Gordon Research Conferences

W. George Parks

The Gordon Research Conferences for 1963 will be held from 10 June to 30 August at four educational institutions in New Hampshire: Colby Junior College, New London; New Hampton School, New Hampton; Kimball Union Academy, Meriden; and Tilton School, Tilton.

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.

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

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 2 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 from foreign scientists.

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, 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, if no double rooms are available. These rooms will be assigned in the order that applications are received. An additional charge will also be made for rooms occupied more than the five conference nights.

Conferees are expected to live at the conference location because one of the objectives of the conferences is to provide a place where scientists can get together informally for discussion of scientific research 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 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. The charges for

guests are: room and meals $60 (including gratuities) for five days. An additional charge of $1 per night per person will be made for a room with private bath or for a single room. An additional charge will also be made for rooms occupied more than five conference nights. 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 travel expenses or subsistence expenses at the Gordon Research 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, Gordon Research Conferences, University of Rhode Island, Kingston, R. I. From 10 June to 30 August mail for the office of the director should be addressed to Colby Junior College, New London, N.H.

The following is an outline of the overall program to be presented at the four locations.

Colby Junior College

Hydrocarbon Chemistry

John H. Raley and Glen A. Russell will serve as *chairman* and *vice chairman,* respectively, in these sessions on the reactive intermediates in hydrocarbon chemistry.

10 June. A. Schriesheim, S. Bank, J. E. Hofmann, C. A. Rowe, Jr., T. J. Wallace, "Hydrocarbon carbanions"; W. V. Bush, C. W. Bittner, G. Holzman, A. W. Shaw, "Reactions of hydrocarbon anions in non-solvating media"; A. K. Hoffmann, "Reactions of some tert-carbinyl nitro anion radicals and species derived therefrom."

11 June. R. W. Murray, A. M. Trozzolo, "Some unusual divalent carbon intermediates"; H. D. Hartzler, "Vinylidene carbenes"; A. S. Gordon, "Some reactions of the cyclopentyl radical."

12 June. Cheves Walling, "Solvent effects in radical reactions"; T. J. Hardwick, "The reactions of hydrogen atoms with hydrocarbons in the liquid phase"; W. H. Richardson, "The mechanism and kinetics of hydroperoxide decomposition with cobalt salts."

13 June. P. von R. Schleyer, "Carbonium ion reactions and rearrangements in bridged ring hydrocarbons"; R. Pettit, "Unsaturated hydrocarbons as pi type ligands in organo-iron carbonyl complexes"; K. M. Harmon, "Preparation and properties of salts of stabilized carbonium ions."

14 June. G. S. Hammond, "The chemistry of some electronically excited molecules"; L. M. Dorfman, "Fast reaction studies in the radiation chemistry of organic systems."

Nuclear Chemistry

J. M. Miller and T. D. Thomas are *chairman* and *vice chairman,* respectively, for this overall session on nuclear states and nuclear models.

17 June. (D. Kurath, *chairman*): S. Moszkowski, "Theory of nuclear matter"; (*speaker* to be announced), "Nuclear vibrations." (*Chairman* to be announced): B. B. Cohen, "Single particle states from stripping"; (*speaker* to be announced), "Shell model data from high-energy reactions."

18 June. (H. J. Mang, *chairman*): (*speaker* to be announced), "Collective model"; V. G. Soloviev, "Superfluidity and quasi-particles." (R. Sorenson, *chairman*): J. O. Rasmussen, "Blocking in superfluidity"; C. Gallagher, "Some experimental evidence for superfluidity."

19 June. (J. O. Newton, *chairman*): F. S. Stephens, "Coulomb excitation"; R. Sheline, "Collective states from nuclear reaction spectroscopy." (G. Goldhaber, *chairman*): (*speakers* to be announced), "Intermediate coupling."

20 June. (R. Naumann, *chairman*): M. L. Perlman and G. D. O'Kelly, "Experimental evidence on intermediate coupling." (*Chairman* to be announced): (*speakers* to be announced), "High-energy phenomena and nuclear structure."

21 June. (K. Wildermuth, *chairman*): D. A. Bromley and (*speaker* to be announced), "Clusters in nuclei."

Polymers

Michael Szwarc and Fraser P. Price are *chairman* and *vice chairman* respectively.

24 June. H. F. Mark, "New developments in polymer chemistry." (R. St. John Manley, *discussion leader.*) B. Ranby, "New developments in cellulose structure"; C. Schuerch, "New horizons in cellulose applications"; J. J. Hermans, "Recent developments in the ultracentrifugation of synthetic polymers."

25 June. (T. Alfrey, *discussion leader*): R. F. Boyer, "The glass temperature and related temperatures in polymers." Remarks on R. F. Boyer's paper by Harry Frisch. F. J. McGarry, "Studies of fractures in polymers"; A. Katchalsky, "Mechanochemistry and muscular contraction."

26 June. J. Halpern, "Theory of catalysis by transition metals"; C. E. H. Bawn, "Catalysis by lithium and its derivatives." (G. Bier, *discussant.*) S. Okamura, "Polymerization in solid state."

27 June. S. Bywater, "The effect of solvent in anionic polymerizations"; J. Smid, "Kinetics of anionic polymerization and copolymerization"; P. Rempp, "Morphology of block polymers in solution"; A. Sehon, "Thermodynamics and kinetics of antibody-hapten reactions."

28 June. P. H. Plesch, "Theory of carbonium-ion polymerization"; J. Kennedy, "Isomerizations in low temperature carbonium-ion polymerizations."

Catalysis

W. Keith Hall and Paul Emmett are *chairman* and *vice chairman,* respectively.

1 July, R. J. Kokes and R. Glemza, "Oxygen adsorption on zinc oxide"; H. A. Taylor, "Hydrogen adsorption on zinc oxide." The influence of electronic factors on the infrared spectra of adsorbed species will be the subject of an open discussion.

2 July. "Infrared studies of alumina and silica-alumina catalysts—evidence for (or against) Lewis and/or Bronsted acidity." Open discussion, "Current problems in infrared spectroscopy as applied to adsorbed molecules" (R. P. Eischens, *discussion leader*). Note: The Petroleum Research Fund will make grants-in-aid to academics who lack support, but wish to take part in the second discussions on 1 and 2 July. Application forms may be obtained

from the chairman until 1 May 1963.

3 July. H. Pines, "Dehydration of alcohols over alumina catalysts"; H. Saltsburg and D. P. Snowden, "Electrical techniques in the study of gas-solid interactions"; G. Parravano, "Chemisorption and catalytic properties of cobalt ferrite and ruthenium dioxide"; W. L. Carrick, "Studies on the mechanism of olefin polymerization"; L. Vaska, "Homogeneous activation of hydrogen and oxygen by transition metal complexes."

4 July. P. J. Lucchesi, "The chemisorption of hydrogen on alumina and alumina-supported platinum catalysts"; G. A. Mills, "Nature and function of dual function catalysts ($Pt\text{-}Al_2O_3$)"; D. S. MacIver, "The physical chemistry of chromia-alumina."

5 July. L. H. Germer, "The adsorption of gases on metal surfaces"; C. C. Harris, "The activation of hydrogen over alloys of nickel and zinc"; M. J. D. Low, "The Mössbauer effect, a new tool for the study of catalysis."

Textiles

Richard Steele and Donald D. Gagliardi are *chairman* and *vice chairman,* respectively.

8–12 July. A. B. Craig, T. H. Guion and R. B. Thompson, "Acrylic polymer composition and its relationship to basic dye receptivity"; Max Feughelman, "The unfolding of α-keratin and the load-extension curve for single wool fibers"; Paul H. Lindenmeyer, "Crystallization habit and fiber formation"; J. Ross Colvin, "The mechanism of biosynthesis of cellulose"; H. Zollinger, "Reactivity of cellulose hydroxyl groups in crosslinking and related reactions"; G. C. Tesoro, Stephen Sello and Kelvin Domovs, "The reactivity of aziridinyl compounds in textile applications"; Waller George, "Information theory and its relation to the statistical aspects of fiber properties and fiber-forming processes"; Norman R. S. Hollies, "The statistical physics of fiber-forming process and products"; Dusan Prevorsek and W. James Lyons, "Behavior of single filaments under fatiguing in cyclic tension."

Elastomers

David Craig and M. L. Studebaker are *chairman* and *vice chairman,* respectively.

15 July. E. M. Bevilacqua and W. J. Wenisch, "Aging of SBR"; T. R. Paxton, "Radiation resistant elastomers"; Paul R. Story, Robert W. Murray and George H. Bebbington, "The chemistry of antiozonant action."

16 July. A. Y. Coran, "Vulcanization chemistry in the presence of delayed action accelerators"; G. E. Serniuk, P. E. Wei, and John Rehner, Jr., "New findings in the cure of EP rubber"; G. Kraus and J. T. Gruver, "Rheological behavior and processing of polybutadenes."

17 July. Sol Davison, M. A. Deisz, D. J. Meier and R. J. Reynolds, "Abrasion properties of tread stocks"; Torkel Weis-Fogh, "Recent work on the rubbery protein resilin"; F. Bueche, "The effect of temperature and other factors on the modulus of filled and unfilled rubber."

18 July. P. B. Stickney and R. D. Falb, "Old and new work on bound rubber formation in carbon black elastomer compounds"; Melvin P. Wagner and H. J. Wartmann, "The Mullins effect in silica reinforced elastomers"; H. Geldof, "The bacterial degradation of elastomers."

19 July. G. S. Trick, "Characterization of polymer networks by some newer physical methods"; Henry L. Hsieh, "Kinetics of polymerization of butadiene, isoprene and styrene with butyllithium."

Corrosion

A. U. Seybolt and Henry Leidheiser are *chairman* and *vice chairman,* respectively.

22 July. (Alan U. Seybolt, *discussion leader.*) Charles Tucker, "Low energy electron diffraction studies of the interaction of oxygen with the (100), (110)- and (111) faces of platinum"; W. W. Bradley, "Some factors affecting the initial oxidation of copper at 200°C." (Henry Leidheiser, *discussion leader.*) Paul E. Doherty and R. S. Davis, "The oxidation of aluminum single crystals"; R. L. Schwoebel, "Growth and structure of oxide on single crystals of magnesium."

