VOL. XXV, No. 3 DECEMBER, 1947

# The NUCLEUS

OF THE NORTHEASTERN AND RHODE ISLAND SECTIONS OF THE

AMERICAN CHEMICAL SOCIETY

## Yuletide Greetings

### Northeastern Section

Combined meeting with the Student Chemical and Chemical Engineering Societies within the boundaries of the Northeastern Section

Symposium on "Small Industries and their Development" at 4:00 p.m.

WERNER E. BACHMANN

of the University of Michigan

"Studies on Polycyclic Compounds"

December 11, 1947 Thursday 8:00 p.m.

PLACE OF MEETINGS

Huntington Hall (Room 10-250)

**The Massachusetts Institute of Technology**

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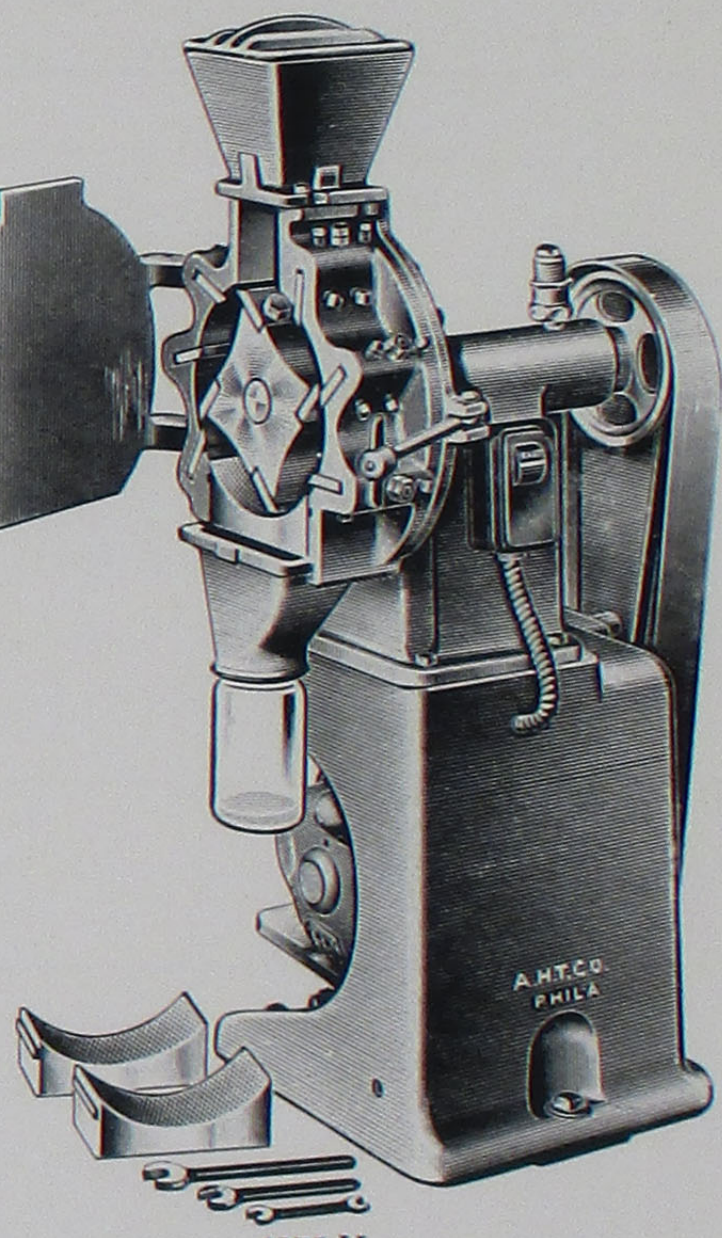


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THE THREE-HUNDRED AND EIGHTY-FOURTH MEETING

of the

# NORTHEASTERN SECTION A. C. S.

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## AFTERNOON MEETING

Combined meeting with the Student Chemical and Chemical Enginereing Societies within the boundaries of the Northeastern Section

## SYMPOSIUM

4:00 p.m., December 11, 1947, in Room 10-250

The Massachusetts Institute of Technology

## "SMALL INDUSTRIES AND THEIR DEVELOPMENT"

JOHN J. HEALY, JR., Assistant General Manager
of the Monsanto Chemical Company, Chairman

### Speakers

4.00 p.m. Earl C. Jertzen, Vice-President of the Krim-Ko Corporation, manufacturers of Irish moss extract

"The Utilization of Sea Weed—our Expanding Sea Weed Industry."

4:30 p.m. William W. Garth, President of the Lithomat Corporation, manufacturers of paper lithographic plates

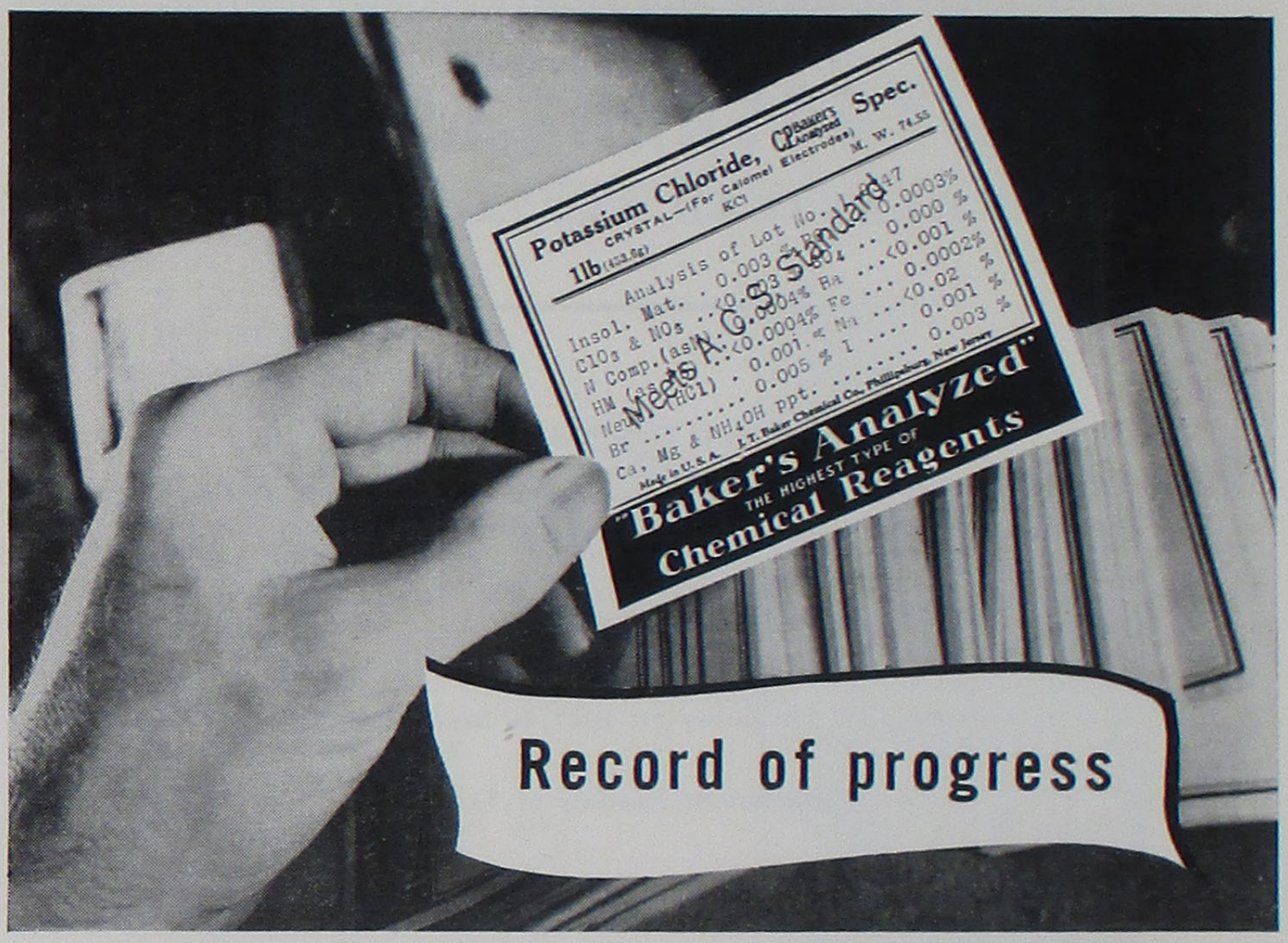
"The Development of the Lithomat"

