

The NUCLEUS

OF THE NORTHEASTERN SECTION OF THE AMERICAN CHEMICAL SOCIETY

March 14, 1957

Thursday, 4:00 p.m.

Symposium, "Adhesives"

C. G. OVERBERGER

of the Polytechnic Institute of Brooklyn

"New Oxidation Reactions of 1,1- and 1,2- Disubstituted
Hydrazines"

March 14, 1957

Thursday, 8:00 p.m.

PLACES OF MEETINGS

Dinner, 6:30 p.m.

The Campus Room, M.I.T. Graduate House

Symposium and Address in Huntington Hall (Room 10-250)

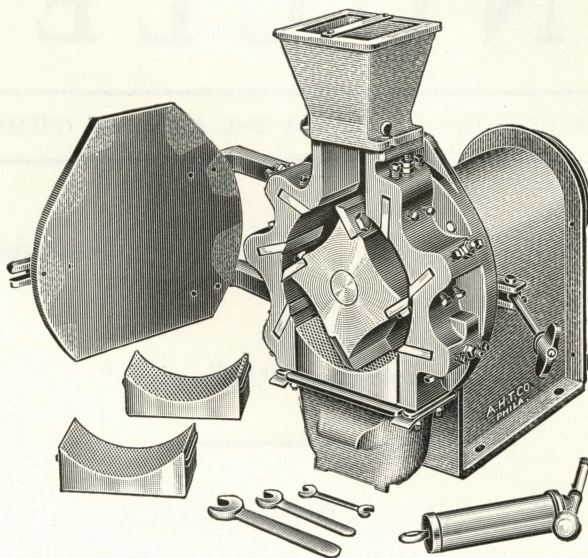
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of the
NORTHEASTERN SECTION A. C. S.

THURSDAY, MARCH 14, 1957

The Massachusetts Institute of Technology, Room 10-250
Entrance, 77 Massachusetts Avenue or the Dorrance Biology Laboratories

AFTERNOON MEETING

Symposium: Jointly with the Elastomer and Plastics Group
"Adhesives"

Herman P. Meissner, M.I.T., Chairman.

- 4:00 p.m. Irving Skeist, Skeist Laboratories, Newark, New Jersey
"New Directions in Adhesives"
- 4:40 p.m. Clinton M. Doede, of Quantum, Inc., Cheshire, Connecticut
"Bonding by Forming Polymers on Free Radicals at the Metal Adhesive
Interface"
- 5:20 p.m. Questions and Discussion.
- 5:30 p.m. Preprandial Hour (reservations necessary) Campus Room, followed by
- 6:30 p.m. Dinner (reservations necessary) in the Campus Room of the M.I.T.
Graduate House, entrance from the street, 308 Memorial Drive.

Price \$2.75 per person (tax incl.)

Should you desire a place reserved, mail the enclosed post card, at once,
or, after 2:30 p.m. Thursday, call UNiversity 4-6900, Ext. 2961.

EVENING MEETING

Edward R. Atkinson, presiding

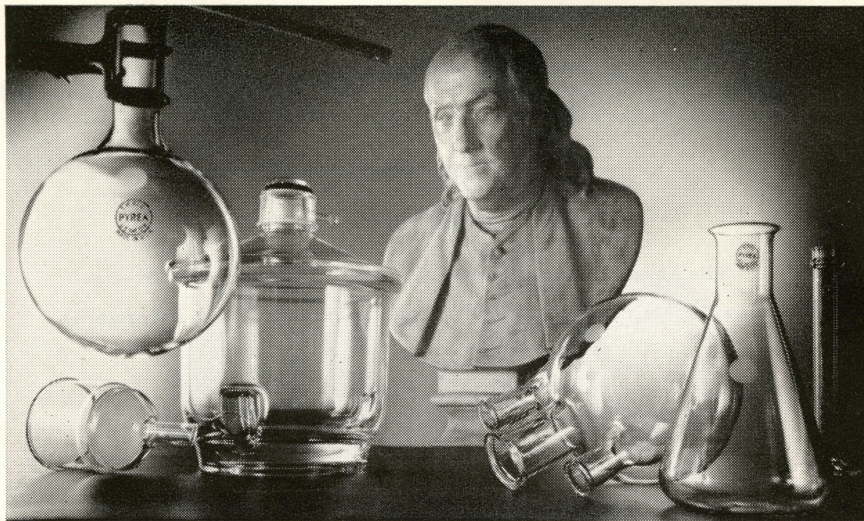
- 8:00 p.m. C. G. Overberger, of Polytechnic Institute of Brooklyn, New York
"New Oxidation Reactions of 1,1- and 1,2- Disubstituted Hydrazines"

Signing and mailing the dinner card or telephoning for reservations must be regarded as an obligation.

All interested are invited.

After five-thirty o'clock, the Reception Hall of the Campus Room, 308 Memorial Drive, west side of the Graduate House, will be available for members of the Section planning to attend the dinner.

A Committee will be in charge.