23 July. (H. H. Uhlig, *discussion leader.*) Carl Wagner, "The phenomenon of passivity and oxidation of metals and alloys at elevated temperatures"; W. C. Hagel, "Anion diffusion in oxide crystals and its relationship to parabolic oxidation." (David A. Vermilyea, *discussion leader.*) J. T. Waber, "Study of the delayed transition between rate laws"; G. R. Wallwork and A. E. Jenkins, "Scaling reactions in the group IIIA and VA metals."

24 July. (Richard E. Grace, *discussion leader.*) Robert A. Rapp, "The formation of passivating internal oxide bands in Ag-In alloys"; G. C. Wood, "The application of electron probe microanalysis to oxidation research with special reference to the study of the oxidation of Fe-Cr base alloys." (R. A. Meussner, *discussion leader.*) Roger L. Levin and J. Bruce Wagner, "Kinetics of oxidation of Fe-Cr alloys and transport properties of the oxide in CO_2-CO mixtures"; Donald Caplan, "The oxidation of chromium and 26% Cr-Fe."

25 July. (Stanley T. Wlodek, *discussion leader.*) J. B. Berkowitz-Mattuck, Paul Blackburn, and Raymond Dills, "Oxidation resistance and test in molybdenum disilicides"; Roger A. Perkins, William L. Price, and William C. Coons, "Effect of temperature and pressure on the oxidation behavior of silicide coatings on refractory metals." (W. M. Fassell, Jr., *discussion leader.*) Paul Jorgensen, "Effect of an electric field on tarnishing reactions."

26 July. (Per Kofstad, *discussion leader.*) R. J. Hussey and W. W. Smeltzer, "The kinetics of thermal oxide film formation on zirconium"; G. Ervin Jr. and T. L. Mackay, "Oxidation of beryllium."

Medicinal Chemistry

Frederick Leonard and Murray Finkelstein are *chairman* and *vice chairman,* respectively.

29 July. Arne Brandstrom, "Physical-chemical properties of local anesthetics"; Aldo P. Truant, "Differentiating characteristics of neurotropic agents"; R. Lorente de No, "Mechanism(s) of local anesthetic action"; Lester C. Mark, "Physiologic disposition of general anesthetics"; Russell A. Van Dyke, "Metabolism of general anesthetics."

30 July. J. T. Dingle, "The possible role of lysosomol enzymes in connective tissue disease"; Robert A. Good, "The role of the thymus in development of immunological competence"; Hans J. Mueller-Eberhard, "The chemical nature of human complement components and their occurrence in tissue lesions"; Hans Selye, "Calcyphylaxis and the design of target-seeking drugs."

31 July. Eugene Berger, "Salt and

water transfer across the intestine"; Robert K. Crane, "Studies on the mechanism of intestinal absorption of sugars"; Guido Majno, "Serotonin and histamine on the structure and permeability of fine blood vessels"; David Schachter, "Active transport of calcium and iron in the small intestine"; Francis P. Chinard, "Permeability properties of the alveolar capillary barrier."

1 August. I. R. Innes, "The specificity of smooth muscle responses to drugs"; J. R. Fouts, "Differences in drug metabolism in various physiological states"; Ken Van Holde, "Association and disassociation of multi-chain enzymes"; John Ott, "Research through time-lapse photography."

2 August. John B. Thiersch, "Compounds with different toxicity from mother to litter in the rat"; Heinz Herrman, "Analysis of effects of chemicals on development."

Food and Nutrition

Lloyd W. Beck and R. S. Harris are *chairman* and *vice chairman*, respectively.

5 August. Chemistry of food proteins (J. E. Varner, *chairman*): Aaron M. Altschul, "Chemistry and subcellular distribution of oilseed proteins"; J. H. Woychik, "Isolation and characterization of wheat proteins." *Chemistry of food proteins* (continued) (Irvin E. Liener, *chairman*): J. R. Brunner, "Nature and significance of the milk fat-globule membrane"; W. A. Landmann, "Meat proteins."

6 August. Nutritive value of proteins (P. Derse, *chairman*): H. H. Williams, "Determination of amino acid availability"; Richard Jansen, "Utilization of dietary protein." *Carbohydrate polymers* (R. A. Clayton, *chairman*): F. Smith, "The structure of some carbohydrate polymers of importance to the food industry"; C. T. Greenwood, "The structure, properties, and amylolytic degradation of starch."

7 August. Lipids (Karl F. Mattil, *chairman*): Charles Sweeley, "Isolation, characterization and function of adrenal lipids"; J. Boldingh, "Isolation and identification of trace constituents in lipids." *Lipids* (continued) (R. G. Langdon, *chairman*): Paul Stumpf, "Comparative aspects of fatty acid biosynthesis"; John Law, "Biochemical studies on some unusual fatty acids."

8 August. Calculus formation in soft tissues (Allan L. Forbes, *chairman*): Robert Van Reen, "Experimentally induced calculi"; Charles Cornelius, "Calculus problems in farm animals"; Allan L. Forbes, "Calculus formations in human beings." *Nutrition and dental health* (R. S. Harris, *chairman*): Fred L. Losee, "Soils, minerals and health."

9 August. Toxicants in foods and food regulation (Donald G. Crosby, *chairman*): Gerald N. Wogan, "Toxic substances from microorganisms"; Edwin L. Hove, "Multiple biological approaches in research."

Separation and Purification

Carl H. Deal and K. C. D. Hickman are *chairman* and *vice chairman* respectively.

19–23 August. C. L. Burger, "The zonal ultracentrifuge"; Per Ake Albertsson, "The separation of particles and macromolecules by partition"; A. K. Solomon, "The permeability of biological membranes"; R. B. Long, "Film permeation"; Henry Freiser, "Chelating agents in ionic separations"; H. Schildknecht, "Laboratory scale separation and purification of aromatics by continuous column crystallization"; Walter Meyer and R. S. Olsen, "Truly continuous ion exchange"; J. M. Prausnitz, "Progress in the thermodynamics of high pressure vapor liquid equilibrium"; Karl Kammermeyer, "Separation problems in manned space flight"; K. C. D. Hickman, "Further experiments in surface phenomena and water conversion."

Instrumentation

Wendell G. Sykes and Ralph Clarridge are *chairman* and *vice chairman*, respectively.

12–16 August. Enoch J. Durbin, "Some experimental methods of studying atmospheric density"; Frank Brock, "Ionization gages for vacuum measurement"; Harry Matheson, "Infrasonics, the gap between sound and weather"; Mason Yearian, "Accelerator instrumentation problems"; Karl K. Brown, "Instrumentation of electronic linear accelerators"; G. K. O'Neill, "Instrumentation problems in particle accelerators"; J. B. Willis, "Instruments for atomic absorption spectroscopy"; Reginald Greenwood, "Neutron capture gamma ray analysis"; Thomas C. Furnas, Jr., "X-ray image intensifier and automatic diffractometry"; Henderson Cole, "Computer-controlled X-ray diffractometer"; Gerald Whipple, "Digital computer pattern recognition of the electrocardiogram"; J. F. Elliott, "Special electronic transducers"; J. S. Courtney-Pratt, "Optical measurement of the rotation rate of Telstar"; George F. Smith, "Applications of the laser to instrumentation"; Paul Smith, "New developments in tunneling phenomena"; Raymond Lyttleton, "On the equality of charges in space"; Vernon Hughes, "Experimental limit to the electron-proton charge difference by the atomic beam method"; John G. King, "Experiments to determine the neutrality of matter"; W. G. Anderson and H. M. Halpern, "Processing of audio frequency data using non-coherent optical analogs"; William P. Schreiber, "Computer analysis of image transmission systems"; Joseph L. Snyder, "A new measurement of the gravitational red shift with the Mössbauer effect"; Ben Melton "Low level signal detectors used in seismology"; D. P. Johnson, "Stable table control systems"; P. T. C. de Boer, "The integrating Schlieren system in shock wave studies."

Cancer

Joseph Leighton and Milan J. Kopac will serve as *chairman* and *vice chairman* for these sessions on physiopathology of the spread of cancer.

26 August. Leonard Weiss, "Metastasis, infiltration and cell surface structure"; A. A. Moscona, "Cell differentiation and cell adhesion." Discussant: William Regelson. Harry Eagle, "Cultured cells as an experimental tool in the study of cancer"; Clyde J. Dawe, "Stromal-parenchymal relationships in viral carcinogenesis."

27 August. (Robert Love, *chairman*): Alfred Glücksmann, "Hormonal influences on tumor induction by chemical carcinogens"; L. M. Franks, "Some effects of hormones and other growth factors on target organs." (Aart Schaberg, *discussant.*) Paul Weiss, "Cell surface, cell environment, and cell locomotion"; George O. Gey, "Observations of collagenolytic activity of normal and tumor cells."

28 August. (Paul Kotin, *chairman*): B. Sylvén, "Biochemical factors possibly concerned in the destructive-

ness of malignant tumors"; Robert E. Greenfield, "Studies on the effects of rodent tumors on the host"; Pietro M. Gullino, "The environment of neoplastic cells in solid rodent tumors"; Edwin R. Fisher and Bernard Fisher, "Further studies related to local and metastatic growth of tumor"; Sumner Wood, Jr., "Mechanisms of tumor metastasis."

29 August. (W. Bradford Patterson, *chairman*): A. C. Wallace, "Influence of route of inoculation on tumor metastasis"; Sheldon C. Sommers and Gilbert H. Friedell, "Relation of lymphocytes to tumor spread"; Louis B. Thomas, "The spread of leukemia in the brain and meninges"; Harold A. Rashkis, "Behavior, central neural mechanisms and cancer"; Norman Molomut, "Sensory stimuli (audio-stress): influence on chemical carcinogenesis."

30 August. (Sidney Farber, *chairman*): Harry S. N. Greene, "The distribution of blood-borne cancer cells and its relationship to metastasis." *Chemotherapy of metastasis* (Panel discussion): Prosper Loustalot, Gaylord M. Conzelman, Jr., Abraham Goldin, Alfred Handler. *General discussants*: Leslie Foulds, Kai Nielsen, Jan Mellgren, Haruo Sato.

New Hampton School

Chemistry and Physics of Liquids

Zevi W. Salsburg and Dean C. Douglass are *chairman* and *vice chairman*, respectively.

