

Meetings

Program of the Gordon Research Conferences

The Gordon Research Conferences for 1961 will be held from 12 June to 1 September at Colby Junior College, New London, N.H.; New Hampton School, New Hampton, N.H.; Kimball Union Academy, Meriden, N.H.; and Tilton School, Tilton, N.H.

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

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

Registration and reservations. Attendance at the conferences is by application. Individuals interested in attending the conferences are requested to send their applications to the director at least two months prior to the date of the conference. *All applications must be submitted in duplicate on the standard application form, which may be obtained by writing to the office of the director.* This procedure is important because certain specific information is required in order that a fair and equitable decision on the application may be made. Attendance at each conference is limited to approximately 100 conferees.

The director will submit the applications of those requesting permission to attend a conference to the committee for that conference. This committee will review the applications and select the members in an effort to distribute the attendance as widely as possible among the various institutions and laboratories represented by the applications. A registration card will be mailed to those selected. Advance registration by mail for each conference is required and is completed on receipt of the card and a deposit of \$15. (Checks are to be made payable to the Gordon Research Conferences.) The deposit of \$15 will be credited against the fixed fee for the conference if the individual attends the conference for which he has applied. A registration card not accompanied by the \$15 deposit will not be accepted. This advance deposit is not required for scientists from foreign countries.

The Board of Trustees of the conferences has established a fixed fee of \$100 for resident conferees at each conference. This fee was established to encourage attendance for the entire conference and to increase the special fund that is available to each conference chairman for the purpose of assisting conferees who attend a conference at total or partial personal expense with their travel or subsistence expenses, or with both. This fixed fee will be charged regardless of the time a conferee attends the conference—that is, for periods of from 1 to 4½ days. It is divided as

follows: registration fee, \$40 (\$15 for administration and \$25 for the special fund); room and meals, \$60 (including gratuities), for 5 days. An additional charge of \$1 per night per person will be made for a room with private bath or for a single room, of which there are only a limited number. These rooms will be assigned in the order that applications are received. An additional charge will also be made for rooms occupied more than five nights.

Members attending a conference are expected to live at the conference location, because one of the objectives of the conferences is to provide a place where scientists can get together informally for discussion of scientific research of mutual interest. It is to the advantage of all participants to attend a conference for the entire week. When special circumstances warrant a request to live elsewhere, permission must be obtained from the director. If the request is approved, these nonresident conferees will be charged a registration fee of \$50, instead of the resident fee of \$40.

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

Conferees living at the conference location who will pay all or part of the fixed fee as a personal expense may request a reduction of \$25 (the amount allotted for the special fund) in the fixed fee. Application for this special fee (\$75) must be made when the registration card is returned to the director.

Accommodations are available for wives who wish to accompany their husbands. 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. Children 12 years of age and over can be accommodated at the conferences. Pets are not permitted in the dormitories.

Special fund. A special fund is provided by the Board of Trustees 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 or participate because of financial limitations. Its use is not limited to scientists who have been invited by the chairman to be speakers or discussion leaders. The money is to be used as an assistance fund only and may be used to contribute toward traveling expenses or subsistence expenses at the conference, or both. Total travel and subsistence expenses usually will not be provided.

Cancellations. The cancellation of an approved application for attendance at a conference will cause forfeiture of the \$15 deposit.

Attendance. Requests for attendance at the conferences, or for additional information, should be addressed to W. George Parks, Director, Department of Chemistry, University of Rhode Island, Kingston, R.I. From 12 June to 1 September mail for the office of the director should be addressed to Colby Junior College, New London, N.H.

Colby Junior College

Petroleum

Cheves Walling, *chairman*
Joseph A. Chenicek, *vice chairman*

12-16 June. J. Snyder, "The chemistry of aluminum alkyls"; H. E. De La Mare, J. K. Kuchi, F. F. Rust, "Reactions between free radicals and metal ions"; J. Thomas, "Electron spin resonance studies of the mechanism of oxidation inhibition by aromatic amines"; J. C. Martin, "Solvent effects in free radical generation"; P. J. Lucchesi, "Some radiation-induced chain reactions of hydrocarbons"; H. Pines, "Reactions of carbanions with hydrocarbons." (Additional subjects to be announced.)

Catalysis

C. J. Plank, *chairman*
M. Boudart, *vice chairman*

19 June. F. S. Stone, "Photo-effects in adsorption and catalysis"; J. F. G. de la Banda, "Semi-conductivity and catalysis. The dehydrogenation of isopropanol on $\text{ZnO-Cr}_2\text{O}_3$ catalysts"; D. Schultze, "Electron exchange studies in carrier catalysts."

20 June. J. M. Smith, "Diffusion and heat transfer rates in porous catalysts"; D. E. Rosner, "Diffusion, heat exchange and chemical surface catalysis in external flow systems"; M. C. Freerks, "Descriptive model for the chemistry of catalyst systems."

21 June. G. E. Langlois and R. P. Sieg, "Hydrocracking of alkyl cyclohexanes"; A. Van Hook, "Carbon-14 experiments in cracking *n*-hexadecane over silica-alumina"; H. A. Benesi, "Identification of the water of constitution in hydrous oxides by infrared spectroscopy."

22 June. V. J. Frilette and P. B. Weisz, "Catalysis by crystalline aluminosilicates"; L. H. Reyerson, "Magnetic behavior of nitric oxide on hydrous oxide gels."

23 June. M. Boudart, "Application of crystal field theory to heterogeneous crystals."

Nuclear Chemistry

Ellis P. Steinberg, *chairman*
Arthur W. Fairhall, *vice chairman*

26-30 June. *High-energy nuclear chemistry and nuclear cosmo-chemistry*; "Present status of high-energy nuclear physics"; "Emulsion and nuclear recoil studies of high energy nuclear reactions"; "Nuclear chemistry at 25-30 Bev"; Absolute cross sections for high energy proton beam monitors"; "Mechanism of (*p*, 2 nucleon) reactions"; "Studies of ($\pi, \pi n$) and ($\pi, \pi p$) reactions"; "Charge distribution in high energy nuclear reactions"; "Spallation-fission competition in heavy nuclei bombarded with high energy protons"; "Extinct radioactivity: Origins of cosmic rays, meteorites, and the solar system"; "Nuclear astrophysics"; "Environmental radioactivity."

Polymers

L. A. Wall, *chairman*
F. H. Winslow, *vice chairman*

3 July. H. Mark, "Progress in polymer research"; C. R. Patrick, "Factors involved in rate coefficients in free radical polymerization"; M. Szwarc, "Reactivities of fluoro-olefins"; G. H. Crawford, D. E. Rice, B. F. Landrum, "Kinetics and mechanism of fluoronitroso polymerization."

4 July. C. C. Price, "Polyphenylene oxide polymers"; J. Eichhorn, "Synergistic agents for self-extinguishing polystyrene"; H. M. Spurlin, C. A. Lukach, D. L. Christman, "Kinetics of ethylene-propylene copolymerization."

5 July. A. D. McIntyre, "Temperature dependence of dynamic mechanical properties of mixed polymer systems"; E. G. Kontos, "Crystallizable stereoblock rubbery copolymers of α -olefins"; R. Simha, "Sequence relations in copolymers"; H. A. Hartung, "Intramolecular cyclization of network polymers."

6 July. V. Stannett, "The permeation of water through polymer films"; T. E. Davis, "Thermal degradation of polypropylene"; A. Chapiro, "Some kinetic features of graft copolymerization with special reference to radiation grafting."

7 July. P. Sigwalt, "Recent advances in block copolymerization initiated by electron transfer to monomer."

Textiles

H. J. White, *chairman*
T. F. Cooke, *vice chairman*

10 July. B. Sheldon Sprague and R. W. Singleton, "Effects of fiber structure on dyeability with disperse dyes"; Robert F. Schwenker, Jr., and Louis R. Beck, Jr., "Applications of modern thermoanalytical techniques in studies of textile materials."

11 July. O. Kratky, "Ideas and investigations on the supermolecular structure of fibrous materials"; W. O. Statton, "Order and mobility of molecules in fibers."

12 July. D. F. Arthur and C. R. Jones, "Problems of heat setting of nylon in high-speed false-twist crimping processes"; Vittorio E. Cappuccio, "Isotactic polypropylene fibers."

13 July. S. J. O'Brien and W. J. van Loo, Jr., "Chemical bonding and reaction rates of wrinkle-resistant finishes with cotton"; Mary L. Rollins, "Microscopically observed phenomena of fiber damage in cotton."

14 July. Robert E. Whitfield, Lowell A. Miller, William L. Wasley, Willie Fong, "Wool stabilization through interfacial polymerization."