5:00 p.m. Horace S. Ford, Treasurer, The Massachusetts Institute of Technology and of the American Research and Development Corporation

"The Financing of Small Industries"

5:30 p.m. Questions and Discussion

6:30 p.m. Dinner (Reservations necessary) the Campus Room, M.I.T. Graduate House. Entrance from the street, 308 Memorial Drive, west side of the House.

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# *The* NUCLEUS

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## Editorial

### ANNUAL STUDENT NIGHT

The December meeting of the Northeastern Section has become synonymous with the custom of holding an annual get-together with the student Chemical and Chemical Engineering Societies within its borders. This meeting has an advantage over the other monthly assemblies of the Section in that it calls attention, in particular, to the undergraduate students within our midst. While this advantage is good from many points of view, it should not dull our eyes to the fact that our schools and colleges have large classes in attendance throughout the academic year.

The undergraduate may not be in a position to attend our meetings, generally, partly on account of full schedules of classes and of extra curricular activities and partly because of the lack of a well-rounded back-ground before the end of his senior year. Nevertheless, every meeting of our Section should hang out a welcome sign to the youngest of the chemists. With these rapidly growing minds, older chemists will sense, at once, a community of interest and understanding, as of one chemist to another.

With our graduate students the story is different. In truth, if we but look around Huntington Hall on every second Thursday of the month, be it the symposium hour or the occasion of the address by the evening speaker, we find many representatives of the graduate student bodies from various schools. Already these men and women have reached such a stage of maturity that in each and every one of them is to be found a recognizable scholar of our science. Let the older among us find a little time and inclination for meeting the younger members of the profession while not missing the opportunity for greeting each other, come Student Night or any of the other appointed Nights of the Northeastern Section.

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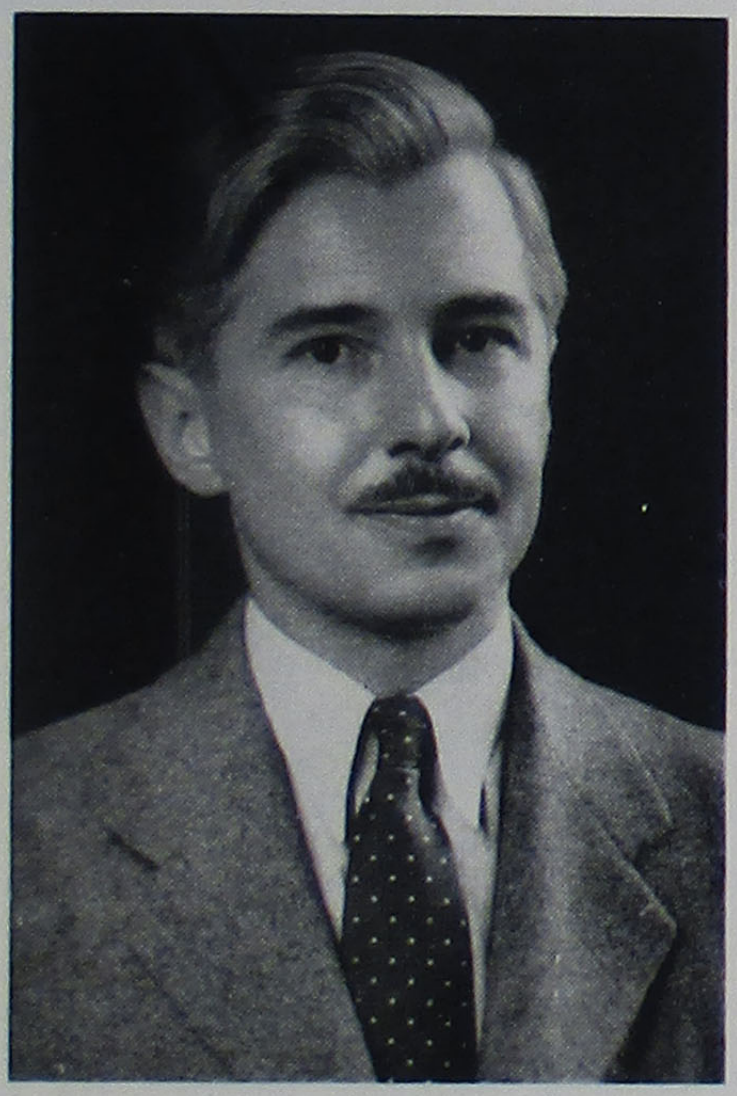
# The Northeastern Section



## DECEMBER SPEAKER



**WERNER E. BACHMANN**

Werner Emmanuel Bachmann, the evening speaker before the Northeastern Section for December is a native of Detroit, Michigan where he was born on November 13, 1901. All of his formal higher education was acquired in the University of Michigan at Ann Arbor where he was awarded the bachelor degree in 1923, the master degree in 1924 and the doctorate in 1926. Likewise his teaching experience has been gained at Michigan. There he became an instructor in organic chemistry in 1925, an assistant professor in 1929, an associate in 1935 and a full professor in 1939.

Dr. Bachmann's background includes two periods of study and research in European laboratories. In 1928, he was in Zurich, Switzerland, as a Rockefeller Foundation Fellow. The year 1935 to 1936 found him a Guggenheim Memorial Foundation Fellow, in London and in Munich.

