News and Notes

The Faraday Society Discussion

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A FARADAY SOCIETY DISCUSSION was held at Cambridge, England, September 25–28, 1950, on two related topics: "Spectroscopy and Molecular Structure" and "Optical Methods of Investigating Cell Structures." The meeting was attended by several hundred persons, nearly one third coming from countries other than England. The papers presented during the first part of the discussion traversed the spectrum from the vacuum ultraviolet through microwaves, dealing with electronic, vibrational, and rotational spectra of relatively simple molecules, and with vibrational spectra of substances as complex as rubber, cellulose, nylon, and plastics.

The discussion of electronic spectra centered around the efforts of Kasha, Sponer, and others to provide quantum-mechanical interpretations of electronic transitions occurring in molecules such as substituted benzenes and naphthalenes. Evidence of their success could be seen, for example, in Kasha's demonstration that the intensification of spin-orbital coupling by substitution of heavy atoms in organic molecules predicted by quantum-mechanical theory does indeed occur. A good deal of the information presented during these discussions was based on recent studies of the fluorescence of crystals and rigid glass solutions of organic molecules.

The papers dealing with rotational and vibrational spectra of relatively simple molecules were chiefly concerned with determination of the force constants of bonds occurring in organic compounds. Considerable attention was given to the properties of the hydrogen bond, especially in solids. Two discussants (Pestemer and Romand) reported independent observations that the presence of hydrogen-bonding may, in certain instances, be demonstrated by ultraviolet absorption.

A paper by E. B. Wilson described the potential applications of microwave spectroscopy to structural analysis. The new method permits the determination of rotational constants (of unsymmetrical molecules) with a precision about one hundred times greater than that afforded by infrared measurements. It was later pointed out by Herzberg that thus far the two methods give remarkably good agreement when applied to the same molecule.

The contributions on the infrared spectra of polymeric substances were necessarily empirical, dealing in the main with the problem of assigning absorption bands to appropriate intramolecular motions. It was noteworthy that investigators in this field showed an increasing interest in macromolecular substances of biological importance, including proteins, cellulose, chitin, and rubber. Several papers dealt with the use of polarized infrared radiation as a means of determining the spatial orientation of bonds responsible for absorption in the infrared.

The second part of the discussion brought together a number of investigators who have attempted to apply spectroscopic methods to analysis of the composition of single cells and cell structures. These techniques, originally developed by Vlès and Gex in France and later refined by Caspersson's extensive work at Stockholm, have spread rapidly in the past five years to a number of laboratories in England, the United States, and the USSR. A number of these groups were represented at the Faraday Society meeting, and as a result the discussion was marked by a diversity of viewpoints. General summaries of the present state of microspectrophotometry were presented by Randall and Barer. The latter considered the difficulties involved in applying infrared spectrometry to cytological objects.

Developments in instrumentation were discussed by Wilkins (spherical reflecting objectives for UV), Barer (the Burch aspherical reflecting objective), Walker and Davies (ultraviolet microcinematography), and Thorell (recording microspectrophotometer). Engstrom described results obtained with newly developed x-ray absorption techniques. During this part of the discussion considerable disagreement was expressed concerning the relative merits of aspherical and spherical reflecting objectives. The former are expensive and difficult to produce; the latter seem to have a rather small coma-free field, according to the views of Barer, Taylor, and Kehoe.