Elastomers

Gerard Kraus, *chairman*
Henry Peters, *vice chairman*

17 July. F. Bueche, "Tensile properties of elastomers"; P. J. Blatz, "Application of finite elastic theory to the deformation and fracture of rubbery materials"; Gerhard Bier, "Crystalline and amorphous copolymers of olefins."

18 July. R. T. Woodhams and S. Adamek, "Unsaturated ethylene/propylene terpolymers"; C. A. Dahlquist, P. W. Trott, R. B. Althouse, "Viscoelastic properties of polyolefin elastomers"; H. J. Cantow, "Molecular structure of polybutadienes and ethylene/propylene copolymers."

19 July. E. M. Bevilacqua, "Chemistry of elastomer oxidation"; A. N. Gent, "The mechanics of ozone cracking of rubbers"; W. P. Slichter, "The study of elastomers by nuclear magnetic resonance."

20 July. David Craig and J. J. Shipman, "The conformation of alkyl and halogen substituted 1,3-butadienes"; C. E. Snyder and J. A. Lovell, "Tetrahydrofuran polymerization: mechanism and elastomeric properties"; E. K. Gladding, "A new hydrocarbon elastomer."

21 July. L. A. Walker, "The role of N,4-dinitroso-N-methylaniline in the promotion of rubber-carbon black interaction"; P. E. Wei, G. G. Wanless, John Rehner, Jr., "Reactions of isoparaffins with sulfur and di-*t*-butyl peroxide."

Corrosion: Oxidation of Metal Surfaces

Morris Cohen, *chairman*
M. A. Streicher, *vice chairman*

24 July. (H. A. Liebhafsky, *discussion leader*): E. Müller, "Corrosion studies with the field ion microscope"; A. Dravnieks, "Use of contact potential measurements in oxidation studies"; D.

Pashley, "Electron optical studies of thin surface films on metals"; J. Kruger, "The use of elliptically polarized light in the study of oxide film growth on metal surfaces immersed in aqueous solutions."

25 July. (W. Smeltzer, *discussion leader*): J. Benard and J. Oudar, "Nucleation of oxides and sulphides on metals"; T. Rhodin, "Oxide nucleation and growth on magnesium"; A. T. Gwathmey, "Some recent results on oxidation of copper and copper-nickel alloy crystals"; W. Boggs, "Oxide growth on tin and its alloys."

26 July. (A. Dravnieks, *discussion leader*): H. J. Engell, "The oxidation of metal-carbon alloys"; C. E. Birchenall, "Some problems in high temperature oxidation of metals"; E. A. Gulbransen, "The effects of environment, stress, and metal structure on the oxidation of iron and iron alloys"; J. Laukonis, "Formation and reduction of oxide films on iron whisker surfaces."

27 July. (M. A. Streicher, *discussion leader*): M. Dignam, "Anodic oxidation of aluminum—transient effects and oxide structure"; R. A. Baker, "Anodic oxidation of lead in sulphuric acid"; M. Cohen, "A comparison between air-formed and anodic oxide films on iron."

28 July. (M. Cohen, *discussion leader*): R. C. Plumb, "Electrode potential transients and oxide films"; H. J. Engell, "Breakdown of oxide films and pitting."

General discussion.

Medicinal Chemistry

C. K. Cain, *chairman*
W. M. Govier, *vice chairman*

31 July. Symposium: *Antiviral chemotherapy*. Ernest C. Herrmann, "Problems in screening and evaluation of antiviral substances"; Igor Tamm, "Selective inhibition of viral multiplication and cytopathogenicity by benzimidazole derivatives"; P. W. Sadler, "Development of antiviral agents"; D. J. Bauer, "The chemotherapy of the pox diseases."

1 Aug. Domingo M. Aviado, "Pharmacology of the pulmonary circulation"; Andrew L. Banyai, "Shortcomings of medicinal therapy in lung diseases and their possible correction"; Ernest L. Dobson, "Homeostatic control of body fluid volume."

2 Aug. *Amino acid analogs as decarboxylase inhibitors*. Karl Pfister, Sidney Udenfriend, Clement A. Stone (subjects to be announced); Benjamin Zweifach, "The role of the reticuloendothelial system in adaptation to injury."

3 Aug. *Chlordiazepoxide (Librium), a new psychotherapeutic drug*. Leo Sternbach, "Chemistry and metabo-

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lism"; George Heise, "Pharmacology and behavior analysis in animals"; Ebbe C. Hoff, "Clinical experience"; Morton F. Mason, "Some problems in analytical toxicology imposed by modern development in drugs"; Ernest E. Muirhead, "The antihypertensive function of the renal medulla."

4 Aug. Ivan Mota, "Studies of histamine liberation and the effect thereon of nicotinic acid derivatives"; Donald B. McCormick, "Phosphorylation of vitamin B₆ in brain and its inhibition by carbonyl reagents."

Separation and Purification

Harry P. Gregor, *chairman*
J. Ward Greiner, *vice chairman*

7 Aug. L. C. Craig, "Membrane purification techniques"; I. A. Eldib, "Zone precipitation"; Dieter Gruen, "Solvent extraction of actinides and lanthanides from fused lithium nitrate-potassium nitrate eutectics."

8 Aug. W. Schlenk, "Formation of clathrate compounds as a basis for separative procedures"; A. J. Barduhn, "Properties of some new gas hydrates and their use in separation processes"; W. G. Knox, "Large scale separations by gas hydrate formation."

9 Aug. W. Groth, "Separations by the gas centrifuge"; W. J. A. Vanden Heuvel, "Gas chromatographic separations of steroids and other high molecular weight compounds"; Gerson Kegeles and J. L. Bethune, "Countercurrent distribution of chemically reacting systems"; A. A. Rosen, "Adsorption and elution processes with charcoals."

10 Aug. Discussion: *Applications of separation and purification procedures in the pharmaceutical industry*. Kotaro Murai, "Purity criteria and applications of countercurrent distribution"; Charles Pidacks, "Partition column chromatography—A versatile laboratory scale method of separation and purification"; S. A. Fusari, "The role of complex formation in the separation and purification of antibiotics"; L. J. Heuser, "Modification by formation of chemical

derivatives for separative procedures."

11 Aug. J. E. Cochran, "Large scale column chromatography of *Vinca Rosea* Linn. alkaloids"; R. D. Walker, Jr., "Heights of transfer units in adsorption fractionation."

Instrumentation

J. M. Vandenbelt, *chairman*
Elwyn D. Jones, *vice chairman*

14–18 Aug. D. R. Herriott, "Characteristics of optical maser beams and some measurement applications"; W. H. Straub, "Methods of optical communication"; K. M. Baird and D. S. Smith, "Very precise electronic setting on interferometric fringes"; H. H. Plumb, "The acoustical interferometer as an instrument for determining absolute temperatures at 4°K"; Robert A. Woodson, "The fringe-count micrometer and automatic long path interferometer"; Martin E. Packard, "The present state of the art and future trends of NMR and EPR"; W. Reddish, "Refinements of technique for precise measurement of dielectric constant and power factor of solid insulating materials"; R. J. Meltzer, "Design considerations for spectrophotometric color measurement"; A. F. Sperry, "On-line computers for chemical processes"; William H. Surber, "Adaptive control systems"; A. J. Young, "Current approach to process control in Britain"; A. L. G. Rees, "Scientific instrument developments in Australia"; John F. Davis, "The mechanisms of information transfer and computation in the process control system in man"; Manfred Clynes, "The first bio-cybernetic law: unidirectional rate sensitivity"; Lawrence Stark, "The pupillary servo mechanism"; John Atwood, "Biological noise in the human pupil"; Marcus O'Day, "Electric propulsion of space vehicles"; David H. Fuller, "Evaluation of gas composition detectors"; L. W. Zabel, "A paper basis weight uniformity instrument"; J. E. McCarley, "An instrument for measuring viscoelastic properties at low rates of shear"; Raymond Jonnard, "Sampling theorem and the speeding up of automatic chemical analysis"; F. D. Ezekial, "Recent developments in torque motor design and applications"; S. Y. Lee (subject to be announced).

Food and Nutrition

J. C. Bauernfeind, *chairman*
D. M. Hegsted, *vice chairman*

21 Aug. *Food additives* (Bernard L. Oser, *chairman*): Bernard L. Oser, "Food additives, status and problems"; Julius Coon, "Toxic substances in natural foods and their significance"; J. Raymond McMahan, "Food antimi-

crobial agents, technology and legality." *Special nutrition problems* (Herbert Pollack, chairman); Doris H. Calloway, "Food problems of the armed forces, present and future"; Albert Taylor, "Progress in space foods and nutrition."