10–14 June. M. L. McGlashan, "Thermodynamics of mixtures of η-alkanes"; J. Hijmans, "Principle of corresponding states for chain-molecule liquids and their mixtures"; S. A. Rice, "Kinetic theory of simple liquids"; I. Oppenheim, "Transport properties of liquids"; F. Stillinger, "Properties of the critical state"; P. Debye, "Molecular forces and critical opalescence"; D. McIntyre, "Studies of critical opalescence by light scattering"; M. E. Fisher, "The range of correlation in classical systems"; H. Frisch, "Selected topics on random geometry"; K. S. Singwi, "Quasi-crystalline nature of liquids and cold neutron scattering"; G. Brady, "Holes, icebergs, and clusters in liquids"; J. Powles, "N. M. R. relaxation in mobile liquids"; J. K. Percus, "The pair distribution function in classical systems."

Nucleic Acids

H. Fraenkel-Conrat and Seymour Benzer will be *chairman* and *vice chairman* for these sessions on the structure, synthesis, and fractionation of nucleic acids.

17–21 June. The emphasis will be on chemical and enzymatic methods in the field. In 1964 the emphasis will be more on genetic aspects and on the techniques of molecular biology.

Fractionation methods for nucleic acids and oligonucleotides (R. W. Holley, *chairman*): B. J. McCarthy, G. Rushizky, R. M. S. Smellie, M. Staehelin, N. Sueoka, and H. G. Zachau. *Gross structure of nucleic acids (physicochemical techniques)* (E. P. Geiduschek, *chairman*): J. R. Fresco, D. Hogness, A. D. Kaiser, A. Peacocke, M. F. H. Wilkins, and H. J. F. Cairns. *Fine structure of oligonucleotides and nucleic acids (chemical and enzymatic studies, s-RNA)* (C. Dekker, *chairman*): G. Tener, P. Gilham, J. Moffatt, D. Rammler, and E. Chargaff. *Fine structure of oligonucleotides and nucleic acids (chemical and enzymatic studies, s-RNA)* (continued) (M. Laskowski, *chairman*): I. R. Lehman, L. A. Heppel, Z. Sormova, W. Fiers, Rhazell, and F. Egami. *Fine structure of oligonucleotides and nucleic acids (chemical and enzymatic studies, s-RNA)* (continued) (G. L. Cantoni, *chairman*): A. A. Bogdanov, U. Littauer, B. P. Doctor, H. G. Boman, P. Berquist, and P. Mandel. *Modification of nucleic acids* (H. Fraenkel-Conrat, *chairman*): P. Brookes, D. M. Brown, D. Shugar, H. Schuster, and K. S. Smith, and M. Simon. *Chemical synthesis of oligonucleotides and nucleic acids* (Lord Todd, *chairman*): F. Cramer, L. Grossman, Pollman, C. B. Reese, and D. Strauss. *Cell-free biosynthesis, DNA, RNA* (J. Hurwitz, *chairman*): F. J. Bollum, R. Litman, S. Ochoa, A. Stevens, G. Schramm, S. Weiss, S. Wildman, M. Singer, T. August, and R. M. Franklin.

Proteins

Herbert A. Sober and Harold A. Scheraga are *cochairmen.*

24–28 June. (Speakers to be announced) "Implications for proteins from nucleic acid conference"; "Genetic relationships among proteins"; "Immuno-chemistry"; "X-ray diffraction studies of oxygenated and reduced hemoglobin"; "Protein sub-units"; "Side-chain interactions"; "Implications of the cotton effect for proteins"; "Mapping of active sites"; "Specific site labelling"; "Enzyme mechanisms"; "Enzyme kinetics by relaxation spectra"; "Non-enzymatic modifications and cleavages of peptide chains."

Coal Science

L. L. Newman and John C. Quinn are *chairman* and *vice chairman.*

1 July. Reactions of single crystals of graphite (P. L. Walker, Jr., *discussion leader*): G. R. Hennig, "Surface reactions of single crystals"; A. E. B. Pressland, "Oxidation of single crystals of graphite as studied by electron microscopy"; I. M. Dawson, "Studies of gas-carbon reactions using single crystals of graphite." *Kinetics and structural studies* (Xavier Duval, *discussion leader*): John M. Thomas, "Optical microscopy in kinetic studies"; H. Harker, "Spin resonance in kinetic studies"; S. Ergun, "X-ray diffraction in kinetic studies."

2 July. Mechanism of the reactions of carbon (S. Ergun, *discussion leader*): E. Wicke, "Profile concentration in front of a burning carbon surface"; Xavier Duval, "Mechanism of the catalytic surface reactions of carbon"; F. Vastola, "Reactions of carbon in plasma." *Special techniques in kinetic studies* (E. Wicke, *discussion leader*): R. F. Strickland-Constable, "Reaction of carbon with carbon dioxide activated by low-voltage electrons"; J. J. Tietjen, "Thermoelectric power of graphite as affected by chemisorption of oxygen"; M. Mentser, "Oxygen exchange reactions of carbons."

3 July. Current developments in gasification technology (Martin A. Elliott, *discussion leader*): F. Moseley, "The hydrogenation of coal chars at Highpressure"; G. U. Hopton, "Rummel slagbath gasification of coal"; H. Benson, "Role of producer gas from coal in the iron-steam process for hydrogen production"; H. R. Hoy, "The work of B.C.U.R.A. on slagging gasification"; G. H. Gronhovd, "The Grand Forks high-pressure slagging gasifier."

4 July. Hydrogasification (Henry R. Linden, *discussion leader*): Raymond Hiteshue, "Production of high-Btu gas

by reacting carbon and hydrogen at high temperatures and pressures"; J. D. Blackwood, "The C.S.I.R.O. char hydrogenation reactor"; C. Y. Wen, "Kinetics of the reactions of coal and char with hydrogen, and hydrogen-water vapor mixtures." *Computer simulation of gasification operations in fixed-bed processes* (J. P. McGee, *discussion leader*): A. L. Hodge, "Some thermochemical aspects of various injected fuels with oxygen in the iron blast furnace"; H. W. St. Clair, "Simulation of a countercurrent solid-gas reactor."

5 July. Magnetohydrodynamics (Harry Perry, *discussion leader*): T. S. Brogan, "The potential of magnetohydrodynamics for the coal industry"; W. S. Emmerich, "The role of coal in magnetohydrodynamic power generation"; John C. Quinn, "Plans for the next Gordon Research Conference on coal science."

Scientific Information Problems in Research

J. Scott Maclennan and Hugh C. Wolfe are *chairman* and *vice chairman*, respectively.

8 July. Welcome and keynote address: Alvin M. Weinberg, "Science, government, and information." *The scientists' needs for information:* Robert J. Howerton and Dorwin Cartwright.

9 July. The scientists' needs for information (continued): Oscar T. Marzke and John S. Ball. *The role of the primary journal actual and potential:* Marshall Gates and Milton O. Lee.

10 July. Economics, page charges, photocopying, copyright: Hugh C. Wolfe and J. Roger Porter. *Publication techniques and their relationship to information storage and retrieval:* Joseph H. Kuney, Herbert R. Koller, and Gordon Walker.

11 July. William V. Thorpe, "The editor-referee problems"; Edward J. Brunenkant, "Report literature"; I. M. Leavitt, "The moon-target for tomorrow."

12 July. Panel discussion: Review and evaluation (Bart E. Holm, *chairman*): H. Menzell and Ralph Shaw.

Adhesion

Frederick R. Eirich and James R. Huntsberger are *chairman* and *vice chairman*, respectively.

15 July. L. R. Lunsford, "Analysis of stress distribution in bonded joints"; G. Irwin, "Separation mechanics of adhesive joints and brittle fracture of strain rate sensitive materials." (H. A. Perry, *discussion leader.*) I. M. Zelman and B. Manire, "Prediction of adhesive and cohesive failure with the Fokker

Program Summary, Gordon Research Conferences for 1963

Qualified scientists are invited to submit applications for attendance at the Gordon Research Conferences. Application blanks may be obtained by returning the postcard on page 1093 to Dr. W. George Parks, Department of Chemistry, University of Rhode Island, Kingston, R.I.

Date	Colby Junior College	New Hampton School	Kimball Union Academy	Tilton School
10–14 June	Hydrocarbon chemistry	Chemistry and physics of liquids	Lipid metabolism	Biochemistry and agriculture
17–21 June	Nuclear chemistry	Nucleic acids	Cell structure and metabolism	Air quality criteria
24–28 June	Polymers	Proteins	High pressure research	Magnetic resonance
1–5 July	Catalysis	Coal science	Coenzymes and metabolic pathways	Chemistry and physics of space
8–12 July	Textiles	Scientific information problems in research	Chemistry, physiology and structure of bones and teeth	Chemistry and metallurgy of semiconductors
15–19 July	Elastomers	Adhesion	Physical metallurgy	Organic coatings
22–26 July	Corrosion	Radiation chemistry	Chemistry at interfaces	Organic reactions and processes
29 July–2 Aug.	Medicinal chemistry	Steroids and other natural products	Toxicology and safety evaluations	Energy coupling mechanisms
5–9 Aug.	Food and nutrition	Inorganic chemistry	Solid state studies in ceramics	Photonuclear reactions
12–16 Aug.	Instrumentation	Statistics in chemistry and chemical engineering	Chemistry and physics of solids	Fluorine chemistry
19–23 Aug.	Separation and purification	Microbiological deterioration	Ion exchange	Geochemistry—origin of petroleum
26–30 Aug.	Cancer	Analytical chemistry	Molten salts	Glass

tester"; R. Myers, "Detection of incipient adhesive failure of coatings." (W. K. Asbeck, *discussion leader.*)

16 July. R. J. Good, "Thermodynamics of liquid surfaces"; D. D. Eley, "Heats of wetting and surface potentials at aluminum surfaces." (R. Simha, *discussion leader.*) V. L. Vakula and S. S. Voyutski, "Molecular structure of polymers and their interadhesion"; A. H. Nissan and S. S. Sternstein, "The nature of the adhesion between cellulose fibers." (H. Schonhorn, *discussion leader.*)

