

The NUCLEUS

OF THE NORTHEASTERN SECTION OF THE AMERICAN CHEMICAL SOCIETY

April 11, 1957

Thursday, 4:00 p.m.

Symposium, "Automation in Analytical Chemistry"

LARS GUNNAR SILLEN

of the Royal Institute of Technology, Stockholm, Sweden

Arthur D. Little Visiting Professor of Chemistry, M.I.T.

"Temperature and Chemistry"

April 11, 1957

Thursday, 8:00 p.m.

PLACES OF MEETINGS

Dinner, 6:30 p.m.

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

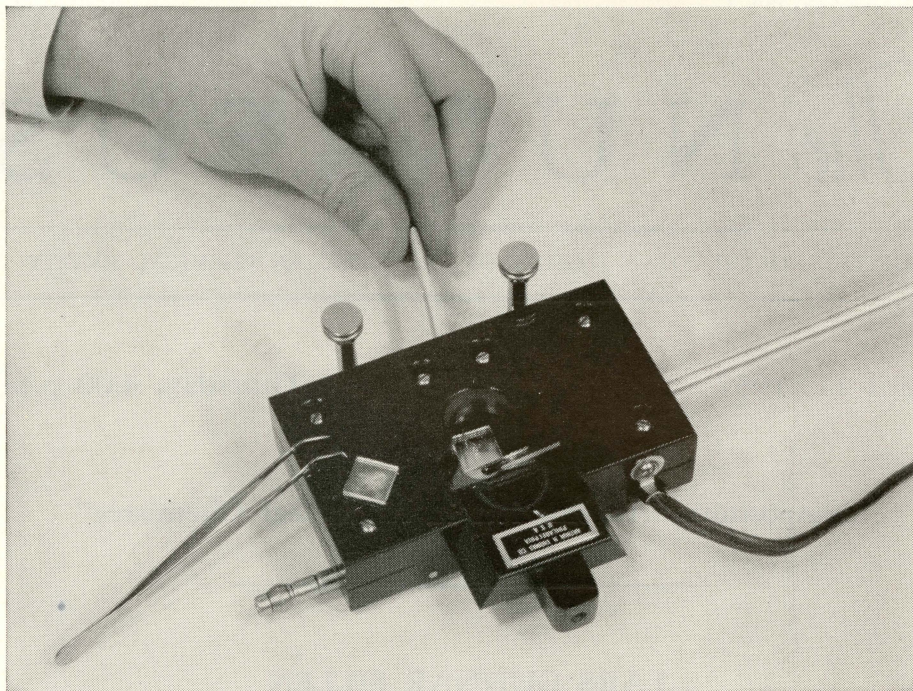
Symposium and Address in Huntington Hall (Room 10-250)

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6893-N. "Fusion Methods in Chemical Microscopy", by Walter C. McCrone (*Interscience Publishers, Inc., 1957*), 328-pp. Includes techniques for Thomas-McCrone Cold Stage **6.75**

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of the
NORTHEASTERN SECTION A. C. S.

THURSDAY, APRIL 11, 1957

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

AFTERNOON MEETING

Symposium: Jointly with the Analytical Group (see page 171)
"Automation in Analytical Chemistry"

William H. Stahl, Quartermaster Research and Development Center,
Natick, Chairman

- 4:00 p.m. Cameron D. Lewis, of E. I. duPont de Nemours and Company
"Automation in Process Development"
- 4:40 p.m. Gordon D. Patterson, Jr., E. I. duPont de Nemours and Company
"Automation in the Laboratory"
- 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. Lars Gunnar Sillén, of the Royal Institute of Technology in Stockholm
and Arthur D. Little, Visiting Professor of Chemistry, M.I.T.
"Temperature and Chemistry"
- 9:15 p.m. Social hour in the Moore Room (6-321 in the Eastman Laboratories)

*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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Editorial

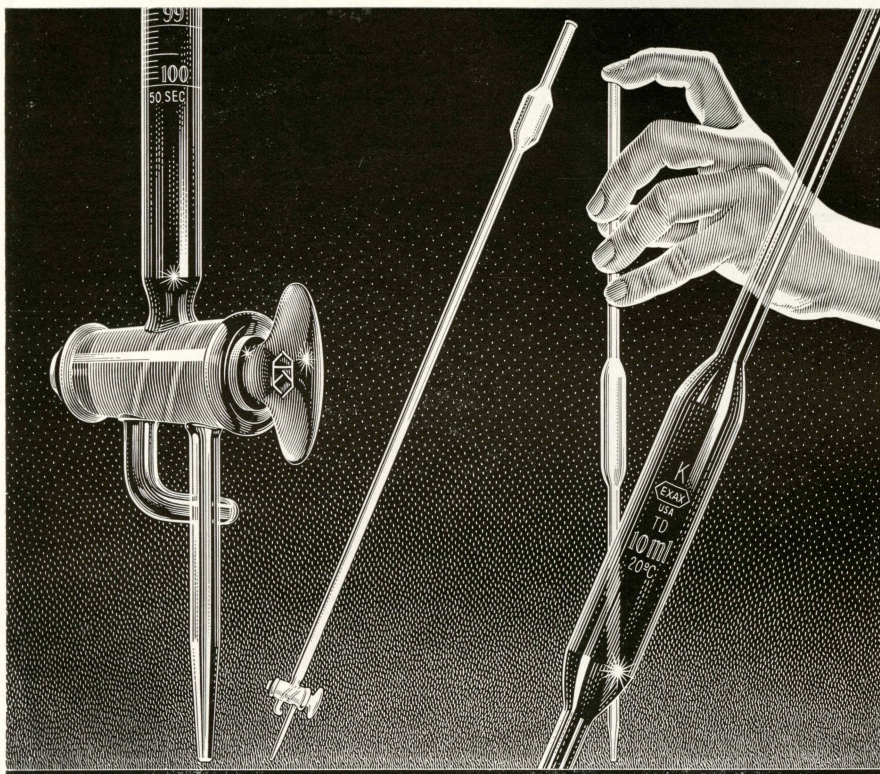
CHEMISTS FROM SWEDEN

The presence of Lars Gunnar Sillén as speaker before the Northeastern Section on April 11, 1957, gives occasion for looking at the beginning of the long line of distinguished chemists whose native land was Sweden and for whom, as chemists, the world became a home. Jöns Jakob Berzelius (1779-1848) stands at the head of the line. He was accustomed to invite students of promise, from far and wide, to come to his laboratory in Stockholm for a year or two of study and research.