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The NUCLEUS

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Editorial

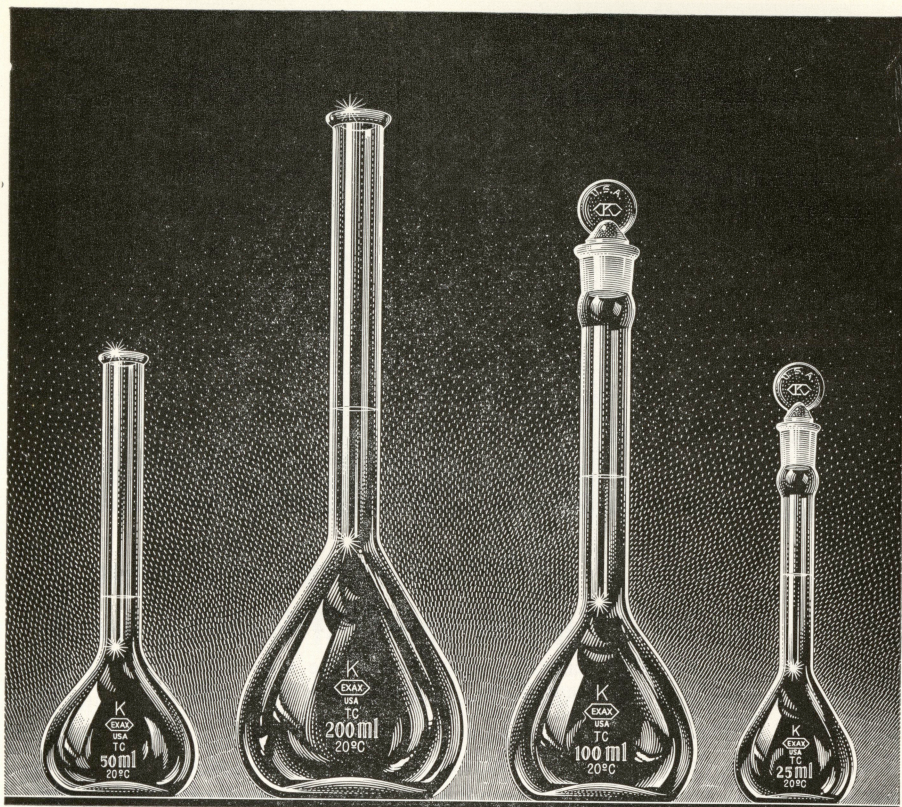
IN PRAISE OF UNITY

Members of the Northeastern Section who were able to attend both the afternoon and the evening February meetings can look back with something of that sort of satisfaction which grows out of close contact with a field of study. The unity of the three addresses, centering around the theme of new techniques for investigating the structure of compounds, created an impression of being at the front of new investigations not for a brief glimpse but for an extended period. It was something like taking a cool and refreshing drink at a fountain and having time to linger and enjoy it deeply. The program committee of the Northeastern Section merits special praise for its foresight.

Although it may be argued that a single topic would have a limited appeal, the events of February fourteenth seemed to show that, at least in this case, the interest in structure and new techniques is as wide as chemistry. It turned out that for every person listening to the addresses there was something of value. Even if only a beginner, so to speak, the presentation of "High Resolution Nuclear Magnetic Resonance Spectroscopy" and of "Electron Spin Resonance and its Application to Chemistry" was within the grasp of the thoughtful listener. Even more important was the train of thought started to find some possibility of adaptations to our own chemistry problems.

The evening speaker presented his summary on "Some Current Researches on Microwave Spectroscopy" in both a convincing and captivating manner. The wide variety of examples chosen, pointed to a sort of universality for Microwave Spectroscopy. The impression was gained that almost any substance would yield new facts if examined by microwave spectroscopy.

Again the Program Committee should be saluted for its imagination in bringing this kind of meeting series to the Northeastern Section.



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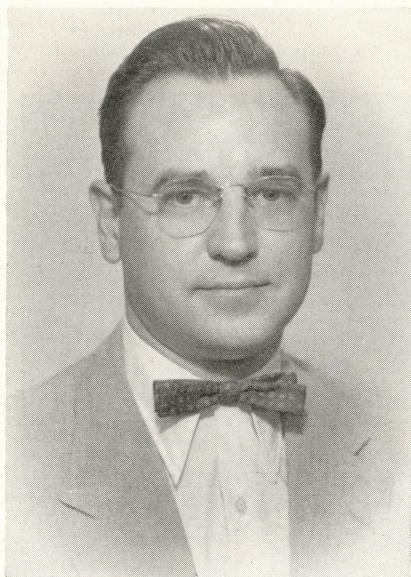
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MARCH SPEAKER



CHARLES G. OVERBERGER

Dr. Charles G. Overberger was born in Barnesboro, Pennsylvania, a small town in the bituminous coal area, in 1920. He was graduated from Pennsylvania State College (now University) with a B.S. degree in 1941. He entered the graduate school of the University of Illinois in the Fall of 1941, obtaining the Ph.D. degree in 1944, under the direction of Professor Carl S. Marvel.

As a graduate student he was a teaching assistant, a research assistant and a University fellow. From 1944 to 1946, he was a Research Associate at the University of Illinois with Professor Marvel. From 1946 to 1947, he held a duPont Postdoctorate Fellowship at the Massachusetts Institute of Technology with Professor Arthur C. Cope.

In 1947, he was appointed as an Assistant Professor of Organic Chemistry at the Polytechnic Institute of Brooklyn. In 1950 he was promoted to Associate Professor and to a full Professorship in 1952. He also was appointed Director of the Polymer Institute in 1951. In 1955 he assumed the duties of Head of the Department of Chemistry.

Dr. Overberger married Peggy J. Bachman from Champaign, Illinois, in 1945. They have three children: Erica, ten; Carla, nine; and Charles Thomas, 10 months.

Dr. Overberger's principal researches are in the fields of synthetic organic, organic reaction mechanisms and polymer chemistry. More specifically, his researches deal with ionic polymerization, the reactions of free radicals in solution, the effect of structure on the decomposition of radical formers, particularly azo compounds, the aromatic character of cyclic sulfones and asymmetric polymer syntheses.