In his researches, Dr. Bachmann has investigated many subjects, including reduction by magnesium monohalide, free radicals, the Griguard reaction, lycopene, pinacol-pinacolone rearrangement, phenanthrene derivatives, carcinogenic and oestrogenic compounds, and the penta-arylethanes.

His extra-curricular activities find him a member of the editorial board of the "Journal of Organic Chemistry" of "Organic Syntheses" and of "Organic Reactions" and an associate editor of the "Journal of the American Chemical Society." With W. S. Struve he is the joint author of the chapter on "The Arndt-Eistert Synthesis" in volume one of Organic Reactions. Chapter six of volume two of Organic Reactions was written by Bachmann and Roger A. Hoffman. Its full title is, "The Preparation of Unsymmetrical Biaryls by the Diazo Reaction and the Nitrosoacetylamine Reaction."

The Organic division of the American Chemical Society made Bachmann chairman in 1939. He is a member of the National Academy of Sciences.

# Recently . . .

### Angier Products, Inc.

Dr. Joseph F. Manning, Director of Research, has supervised the development of an adhesive to be used for hot press bonding of wood veneer to aluminum. The adhesive is based upon a combination of a thermosetting resin and a synthetic rubber so that sufficient elasticity is imparted to overcome the difference in thermal expansion of the wood and metal. Bonding is carried out at 300°F. for one minute in a continuous process for preparing molded strips approximately 1/4 inch wide.

Dr. Manning, with Dr. J. Philip Mason of Boston University, is co-author of the book, "Technology of Plastics and Resins".

### Esselen Research Corporation

Dr. Gustavus J. Esselen of the Esselen Research Corporation was elected a member of the executive committee of the Division of Industrial and Engineering Chemistry at the September meeting of A.C.S. in New York City.

### Factory Mutual Laboratories

Raymond B. Lawrence, formerly Assistant Chief Metallurgist at the Auburn Works of International Harvester Company, has joined the Research and Special Investigations Group. He will divide his time between the Boston Laboratories and the Norwood Field Station.

William K. Dobbins, a recent Chemical Engineering graduate from Northeastern University, is working on special habard tests in the Chemical Laboratory.

Alan L. Kling, Research Supervisor, was Chairman of a two-day meeting on explosion and explosion venting at Pittsburgh, Pennsylvania on October 16 and 17. The meeting was sponsored by the U. S. Bureau of Mines and the National Fire Protection Association.

### General Latex and Chemical Corporation

Alan W. Oliner, who recently received his Master's degree from the New York School of Forestry, has recently joined the staff bringing with him a background on the application of elastomers to paper fibers and is engaged in research and development along this line in our laboratory. Mr. Oliner is co-author of a recent publication in the August 14, 1947 issue of the Paper Trade Journal entitled "Properties of Flexible Impregnated Paper".

Emanuel Salos who received his degree from Northeastern University in 1947 has recently been appointed to acting head of the control laboratory.

### Lever Brothers Company

John W. Bodman, Director of Research, recently returned from an extended trip to the West Coast where he visited the San Francisco and Los Angeles areas.

Karl B. Nordstrom served as a juror in the Fall Session of the Middlesex County Criminal Court in East Cambridge.

Louis H. Libby and Lloyd F. Henderson are co-inventors of an improved process for treating soybean and similar oils for use in soap, recently patented as U.S. 2,428,367.

### Monsanto Chemical Company

Dr. Edward S. Blake is now Assistant Director of Research at the Merrimac Division. He has been transferred from the Organic Chemicals Division at Nitro, West Virginia.

Donald M. Black has joined the leather application research group at Everett. During the war he was employed at the Clinton Laboratories at Oak Ridge, Tennessee, and this last summer spent six weeks in the South Pacific as a member of the Bikini Scientific Resurvey Group. He received his Ph.D. degree from M.I.T. in July, 1947.

Alva F. Harris is now employed in Products and Process Development Group as a research organic chemist. He recently received his M.A. degree from the University of Nebraska.

On October first, Dudley A. Williams joined the Merrimac Division, as a research chemist with the Physical Chemistry Group. He was previously

(*Please turn to page* 85)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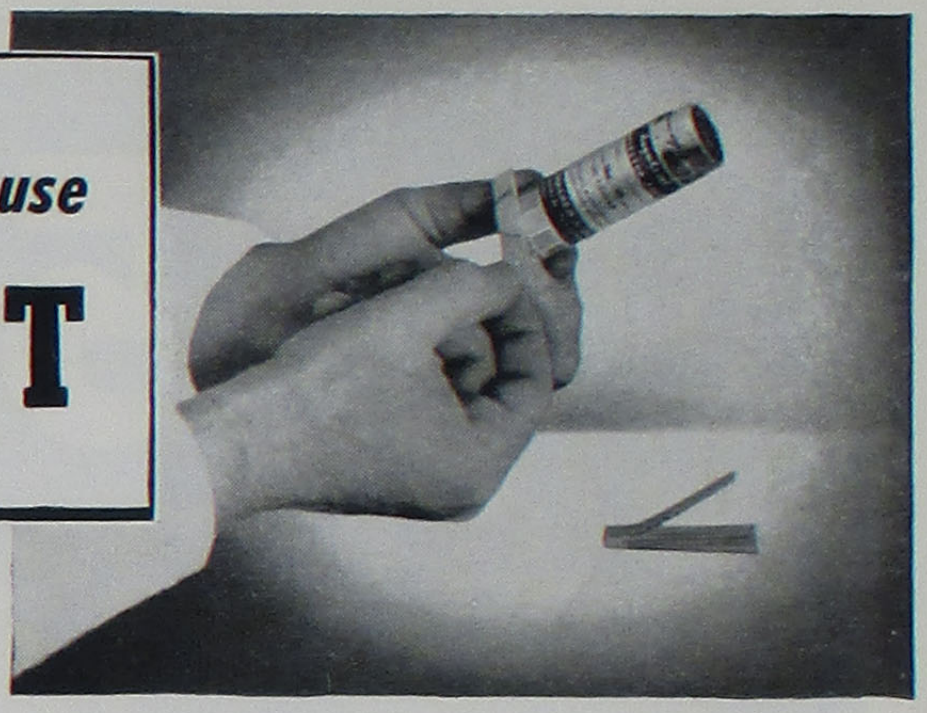

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THE THREE-HUNDRED AND EIGHTY-FOURTH MEETING

of the

# NORTHEASTERN SECTION A. C. S.

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## EVENING MEETING

Combined meeting with the Student Chemical and Chemical Engineering Societies within the boundaries of the Northeastern Section

Speaker

**WERNER E. BACHMANN**

of the University of Michigan

Subject

**"STUDIES ON POLYCYCLIC COMPOUNDS"**

**THURSDAY, DECEMBER 11, 1947 at 8:00 p.m.**

Huntington Hall (10-250)

**THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY**

*Note, entrance to the building will be through 77 Massachusetts Avenue or through the Eastman Laboratories*

Dinner will be served at 6:30 sharp in the Campus Room of the M.I.T. Graduate House, entrance from the street, 308 Memorial Drive, west side of the House

Price $1.75 per person (tax incl.)

