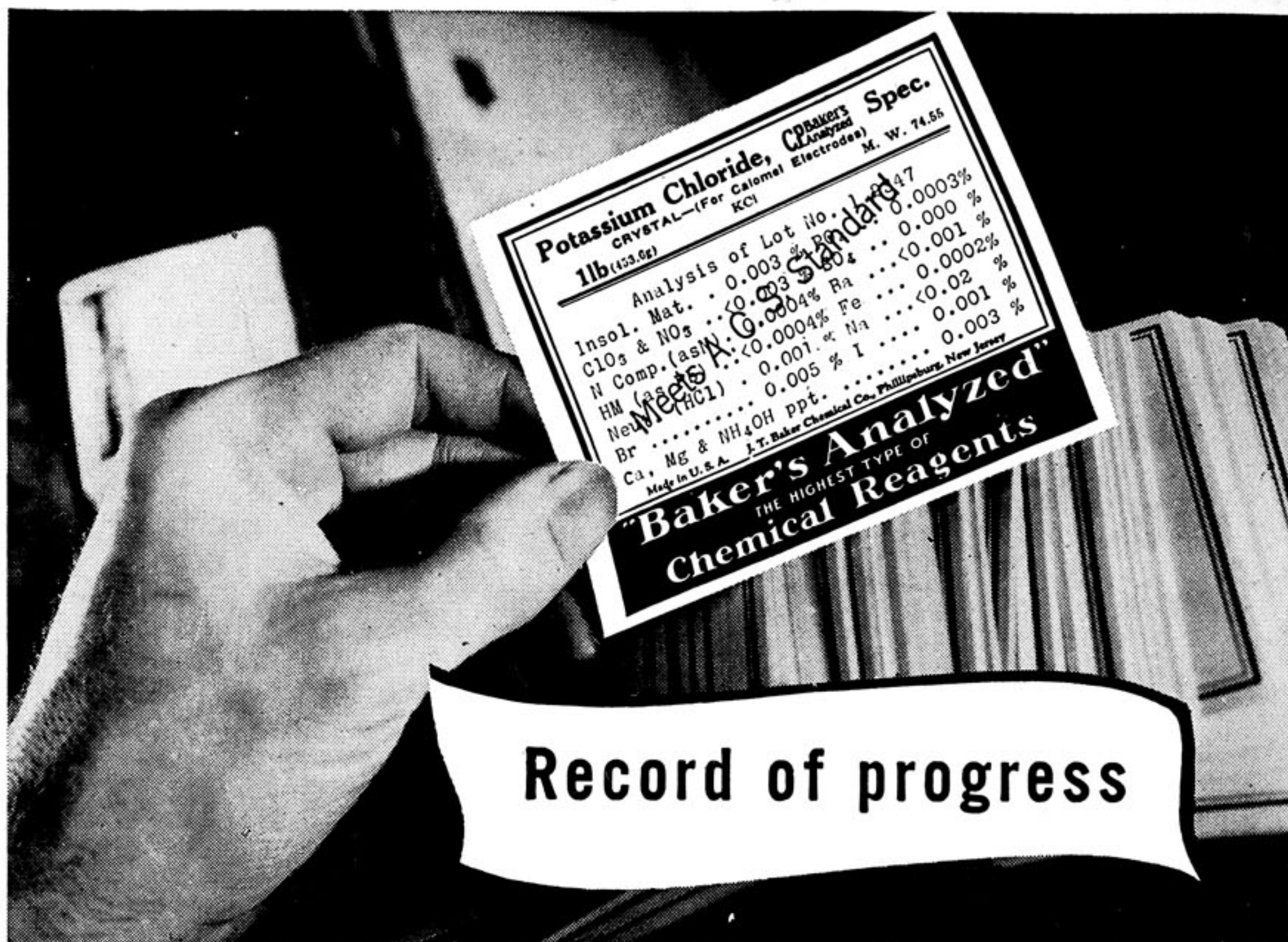




The
PUGET SOUND CHEMIST

Bulletin of the Puget Sound Section of the American Chemical Society



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The **PUGET SOUND CHEMIST**

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October Meeting

**PUGET SOUND SECTION OF THE
AMERICAN CHEMICAL SOCIETY**

Wednesday, Oct. 29, 1947

7:30 P.M.

Address • Bagley Hall • Room 140



SPEAKER

DR. HERMAN MARK

SUBJECT

***"The Mechanical Behavior
of High Polymers"***



INFORMAL DINNER—EDMOND MEANY HOTEL—6:00 P.M.

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October Speaker . . .



DR. HERMAN MARK

Dr. Herman Mark will address the October meeting of the Puget Sound Section on the subject "Mechanical Behavior of High Polymers."