22 Aug. *Fatty acids and tocopherol* (Robert Harris, chairman): Fred A. Kummerow, "Fatty acid interrelationships in lipoprotein"; Max Horwitt, "Polyunsaturated fatty acids and tocopherol"; A. L. Tappel, "Selenium, tocopherol, and antioxidant function." *Carbohydrates and nutrient utilization* (Z. I. Kertesz, chairman): Albert Renold, "Comparative metabolism of carbohydrates in normal and diabetic individuals"; Willard A. Krehl, "Utilization of nutrients as affected by food composition, food processing, and nutrient interrelationships."

23 Aug. *Nutrition and disease* (Nevin S. Scrimshaw, chairman): Nevin S. Scrimshaw, "Nutrition and natural resistance to disease"; Robert E. Hodges, "Nutrition, acquired immunity and antibody formation"; William B. Dewitt, "Nutrition and helminthic infection"; Walter E. Knox, "Nutrition and metabolic diseases"; Benjamin Pasamanick, "Nutrition and mental disease."

24 Aug. *Nutrition and disease* (continued): Roger Maickel, "Nutrition and drug toxicity or metabolism"; Elmer L. Severinghaus, "Nutrient supplements and hospital diets as adjuvants of medical care." *Future food problems* (Paul E. Pearson, moderator): *The exploding population, the food problem, and action plans to meet the challenge* (a three-member panel program).

25 Aug. *Obesity and atherosclerosis* (Theodore Van Itallie, chairman): Theodore Van Itallie, "Dietary, depot, and intimal fat"; Albert J. Stunkard, "Dietary intake, activity, and obesity"; Laurance W. Kinsell, "Nutritional advances in atherosclerosis."

Cancer

Chester M. Southam, chairman
Sidney Weinhouse, vice chairman

28-29 Aug. *The complex etiology of cancer*: L. Gross, H. Rubin, R. Dulbecco, K. DeOme, "Virus phenomena"; K. DeOme, L. Gross, M. Duran-Reynals, "Interactions of viruses and other factors"; P. Kotin, A. W. Horton, J. Orr, R. S. Schwartz, "Interactions of factors other than viruses"; A. E. Moore, J. Grace, S. O. Schwartz, S. Stewart, "The search for cancer viruses of man."

30-31 Aug. *Interrelationships of tumor and host*: R. Golbey, G. Foley, R. R. Smith, N. Molomut, "Vagaries of tumor growth"; S. Albert, D. Clarke, "Non-antibody host factors"; L. Ortega, S. Lawrence, R. S. Schwartz, "Mechanisms of tissue rejection"; G. Klein and J. Finney, "Cancer specific antigens."

1 Sept. *Fine structure of normal and cancer cells*: C. T. Ashworth, E. Essner, G. C. Easty, K. Porter, R. C. Buck.

New Hampton School

Chemistry of Coal

Richard A. Glenn, chairman
L. L. Newman, vice chairman

Science in the Preparation of Coal

12 June. W. A. White, H. F. Yancey, C. C. Harris, "Behavior of clays during washing"; D. A. Hall, C. C. Harris, E. R. Palowitch, "Dewatering and drying of coal."

13 June. R. P. Gardner, R. L. Brown, J. A. Harrison, "Breakage of coal"; H. B. Charnbury and R. A. Glenn, "Selective pulverization."

14 June. R. L. Brown, D. A. Hall, J. R. Garvey, "Flow of coal"; N. Berkowitz, "Coal-oil slurries for pipeline transport"; J. L. Bayer, H. L. Benedict, "Effects of preparation on petrographic composition."

15 June. I. N. Plaksine and V. I. Klassen, "Froth flotation processes"; I. N. Plaksine and N. F. Olofinsky, "Electrostatic cleaning"; E. R. Palowitch, "Thermomagnetic separation of pyrite"; M. R. Geer, A. W. Deurbrouck, "Dense-medium cyclone desister table."

16 June. D. A. Hall, A. M. Wandless, P. G. Meerman, "Quality control"; L. L. Newman, "Coal Gasification." Planning for next conference.

Chemistry and Physics of Liquids

R. H. Cole, chairman
Walter H. Stockmayer, vice chairman

19-23 June. B. J. Alder, "Machine studies of molecular dynamics"; O. K. Rice, "Thermodynamics and statistical mechanics of non-uniform fluids"; Z. W. Salsburg, "Cell theories for solutions of molecules of different sizes"; R. L. Scott, "Thermodynamic properties of solutions"; J. S. Rowlinson, "Problems of the precise interpretation of the properties of simple mixtures in terms of intermolecular parameters"; J. H. Hildebrand, "Forces between molecules of different species"; J. E. Mayer, "Equations for entropy production in transport"; H. Eyring, "Extended free volume theory of transport processes"; D. C. Douglass, "Self-diffusion and the velocity correlation function"; A. R. Ubbelohde, "Cluster theory of viscosity, prefreezing in relation to premelting"; J. Lamb, "Viscoelastic and ultrasonic relaxation"; R. H. Cole, "Dielectric relaxation in liquids"; W. DeMaeyer, "Studies of chemical kinetics in liquids by relaxation methods."

Proteins

J. T. Edsall, chairman
Leon Heppel, co-vice chairman
Cyrus Levinthal, co-vice chairman

26-30 June. *New developments in protein analysis, separation of peptides, and peptide chain sequences. Three-dimensional structure of proteins—the evidence from x-ray diffraction, optical rotation, deuterium exchange, and so on.* (This will include discussion of unfolding and refolding of protein molecules in different solvents). *Structural basis of enzyme specificity* (insofar as this can be now discussed in terms of protein structure.) Among those taking part will be: C. B. Anfinsen, Jr., G. Braunitzer, L. C. Craig, F. R. N. Gurd, V. M. Ingram, E. Katchalski, J. C. Kendrew, I. M. Klotz, B. W. Low, S. Moore, H. Neurath, M. F. Perutz, F. M. Richards, J. A. Schellman, H. A. Scheraga, W. A. Schroeder, W. H. Stein, C. Tanford, and B. L. Vallee.

Scientific Information Problems in Research

Robert A. Harte, chairman
Karl F. Heumann, vice chairman

3 July. *Theory of information retrieval* (Calvin N. Mooers, session leader). *The abstracting problem* (G. Miles Conrad, session leader): Milton O. Lee.

4 July. *The indexing problem* (Charles L. Bernier, session leader): E. J. Crane; Frank B. Rogers. *The retrieval problem* (Saul Herner, session leader): Robert L. Hayne.

5 July. *Character recognition devices* (Paul W. Howerton, session leader): Harry J. Woll; John A. Fitzmaurice; Charles W. Allen. *The hardware problem* (Ascher Opler, session leader): Eugene Wall; Jack Minker.

6 July. *Special services* (C. Dake Gull, session leader): Burton W. Adkinson, "The role of government."

7 July. *Goals and prospects* (session leader to be announced).

Magnetic Resonance

G. E. Pake, chairman
B. P. Dailey, vice chairman

10 July. (N. Bloembergen, chairman): G. Benedek, "Temperature and pressure dependence of chemical shifts in octahedral cobalt complexes"; W. M. Walsh, "Effects of pressure and temperature on crystalline field splittings." (H. S. Jarrett, chairman): D. I. Bolef, "Acoustic absorption techniques in NMR"; R. G. Shulman, "Knight shifts in intermetallic compounds and alloys"; V. Jaccarino, "NMR properties of intermetallic compounds."

11 July. (F. Bloch, chairman): C. D. Jeffries, "Dynamic nuclear orientation"; A. Abragam, "Dynamic polarization

and spin temperature." (H. C. Torrey, *chairman*): C. Ryter, "Measurement of electron densities by observation of the day shift"; J. Lambe, "ENDOR mechanisms in solids."

12 July. (R. E. Norberg, *chairman*): J. I. Budnick, "NMR in ferromagnets"; M. Weger, "Nuclear relaxation processes in ferromagnets." (D. W. McCall, *chairman*): E. R. Andrew, "NMR experiments with rapidly rotating crystals"; J. Powles, "Magnetic relaxation in polymers."

13 July. (H. S. Gutowsky, *chairman*): S. I. Weissman, "Possible new biradicals"; D. B. Chesnut, "ERP studies of spin correlation in some ion-radical salts"; H. N. McConnell, "Rates of intramolecular charge- and spin-exchange in aromatic radicals." (W. Gordy, *chairman*): D. H. Whiffen, "Electron resonance spectra of some non-aromatic organic free radicals"; R. W. Fessenden, "ERP studies of transient radicals."