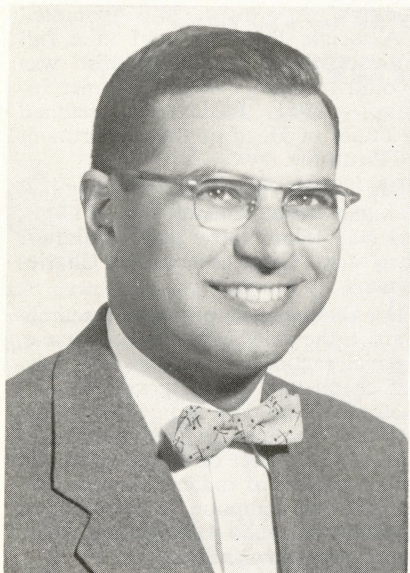
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CHARLES G. OVERBERGER

(Continued from previous Page)

Dr. Overberger is a member of the American Chemical Society, The Chemical Society, The American Institute of Chemists, The American Association for the Advancement of Science, The Society of Chemical Industry, Alpha Chi Sigma, Phi Lambda Upsilon and Sigma Xi. He is also a member of Phi Eta Sigma, Phi Kappa Pi and Sigma Pi. He is a consultant for several industrial concerns and agencies for the Defense Department, and has served on a number of advisory panels for the National Academy of Science and the National Science Foundation. He has been active in the New York Section of the American Chemical Society and is presently a member of the Board of Directors of the New York Section and also of the Metropolitan Long Island Subsection of the New York Section. He is a member of the American Chemical Society Committee Advisory to the Chemical Corps, a member of the Council Committee on Professional Relations and Status, and a Member-at-Large of the Advisory Board of the Gordon Research Conferences.

SYMPOSIUM SPEAKER

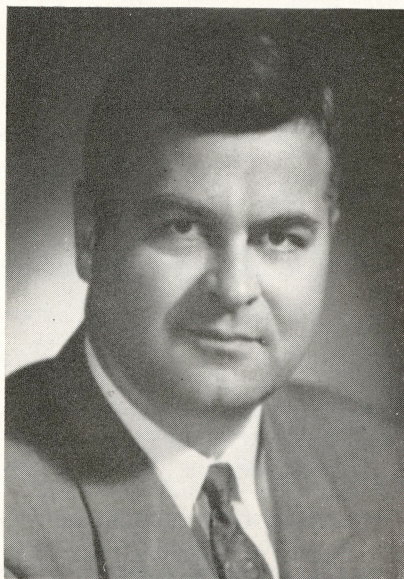


IRVING SKEIST

Irving Skeist, 41, a native Bay Stater, received his B.S. from Worcester Polytechnic Institute and his M.S. and Ph.D. — in Polymer Chemistry — from Polytechnic Institute of Brooklyn. With a background of fifteen years in industrial research and product development for Celanese Corp., Newark Paraffine and Parchment Paper Co., American Molding Powder, and Gering Products, he started his own consulting firm, Skeist Laboratories in Newark, New Jersey. A polymer specialist, he is the author of patents, technical papers, and economic surveys on plastics, plasticizers, polymerization, rheology, resins, fibers and adhesives. His book of Epoxy Resins is scheduled for publication by Reinhold this fall.

Dr. Skeist is a Registered Patent Agent and a member of ACC & CE, ACS, AIC, CCDA, CMRA, Phi Lambda Upsilon, Sigma Xi, SPE and SPI.

SYMPOSIUM SPEAKER



CLINTON MILFORD DOEDE

Clinton Milford Doede was born at Bonfield, Illinois, October 17, 1910. His formal higher education was acquired at the University of Chicago where he obtained the B.S. degree in

(Please turn to Page 134)

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CLINTON M. DOEDE

(Continued from Page 132)

1931 and the doctorate in physical chemistry in 1934.

His first position, 1934-1937, was that of a research chemist with the Firestone Tire and Rubber Company. The next two years saw him as head of the Physical Chemistry Research Division of Firestone. In 1939 he went to the Connecticut Hard Rubber Company as Vice President and General Manager. Here he remained until 1955 when he became President of Quantum, Inc.

For the year 1948-1949 he was a lecturer on Chemical Engineering at Yale and on Biophysics, 1949-1950.

Dr. Doede's special fields of research deal with the physical chemistry of rubber, especially silicones, photochemistry and applications of radiant energy. One of the more interesting projects at Quantum is helping the University of Buffalo to obtain industrial support for a swimming-pool type of reactor for the campus.

He is a member of the American Association for the Advancement of Science, the American Chemical Society, the Physical Society and the Faraday Society. He is a Fellow of the Institute of Chemistry.

Dr. and Mrs. Doede and their four children John, Robert, Patricia and Allen make their home in Hamden, Connecticut. Mrs. Doede holds a Ph.D. in microbiology from Yale.

Mr. and Mrs. Doede make travel a hobby. Together they have flown more than 100,000 miles outside continental United States visiting all of the continents and over 60 of the nations of the world.

ELASTOMER & PLASTICS GROUP

JOHN B. GREGORY, Chairman, Frederick S. Bacon Laboratories, Watertown 4-5000

MAX TAITEL, Chairman-elect, Union Bay State Laboratories, Inc., TRowbridge 6-8076

The fifth meeting of the 1956-1957 season will be held jointly with the regular second-Thursday-of-the-month sessions of the Northeastern Section of the A.C.S., on March 14, 1957. The afternoon symposium on "Adhesives" will be held at 4:00 p.m. in

Huntington Hall, room 10-250, M.I.T. under the chairmanship of Professor Herman P. Meissner of M.I.T. The first speaker Irving Skeist of the Skeist Laboratories, Newark, New Jersey will discuss

"New Directions in Adhesives"

The second speaker, Clinton M. Doede of Quantum, Inc., Cheshire, Connecticut will speak on

"Bonding by Forming Polymers on Free Radicals at the Metal-Adhesive Interface"

A dinner, honoring the speakers, will be held at 6:30 p.m. in the M.I.T. Graduate House, at 308 Memorial Drive, Cambridge. It will be preceded by a preprandial hour at 5:30 p.m. Please send in the dinner card if you plan to attend. For details read page 127 of the NUCLEUS.