Dr. Mark was born in Vienna, Austria, on May 3, 1895. He attended the University of Vienna, and in 1921 received his Ph.D. degree from that institution.

In 1926, Dr. Mark became the research manager of Technische Gymnasium in Germany, and he held this position until 1932, at which time he was made Professor of Chemistry at the University of Vienna.

In 1938 he came to this continent, and succeeded Dr. Emil Heuser as research manager of the Canadian International Paper Company of Hawkesbury, Ontario. In 1940 he moved to Brooklyn, New York, to become Professor of Chemistry at Brooklyn Polytechnic Institute, the position which he now holds.

Dr. Mark has made many original contributions to the chemistry of high polymers, especially in the study of rubber and cellulose. He is the author of several books, among which are "Physical Chemistry of High Polymeric Systems," and "High Polymeric Reactions, Their Theory and Practice."

During his visit to the Northwest, Dr. Mark will also be the guest of the Pacific Section of TAPPI during their technical seminars. Dr. Mark will conduct a sem-

inar on cellulose chemistry in Portland, Oregon, on October 27-28, and in Seattle at the University of Washington on October 29-30.

PROPOSED AMENDMENT!

At the October meeting of the Puget Sound Section, the following amendments were proposed for our local constitution:

- (1) That the office of Chairman-elect be created in addition to our present offices.
- (2) That the office of Chairman-elect be created and that as a part of his duties he assumes the chairmanship of the Program Committee.
- (3) That the office of Chairman-elect be created and that the office of Vice-Chairman be eliminated.

It is urged that you consider these proposals seriously and that you attend the October meeting to participate in further discussion or action on these proposals.

ELECTIONS COMING!

In line with our policy of giving the widest possible publicity to the coming election of officers for next year, the membership of the nominating committee is herewith presented:

Ed Lingafelter, *Chairman*
Roger Harrison
Robert Sprenger
Ed Lovell
John Steffan

You are urged to consult with the members of this committee during the coming weeks in order that they might have the benefit of a broad cross-section of the views of the members in this important situation.

HERBERT R. ERICKSON

Annual Research Conference Is Scheduled for November 25th

Dr. D. M. Ritter, our Program Chairman, announces that the annual research conference of the Puget Sound Section has been scheduled for Tuesday, November 25. While final plans for the program have not been divulged as yet, it is hoped that sufficient papers will be available for the conference to permit the running of two sections.

Abstracts of papers to be presented to the conference should be in the hands of Dr. Ritter on or before November 1. At the present writing, twelve papers are definitely scheduled and more are desired to assure a full program. Particularly in demand are papers based on applied chemistry and industrial subjects, as the majority of subjects now definitely scheduled are the results of pure research, and a more balanced program is hoped for.

The evening speaker, and guest of the Section during the conference sessions will be Dr. Joel Hildebrand, Dean of the College of Arts and Sciences of the University of California at Berkeley. Dr. Hildebrand is one of the leading members of the Society, and it is hoped that a truly representative group of papers will be available for presentation during the research conference in order that he may fully appreciate the many interests and activities of the membership of our Section.

**NOVEMBER
MEETING**
**Annual Research
Conference**
TUESDAY
November 25

Dr. H. K. Benson

In June of this year it was voted that the Puget Sound Section draft a letter to Dr. H. K. Benson in appreciation of his devotion to the Chemical Industry and to the American Chemical Society. Herewith is printed a copy of the letter sent to Dr. Benson:

DR. H. K. BENSON
2425 41st North
Seattle, Washington

Dear Dr. Benson:

This letter is being sent to you in accordance with the sincere desire of the membership of the Puget Sound Section of the American Chemical Society as expressed by unanimous vote, that you be told of the earnest appreciation that each member of our society has for the good work you have done during the past year.

The Puget Sound Section is indebted to you for the organization work that you did in bringing the section into existence by being the temporary Chairman during its organization and the first elected Chairman in 1909. The society is further indebted to you and appreciates the many years of influence, leadership, and service that you rendered in being a counselor of this section.

The Puget Sound Section of the American Chemical Society also appreciates your untiring effort and wise leadership that has been so effective and far reaching in the development of chemical industry in the Pacific Northwest.

The society and the Northwest are further indebted to you for your work and leadership in related societies and activities as specifically stated in the June, 1947, issue of the Puget Sound Chemist, which was dedicated to you.

Many of us who have been in your classes are thankful and appreciative of the excellent instruction, guidance, and inspiration that we received. Northwest industry has, is, and will continue to benefit from the ability and efficiency of the large number of graduates of the Department of Chemistry and Chemical Engineering of the University of Washington. Most of the growth and efficiency

of these departments occurred and developed during the period that you were associated with and head of the Department of Chemistry and Chemical Engineering.