Subsequent papers discussed results obtained from microspectrophotometric investigations of various biological objects. It is noteworthy that these reports were largely concerned with measurements of living cells rather than with fixed tissues. Investigations by Bradfield showed that the ultraviolet absorption of initially living cells is rapidly altered during irradiation. This provides quantitative confirmation of the observations first noted by Vlès and Gex in 1928 and also reported by Larianov and Brumberg in 1946. It raises a number of serious issues concerning the meaning of data obtained from fixed cells, which need to be resolved before sound conclusions may be drawn from intracellular UV absorptions. Ultraviolet absorption spectra of structures in living cells were reported by Walker and Davies and by Commoner. The former reported the UV absorption spectra of the nucleus and nucleolus of living fibroblasts. These were based on measure-

ments through single points in the cell, and on the assumption that underlying and overlying material made a negligible contribution to the absorption. The latter showed that in certain living plant cells the actual UV absorption spectra of the nucleus itself could be determined by measuring a minimum of three absorption spectra through appropriate regions of the cell. Similar procedures yielded the separate spectra of the vacuole contents and the protoplast layer. In the discussion which followed these papers it was pointed out that the heterogeneity of optical sections through living cells made it difficult to interpret the meaning of absorption maxima from single points in the cell. These and other considerations led some discussants to suggest that in many instances intracellular absorption measurements may provide only qualitative information concerning cell composition, and that quantitative interpretations must be viewed with considerable caution.

These problems appear to reflect the present transitional state of microspectrophotometry. Investigators participating in the Faraday Society Discussion were seriously concerned with the development of means for critical evaluation of absorption measurements of cytological objects. That such criteria are yet to be fully expounded was apparent from the reluctance of most investigators to draw more than tentative conclusions from the data obtained.

The hospitality extended to the participants by the Colleges of Cambridge University did much to make the meeting a successful one; the dinner in the great hall at Trinity College was a highlight. In arranging this timely meeting the Faraday Society has made a significant contribution to the development of spectrometry. That the meeting was lively, critical, and squarely directed toward important issues reflects the society's traditional interest in those vital areas of research that represent the interpenetration of physics, chemistry, and biology.

Scientists in the News

George E. Byers has become assistant production director of Henry K. Wampole & Company, Philadelphia. He was formerly director of pharmaceutical production, Carroll Dunham Smith Pharmacal Company, New Brunswick, N. J.

The South Pacific Commission has engaged **L. R. Catala** to carry out its project for improvement of resources on coral atolls. Dr. Catala has been released for 6 months by the Institut Français d'Oceanie (Noumea) for this work, and will be assisted by **Mrs. Catala.** Their investigations will include a survey of the physical environment in the islands, with a view to discovering ways of increasing the quantity and variety of subsistence and commercial crops, improving domestic animals, and exploiting fisheries and native handicrafts.

Ivor Cornman, assistant research professor of anatomy at the George Washington University, has received a grant from the American Cancer Society of $4,294 to aid in the search for antibiotic drugs that will destroy cancer cells without harming normal tissue. Dr. Cornman will make tests with antibiotic drugs being developed at George Washington's Department of Medicine by **Monroe J. Romansky,** associate professor of medicine.

Olive W. Dennis has retired as research engineer for the Baltimore & Ohio Railroad. Miss Dennis began railroading in 1920, when she went to work as a draftsman in the bridge engineering department of the B & O. Within a year, she was appointed to the position of engineer of service and in 1946 she became research engineer. Miss Dennis has a degree in civil engineering from Cornell University. She was the first woman member of the American Railway Engineering Association and has been for many years a member of its Committee on the Economics of Railway Location and Operation. As research engineer, Miss Dennis' job has been to study and recommend improvements in passenger service and equipment and to make studies concerning efficiency and economy in railway operations.

Joseph C. Elgin has been appointed associate dean of the school of engineering at Princeton University. Dr. Elgin, who is chairman of the university's department of chemical engineering, is now on sabbatical leave but will resume his duties as chairman and as associate dean next fall. He is also consultant for the Atomic Energy Commission and a trustee of Associated Universities, Inc., which operates Brookhaven National Laboratory.

The Willard Gibbs Medal for 1951 has been awarded to **William Francis Giauque,** of the University of California. The award, conferred annually by the Chicago Section of the American Chemical Society, will be presented to Dr. Giauque at a dinner on May 18. The 1951 medalist is internationally known for his research at low temperatures, for which he won the 1949 Nobel prize in chemistry. He was the first to demonstrate, in 1933, the magnetic method for approaching absolute zero.