After the dinner Dr. Charles G. Overberger of the Polytechnic Institute of Brooklyn will speak in Huntington Hall, discussing

"New Oxidation Reactions of 1, 1- and 1, 2-Disubstituted Hydrazines"

At 9:15 p.m. there will be a social hour in the Moore Room (6-321) M.I.T. with an opportunity to meet the speakers.

All interested persons are welcome to the meetings, the dinner, and the social hour.

ANALYTICAL GROUP

DONALD L. GUERNSEY, Chairman, M.I.T., UN 4-6900, Ext. 3306

FRANK O'HALLORAN, Secretary - Treasurer, Water Laboratory, Commonwealth of Massachusetts, UN 4-6900, Ext. 3306

The sixth meeting of this year will be held at 8:00 p.m. on Wednesday, March 20, 1957, in Room 2-131, M.I.T.

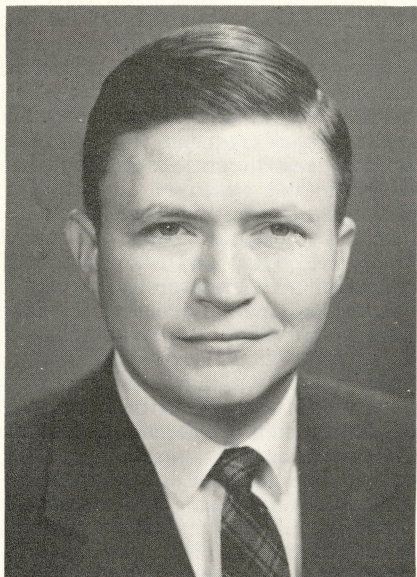
Fred W. McLafferty, Director of the Eastern Research Laboratory of the Dow Chemical Company, at Framingham, Massachusetts, will speak on

"Molecular Structure and Composition by Mass Spectrometry"

Prior to the meeting there will be a dinner at 5:45 p.m. in the M.I.T. Faculty Club on the sixth floor of the Sloan Building at 50 Memorial Drive, Cambridge. Reservations may be

made by telephoning Mr. Donald L. Guernsey, UN 4-6900. Ext. 3306.

All interested persons are invited.



FRED WARREN McLAFFERTY

Fred Warren McLafferty was born May 11, 1923 in Evanston, Illinois. He received his B.S. and M.S. degrees from the University of Nebraska in 1943 and 1947 respectively. He was in the U.S. Army 1942-45, serving in Europe in the infantry. He was graduated from Cornell University in 1949 with a Ph.D. in organic chemistry. After a one year postdoctorate fellowship at the University of Iowa, he joined the Spectroscopy Laboratory of The Dow Chemical Company in Midland, Michigan. In 1956 he moved to Framingham, Mass., where he is Director of Dow's Eastern Research Laboratory.

Dr. McLafferty served as Treasurer of the Midland Section of the American Chemical Society in 1953, Secretary in 1954, and Chairman in 1956. He is Secretary of the national organization on mass spectrometry, ASTM Committee E-14. He is a member of Sigma Xi, Phi Lambda Upsilon, Alpha Chi Sigma, and Sigma Chi. His chief research interests have been in the fields of organic extractants, organic

fluorine compounds, fatty acids, mass spectrometry, and instrumental analysis.

Dr. and Mrs. McLafferty and their four children make their home in Wellesley, Mass.

BOSTON SECTION OF THE ELECTROCHEMICAL SOCIETY

The fourth meeting of the Boston Section of the Electrochemical Society will be held on Thursday, March 21, 1957, in the Campus Room of the M.I.T. Graduate House. Dr. Miles V. Sullivan of the Bell Telephone Laboratories will speak on

"New Sources of Electric Energy— the Bell Solar Battery"

A dinner at 6:30 p.m. in the Campus Room of the M.I.T. Graduate House will be preceded by a pre-prandial hour at 5:45 p.m. Following the dinner Dr. Sullivan will speak in the Campus Room in the M.I.T. Graduate House at 7:45 p.m. Reservations for the dinner may be made by writing to Charles Levy, 61 Central Street, Auburndale 66, Mass., or by telephoning to him at WA 4-8540, Extension 685. The price of the dinner will be \$3.00.

All interested persons are invited.

SPEAKER BEFORE THE ELECTROCHEMICAL SOCIETY

MILES VINCENT SULLIVAN

Miles Vincent Sullivan was born in Fargo, North Dakota, August 19, 1917. He received the A.B. degree from Wabash College in 1941. Graduate studies were carried out at Purdue University leading to the M.S. in 1942, and, after the War, to the doctorate in 1948. From 1942 to 1946, he was a research chemist in the Naval Research Laboratory. He has been an engineer with the Bell Telephone Laboratories, Inc., since 1948.

His researches have dealt with inflammability, lubricating oils, analysis for lead in gasoline, wire insulations, heats of combustions, dielectric measurements, transistor materials and process development.

NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY

By AKSEL A. BOTHNER-BY, of Harvard

Résumé of an address before the Northeastern Section, February 14, 1957

With the advent of commercial instruments, high resolution nuclear magnetic resonance spectroscopy has rapidly developed as a powerful tool for the investigation of chemical structural problems. The principal on which the commercial instrument operates is as follows: When magnetic nuclei are immersed in a magnetic field of strength H , they precess about the direction of the applied field with a frequency ν given by the equation $\nu = \gamma H$, where γ is a constant characteristic of the kind of nucleus. Radiant energy of frequency ν will interact with these nuclei by a resonance phenomenon, and the resultant absorption and/or emission of energy may be detected by suitable electronic devices. For a given frequency, ν , only one value of H will satisfy the resonance equation. In the experiment, a sample of substance containing magnetic nuclei is exposed to a gradually increasing applied magnetic field, H_a , and the values of H_a at which a resonance is observed are noted. The interpretation of the spectrum thus obtained consists of the evaluation of the various factors which cause H , the field of intensity at the nucleus, to differ from H_a . Three factors appear to be important.