The Northwest and society at large are benefiting from the vast amount of research supervised, inspired, directed and done by you. Further, society and industry have, are, and will continue to benefit from the vast amount of valuable information published under your name.

Indeed, at this time of your retirement from the Headship of the Department of Chemistry and Chemical Engineering, we, the members of the Puget Sound Section of the American Chemical Society, wish to express our thanks to you for the above and many other reasons, and wish you continued success and satisfaction in your research plans.

Respectfully yours,
COLLIS C. BRYAN, *Secretary*
Puget Sound Section
American Chemical Society

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**Pacific Chemical Exposition
Held In San Francisco
This Month**

The Pacific Chemical Exposition is to be held in San Francisco on October 21 through 25, under the sponsorship of the California Section. As we go to press, this exposition gives every indication of being one of the biggest events yet to take place in the sphere of chemical interest on the West Coast. Complete details as to program, special events and exhibits of special interest were given in *Chemical and Engineering News*, September 22, and need not be reproduced here.

At the Conference on Western Chemical Markets, October 21, three papers by Northwest authors are scheduled: A paper on the Western Plastics Industry as a Consumer of Chemicals, co-authored by A. J. Norton and D. V. Redfern of this Section; a paper on the Western Wood Industry as a Consumer of Chemicals, by C. C. Heritage of Weyerhaeuser Timber Company, Longview, Washington; and a paper on the Western Pulp and Paper Industry as a Consumer of Chemicals, by R. G. Misphey of Crown Zellerbach Corporation, Camas, Washington.

Advance information indicates that the Puget Sound Section should be well represented at these meetings, as many of our members plan to be in San Francisco while the exposition is in progress. Those who are able to attend will profit

(Continued on Page 13)

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THE EDITOR'S RETORT

Our October meeting was enlivened by a discussion, ably moderated by our Secretary, of two rather controversial, and certainly important, subjects. These were, in the order encountered, the National Research Foundation and our Section election procedure. The latter subject, of course, was stimulated by the message from our Chairman carried by the September *Chemist*. Without reference to the aspects of these matters debated in open meeting, we wish merely to record that, of some fifty members present, perhaps six felt moved to take the floor and express an opinion on the questions at hand. On the causes for such a lack of enthusiasm we hesitate to ponder. Perhaps it was too soon after dinner. On the other hand, perhaps there were no opinions to be expressed, in which case we are indeed crying in the wilderness. A healthy interest in the affairs of our Section and the Society should generate at least an occasional opinion, however, and we prefer to believe that such did exist momentarily, but were stifled at birth. This is a vicious procedure, and should be frowned upon by all. Perhaps opinions were present which were not allowed to show themselves. This is also undesirable. Opinion, no matter how informed, is valueless to society unless made public.

At the risk of becoming tedious we wish to reiterate a statement made during the last meeting to the effect that the *Puget Sound Chemist* is the representative of our Section to the rest of the country. It is only as effective and influential as the membership of the Section chooses to make it. No matter how able, your editorial staff cannot, by themselves, do full credit to the Section through this publication. Only the active (repeat, active) support and effort of the members themselves can attain this happy result. If more specific suggestions are desired, any member of the staff will be glad to supply them upon request.

We wish to give particular mention and thanks to the Library Committee for the fine work they have contributed in

giving us a report on the new acquisitions of the Seattle Public Library for the first half of this year. We sincerely hope that the membership will make use of this compilation, into which so much effort has gone.

A new industrial publication by the Adhesive Resin and Chemical Division of American-Marietta Company has come to our attention. This attractive booklet, entitled "The Magic that is Chemistry" is very effectively done and deserves commendation. Of particular note is a fine likeness of Mr. Redfern looking every inch the stern and critical Chief Chemist.

Again this month the *Chemist* contains only twenty pages. This is the result of a severe case of malnutrition in the Advertising Department, plus a chronic Contribution deficiency. The Membership of the Section can play the Physician in this pitiful case by administering massive doses of Vitamin A (for Advertising) and Vitamin C (for Contributions). Nor do we mean Contributions in the mundane pecuniary sense. Apply pencil to paper and produce a paragraph or a page for the next issue. Here is your chance to exercise that latent desire of every man to see his name in print.

A. J. NORTON REPORTS ON NEW YORK MEETING

It is to be hoped that each member studies the new constitution as thoroughly as did the nearly 500 councilors in N. Y., and the by-laws more carefully. It is not too easy to change things like this, and they will be submitted to you shortly for approval.

If approved the new constitution goes into effect on January 1, 1948. Our own local section must have its own by-laws and procedures modified by then to conform to the new order. This looks like quite a task for a special committee.