Should you desire a place reserved, mail the enclosed post card, at once, or notify Thomas R. P. Gibb, Jr., Metal Hydrides, Inc., Beverly, Mass. (Tel. Bev. 1875-1876)

On account of conditions arising out of the war, arrangements can be made for but very few late comers. After 2:30 p.m. Thursday call Kirkland 2680.

Immediately following the dinner, Dr. Bachmann will speak in Huntington Hall.

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

All interested are invited.

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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.

## ATTENTION:
## ALL MEMBERS OF THE NORTHEASTERN SECTION

At its meeting on November 4th the Board of Directors of the Northeastern Section of the American Chemical Society took an action which may well prove to be of great importance to the Section. We hope and believe it to be a step forward, but to make it a success, the support of many members of the Section is needed.

On the recommendation of a special committee which has studied this problem, the Board voted to approve the establishment of Divisions within the Northeastern Section primarily for the purpose of holding divisional meetings of particular interest to the various groups within the Section.

Due to the present size of the Section, it is felt that a single monthly speaker and the symposia which are currently being held do not fully meet the needs or completely satisfy the sustaining interests of all the members of the Section. Although the general meetings of the Section, together with the special symposia, will be continued on a high level, it now becomes possible for special groups, such as organic chemists, rubber chemists, analytical chemists, etc. to organize Divisions and to sponsor continuing programs to meet their special needs. This procedure has been adopted and successfully operated by several of the large sections. Furthermore, at least two local groups have requested that we make this possible here.

Although it appeared unwise to suggest any rigid plan for Divisional organizations, the Directors voted to establish the following framework within which Divisions may become operative:

1. Any Divisional group shall originate only by spontaneous request of interested individuals or groups.
2. A minimum of thirty-five qualified individuals must signify interest and willingness to support the group before permission will be granted to organize a Division. Membership in a local Division shall be limited to American Chemical Society members or associate members of the Northeastern Section.
3. Local Divisions shall operate under by-laws meeting the approval of the Board of Directors of the Northeastern Section.
4. Programs for the Divisional meetings shall be arranged by Divisional Program Committees subject to the general approval of the Northeastern Section Program Committee. Any Divisional programs shall be open to interested members of the American Chemical Society.
5. The Divisions shall be substantially financially self-sustaining although suitable grants for specific purposes may be made by the Directors of the Board of Directors of the Section.

It is our hope that this new activity of the Section will be of service to our members. Any individual or group interested in organizing a Division should feel free to initiate such action by corresponding with the Chairman or Secretary of the Section. It is up to you!

CHESTER M. ALTER, *Chairman*

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### MEMBERSHIP BLANKS

A membership blank will accompany each copy of the NUCLEUS for December, 1947 and for January, 1948. Should any member of the Northeastern Section be in doubt about the use of said blank, then the membership committee, Martin J. Gurley of the Esselen Research Corporation, Chairman, will be glad to answer questions.

# Yankee Chemistry at Work

## Money for Ideas

Even in these days, chemists may and sometimes do make inventions which are under their own control and which they believe can be developed into a profitable business. The problem is that, in addition to a worthwhile invention, money and business ability are needed to transform an idea into a profitable operation. Frequently the chemist or other technical man lacks one or both of these qualifications. The problem may be solved either by selling the invention to an established concern or, if an independent business is preferred, by finding someone who can supply the money and business skill. Neither of these alternatives is easy; for both wealthy men and appropriate established companies who want to make speculative investments in new enterprises are hard to find.

To mitigate this problem somewhat, several new organizations have been formed recently with the general objective of appraising new ideas, providing capital and managerial assistance for the commercialization of the new ideas, and, if possible, making a profit on the operation. As it happens, a number of these new institutions are in Boston, which has long been noted as a financial center. One of the best known of these is the American Research and Development Corp., which is probably the only one of its kind in the world today. This Corporation is intended in part to provide a mechanism whereby insurance companies, investment trusts and other fiduciary organizations can invest in and support totally new enterprises. Although these institutions, in which is concentrated a large share of the country's liquid wealth, generally legally cannot invest directly in such speculative enterprises, they are permitted to invest up to 9.9% of their capital in organizations like American Research and Development Corp. and thus indirectly support new enterprises. About half of the Corporation's present capital, which totals some $3,500,000, is supplied by such institutions and the rest by public sale to private investors, who must subscribe a minimum of $5000 each.

The Corporation maintains a thorough review procedure for judging all proposed ventures and has three outstanding scientists on its board of advisers. To avoid undue risk, it is permitted to invest only 10% of its capital in any one venture. If it proves to be a financial success, other organizations of its type will probably be founded.

Another Boston organization, New Enterprises, Inc., was formed by a group of Bostonians as a means for investigating proposed ventures. If a venture is found acceptable, it is recommended to the organization's stockholders for personal investment. This organization, and a predecessor, have been operating for a number of years and have financed several ventures which are now established businesses.

Still another type of agency does not finance new operations but instead investigates new inventions or ideas and brings the promising ones to the attention of appropriate manufacturers. One such agency is New Products Research Corp. of Boston.

These organizations, and others like them, have already supported a number of new ventures. One of these is Jet-Heet, Inc., which has developed home and industrial heating units said to be inexpensive, highly efficient, and easy to install. The units are based on the combustion principles developed for aircraft turbo-jet combustion chambers. Another project involves a vapor degreasing unit for cleaning and drying automobile transmissions and differentials when changing grease. Other enterprises include a new metallurgical process, several new household products, radioactive isotopes as tracers, and new types of phenolic resins.

## NITROGEN COMPOUNDS

*A résumé prepared by L. F. Audrieth*

The importance of nitrogen chemistry as a distinctive field of chemistry was stressed by Dr. L. F. Audrieth, Professor of Inorganic Chemistry at the University of Illinois, in his talk before the Northeastern Section of the American Chemical Society on Thursday, November 20th. This interest in nitrogen chemistry is evidenced by the academician as well as by the industrial research chemist and technologist. Consequently, considerable work is being carried out in universities on the properties of various nitrogen compounds while parallel evaluations of such materials are being made in industrial research laboratories. Particular emphasis has been placed in the last ten years on the nitrogen chemistry of the non-metallic elements, sulphur and phosphorus. Present interest is also directed to the improvement of manufacturing processes for production of hydrazine and hydroxylamine, both of which are potentially cheap materials.