First, the applied field is altered by the sample container, by relatively remote parts of the sample, and by the coils, supports and electronic gadgetry surrounding the sample. Some of these effects are constants of the apparatus, others can be corrected for by well-understood classical equations.

Second, the applied field may be altered by the molecules in the immediate neighborhood of the molecule containing the nuclei being studied. The effect in this case differs from the classically predicted one, but for most substances follows a simple law, permitting an empirical correction to be applied. For substances which are magnetically anisotropic (aromatic compounds, acetylenic compounds), the simple law is not obeyed, but the experimental expedient of extrapolation to infinite dilution in an isotropic solvent removes the anomaly.

Thirdly, the applied field is altered by the electronic motions within the molecule. The "shielding" thus produced is characteristic of the molecular structure, and can usually be related directly to the functional groups present in the molecule.

When the first and second effects are taken into account and either empirically corrected for, or experimentally eliminated, the operation of the third effect may be examined. It is found that the shieldings are often extremely constant for a given functional group. For example in a series of fifteen normal alkyl halides, the groups C_1CH_2R , $BrCH_2R$, and ICH_2R give rise to proton resonance absorption with magnetic field intensities at the molecule less by 2.15 ± 0.02 , 1.97 ± 0.02 , 1.80 ± 0.02 parts per million, respectively, than that necessary for resonance in cyclohexane. Other measurements show similar exact correlations for other functional groups. The prospect of profitable applications of nuclear magnetic resonance spectroscopy in qualitative or organic analysis is even brighter than heretofore.

ELECTRON SPIN RESONANCE AND ITS APPLICATION TO CHEMISTRY

By GEORGE K. FRAENKEL

Department of Chemistry, Columbia University, New York 27, N. Y.

*Résumé of an address before the Northeastern Section, A.C.S.,
February 14, 1957*

The elementary principles of electron spin resonance were discussed from the point of view of the detection, identification, and estimation of free radicals.

Typical spectra observed from free radicals in solution were reviewed, with particular emphasis on the spectra of semiquinones. These spectra exhibit hyperfine structure caused by interaction of the unpaired electron with the proton nuclear magnetic moment. This hyperfine structure, which is proportional to the unpaired electron density at the magnetic nucleus, gives information of considerable interest to chemical valence theory, and the splitting arising from protons attached to aromatic rings is not predicted by conventional valence theory. Recent theories which account for this phenomenon were discussed as well as the relation between the splitting and the unpaired electron density in the aromatic ring. Other spectra of semiquinones show that there is very extensive delocalization of the unpaired electron over methyl and even tertiary-butyl groups substituted on aromatic rings and give direct evidence for the phenomenon of hyperconjugation. The variation of odd-electron density with substitution in aromatic rings was treated also.

Paramagnetic spectra can be used for the qualitative and quantitative identification of free radicals and for the study of oxidation-reduction equilibria. Since the technique can be used to follow the concentration of the reactive intermediate, reactions which involve free radicals can probably be elucidated much more definitely than before.

The properties of the high temperature form of liquid sulfur were described as another example of the utility of the electron spin resonance method. The highly viscous red material that is formed on heating pure sulfur above 160°C. has been shown to be paramagnetic and the paramagnetic resonance spectra, studied as a function of temperature, have been interpreted in terms of a model consisting of long-chain polymers in equilibrium with S_8 rings. Data were obtained for the heat of scission of a sulfur-sulfur bond in a long chain, and the chain length as a function of temperature was estimated. Variation of line width with temperature, quite marked in these spectra, have been interpreted in terms of a rapid radical displacement reaction, and the rate constant and energy of activation evaluated. These data illustrate a very interesting method of studying rapid radical reactions.

Miscellaneous applications to the study of trapped radicals were described. The ultimate sensitivity of the method and the range of applicability were also discussed.

SOME RECENT TRENDS IN MICROWAVE SPECTROSCOPY

WALTER GORDY
Duke University

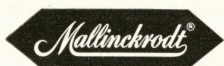
*Résumé of an address before the Northeastern Section, A.C.S.,
February 14, 1957*

Some of the more active fields of microwave spectroscopy of primary interest to chemists are:

- C₁. Study of the rotational spectra of light simple molecules in the shorter millimeter and newly opened sub-millimeter wave region.
- C₂. Determinations of the molecular structure of rather complex asymmetric rotors such as ethyl chloride and bromide, pyridine, pyrrole, and thiophenol.
- C₃. The measurement of potential barriers hindering internal rotation in symmetric and asymmetric molecules through measurement of the splitting of rotational lines caused by barrier tunneling.
- C₄. Study of the electronic structures of free radicals through nuclear hyperfine structure of their electron spin resonance.
- C₅. Study of radiation damage to molecules or macro-molecules in the solid state by means of electron spin resonances. This gets into biology.

(Please turn to Page 139)

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


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TRENDS IN MICROWAVE SPECTROSCOPY

(Continued from Page 137)

- C₆. Paramagnetic resonance studies of crystals of the rare earths and actinide series.

Some of the more active fields of microwave spectroscopy of primary interest to physicists are:

- P₁. Measurement of nuclear moments through hyperfine structure of rotational spectra or paramagnetic resonance.
 P₂. Electron spin resonance in conductors and semi-conductors.
 P₃. Cyclotron resonance in solids.
 P₄. Paramagnetic resonance of free atoms.
 P₅. F and V center resonance in irradiated crystals.
 P₆. MASERS, gyrators, gyratrons, and clocks.

The elaboration is confined to recent results obtained at Duke University on C₁ and C₅.