Friedrich Wöhler, one of these students, recorded, in his later years, his impressions on entering the laboratory. In the *Berichte* for 1875 stands his long and absorbing account, worthy of careful reading. The opening paragraphs, giving the spirit of the occasion, perhaps, may find an echo in every student as he enters the graduate school of his choice. It all happened in the fall of 1823. Wöhler was just twenty-three years old, unaware of the extent of his own distinguished career which time would unfold for him.

"With beating heart I stood at Berzelius' door and rang the bell. A neatly dressed, stately man of fresh appearance opened. It was Berzelius himself. He welcomed me in a most friendly way, said that he was expecting me for a long time, and talked about my journey, of course all in the German language, in which he was as proficient as in French and English. When he took me into his laboratory, I was as if in a dream, doubting if it was a reality to see myself in these classic rooms, and so at the goal of my wishes.

"On the following morning I began work. I obtained for my special use a platinum crucible, a balance with weights, a wash-bottle, and above all a blowpipe upon the use of which Berzelius laid great stress. At my own expense I had also to provide alcohol for the lamps and oil for the blast lamp. The ordinary reagents and utensils were had in common. Ferrocyanide of potassium, however, was not to be had in Stockholm so I had to order it from Lübec. I was at that time the only one in the laboratory. Before me Mitscherlich and H. and G. Rose had been there. After me came Gustav Magnus. The laboratory consisted of two ordinary rooms with the very simplest arrangements. There were neither furnaces nor hoods, neither water system nor gas. In one of the rooms there were two ordinary long work tables of pine wood. At one of them Berzelius had his place, at the other I had mine. . . ."



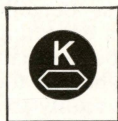
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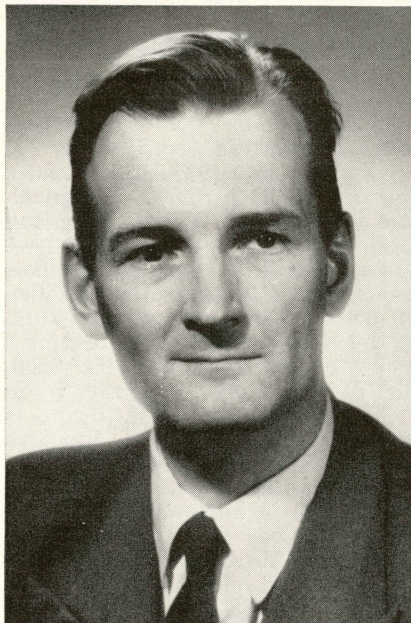
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APRIL SPEAKER



LARS GUNNAR SILLEN

Lars Gunnar Sillén was born on July 11, 1916, in Stockholm, Sweden. He attended the Stockholm University (Stockholms Högskola) from which he received his fil kand 1934, fil mag 1936, fil lic (Ph.D.) 1937, and fil dr 1941. From 1941 to 1948 he served on the faculty of the University, as laborator (associate professor) of

chemistry. In 1948, he became professor of inorganic chemistry at the Chalmers Institute of Technology in Göteborg (Chalmers Tekniska Högskola) and since 1950 has been professor of inorganic chemistry at the Royal Institute of Technology in Stockholm (Kungliga Tekniska Högskolan). In 1956, he was appointed Dean of the Chemistry Department.

In 1942, he advanced to the rank of sergeant in the Royal Swedish Coast Artillery (anti-aircraft guns); now retired. He is a consultant for the Research Institute for National Defense (Försvarets Forskningsanstalt).

He has been President of the Commission on equilibrium data, Analytical Section, International Union of Pure and Applied Chemistry, since 1953 and editor of Svensk Kemisk Tidsskrift, since 1955.

Dr. Sillén started research work with Professor Arne Westgren in 1937 on X-ray crystallography, and devoted the next five or six years to studies on the crystal structure of bismuth oxides and oxyhalogenides, mixed oxides with defect lattices, etc. After that he gradually turned to solution chemistry: zinc halogenide complexes, mercury (II) halogenide complexes, hydrolysis of metal ions. In later years, he has been especially concerned with working out better experimental and mathematical methods for treating complicated ionic equilibria, notably equilibria where polynuclear complexes are formed. His

(Please turn to next Page)

LARS GUNNAR SILLÉN

(Continued from previous Page)

other research interests include the mathematics of the degradation and synthesis of macromolecules, kinetics of ion exchange and gas mask layers.

Professor Sillén has a deep interest in chemical education and has published on this subject. He is co-author of a book, *Problems in Physical Chemistry* (1948), the second edition of which has been translated and published in the United States.

During the spring semester of 1957, as the Arthur D. Little Visiting Professor of Chemistry, Professor Sillén is delivering a series of lectures entitled "Studies on Chemical Equilibria." These lectures deal briefly with the history of the law of mass action and then develop the mathematical methods used in treating equilibrium systems containing many known reacting species. A discussion of mathematical and experimental methods of treating equilibrium systems of unknown species will follow. Professor Sillén's extensive work in these areas provides much illustrative material for the lectures.