14 July. (C. A. Hutchison, Jr., *chairman*): J. H. van der Waals, "Investigation of phosphorescence of aromatic hydrocarbons by electron resonance"; G. W. Ludwig, "Study of impurities in semi-conductors by spin resonance."

Radiation Chemistry

John L. Magee, *chairman*
Ellison H. Taylor, *vice chairman*

17 July. (W. M. Garrison, *chairman*): M. Burton, "Present status of radiation chemistry." (C. J. Hochanadel, *chairman*): F. S. Dainton, "Radiation chemistry of water and aqueous systems. Status of experimental work."

18 July. (P. J. Dyne, *chairman*): A. Kuppermann, "Radiation chemistry of water and aqueous systems. Status of theory." (H. A. Schwarz, *chairman*): L. Dorfman, "Observation of intermediates in radiation chemistry."

19 July. (F. W. Lampe, *chairman*): "Impact processes and ion-molecule reactions" (speaker to be announced). (E. H. Taylor, *chairman*): contributed papers on recent work.

20 July. (M. Magat, *chairman*): S. Lipsky, "Energy transfer." (H. A. Dewhurst, *chairman*): A. Chapiro, "Radiation chemistry of polymerization."

21 July. (L. Wall, *chairman*): M. A. Golub, "Radiation chemistry of polymers."

Organic Reactions and Processes

Harold E. Zaugg, *chairman*
William A. Mosher, *chairman-elect*

24 July. Erwin Klingsberg, "The 1, 2-dithiolium cation: a new pseudoaromatic system"; Stanley J. Cristol, "Reactions of anthracenes and dihydroanthracenes."

25 July. W. J. Pummer, L. A. Wall, J. E. Fearn, J. M. Antonucci, "Reactions of aromatic fluorocarbons"; C. David Gutsche, "Intramolecular reactions of diazoalkanes"; G. A. Olah, "Newer methods and investigation of the mechanism of Friedel-Crafts type reactions."

26 July. Christian S. Rondestvedt, Jr., "The catalytic isomerization of *m*-dioxanes to β -alkoxy aldehydes"; R. H. Hasek, "Dialkylketenes"; Rolf Huisgen, "1, 3-Dipolar additions."

27 July. R. F. Heck and David S. Breslow, "The mechanism of the oxo reaction"; Hugh L. Dryden, Jr., Gayle M. Webber, Robert R. Burtner, John A. Cella, "The use of sodium in the birch reduction of aromatic compounds"; Norman H. Cromwell, "Polycyclic heterocyclic syntheses. Benzacridines and indenoquinolines."

28 July. Robert L. Letsinger, "Organoboron-nitrogen compounds. Chemical and catalytic properties."

Steroids and Other Natural Products

G. Büchi, *chairman*

31 July-4 Aug. P. Beal, "Chemical modification of the corticosteroids"; K. Biemann, "Applications of mass spectrometry in the determination of the structure of natural products"; L. Crombie, P. de Mayo (subjects to be announced); R. E. Ireland, "Syntheses in the terpene field"; E. Leete, "Recent developments in the biogenesis of natural products"; N. Leonard, "The chemistry of triacanthine"; H. Musso, "Orcein, litmus, and some aspects of phenol oxidation"; K. Nakanishi (subject to be announced); A. Patchett, "A new class of aldosterone antagonists"; H. Rapoport, H. Schmid, W. I. Taylor (subjects to be announced); H. Wassermann, "Bacterial pigments."

Statistics in Chemistry and Chemical Engineering

Carl A. Bennett, *chairman*
J. Stuart Hunter, *vice chairman*

7 Aug. J. S. Hunter and Cuthbert Daniel, "Screening experiments for factors"; C. W. Dunnett, "Screening experiments for treatments."

8 Aug. J. W. Gorman and P. W. M. John, "Experiments with mixtures"; R. W. Sommers, "Critical factors in the selection of theoretical and empirical models."

9 Aug. Rutherford Aris, "Chemical engineering applications of spectral analysis"; Gwilym M. Jenkins, "Spectral approach to industrial experimentation."

10 Aug. A. J. Duncan, "Bulk sampling"; Edgar Anderson, "Semigraphical methods of analysis."

11 Aug. Marvin Zelen, "Robustness of life testing procedures."

Analytical Chemistry

Sidney Siggia, *chairman*
Donald D. DeFord, *vice chairman*

14 Aug. C. B. Murphy, "Differential thermal analysis"; D. J. Fraade, "Continuous analysis."

15 Aug. I. Frankuchen, "The application of x-rays to structure determination of organic materials"; L. S. Birks, "The electron probe."

16 Aug. H. Fischbach, J. W. Cook, L. L. Ramsey, "Analysis and food and drug regulations"; W. W. Bates, "Analysis and composition of tobacco smoke."

17 Aug. J. E. Lovelock, "Electron affinity spectroscopy." (This will be an open session.)

18 Aug. G. A. Harlow, "New developments in the determination of acids and bases."

Inorganic Chemistry

H. M. Haendler, *chairman*
M. L. Nielsen, *vice chairman*

21 Aug. The metal-oxygen bond (D. C. Bradley, *chairman*): L. G. Sillen, "Metal-oxygen hydrolytic polymer systems"; J. Lewis, "Magnetic interaction through M-O-M systems"; M. C. R. Symons, "Structure and reactivity of oxy-anions of transition metals"; C. C. Addison, "Covalent metal nitrates."

22 Aug. F. A. Cotton, "Metal-oxygen chelate complexes"; R. C. Mehrotra, "Metal alkoxides and metal carboxylates"; P. J. Wheatley, "X-ray studies on alkali-metal alkoxides"; C. N. Caughlan, "X-ray studies on titanium alkoxides"; D. C. Bradley, "Structural aspects of metal oxide alkoxides."

23 Aug. Fluorine chemistry (K. Knox and R. W. Mason, *cochairmen*): C. P. Colburn, "Current developments in the nitrogen-fluorine field"; J. S. MacKenzie, "New developments in oxygen-fluorine chemistry"; G. L. Goodman, "Electronic structure of metal hexafluorides"; M. Schmeisser (subject to be announced); F. Seel, "Coordination compounds of nitrogen and halogen fluorides"; E. L. Muetterties, "Stereochemistry of metal fluorides and their complexes."

24 Aug. R. D. Peacock, "Recent work on the fluorine compounds of the transition metals"; R. Hoppe, "Preparation and crystal chemistry of some complex fluorides of the transition elements and the rare earths"; K. Knox, "Structures and properties of some complex fluorides."

25 Aug. V. Gutmann, "Some molecular addition compounds and their reactions in solution"; R. Herber, "Radiochemical evidence for inorganic molecular complexes"; N. N. Greenwood, "Thermochemistry of molecular addition compounds."

Adhesion

Robert L. Patrick, *chairman*
F. H. Wetzel, *chairman-elect*

28 Aug. Turner Alfrey, "Bulk properties of polymers and their effect on adhesion"; Edward J. Ripling, "Bulk properties of metals and their effect on adhesion."

29 Aug. Peter Debye, "Molecular forces and zero-point energies"; George G. Cocks, "The effect of molecular structure and shape on adhesion."

30 Aug. William C. Wake, "Rubber-textile adhesion." Panel discussion: *Fiber rubber adhesion* (H. T. Patterson, Frank N. Kelley, M. W. Wilson).

31 Aug. G. R. Sprengling, "Curing mechanisms of phenolic-elastomer blends"; Louis H. Sharpe, "Surface analysis by infrared—new techniques"; Charles Blaich, "Elastomeric properties in adhesion."

1 Sept. Leonard Suffredini, "Glass flake reinforcement and flaw theory."

Kimball Union Academy

Lipide Metabolism

Jules Hirsch, *chairman*
Maurice Rapport, *vice chairman*

12 June. (J. David Robertson, *chairman*): V. Luzzati, "The structure of liquid-crystalline phases in association colloids: description of lipid-water systems"; W. Stoeckenius, "The electron microscopy of lipid and lipoprotein structures." (Sanford L. Palay, *chairman*): Jack H. Schulman, "Physical chemistry of the absorption of emulsions in living systems"; C. T. Ashworth, "Cellular dynamics in intestinal absorption."

13 June. (E. B. Astwood, *chairman*): E. B. Astwood, "Pituitary hormones and fat mobilization"; T. M. Chalmers, "A lipid-mobilizing agent from human urine"; Daniel Rudman, "Studies on a lipid-mobilizing substance of the pituitary gland." (James A. F. Stevenson, *chairman*): James A. F. Stevenson, "The hypothalamus and the regulation of energy and water exchange"; Irving L. Schwartz, "Chemoreceptor mechanisms in the regulation of food intake"; Albert F. Debons, "Brain and tissue distribution of gold thioglucose and gold thiomalate"; Donald C. Borg, "Some advantages and limitations of radioactivation as a method for elemental analysis."