17 July. J. Skewis, "The role of molecular diffusion in polymer tack"; W. Fackler, Jr., "Rapid test of setting times of adhesive bonds." (J. Bikerman, *discussion leader.*) S. Reegen, "Factors determining the peel strength of polyurethanes"; G. Goldfinger, "Mechanism of adhesive failure between adherends of very different elastic properties." (D. H. Kaelble, *discussion leader.*)

18 July. C. J. Shoaf, H. R. Krysiak, and T. C. Mayberry, "Adhesives for Dacron polyester tire cord"; J. Outwater, "The strength of glass as bonded to resins." (J. Huntsberger, *discussion leader.*) W. E. Cass, "Chemical factors in bonding resins to glass fibers"; L. E. St. Pierre, "Adhesion and boundary lubrication"; I. Zelman, "Adhesion of elastomeric sealants at liquid nitrogen temperatures." (H. F. Wakefield, *discussion leader.*)

19 July. H. H. Levine, "Polybenzimidazoles"; A. F. Lewis, "Adhesive behavior of amine cured epoxy resins." (A. Tomashot, *discussion leader.*)

Radiation Chemistry

H. A. Dewhurst and M. Dole are *chairman* and *vice chairman*, respectively.

22 July. A. G. Tenner, "Energy degradation processes"; A. Kupperman, "Low energy electron impact spectroscopy."

23 July. D. A. Ramsay, "Molecular electronic spectroscopy"; J. R. McNesby, "Vacuum UV photochemistry."

24 July. E. J. Hart, "Hydrated electron in radiation chemistry." Contributed research papers.

25 July. G. Meisels, "Gas phase dosimetry and the radiolysis of ethylene"; R. Holroyd, "Liquid phase radiolysis of hydrocarbons"; S. Okamura, "Radiation induced polymerization of ring compounds."

26 July. R. R. Hentz, "Radiation chemistry of heterogeneous systems."

Steroids and Other Natural Products

William I. Taylor is *chairman.*

29 July–2 August. The following persons have been invited to speak: A. Arigoni, W. G. Dauben, B. Gilbert, H. Grisebach, W. Herz, Anders Kjaer, S. G. Levine, A. I. Scott, G. A. Sim, G. F. Smith, G. Stork, and E. Wenkert.

Inorganic Chemistry

Robert W. Parry and Robert R. Girardot are *chairman* and *vice chairman*, respectively, for these sessions on the structural developments in inorganic chemistry and their chemical implications.

5 August. Boron systems: William N. Lipscomb, (Subject to be announced); Grant Urry, "The boron halides." *Open session.* (Robert W. Parry, *discussion leader*). Participants: A. D. McElroy and others to be announced.

6 August. Metal carbonyl systems: Lawrence Dahl, "Metal carbonyl structures"; F. Albert Cotton, "Structures and spectra"; Geoffrey Wilkinson, (subject to be announced); Herbert D. Kaesz, (subject to be announced).

7 August. Owen S. Mills, (subject to be announced); (speaker and subject to be announced). *Open session.* (Ronald Nyholm, *discussion leader.*) *Participants*: Bruce King and Rolf Herber.

8 August. New developments in the less common coordination numbers: J. Lynn Hoard, "Coordination number eight"; Edwin M. Larsen, "Recent chemistry of coordination number eight." (Speaker and subject to be announced.)

9 August. J. R. Perumareddi, "Spectra of coordination number eight"; J. Lynn Hoard, "Coordination number seven"; Earl Muetterties, "Coordination number five."

This program is supported in part by a grant from the Directorate of Chemical Sciences, Air Force Office of Scientific Research.

Statistics in Chemistry and Chemical Engineering

Mavis B. Carroll and Harry Smith, Jr., are *chairman* and *vice chairman*, respectively.

12 August. (A. M. Schneider, *chairman*): W. L. Nicholson, "Indirect measurement problems in radiochemistry." (R. A. Bradley, *chairman*): J. B. Kruskal, "Multidimensional scaling."

13 August. (C. L. Mallows, *chairman*): F. J. Anscombe, "Bayseian statistics." (M. Godfrey, *chairman*): D. R. Cox, "The choice between different models."

14 August. (R. A. Freund, *chairman*): A. H. Hald, "Attribute sampling plans and their dependence on lot size, costs, and prior distributions." (W. J. Youden, *chairman*): D. Dugue, "Extreme values in quality control."

15 August. (P. T. Atteridg, *chairman*): J. P. Comer, "Applications of stochastic approximation to process control." (R. W. Kennard, *chairman*): S. M. Free, "Quantifying a series of chemical analogs."

16 August. (Clark Holloway, Jr., *chairman*): J. R. Bainbridge, "Statistical pitfalls in chemistry and chemical engineering."

Microbiological Deterioration

Arthur M. Kaplan and Hugh D. Sisler are *chairman* and *vice chairman*, respectively.

19 August. The microorganism (Hillel S. Levinson, *discussion leader*): M. R. J. Salton, "The cell wall"; Eugene D. Weinberg, "Cellular sites of attack by antimicrobial compounds."

20 August. The microorganism (continued): John F. Wilkenson, "The microbial production of gums and slimes." *Antimicrobial formulation* (Saul Rich, *discussion leader*): Takeru Higuchi, "Formulation of antimicrobial agents, physical chemical basis."

21 August. Antimicrobial formulation (continued): Charles C. Yeager, "Formulation and its effects on antimicrobials in industrial processes"; H. P. Burchfield, "Biological and physical interactions in agricultural formulation." *Lignin* (Richard C. Quittenton, *discussion leader*): Stewart A. Brown, "The chemistry and synthesis of lignin."

22 August. Lignin (continued): Walter J. Shubert "Microbiological degradation of lignin"; Joseph Kuc, "The relationship of plant phenols and inhibition of plant pathogens." *Microbial corrosion of metals* (Carl Wessel, *discussion leader*): Carl H. Oppenheimer, "The role of microorganisms in metal corrosion."

23 August. Summary and open discussion of the implication of conference proceedings (M. R. J. Salton, *discussion leader*).

Analytical Chemistry

Stephen Dal Nogare and Ralph Adams are *chairman* and *vice chairman,* respectively.

26 August. James W. Robinson, "Atomic absorption spectroscopy"; Richard S. Juvet, "Practical aspects of gas chromatography."

27 August. Ward B. Schaap, "Polarography in nonaqueous solvents"; Stanley Wawzonek, "Polarography of organic compounds"; James S. Fritz, "Organic functional group analysis."

28 August. Edward G. Brame, Jr., "Nuclear magnetic resonance"; Lawrence H. Piette, "Electron Paramagnetic resonance"; Donald R. Johnson, "Attenuated total reflectance."

29 August. Hermenegild A. Flaschka, "Complexes." Open session.

30 August. Walter J. Blaedel, "Reaction kinetics in analysis."

Kimball Union Academy

Lipid Metabolism

Manfred L. Karnovsky and David Kritchevsky are *chairman* and *vice chairman,* respectively.

10 June. Fatty acids: S. Wakil, "Newer developments in the biosynthesis of fatty acids"; R. Vagelos, "Aspects of fatty acid biosynthesis"; K. E. Bloch, "Enzymatic synthesis and comparative biochemistry of unsaturated fatty acids"; I. Fritz, "Carnitine and its role in fatty acid metabolism."

11 June. Phosphatides and other complex lipids (A): W. Lands, "Positional specificities in phosphatide synthesis"; C. Ballou, "Inositol phosphatides"; E. Lederer, "Structural and biosynthetic studies on mycobacterial lipids, I"; H. E. Carter, "Complex glycolipids"; S. Roseman, "Studies on the metabolism of the sialic acids."

12 June. Functions of complex lipids: H. Nikaido, "Phospholipid metabolism associated with the active transport of β-thiogalactosides in *E. coli*"; S. Fleischer, "Role of lipids in mitochondrial function"; M. Rapport, "Immunological activity of sphingolipids." *Phosphatides and other complex lipids (B)*: S. Bergstrom, "Chemistry and metabolism of the prostaglandins"; E. Lederer, "Structural and biosynthetic studies on mycobacterial liquids, II."

13 June. Lipid absorption, storage, mobilization, and transport: F. Mattson, "Role of lipolysis in the absorption of glycerides"; D. Steinberg, "Fatty acid mobilization and utilization"; J. Marsh, "Studies on the biosynthesis of plasma lipoproteins"; D. Fredrickson, "Tangier disease—one of the newer genetically determined lipid storage diseases." General discussion.

14 June. Lipids of insects: A. Devir, "Fat transport in the locust"; R. Clayton, "Utilization of sterols in insects"; E. Van Handel, "The obese mosquito."

Cell Structure and Metabolism

Alexander Leaf and Michael Kasha are *cochairmen* for these sessions on the properties of water and its role in biological systems.

17 June. Thermodynamic aspects of protein hydration (chairman to be announced): H. S. Frank, "Water structure and the thermodynamics of hydration"; W. Kauzmann, "Thermodynamics of hydrocarbon-water interaction applied to the protein molecule." (W. Stockmayer, *chairman*): G. Nemethy, "A statistical mechanical model of water interaction with proteins"; I. M. Klotz, "Hydration and behavior of proteins."

18 June. Quantum chemical aspects (M. Kasha, *chairman*): Bentz B. Howard, "Present state of the theory of hydrogen bonding, and the structure of water"; R. Marchi and H. Eyring, "Significant structure theory applied to water"; L. Augenstein, "The possible nature of excitation events and radiation products in aqueous systems." *Physical studies of protein hydration* (N. Davidson, *chairman*): H. Berendsen, "NMR study of water adsorbed on oriented protein fibers"; R. Glick, "NMR study of proteins under hydration."

19 June. (L. Mandelkern, *chairman*): C. Tanford, "The free energy of hydrophobic bond formation"; P. V. Hippel, "The role of water in the formation and stabilization of the collagen structure." *Transport problems* (chairman to be announced): Barnett Rosenberg, "Electrical conductance of protein as a criterion of hydration"; Z. Luz, "NMR measurements of proton transfer rates in aqueous buffer solutions."

20 June. Permeability of membranes (A. Leaf, *chairman*): Royal E. Collins, "Physics of aqueous flow through finely porous media"; O. Kedem, "Thermodynamics of water transport through membranes"; J. D. Bernal, "Implications of water structure in biology."

21 June. (M. J. Polissar, *chairman*): A. Mauro, "The paradox of diffusion and bulk water permeability of membranes"; A. K. Solomon, "Water transport through biological membranes."