The national meeting was one of the best that has been held for a long time in many respects. The papers were well attended, well organized and of very high caliber for the most part.

The popularity of general symposiums
(Continued on Page 14)

LIBRARY COMMITTEE REPORT

Additions to the Seattle Public Library, Jan. to June 1947

ANALYSIS

American Oil Chemists' Society: "Official and Tentative Methods of the American Oil Chemists." 2d Ed.—1946.

American Public Health Association: "Standard Methods for the Examination of Water and Sewage." 9th Ed.—1946.

A. S. T. M.: "Symposium on Analytical Colorimetry and Photometry"—1944.

Balcher and Godbert: "Semi-micro Quantitative Organic Analysis"—1945.

Hamilton and Simpson: "Calculations of Analytical Chemistry." 4th Ed.—1947.

HIGH POLYMERS

"Advancing Fronts in Chemistry." Vol. 1, "High Polymers"—1946.

Marchionna: "Butalastic Polymers"—1946.

Mark and Raff: "High Polymetric Reactions."

Mark: "Physical Chemistry of High Polymetric Systems"—1940.

Rochow: "Introduction to the Chemistry of the Silicones."

ORGANIC COMPOUNDS

Egloff: "Physical Constants of Hydrocarbons." Vol. IV—1947.

Heilbron and Bunbury: "Dictionary of Organic Compounds." New and Enlarged Edition—1943.

Karrer: "Organic Chemistry." 2d English Edition Revised and Enlarged.

Norton: "The Chemistry of Heterocyclic Compounds"—1946.

Nieuwland and Vogt: "The Chemistry of Acetylene"—1945.

Patterson and Capell: "The Ring Index."

Shell Chemical Corporation: "Allyl Alcohol."

Weygand: "Organic Preparations"—1945.

PHYSICAL CHEMISTRY

Bichowsky: "The Thermochemistry of the Chemical Substances"—1936.

Frenkel: "Kinetic Theory of Liquids"—1946.

Hecht: "Explaining the Atom"—1947.

Jost: "Explosion and Combustion Processes in Gases"—1946.

Kraemer et al: "Advances in Colloid Science." Vol. II—1946.

Luder and Zuffanti: "Electronic Theory of Acids and Bases"—1946.

Masing: "Ternary Systems"—1944.

New York Academy of Sciences: "Surface Active Agents"—1946.

Noyes and Leighton: "The Photochemistry of Gases"—1941.

"Nucleonics"—1946.

Semat: "Introduction to Atomic Physics," Revised and Enlarged Edition—1946.

Svedberg and Pederson: "The Ultracentrifuge"—1940.

Ward: "Colloids"—1945-1946.

Waters: "The Chemistry of Free Radicals"—1946.

PLASTICS

Brown and Harris: "An Introduction to Engineering Plastics"—1947.

D'Alelio: "Experimental Plastics and Synthetic Resins"—1946.

Davis and Beck: "Applied Plastic Product Design"—1946.

Debell et al: "German Plastic Practice."

Hicks and Francis: "Low Pressure Laminating of Plastics"—1947.

Kaye: "The Production and Properties of Plastics"—1947.

Modern Plastics: "Plastic Stock Molds"—1944.

Nauth: "The Chemistry and Technology of Plastics"—1947.

Richardson and Wilson (Ed.): "Fundamentals of Plastics"—1946.

Sasso (Ed.): "Plastics Handbook for Product Engineers"—1946.

Smith: "Plastics for Production"—1944.

Society of the Plastics Industries: "Design of Molded Articles"—1946.

Thayer: "Plastics Molds." 3rd Ed.—1946.

Wakeman: "The Chemistry of Commercial Plastics"—1947.

Winding and Basche: "Plastics Theory and Practice"—1947.

INDUSTRIAL

Abstracts of Chemical Patents Vested in the Alien Property Custodian. Sec. 1-34—1944-1946.

Azbe: "Theory and Practice of Lime Manufacture"—1946.

Bogue: "The Chemistry of Portland Cement"—1947.

Delmonte: "The Technology of Adhesives"—1947.

Dunstan (Ed.): "The Science of Petroleum"—1938.

Elliott: "The Alkaline-Earth and Heavy Metal Soaps"—1946.

Heckel: "The New Paint, Varnish and Lacquer Catechism"—1946.

Heldman: "Techniques of Glass Manipulation in Scientific Research"—1946.

Jamieson: "Vegetable Fats and Oils." 2d Ed.—1943.

Kirschenbauer: "Fats and Oils"—1944.

Mantell: "Industrial Carbon." 2d Ed.—1946.