Technical interest in the nitrogen chemical field is motivated by the availability of ammonia. Present synthetic ammonia capacity is somewhat in excess of the demand with the result that ammonia producers are looking for outlets for tonnage quantities of this basic chemical commodity. Not only is ammonia available in tremendous quantities, but its low cost together with its purity represent attractive features warranting its commercial evaluation.

The nitrogen chemist has been guided in his research efforts by the outstanding contributions of such pioneers in the field as the late Professor E. C. Franklin. It was Franklin who first showed that many nitrogen compounds could be related to ammonia in much the same way that common oxygen compounds may be considered as derived from water as the parent substance. Franklin set up the nitrogen system of compounds on the basis of such analogies. By using liquid ammonia as the solvent, he was able to verify experimentally the usefulness of such a concept. Thus, a compound like potassium amide actually does behave as the nitrogen analogue of potassium hydroxide. In liquid ammonia solution, $KNH_2$ can be neutralized by treatment with $NH_4Cl$, representing an acid in liquid ammonia. Many other nitrogen compounds, both organic and inorganic, in like fashion reveal their true chemical nature when studied in liquid ammonia as a solvent. It is significant that change in solvent very markedly alters the chemical properties of many solutes.

While many other solvent systems have been evaluated, it is only in the case of liquid ammonia and possibly in the case of glacial acetic acid that these non-aqueous solvents been found to be useful in extending the concept of solvent systems of compounds.

Among the more important synthetic reactions are those which might be called solvolytic in nature. The speaker pointed out that there is no essential difference between the reactions of water, of alcohols, of ammonia, and amines when these substances act upon inorganic and organic acid chlorides or esters. It was possible to demonstrate that reactions of solvolysis of esters regardless of their nature are catalyzed by the solvated hydrogen ion. Thus, conversion of esters into amides by liquid ammonia and into N-substituted amides by amines is catalyzed by ammonium and amine salts respectively.

The application of the solvent system concept in elucidating the chemistry of the nitrogen analogues of sulfuric acid was made clear in a discussion of the chemistry of sulfamic acid and sulfamide. Sulfamic acid is now a tonnage industrial chemical with many interesting uses. Sulfamide in many respects resembles urea and like the latter is capable of condensing with formaldehyde to give a whole series of resinous products. Its present high cost is a deterrent towards its technical usefulness. The N-substituted sulfamic acids made by the

action of amines upon chlorosulfonic acid are likewise interesting substances. Their properties and reactions resemble those of the alkyl sulfuric acids. The high molecular weight materials have, as might be expected, interesting surface active properties. The N-cyclohexyl sulfamic acid salts are characterized by their remarkable sweetness.

The situation is very much more complex in the case of the nitrogen derivatives of phosphoric acid. Compounds such as $P_3N_5$ and PON and HNPN are surprisingly inert towards chemical attack and presumably represent highly polymerized structures. The amido phosphoric acids are better known in the form of their N-substituted products. While phosphorus oxytriamide is unknown, it is significant that the N-substituted organic derivatives represent a large and unusual class of materials. These are in effect the nitrogen analogues of the esters of phosphoric acid. Investigation has shown these substances to be, like their oxygen analogues, excellent hydrogen bonding agents. Their usefulness as plasticizers and gelatinizers was emphasized by the speaker.

Considerable research interest is now evidenced in the field of hydrazine chemistry. Hydrazine is a substance which, like ammonia, may be thought to constitute the parent substance of a hydrazine system of compounds. The organic hydrazines, depending upon the degree of substitution, lead to such very interesting hydronitrogens as the tetrazanes, tetrazenes, isotetrazenes and other chain nitrogen compounds. With the availability of cheaper hydrazine, interest in the hydrazine derivatives of carbonic acid, such as amino guanadine, carbohydrazide, and the like will develop to a point where these substances may well become tonnage chemical commodities.

In presenting this bird's-eye view of the field of nitrogen chemistry, the speaker emphasized repeatedly the need for application of the organic chemist's techniques to the field of inorganic chemistry. He also cautioned, however, against the common practice of failing to consider that organic nitrogen compounds in many instances owe their specific characteristics not to the attached carbon atoms, but to the presence of nitrogen.

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## MEETING OF THE DIRECTORS

(*Continued from page* 73)

the comments of the Review Committee. Chester P. Baker objected to the recommendations pertaining to Councillors and suggested that the election of Councillors take place shortly before the Councillors assume office. Allen D. Bliss presented the detailed recommendations of the Review Committee on the method of electing Councillors so as to produce rotation. Discussion of the means of electing Councillors followed. Thomas R. P. Gibb, Jr. read a letter from Alden H. Emery stating that the American Chemical Society would like to have the names and a short biography of the eight Councillors who will represent the Section for the coming year. Chester M. Alter then requested that the Secretary write a letter to the sixteen present Councillors of the Section describing the present situation and asking if the present Councillors would be willing to resign so that a new slate may be elected in conformity with the request of Mr. Emery. Allen D. Bliss moved that the Chairman of the Section, in conjunction with the Nominating Committee, appoint a list of eight Councillors and eight alternates from the present list of sixteen Councillors (the present Councillors have all been duly elected by the Section), said eight Councillors and eight alternates to take office on January 1 for a term of one year. The motion was carried.

The report of the Committee on Local Divisional Meetings was given by Chairman Llewellyn B. Parsons, who circulated copies. John J. Healy, Jr. objected to the recommendation that membership in a local division be open to nonmembers of the Northeastern Section. After a discussion the report

(*Please turn to page* 79)


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## GOLDEN JUBILEE DINNER

The fiftieth anniversary of the Northeastern Section will be celebrated, in part, by a dinner in Harvard Hall of the Harvard Club of Boston, on Thursday, February 12, 1948, when Charles Allen Thomas, President of the American Chemical Society will be our guest.

The cost of the dinner will be $3.50, tax included. Should you desire to attend, tickets may be purchased at the December eleventh meeting of the section or by mail, by sending your check, payable to John O. Percival, treasurer of the Northeastern Section, Monsanto Chemical Company, Everett Station, Boston, Massachusetts.

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## MEETING OF THE DIRECTORS

(*Continued from page* 77)

was amended and the following recommendations were moved by Stuart B. Foster:

(1) Any divisional group shall originate only by spontaneous request of interested individuals or groups.

(2) A minimum of thirty-five qualified individuals must signify interest and willingness to support the group before permission will be granted to organize a division. Membership in a local division shall be limited to American Chemical Society members or to associate members of the Northeastern Section.

(3) Local divisions shall operate under by-laws meeting the approval of the Board of Directors of the Northeastern Section.

(4) Programs for the divisional meetings shall be arranged by divisional program committees subject to the general approval of the Northeastern Section Program Committee. Any divisional program shall be open to interested members of the American Chemical Society.