Peter V. Karpovich, professor of physiology, Springfield College, Springfield, Mass., has been appointed consultant to the Army Surgeon General. Dr. Karpovich is conducting a study supported by a grant given by the joint armed forces regarding the comparative merits of various methods of artificial respiration.

Recent visitors at the National Bureau of Standards were **R. Kikuchi,** Department of Physics, University of Tokyo; **C. Sanders,** of the National Research Council of Canada, photometry section; and **Y. Tamura,** of the Osaka Industrial Research Institute, Japan. Fourteen members of the Secondary Non-Ferrous Metals Smelters and Refiners Productivity Team from France, in the U. S. under the auspices

of ECA, toured the metallurgy and chemistry laboratories.

John Gamble Kirkwood, professor of chemistry at Caltech, has been named Sterling professor of chemistry and chairman of the Department of Chemistry at Yale. He will assume the professorship on July 1 as part of a Yale program to strengthen her science faculties. He has been Arthur A. Noyes professor at Caltech since 1947.

The American Water Works Association has awarded its John M. Goodell Prize for 1950 to **Malcolm S. McIlroy,** professor of electrical engineering at Cornell University. The certificate and a cash award are given to the member who has made the most notable contribution to the science of water works development during the year. Formal presentation will be made at the association's annual conference in Miami in May. Professor McIlroy was cited for the development of an electrical apparatus to study pressure flows in pipeline networks.

Albert M. Mattocks has been appointed manager of the Pharmaceutical Development Department of McNeil Laboratories. Dr. Mattocks was formerly director of the laboratory of the American Pharmaceutical Association, with headquarters in Washington, D. C.

The influence of science and technology on civilization will be discussed in the 1951 Haynes Foundation Lecture series at the California Institute of Technology in April. **C. E. Kenneth Mees,** of Rochester, N. Y., will speak April 2, 4, and 6 on "Technology and Civilization," "Science and Technology," and "The Effect of Technology on the Organization of Society." Dr. Mees, a native of England, received his D.Sc. degree from the University of London. He came to this country in 1912 as research director for Eastman Kodak and since 1934 has been its vice president in charge of research.

Hans Popper, associate professor of pathology in Northwestern University's Medical School, has been appointed to the editorial board of *Gastroenterology.* Dr. Popper also is director of the pathological laboratories at Cook County Hospital, Chicago.

Robert H. Seashore, chairman of the Department of Psychology at Northwestern, is now at the School of Aviation Medicine, Randolph AFB, working on a research project for the USAF. Dr. Seashore, whose special field is analysis of human abilities in relation to difficult performances and the operation of complex machines, will try to sift from the literature the most important psychological tests and methods that may be useful to the Air Force in selecting and training personnel.

H. T. Shortt and **P. C. C. Garnham** were awarded the Darling Foundation Prize for their joint work on the life cycle of the malaria parasite in man and monkey, and **Rene Sand,** of Belgium, was nominated for the Leon Bernard Foundation Prize for achievements in social medicine. The Darling Foundation Prize consists of a bronze medal and 1,000 Swiss francs. Set up by the League of Nations to honor the famous malariologist, S. T. Darling, it was last awarded in 1938. The present recipients were selected by WHO and the Darling Foundation committee. Professor Shortt occupies the chair of medical protozoology at London University and is president of the Royal Society of Tropical Medicine and Hygiene. Dr. Garnham, a reader in medical parasitology at London University, spent many years in Africa, where he became widely known for his studies in tropical medicine, epidemiology, and malaria. Rene Sand holds the chair of social medicine at Brussels University. The Leon Bernard Foundation Prize was established by international subscription in perpetuation of the memory of Leon Bernard, of France, a member of the League of Nations Health Committee. The prize, which consists of a medal and 1,000 Swiss francs, was last awarded in 1939.