Naves and Mazuyer: "Natural Perfume Materials"—1947.

Pratt: "Chemistry and Physics of Organic Pigments"—1947.

Rennicke: "The Manufacture of Paperboard"—1944.

Announcing

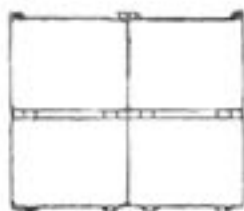
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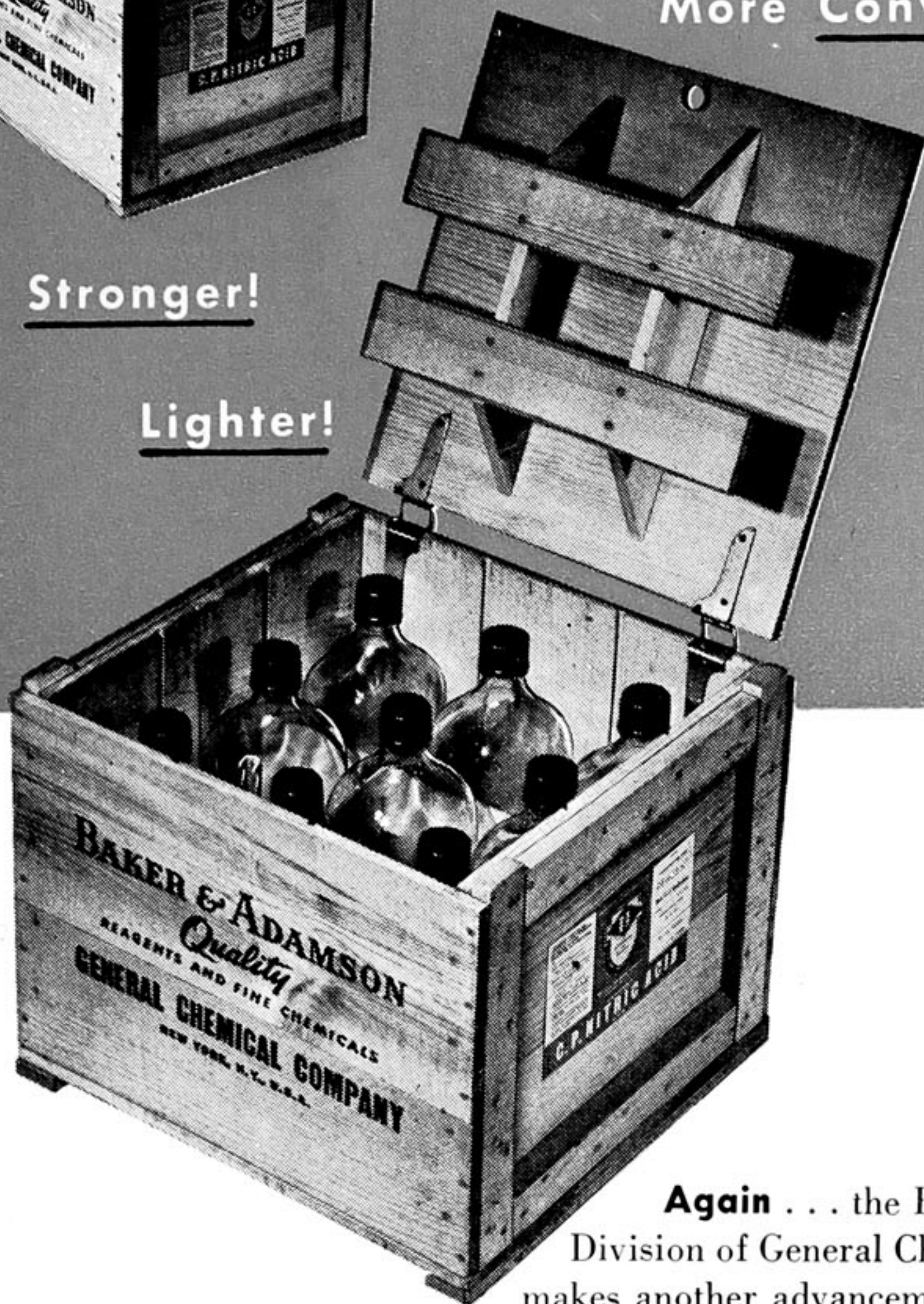


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KINETICS

Herb Erickson, our Chairman, has just recently returned from a prolonged trip East. He was fortunate enough to time this trip so that he could be present at the ACS meeting in New York.

Among other members of our Section who were present during the New York meeting were Vice-Chairman Joe McCarthy, Dr. H. K. Benson, G. H. Cady, A. J. Norton, John Meiler, K. B. Kellogg, G. Rohrback and H. Dauben.