Mrs. Sillén, born Birgit Bjernekuull, is an artist. Mr. and Mrs. Sillén have three children, Gunnar, born in 1939, Bo, born in 1941 and Birgitta, born in 1952.

Professor Sillén counts as hobbies, collecting Roman and Swedish coins and sailing and skiing when opportunity arises.

SYMPOSIUM CHAIRMAN WILLIAM HERBERT STAHL

Since 1952, Dr. Stahl has been chief of the analytical chemistry section of the Quartermaster Research and Development Center of Philadelphia, Pennsylvania, and Natick, Massachusetts. Prior to this date he had been chief of the biochemistry section.

Born in Philadelphia on March 8, 1913, he received the B.S. degree in biochemistry from Pennsylvania State University in 1935. His doctorate was conferred by Michigan State University, in immunochemistry, in 1939.

Dr. Stahl has had a variety of experience in his field. He was a grad-

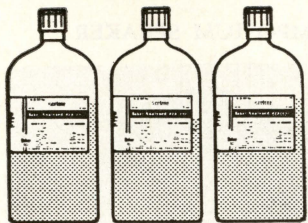


WILLIAM HERBERT STAHL

uate assistant in biochemistry at Michigan State, 1935-1937, chemist and a U. S. Department of Agriculture Fellow at the Michigan Agricultural Experiment Station, 1937-1941 and chief chemist, Fairchild Brothers and Foster (commercial preparation of digestive enzymes), New York, 1941-1945. In this year he became a group leader, with Foster D. Snell, Inc. of New York. Concurrently, in 1946, he was also an instructor in general chemistry at the Brooklyn Polytechnic Institute of New York. His interests lie in general instrumental research in micro-and macro-analytical methods and procedures, involving such diverse materials as keratins, cellulose, plasticizers and food odors.

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Benzene, Reagent7	Chloroform, Technical.....7	Methyl Ethyl Ketone, Purified...7
Benzene, Purified7	Collodion, U.S.P.6	Oleic Acid, U.S.P.7
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iso-Butyl Alcohol, Reagent.....6	Ethyl Acetate, N.F.....7	Toluene, Purified.....7
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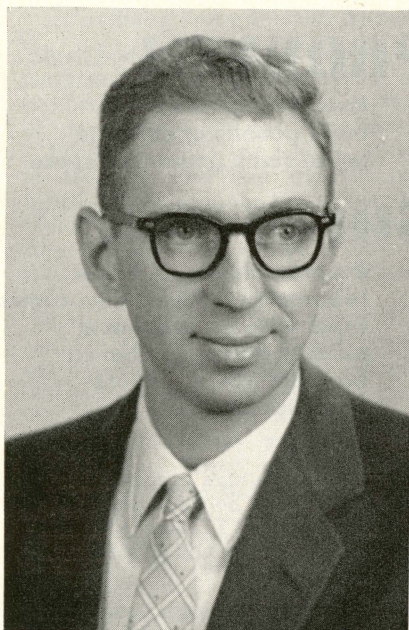
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SYMPOSIUM SPEAKER



CAMERON D. LEWIS

Cameron David Lewis was born in Staunton, Virginia, in 1920. He acquired the A.B. in chemistry from the University of Buffalo, Buffalo, New York, in 1942. His two advanced degrees A.M. and Ph.D., in organic chemistry, were obtained from Illinois in 1945 and 1947 respectively. Professor Carl S. Marvel was his thesis director. During graduate school years he held a position first as research assistant at the Illinois Geological Survey and then in the War Production Board Rubber Reserve Program. In 1947 he took a position as a research chemist with E. I. du Pont de Nemours and Company, Inc. at Arlington, New Jersey, and Wilmington, Delaware, in the Experiment Station, Polychemicals Department. His work has dealt with vinyl polymerization, the chemistry and physics of synthetic polymers and emulsion copolymerization of butadiene and styrene at elevated temperatures. In recent years he has turned attention to instrumental analysis in the polymerization field.

Dr. Lewis has been a member of the American Chemical Society since 1946.

SYMPOSIUM SPEAKER

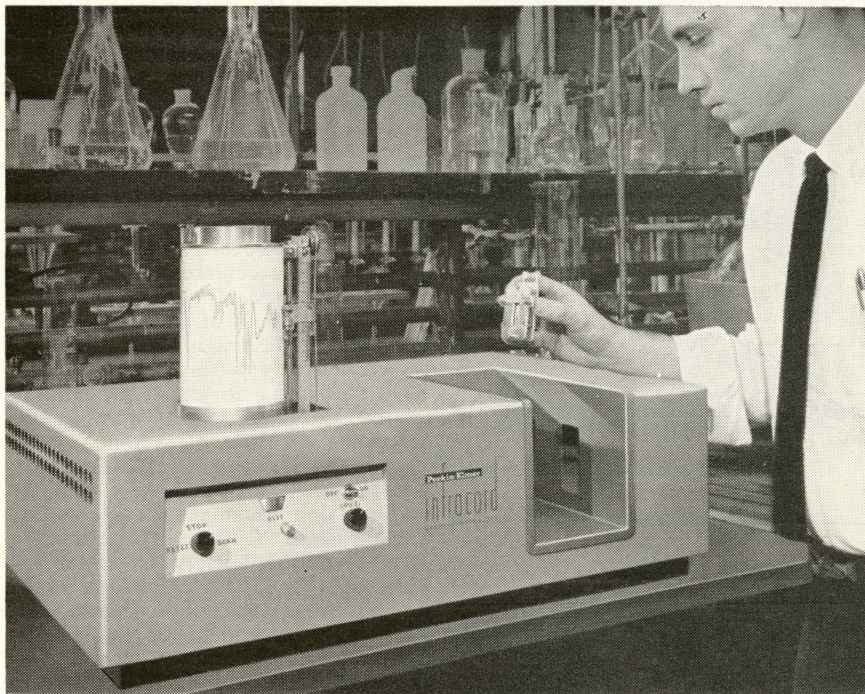


GORDON D. PATTERSON, JR.

