therapy with antimicrobial agents"; discussion, Walter Loesche. Lars Christersson, "Treatment of localized juvenile periodontitis—antimicrobial and surgical approaches directed to the invasive periodontal microflora"; discussion, Michael Newman.

27 June. Reconstructive periodontal therapy (Sture Nyman, chairman): Jan Egelberg, "Periodontal regeneration and new attachment procedures"; discussion, Alan Polson. Thorkild Karring, "Reattachment and new attachment procedures"; discussion, Jack Caton. Robert Schallhorn, "Osseous defect grafting procedures"; discussion, Gerald Bowes. (Helmut Zander, chairman): Harald Løe, "The longevity of the human dentition."

28 June. Prevention of periodontal disease and long-term maintenance of periodontal health (Raul Caffesse, chairman): Jan Lindhe, "The effect of maintenance therapy in the prevention of recurrent periodontal disease"; discussion, R. Caffesse. Niklaus P. Lang, "Long-term maintenance—clinical and microbiological assessment of risk"; discussion, Max Listgarten.

Poster session to be developed. Submit 250-word abstracts by 1 April 1985 to: Dr. Robert J. Genco, Department of Oral Biology, State University of New York at Buffalo, 135 Foster Hall, Buffalo, New York 14214.

## Phagocytes

### *Proctor Academy*

Marco Baggiolini, chairman; Peter Elsbach, vice chairman.

1-5 July. Three sessions on mechanisms of phagocyte activation and stimulus-transduction in neutrophils. (M. Baggiolini, E. Becker, and J. Gallin, discussion leaders): D. Lew, V. von Tscharner, "Calcium"; E. Lapetina, M. Waite, "Phospholipids, phospholipases and products"; J. Niesel, "Protein kinase C"; J. Hartwig, F. Southwick, "Cytoskeleton"; P. Henson, F. Snyder, "I-O-alkyl lipids"; H. Korchak, R. Sha'afi, L. Sklar, R. Snyderman, "Induction of movement, exocytosis and respiratory burst." Two sessions on the respiratory burst oxidase. (B. Babior and R. Johnston, discussion leader): J. Curnutte, T. Gabig, L. McPhail, S. Minakami, E. Pick, D. Roos, F. Rossi, A. Segall, "Biochemistry, composition, catalytic properties, assembly, activa-

tion"; A. Azzi, "Cytochromes, electron transport and proton translocation. Non-oxidative killing mechanisms of phagocytes and other systems (P. Elsbach, discussion leader): R. Lehrer, D. Romeo, J. Weiss, "Bactericidal proteins of phagocytes"; P. Henkart, "Large-granule lymphocytes"; J. Tschopp, "Pore-forming proteins." Diapedesis (S. Silverstein, discussion leader): A. Arnaout, M. Bevilacqua, L. Liotta, M. Furie, "Mechanisms and determinants of migration of neutrophils and macrophages." 1 July, poster session. Poster application with a short abstract should be sent to the chairman.

4 July. Night session. Comments on the most interesting contributions to the conference by a panel of experts: C. Cochrane, H. Colten, M. L. Karnovsky, S. Klebanoff, T. Stossel, G. Weissmann.

### Physicochemical Aspects of

#### Photosynthesis

##### *Colby-Sawyer College (N)*

G. T. Babcock, chairman; R. Malkin, vice chairman.

29 July. (H. T. Witt, discussion leader): H. Michel, "Viridis reaction center crystal structure"; G. Feher, "Structure in *Sphaeroides* reaction centers"; J. Miller, "Electron transfer mechanisms." B. Blankenship, overview speaker; Protein structure and pigment organization in reaction centers and light-harvesting complexes (J. Breton, R. Cogdell, discussion leaders).

30 July. V. Shuvalov, overview speaker; Primary photosynthetic events: characterization of photochemical and thermal electron transfers (S. Boxer, P. Mathis, discussion leaders). B. Pearlstein, overview speaker; Light-harvesting ensembles, energy transfer and trapping, modulation of efficiency and direction (B. Andersson, K. Sauer, discussion leaders).

31 July. L. Dutton, overview speaker; Donors and acceptors to reaction centers: Gating, heterogeneity and inhibitors (A.-L. Etienne, R. Malkin, discussion leaders). T. Moore, overview speaker; Model compound approaches to the photosynthetic apparatus (J. Fajer, M. Wasielewski, discussion leaders).

1 August. A. Crofts, overview speaker;  $bc_1/b_6f$  complexes, membrane potentials and the disposition of protons in ATP synthesis (D. Ort, W. Junge, discussion leaders). (D. Knaff, discussion leader): L. Duysens, "Biophysics in Leiden"; J. Ames, "Vakgroep Biofysica, Huygens Laboratorium."

2 August. W. Rutherford, overview speaker; Organization and function on the donor side of PSII; the  $O_2$ -evolving complex (G. Brudvig, Y. Inoue, discussion leaders).

### Physical Metallurgy

##### *Holderness School*

William Nix, chairman; Simon C. Moss, vice chairman.

#### Role of Interfaces in Deformation and Strengthening

5 August. Grain boundary structure (J. C. M. Li, session chairman): V. Vitek, "Grain boundary dislocations and atomic structure"; P. Bristowe, "Atomistic calculations and grain boundary structure"; W. M. Grabski, "Spreading of extrinsic grain boundary dislocations." Grain boundary relaxation processes (J. R. Weertman, session chairman): K. Tangri and R. A. Varin, "Delocalization of extrinsic grain boundary dislocation cores and deformation of fine-grained solids"; M. H. Yoo, "Slip interface interactions of elevated temperatures."

6 August. Interface controlled processes (N. E. Paton, session chairman): R. Raj, "Grain boundary structure and slip induced cavitation"; E. Artz, "Interface controlled diffusional creep"; A. S. Argon, "Grain boundary migration." Interfacial bonding (B. Kear, session chairman): C. L. Briant, "Cohesive strength of grain boundaries"; T. Tsakalakos, "Mechanical properties of modulated structures."

7 August. Polycrystal deformation (U. F. Kocks, session chairman): A. W. Thompson and H. Margolin, "Grain size strengthening"; H. Mecking and J. Estrin, "Texture development in polycrystal deformation"; H. Gleiter, "Nanocrystalline solids—an approach to a new type of materials." Mechanical properties of thin films (C. Y. Li, session chairman): M. Murakami, "Mechanical properties of thin films on substrates"; P. A. Flinn, "Mechanical properties of interconnect and passivation thin films."

8 August. Grain boundary sliding and superplasticity (T. G. Langdon, session chairman): B. Baudelet, "Role of interfaces in superplastic deformation"; G. L. Dunlop, "Grain boundary dislocation creep"; A. K. Ghosh, "Evolution of grain size distribution during superplastic deformation"; D. S. Wilkinson, "Strain-enhanced grain growth in superplastic flow." After dinner lecture (B. Wilshire, session chairman): D. Weaire, "Soap, cells and statistics—random patterns in two dimensions."

9 August. Interface effects in deformation and strengthening (H. Oikawa, session chairman): A. C. R. Westwood, "Chemomechanical effects in solids"; D. P. Pope, "Strengthening mechanisms in ordered alloys"; D. Srolovitz, "Diffusional and sliding relaxation processes at inclusions."

### Physical Organic Chemistry

##### *Brewster Academy*

Jordan J. Bloomfield, chairman; John E. Baldwin, vice chairman.

10 June. (Jordan J. Bloomfield, discussion leader): Dennis C. Owsley, "Kinetics, thermodynamics and catalysis in the rearrangement of 4-vinylbutyrolactone to sorbic acid"; Richard N. McDonald, "Gas phase ion-molecule chemistry in a flowing afterglow apparatus"; Kendall N. Houk, "Theoretical transition structures of organic reactions." (Dan Farcasiu, discussion leader): Elsa Reichmanis, "Radiation-sensitive materials: Chemistry and processes for lithographic applications"; William C. Agosta, "Photochemistry of carbonyl substituted 1,6-heptadienes."