High Pressure Research

Orson L. Anderson and Clayton Swenson are *cochairmen.*

24 June. Inert gas solids (Stuart Rice, *chairman*): J. S. Dugdale, "Equation of state, solid He^3"; A. F. Schuch, "X-ray studies of solid He^3"; J. Stryland, "P-V measurements of solid argon." *Magnetic properties* (Harvey Brooks, *chairman*): George Benedik, "Magn. resonance under P"; J. E. Schirber, "Electronic properties"; (speaker and subject to be announced).

25 June. Lattice dynamics (W. P. Mason, *chairman*): T. H. K. Barron, "Theory"; H. J. McSkimin, "Elastic constants of quartz under P"; W. Daniels (subject to be announced); C. Swenson, "Bulk compressibility." *Ultra pressure equation of state* (Comings, *chairman*): Harry G. Drickamer, "Lattice constants"; J. C. Jamieson, "Phase transitions"; S. Katz, Ultrasonic measurements."

26 June. Mechanical properties (D. Newhall, *chairman*): H. L. D. Pugh, "Ductility under pressure"; A. Brobrowsky, "Elasticity problems"; (speaker and subject to be announced). *Geophysics* (A. Francis Birch, *chairman*): (speaker to be announced), "Calculations of the earth's temperature and pressure." (J. J. Gilvarry, *discussant.*)

27 June. Phase transitions—ultrahigh pressure (George Kennedy, *chairman*): A. Van Valkenberg, "Microscopic high pressure films"; G. Jura, "Metallic state." *Activated processes* (A. Lawsen, *chairman*): David Lazarus (subject to be announced); A. L. Ruoff, "Creep under high pressure"; E. U. Franck, "Pressure dependence of liquid-liquid immiscibility curves."

28 June. Crystal growth (H. S. Young, *chairman*): O. W. Florke, "Growth and order of potassium felspars."; C. J. M. Rooymans, "Metallic state in high pressure transitions"; S. Takasu (subject to be announced).

Coenzymes and Metabolic Pathways

Thomas H. Jukes and Arnold D. Welch are *chairman* and *vice chairman,* respectively.

1 July. (David Perlman, *chairman*): R. H. Abeles, "Enzymatic functions of vitamin B_{12} in diol dehydrases"; F. M. Huennekens, "Hydride ion mechanisms in folic acid and vitamin B_{12} coenzymes"; J. C. Rabinowitz, "Some aspects of microbial pyruvate metabolism." (Harland Wood, chairman): S. Rosenthal, "Vitamin B_{12} and methionine biosynthesis"; R. Mazumder, "Metabolism of methylmalonyl Co A in animal tissues." (W. Sakami, *discussion leader.*)

2 July. (J. M. Buchanan, *chairman*): B. N. Ames, "Control mechanisms of histidine biosynthesis"; H. Vogel, "Arginine biosynthesis and its control by repression"; G. M. Tomkins, "Hormonal control of enzyme action." (L. O. Krampitz, *chairman*): W. Frisell, "Intramitochondrial distribution and purification of electron-transfer flavoenzymes"; H. Sprince, "Biochemical aspects of indole metabolism in the mammalian organism."

3 July. (*Chairman* to be announced): M. J. Osborn, "Biosynthesis of bacterial cell wall lipopolysaccharides"; P. W. Robbins, "The conversion of O-antigens by bacteriophage"; P. Reichard, "Enzymatic reduction of ribonucleotides." (F. Maley, *discussion leader*), (*Chairman* to be announced): E. Borek, "The methylating system of s-RNA"; A. Nygaard, "Kinetics and specificity of DNA-RNA complex formation."

4 July. (B. Horecker, *chairman*): M. Simpson, "Amino acid incorporation into isolated yeast ribosomes, changes in the system during logarithmic phase of growth"; A. J. Wahba, "The genetic code." (W. L. Williams, *chairman*): D. B. Sprinson, "Aromatic biosynthesis"; H. P. Broquist, "The aminoadipic pathway of lysine biosynthesis in fungi."

5 July. (B. R. Baker, *chairman*): J. R. Bertino, "Mechanism of action of folic acid antagonists." (Dorris Hutchison and S. F. Zakrzewski, *discussion leaders.*) P. Calabresi, "Inhibition of DNA viruses by pyrimidine nucleoside analogs."

Chemistry, Physiology, and Structure of Bones and Teeth

George Nichols, Jr., and Philip Henneman are *chairman* and *vice chairman,* respectively.

8 July. Short communications selected from submitted abstracts (to be sent to Philip Henneman, *chairman,* before 15 May). *Ultrastructure of hard tissue* (Aaron Posner, *chairman*): L. Richelle, "Ultrastructure of bone"; (William F. Neuman, *discussant*).

9 July. E. D. Eanes, "The effect of fluoride on bone crystals"; J. Menczel, "The reaction of fluoride with bone and its possible clinical implications"; J. D. Hoffman, "Nucleation theory." *Metabolism of bone with emphasis on actions of parathyroid hormone* (H. F. DeLuca, *chairman*): H. Rasmussen and H. F. DeLuca, "Cellular and subcellular actions of parathyroid hormone and vitamin D."

10 July. B. Flanagan and G. Nichols, Jr., "Changes in bone cell metabolism induced by parathyroid hormone"; J. W. Hekkelman, W. A. de Voogd van der Straaten, M. P. M. Herrmann-Erlee and P. J. Gaillard, "Bone metabolism and the action of parathyroid extract: an enzymological approach"; D. V. Cohn, "Oxidative metabolism of bone and the effect of parathyroid extract." *Biosynthesis and resorption in cartilage and bone* (S. Fitton-Jackson, *chairman*): M. Owen, "The kinetics of osteogenic cells"; W. P. Deiss, "Metabolic processes in *calvaria*"; R. Perlman and A. Dorfman, "The metabolism of the protein-polysaccharide of developing cartilage."

11 July. J. Wetherall, "Sulfate metabolism and calcification in developing epiphysis"; G. Weissmann, "Aspects of catabolism of extracellular matrices." *Research on oral hard tissues* (R. Sognnaes, *chairman*): R. Frank, "Ultrastructure of normal and pathological human calcified dental tissues with references to bone."

12 July. Novel approaches to the study of mineralized tissues (C. A. L. Bassett, *chairman*): R. O. Becker and C. A. L. Bassett, "Bio-electric phenomena relating to bone"; M. H. Shamos and L. S. Lavine, "Physical bases for bio-electric effects"; R. C. Mellors, "Subcellular analysis with the electron probe"; A. H. Silver, "Magnetic resonance."

Physical Metallurgy

H. W. Paxton and J. W. Cahn are *chairman* and *vice chairman,* respectively, for these sessions on body-centered cubic materials.

15–19 July. W. Rall, "Analysis in the parts per million range"; A. A. Johnson, "Point defects in b.c.c. materials"; D. Beshers, "Interstitial atoms in b.c.c. materials"; Z. Basinski, "Flow in b.c.c. materials"; A. S. Keh, "Flow in b.c.c. materials"; R. E. Smallman, "Properties and stoichiometry in b.c.c. alloys"; G. T. Hahn, "Application of dislocation dynamics to yielding and fracture"; R. Borg, "Self diffusion in b.c.c. materials"; R. H. Chambers, "Dislocation motion in very pure b.c.c. metals"; A. D. Brailsford, "Theories of dislocation mobility"; A. Sleeswijk, "Twinning and stacking faults"; D. Stein, "Dislocation motion in b.c.c. metals"; G. Cowan, "Limiting shear strength of metals"; B. L. Mordike, "Observations on single crystals of b.c.c. metals"; J. C. M. Li, commentary.

Chemistry at Interfaces

James M. Holmes and Donald Graham are *chairman* and *vice chairman,* respectively.

22 July. Liquid interfaces (Paul Becher, *chairman*): Ulrich P. Strauss, "Polyelectrolytes as micellar systems"; Willard D. Bascom, "The role of surface tension gradients in the spontaneous spreading of liquids on solids"; A. Vrij, "Light scattering in soap films."

23 July. Biological interfaces (John D. Arnold, *chairman*): J. A. Clements, "Surface tension in the lung"; J. M. Tobias, "Structural-functional dynamics of the nerve cell surface"; W. Stoeckenius, "Molecular structure of membranes at cellular interfaces."

24 July. Gas-solid interfaces (Carl Amberg, *chairman*): W. A. Steele, "Some aspects of the theory of monolayer adsorption of gases on solids"; P. G. Shewmon, "Determination of the atomic nature of adsorption sites on metals from surface energy measurements"; R. Haul, "On the transport mechanism of physically adsorbed molecules in pores."

25 July. Monolayers (E. D. Goddard, *chairman*): M. van den Tempel, "Surface dilational viscosity: application to stability of thin films"; M. Blank, "Monolayer permeability to gases"; B. A. Pethica, "The thermodynamic properties of ionized monolayers."

26 July. Additional topics and general discussion (L. E. Copeland, *chairman*).

Toxicology and Safety Evaluations

Frederick Coulston and Leonard J. Goldwater are *chairman* and *vice chairman,* respectively.

29 July. (C. R. Brewer, *moderator*): J. O. Hoppe, "Acute toxicity and the blood-brain barrier"; D. P. Rall, "Exchange of drugs and chemicals between blood, brain, and cerebrospinal fluid." (J. P. Frawley, *moderator*): N. G. Anderson, "Alterations in the molecular scans of cells and tissues produced by drugs"; J. J. Burns, "Application of metabolic data to toxicity studies."

30 July. (W. O. Nelson, *moderator*): W. Lenz, "Lessons to be learned from the thalidomide tragedy"; H. Tuchmann-Duplessis, "Carbohydrate metabolism and congenital defects." (L. Z. Saunders, *moderator*): P. B. Sawin, "Growth, reproduction, and spontaneous anomalies in the rabbit"; G. F. Somers, "Test procedures for teratogenic effects of drugs."

31 July. (B. Oser, *moderator*): J. Warkany, "Effect of natural and synthetic substances on prenatal development"; R. Hertz, "Effects of steroids in animals and man." (L. J. Goldwater, *moderator*): A. C. Ladd, "Normal lead in blood and urine—1962: an international study"; W. A. Thomas, "Effects of drugs and chemicals in rat diets on the molecular structure of cells."