Gordon Derby Patterson, Jr. was born in Columbus, Ohio, on May 6, 1923 while his father was a graduate student in chemistry at Ohio State University. His high school days were passed at P. S. duPont in Wilmington, Delaware. After two college years at Allegheny, Meadville, Pennsylvania, he went to Hobart College at Geneva, New York as a part of the Navy V-12 program. There followed three years service in the Navy, 1943-1946, including two years in the Pacific. In the midst of the war, he completed studies for the B.S. in science at Allegheny in 1944.

In graduate school at Purdue University he won the M.S. in 1949 and Ph.D. in 1952, in analytical chemistry under the direction of Professor Melvin G. Mellon. While at Purdue he held a teaching position in the chemistry department. Beginning in November, 1951, he has been a research chemist with the du Pont Company, Film Department Division, first at Buffalo for three and a half years and now in Wilmington. The work has been primarily with the evaluation and

(Please turn to Page 171)



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The eighth meeting of this year will be held at 8:00 p.m. on Wednesday, April 17, 1957, in Room 2-131, M.I.T.

Thomas R. P. Gibb, Jr., of Tufts University, will speak on

"Research in Analysis"

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.

ANALYTICAL SPEAKER



THOMAS R. P. GIBB, JR.

Thomas R. P. Gibb, Jr., was born in Belmont, Massachusetts, February 10, 1916. He attended the Belmont Public Schools in preparation for Bowdoin College where he was graduated, cum laude in chemistry in June 1936. The following fall he entered

the Graduate School of the Massachusetts Institute of Technology where he obtained the doctorate in 1940 in the field of organometallic compounds, working with Professor Avery A. Morton.

While still a graduate student he became an instructor in chemistry in the Massachusetts Institute of Technology. Later he was promoted to the rank of assistant professor. He continued this work until 1946 when he went to Beverly, Massachusetts, to establish a research laboratory at Metal Hydrides, Inc. His textbook, "Optical Methods of Chemical Analysis," was published in 1942.

After five very busy years at Metal Hydrides, Inc., he joined the staff of Tufts College, now University, where he holds the title of Associate Professor and Director of Sponsored Research.

Dr. Gibb became secretary of the Northeastern Section of the American Chemical Society in 1946 and Chairman in 1952. He has served several years as a national councillor. He is past president of the Boston Microchemical Society which, in time, affiliated with the Northeastern Section as the Analytical Group. He is a member of the American Chemical Society, the New England Association of Chemistry Teachers, the American Rocket Society, the Optical Society of America, the American Association for the Advancement of Science, Phi Beta Kappa, Sigma Xi, and Alpha Chi Sigma. He is the senior author of fourteen scientific papers and of several patents, chiefly in the field of metal hydrides. His chief researches have been in metal hydrides and methods of analysis.

Dr. and Mrs. Gibb and their two children make their home in Winchester, 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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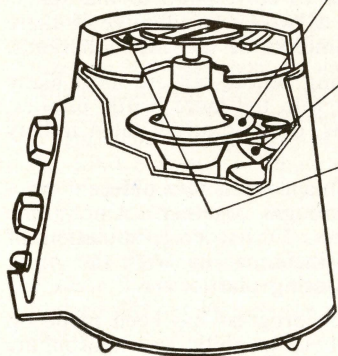


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NEW DIRECTIONS IN ADHESIVES

By IRVING SKEIST, Skeist Laboratories, Newark, New Jersey

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

The American adhesives industry was founded in Boston 150 years ago with the opening of Elijah Upton's glue factory. Protein and carbohydrate adhesives are still important in the bonding of paper and wood for indoor use; but recent developments are chiefly in synthetic adhesives for impervious adherends — plastics, glass, metals.

The surfaces of metals and glass are different from the interiors. This complicates the study of these materials as adherends. Plastics lend themselves more readily to an examination of the influence of solubility parameter and hydrogen bonding upon adhesion.

The following rules have been evolved for the cementing and laminating of plastics:

1. The crystalline plastics are best bonded by heat rather than adhesives (i.e., best adhesive is the polymer itself, melted).

2. Amorphous or non-crystalline plastics are bonded to themselves with monomers or solvent cements, sometimes resin-bodied.

3. To bond two different plastics, or a plastic to a non-plastic, it is best to use a polymeric adhesive. For good *adhesion* to the two surfaces, the initial viscosity of the adhesive should be low, while for good *cohesion* within the adhesive layer, its final viscosity must be high. The viscosity change is accomplished by evaporation of solvents from cements, evaporation of water from latices, polymerization of monomers, or curing of resin intermediates.

4. To minimize strains and resulting stresses caused by flexing or temperature change, the adhesive layer should be as thin as possible, and no more rigid than the adherends.

5. Solvents and polymers should be selected to correspond to the adherends in solubility parameter. This may require a two-layer adhesive if there is a great difference between the solubility parameters of the two adherends.

6. Low-boiling solvents give the fastest setting action, but are most likely to cause crazing. Crazing is most likely to occur with the more brittle plastics, and is minimized by avoiding low-boiling solvents, or by diluting them if they are used.