Rotational transitions have been measured in the wavelength region from 0.7 to 1.5 mm for DC1, TC1, DBr, TBr, DI and HI. Their internuclear distances and nuclear couplings (for the various halogen isotopes) have been accurately evaluated. Both the effective internuclear distances and the halogen nuclear couplings are slightly greater for the lighter hydrogen isotopic species. Nuclear quadrupole splitting by deuterium was detected in DC1. The nuclear magnetic coupling of the halogen nucleus in the halides increases from C1 to I. The quadrupole couplings are consistent with the interpretation which requires no large s-p hybridization of the halogen bonding orbitals. Rotational transitions of ND₃, PH₃, PD₃, AsH₃, AsD₃, SbH₃, and SbD₃ have been measured in the wavelength region from 0.97 to 4 mm. Again small differences in structure were noted for the hydrides and deuterides. The bond angle falls from 107° in ND₃ to 93° 10' in PD₃, to 91° 30' in AsD₃, and further to 90° 56' in SbD₃. Despite the almost right angle bonds in the As and Sb compounds, their nuclear quadrupole coupling indicates appreciable s character (10%) in their bond orbitals. Similarly, the structures of H₂ and H₂Se have been obtained from rotational transitions occurring in the wavelength region from 1 to 4 mm. The bond angle in H₂S is 92° 6', and that in H₂Se is 91°. There is also an apparent inconsistency in the S³³ quadrupole coupling which indicates about 12% s hybridization of the S bonding orbitals and the bond angle which indicates only about 3 to 4%. These discrepancies reveal that our present concepts of chemical bondings have some flaws. The bond lengths R_{A-H} (in angstrom units) in all the above hydrides, and presumably in others, can be guessed closely with the empirical rule:

$$R_{A-H} = 0.32 + r_A - 0.06 x_A - 2.1$$

where r_A is the covalent radius and x is the electronegativity of the atom A.

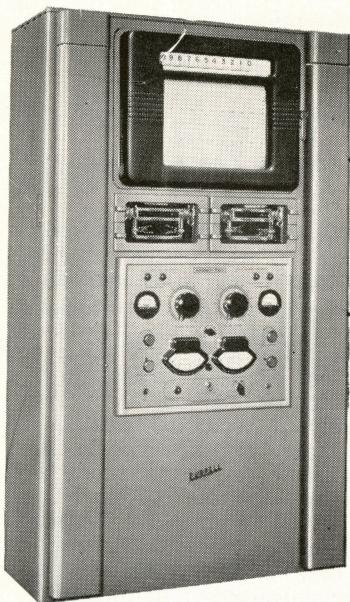
A large variety of organic free radicals have been produced in our laboratory by ultraviolet or X-irradiation of various organic or bio-chemicals in the solid or frozen state. These have been examined and some have been tentatively identified through the microwave magnetic resonance of their unpaired electrons. Some of the free radicals we think we have identified from the proton hyperfine structure of their electron spin resonance are CH₃, (C₂H₄)⁺, C₂H₅, and either (C₂H₆)⁺ or RC(CH₃)₂ where R has no coupling nuclei. Orientation effects on the resonance have been found in single crystals of some of the amino acids and in certain proteins. Evidence has been found that an electron vacancy can move through the polypeptide backbone structure of many proteins to the point of lowest energy for the vacancy — usually to an S atom or S-S link if the protein contains sulfur.

Our microwave research at Duke University is supported by the Office of Scientific Research of the U. S. Air Force and by the Office of Ordnance Research.

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**REPORT OF THE NOMINATING
COMMITTEE FOR OFFICERS OF
THE NORTHEASTERN SECTION
FOR THE YEAR 1957-1958**

*(Arthur C. Cope of the Massachusetts
Institute of Technology is chairman of
the Nominating Committee)*

Chairman (for 1 year)

LOCKHART B. ROGERS, M.I.T.

Chairman-elect (for 1 year)

AUSTIN W. FISHER, JR., Arthur
D. Little, Inc.

HOWARD H. REYNOLDS, The Cry-
ovac Company

Secretary (for 1 year)

RIDGLEY G. SHEPHERD, JR.,
Dennison Manufacturing Co.

Treasurer (for 1 year)

LLOYD H. PERRY, Union Bay State
Chemical Company, Inc.

Auditor (for 1 year)

STUART B. FOSTER, Framingham
State Teachers College

HENRY A. HILL, National Poly-
chemicals, Inc.

Board of Trustees (for 3 years)

KENNETH E. BELL, Mirror Lake,
New Hampshire

JOHN A. TIMM, Simmons College

National Councillor (for 3 years)

To take office January 1, 1958

Four to be elected

EDWARD R. ATKINSON, Dewey
and Almy Chemical Company

ALLEN D. BLISS, Simmons College

ELKAN R. BLOUT, Polaroid Corpo-
ration

THOMAS R. P. GIBB, JR., Tufts
University

JAMES E. LUVALLE, Technical Op-
erations, Inc.

C. RICHARD MORGAN, Arthur D.
Little, Inc.

JOHN L. ONCLEY, Harvard Univer-
sity

M. KENT WILSON, Tufts University

Alternate Councillor (for 3 years)

To take office January 1, 1958

Four to be elected

ROBERT D. EDDY, Tufts University

HELEN T. JONES, Wellesley College

EDWARD F. LEVY, Gillette Co.

JAMES J. LINGANE, Harvard Uni-
versity

WILLIAM F. LUDER, Northeastern
University

LEONARD K. NASH, Harvard Uni-
versity

JANET S. PERKINS, Simmons Col-
lege

MARTHA B. THOMAS, Sylvania
Electric Products Co.

*Norris Award Committee (for 4
years)*

Two to be elected

PAUL M. DOTY, Harvard University

GEORGE E. KIMBALL, Arthur D.
Little, Inc.

RICHARD C. LORD, M.I.T.