1 August. (P. S. Larson, *moderator*): G. E. Paget, "Electron microscopy in the study of drug toxicity"; C. G. Zubrod, "Prediction of toxicity in man from animal models." (F. Coulston, *moderator*): J. A. Shannon, "Drug toxicity—problems and prospects."

2 August. (J. Jerome, *moderator*): A. J. Lehman and R. Smith, "Discussion of *new* food and drug regulations."

Solid State Studies in Ceramics

J. E. Burke and J. B. Wachtman, Jr., are *chairman* and *vice chairman,* respectively, for these sessions on atom movements in ceramics.

5 August. C. E. Birchenall, "Mechanism of diffusion in oxides and sulfides"; J. Belle, "Radiation effects on diffusion in UO_2"; R. Haul, "Mobility of oxygen in and at oxides."

6 August. Grain boundary effects: J. Cabané, "Grain boundary diffusion in alkali halides"; R. Condit, "O^{17} diffusion along grain boundaries in BeO"; S. B. Austerman, "Self-diffusion in beryllium oxide single and polycrystals"; R. Thompson, "Diffusion of alkali ions along dislocations."

7 August. A. B. Lidiard, "Activation energies for diffusion of alkali and alkaline earth ions"; R. J. Friauf, "Diffusion and correlation effects in TlCl and AgCl"; R. Carter, "Ionic conductivity in CaO-doped ZrO_2"; W. Hagel, "Oxygen diffusion in CaO-doped ZrO_2."

8 August. W. D. Kingery, "Diffusion measurement in oxides and its applicability to sintering, creep and oxidation"; B. Y. Pines, "Sintering in oxides"; (speaker and subject to be announced).

9 August. P. Jorgensen, "Effect of an electric field on oxidation of silicon and zinc"; Rustum Roy, "Effect of interstitial ions on diffusion of calcium in calcium fluoride."

Chemistry and Physics of Solids

M. Tinkham and H. B. Callen are *chairman* and *vice chairman,* respectively, for the sessions on magnetism.

12 August. C. Herring, "Basic theory of exchange coupling"; F. Keffer, "Spin waves"; H. B. Callen, "Statistical mechanics of ferromagnetism."

13 August. W. P. Wolf, "Exchange effects and magnetic properties of the rare earth garnets"; R. C. LeCraw, "Ferromagnetic resonance in garnets"; E. Schlömann, "Non-linear processes and relaxation in ferromagnetic resonance."

14 August. A. M. Portis, "N.M.R. in magnetic materials"; R. Nathans, "Neutron studies of the distribution of spin densities"; J. F. Dillon, Jr., "Faraday rotations in ordered systems."

15 August. P. A. Wolff, "Localized magnetic moments in alloys"; P. G. de Gennes, "Magnetism and superconductivity"; W. Marshall, "Spin ordering near T_C, Mössbauer effect, and HFS coupling."

16 August. W. C. Koehler, "Spin ordering in rare earth metals and alloys"; E. F. Bertaut, "Symmetry theory of magnetic ordering."

Ion Exchange

Robert M. Wheaton and Oscar D. Bonner are *chairman* and *vice chairman,* respectively.

19 August. Reactions (H. C. Thomas, *leader*): R. M. Diamond, K. A. Kraus, and F. Nelson, "Cation exchange from concentrated electrolyte solutions"; R. E. Meeker, "Uptake of electrolytes; site sharing"; G. E. Boyd, "Thermal effects in ion exchange equilibria."

20 August. Membranes (E. A. Mason, *leader*): E. Glueckauf, "Influence of inhomogeneity on permeability of ion exchange membranes"; B. C. Duncan, "Ion transport across membranes"; Patrick Meares, "Transport in ion exchange membranes"; W. A. McRae, "Ion exchange fuel cells."

21 August. Applications (W. Rieman III, *leader*): V. J. Frilette and W. O. Haag, "Kinetic and mechanistic aspects of benzene alkylation"; F. Helfferich, "Kinetics of ion exchange catalysis"; B. L. Baker, "Inorganic materials for disposal of radioactive wastes"; F. J. Wolf, "Bile acid sequestrants."

22 August. Structures (C. Calmon, *leader*): G. J. de Jong, "Experience with scavenger resins"; E. A. Tomic, "Selective ion exchange on chelating polymers." Business meeting. Report of nomenclature committee. H. F. Walton, "Ligand exchange."

23 August. Structures (continued) A. Clearfield, "Inorganic ion exchangers"; E. C. Freiling, "The nature, behavior and use of molten ion exchangers."

Molten Salts

John D. Corbett and Max Bredig are *chairman* and *vice chairman,* respectively.

26 August. Theory of fused salts (H. Reiss, *chairman*): H. Reiss, "Recent theoretical developments in fused salts"; D. A. McQuarrie, "Cell theory calculations of fused salts"; S. J. Yosim, "The application of scaled particle theory to fused salt systems."

26–27 August. Thermodynamics and equilibrium properties (O. J. Kleppa, *chairman*): M. Blander, "Theoretical aspects of fused salt mixtures"; O. J. Kleppa, "Thermochemical studies of fused salt solutions"; H. Bloom, "The thermodynamics of reciprocal molten salt systems." (S. N. Flengas, *chairman*): W. J. Hamer, "Potentials in oxide melts"; S. N. Flengas, "Electrical conductivities in molten sulfide-chloride mixtures."

27–28 August. Dynamic properties (R. W. Laity, *chairman*): B. R. Sundheim, "Conductivity and transference numbers"; A. N. Campbell, "The conductance of molten lithium chlorate with small additions of foreign substances"; P. C. Mangelsdorf, "Ionic hydrodynamics"; H. Öye, "Transport in highly conducting crystalline sulfates." (R. A. Osteryoung, *chairman*): F. R. Duke, "Kinetics of acid-base reactions in fused salts"; J. Van Norman, "Chronopotentiometry in molten salts"; J. Jordan, "Polarography in nitrates";

S. Selis, "Kinetics of electrode processes." (M. A. Bredig, *chairman*): M. A. Bredig, "Electronic conduction in electropositive metal solutions"; L. E. Topol, "Conductivity, magnetic susceptibility, and thermoelectric potential measurements in Bi-BiX_3 systems"; H. L. Frisch, "Electron states in random arrays—connection with molten salt systems"; S. A. Rice, "Theory of transport."

29 August. Potential applications of molten salts (S. Senderoff, *chairman*): I. Trachtenberg, "Electrode processes in molten salt fuel cells"; S. Senderoff, "Depolarizers for high energy-density thermal batteries"; O. Glemser, "Synthesis in molten salts."

29–30 August. Spectroscopy (J. R. Morrey, *chairman*): G. P. Smith, "Recent advances in UV and visible spectroscopy of fused salts"; R. A. Satten, "Theoretical approaches to the interpretation of molecular spectra of transition elements with emphasis on lanthanides and actinides." (D. M. Gruen, *chairman*): G. J. Janz, "Raman and infrared spectra"; N. Nachtrieb, "NMR spectra of molten salts"; B. R. Sundheim, "ESR spectra." *Ion associations and complex ions* (D. M. Gruen, *discussion leader*).

Tilton School

Biochemistry and Agriculture

John B. Hanson and Ernest G. Jaworski are *chairman* and *vice chairman,* respectively.

10 June. Basic studies related to insecticide action (James Sternburg, *chairman*): Richard D. O'Brien, "Advances and setbacks in selectivity theory for insecticides"; William Chefurka, "Oxidative phosphorylation in insects in relation to insecticidal action"; Dan L. Shankland, "Analysis of reflex systems in the cockroach"; Thomas Eisner, "Chemical defense mechanisms of arthropods."

11 June. Biochemistry of plant pathogenicity (Joseph Kuc, *chairman*): J. M. Daly, "Respiratory patterns as related to host-parasite interaction"; M. A. Stahmann, "Extracellular hydrolytic enzymes and parasitism"; A. E. Dimond, "Plant chemotherapeutants and disease resistance"; I. A. M. Cruickshank, "Phytoalexins."

12 June. Plant respiration and physiological processes (George G. Laties, *chairman*): J. A. Bassham, "The relation of respiration and photosynthesis"; S. G. Wildman, "Structural components of the cell in relation to respiration"; J. Biale, "Respiration related to maturation and senescence in fruits"; J. B. Hanson, "Respiration related to salt transport"; Conrad Yocum, "Relation of respiration to nitrogen fixation."

13 June. Biological implications of pesticide residues (Donald Crosby, *chairman*): Joseph C. Street, "Effects of pesticides on domestic animals"; John George, "Effects of pesticides on wildlife"; C. S. Pittendrigh, "Circadian organization."

14 June. Electron spin resonance (E. G. Jaworski, *chairman*): Jonathan Townsend, "Fundamentals of electron spin resonance"; Tom C. Hollacher, "The application of electron spin resonance to biological problems."

Air Quality Criteria

J. E. McKee and Robert A. Baker are *chairman* and *vice chairman,* respectively.

17 June. Introduction, mechanics of the Gordon Research Conferences, scope of this conference, and general guidelines (J. E. McKee, *chairman*). *Air quality criteria—general considerations and needs* (W. L. Faith, *chairman;* John A. Maga, *discussion leader*). *Effects of specific air pollutants on human respiratory functions* (Robert Kehoe, *chairman;* Robert A. Prindle and John R. Goldsmith, *discussion leaders*).

18 June. Specific air pollutants and carcinogenesis (Arthur J. Vorwald, *chairman;* William B. Deichmann, *discussion leader*). *Threshold concentrations of specific air pollutants related to odors, eye irritation, visibility, psychological reactions, esthetics, and nuisance effects* (Allan Brandt, *chairman*; Robert L. Stockman and Amos Turk, *discussion leaders*).

19 June. Animal responses to specific air pollutants in threshold and massive doses (Robert A. Baker, *chairman;* L. V. Cralley, *discussion leader*). *Phytotoxic effects of specific air pollutants* (A. J. Haagen-Smit, *chairman;* John T. Middleton, *discussion leader*).

20 June. Threshold and limiting concentrations of specific air pollutants in relation to economic damage (Louis C. McCabe, *chairman;* Ralph G. Smith, *discussion leader*). *Limitations of air quality criteria in relation to instrumentation, statistical considerations, sampling, meteorology, and so forth.* (A. T. Rossano, Jr., *chairman;* Maynard Smith, *discussion leader*).