11 June. (Bruce E. Smart, discussion leader): Dabney K. White Dixon, "Models for electron transfer in heme proteins"; Wolfram Grimme, "The effect of structure, substituents, and charge on hydrocarbon cycloreversions." (Alan P. Marchand, discussion leader): Clinton K. Harrington, "A general amidine synthesis via a novel 2+2 cycloaddition: Mechanistic considerations"; Thomas C. Bruice, "Oxygen insertion and addition reactions catalyzed by metalloporphyrins and dihydroflavins."

12 June. (Edward L. Clennan, discussion leader): David Wemmer, "NMR assignments and structural analysis using two-dimensional methods"; William P. Jencks, "Proton transfers from HCN"; David A. Dixon, "Theoretical studies of the structures and energetics of fluorocarbons." (William N. White, discussion leader): Laurance D. Hall, "NMR chemical microscopy: Chemical shift imaging"; Richard L. Schowen, "The role of cofactors in the catalytic power of enzymes."

13 June. (Joseph B. Lambert, discussion leader): Edward M. Arnett, "Ion pairing and alkylation of alkali enolates"; Steve Kaiser, "Silicoaluminophosphate molecular sieves: catalytic properties"; Harold H. Freedman, "Organic synthesis via enzymes in non-aqueous media." (John E. Baldwin, discussion leader): Dan Farcasiu, "Super acidic strength of solid acids and acids in

solution. A comparison"; Robert W. Murray, "Some carbonyl oxide and dioxirane chemistry."

14 June. (Mark Jason, discussion leader): John E. Bartmess, "Proton transfer and elimination reactions in the gas phase"; Bertrand L. Chenard, "The properties and chemical dynamics of cyclic polysulfides."

## Plant Cell and Tissue Culture

### *Plymouth State College (S)*

Ronald L. Phillips, chairman; Keith A. Walker, vice chairman.

17 June. Tissue culture-induced variation (C. Edward Green, discussion leader): Angela Karp, "Chromosome variation and its role in somaclonal variation"; Kiyoharu Oono, "Genetical analysis of regenerated rice plants"; Prem S. Chourey, "Mitochondrial DNA variation resulting from the culture process." Selection schemes (William Scowcroft, discussion leader): Kenneth A. Hibberd, "Selection for amino acid variants in maize tissue cultures"; Gunther Donn, "Selectable gene amplification in plants"; Richard I. S. Brettell, "Selection of resistance to *Sclerotinia nodorum* through tissue culture."

18 June. Gene transfer (Mary-Dell Chilton, discussion leader): Horst Lorz, "Direct gene transfer to cereal protoplasts"; Ingo Potrykus, "Transformation of plants by use of direct gene transfer into protoplasts"; Brian L. Miki, "Recovery of transformants following microinjection of alfalfa protoplasts." (Mary-Dell Chilton, discussion leader): Nam-Hai Chua, "Use of gene transfer techniques to study photochromemediated and tissue-specific gene expression"; Robert A. Schilperoort, "T-DNA delivery and expression in certain monocots."

19 June. Quantitative variation among regenerated lines (Dwight T. Tomes, discussion leader): Rollie G. Sears, "Agronomic performance of lines from wheat tissue culture"; Elizabeth D. Earle, "Evaluation of maize lines derived from tissue culture"; James Dunwell, "Quantitative variation among barley lines derived from anther culture." Hybrid formation via cell fusion (David A. Evans, discussion leader): Glenn B. Collins, "New interspecific hybrids by cell fusion"; Shamay Ihzar, "Genetic segregation following protoplast fusion"; E. C. Cocking, "Utilization of cell fusion techniques."

20 June. Haploids from anther culture (Glenn B. Collins, discussion leader): Wilf Keller, "Advances in anther culture

technology with *Brassica*"; Kenneth J. Kasha, "Advantages/disadvantages of anther-derived doubled haploids"; A. Dennis Genovesi, "Use of anther culture in maize breeding." Patents in the field of plant cell and tissue culture (Keith A. Walker, discussion leader).

21 June. Regeneration (Indra K. Vasil, discussion leader): Martha Wright, "Recovery of soybeans from tissue culture"; Robert M. Skirvin, "Investigations with chimeral plants derived from tissue culture"; Indra K. Vasil, "Variability and stability in cell culture-relationship to culture type."

Poster sessions will be held each day. Applicants should indicate whether they will present a poster and the title on their application for the conference.

## Plant Molecular Biology

### *Proctor Academy*

E. M. Tobin, chairman; C. S. Levings, vice chairman.

10 June. Organelle genomes (C. S. Levings, discussion leader): R. B. Hallick, "Organization and expression of chloroplast genes"; D. Lonsdale, "The physical and genetic complexity of the mitochondrial genome of maize"; R. G. Herrmann, "Expression and modification of genes for thylakoid membrane proteins." Regulation of genes for chloroplast proteins (L. Bogorad, discussion leader): L. McIntosh, "Molecular modification of photosynthesis"; M. Goldschmidt-Clermont, "Structure and expression of the gene of ribulosebiphosphate carboxylase in *Chlamydomonas*."

11 June. In vitro transformation techniques (M. van Montagu, discussion leader): R. A. Schilperoort, "Genetic manipulation of plants via DNA transformation and via *Agrobacterium*"; H. Lörz, "Cereal transformations"; B. Hohn, "Bacteria and DNA mediated plant transformation"; Phytochrome regulation of gene expression (E. M. Tobin, discussion leader): P. H. Quail, "Phytochrome and its gene"; E. Schäfer, "Phytochrome regulation of transcription measured in isolated nuclei."

12 June. Use of in vivo transformation in understanding gene regulation (R. Fraley, discussion leader): A. R. Cashmore, "Nuclear genes encoding chloroplast proteins: their structure and expression and the translocation of their encoded polypeptides"; R. Fluhr, "Regulatory sequence of plant genes"; P. Dunsmuir, "Expression of the petunia chlorophyll binding protein genes in petunia and to-

bacco." Regulation of seed proteins (R. Veachy, discussion leader): T. J. Higgins, "Structure and expression of a pea seed albumin gene"; B. Larkins, "Maize zein genes."

13 June. Hormones and heat shock (G. Hagen, discussion leader): J. Key, "Heat shock in plants: Regulation of genes and proteins"; P. Chandler, "The mechanism of growth regulator action in aleurone of barley"; M. Crouch, "The role of ABA in *Brassica* embryo development." Transposable elements (N. Federoff, discussion leader): M. Alleman, "Robertson's mutator"; Zs. Schwarz-Sommer, "Structure and functions of the En-I controlling element system of *Zea mays*."

14 June. Developmentally regulated genes (L. Dure, discussion leader): R. B. Goldberg, "Organization and expression of developmentally regulated plant genes"; W. Taylor, "Developmental regulation of genes encoding photosynthetic proteins"; J. Bennett, "Development of the photosynthetic apparatus of a green alga and higher plants."

## Plasma Physics

### *Colby-Sawyer College*

T. N. Jensen, chairman; J. D. Callen, vice chairman.

### Relaxation Phenomena of Plasmas

10 June. (M. N. Rosenbluth, discussion leader): J. B. Taylor, "Relaxation phenomena of laboratory plasmas"; P. Browning, "Relaxation in solar plasmas"; S. A. Orszag, "Role of vortexline reconnection in hydrodynamic turbulence." (M. Yamada, discussion leader): T. R. Jarboe, "Evidence for helicity conservation in spheromak experiments"; M. G. Rusbridge, "Stochastic fields and relaxation."