K. S. Spiegler, on leave of absence from the Weizmann Institute of Science in Rehovoth, Israel, has been appointed Weizmann Institute Postdoctoral Fellow at MIT for the current academic year, to work on electrochemical properties of ion-exchange resins.

For outstanding achievement in the chemical study of food allergy and immunology, three USDA chemists have won the 1950 Hillebrand Prize of the American Chemical Society's Washington Section. The winners are **Henry Stevens,** head of the Allergen Research Division of the Bureau of Agricultural and Industrial Chemistry, and two associates, **E. Jack Coulson** and **Joseph R. Spies.** A major accomplishment of the group has been the demonstration that cottonseed oil in food products does not cause allergies, as had heretofore been widely suspected. The prize, a cash award, was established in 1925 in honor of William Francis Hillebrand, chief chemist of the National Bureau of Standards from 1908 to 1925. It is conferred annually upon a member (or members) of the Washington Section in recognition of a notable contribution to chemistry during the 3 preceding years.

Percy Tham, head of the Photogrammetry Office, Department of the Royal Geographic Survey, University of Stockholm, is a current visitor in the U. S. Among his projects is the discussion of photogrammetric problems with members of the Topography Division, U. S. Geological Survey.

M. Tigerschiold, director of research, Jernkontorek, Sweden, has been awarded the Carl Lueg Medal of the Verein deutscher Eisenhuttenleute.

The Section of Science of the Royal Netherlands Academy of Sciences and Literature has awarded the Leeuwenhoek Medal to **S. A. Waksman,** of Rutgers University. The medal is given every 10 years to the scientist who in the past decade has made the most remarkable observations on microscopical organisms, first discovered by Leeuwenhoek in 1675.

Colleges and Universities

A course on "Techniques and Applications of the Electron Microscope" will be given again this summer in the **College of Engineering Physics at Cornell** from July 9 to 11. The course is designed for institutional and industrial research workers who have recently entered the field or who are planning research involving the use of the electron microscope. For further information, write to Benjamin M. Siegel, Rockefeller Hall, Cornell.

The **University of Havana** summer school session for foreigners, especially North American teachers and students, will extend from July 20 to August 11. Spanish at all levels will of course be offered, and some courses in general fields, a few of which will be in English, but the majority in Spanish. There will be a seminar on Inter-American Relations, July 23–August 4, extracurricular lectures by Cuban and Latin-American scholars, and visits to places of historic interest, sugar mills, and tobacco plantations. For additional information, address the Secretary of the Summer School.

McGill University Geography Summer School will be held July 2–August 11 at Stanstead College, P. Q. Special courses will be given on arctic geography by Patrick D. Baird, Montreal director of the Arctic Institute of North America, which endorses the program; also courses on the geography of Canada, Europe, the Soviet Union, and South Asia. The teachers' program will be directed by Neville Scarfe, the graduate and undergraduate program by Bogdan Zaborski. Other members of the staff will be William F. Christians, Brian Bird, Sir Hubert Wilkins, and Kenneth Hare, Director, to whom inquiries should be addressed at McGill University, Montreal.

Michigan State's Departments of Bacteriology, Biological Science, Botany, Physiology, and Zoology are sponsoring a "Symposium on Phosphorus Metabolism," April 25–27. Speakers will be G. Evelyn Hutchinson, Yale; Henry A. Lardy, University of Wisconsin; Jacob Sacks, Brookhaven National Laboratory; Harry G. Albaum, Brooklyn College; and Harold C. Hodge, University of Rochester. Ralph W. Lewis, Department of Biological Science, will supply additional information.