21 June. Summary of criteria for each specific air pollutant (V. G. MacKenzie, *chairman; Leslie Silverman, summary speaker*). *Business session* (J. E. McKee, *presiding*).

Magnetic Resonance

B. P. Dailey and R. E. Norberg are *chairman* and *vice chairman,* respectively.

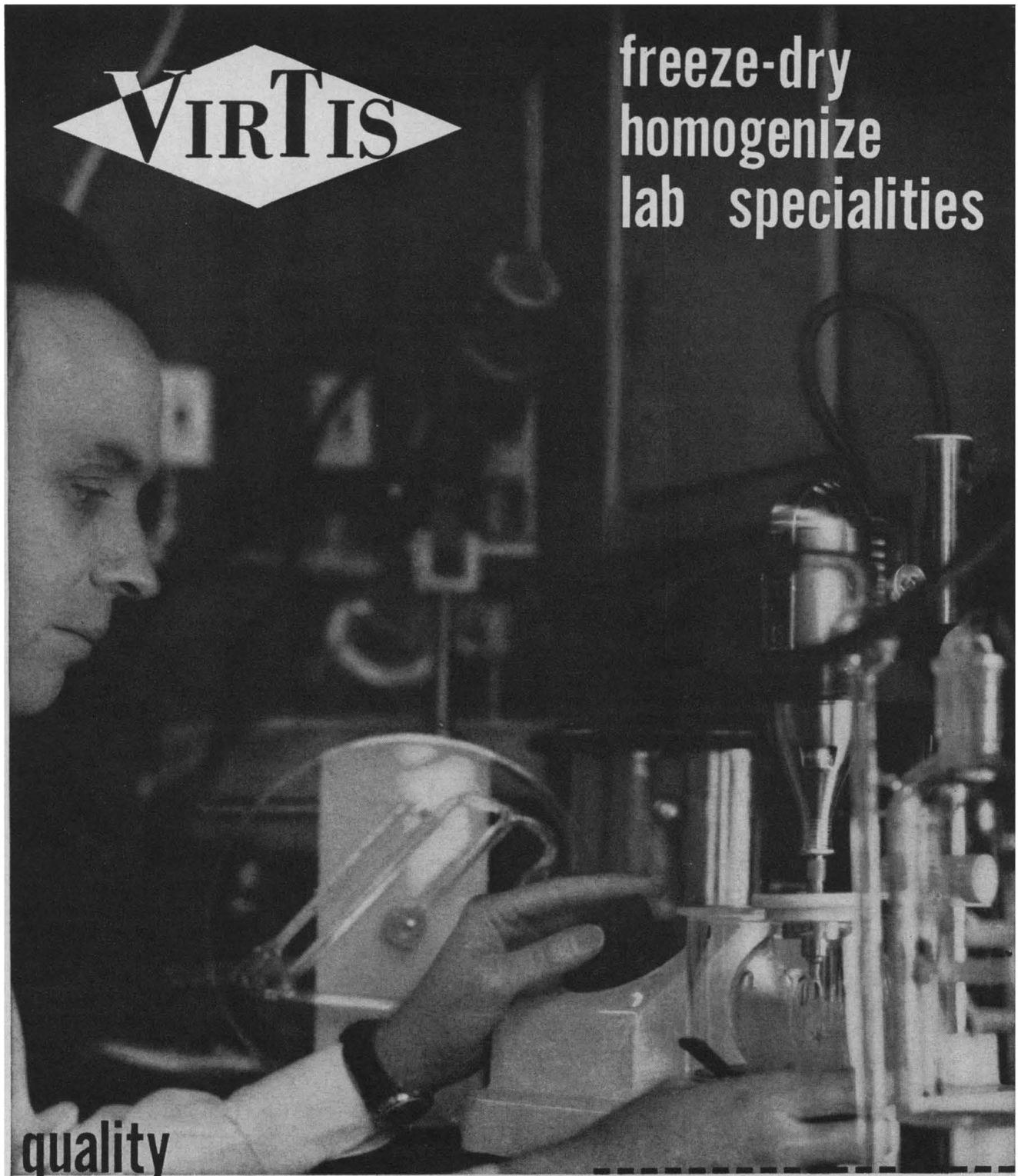
24 June. Electron spin resonance (S. T. Weissman, *chairman*): Clyde A. Hutchison, Jr., "Paramagnetism of ground state triplet molecules in organic single crystals"; A. Wilson Nolle, "ESR spectra and relaxation of the Mn^{2+} ion"; F. J. Adrian, "ESR studies of small free radicals in photolytic systems at 4.2°K." *Electron spin resonance* (continued) (Harden McConnel, *chairman*): George K. Fraenkel, "Spin density distributions and linewidth variation in ESR spectra"; Andrew McLachlan, "Spin densities and relaxation phenomena in ESR."

25 June. Nuclear polarization (C. D. Jefferies, *chairman*): A. Abragam, "Dynamic polarization and nuclear targets"; George Feher, "Nuclear polarization by a DC current." *Polarization and double resonance* (G. Pake, *chairman*): Karl Hausser, "Dynamic nuclear polarization in liquids"; Weston Anderson, "Double resonance studies in high resolution NMR"; C. P. Slichter, "Nuclear double resonance."

26 June. Nuclear magnetic resonance (R. E. Norberg, *chairman*): Erwin Hahn, "Experiments and effects in the rotating frame"; A. Redfield, "Nuclear relaxation in metals." *Nuclear magnetic resonance* (continued) (Robert Shulman, *chairman*): E. L. Mackor, "NMR relaxation in HF"; I. Solomon, "Spin temperatures in solids"; S. Meiboom, "NMR studies with a superconducting solenoid."

27 June. Nuclear magnetic resonance — theory (Herbert Gutowsky, *chairman*): John Pople, "The theory of C^{13} chemical shifts"; Martin Karplus, "Electric and magnetic interactions in molecules." *Nuclear magnetic resonance—field effects* (W. G. Schneider, *chairman*): John Waugh, "Electric field effects on NMR spectra of fluids"; A. D. Buckingham, "Effects of strong fields on high resolution NMR."

28 June. Nuclear magnetic resonance — relaxation (Richard Bersohn,



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chairman): Rex Richards, "Spin-lattice relaxation and Overhauser double resonance"; John Baldeschweiler, "Relaxation effects in nuclear magnetic double resonance."

Chemistry and Physics of Space

Fred L. Whipple and Hans E. Suess are *chairman* and *vice chairman,* respectively.

1–5 July. The lunar surface (Eugene Shoemaker, *moderator*): Thomas Gold; Ewen A. Whitaker. *Abundances of the elements* (Hans E. Suess, *moderator*): Harold C. Urey. *Pressure history of meteorites* (Herbert C. Uhlig, *moderator*): Edward Anders; A. E. Ringwood. *Theoretical aspects of cosmic rays* (John A. Simpson, *moderator*). *Cosmic ray ages of meteorites* (Oliver Schaffer, *moderator*). *Radiogenic ages of meteorites* (Harrison Brown, *moderator*): Joseph Zähringer. *Isotopic anomalies,* Peter Signer; Robert O. Pepin; George Weatherill, *Interplanetary gas and dust* (Eugene N. Parker, *moderator*): Conway W. Snyder; Richard B. Southworth. *Early evolution of the solar system* (Lawrence H. Aller, *moderator*): William A. Fowler; A. G. W. Cameron. Other moderators and speakers will be announced.

Chemistry and Metallurgy of Semiconductors

Paul H. Egli and Peter Pollak will be *chairman* and *vice chairman,* respectively.

8 July. H. Krebs, "Structure and bonding in semiconductors"; E. Mooser and W. B. Pearson, "Basic concepts in semiconductor binding"; Georg Rupprecht, "Chemical binding in ferromagnetic and ferroelectric materials."

9 July. C. K. Jørgensen, "Crystal field theory and optical absorption"; A. J. Rosenberg, "Lattice stability of intermetallic compounds"; Conyers Herring, "Transport in inhomogeneous systems."

10 July. Gunther Wolff, "Crystallography and bonding of semiconductor surfaces"; Peter Pollak, "Rationalization and experiments in multicomponent semiconductor systems"; Frank Herman, "Selected topics in energy band theory."

11 July. Daniel D. Eley, "Electron transport in organic monomers and complexes"; Herbert A. Pohl, "Electron

transport in polymeric molecular solids"; Albert Szent-Gyorgyi, (subject to be announced).

12 July. T. C. Harman, "Thermomagnetic transport in semiconductors"; J. M. Honig, "Thermoelectric and thermomagnetic phenomena."

Organic Coatings

Harold L. Jaffe and Joseph Gaynor are *chairman* and *vice chairman*, respectively.

15–19 July. D. R. Hays, "Factors affecting solvent retention: carbon-14 tagged solvents in poly (methyl methacrylate) films"; William E. Weesner, "Sulfur-polyester products"; Kurt Gutfreund, "Instrumental techniques applied to paint film deterioration"; Robert Evans, "The functionality of tars"; Robert Toomey, "Solvent release and paint decomposition"; C. K. Ikeda and S. Hochberg, "2-vinyl-1, 3-cyclic acetals, a new class of paint vehicles"; C. E. Anagnostopoulos, "Nascent ultraviolet screeners for protecting polymers against the effects of weathering"; D. A. Brubaker, "Binder requirements for electrostatic printing papers"; Edward G. Locke, "Surface characteristics of wood as they affect the durability of finishes." Speculative discussion: *Pigmented latex film formation*, George L. Brown, John Brodnyan, Edward Bobalek, Frank J. Hahn and others.