(5) The divisions shall be substantially financially self-sustaining although suitable grants for specific purposes may be made by the Board of Directors of the Northeastern Section.

The motion was carried.

The Secretary read correspondence with the NEACT and noted his failure to receive a reply from the Boston Public Library in regard to a communication authorized at the previous meeting. Stuart B. Foster moved that the request of the NEACT for cooperation in the matter of publishing an historical survey be referred to the Board of Publications for investigation and report. The report of the Chairman was given by Chester M. Alter, who read a letter from John A. Timm appointing Allen D. Bliss to the post of Business Manager of the NUCLEUS. The report of the Treasurer was given by John O. Percival.

Chester M. Alter then read the list of Councillors and alternates which he, in conjunction with the Nominating Committee, appointed. The list of Councillors is as follows:
*Councillors*—Paul D. Bartlett, John T. Blake, Allen D. Bliss, Gustavus J. Esselen, W. Franklin Fallwell, Jr., Helen S. French, John J. Healy, Jr., Harold A. Iddles. *Alternates*—Chester M. Alter, Frederick S. Bacon, Stuart B. Foster, Albert F. McGuinn, John C. Morgan, Avery A. Morton, Llewellyn B. Parsons, John A. Timm.

The meeting was adjourned at 9:00 p.m.

THOMAS R. P. GIBB, JR.,
*Secretary*

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## SYMPOSIUM SPEAKERS, DECEMBER

### EARL C. JERTZEN

Earle C. Jertzen, vice-president of the Krim-Ko Corporation of New Bedford, Massachusetts who will be the first speaker at the symposium on December the eleventh was born in Hazel Run, Minnesota on January 7, 1899. He received the B. S. degree in agriculture, specializing in Biochemistry, from the University of Minnesota, in 1923.

For two years, thereafter, he worked as a dairy chemist and then started his own pasteurized milk plant and creamery in Virginia, Minnesota. Selling out in 1929, he joined the Krim-Ko Corporation in 1930. This corporation produced chocolate milk, using a sea weed extract to hold insoluble chocolate particles in suspension. This success with chocolate milk drinks began a seventeen-year experience yith the products from sea weed.

With the coming of the recent world war, sugar rationing put an end to selling products depending on it. Being the only officer in his company, having chemical background, and having no sales work to follow, he was elected to produce products from sea weed, useful for the war effort.

In February 1942 Mr. Jertzen with his family, moved to Scituate, Massachusetts and since that time he has devoted all of his efforts to the development of the so-called "Sea Weed Business."

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### WILLIAM W. GARTH, JR.

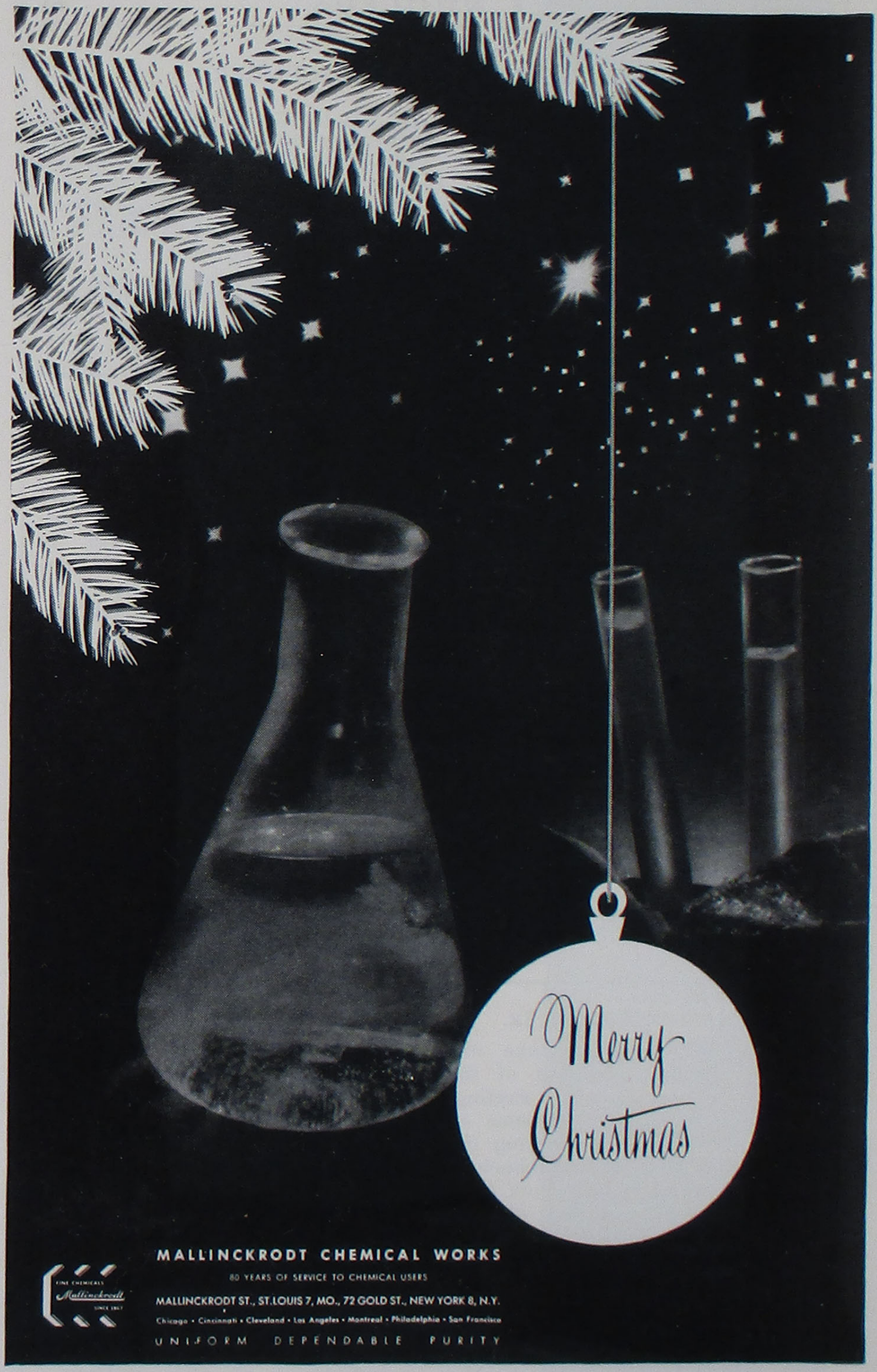
William W. Garth, Jr., who will speak on "The Development of the Lithomat" at the December meeting, was born in Huntsville, Alabama on May 14, 1945. Before entering the Massachusetts Institute of Technology he attended school in New York City. In 1936 he was graduated with an S. B. in Business and Engineering Administration, chemical engineering option. While at M.I.T. he was captain of basketball, a member of the Kappa Sigma fraternity and of Tau Bet Pi.