11 June. (D. W. Kerst, discussion leader): S. Ortolani, "Physics of RFP plasmas"; R. W. Moses, "Nonlocal electrical conductivity and the kinetic dynamo"; M. J. Schaffer, "Helicity transport by fluctuations in RFP's." Open poster session.

12 June. (R. F. Post, discussion leader): K. McQuire, "Relaxation phenomena observed in tokamaks"; M. Tagger, "Internal coalescence, sawteeth and external disruptions"; K. Lackner, "Origin and effect of edge localized modes in divertor plasmas." (R. G. Kleva, discussion leader): B. A. Carreras, "Edge turbulence and transport"; P. H. Diamond, "Dynamics of MHD turbulence and relaxation processes in plasmas."

13 June. (S. C. Prager, discussion



leader): D. Montgomery, "The effects of small scale MHD turbulence on the large scales: Selective decays and dynamic alignment"; R. E. Waltz, "Subcritical turbulence in plasmas"; W. Gekelman, "Basic physics experiments on turbulence during magnetic reconnection." W. B. Thompson, discussion leader): H. Grad, "Numerical approaches to plasma physics"; R. M. Kulsrud, "Relaxation of the galactic magnetic field."

14 June. (D. A. Monticello, discussion leader): H. R. Hicks, "Numerical techniques for nonlinear plasma computation"; D. D. Schnack, "Examples of numerical simulation of nonlinear phenomena of fusion plasmas"; D. Biskamp, "Computational drift wave turbulence."

### Point Defects, Line Defects and Interfaces in Semiconductors

#### *Plymouth State College (N)*

James W. Corbett, chairman; Eicke R. Weber, vice chairman.

8 July. (D. Lang and B. Meyer, chairmen): T. Ikoma, "EL2 reconsidered"; L. A. Ledebro, "The origin of the DX center in III-V alloys"; P. M. Mooney, "Kinetics of charge capture by deep donors in AlGaAs." (R. Fair and D. A. Antoniadis, chairmen): S. T. Pantelides, "Atomic diffusion in silicon"; U. Gosele, "Problems in diffusion."

9 July. (P. M. Petroff and S. Louie, chairmen): W. Spicer, "Unified defect model for Schottky barriers on GaAs and other III-V compounds"; J. Woodall, "The work function approach to metal semiconductor interfaces"; Z. Lilienfeld, "The structure of metal contacts on GaAs." (Vijay A. Singh and M. Stoneham, chairmen): M. Scheffler, "Dissolution and reaction energies of impurities in silicon"; L. C. Snyder, "Defects calculations using *ab initio* techniques."

10 July. (G. D. Watkins and C. A. J. Ammerlaan, chairmen): J. M. Spaeth, "ENDOR: Experimental considerations"; H. Katayama-Yoshida, "ENDOR: Theoretical considerations"; A. Ourmazd, "Gettering." (R. Bhargava and J. Van Vechten, chairmen): L. Samuelson, "Defect states in III-V alloys"; M. Levinson, "Novel properties of defects in III-V semiconductors."

11 July. (B. Carter and J. Spence, chairmen): C. Barnes, "Defects in superlattice structures"; R. Hull, "Defects in superlattices"; R. Sauer, "Photoluminescence in dislocated silicon."

12 July. (L. C. Kimerling and S. J. Pearton, chairmen): Y. H. Lee, "Surface damage and contamination by reac-

tive-ion-etching"; J. W. Coburn, "Ion-assisted surface chemistry in reactive-ion-etching."

### Polyamines

#### *Kimball Union Academy*

David R. Morris, chairman; Laurence J. Marton, vice chairman.

1 July. Polyamines and chemotherapy (J. Jänne and P. Sunkara, chairmen). Molecular genetics of polyamine biosynthesis in prokaryotes and lower eukaryotes (H. Tabor and C. W. Tabor, chairmen).

2 July. Molecular genetics of polyamine biosynthesis in higher eukaryotes (P. Coffino and O. Jänne, chairmen). Polyamines in parasites (P. McCann and C. Bacchi, chairmen).

3 July. Cellular proliferation and differentiation (S. Baylin and O. Heby, chairmen). Polyamine interactions with nucleic acids (L. Marton and U. Bachrach, chairmen).

4 July. Enzymology and post-translational regulation of ornithine decarboxylase (S. Hayashi and A. Pegg, chairmen). Trends in polyamine research (S. Cohen and A. Zeller, discussants).

5 July. Polyamine derivatives (H. G. Williams-Ashman and N. Seiler, chairmen).

### Polymer Colloids

#### *Tilton School*

R. A. Wessling, chairman; R. H. Ottewill, vice chairman.

8 July. (I. M. Krieger, discussion leader): W. B. Russel, "The nonequilibrium statistical mechanics of concentrated colloidal dispersions"; R. H. Ottewill, "Behavior of concentrated latexes." (D. H. Clemens, discussion leader): S. G. Croll, "Drying of latex paints"; J. W. S. Goossens, "The mechanism of coagulation of heat sensitive latexes."

9 July. (Discussion leader to be announced): J. W. Vanderhoff, "Semi-batch emulsion copolymerization"; C. J. McDonald, "NMR characterization of composite latex particles." (R. M. Fitch, discussion leader): H. Ringsdorf, "Polymeric liposomes as models for biomembranes and cells?" J. H. Fendler, "Kinetics and mechanisms of surfactant vesicle polymerizations."

10 July. (D. I. Lee, discussion leader): G. W. Poehlein, "Use of continuous reactor system to study radical transport phenomena in emulsion polymerization"; R. Novak, "Particle nucleation in unimodal emulsion polymerization." B.

R. Vijayendran, discussion leader): R. L. Rowell, "Probing the latex surface charge density with concurrent measurements of electrophoretic mobility distribution and hydrodynamic size"; D. G. Rance, "Influence of the low surface charge density of PTFE latexes on colloidal behavior."

11 July. (F. L. Saunders, discussion leader): P. Stenius, "Surface polarity and competitive adsorption on latexes"; T. G. M. Van de Ven, "Formation and strength of polymer bonds in colloidal systems." (M. A. Winnik, discussion leader): D. Horn, "Characterization and mode of action of polyelectrolytes interacting with polymer colloids in aqueous systems"; F. Candau, "Search for stability conditions for inverse latex."

12 July. (R. H. Ottewill, discussion leader): J. Guillot, "Emulsion copolymerization of acrylonitrile: Experiment and simulation"; D. C. Blackley, "Preparation and behavior of synthetic polyisoprene latexes: Their use as models for natural rubber latex."

### Polymers

#### *Colby-Sawyer College (N)*

Norbert M. Bikales, chairman; Bill M. Culbertson, vice chairman.

1 July. (Harry W. Gibson, discussion leader): Thomas Katz, "Metal-catalyzed polymerization and routes to metal-containing polymers." (Morton Litt, discussion leader): David A. Tirrell, "Model copolymerization reactions." (Bill M. Culbertson, session chairman): Poster session. (Joseph P. Kennedy, discussion leader): Paul Rempp, "New developments in the field of tailor-made macromolecules."

2 July. (Roderic P. Quirk, discussion leader): Pierre Sigwalt, "Mechanism of alternating copolymerizations in the presence of complexing agents." (Bernard J. Bulkin, discussion leader): Michael M. Coleman, "Miscible polymer blends: Recent infrared spectroscopic studies." (James Economy, discussion leader): Lynn W. Jelinski, "Molecular motions in bulk polymers by solid-state NMR."