7. Plasticizer migration is sometimes a problem when two different plastics, at least one of which is plasticized, are brought together. Among the remedies are 1) use of non-migrating plasticizers, 2) harder formulation of the plasticized material, 3) use of plasticizers incompatible with the other plastic. The solubility parameter may aid in choosing plasticizers.

In the bonding of glass fibers to resins, much progress has been made on glass finishes. Just as oil-water surfactants have both lyophilic and hydrophilic portions, the glass finishes consist of a silane or siloxane to adhere to the glass fiber and a suitable "resinophilic" group at the other end. This group may be allyl or vinyl, for copolymerization with unsaturated polyesters; or it may be an amine, functioning as reactive hardener for epoxies.

For metals, the epoxies are outstanding. They combine the chemical reactivity of the epoxide group, the hydrogen bonding of the hydroxyl, the heat resistance of the phenylene, the flexibility and inertness of the ether. The epoxies can be applied to the metal surface at low viscosity for good wetting, then cured in situ, without evolution of volatiles, to give a strong, coherent bond. Cure can be effected without application of heat, if necessary. Fillers may be incorporated to reduce or even eliminate the difference in thermal expansion between metal and adhesive layer. Polysulfide rubbers or fatty acid-polyamine condensates provide high peel strength.

The technologist expects much from epoxies. On the one hand, he seeks high peel strength and the ability to withstand flexing, impact, changing temperatures. These properties call for free rotation in a substantial proportion of the segments of the cured Big Molecule. But he also wants the shear strength and heat resistance that come from aromatic rings, polar groups, high density of cross-links. Density of cross-links depends upon the choice and proportion of ingredients and heating cycle. The epoxies are a stimulating challenge to the formulator of adhesives.

BONDING BY FORMING POLYMERS ON FREE RADICALS AT THE METAL-ADHESIVE INTERFACE

By DR. C. M. DOEDE, Quantum, Inc., Cheshire, Connecticut

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

The classical studies of adhesion have provided the fundamental information with regard to surfaces and interfaces. These include surface energies and interfacial energies, the energies of cohesion and adhesion, the energies of immersion of solids and liquids, the angle of contact of a liquid on a solid, the degree of wetting of a solid by a liquid, and many other relationships. They have contributed relatively little to the understanding of the molecular configuration involved or the kinetics associated with the process in which an organic or non-metallic substance is attached to a metal or some comparable type of dissimilar substrate. The experimental approach chosen for this work has been an attempt to synthesize on the surface of the metal substrate a series of molecular configurations and to try to follow their deposition, growth and thickness with the elliptical polarizing spectrometer known as an ellipsometer, and to remove and to rupture the metal from the substrate by spinning the properly designed sample in an ultracentrifuge and observing the angular velocity at which rupture occurs. Although gravitational fields of 40,000 g. were available in the centrifuge, it was necessary to increase the mass of the sample to be ruptured by polymerizing the button onto the organic above the already established interface. The first series of experiments involved the deposition of monolayers such as acrylic acid, methylacrylate, and methylmethacrylate on metallic substrates of the kind known as Johansson gage blocks. Methyl methacrylate was polymerized onto the monolayer by means of ultraviolet light and gamma radiation from a Co^{60} source at room temperature and with benzoyl peroxide. The method of polymerization did not seem to determine the amount of adhesion nor was the degree of adhesion affected by the presence or absence of a double bond in the monolayer at some distance from the metal substrate. The polymer formed did not include the monomer supposedly available from the film on the metal.

The second series of experiments was based on the polymerization of a monomer placed directly upon the gage blocks without the use of a normally deposited monolayer. In this instance the force of adhesion appeared to be two or three times that obtained where the monolayer had been deposited separately. A geometrical analysis of the molecular configurations within the interface region would indicate that the forces from the active centers of metal substrate must extend for several atoms below the surface and that the points of contact between the metallic active centers and the polymer placed on the substrate are relatively limited. There is little question but what these centers of attraction must also extend at least two or three molecules into the organic phase of the adhesive system.

This research was performed under U. S. Air Force Contract No. AF 33(616)-2465.

Candidate for Chairman-Elect,
Northeastern Section



AUSTIN W. FISHER, JR.

Austin W. Fisher, Jr. who is a candidate for the office of Chairman-Elect in this month's election, received his undergraduate and graduate training at the Massachusetts Institute of Technology. After receiving the Sc.D. in chemical engineering in 1941 he served with the Barrett Division, Allied Chemical & Dye Corp. and with Publicker Industries before joining the staff of Arthur D. Little, Inc. in 1946. At the present time he is Manager of the New England office of Little. Dr. Fisher lives in Lexington where he is active in community affairs. He is currently a National Councilor of the ACS and a member of the Northeastern Section's Chemistry Education Committee. In the past he has served as chairman of the local section of the American Institute of Chemical Engineers and on national committees of that organization. He is currently a Councilor-at-Large and Chairman of the New England Chapter of the American Institute of Chemists.

Candidate for Chairman-Elect,
Northeastern Section



HOWARD H. REYNOLDS

Howard H. Reynolds, who is a candidate for the office of Chairman-Elect received the A.B. degree from Harvard and the Sc.D. from the Massachusetts Institute of Technology in 1939 where he majored in chemical engineering. The war years were spent with the Wyandotte Chemical Company and with the Davison Chemical Co. In 1944 Dr. Reynolds joined the staff of the Dewey and Almy Chemical Co. When the Cryovac Co. was created as a separate division of W. R. Grace & Co. in 1956 he became Manager of Research for Cryovac. Dr. Reynolds is currently a National Councilor of the ACS and is Chairman of the Chemistry Education Committee of the Northeastern Section. In the past he has served as chairman of the local section of the American Institute of Chemical Engineers, as chairman of the Elastomer and Plastics Group of the Northeastern Section, ACS, and as chairman of the Section's Board of Publications. Dr. Reynolds makes his home in Belmont and is active in community affairs.