Organic Reactions and Processes

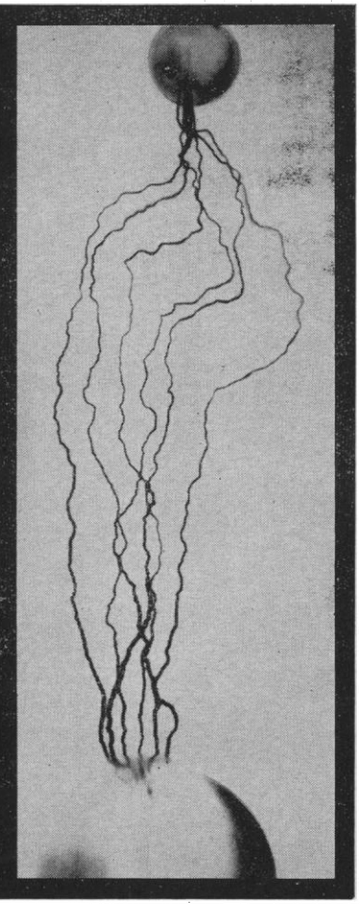
Ellis K. Fields and William E. Truce are *chairman* and *vice chairman*, respectively.

22 July. S. Meyerson, "Organic ions in the gas phase"; M. J. S. Dewar, "Stereochemistry of addition to double bonds."

23 July. L. Horner, "Syntheses with organophosphorus compounds"; T. W. Campbell, "Catalytic conversion of isocyanates to carbodiimides"; G. L. Closs, "Recent developments in carbenes."

24 July. P. Kovacic, "Polymerization of aromatic nuclei"; F. Hubenett, "Preparation and properties of isothiazoles"; H. E. Zimmerman, "Recent developments in mechanistic and exploratory organic photochemistry."

25 July. D. Bryce-Smith, "Unsolvated organomagnesium complexes"; F. Ramirez, "The oxyphosphorane reagents"; A. Schriesheim, "Hydrocarbon carbanions."



26 July. W. M. Wagner, "Reactions of trichloromethyl anions"; K. U. Ingold, "The reaction of peroxy radicals with phenols."

Energy Coupling Mechanisms

D. R. Sanadi and W. Kielley are *chairman* and *vice chairman,* respectively.

29 July. Properties and function of ATPase: M. Avron, "Recent studies on the coupling of phosphorylation to electron transport in photophosphorylation." (B. Petrack, *discussant*). D. E. Koshland, "Properties of the intermediate stage in myosin hydrolysis as indicated by O^{18}-exchange studies"; E. Racker, "ATPase and other coupling factors of oxidative phosphorylation." *Role of iron proteins*: A. San Pietro and K. T. Fry, "Studies on photosynthetic pyridine nucleotide reductase." (R. Bartsch, *discussant*). L. Mortenson, "Ferredoxin and its role in anaerobic electron transport." (J. E. Carnahan, *discussant.*) P. Handler, "Mechanism of action of iron flavoproteins."

30 July. Functional groups: W. Kielley, "Role of sulphydryl groups in the active center of myosin"; A. Stracher. "Studies on the ATPase active center of myosin A"; A. Fluharty, "Evidence for participation of a dithoil function in oxidative phosphorylation"; J. J. Blum, "Activation of myosin ATPase by some uncoupling agents"; J. W. Newton, "Disulfides in the photochemical apparatus of bacteria"; P. G. Heytler, "Study on the mechanism of action of CCP class uncouplers."

31 July. Coupling factors and intermediates: G. Pinchot, "Mechanism at the first phosphorylation site"; D. E. Griffiths, "Oxidative phosphorylation at the pyridine nucleotide level"; P. D. Boyer and J. B. Peter, "Bound phosphohistidine and an activated imidazole structure in phosphorylation and energy transfer reactions"; D. E. Green, M. Hanson, A. Smith, and G. Webster, "On the factors essential for oxidative phosphorylation"; A. L. Lehninger, "Coupling factors of rat liver mitochondria"; D. R. Sanadi, "Oxidative phosphorylation in the DPNH-quinone reductase reaction."

1 August. C. Hind and A. T. Jagendorf, "Intermediates in photosynthetic phosphorylation." (J. W. Hinkson, *discussant.*) M. Morales, "Molecular changes associated with contraction"; D. I. Arnon, "The energy transformation reactions in photosynthesis"; B.

Chance, "Conversion of energy into electron flow, with the formation of 'high energy' intermediates"; J. Gergely and A. Martonosi, "Control mechanisms in muscle contraction and relaxation."

2 August. Quinones in electron transfer: T. Stadtman, "Phosphorylation associated with oxido-reductions in anaerobic bacteria"; F. Crane, M. Henninger and R. A. Dilley, "Plastaquinones and tocopherol quinones in chloroplast"; D. W. Krogman, "The role of quinones in chloroplast electron transfer."

Photonuclear Reactions

D. J. Zaffarano and Evan Hayward are *chairman* and *vice chairman,* respectively.

5-9 August. (Speakers to be announced), "The photodisintegration of light elements"; "Fluorescence of nuclear levels below the particle threshold"; "Experimental evidence for higher order multipole excitations"; "Electron induced reactions and collective excitations"; "Excitation of nuclear states by heavy particle bombardment"; "Review of particle-hole calculations and shell model theory"; "Contributions to nuclear structure from high energy experiments"; "Photonuclear cross-sections above the giant resonance"; "New experimental techniques applied to particle emission cross-sections."

Fluorine Chemistry

Leo A. Wall and Murray Hauptschein are *chairman* and *vice chairman,* respectively.

12 August. (Glenn Finger, *chairman*): Cedric L. Chernick, John G. Malm, and Howard H. Claassen, "Preparation and properties of inert gas compounds"; A. V. Grosse, A. D. Kirshenbaum, A. G. Streng and L. V. Streng, "Preparation and properties of krypton tetrafluoride." (J. C. Tatlow, *chairman*): B. Sukornick, "Chemistry of some NF, OF and SF compounds."

13 August. (Michael Szwarc, *chairman*): K. O. Kutscke, "Photochemical production and reactions of perfluoroalkyl radicals"; A. F. Trotman-Dickenson, "The reactions of fluorinated cyclopropanes"; S. V. R. Mastraneglo, "Chemical evidence for two forms of CF_2."

14 August. (Colin R. Patrick, *chairman*): John L. Margrave, "Thermodynamic properties of inorganic fluorine compounds"; Donald W. Scott, "Experimental and statistical thermodynamics applied to fluorine compounds." (Robert Simha, *chairman*): Colin R. Patrick, "Solution properties of aromatic fluorocarbons and some observations on the theories of solutions of fluorocarbons"; A. J. Havlik and Robert Simha, "Considerations on the equation of state for chain-like liquids; fluorine and non-fluorine containing oligomers."

15 August. (Murray Hauptschein, *chairman*): William T. Miller, "Substitution and addition reactions of fluoroolefins"; Carl G. Crespan, "Sulfur and oxygen containing derivatives of fluoroolefins"; Joseph D. Park, "Recent advances in nucleophilic displacement reactions of fluorinated cyclobutenes."

16 August. (William Postelnek, *chairman*): J. C. Tatlow, "Synthesis and reactions of aromatic fluorocarbon derivatives"; Christ Tamborski, Robert J. Harper, Jr., and Edward J. Soloski, "Preparation and reactions of perfluoroaryl organo-metallic compounds."

Geochemistry—Origin of Petroleum

Frederick D. Rossini and Harold M. Smith are *co-chairmen.*

19 August. Basic geological concepts (H. D. Hedberg, *discussion leader*). *Basic geochemical concepts* (J. M. Hunt, *discussion leader*). *The raw material for bacterial action* (J. R. Vallentyne, *discussion leader*). *The course and results of bacterial action* (S. C. Rittenberg, *discussion leader*).

20 August. Organic compounds formed as a result of and subsequent to bacterial action (J. G. Erdman, *discussion leader*). *Hydrocarbons in petroleum* (B. J. Mair, *discussion leader*). *Sulfur, nitrogen and oxygen compounds in petroleum* (J. S. Ball, *discussion leader*).

21 August. Porphyrins, pigments and metals in petroleum (G. W. Hodgson, *discussion leader*). *Isotopes in petroleum* (S. R. Silverman, *discussion leader*). *Thermodynamics, equilibrium and thermal stability* (F. D. Rossini, *discussion leader*). *Clay-organic complexes* (R. A. Rowland, *discussion leader*). *Catalysis under geological conditions* (R. B. Anderson, *discussion leader*).

22 August. Compaction and migra-

tion: (I. H. Milne and E. G. Baker, *discussion leaders*). G. D. Hobson, "The occurrence and origin of oil and gas."

23 August. Synthesis of ideas on origin of petroleum—a panel discussion (W. E. Hanson, *leader*): N. P. Stevens, E. Eisma, P. A. Dickey, U. P. Colombo, F. J. Stevenson, M. Louis, and C. H. Oppenheimer.

Glass

Norbert J. Kreidl and Martin Goldstein are *chairman* and *vice chairman,* respectively, for these sessions on defect structures.

26 August. High energy radiation effects (J. R. Hensler, *chairman*): R. A. Weeks, "Introduction to defect structures"; F. Laves, "Infrared absorption of hydrogen and other impurities in quartz and silica." *High energy radiation effects* (continued) (R. A. Weeks, *chairman*): J. Weil, "Paramagnetic impurity centers in quartz"; G. W. Arnold, "Influence of growth rate on radiation induced defects in quartz."

27 August. High energy radiation effects (continued) (J. G. King, *chairman*): J. G. Castle, "Spin lattice relaxation at defect sites in quartz"; S. Weissmann, "X-ray and electron microscope studies of fast neutron irradiated quartz and fused silica." *High energy radiation effects* (continued) (E. W. J. Mitchell, *chairman*): E. W. J. Mitchell, "Defect structures"; J. H. C. Lietz, "Luminescence and absorption in zircon and fused silica."

28 August. High energy radiation effects (continued) (S. D. Stookey, *chairman*): P. J. Bray, "Magnetic resonance studies of the structure of glass"; R. E. Strakna, "Effects of fast neutron irradiation on elastic properties of fused silica." *High energy radiation effects* (continued) (M. Goldstein, *chairman*): R. W. Douglas, "Ideal and real glasses"; P. Acloque, "Studies on defects in glass at St. Gobain Laboratories."

29 August. Stimulated emission (R. J. Ginther, *chairman*): H. Kallman, "Radiative processes"; F. J. McClung, Gisela Eckhardt, R. W. Hellwarth, and D. Weiner, "Stimulated Raman scattering." *Stimulated emission* (continued) (H. Kallman, *chairman*): H. W. Gandy, "Stimulated emission in silicate glasses." Brief papers on stimulated emission will also be presented.

30 August. (N. J. Kreidl, *chairman*) Continued brief papers.