From 1936 to October 1943, he worked for the Boston Manufacturers Mutual Fire Insurance Company, starting in the investment department and gradually being given experience in each of the other departments of the company. In the long run he withdrew on an indefinite leave of absence. At that time he was assistant to the President of the Boston Manufacturers Mutual Insurance Company, the Worcester Mutual Fire Insurance Company, the Fall River Mutual Fire Insurance Company, and the Mutual Boiler Insurance Company of Boston. During this period Mr. Garth completed two years of the night law school of Northeastern University.

In March, 1942, he became a Director of the Lithomat Corporation, a company formed in September, 1940. In the fall of 1942 he was elected President and Treasurer and carried on this work nights, Saturdays and Sundays until October, 1943 where he became a full time member of the Lithomat staff.

A large part of his early association with Lithomat was concerned with a reorganization of the company, financing, streamlining and establishing the basic organization. This work was followed by a period of doing substantial business on a shoe string and again the problems were largely financial and of a general corporate nature. In 1945, a termination of war contracts made it clear that some time would be required to put the Lithomat program on a profitable basis. In the fall of 1945, the Chemical Products Corporation was acquired. It has provided the earnings necessary to complete the Lithomat program. This business nearly doubled in 1946 and required the acquisition of the New England Lacquer Company to provide adequate space for business offices, laboratories, and manufacturing. This latter company was purchased in February 1947.

Mr. Garth is President of the Lithomat Corporation, the Chemical Products Corporation, producing organic solvents and plastic materials, and of the New England Lacquer Company, manufacturers of cable coatings.

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# Rhode Island Section



THE DECEMBER MEETING OF THE RHODE ISLAND SECTION
of the
AMERICAN CHEMICAL SOCIETY
will be held
in the Metcalf Auditorium, Brown University,
Corner of Thayer and Waterman Streets, Providence

FRIDAY, DECEMBER 12, 1947, at 8:00 p.m.

Speaker:

LINCOLN T. WORK
of the Metal and Thermit Corporation

Subject:

"PARTICAL SIZE AND ITS INDUSTRIAL APPLICATIONS"

The meeting will be preceded by a social hour, from 5:00 to 6:00 p.m. at the University Club, 219 Benefit Street. At 6:30 p.m. an informal dinner will be available at the Brown University Faculty Club, One Megee Street at a cost of $1.50. Reservations may be made by mailing the enclosed post card by Tuesday preceding the meeting, or by telephoning Mrs. D. D. Marsoopian, Chemistry Department, Brown University (Gaspee 6771, Ext. 256).

***Note: The dinner will be at 6.30 p.m. and the meeting at 8.00 p.m.***

## SPEAKER FOR DECEMBER LINCOLN T. WORK

Dr. Work was born in Hartford, Connecticut, in 1898 and was educated at Columbia University where he received the degrees of Bachelor of Arts, Chemical Engineer and Doctor of Philosophy. While studying for his advanced degree, he was instructor and

(*Please turn to next page*)

## DECEMBER SPEAKER

LINCOLN T. WORK

## LINCOLN T. WORK

(*Continued from page* 83)

later became assistant professor and holds. He has always had a special associate professor in chemical engineering at the University.

In 1940 Dr. Work left the teaching field to become Director of Research and Development for Metal & Thermit Corporation, which position he now interest in particle size, having written numerous articles for technical journals and books, and he is regarded as a leading authority in this field. During the period of academic life he also was actively engaged in consulting work on particle size problems relating to Portland cement, fuels, soils, paints and pigments.

An active member of many metallurgical and chemical societies, Dr. Work has held both local and national posts and he has been in demand as a speaker on both technical, educational and research management subjects.

## Recently . . .

(*Continued from page* 68)

employed on an N.D.R.C. project developing compact oxygen producing equipment for the armed forces.

### National Research Corporation

Approximately 250 vacuum technologists, many of whom were from England and other foreign countries, attended the Cambridge High Vacuum Symposium. This meeting was sponsored by National Research Corp. and the Division of Industrial and Engineering Chemistry of the A.C.S.

Dr. Frank C. Benner, Director of the Chemistry Dept., discussed industrial high vacuum before the Student Chapter of the A.S.M.E. at Northeastern University on Nov. 5.

### Skinner and Sherman, Inc.

Mr. Herbert L. Sherman, who is Chairman of the New England District of the American Society for Testing Materials, presided at a meeting held at the Providence Engineering Society on October 30. The meeting, which was devoted to textile subjects, was preceded by a dinner, at the New England Councilors, the speakers, and Mr. C. L. Warwick, Executive Secretary of A.S.T.M.

Mr. Andrew Landini attended the formation meeting of the Association of Official Racing Chemists held at Chicago on November 8, 9, and 10. Mr. Landini was appointed a member of the Committee on Ethics.

On December 8 and 9 Mr. Sherman, who is President of the American Council of Commercial Laboratories, will preside at the Annual Meeting of the Council to be held at the National Bureau of Standards in Washington.

A "Men of Science" dinner, sponsored by A.C.C.L., will be held at the Statler Hotel on the evening of December 8 at which Dr. E. U. Condon, Director of the Bureau of Standards, will be the principal speaker.

(*Please turn to page* 86)

# *Recently . . .*

### Alberto F. Thompson, Jr.

The Atomic Energy Commission has appointed Alberto F. Thompson, Jr. chief of technical information. Formerly he was director of the publication of technical information of the Atomic Energy Project. Dr. Thompson was secretary of the Northeastern section before the war.

### Paul D. Bartlett

Paul D. Bartlett, professor of chemistry at Harvard University, has been elected chairman of the Organic Division of the American Chemical Society. He succeeds Arthur C. Cope, chairman of the Department of Chemistry of the Massachusetts Institute of Technology.

### Fabric Research Laboratories, Inc.

Milton Platt, Sc.D., the Massachusetts Institute of Technology, in 1946, has been appointed Assistant Director of Research of the Fabric Research Laboratories, Inc., 665 Boylston Street, Boston, Massachusetts. Dr. Platt joined the Fabric Research Laboratories in August 1946. He has been working on the application of stress-analysis techniques to textile problems as a part of a broad program on the application of engineering principles to textiles, plastics, paper and other non-rigid materials.

### Polaroid Corporation

Patricia Lee Snow recently joined the staff of the chemical Research Laboratory of the Polaroid Corporation. Miss Snow was graduated from Cornell with a major in chemistry and then worked for a year in the Merck Laboratories.



### HORACE S. FORD

Horace S. Ford, who will address the December symposium on "The Financing of Small Industries" was born, brought up and educated in the public schools in Gloucester, Massachusetts. On graduating from High School, he found that, for financial reasons, there was no possibility of going to college. Scholarships were few and loan funds had not been built up at that time. The week after leaving High School he went to work for the New England Trust Company of Boston. Transferring a year later to the Old Colony Trust Company, he remained as clerk, bookkeeper and assistant cashier until January 1, 1914.