Mr. David Eichelberger, Vice-President of American-Marietta Company recently won a bet from a chemist who shall be nameless. Mr. E. wagered that if taken fishing at the height of the salmon run in the Columbia, he would not catch a fish. He proved his point. The jinx worked so well, in fact, that our chemist, who was believed to be a peerless Izaak Walton, also finished the trip fishless.

Fred Armbruster recently departed for a brief trip to Midland, Michigan, and other Eastern points.

Mr. Leigh Willard, President of Inter-

lake Chemical Corporation of Cleveland, Ohio, and Mr. Ray Booty, Research Director of the same company, recently toured the West Coast. During their four-day visit in the Northwest they visited Mount Rainier and enjoyed a successful fishing trip on the Sound.

Tom Baxter, formerly with Reichhold Chemicals, Inc., is now associated with an exporting concern in Vancouver, B. C.

A group which deserves recognition as a regular part of the Peripatetic League is composed of the members from Shelton who are in frequent attendance at our meetings. Local members please take note that they either drive more than 80 miles each way or suffer for over an hour at the hands of the Puget Sound Navigation Company in order to get here.

Mr. Henry Reichhold and Mr. Charles O'Connor, President of Reichhold Chemicals, Inc., were both recent visitors in Seattle.

Walter R. Carmody, Physical Chemistry Department, Seattle College, has returned to Seattle. Dr. Carmody graduated

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from the University of Washington in Chemical Engineering and took his Ph.D. in 1926 at Catholic University of America in Washington, D. C. Following his graduation he was associated with Reed College in Portland, Oregon, and Boston College, besides doing electrochemical research at Stanford during the summers. The M.I.T. Radiation Laboratories claimed him during World War II. Since then he has been with the Electrochemical Division of the U. S. Bureau of Mines at Albany, Oregon. Dr. Carmody has been a member of the ACS since 1926 and has twelve publications on physical and electrochemistry.

Pacific Chemical Exposition

(Continued from Page 7)

not only from the many interesting papers to be delivered at the various meetings, but also from the opportunity to renew old friendships and make new ones among the memberships of our associated Sections and Societies to the South.

LAUCKS LABORATORIES, Inc. ANNOUNCE NEW SERVICE

A toxicological testing program, offered for the first time to the general public, has been announced by Laucks Laboratories, Inc.

According to John T. Laucks, public relations official for the Seattle firm, an enlargement of staff and equipment has enabled the program to be placed on "general service" status. Heretofore, toxicological services were available only to governmental agencies.

Laucks pointed out that the public program will include testing of all foodstuffs and feeds for toxic effects, and also the detection and certification of poisoning in animal life. As in their state and federal service, the laboratories will employ test animals and spectrophotometric equipment in all determinations.

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FLUORINE

As a follow-up to our article on Fluorine published June, 1946, we offer the following information sent to us by Mr. George F. Wilkins, Engineering Service Division, General Chemical Company, Los Angeles, California.

Sodium Fluoride Water Treatment

The cities now using sodium fluoride for treating drinking water for caries control are: Grand Rapids, Mich., Marshall, Texas, Southbury, Conn. (St. School), Ottawa, Kansas, Newburgh, N. Y., Evanston, Ill., Brantford, Ont., Wrentham, Mass. (St. School), Midland, Mich., Belchertown, Mass. (St. School), and Sheboygan, Mich. Fourteen more are planning to treat in the near future.

W. Leslie Harris, Chief Chemist, Grand Rapids, Michigan, delivered a lecture at the University of Michigan, School of Public Health, on the subject "Experience in the Application of Fluoride to a Public Water Supply." This article has been mimeographed and is available through the University of Michigan or possibly directly through Mr. Harris. It contains 11 pages of discussion, tables, etc., that give a very good picture of the use of sodium fluoride water treatment.

Data on feeders is available from Wallace & Tiernan for cases where dry feed is required. They have supplied feeders for the City of Newburgh, N. Y. Also, Proportioneers Inc. have a liquid feed machine suitable for feeding sodium fluoride in solution or slurry form.

Methods of analysis for determining fluoride content have been developed by a number of people. We would recommend your investigation of the following: "Modification Of The Fluoride Determination" by R. D. Scott, Ohio State Dept. of Health, Columbus Ohio, "Determination Of Fluoride In Water—A Modified Zirconium-Alizarin Method" by William L. Lamar, Geological Survey, U. S. Dept. of Interior, Raleigh, N. C., "Colorimetric Determination Of Fluoride In Natural Waters With Thorium And Alizarin" by N. A. Talvitie, Wash-

ARTHUR J. NORTON **Consulting Chemist**

•
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CHEMICAL RESEARCH
and DEVELOPMENT

•
Associates
G. OTTO ORTH, JR.
L. H. BROWN

•
2919 First South Seattle
MAin 4090

ington State Dept. of Health, Seattle, Washington.