3 July. (Paul C. Painter, discussion leader): Curtis W. Frank, "Electronic excitation transport and excimer formation as probes of polymer structure and dynamics." (Matthew Tirrell, discussion leader): Jacob Klein, "Surface forces in polymer solutions." (S. Elaine B. Petrie, discussion leader): Ulrich W. Suter, "Influence of the molecular structure on the macroscopic properties of glassy vinyl polymers"; Pavel Kratochvil, "Recent

studies on the compositional heterogeneity of copolymers."

4 July. (Claude Cohen, discussion leader): S. Jean Candeau, "Quasi-elastic light scattering for network characterization." (Claude Picot, discussion leader): Robert Ullman, "Intra- and intermolecular scattering from polymer solutions as a function of concentration." (Bill M. Culbertson, discussion leader): Rudolph Pariser, Norbert M. Bikales and other conference participants: Round table on "Where is polymer science headed?"

5 July. (Virgil Percec, discussion leader): Robert F. T. Stepto, "Formation and properties of polymer networks." (Robert W. Lenz, discussion leader): Howard M. Reiss, Single-molecule gas-phase polymerization kinetics."

### Population Biology and Evolution of Microbes and Their Accessory Elements

#### Kimball Union Academy

Bruce R. Levin, chairman; Daniel Hartl and Barry Hall, vice chairmen.

26 August. (Edward C. Cox, discussion leader): Barry Hall, "The evolution and maintenance of cryptic genes"; Brian Nichols, "Construction and analysis of hybrid genes; some evolutionary implications"; Michael Savageau, "The evolution of gene regulation in bacteria." (Robert Helling, discussion leader): Reinhard Wirth and Donald Clewall, "Sex pheromones and plasmid transfer in *Streptococcus faecalis*"; Richard Novick, "The evolution of plasmid genomes."

27 August. (Douglas Berg, discussion leader): Daniel Hartl, "The population biology of insertion sequences"; Lin Chao, "The population biology of transposons"; Julian Adams, "Adaptation and transposable elements in yeast population." (Kim Atwood, discussion leader): Daniel Dykhuizen, "The nature and measurement of selection in continuous culture populations of bacteria"; Leo Luckinbill, "The mechanisms of adaptation in periodic selection."

28 August. (Monica Riley, discussion leader): John Roth, "The evolution of genetic map order in bacteria"; Alan Atherly, "Chromosome rearrangement in *Rhizobium saponicum*"; Harold Neimark, "Chromosomal loss and the evolution of wall-less prokaryotes." (Marcus Feldman, discussion leader): Robert Selander, "Genetic structure of pathogenic bacteria"; Roger Milkman, "DNA polymorphism in *Escherichia coli*."

29 August. (Nancy Kleckner, discussion leader): Allan Campbell, "Bacteri-

ophage lambda as a biological species"; Richard Lenski, "Coevolution in bacteria and phage"; Bruce Levin, "The population biology and evolution of restriction-modification." (Conrad Istock, discussion leader): Rolf Freter, "Models of control of population densities of bacteria in the large intestines of mammals"; Richard Michod, "DNA repair and the evolution of transformation."

30 August. (Catharina Svanborg Eden, discussion leader): Donald Brenner, "Is there a role of pathogenicity in bacterial speciation?"; David Low, "The genetic analysis of *E. coli* that cause urinary tract infections: Identification of clonal types based on acquisition of certain chromosomal genes"; Renee Fitts, "*Salmonella*-specific DNA sequences: a possible role in speciation."

### Proteins

#### New Hampton School

Gary K. Ackers, chairman; Irwin D. Kuntz, Jr., vice chairman.

17 June. Theoretical aspects of protein structure and dynamics. Issues in protein folding.

18 June. Chromatin structure. Protein design.

19 June. Thermodynamic coupling in protein interactions and functions. Immunological mechanisms.

20 June. Solution nuclear magnetic resonance properties.

21 June. Protein assemblies as macromolecular switches.

### Quantitative Structure Activity Relationships

#### Plymouth State College (N)

Richard Cramer, chairman; A. J. Hopfinger, vice chairman.

22 July. Molecular modeling A. Computational chemistry (L. Allen, chairman): A. Hagler, "Strategies in conformational analysis of flexible molecules"; K. Miller, "Intermolecular modeling of polycyclic aromatic hydrocarbons with DNA"; D. Dolata, "Conformational analysis based on artificial intelligence." Poster session—three-dimensional drug design (R. Potenzzone, Jr., chairman).

23 July. Statistical methods (P. Magee, chairman): J. Seydel, "Multivariate methods for estimating structure-pharmacokinetic relationships"; W. Dunn, "Applications of partial least square to construction of QSAR"; K. Enslein, "SAR model building and validation: Some statistical considerations." QSAR

applications (P. Craig, chairman): R. Franke, "Evolution of structure activity patterns"; J. Dearden, "Thermodynamics of partitioning of aromatic compounds: Some considerations of intramolecular hydrogen bonding and steric effects"; T. Fujita, "Applications of QSAR in pesticide science."

24 July. Molecular modeling B. Molecular graphics (P. Goodford, chairman): N. Max, "Application of graphics in protein design"; A. Vinter, "Molecular graphics for industrial drug design problems"; M. Pique, "Fast display of space-filling models." Poster session—QSAR methods and applications (A. Leo, chairman).

25 July. Crystallography and intermolecular modeling (D. Abraham, chairman): S. Neidle, "Crystallographic and molecular modeling of drug-DNA interactions"; W. Duax, "Crystal structures as guides in drug design"; S.-H. Kim, "Crystal structure analyses of sweet-tasting molecules." Organization and function of drug design groups in industry (J. Topliss, chairman): M. Wise, "Drug design at Smith Kline & French"; S. Unger, "Drug design at Syntex"; B. Venkataraghavan, "Drug design at Lederle"; D. E. Walters, "Drug design at Searle"; H. Weintraub, "Computer-assisted molecular design at Abbott: A state-of-the-art approach"; V. Madison, "Drug design at Hoffmann-La Roche"; C. J. Blankley, "Computer-assisted drug design at Warner-Lambert/Parke-Davis."

26 July. Future directions in computer-assisted molecular design (R. Rein, chairman): C. L. Brooks, III, "Applications of molecular dynamics"; S. Krimm, "Prediction of vibrational spectra of polypeptides"; E. Clementi, "Application of quantum mechanics to large molecular systems."

### Quantum Solids and Fluids

#### Plymouth State College (N)

Michael Wortis, chairman; Paul Horn, vice chairman.

### Interface Structure and Dynamics

10 July. (William Mullins, discussion leader): James D. Gunton, "Dynamics of interfaces in phase transitions"; Brian Stephenson, "General phenomenology of early-stage spinodal decomposition"; Martin Glicksman, "Direct mean-field kinetic measurements of late-stage segregation"; (Walter Goldberg, discussion leader): Royce K. P. Zia, "Effective interface Hamiltonians"; David Jas-

now, "Interface dynamics near equilibrium."

11 July. (Gary Grest, discussion leader): John Weeks, "Fluctuations of solid-fluid and fluid-fluid interfaces"; George Gilmer, "Atomic interface structure and growth kinetics"; Chohamreza Abbaschian, "Solid-liquid interfaces at high supercooling." (Daniel Fisher, discussion leader): John Joannopoulos, "Microscopic studies of structural phase transitions at interfaces of solids"; David Huse, "Energetics and phase transitions in thick adsorbed films."

12 July. (Discussion leader to be announced): Reinhardt Lipowsky, "Critical effects at the wetting transition"; Daniel Deysens, "Adsorption phenomena in binary fluids"; Simon Mochrie, "Multilayer growth of simple molecules on inert substrates." (Gene F. Mazenko, discussion leader): Nigel Goldenfeld, "Solidification fronts far from equilibrium: Dendritic growth and related phenomena"; Heine Muller-Krumbhaar, "Dynamics of interfacial pattern formation."