Advanced courses in mathematics will be given this summer at Boston University (May 28–July 7); Catholic University (July 2–August 11); Cornell (July 2–August 11); Duke (June 12–July 21); Northwestern; Ohio State (June 19–August 31); Iowa State (June 12–August 8); Syracuse; Buffalo (July 2–August 11); California—Los Angeles (June 18–August 11); Chicago (June 26–September 1); Colorado (June 18–July 20); Detroit (June 25–August 3); Kansas (June 7–August 4); Kentucky (June 18–August 11); Maryland (June 23–August 3); Michigan (June 25–August 17); Minnesota (June 18–July 28); Nebraska (June 5–July 27); North Carolina (June 11–July 19); Oklahoma (June 8–August 3); Southern California (June 25–August 4); Wyoming (June 18–July 20); Virginia (June 25–August 18); Wisconsin (June 25–August 17); and West Virginia (June 6–July 17).

The **University of Tennessee** has awarded its first Ph.D. in chemical engineering to Franklin S. Chance, Jr., who is now associated with Chas. Pfizer & Co. Tennessee is offering specialization in metallurgy, microbiology, nuclear technology, and chemical engineering. In special cases, the department uses some of the laboratory facilities of the Oak Ridge Institute of Nuclear Studies and divisions of the Oak Ridge National Laboratory. Fellowships in amounts ranging from $1,400 to $2,100 are available to graduate students.

Grants

New awards bring to a total of 371 the number of unclassified research projects supported by the **Atomic Energy Commission.** New contracts in biology and medicine went to Washington State (C. O. Stanberry); Yale (John H. Heller); Cincinnati (Robert A. Kehoe); Michigan State (H. B. Tukey); Virginia (A. Chanutin); Tulane (W. S. Wilde); Louisiana State (John F. Christman); North Carolina (Maurice Whittinghill); and Washington University (Wendell G. Scott, Michel Ter-Pogossian). New contracts in physics were awarded to Rensselaer Polytechnic (D. C. Moore and G. N. Glasoe); in metallurgy to Armour Research Foundation (Max Hensen); and in chemistry to Oklahoma A & M (T. E. Moore).

Nine new special control grants have been awarded by the **USPHS** for the study of cancer to: University of Southern California School of Medicine (John W. Mehl and Hugh A. Edmondson; Edward G. Jones and Ian Macdonald); University of Maryland Medical School (Russell S. Fisher); Washington University (Evarts A. Graham); University of Pennsylvania (George C. Lewis); Nix Tumor Clinic, San Antonio (Dudley Jackson); University of Texas, Medical Branch (M. Mason Guest); University of Texas, M. D. Anderson Hospital for Cancer Research (William O. Russell); and University of Utah (John Z. Bowers).

The **Samuel Rubin Chair in Anthropology** at Brandeis University (Waltham, Mass.) has been established by Samuel Rubin, New York perfume manufacturer who was one of the founders of the New York University–Bellevue Medical Center. The establishment of this chair will enable the two-year-old institution to start a program of research to determine the impact of cultural factors on social organization in the U. S.

The **Swedish Humanistic Fund** has distributed 103 grants totaling $80,000 for research that will include investigations concerning population movements on the island of Gotland in ancient times. The **Swedish Natural Science Research Council** has made grants amounting to $125,800, of which part will go toward

preparing for publication the extensive findings of the Swedish *Albatross* Oceanographic Expedition; H. Kullenberg, of Gothenburg, a member of the expedition, was given 10,000 kr. toward perfecting his vacuum plummet for taking sediment cores from the ocean floor. Other funds were allocated to a zoological expedition to East Africa and to glaciological, botanical, and physiological research.

Miscellaneous

With the cooperation of the insecticide industry, the **American Association of Economic Entomologists** Section on Insecticides has undertaken the sponsorship of insecticide reference standards. These are intended chiefly for bioassays of insecticides, but they are also suitable for use as standards for chemical assays. The following AAEE Reference Standards will be available on April 1: DDT, technical grade; methoxychlor, technical grade; lindane; toxaphene; tetraethyl pyrophosphate, 40%; parathion, technical grade; and chlordane, technical grade. Order must be accompanied by remittance of $1.00 per standard, and all shipments will be made by collect express. Send orders to Wisconsin Alumni Research Foundation, Insecticide Testing Laboratory, Madison 1.