The foregoing methods include the reagents required, procedures used, and bibliography.

NORTON REPORTS . . .

(Continued from Page 8)

siums, as against isolated experimental papers, was much in evidence, and emphasized again the chief value of the A. C. S. in broadening educational opportunities.

If we want it, we can have a unified national meeting in 1952 or '53—but we must work for it. One thing we must do is to help and support Portland in the sectional meeting next year. The success of that meeting means a great deal to everyone in the Pacific Northwest.

Business is in a very confused state if analyzed by the economic laws. Political controls are the governing factor at present and government stockpiling is holding up volumes and prices for the time being.

The Interaction of Filler and Resin Properties in Determining the Mechanical Characteristics of Plastic Laminates

SIMON WILLIAMS, Farragut College and Technical Institute

Abstract: Data are shown relative to the structural characteristics of woven fabric and non-woven webs of cotton fibers, i.e., weight, thickness, strength, modulus of elasticity, etc., and their influence on the mechanical and electrical properties of plastic laminates using such fillers. An hypothesis is developed relative to those elastic and dimensional properties of both resin and filler which govern the strength and energy absorption properties of the laminated structure, in which fineness, strength, and load-elongation characteristics are all interrelated. Comparisons are made with laminates containing paper, glass, and asbestos.

The research reported was conducted during the war under contract to both the Office of Production Research and Development of the War Production Board, and the Bureau of Ships, Navy Department.

Phenolic Resins in Assembly Gluing of Wood

C. M. KEATON

The use of adhesives for the assembly gluing of wood is an ancient art. However, in recent years, especially under the impetus given by the recent war, an adhesive was required that would not only give waterproof joints, but would also withstand any and all conditions of exposure.

Phenolic formaldehyde resins were already being used for adhesives of this type, especially in the Douglas Fir Plywood industry. These resins, when properly formulated and extended with various fillers, give excellent, durable, waterproof bonds.

While phenolic and resorcinol formaldehyde resin adhesives are used in high frequency gluing, special formulations are required for the resin because of the arcing and carbonization of the ordinary resins when excited by a high frequency current.

The ideal adhesive needed by the wood working industry is one that will give an instantaneous bond when the surfaces of the joint are brought together. At the same time it should have a long, preferably indefinite pot life and assembly time. Or, in other words, an adhesive is wanted which can be spread on the faces of the joint today and which, when the faces of the joint are brought together tomorrow, will immediately form a durable bond.

Determination of Leaching Characteristics of Toxic Water Repellent Wood Preservatives*

LLOYD H. BROWN

Abstract: The applicability of colorimetric methods to determination of leaching of pentachlorophenol is tested. The method is applied to a comparison of leaching characteristics of toxic wood preservatives containing various water repellants.

**Work sponsored by Oronite Chemical Co.*

Abstract of The Proximate Analysis of Douglas Fir Bark

LEO FRIEDMAN and MORTIMER WEISER
Dept. of Chemistry, Oregon State College

The proximate analysis of Douglas fir bark has been carried out to determine its ash, hot water soluble, alcohol-benzene soluble, lignin, and holocellulose contents. Values obtained total 100 ± 1.0 percent, indicating that procedures give satisfactory results.

The procedures commonly used in the analysis of wood have been modified in the following manner:

1. Twenty mesh samples were substituted for 60-80 mesh samples in certain procedures.
2. Products were dried at 60-65° C. at reduced pressure instead of 105° C.
3. The 72 percent sulfuric acid reaction in the determination of lignin was carried on for five hours with constant agitation.
4. Changes were made in the bleaching procedures in the determination of holocellulose.

Nutritive Value and Composition of Alfalfa as Influenced by Fertilizer Treatment

MARIAN SETTERLUND, R. J. EVANS, J. L. ST. JOHN and S. C. VANDECAVEYE, Divisions of Chemistry and Soils, Institute of Agricultural Sciences, Washington Agricultural Experiment Station, Pullman, Washington

Abstract: The effect of fertilization on the nutritive value of alfalfa grown at Prosser, Washington, was correlated with differences in chemical composition. Alfalfa grown on a check plot and on plots receiving phosphorus, phosphorus plus sulfur, and phosphorus plus potassium was chopped, mixed and fed to rabbits.

Samples of the alfalfa and meat were analyzed for the minerals Ca, P, K, S (inorganic, cystine and methionine) and protein.

The percent P and K were highest in the phosphorus-sulfur alfalfa and percent protein highest in the phosphorus fertilized alfalfa.