14 June. (E. C. Horning, *chairman*): Donald C. Damoth, "The fundamentals of mass spectrometric analysis"; Einar Stenhagen, "Mass spectrometric structure determination of fatty acids"; C. A. Genge, "Application of mass spec-

trometry to lipid biochemistry." (E. C. Horning, *chairman*): T. J. Flautt, "Structural analysis by means of high-resolution nuclear magnetic resonance"; C. Y. Hopkins, "The utility of nuclear magnetic resonance in the analysis of glycerides and fatty acids"; E. C. Horning, "Gas chromatographic separations of steroids and related compounds."

15 June. (Lowell E. Hokin, *chairman*): Lowell E. Hokin, "The phosphatidic acid cycle and sodium transport"; R. A. Pieringer, "The biosynthesis of lysophosphatidic acids from monoglycerides and ATP"; C. G. Hug-gins, "Phosphorus metabolism in phospholipid and phosphatido-peptide as related to denervation and supersensitivity in the submandibular salivary glands"; F. N. LeBaron and George Hauser, "The metabolism and possible functional role of brain phosphoinositides and their complexes with proteins." (Leonard B. Kirschner and M. L. Karnovsky, special discussants.)

16 June. (E. H. Ahrens, Jr., *chairman*): John Senior, "Studies of fatty acid metabolism and absorption in the intestinal mucosa"; John M. Johnston, "Recent developments in the mechanism of the intestinal absorption of fatty acids."

Cell Structure and Metabolism

Richard B. Roberts, *chairman*
Thomas F. Anderson, *vice chairman*

The Cytology of Bacteria and Other Microorganisms

19 June. *Structure of microorganisms* (R. Williams, *chairman*): G. Chapman, A. Glauert (subjects to be announced). *Structure of microorganism* (continued) (C. F. Robinow, *chairman*): E. S. Anderson, P. C. Fitz-James (subjects to be announced).

20 June. *The cell surface* (T. F. Anderson, *chairman*): W. Weidel, G. Mac-cacaro (subjects to be announced). *Radiation analysis of cell structure* (E. C. Pollard, *chairman*): D. Billen, W. R. Guild, F. Hutchinson, J. W. Preiss (subjects to be announced).

21 June. *Autoradiographs, suicide* (O. Maaløe, *chairman*): F. Forro, M. Riley (subjects to be announced). *Isolation of sub-cellular components* (K. McQuillen, *chairman*): P. A. Albertson, D. Ezekial (subjects to be announced). *Role of cellular structures in synthesis* (H. Chantrenne, *chairman*): R. J. Britten, J. P. Waller (subjects to be announced). *Transport mechanisms* (A. K. Solomon, *chairman*): A. Képés, S. G. Schultz (subjects to be announced).

23 June. *Cell free systems* (S. Spiegelman, *chairman*): B. Hall, J. Hurwitz, D. Novelli (subjects to be announced).

Physical Metallurgy

Michael Bever, *chairman*
W. D. Robertson, *vice chairman*

Imperfections, Substructure, and Microstructure

26 June. K. L. Moazed and G. M. Pound, "Field emission microscopy of metal crystal nucleation from the vapor"; C. Elbaum, "Substructures in crystals grown from the melt"; S. Weissmann, "Analysis of substructure—experiments and theory"; C. N. J. Wagner, "Analysis of defect structures in deformed crystals."

27 June. P. B. Hirsch, "Dislocation distributions, flow stress, and hardening in face-centered cubic metals"; U. F. Kocks, "Special arrangements of dislocations in deformed face-centered cubic metals"; V. V. Damiano, "Dislocations and substructures in zinc single crystals"; L. M. Clarebrough, "Short-range order, point defects, and dislocations in alpha brass"; J. R. Patel and A. R. Chaudhuri, "Defect structure in dislocation-free crystals of silicon and germanium."

28 June. M. J. Marcinkowski, "Theory and direct observation of anti-phase domain boundaries and dislocations in AB₂ type superlattices"; J. S. Kirkaldy, "The thermodynamic basis of morphological development"; V. A. Phillips, "Electron microscopic observations on the role of dislocations in precipitation"; H. I. Aaronson, "The role of interfacial structure in diffusional transformations."

29 June. M. Hillert, "Some theoretical aspects of the formation of pro-eutectoid structures"; W. L. Grube and S. R. Rouze, "Growth studies of isothermal transformation structures of austenite by thermionic emission microscopy"; and W. S. Owen, "Structures produced by diffusionless transformations."

30 June. J. E. Hilliard, "Quantitative electron transmission metallography"; M. J. Fraser, "Annealing twins and surface topography"; S. V. Radcliffe, "Products of transformations at high pressure."

Vitamins and Metabolism

Harry P. Broquist, *chairman*
James S. Dinning, *vice chairman*

3 July. (K. Folkers, *chairman*): H. Weisbach, "The cobamide coenzymes"; Y. Kapiro and S. Ochoa, "The role of biotin and vitamin B₁₂ in propionic acid metabolism"; (E. Stadtman, *discussant*). (B. C. Johnson, *chairman*): J. C. Rabinowitz, "The role of vitamin B₁₂ derivatives in CO₂-pyruvate exchange reactions"; R. H. Abeles, "An intramolecular oxidation-reduction requiring

a cobamide coenzyme"; (L. A. Manson, *discussant*).

4 July. (T. H. Jukes, *chairman*): J. Buchanan, "A new derivative of tetrahydrofolic acid as an intermediate in methionine biosynthesis"; L. Jaenicke, "Tetrahydrofolic acid and the biogenesis of methionine"; (J. C. Rabinowitz, *discussant*). (G. Kidder, *chairman*): G. M. Brown, "The biosynthesis of folic acid" (S. Kirschfeld, *discussant*); G. Plaut, "The biosynthesis of riboflavin and certain pteridines."

5 July. (Chairman to be announced): F. L. Crane, "Benzoquinones in phosphorylating electron transport systems"; C. H. Shunk, A. C. Page, Jr., K. Folkers, "Studies in coenzyme Q, chromenols, and chromanols"; A. F. Brodie, "Naphthoquinone coenzymes and a naphthochromanol intermediate in oxidative phosphorylation (bacterial)." (E. L. R. Stokstad, *chairman*): K. Schwarz, "On the mode of action of vitamin E"; S. R. Ames, "The present status of the vitamin A isomers"; J. E. Dowling, "The biological activity of vitamin A acid"; G. Wolf, "Vitamin A function in mucopolysaccharide and adrenal hormone biosynthesis."

6 July. (I. C. Gunsalus, *chairman*): L. O. Krampitz, "Mode of action of thiamine diphosphate"; Q. H. Gibson, "Study of the reaction mechanism of lipoyl dehydrogenase by rapid spectrophotometry"; D. R. Sanadi, "The role of lipoic acid and other disulfides in oxidative reactions." (J. S. Dinning, *chairman*): B. Magasanik, "Control of purine nucleotide biosynthesis and interconversions"; L. Gorini, "Genetic and physiological aspects of the control of arginine biosynthesis."

7 July. (H. P. Sarett, *chairman*): N. Sloane, "Biological activity and chemical properties of metabolites of para-aminobenzoic acid"; J. R. D. McCormick, "Biosynthesis of tetracyclines: cosynthetic factor I"; S. P. Mistry, "Amino acid incorporation and biotin deficiency."

Chemistry, Physiology, and Structure of Bones and Teeth

William P. Norris, *chairman*
Roy V. Talmadge, *vice chairman*

10 July. Selected communications (Robert E. Rowland, *chairman*). *Evolution of bone as a tissue* (Marshall R. Urist, *chairman*): Robert H. Denison, "The habitat of the earliest vertebrates"; Tor Ørving, "The skeleton of the earliest vertebrates."

11 July. *Evolution of bone as a tissue* (continued) (Marshall R. Urist, *chairman*): Alfred S. Romer, "Vertebrate paleontology"; T. Dale Stewart, "The last phase of human evolution."

Vasculature and hemodynamics of bone (Robert B. Duthie, *chairman*): J. Trueta, "Anatomical considerations of circulation."

12 July. *Vasculature and hemodynamics of bone* (continued) (Robert B. Duthie, *chairman*): Donald A. McDonald, "Hemodynamics of blood flow"; Friedrich Wassermann, "The problem of transport between blood and bone"; James B. Wray, "The response of periosteal vessels to certain vasomotor agents." *Physical and chemical reactions of bone mineral* (William F. Neuman, *chairman*): John Strandh, "Microchemical studies on single Haversian systems."