**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 Councillors (for 3 years)
To take office January 1, 1958*

Four to be elected

EDWARD R. ATKINSON, Dewey
and Almy Chemical Company
ALLAN 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 Councillors (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

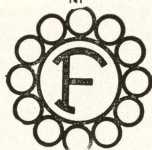
**OFFICERS OF THE
NORTHEASTERN SECTION
1957-1958**

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
(Please turn to Page 167)



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OFFICERS OF THE NORTHEASTERN SECTION

(Continued from Page 165)

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 nominating 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.

No further nominations have been received. A ballot accompanies this issue of the NUCLEUS. To be counted it must be post marked not later than April 30, 1957.

DO YOU KNOW THE CHEMISTRY TEACHER IN THE HIGH SCHOOL OF YOUR HOME TOWN?

Over a year ago the Committee on Chemistry Education asked for volunteers from the Section who would agree to introduce themselves to a chemistry teacher in their local high school; to talk over his problems; and to offer him the assistance of the Section in meeting these problems. Seven members of the Section volunteered:

John B. Gregory	Wendall Sykes
Ralph Marotta	Harry Teicher
Wilson H. Power	Joseph Voci
Augustus C. Walker	

and through their efforts friendly contacts were made with teachers in eleven towns in the Metropolitan Boston area. Valuable information was collected which has been of great help to the Committee in its efforts to offer the teachers those services which are most desired. The Committee is very grateful to these seven for their efforts. However, it would like to have many

more volunteers to obtain a far better sampling of the needs and the desires of the teachers in the entire area of the Northeastern Section.

Thus far no one has volunteered from the following typical cities and towns in this area:

Boston	Newton
Cambridge	Wellesley
Charlestown	Frammingham
Somerville	Natick
Watertown	Roxbury
Medford	Jamaica Plain
Revere	Roslindale
Salem	Dorchester
Marblehead	Needham
Belmont	Dedham
Waltham	

and the list could go on.

If you live in one of these or in any other town, volunteer to give a little of your time for this worthwhile activity. Write to Howard H. Reynolds, The Cryovac Company, 62 Whittemore Avenue, Cambridge 40, Massachusetts.

FIFTY-YEAR MEMBERS OF THE A.C.S.

Come the spring and the American Chemical Society seeks out its members of half-a-century standing, for special recognition and honor. This April the Northeastern Section is happy to recognize four of its members who have been members of the Society since 1907. The Section, through its secretary has invited these gentlemen to be its guests at the regular monthly dinner on April the eleventh. For fifty years these men have supported the American Chemical Society and its many activities.

Harold C. Chapin, of 290 Pine Street, Lowell, Massachusetts, has been associated with the Lowell Technological Institute for many years. He has served as secretary of the American Association of Textile Chemists and Colorists.

Walter W. Evans, of East Kingston, New Hampshire has been technical director for many years, of the Exeter Manufacturing Company at Exeter, New Hampshire.

Herman B. Kipper, of Accord, Massachusetts, was director of his own laboratory, the Kipper Research Laboratory, at Accord, Massachusetts.

Lester A. Pratt, of 7 Everett Avenue, Winchester, Massachusetts, was General

(Please turn to Page 169)



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FIFTY-YEAR MEMBERS

(Continued from Page 167)

Manager of Sales, Monsanto Chemical Company, Everett Station, Massachusetts. In 1933 he was Chairman of the Northeastern Section, A.C.S.

PHI LAMBDA UPSILON SPONSORS ADDRESSES BY OUTSTANDING CHEMISTS

On May 2nd, 1957, the M.I.T. chapter of Phi Lambda Upsilon will present a talk by Professor John C. Sheehan. This talk is the first of a series planned by this honorary chemistry society, to present outstanding men in the field of chemistry. Professor Sheehan will discuss "Antibiotics from a Chemical Viewpoint". He will scan the history of antibiotics from their discovery and first use through the present, with views toward the future. The talk will be held at 8:00 P.M. in Room 6-120 at the Massachusetts Institute of Technology. It will be open to the public.

Professor Sheehan has been well known in the field of antibiotics for years with his recent total synthesis of Penicillin V constituting one highlight of his work. He received his Ph.D. at the University of Michigan under the supervision of Professor W. A. Bachmann. As a post-doctoral fellow with Professor Bachmann, he was co-discoverer of the process which was used during World War II for manufacturing the high explosive RDX. After his post-doctoral work he was a Senior Research Chemist at Merck and Company in Rahway, N. J. where he developed methods for the production of streptomycin penicillin, and synthetic B-vitamins. He has been a professor at M.I.T. since 1946. In 1951 he received the American Chemical Society's Award in Pure Chemistry.

TV COMMITTEE MEMBERS NEEDED

Interested chemists are needed, urgently, to help the T.V. Committee in organizing and presenting the monthly programs sponsored by the Northeastern Section. Call or write, Stephen S. Winter, Northeastern University, Copley 7-6600, 360 Huntington Avenue, Boston 15, Massachusetts.

MEETING OF THE DIRECTORS OF THE NORTHEASTERN SECTION OF THE AMERICAN CHEMICAL SOCIETY

The March meeting of the Directors was held at 4:35 P.M. in the Moore Room, at M.I.T., Chairman Edward R. Atkinson presiding. The following members were present: Avery A. Ashdown, John T. Blake, Ernest C. Crocker, Austin W. Fisher, Jr., Laurence S. Foster, Arno H. A. Heyn, Henry A. Hill, David M. Howell, Martha B. Thomas, John A. Timm, George B. Walker, Jr. and Stephen S. Winter. The minutes of the February meeting were accepted as distributed.