The phosphorus-sulfur rabbit group showed greatest total gain and average gain per week, and the phosphorus group had highest feed efficiency in terms of gms. gain per gm. feed intake.

Effect of Protein Supplements on Hatchability

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Abstract: Previous work has shown that animal protein concentrates are necessary for maximum hatchability of chicken eggs. A study was made on the effect of various protein concentrates on

hatchability of hens fed a cereal all-mash basal diet. The ration of seven groups of laying hens, housed in open pens, was supplemented with the following concentrates: pea meal, packing plant meat meal, rendering plant meat meal, fish meal and combinations of pea meal and P.P. meat meal. Maximum hatchability was obtained on all supplements except pea meal. When several hens from each group were transferred to laying batteries, a decrease in hatchability resulted in those groups which did not receive an adequate level of animal protein. The relation of the animal protein factor to hatchability will be discussed.

Some Observations on the Polarographic Behavior of Lignin

C. ROLAND McCULLY, University of Oregon

Abstracts The methods used in preparation of lignin samples are given, most experiments being done on lignin isolated using an benzyl alcohol method.

Reduction lignin at the dropping mercury electrode has been demonstrated and reproducible waves have been obtained from lignin dissolved in alkaline solution. A reaction between lignin and the dissolved oxygen present in alkaline solutions exposed to air has been demonstrated. The polarograph has been used to follow the course of this reaction by determining the oxygen consumption and the increase in reaction product, this product being reducible in the polarograph. Technique employed and descriptions of special cells used in controlling oxygen interference are given.

Some of the possibilities of polarographic studies on lignin are as follows:

1. Kinetics of the reaction of lignin with dissolved oxygen. Preliminary studies indicate a complex reaction.
2. Equilibrium studies.
3. Determination of diffusion coefficients and average molecular weights for 1 lignin.
4. Anodic waves for lignin. Preliminary studies indicate that lignin can be oxidized at the dropping mercury electrode.

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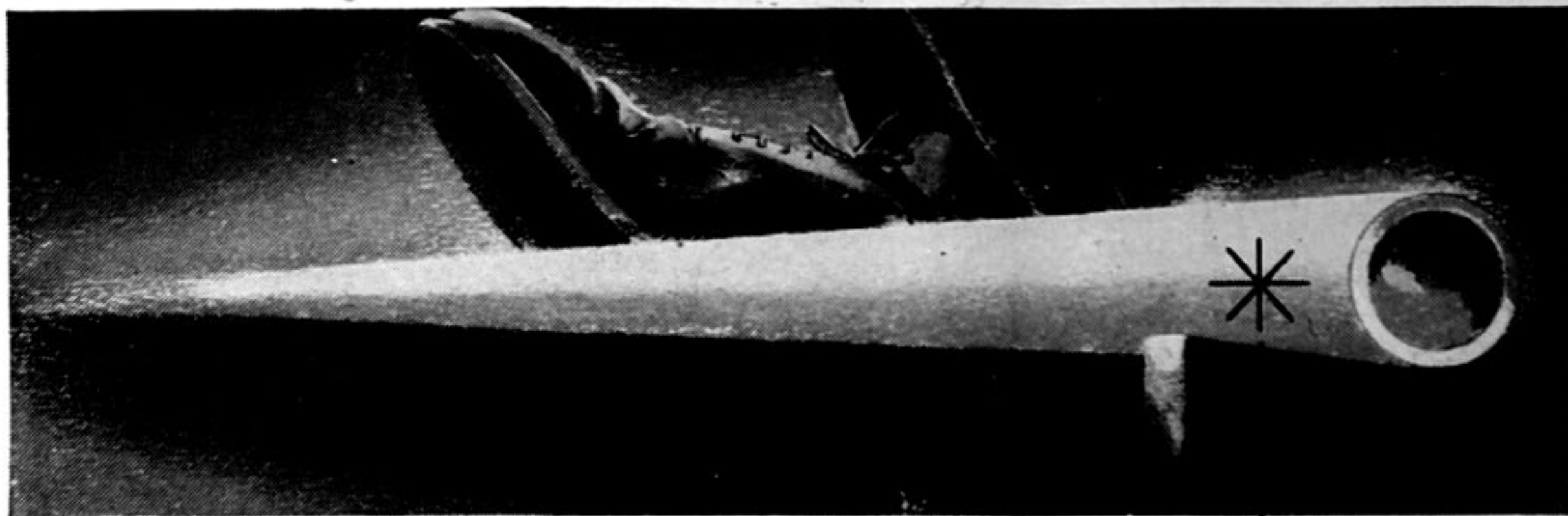
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