13 July. *Physical and chemical reactions of bone mineral* (continued) (William F. Neuman, *chairman*): Eubert J. Daniel, "Histochemical and electron-optical analyses of calcifying systems: part 1, embryogenesis; part 2, maturation"; Howard M. Myers, "Absorption of water and alizarin on apatites"; Aaron S. Posner, "Hydrogen bonding in apatites." *Defects in mineralization and in mineral reserve* (Robert P. Heaney, *chairman*): Robert Steendijk, "Observations on calcification in vivo as affected by intravenous administration of inorganic phosphate"; Leo Lutwak, "Osteoporosis and its treatment, as evaluated by calcium-45."

14 July. *Defects in mineralization and mineral reserve* (continued) (Robert P. Heaney, *chairman*): Jenifer Jowsey, "The structure of bone in relation to age and osteoporosis"; Eugene Eisenberg, "Bone formation and metabolism in relation to osteoporosis and the aging process."

Organic Coatings

G. G. Schurr, *chairman*
R. R. Myers, *vice chairman*

17 July. R. D. Andrews, "Structural analysis of polymers by stress birefringence measurements"; T. L. Smith, "Mechanical properties of polymers."

18 July. E. G. Bell, "Dialysis techniques for study of emulsifier transport phenomena in latex"; E. R. Moore, "Relations between structure and properties in water-thinned alkyd systems."

19 July. J. G. Brodnyan, "Mechanism of emulsion polymerization and particle size distribution functions"; R. F. Fischer, "Cross-linked polyesters from allyl glycidyl ether and maleic anhydride."

20 July. F. W. Hobden, "The mechanism of the formation of bloom on paint surfaces"; J. S. Mackie, "The weathering of paints—an electron microscopic investigation."

21 July. R. J. Fahl, "Optical properties of pigmented films."

Chemistry at Interfaces

R. A. Beebe, *chairman*
L. E. Copeland, *vice chairman*

24 July. *Monolayers on liquids and in biological interfaces* (George L. Gaines, Jr., *chairman*): Norman L. Gershfeld, "The interaction of drugs with model systems"; R. F. Robertson, "Isotopic halogen exchange in unimolecular films at the air-water interface"; Hans J. Trurnit, "Intracellular membranes in relation to photosynthesis."

25 July. *Capillarity* (James C. Melrose, *chairman*): F. P. Buff, "The molecular foundations of the theory of capillarity"; L. E. Scriven, "Dynamics of fluid interfaces"; R. E. Johnson, Jr., "Wettability theory and practice"; B. V. Derjaguin, "The capillary effects of the second kind."

26 July. *Physical adsorption* (Stephen Brunauer, *chairman*): Peter Cannon, "The effects of adsorbed vapors on dislocations and the mechanical properties of solids"; G. L. Kington, "Some thermodynamic aspects of adsorption in porous solids"; J. H. deBoer, "Physical adsorption as a tool for the investigation of the sizes and natures of surfaces."

27 July. *Chemisorption* (Carl H. Amberg, *chairman*): P. A. Redhead, "Chemisorption of diatomic gases on tungsten"; P. J. Lucchesi, "The infrared spectra of acetylene and acetylene derivatives adsorbed on alumina and silica"; B. M. W. Trapnell, "Mechanisms of chemisorption."

(Additional speakers and discussions to be announced.)

Solid-State Studies in Ceramics

L. Himmel, *chairman*
J. Selsing, *vice chairman*
Transport Properties

31 July. F. J. Morin, "The electrical behavior of halides, oxides, and sulfides of the transition metals"; D. H. Whitmore, "The semiconducting properties of transition metal oxides."

1 Aug. H. P. R. Frederickse, "The properties of electrons in rutile"; E. E. Kohnke, "Electrical and optical properties of stannic oxide crystals"; S. P. Mitoff, "Electronic and ionic conductivity in magnesium oxide crystals."

2 Aug. C. J. Kevane, "Electrical properties of rare earth oxides"; S. Kurnick, "Transport processes in rare earth sulfides"; R. Heikes, "Transport phenomena in oxide systems."

3 Aug. J. A. Cape, "High temperature thermal properties of refractory materials"; G. Gody, "Thermal conductivity of semiconducting materials at high temperatures"; W. R. Riedel, "Project Mohole."

4 Aug. H. Schmalzried, "Disorder and diffusion in phases with spinel structure"; R. J. Charles, "Polarization and diffusion in glass."

Toxicology and Safety Evaluations

Frank R. Blood, *chairman*
C. Boyd Shaffer, *vice chairman*

7 Aug. (David W. Fassett, *chairman*): J. M. Coon, "Safety evaluations using humans"; M. L. Keplinger, "The evaluation of toxic materials using humans"; T. B. Clarkson, "The pigeon as an experimental animal"; Martin Ross, "Spontaneous diseases in animals."

8 Aug. (Jack Frawley, *chairman*): R. B. March, "Metabolism of organophosphorus pesticides"; W. J. Hayes, Jr., "Metabolism of chlorinated hydrocarbon insecticides in mammals." (Joseph Treon, *chairman*): M. R. Zavon, "Interpretation of animal toxicity data in human safety evaluation of pesticides"; B. R. Zeitlin, "Use of radioactive glucose for screening of potential toxicants."

9 Aug. (C. Boyd Shaffer, *chairman*): Philippe Shubik, "Evaluation of carcinogenic effect of food additives"; J. A. Miller, "A new metabolic approach in the study of carcinogenic amines." (J. Siegel, *chairman*): W. L. Anderson, "The chemical phase of air pollution in confined spaces"; W. E. McConaughy, "Engineering aspects of atmosphere control."

10 Aug. (F. H. Snyder, *chairman*): J. H. Draize, "Appraisal of the safety of substances applied topically to skin and mucous membranes"; A. M. Kligman, "Predictive methods for recognizing cutaneous allergens and irritants"; W. Lammers, "Discussion of the margarine additive intoxication." (P. E. Johnson, *chairman*): W. J. Darby, "Food additives as an international problem."

11 Aug. (A. J. Lehman, *chairman*): R. A. Gessert, "Drug evaluation for veterinary use"; H. M. Peck, "Drug interaction and safety evaluation."

Chemistry and Physics of Solids

Walter Kohn, *chairman*
Charles P. Slichter, *vice chairman*
New Theoretical Viewpoints and Their Experimental Significance

14 Aug. Introductory session: W. Kohn and D. Pines. J. M. Luttinger and B. Pippard, "The normal metal."

15 Aug. R. A. Ferrell and J. Friedel, "The normal metal" (continued); J. Bardeen and M. Tinkham, "Superconductivity."

16 Aug. F. Keffer, H. Suhl, B. Matthias, "Magnetism"; R. Kubo and B. Lax, "Transport phenomena."

17 Aug. F. J. Morin and a speaker to be announced, "Insulators"; J. C. Phillips and C. P. Slichter, "New one electron theories."

18 Aug. Concluding discussion: P. W. Anderson and C. Herring.

Photonuclear Reactions

James E. Leiss, *chairman*
Peter T. Demos, *vice chairman*

21-25 Aug. *Photon-induced reactions*: "Survey of present experiment knowledge of photon-induced reactions"; "Sum rules for photon-induced reactions"; "Theories of photo-nuclear reactions"; "Final states in the nuclear photo effect"; "Inelastic particle scattering"; Theory of coulomb excitation in the medium energy range"; "Electron-induced reactions"; "Nuclear excitation by heavy particle coulomb scattering."

High-Temperature Chemistry: Molten Salts

Dieter Gruen, *chairman*
John Corbett, *vice chairman*

28 Aug. *Structural models* (J. O'M. Bockris, *chairman*): J. O'M. Bockris, "Models for fused salts"; H. Eyring and D. Ree, "Significant structure theory of fused salts"; A. R. Ubbelohde, "Quasi-crystalline and other models for fused salts"; H. Bloom, "Structure of molten binary mixtures of alkali halides with cadmium halides." *Transport properties* (B. R. Sundheim, *chairman*): B. R. Sundheim, "Transport properties in fused salts"; J. Katz, "Statistical mechanics of transport processes"; F. Collins, "Diffusion in fused salts."

29 Aug. *Transport properties* (continued) (R. W. Laity, *chairman*): R. W. Laity, "Diffusion in fused salts"; S. Bruckenstein, "Diffusion coefficients and heats of activation for diffusion from chronopotentiometric studies in fused salts"; S. W. Mayer, "Structural studies in polymeric sodium metaphosphate melts." *Thermodynamic properties* (O. J. Kleppa, *chairman*): H. Reiss, "Aspects of the statistical mechanics of fused salts"; H. Flood, "Thermodynamics and structure of fused salts"; O. J. Kleppa, "Reaction calorimetry in fused salt mixtures"; S. Cantor, "Cryoscopy in sodium fluoride."