On that date he came to the Massachusetts Institute of Technology as Bursar, a post which he held for twenty years. In 1934, Mr. Ford was made treasurer of M.I.T. which position he holds at the present time. Accordingly he has kept in close touch with the business and financial operations of the M.I.T. for thirty-four years.

In recent years, Mr. Ford has been invited by a number of organizations to become either a Director or a Trustee of a number of organizations. This work he has carried on in addition to his office of Treasurer of the M.I.T. Among these organizations may be mentioned the American Research and Development Corporation of Boston, Arthur D. Little, Inc., of Cambridge, Harvard Coöperative Society, Inc., of Cambridge, Home Savings Bank of Boston, Liberty Mutual Insurance Company of Boston, the Old Colony Trust Company of Boston, and the United Mutual Fire Insurance Company of Boston.

Mr. Ford's clubs include the Commercial Club of Boston (President 1947-1948), the Merchants Club of Boston, the Union Club of Boston, the Harvard Faculty Club of Cambridge, and the Annisquam Yacht Club.

All of Mr. Ford's many friends will understand at once when they hear him say that he has plenty to take up his mind, and that as far as the work is concerned, it always has been and always will be, "just fun".

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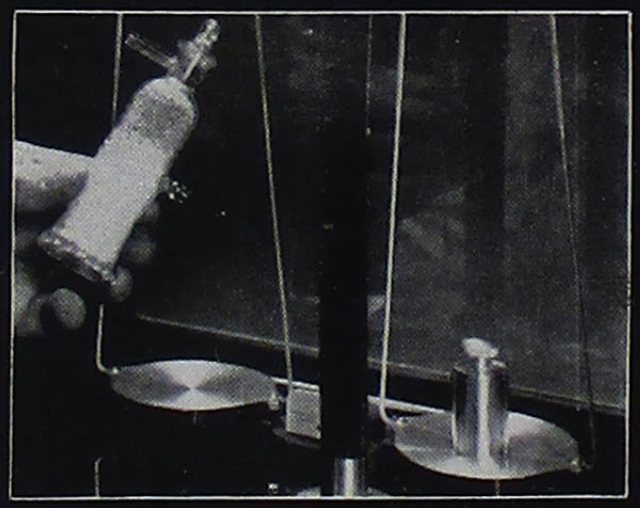

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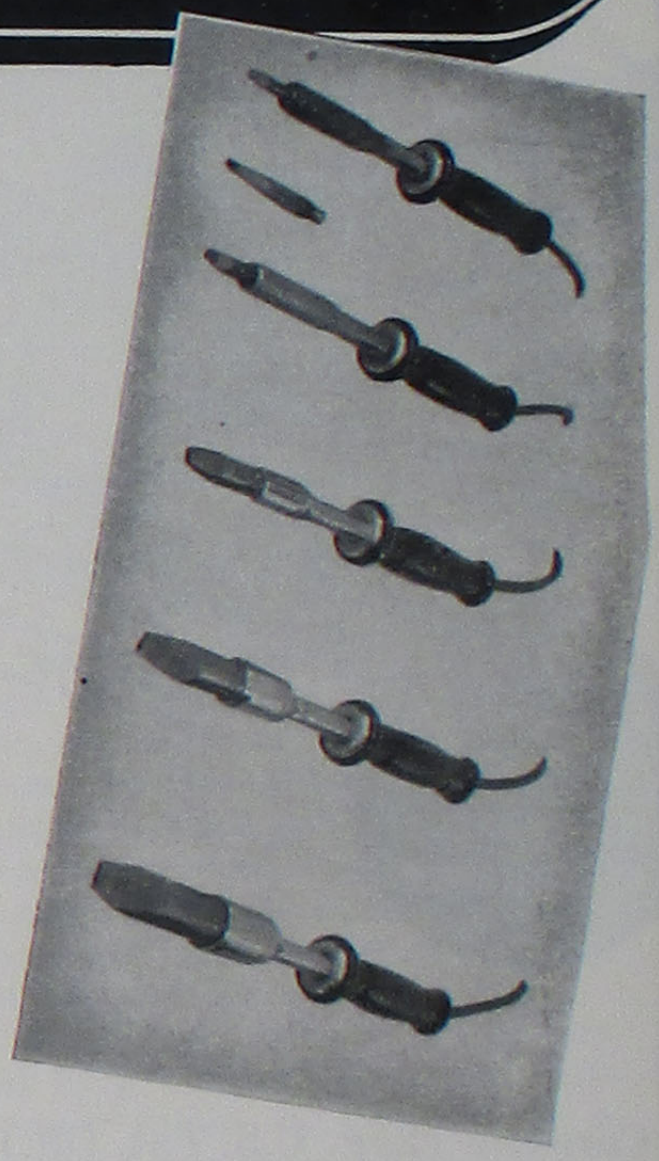

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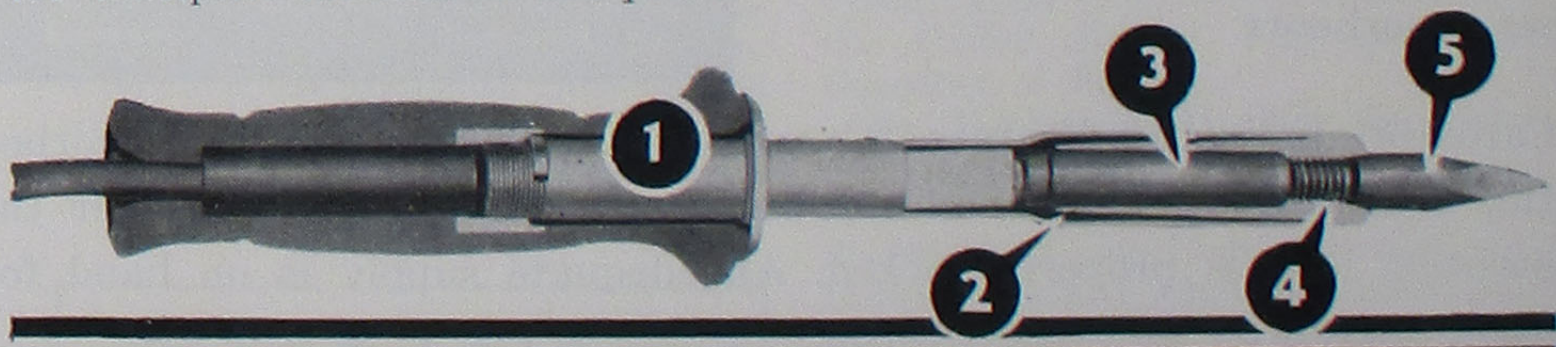


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