13 July. Gretchen Kalonji, "Grain boundary phase equilibria"; Stephen L. Sass, "Grain boundary phase transformations induced by solute segregation." (Robert Birgeneau, discussion leader): François Heslot, "Experiments on interface dynamics in crystal growth."

14 July. Ciriya Jayaprakash, "Simple models for equilibrium crystal shapes"; Steve Lipson, "Experiments on wetting and roughening of hcp helium crystals"; Pawel Pieranski, "Shapes and growth of blue phase crystals."

## Radiation Chemistry of Macromolecules

### *Plymouth State College (S)*

G. A. Bohm, chairman; M. Simic, vice chairman.

12 August. (A. Mozumder, discussion leader): R. Ritchie, "Interaction of swift electrons with condensed phases"; M. Inokuti, "Physics of energy deposition and transfer to complex media." (M. Simic, discussion leader): Y. Tabata, "Pulse radiolysis of polymers"; W. Schnabel, "Oxidative degradation processes in synthetic and biological polymers."

13 August. (F. Williams, discussion leader): A. Trifunac, "Detection of transient intermediates by magnetic resonance techniques"; M. Sevilla, "Free radical intermediates formed on irradiation of biopolymers." (G. G. A. Bohm, discussion leader) M. Bowden, "Positive electron beam resists"; H. Ito, "Ra-

diation sensitive polymers for microlithography."

14 August. Poster session. (M. Inokuti, discussion leader): W. F. Schmidt, "Radiation induced electrical conductivity in macromolecules"; A. J. Swallow, "Charge transfer in proteins."

15 August. (C. Trumbore, discussion leader): D. Schulte-Frohlinde, "Radiation induced changes in DNA and their biological consequences"; L. Mee, "Radiation-induced cross-linking in biopolymers"; E. Kempner, "Target theory." (M. Dole, discussion leader): J. Silverman, "Transient intermediates and reaction products formed in the radiolysis of polyethylene"; J. Lyons, "The effect of morphology on radiolysis products formed in polyethylene."

16 August. (D. Chapman, discussion leader): P. Wardman, "Radiation sensitization and protection of molecular and cellular systems"; M. A. Zaidler, "Stochastic and biophysical aspects of energy deposition in cellular systems."

## Reactive Polymers, Ion

### Exchangers and Adsorbents

#### *Hawthorne College*

Dennis Clifford, chairman.

5 August. Preparation, structure and function of reactive polymers (Jean Frecht, discussion leader): David Sherrington, "Preparation and structure of reactive polymers for organic applications"; Philip Hodge, "Novel applications of reactive polymers in synthesis"; Philip Garrou, "Study of polymer-supported catalysts under industrial conditions." Physicochemical limitations of the polymer phase (Robert Kunin, discussion leader): Robert Albright, "Establishing the gel and macroporous domains of porous polymers"; Warren Ford, "Diffusional effects in polymer-supported catalysts."

6 August. Ion exchange, sorption and chromatography theory (Friedrich Helfferich, discussion leader): Csaba Horvath, "High performance displacement chromatography: From theory to practice"; Linda Wang, "Multicomponent chromatography in mixed-exchanger systems." Liquid chromatography of ions (Fred Cantwell, discussion leader): Goran Schill, "Model for the determination of non-UV/VIS absorbing mobile phases"; Chris Pohl, "Chromatographic elution of anions by in situ borate complex formation."

7 August. Inorganic sorbents and exchangers—materials and processes (Rusel Paterson, discussion leader): Edith

Flanagan, "Structure and properties of aluminum phosphates and other new-generation molecular sieves"; John D. Sherman, "Carbohydrate separations using zeolites." Reactive polymer chelates and metals separations (Frank McGarvey, discussion leader): Abraham Warshawsky, "Ion coordinating polymers—facts and prospects"; Spiro Alexandratos, "Polymer-supported, bifunctional, metal-ion extractants."

8 August. Characteristics and effects of humic polymers in water treatment (Robert L. Wershaw, discussion leader): George Aiken, "Interactions of humic materials with XAD macroporous resins"; Irwin H. Suffet, "Interactions of humic materials with ion-exchange resins"; Yair Egozy, "Ultrafiltration vs. resins for the renewal of humic materials from ultra-pure water." Poster session (Gil Janauer, discussion leader).

9 August. Biochemical separations by reactive polymers (Roy Wood, discussion leader): Rodney Walters, "Reactive polymers in high-performance affinity chromatography"; Sheldon Sivakoff, "Scale-up from analytical to preparative chromatography for biochemical separations"; Sholo Margel, "Polyacrolein monospheres (Acrobeads) for labeling and separation of cells."

## Red Cells

### *Plymouth State College (N)*

Arthur W. Nienhuis, chairman; Harvey Lodish, vice chairman.

5 August. Regulation of globin genes (David J. Weatherall, discussion leader): David J. Weatherall, "Genetic disorders of hemoglobin synthesis"; Bernard G. Forget, "Mutations affecting the expression of the human gamma globulin genes"; Arthur Bank, "Human globin gene expression"; Frank Grosveld, "The regulation of beta-globin genes." Membrane and cytoskeleton structure (Sam Lux, discussion leader): Vincent Marchesi, "Structure, function, and regulation of the spectrin-actin lattice: Pivotal role of proteins 4.1"; Vann Bennett, "Ankyrin and synapsin: Spectrin-binding protein in brain membranes"; Jane Barker, "Mutations affecting cytoskeleton assembly."

6 August. Erythropoiesis and oncogenes (David Nathan, discussion leader): Hartmut Beug, "Modulation of erythroid differentiation by avian retroviral oncogenes"; Inder Verma, "Oncogenes in hematopoiesis"; George Stamatoyannopoulos, "Biology of HbF synthesis." Membrane dynamics and erythropoiesis

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An application blank for attendance at the Gordon Research Conferences may be found on page 1106. A summary of the program is on pages 1084 and 1085.

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(Harvey Lodish, discussion leader): Elias Lazarides, "Assembly of the membrane cytoskeleton avian erythroid development"; Richard Klausner, "Regulatory aspects of intracellular iron"; Vik Patel, "Adhesion of erythroid precursor cells to fibronectin."

7 August. Chromatin (Arthur Nienhuis, discussion leader): Gary Felsenfeld, "Chromatin structured near a transcriptionally active beta globin gene"; Mark Groudine, "Chromatin structure and gene expression"; Thalia Papayanopoulou, "Expression of globin genes in heterospecific cell hybrids." Malaria (Ruth Nussenweig, discussion leader): Russell Howard, "Malarial proteins associated with the membrane of infected red cells"; John Barnwell, "Biology of parasite proteins"; Michele Jungery, "Disruption of hemotaxis in malarial infection."

8 August. Erythropoietic factors (Eugene Goldwasser, discussion leader): R. Allan Mufson, "Studies with cloned erythropoietin genes"; James Ihle, "Regulation of hematopoietic stem cell proliferation and differentiation by T cell-derived lymphokines"; Greg Johnson, "Biology of cloned hematopoietic regulators." Philip Leder, keynote speaker.

9 August. Gene transfer (Stuart Orkin, discussion leader): Jerry Lingrel, "Expression of globin genes following gene transfer"; Richard Mulligan, "Retroviral vectors."

In addition to the program presented above, poster sessions will be held daily, Monday through Thursday. All applicants are encouraged to participate.

## Reverse Osmosis, Ultrafiltration and Gas Separations

*Colby-Sawyer College (S)*

John K. Beasley, chairman; A. Zelman, vice chairman.

8 July. Membrane formation-structure-property relationships (H. H. Hoehn, discussion leader). Membrane synthesis and preparation (C. A. Smolders, discussion leader).