30 Aug. *Electrode processes and electrochemistry* (M. Blander, *chairman*): J. O'M. Bockris, "The mechanisms of electrodeposition in fused salts: a) Charge transfer to complexes, b) Mechanisms of the formation of dendritic deposits"; J. Braunstein, "EMF measurements with silver-solid silver halide electrodes in molten nitrates"; M. Blander, "Interpretation and evaluation of higher association constants

from EMF data"; C. H. Liu, "Electrochemistry in molten sulfates and in low melting halides." *Spectroscopy* (M. A. Bredig, *chairman*): F. H. Stillinger, "Theory of radial distribution functions of fused salts"; J. Zarzycki, "Magnetic rotatory polarization"; H. Levy, "X-ray and neutron diffraction studies"; L. S. Singer, "Electron spin resonance."

31 Aug. *Spectroscopy* (G. P. Smith, *chairman*): G. Janz, "Raman spectra and the structure of fused salts"; G. P. Smith, "Charge transfer spectra in fused salts"; Gordon Goodman, "The possible uses of ligand field theory in studies of fused salts." *Metal-molten salt systems* (J. Corbett, *chairman*): M. Bredig, "Electrical conductivities in a variety of metal-molten halide systems"; J. Corbett, "Metal-metal iodide solutions for the lighter lanthanides"; N. Nachtrieb, "Magnetic susceptibility measurements on the Bi-BiCl₃ and the Cd-CdCl₂ molten systems"; S. Yosim, "Electrochemical properties of bismuth-bismuth trihalide solutions"; J. W. Tomlinson, "Recent work on metal-metal halide systems."

1 Sept. *Advances in technology* (R. Steunenberg, *chairman*): W. Grimes, "Molten fluoride systems as fuels and blankets for nuclear reactors"; R. C. Werner, "Fused salts in regenerative fuel cells"; T. A. Henrie and D. H. Baker, Jr., "Some theoretical and practical aspects of fused salt electrolysis of reactive metals."

Tilton School

Ion Exchange

Harold F. Walton, *chairman*
Robert M. Wheaton, *vice chairman*

26 June. *Complex ions*: H. P. Gregor, "Polyelectrolyte-metal complexes"; F. Helfferich, "Ligand exchange"; Y. Marcus, "Anion exchange specificity for metal complexes"; D. W. Margerum, "Kinetics of ion exchange diffusion and coordination reactions."

27 June. *Complex ions, thermodynamics*: W. Riemann, III, "Kinetics of chelating resins"; C. E. Wymore, "Resins as desiccants"; D. H. Freeman and G. Scatchard, "Swelling of resins studied photomicrographically"; D. Reichenberg, "Exchange distributions with partially sulfonated polystyrenes"; O. D. Bonner, "Model compounds for ion exchange."

28 June. *Membranes*: R. Schlögl, "Onsager coefficients in membrane transport"; W. Juda, "Applications of ion exchange membranes"; K. W. Chen, "Water desalting by membranes"; Y. Tsunoda and M. Seko, "Water desalting by membranes."

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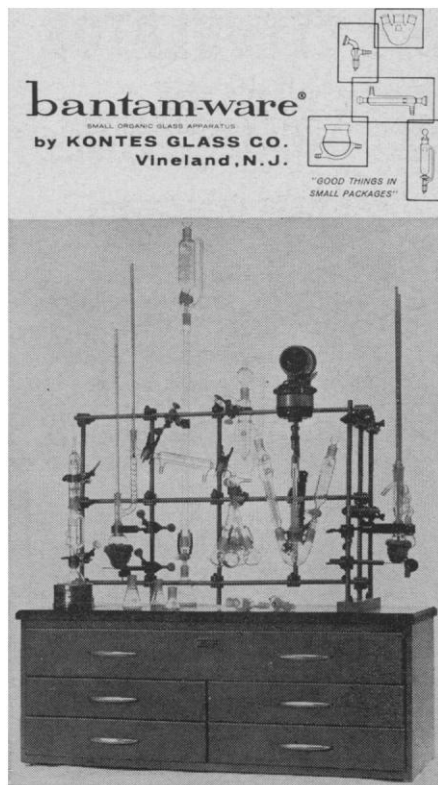
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29 June. *Special exchangers, column separations*: R. Kunin, "Porous resins"; S. Lindenbaum, "Liquid ion exchangers"; W. J. Sloan, "Computers in column problems"; P. B. Hamilton, "Amino-acid separations."

30 June. Panel discussion: *Important unsolved problems in ion exchange* (G. E. Boyd and D. Reichenberg, *chairmen*).

Chemistry of Carbohydrates

3-7 July. (Program to be announced.)

Chemistry and Metallurgy of Semiconductors

A Rosenberg, *chairman*
P. Egli, *vice chairman*

10 July. *Epitaxial crystal growth*: A. P. Hale, "Vacuum deposition of silicon layers"; T. Renner, "Preparation of III-V compounds by vapor deposition"; V. J. Lyons, "Vapor growth of gallium arsenide"; P. I. Pollak, "Vapor phase growth of silicon crystals."

11 July. *Crystal growth at high pressures*: W. V. Wright, "Moderately high pressures"; R. H. Wentorf, "Ultra high pressures." *Thermodynamics*: M. B. Bever, "Properties of compound semiconductors"; W. Tiller, "Obtaining phase diagrams through controlled solidification."

12 July. *Chemical bonds and electron energy bands*: C. H. L. Goodman, A. J. Cornish, "Empirical relations between electrical properties and composition"; J. C. Slater and P. O. Lowdin, "Theoretical relationships."

13 July. *Organic conductors*: D. Fox, "Mechanisms"; M. I. Pope, "Phenomena."

14 July. *Electroluminescence*: E. E. Loebner, "Mechanisms"; H. F. Ivey, "Phenomena."

Microbiological Deterioration

James W. Clapp, *chairman*
Arthur M. Kaplan, *vice chairman*

17 July. *Newer developments in industrial preservations* (Charles C. Yeager, *chairman*): Richard C. Ross, "The microbiology of oil paints"; Robert L. Johnson, "Synthetic latex preservation." *Microorganisms and hydrocarbons* (Ray C. Allred, *chairman*): J. B. Davis, "Oxidation of alkyl-substituted cyclic hydrocarbons"; John O. Harris, "Oxidation of aliphatic hydrocarbons"; Ray C. Allred, "Oxidation of sulfonated alkylbenzenes."

18 July. *Mechanisms of action of biocides* (Robert E. Deems and Philip N. Gordon, *cochairmen*): Adrien Albert, "The physics and chemistry of fungicidal and bactericidal action"; J. L. Strominger, "Antibiotics as inhibitors of bacterial cell wall synthesis"; M. W. Allen, "Mechanism of action of nematocides"; A. S. Crafts, "Mechanism of ac-

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tion of herbicides"; Saul Rich, "Future trends in the chemical control of microorganisms."

19 July. *Spore germination and physiology* (Z. John Ordal, *chairman*): Hillel S. Levinson, "Bacterial spores"; S. G. Knight, "Fungal spores." *Genetics and the control of microorganisms* (Harold H. Smith, *chairman*): L. S. Baron, "Genotypic, phenotypic, and environmental effects of genetic transfer mechanisms in microorganisms"; Ellis Engelsberg, "Mutation to sensitivity to carbohydrate inhibition."

20 July. *Degradation of cellulose at the enzymic level* (R. C. Quittenton, *chairman*): D. R. Whitaker, G. Halliwell (subjects to be announced). *Microbiology of stored grains* (Robert

L. Johnson, *chairman*): Clyde M. Christiansen, "Industrious fungi."

21 July. Summary and open discussion of the week's papers and their implications (Adrien Albert, *chairman and discussion leader*).

Biochemistry and Agriculture

James L. Liverman, *cochairman*
Frank L. Stark, Jr., *cochairman*

24 July. *The role of cobalt in growth processes* (James L. Liverman, *chairman*): Harold Evans, "Cobalt in plant nutrition"; Frank Salisbury, "Cobalt in photomorphogenic responses"; Lars Loercher, "Metabolic aspects of cobalt action"; Horace A. Barker, "Role of vitamin B₁₂ in biochemical processes";

Gunther Eichorn, "Chelation in biological phenomena."

25 July. *Progress in phenoxy herbicides* (John B. Hanson, *chairman*): Corwin Hansch, "Relation of structure to activity" (A); Donald G. Crosby, "Relation of structure to activity" (B); J. L. Key, "Penetration and translocation"; Michael K. Bach, "Metabolism of the herbicides in plants"; J. B. Hanson, "Effects on the cytoplasm of plants."