The **National Research Council's Committee on Geophysics Advisory to the Office of Naval Research** will meet May 3 to consider projects in geophysical research. Those who wish support for basic research in this field should submit five copies of their proposal and a letter of endorsement signed by the president or authorized financial officer of their institution to the Office of Naval Research, Department of the Navy, Washington 25, D. C. Investigators forwarding their proposals by way of ONR area branch offices are urged to send an advance copy to the Geophysics Branch of ONR in Washington. Guides for the preparation of research proposals are available from ONR. To be considered at the meeting, proposals should be received in Washington not later than *April 16*. It is the policy of the committee to recommend only projects submitted in the name(s) of the principal investigator(s), who are expected to participate actively in the research.

A new quarterly, ***Documenta Neerlandica et Indonesica de Morbis Tropicis,*** is being published (in English) in the Netherlands. There will be approximately 100 pages per issue, with articles on original research in tropical diseases. N. H. Swellengrebel is chairman of the editorial board, and the subscription price is $4.50.

An appeal has been issued by the **Royal Society** of Great Britain for subscriptions to a memorial fund to establish scholarships in honor of Lord Rutherford, nuclear physics pioneer. The money will be used to set up Rutherford Scholarships tenable for three years, to be awarded to postgraduate students within the British Commonwealth, and a Rutherford Memorial lecture to be delivered in New Zealand—Rutherford's birthplace—and elsewhere in the Commonwealth. Publication of Rutherford's papers and correspondence is also planned.

Beginning with Volume XXXI, Number 1, March 1951, the title of *Archives of Biochemistry* (Academic Press) was changed to ***Archives of Biochemistry and Biophysics.*** In addition to established biochemical topics, the editors wish to consider manuscripts in the fields of virus research, radiation effects on living matter, macromolecular biology and chemistry, the application of radioactive indicators, and physics of biological systems. E. Newton Harvey, E. C. Pollard, and R. W. G. Wyckoff have been added to the Editorial Board.

Bulletin No. 121, ***Sanitary Milk and Ice Cream Legislation in the United States,*** is now available without charge from the Publications Office of NRC. The bulletin is a report on the first part of a study of milk regulations in relation to milk quality undertaken by the NRC Committee on Milk Production, Distribution, and Quality. The complete project includes two major phases: a compilation and analysis of state and municipal statutes and regulations on the production and handling of fluid milk products, and the effect of these laws on the quality of the milk, as measured by their administration and enforcement as well as by actual experimental procedures. The first part of the research has been completed and is reported on in the bulletin; the second study is now under way. The project is under the direction of A. C. Dahlberg, of Cornell University.

The **New York Botanical Garden–Kunhardt** expedition to the Guiana Highlands in Venezuela has collected nearly 1,500 South American plants, mainly members of the Compositae, Guttifereae, and Rapateacea, which will be added to the extensive collection in the Garden herbarium. Bassett Maguire has rejoined the expedition at San Guam and plans to collaborate with the British Guiana Forest Department in an expedition to the eastern end of the Pacaraima range. The Garden hopes later to explore the mountains on Africa's west coast with a view to discovering the relationship, if any, between the isolated flora of that region and that of Guiana. Information on the evolution of plants and the theory of continental drift is also expected to result from such exploration.

Refinery Supply Company, Tulsa, Okla., has become a wholly owned subsidiary of the Cenco Corporation. W. A. Schlueter will continue as president of Refinery Supply, in addition to serving as director and vice president of Central Scientific Company.

Reconstruction of **Dechema House** has progressed so far that Deutsche Gesellschaft fur chemisches Apparatewesen E V expected to be able to take up its work there on March 1. At that date also the branch office of the Technical Standardizing Committee for the Chemical Plant, and the branch office of the Technical Committee for the Standardization of Chemical Laboratory Apparatus, took up their activities in Dechema House.