9 July. Membranes for desalination (S. Sourirajan, discussion leader). Other

separations with reverse osmosis membranes (D. R. Lloyd, discussion leader).

10 July. Membranes for ultrafiltration (T. Matsuura, discussion leader). Applications of ultrafiltration membranes (J. K. Smith, discussion leader).

11 July. Mechanisms for gas separations (E. Klein, discussion leader). Membranes for gas separations (W. Koros, discussion leader).

12 July. Liquid-liquid separations with membranes (S. A. Stern, discussion leader).

## Second Messengers and Protein Phosphorylation

*Kimball Union Academy*

Lutz Birnbaumer, chairman; Susan S. Taylor, vice chairman.

10 June. Dual signal transduction in adenylate cyclase (Karl-Heinz Jakobs, chairman): Alfred Gilman, "Structure and function of adenylate cyclase"; Eva J. Neer, "Brain coupling proteins"; Juan Codina, "Primary structure of coupling proteins." Structure and function of receptors that couple to adenylate cyclase (Günter Schultz, chairman): Michael Schimerlik, "The muscarinic receptor: Allostery"; Ravi Iyengar, "The glucagon receptor."

11 June. Phosphatidylinositol and signal transduction (Richard Haslam, chairman): Eduardo Lapetina, "The biochemistry of phosphatidylinositol phosphates"; Marvin Gershengorn, "Phospholipids and signal transduction in TRH action"; John Williamson, "Molecular responses to vasopressin in the liver cell." Oncogene products as GTP binding proteins (Edward Scolnick, chairman): Richard Firtel, "Dictyostelium *ras* genes and cell differentiation"; Michael Wigler, "Yeast *ras* genes and sporulation."

12 June. Self-transducing receptors (Michael Czeck, chairman): John Ding-E Young, "The pore forming  $F_c$  receptors"; Eric Barnard, "The GABA-benzodiazepine receptor"; Ronald Kahn, "The tyrosine kinase of the insulin receptor." Cyclic nucleotides in neurobiology (J. W. Keibarian, chairman): Irwin Levitan, "Protein phosphorylation as the basis for ion channel activity regulation"; William Quinn, "Behavior and cyclic nucleotides in *Drosophila*."

13 June. Ca channels and their regulation (Arthur Brown, chairman): David Triggie, "The pharmacology of regulated Ca channels"; Harald Reuter, "Agonist regulation of Ca channels in the heart";

William Catterall, "Biochemical approaches to voltage regulated Ca channels." A well-studied receptor system (Lutz Birnbaumer, chairman): Robert J. Lefkowitz, "The molecular basis for the action of catecholamines."

14 June. Signal transduction in response to light (Mark Bitenski, chairman): Lubert Stryer, "The biochemistry of rod cell transduction"; Gobind Khorana, "Problems and approaches to the study of conformational organization of transmembrane proteins: Rhodopsin."

## Separation and Purification

*Colby-Sawyer College (N)*

George E. Keller, II, chairman; C. Judson King, vice chairman.

12 August. (Phyllis Brown, discussion leader): Richard A. Hartwick, "Latest developments in microbore HPLC"; Barry L. Karger, "Latest developments in HPLC analyses of macromolecules." (Phyllis R. Brown, discussion leader): Fred E. Regnier, "High-performance preparative HPLC of proteins"; William M. Skea, "Process-scale high-performance liquid chromatography."

13 August. (C. Judson King, discussion leader): Jerry L. Atwood, "Separations via liquid clathration"; Dwight E. Williams, "Novel surface-modified materials with potential utility for separations." (C. Judson King, discussion leader): Brent M. Lok, "New classes of molecular sieves"; Hubert L. Fleming, "Adsorption with chemically modified aluminum oxides."

14 August. (Verle N. Schrodt, discussion leader): S. Joseph Tarnowski, "Monoclonal antibodies in the purification of interferons"; Gregory C. Davis, "Monoclonal antibodies in the separation of plant hormones." (Verle N. Schrodt, discussion leader): Louis A. Kaminski, "Sedimentation field flow fractionation—a promising new bioseparations technique"; Stephen M. Balaban, "Large-scale protein separation."

15 August. (Reed M. Izatt, discussion leader): Vladimir Prelog, "Separation of enantiomers by partition between liquid phases"; Nicholas Quirke, "Molecular simulation methods." (Reed M. Izatt, discussion leader): Guido Sartori, "Hindered amines for selective  $H_2S$  removal"; Richard A. Bartsch, "Ionizable crown ethers as metal ion carriers for proton-coupled transport across bulk liquid and emulsion membranes."

16 August. (Ronald W. Rousseau, discussion leader): Charles H. Byers, "Crystal detection via laser light scatter-

ing"; Maurice A. Larson, "Growth-rate dispersion in suspension crystallization: mechanisms, modeling, and effect on size distribution."

## Chemistry and Physics of Solids

*Plymouth State College (N)*

Andrew Kaldor, chairman.

12-16 August. (Speakers and subjects to be announced.)

## Space Plasma Physics

*Proctor Academy*

T. J. Birmingham, chairman; T. W. Hill, vice chairman.

### Plasma Turbulence and Its Role in Solar-Terrestrial Physics

24 June. (G. Haerendel, discussion leader): D. Montgomery, "Dynamical relaxation processes in turbulent plasmas and magnetofluids"; M. Kelley and P. Kintner, "Turbulence: A new framework for the interpretation of ionospheric plasma physics"; D. Nicholson, "Strong Langmuir turbulence." (R. Rosner, discussion leader): E. Parker, "Dynamical non-equilibrium of magnetically confined plasmas"; M. Rushbridge, "The role of turbulence in magnetically confined laboratory plasmas."

25 June. (A. Hasegawa, discussion leader): R. Kraichnan, "Turbulence, chaos, and moment approximations"; J. Mariska, "Observations related to turbulence in the solar chromosphere, transition region, and corona"; C. Surko, "Turbulence in a tokamak fusion plasma." (A. Barnes, discussion leader): A. Pouquet, "Variable spectral laws in MHD turbulence"; M. Dobrowolny, "MHD turbulence in interplanetary space."

26 June. (S. Shawhan, discussion leader): R. Sudan, "Spectral equations for fully developed plasma turbulence and applications"; R. Greenwald, "Radar studies of plasma turbulence in the ionosphere"; M. Keskinen, "Theory of onset and development of macroturbulence in low beta plasmas and applications." (E. Levy, discussion leader): H. K. Moffatt, "Turbulent convection and the solar dynamo"; G. Glatzmaier, "Three-dimensional simulations of stellar convective dynamos."

27 June. (J. Hollweg, discussion leader): L. Celnikier, "What can high time resolution tell us about interplanetary plasma turbulence?" A. Title, "Solar magnetic field structures"; M. Gold-

stein, "Solar wind turbulence beyond 1 AU and its effects on the modulation of galactic cosmic rays." (J. R. Jokipii, discussion leader): R. Woo, "Radio scintillation observations of electron density fluctuations in the solar wind"; C. Rino, "Applications of statistical turbulence theory to convective instabilities in the ionosphere."

28 June. (C. Russell, discussion leader): R. Stenzel, "Observations of plasma turbulence in a reconnection experiment"; J. Drake, "Magnetic energy dissipation in collisionless plasmas"; W. Matthaeus, "Turbulent magnetic reconnection."

For additional information contact T. J. Birmingham, Code 695, NASA/Goddard Space Flight Center, Greenbelt, Maryland 20771. Telephone: 301-344-5461.

## Spin Polarized Quantum Systems

*Hawthorne College*

Thomas J. Greytak, chairman; Isaac F. Silvera, vice chairman.