26 July. *Biochemistry and structure of the plant cell wall* (A. C. Neish, *chairman*): S. T. Bayley, "The structure of the plant cell wall and its development"; Peter Albersheim, "The metabolism of pectic substances"; J. R. Colvin, "The mechanism of formation of cellulose fibrils"; M. B. Perry, "Biogenesis of carbohydrates"; H. S. Stafford, "Problems in lignification."

27 July. *New aspects of plant disease control* (Donald G. Crosby, *chairman*): Arthur Kelman, "Pectinolytic and cellulolytic enzymes in plant disease"; H. H. Flor, "Host-parasite relationships in plant disease"; Ernest Jaworski, "Genetic and antigenic relationships in plant disease." *Role and mission of the President's Science Advisory Boards*.

28 July. *New developments in insect control procedures* (Frank L. Stark, Jr., *chairman*): Martin Jacobson, "Insect sex attractants in survey and control procedures"; L. D. Christenson, "Promising new approaches to insect control and eradication"; R. C. Von Borstel, "Genetic methods for insect control."

Electrodeposition

Martin S. Frant, *cochairman*
Walter R. Meyer, *cochairman*

31 July. *The mechanism of electrodeposition* (W. R. Meyer, *chairman*): N. B. Hackerman, "Nature and kinetics of discharge species at the electrode surface"; P. Delahay and D. Mohilner, "Metal deposition: double layer effects and investigation of fast discharge processes." *The mechanism of electrodeposition* (continued) (E. Saubestre, *chairman*): J. O'M. Bockris, "Rate-determining steps and paths in the electrodeposition and electrodisolution of thin metallic layers"; J. O'M. Bockris, D. Drazic, H. Kitz, "Transient phenomena at the iron-solution interface, and the mechanism of the deposition and dissolution of iron."

1 Aug. *The mechanism of electrodeposition* (continued) (N. Hackerman, *chairman*): R. G. Barradas and B. E. Conway, "Electrochemical adsorption heterocyclic bases and ionic derivatives." Late papers and general discussion on mechanisms. *Addition agents in electrodeposition* (O. Kardos, *chairman*): H. Brown, "The role and structure of addition agents in electroplating, with special reference to nickel"; D. Trivich, "Some aspects of brightener ac-

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tion"; S. E. Beacom, "Leveling in bright nickel deposits."

2 Aug. *The effect of structure on properties: A) Basis metal structure* (A. Brenner, chairman): H. Leidheiser, "Nickelplating on copper single crystals"; M. H. Jones, "Effect of substrate metallurgy." *B) Coating metal structure* (A. Brenner, chairman): H. J. Read, "Plastic properties of electrodeposits"; A. M. Max, "Stress in electrodeposits."

3 Aug. *Electrodeposition of alloys* (F. A. Lowenheim, chairman): M. L. Holt, "Electrodeposition of alloys of some of the transition metals"; H. Koretzky, "Current research on electrodeposited thin magnetic films. A critical survey"; I. Wolf, "Factors affecting magnetic properties of iron-nickel films." *Electrodeposition on unusual substrates* (H. B. Linford, chairman): D. R. Turner, "Metal deposition on semiconductors"; E. Saubestre, "Plating on unusual metals."

4 Aug. *Current problems in the utilization of plated coatings* (N. Murphy, chairman): M. Frant, "Electrodeposited metals as electrical contacts"; F. A. Lowenheim, "Solderability of plated metals"; C. Levy, "Electro-deposited coatings for high temperature applications."

Electrical and Relaxation Processes in Glass

R. J. Charles, chairman

N. J. Kreidl, vice chairman

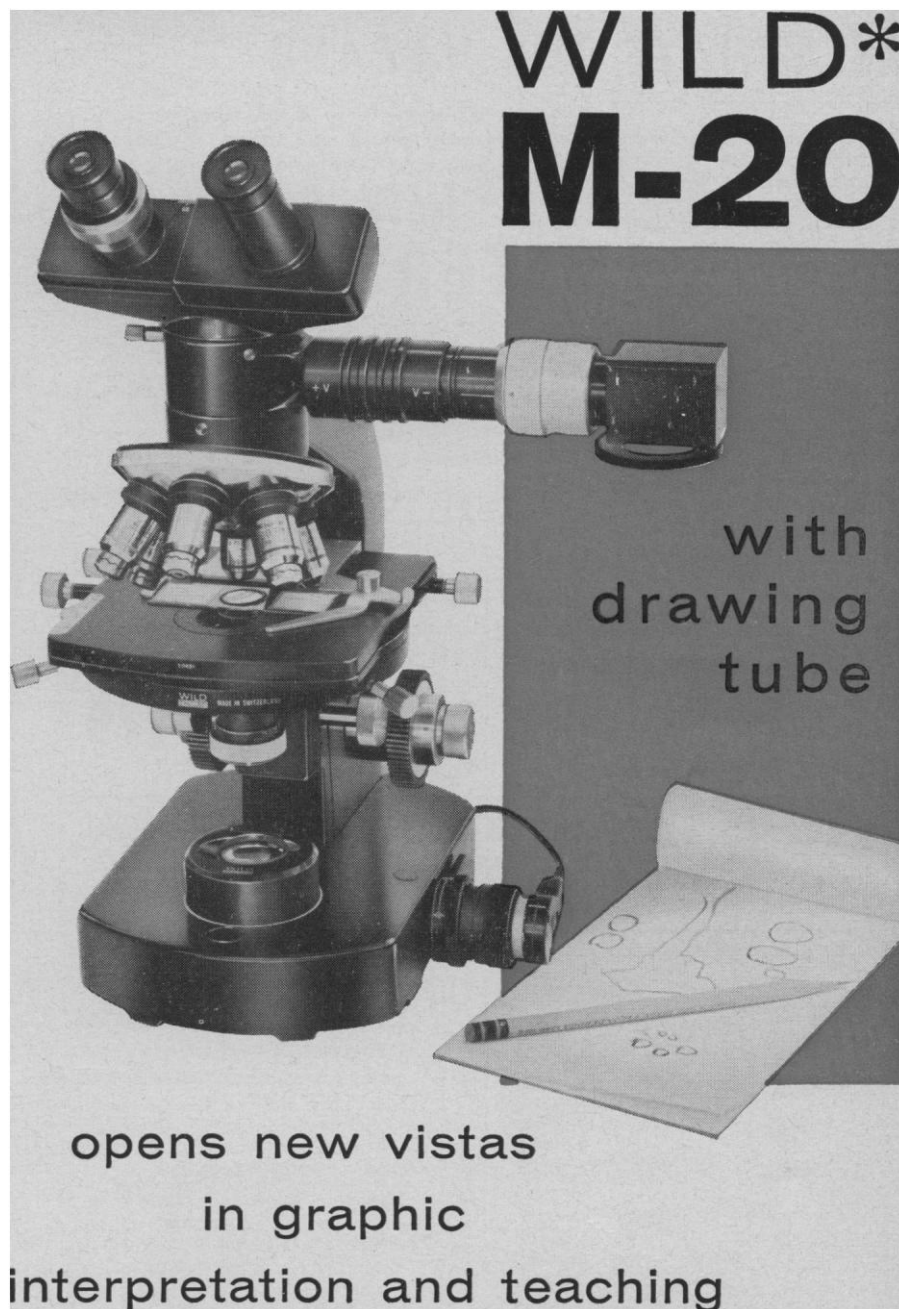
7 Aug. *Electrical conduction and polarization* (R. J. Charles, chairman): H. E. Taylor, "The dielectric relaxation of glass due to the movement of alkali ions"; J. I. Isard, "Electrical conduction in glasses." (N. J. Kreidl, chairman): A. E. Owen, "Comparison of conduction and relaxation processes in glass."

8 Aug. P. M. Sutton, "Space charge and electrode polarization"; R. J. Charles, "A defect model of diffusion in glass." *Alkali ion mobility* (F. M. Ernsberger, chairman): T. Abe, "On the free sodium ion in glass"; G. Eisenman, "The electrochemical properties of cation-sensitive glass electrodes and the atomic basis of their cation discrimination."

9 Aug. R. J. Ryder, "Internal friction of alkali silicate glasses"; I. I. Kitaigorodskii, (subject to be announced). *Glass structure and the liquid state* (A. B. Bestul, chairman): D. Turnbull, "The glass transition."

10 Aug. P. D. Bray, "Nuclear magnetic resonance studies of the structure of glass"; M. Aslanova, "Structure and properties of glass fibers"; T. A. Litovitz, "Structural relaxation in liquids (molten glasses)."

11 Aug. Discussions and business meeting.



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