Following the opening remarks of the Chairman, the Secretary reported that two of the four 50-year members had accepted dinner invitations for the April meeting.

The Treasurer's report was read by Martha B. Thomas. During the period from February 3 to March 4, 1957, there was no income. The expenses amounted to \$1,188.04, leaving a balance of \$4,918.46.

Arno H. A. Heyn announced that twenty new members had joined the Section during the past month. The Section now has 2,225 members.

The report of the Public Relations Committee was presented by Stephen S. Winter. The amount of publicity in magazines and newspapers has shown a steady increase in recent weeks. Our first television program has been presented. A letter announcing the various Section activities for high school teachers was mailed to 342 high schools in this area. Approximately 60 of the post cards enclosed have been returned. A mailing list for future announcements will be based on the returned cards.

Austin W. Fisher, Jr. reported that the Committee on Chemistry Education had met and had discussed the results from the above questionnaire to high schools. The Committee also discussed means for furthering contact of Section members with high school teachers in their area.

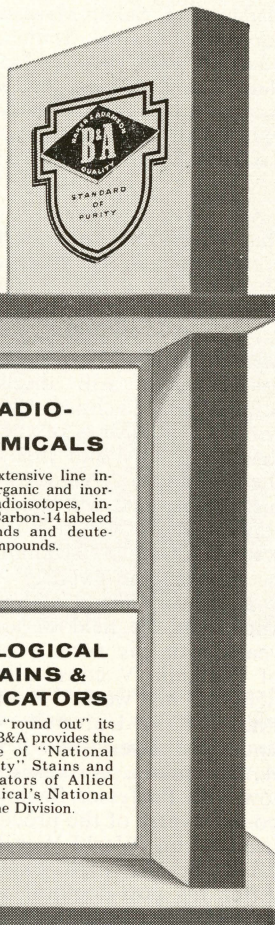
According to David M. Howell, 69 new section members will be invited as dinner guests at the April meeting.

Avery A. Ashdown reported for the Norris Award Committee. A motion

(Please turn to Page 173)

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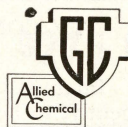
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GORDON PATTERSON, JR.

(Continued from Page 158)

characterization of organic polymers. Since moving into the new laboratory, in July 1955, Dr. Patterson has been in charge of the testing service and development for the Wilmington Film Research Laboratory.

Dr. Patterson's interest in automatic analysis stems from his master's thesis assignment which turned out to be essentially a literature review of the field up to 1948. So much effort went into setting up a logical classification scheme that he has continued, as an avocation, to maintain a bibliography of automatic methods.

Publications include "Classification of Methods in Quantitative Chemical Analysis" [*J. Chem. Ed.* 26, 468 (1949)] and four reviews on automatic operations in analytical chemistry, published between 1950 and 1955. Another review is in preparation. In 1952 he published a method for the determination of sulfur dioxide by color changing gels. This paper appeared in the *Journal of Analytical Chemistry* 24, 1586 (1952).

Dr. Patterson is a member of the American Chemical Society, the American Association for the Advancement of Science, the Society of the Sigma Xi and of Phi Lambda Upsilon, the honorary chemical society.

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 seventh meeting of this year will be held jointly with the Northeastern Section at 4:00 p.m. on Thursday, April 11, 1957, in Room 10-250, M.I.T.

This meeting will be a symposium on "Automation in Analytical Chemistry." William H. Stahl of the Quartermaster Research and Development Center, Natick, will be the chairman. Cameron D. Lewis of du Pont will speak on

"Automation in Process Development"

Gordon D. Patterson, Jr. also of duPont, will speak on

"Automation in the Laboratory"

Following the symposium there will

be a social hour at 5:30 p.m. in the Campus Room of the Graduate House and a dinner at 6:30 p.m. in honor of the chairman and the speakers in the same Campus Room. Reservations may be made by using the blue card in the NUCLEUS. After Thursday morning, reservations may be made, also, by telephoning UNiversity 4-6900, Ext. 2961.

All interested persons are invited.

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

Contrary to previous announcements, the sixth meeting of the present season will be a plant trip to the Cambridge plant of the Dewey and Almy Chemical Company on April 23, 1957. Those persons planning to attend will assemble at 3:30 p.m. at the main entrance of the plant, 62 Whittemore Avenue, Cambridge, Mass.

The tour will include a visit through the sounding balloon manufacturing unit, an inspection of the new pilot plant and a demonstration of the new Cobalt 60 radiation unit.

Immediately following the inspection trip, a catered dinner will be served in the Dewey and Almy cafeteria. After dinner, Mr. David A. Trageser, Processing Development Engineer, will speak on

"Commercial Aspects of the Radiation of Materials—Particularly Polymers"

Since it will be necessary to make final preparations for this visit well in advance, reservations are mandatory and must be received no later than 4:30 p.m., Friday, April 19, 1957 by Mr. Joseph M. Donahue of the Good-year Tire and Rubber Company, 66 B Street, Needham Heights 94, Mass., phone NEedham 3-5850. Cost of the dinner will be \$2.75.

All interested persons are invited.