22 July. (L. Nosanow, discussion leader): F. Laloë, "Overview of  $^3\text{He} \uparrow$ "; J. T. M. Walraven, "Overview of  $\text{H} \downarrow$ "; A. Krisch, "Opportunities in high-energy physics." (W. Stwalley, discussion leader): Yu. Kagan, "Decay mechanisms"; B. J. Verhaar, "Three-body and two-body processes on surfaces."

23 July. (A. Greenberg, discussion leader): R. Sprik, "Recent results on compression and other experiments in Amsterdam"; H. Godfried, "Recent experimental results on  $\text{H} \downarrow$  at Harvard"; H. Hess, "Recent experimental results of  $\text{H} \downarrow$  at Massachusetts Institute of Technology." (G. Frossati, discussion leader): B. Castaing, "Current problems in liquid  $^3\text{He} \uparrow$ "; K. Bedel, "Properties of spin polarized  $^3\text{He}$ ."

24 July. (R. Guyer, discussion leader): D. Lee, "Spin waves in  $\text{H} \downarrow$ "; L. Levy, "Non-linear dynamics of spin waves"; W. Hardy, "Electron spin resonance in atomic hydrogen." (D. Kleppner, discussion leader): R. More, "Opportunities in fusion plasmas"; W. Happer, "Laser polarization of spins."

25 July. (M. Papoular, discussion leader): J. Berlinsky, "Spin relaxation of atomic hydrogen"; V. Goldman, "Kapitza resistance between  $\text{H} \downarrow$  and  $^4\text{He}$ "; M. L. Ristig, "Atomic and molecular impurity interactions with the helium surface." (J. Reppy, discussion leader): M. Rasolt, "Critical fluctuations in a dilute Bose gas"; H. Godfrin, "Polarization of adsorbed  $^3\text{He}$  layers."

26 July. (D. Edwards, discussion leader): C. Lhuillier, "Transport properties in polarized gases"; M. Leduc, "Experiments on gaseous  $^3\text{He} \uparrow$ "; D. Candela, "Spin waves in liquid  $^3\text{He}$ ."

## Statistics in Chemistry and Chemical Engineering

*New Hampton School*

Robert G. Easterling, chairman; Gary Blau, vice chairman.

29 July. (Peter W. M. John, discussion leader): David V. Hinkley, "Transformations in statistics: Data, statistics and parameters." (William J. Hill, discussion leader): J. Stuart Hunter, "Bits and pieces of mixed-level fractional factorials (some ideas of J.W.T.)."

30 July. (Jeffrey H. Hooper, discussion leader): Raghu Kacker, "Off-line quality control, parameter design, and the Taguchi method: Techniques for improving product and process designs." (Garrett Brauer, discussion leader): Harald Martens, "Good information from dirty data: Multivariate calibration."

31 July. (John A. Cornell, discussion leader): John Aitchison, "Experiments with mixtures and other problems of constant-sum variation in chemistry." (Toby J. Mitchell, discussion leader): Derek Pike, "Objectivity in design and analysis of experiments."

1 August. (Kenny S. Crump, discussion leader): William B. Fairley and Murray R. Selwyn, "Decision uses of quantitative risk assessment: A case study of DDT." (Dan Carr, discussion leader): Berton H. Gunter, "Regressive behavior: Interactive adaptive, nonparametric strategies for not-so-nice data."

2 August. (Robert G. Stiratelli, discussion leader): David Rocke, "Robust statistical analysis of interlaboratory studies."

## Structural Macromolecules: Collagen

*Plymouth State College (S)*

Helga Boedtker, co-chairman; Robert Trelstad, co-chairman.

8 July. New aspects of molecular and supramolecular structure: The collagens and matrix glycoproteins (Klaus Kuhn, chairman): Robert Burgeson, "The collagens"; Rupert Timpl, "The glycoproteins"; Peter Bruckner, "Can collagen be a core protein?" Gene structure: Traditional and not so traditional (Benoit de Crombrughe, chairman): Linda Sandell, "Interstitial collagen genes"; Bjorn

Olson, "Novel and unusual collagen genes."

9 July. The role of extracellular matrix in development (Merton Berfield, chairman): Brigid Hogan, "The role of basement membranes in development"; Peter Ekblom, "Basement membranes and kidney development"; Thomas Linsemayer, "Type X collagen in skeletal development." The genetics of inherited and acquired matrix disorders (Kari Kivirikko, chairman): Darwin Prockop, "From osteogenesis imperfecta to scleroderma: Genetic implications and facts"; John Stuart, "Genetics of collagen induced arthritis."

10 July. Matrix pathology: Tumors and other troubles (Joseph Madri, chairman): Steven Hajdu, "The diagnostic role of the matrix in soft tissue neoplasms"; Steffen Gay, "Immunologic analyses of the collagens in human diseases"; Tony Martinez-Hernandez, "The role of the matrix in hepatic injury." The paradigm of self assembly in aggregation and post-depositional rearrangements (Hynda Kleinman, chairman): David Hulmes, "Models of the fibril in assembly"; Peter Yurchenco, "Molecular packing in basement membranes."

11 July. Cell-matrix interactions (Klaus von der Mark, chairman): Zena Werb, "Cell-matrix interactions and extracellular matrix degradation"; Paul Benay, "Phenotypic modulation of chondrocytes in culture"; Wen-Tien Chen, "Adhesive and invasive properties of fibroblasts"; John Fessler, Johnathan King and Dennis Summerbell, "Rules and mechanisms of patterning of molecules and embryos."

12 July. Artificial matrixes and their medical uses (Frederick Silver, chairman): Karl Piez, "Injectable and implantable collagens"; John Burke, "The development of an artificial dermis."

## Superconducting Films

### Holderness School

Valdimir Z. Kresin, chairman; Donald U. Gubser, co-vice chairman; Stuart A. Wolf, co-vice chairman.

26 August. (R. A. Hein, discussion leader): M. R. Beasley, "Transition temperature of very thin films and multilayers"; A. M. Goldman, "Size quantization and reentrance in superconductors"; P. M. Chaikin, "Properties of monolayer silver films on germanium." (D. E. Prober, discussion leader): S. A. Wolf, "Rf sputtering of high  $T_c$  films"; A. I. Braginski, "Preparation

and growth of superconducting films."

27 August. (J. L. Olsen, discussion leader): D. K. Finnemore, "Proximity effect"; A. C. Motta, "Screening in proximity system"; M. Gurvitch, "Field effect and superconductivity." (J. M. Rowell, discussion leader): K. E. Kihlstrom, "Tunneling spectroscopy on A-15 and B-1 structure of superconducting films"; E. L. Wolf, "Tunneling spectroscopy in superconducting films."

28 August. (I. K. Schuller, discussion leader): A. Gilabert, "Properties of S-N multilayers"; G. B. Arnold, " $T_c$  of multilayer films"; J. B. Ketterson, "Superconducting artificial superlattices." (R. C. Dynes, discussion leader): R. W. Simon, "Phase segregated granular superconducting films"; P. Santhanam, "Localization and superconducting fluctuations in thin films and wires of aluminum."

29 August. (D. U. Gubser, discussion leader): A. F. Hebard, "Diverging scale length at the transition in highly disorder thin films"; P. Martinoli, "Incommensurate-commensurate transition in superconducting modulated films"; J. C. Garland, "Thermoelectricity in superconducting films." D. M. Ginsberg, discussion leader): M. Tinkham, "Thermal noise, shot noise and chaos in Josephson junctions"; D. G. Stroud, "Superconducting clusters."

30 August. (M. Nisenoff, discussion leader): J. Halbritter, "Inhomogeneous tunnel barrier"; R. A. Buhrman, "Interface states in Josephson tunnel junctions"; T. Van Duzer, "Interface problems in superconducting electronic devices."