M. KENT WILSON, Tufts University

**OFFICERS OF THE
NORTHEASTERN SECTION**

1957-1958

Constitutional Provisions

ARTICLE VIII—Election of Officers

SECTION 1. As provided in Article V, Section 3, the Chairman-elect shall take office as Chairman at the expiration of the preceding Chairman's term of office. All other officers of the "Northeastern Section," one member of the Board of Trustees, the Councillors and Alternate Councillors for the term beginning January first of the following year shall be elected annually by written ballot in the manner hereinafter provided. With the exception of the Councillors and Alternate Councillors, who shall take office as provided in Article VII, Sections 1 and 2, the officers and elected directors shall take office at the close of the annual meeting of the Board of Directors.

SEC. 2. At the February meeting of the "Northeastern Section," the Nominating Committee shall present to the Members the names of nominees for the various offices enumerated in Section 1 hereof, and the said nominations shall be published in the March issue of the Official Publication.

SEC. 3. Any group comprising 2 per cent or more of the membership of the "Northeastern Section" may nominate candidates for any elective office provided that such nomination (accompanied by the signatures of the nom-

(Please turn to Page 143)



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OFFICERS 1957-1958

(Continued from Page 141)

inating group) shall be presented in writing to the Chairman of the Nominating Committee *not more than ten days following the March meeting of the "Northeastern Section."* Names of nominees thus presented shall be designated on the ballot as having been nominated by petition.

MEETING OF THE DIRECTORS

The February meeting of the Directors was held at 4:30 P.M. in the Moore Room at M.I.T., Chairman Edward R. Atkinson presiding. The following members were present: Avery A. Ashdown, Arthur C. Cope, Robert D. Eddy, Austin W. Fisher, Lawrence J. Heidt, Arno H. A. Heyn, David M. Howell, Lockhart B. Rogers, Martha B. Thomas, John A. Timm, George B. Walker, Jr., M. Kent Wilson and Stephen S. Winter. The minutes of the January meeting were accepted and distributed.

In presenting the report of the Chairman, Edward Atkinson reminded members that the National Society has requested assistance in proposing nominees for President-Elect, Director-at-Large, Procedural Committee and Council posts. Details and forms are available from the Chairman and Secretary. A. C. S. headquarters has supplied the Section with the names of new 50-year members. On a motion duly made and seconded, it was

VOTED: That the Secretary invite new 50-year members to be dinner guests of the Section at the April meeting.

The Secretary announced that the annual report of the Section has been sent to the A. C. S. Washington office.

Martha B. Thomas read the Treasurer's report. During the period from December 3, 1956, to February 5, 1957, the income was \$3,566.25 and the expenses were \$370.55, leaving a balance of \$6,106.50. Budgetary increases of \$100 each for the Public Relations Committee and the Chemistry Education Committee were balanced by an equivalent reduction in the Chairman's fund. The reports were accepted.

The report of the Membership Committee was presented by Arno H. A. Heyn. Nineteen new members have joined the Section. However, transfers, resignations and deaths have reduced the roster to 2203 members. David M. Howell suggested that the NUCLEUS carry the names of new members.

Stephen S. Winter reported that arrangements have been completed with WBZ-TV to present a chemical series as a portion of the "Dimensions" program which is telecast every Sunday morning between 9:30 and 10:30. The first program will be on February 24 when Dr. Bernard Vonnegut of Arthur D. Little will speak on clouds. The A. C. S. program will be presented at monthly intervals. Industrial organizations, universities and government laboratories are invited to participate in this series.

The report of the Hospitality Committee was presented by David M. Howell. New members are to be invited as dinner guests of the Section at the April meeting. Four Hungarian chemists refugees, will be guests of the Section at the February meeting.

There being no further business, the meeting was adjourned at 5:45 P.M.

Respectfully submitted,

RIDGLEY G. SHEPHERD, JR.

*Secretary of the Northeastern
Section of the American Chemical Society.*

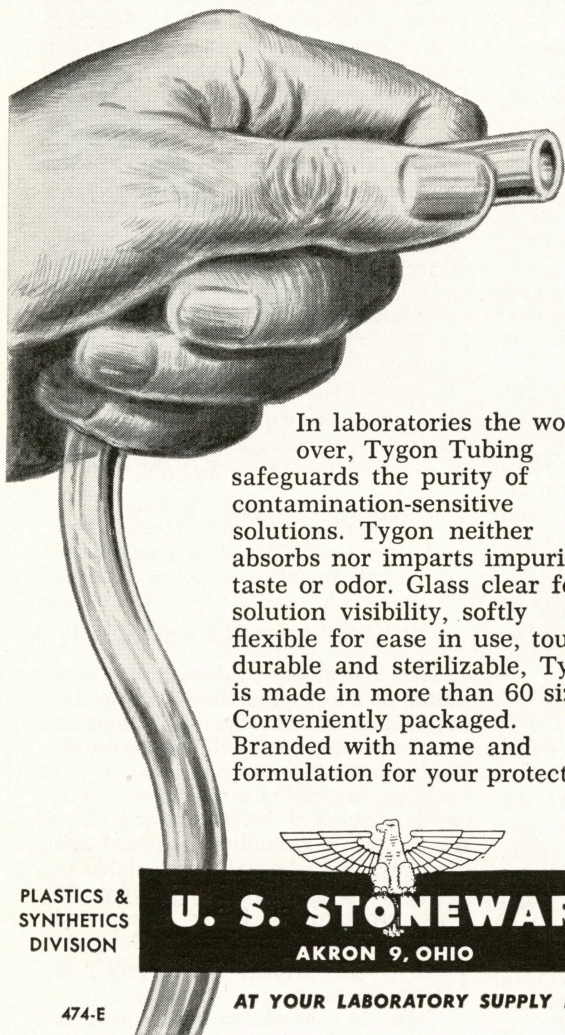
A SCIENCE SPEAKER PROGRAM

The Chemistry Education Committee of the Northeastern Section has initiated a Science Speaker Program in co-operation with P.T.A. groups. This is part of a program we are developing to combat a shortage of scientific personnel in our nation. The Committee is compiling a list of science speakers who will be available to speak at the request of P.T.A. groups. This program is being announced through The Massachusetts Congress of Parents and Teachers, Inc. early in March.