BOSTON SECTION OF THE ELECTROCHEMICAL SOCIETY

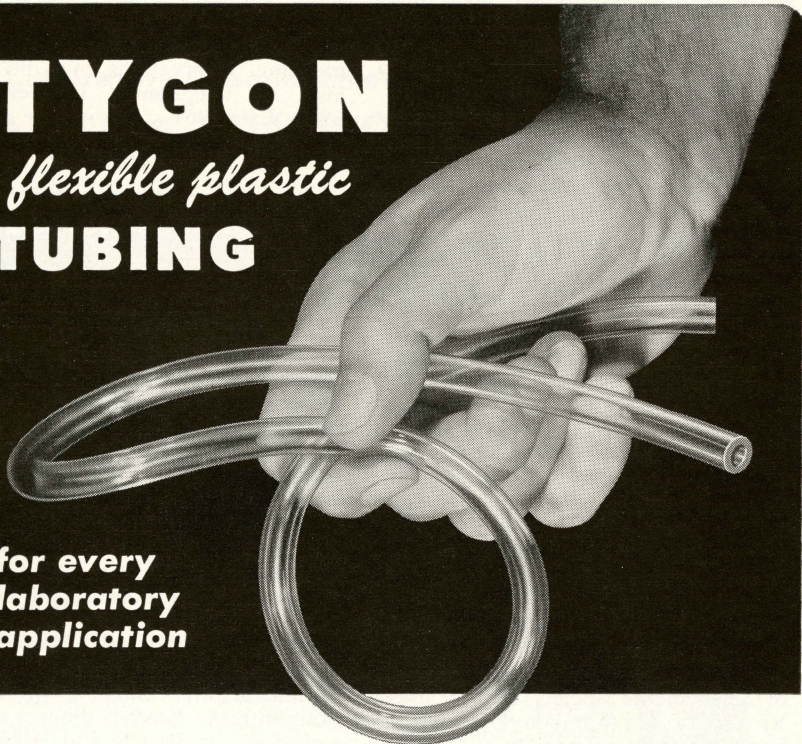
The next meeting of the society will be held in May, 1957. There will not be a meeting in April.

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(Continued from Page 169)

regulating the size of the award was made and tabled on a vote of the Directors.

On a motion duly made and seconded, it was

VOTED: That next year's Norris Award be made in November and that the Norris Award Committee be requested to present its nominee at the annual meeting.

Under new business, Austin W. Fisher, Jr. reported on a new project being considered by the New England Council to establish a service center for New England. Included in the proposed services would be secretarial assistance to scientific societies and provisions for meeting areas. The report was received with considerable interest and the Directors are looking forward to further details.

There being no further business, the meeting was adjourned at 5:50 P.M.

Respectfully submitted,
RIDGLEY G. SHEPERD
Secretary of the Northeastern Section of the

NORTHEASTERN SECTION TELEVISION

WBZ-TV CHANNEL 4

Sunday mornings, 9:30-10:30

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".

Cooperating Companies

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April 21	Cryovac Corporation
May 19	Arthur D. Little, Inc.
June 16	Dennison Mfg. Co.
July 14	Tracerlab, Inc.
August 11	Dow Chemical Co.

Other companies are invited to present programs. Communicate with Stephen S. Winter, Northeastern University, Boston 15, Massachusetts, COpley 7-6600.



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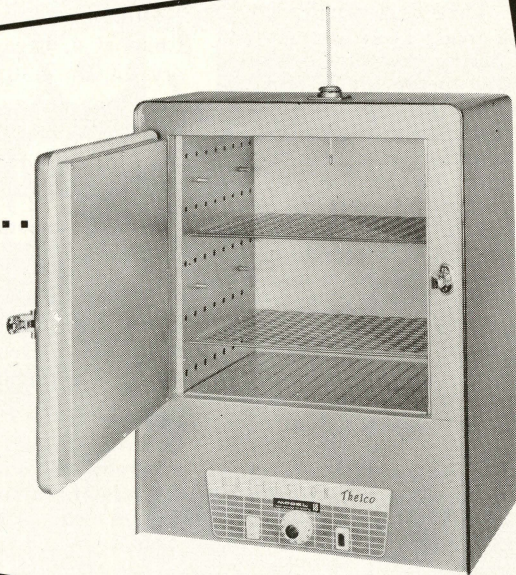
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NORTHEASTERN SECTION FUNDS

The Northeastern Section was incorporated May 26, 1926 under the laws of Massachusetts. The legal name of the corporation is The Northeastern Section of the American Chemical Society, Incorporated.

The Section has five funds, namely:

The Northeastern Section General Fund.

The Norris Award Fund.

The Permanent Trust Fund.

The Publications Fund.

The Richards Medal Fund.

The Northeastern Section will welcome gifts and bequests at any time. Checks payable to John T. Blake, Treasurer of the Board of Trustees, may be sent to his address, Simplex Wire and Cable Company, 78 Sidney Street, Cambridge, Mass.

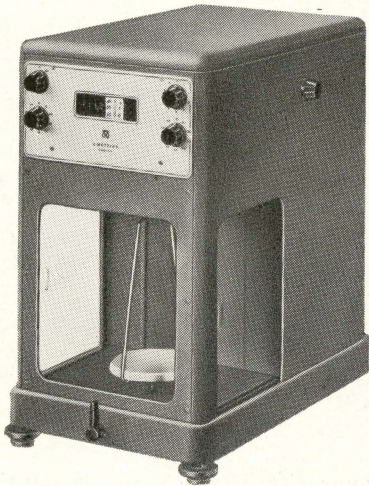
Funds given to the Northeastern Section should be left in the following manner:

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- Permanent Trust Fund
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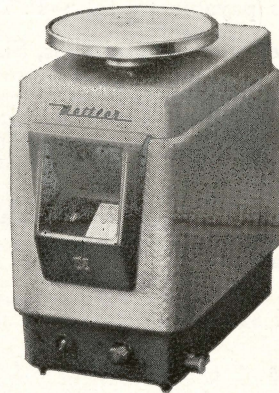
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