## Thermosetting Polymers

### Holderness School

Garth L. Wilkes, chairman; Ivan Goldfarb, vice chairman.

29 July. (J. E. McGrath, discussion leader): P. Hergenrother, "Acetylene containing prepolymers"; V. McGinnis, "New catalyst systems of polymer design considerations for thermosetting adhesives." (R. Bauer, discussion leader): C. P. Sung, "A new spectroscopy technique to characterize curing and mobility in epoxy networks"; J. LeMay, "Network structure effects on epoxy fracture."

30 July. (J. King, discussion leader): H. Stenzenberger, "Bismaleimides: Synthesis, properties and applications"; B. Culbertson, "Bisoxazoline-phenolic resin reaction: A new route to expanding thermosetting polymers." (C. P. Sung,

discussion leader): N. F. Sheppard, Jr., "Dielectric studies of curing thermosets"; Poster introductions.

31 July. (A. Kinloch, discussion leader): R. Farris, "An impulsive method for measuring the properties required to calculate stresses developed during cure"; R. Morgan, "Composite matrices—their role in composite performance and durability," (D. L. Hunston, discussion leader): J. P. Pascault, "Characterization and curing behavior of epoxy materials, diamine and cyanoguanidine hardeners"; J. A. Clarke, "Development of a fracture toughness spectrum for high-temperature epoxies."

1 August. (R. Hartshorn, discussion leader): W. Wu, "Characterization of molecular networks in epoxies—a neutron scattering study"; D. C. Timm, "Molecular characterization of thermoset resins via gel permeation chromatography." (P. M. Hergenrother, discussion leader): D. W. Schaefer, "Structure of random materials: polymers, gels and porous solids."

2 August. (D. Kaelble, discussion leader): J. Halpin, "Processing science: An approach for preparing composite systems"; C. Beatty, "Control and detection of matrix polymer-filler interaction."

## Three Dimensional Electron Microscopy of Macromolecules

### Hawthorne College

Wah Chui, chairman; P. N. T. Unwin, vice chairman.

8 July. Microscopy of frozen, hydrated specimens (P. N. T. Unwin, discussion leader): J. Dubochet, R. Milligan, Y. Talmon. High resolution studies of crystals (R. M. Glaeser, discussion leader): R. Henderson, T. W. Jeng.

9 July. Correlation averaging (J. Frank, discussion leader): M. VanHeel, O. Saxton. Complex macromolecular assemblies (R. Stroud, discussion leader): A. Klug, D. Caspar.

10 July. Membrane structure (R. Henderson, discussion leader): R. Glaeser, A. Brisson, R. Wade. Developments in crystallization methods (R. Kornberg, discussion leader): M. Garavito, H. Michel.

11 July. Filamentous proteins (D. DeRosier, discussion leader): T. Crowther, P. Flicker, K. Taylor. (E. Mandelkow, discussion leader): discussion of selected posters.

12 July. Novel approaches in structural cell biology (U. Aebi, discussion leader): D. Agard, J. Wall.



## Trichothecenes and Other

### Fusarium Mycotoxins

*Colby-Sawyer College (S)*

Chester J. Mirocha, chairman; Bruce Jarvis, vice chairman.

17 June. (G. Neish, discussion leader): G. Neish, "Modern aspects of fusarium taxonomy"; E. Smalley, "Trichothecene-producing fungi and concepts of parasitism and saprophytism in *Fusarium*"; L. Trenholm, "Natural occurrence trichothecenes, zearalenone and moniliformin." (B. Jarvis, discussion leader): D. Miller, "Production trichothecenes on synthetic medium"; H. Cohen, "Enzyme activity and toxin production."

18 June. (W. Roush, discussion leader): W. Roush, "Synthesis of macrocyclic trichothecenes"; G. Kraus, "Synthesis analogues T-2 and DAS"; E. Colvin, "Total synthesis of deoxynivalenol." (R. Cole, discussion leader): T. Yoshizawa, "Metabolism trichothecenes"; H. K. Kiessling, "Metabolism zearalenone."

19 June. (Y. Ueno, discussion leader): Y. Ueno, "Action trichothecenes on nervous system"; B. Johnsen, "Similarity T-2 action to nerve poisons"; R. Gunther and E. Jankus, "Pathological-physiological lesion in cat." (R. Wanne-macher, Jr., discussion leader): C. S. McLoughlin, "Inhibition protein synthesis"; Y. Matsuoka, "Diarrhea induction by Fusarenone-x."

20 June. (E. W. Sarver, discussion leader): E. V. Pathre, "NMR spectra of trichothecenes"; E. Mazzola, "Mass spectra of macrocyclic trichothecenes"; R. J. Pawlosky, "Chemical ionization

mass spectra of trichothecenes." (P. Scott, discussion leader): R. Plattner, "Tandem multiple stage mass spectrometry"; F. S. Chu, "Detection of T-2 toxin using antibody-enzyme methods."

21 June. (R. Eppley, discussion leader): R. Eppley, "Analysis of DON by thin-layer chromatography"; D. Hewetson, "Mass spectral library trichothecenes"; C. Hsia, "Detection of T-2 by affinity chromatography."

### Physicochemical Aspects of Water and Solute Transport in the Microvasculature

*Plymouth State College (S)*

Fernando F. Vargas, chairman; Robert W. Gore, vice chairman.

10 June. Structural basis of endothelial cell function (Roger C. Wagner, discussion leader): Detler Drenckhahn, "Molecular and functional aspects of endothelial stress fibers"; Peter Lelkes, "Changes in the cytoskeleton of capillary endothelial cells during development"; Jorgen Frokjaer-Jensen, "Three-dimensional organization and possible function of endothelial vesicles." Metabolism and growth of endothelial cells (David Shepro, discussion leader): Mary E. Gerritsen, "Regulation of arachidonic acid metabolism in the microvascular endothelium"; Ronald Heimark, "Role of cell to cell interaction on endothelial growth."

11 June. Physicochemical properties of the cell surface (Robert W. Gore, discussion leader): Walter Drost-Hansen, "Physics of water at cell surfaces"; Donald C. Rau, "The interactions of

water near the cell surface"; John H. Crowe, "Stabilization of biological membranes by carbohydrates." Cell surface and trans-endothelial transport (Stuart K. Williams, discussion leader): Una S. Ryan, "The endothelial cell surface"; Charles C. Michel, "Specific and non-specific effects of macromolecules on vascular permeability."

12 June. Regulation of vascular permeability I (Eugene M. Renkin, discussion leader): Laurence H. Smaje, "The effect of histamine on single capillaries and venules in the mammalian mesentery"; William L. Joyner, "Ionic modulation of leaky site formation in microvessels"; Soren-Peter Olesen, "Mechanisms of capillary permeability changes." Regulation of vascular permeability II (Charles C. Michel, discussion leader): Frederic S. Cohen, "The role of water flow in fusion between phospholipid bilayers"; Stuart K. Williams, "Effect of proteins on vesicular transport."

13 June. Electrophysiology of endothelium (Christian Crone, discussion leader): David Larson, "Intercellular communication in endothelium"; Basil Northover, "Role of calcium in the physiological regulation of endothelial cells"; Legier Rojas, "Ionic channels in endothelial cells." Poster session.

14 June. Physical chemistry of the interstitial space (Roy F. Curry, discussion leader): Wayne D. Comper, "Multi-component diffusion in polymer networks"; Perry L. Blackshear, Jr., "Interstitial water movement and tissue mechanics"; Roy F. Curry, "Diffusion and water flow in a fibrous matrix."

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Signature \_\_\_\_\_

Date \_\_\_\_\_

Telephone: Business \_\_\_\_\_

Home \_\_\_\_\_

RECEIPT OF THIS APPLICATION WILL NOT BE ACKNOWLEDGED  
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