There is a need for more speakers to join the names of those who have volunteered already. We desire those members who have a feeling of social responsibility and a desire to im-

(Please turn to Page 145)

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A SCIENCE SPEAKER PROGRAM

(Continued from Page 143)

prove the present condition of our nation.

All those interested are requested to send their names and addresses as soon as possible to: Paul C. Maybury, Chairman, Department of Chemistry, Eastern Nazarene College, Wollaston Park, Quincy 70, Massachusetts.

APRIL MEETING

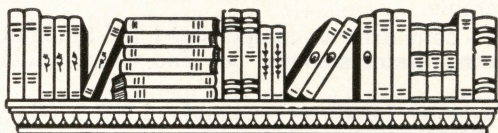
The April afternoon symposium of the Northeastern Section will deal with Automation in Analytical Chemistry. William H. Stahl of Quartermaster Research and Development Center at Natick, Massachusetts will be the chairman. The speaker will be G. D. Patterson, Jr. and C. D. Lewis, both from the du Pont Laboratories at Wilmington, Delaware.

Lars Gunnar Sillen of the Royal Institute of Technology in Stockholm, Sweden, the Arthur D. Little visiting Professor of Chemistry at M.I.T., will discuss "Temperature and Chemistry" at the evening meeting.

ANALYTICAL SPEAKER FOR FEBRUARY



REV. JAMES J. DEVLIN, S.J.



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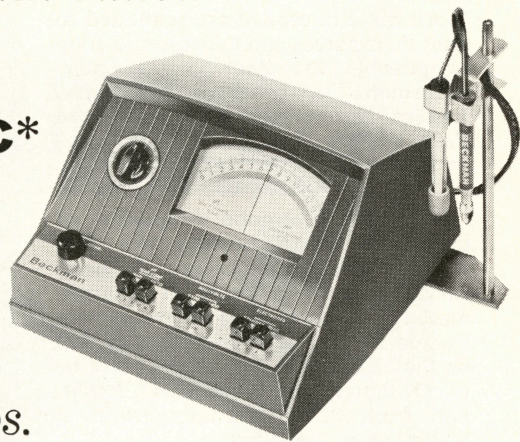
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THE DIVISION OF INORGANIC CHEMISTRY—A NEW DIVISION OF THE A.C.S.

At the National A.C.S. Meeting in Atlantic City, New Jersey on September 18, 1956, the Council of the American Chemical Society voted unanimously to grant the petition for the formation of a new Division of the American Chemical Society, the Division of Inorganic Chemistry.

As prescribed by the Society's by-laws, the new Division was established on a probationary period (not to exceed three years) and the officers were appointed by the President of the Society. Dr. Warner appointed Dr. John C. Bailar, Jr. as Chairman of the Division, Dr. John F. Gall as Chairman-Elect, and Dr. L. B. Asprey as Secretary-Treasurer.

The Division has two symposia scheduled for the Miami Meeting in April. A symposium on "The Present Status of Inorganic Chemistry in America" under the chairmanship of Dr. Arthur Adamson and a symposium on "Unfamiliar Oxidation States of the Elements" under the chairmanship of Dr. Jacob Kleinberg. In addition, eighteen general papers covering a wide range of topics will be presented. The program for these papers will appear in the February 18 issue of *C & EN*. On Wednesday, April 10, the Division will have a cocktail hour followed by a dinner and Dr. Wilhelm Klemm will be the guest speaker. The talk will be followed by a business meeting and social hour. On Thursday afternoon, April 11, all members are invited to an open discussion type of meeting to present their views on the problems, aims, and actions of the Division.

Negotiations are under way with Captain Maxwell, of the Pergamon Press, for a reduced subscription rate to the *Journal of Inorganic and Nuclear Chemistry*. At least 300 members of the Division must subscribe in order to receive a reduced rate which will be approximately half of the regular rate.

At the New York Meeting, the newly formed Inorganic Division in cooperation with the Division of Physical and Inorganic Chemistry will co-sponsor a symposium on "Organome-

tallic Compounds" under the chairmanship of Dr. Eugene C. Rochow of Harvard. Dr. Rochow invites interested persons to participate in this program.

The new Division is off to a good start with approximately 450 members and all interested persons are invited to become members of the Division by submitting at least one year's dues (\$3.00) to the Secretary-Treasurer, Dr. L. B. Asprey, Los Alamos Scientific Laboratory, Box 1663, Los Alamos, New Mexico. Dr. Asprey welcomes suggestions for papers and symposia for the September National Meeting of the Society in New York. Other suggestions as to the future operations of the new Division are welcomed by its officers.

NORTHEASTERN SECTION TV PROGRAM

A monthly TV presentation by the Northeastern Section over WBZ-TV, Channel 4, began on Sunday, February 24, at 9:30 a.m., as part of the hour long program "Dimensions". Dr. Bernard Vonnegut of Arthur D. Little, Inc., discussed his work on "Rain Making."

TV COMMITTEE MEMBERS NEEDED

Interested chemists are urgently needed to help the TV committee organize and present the monthly programs sponsored by the Northeastern Section. The only requirement is enthusiasm. About 100,000 viewers are waiting. Call or write: Stephen S. Winter, Northeastern University, Copley 7-6600, 360 Huntington Avenue, Boston 15, Massachusetts.

A.C.S. RADIO PROGRAM "Objective"

Each Sunday at 7:00 p.m. the Northeastern Section presents the program OBJECTIVE, stories of chemical research and discovery, over station WMEX, Boston.

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