# The PUGET SOUND CHEMIST

Bulletin of the Puget Sound Section of the American Chemical Society

VOLUME VIII 7 OCTOBER • 1946 NUMBER 13

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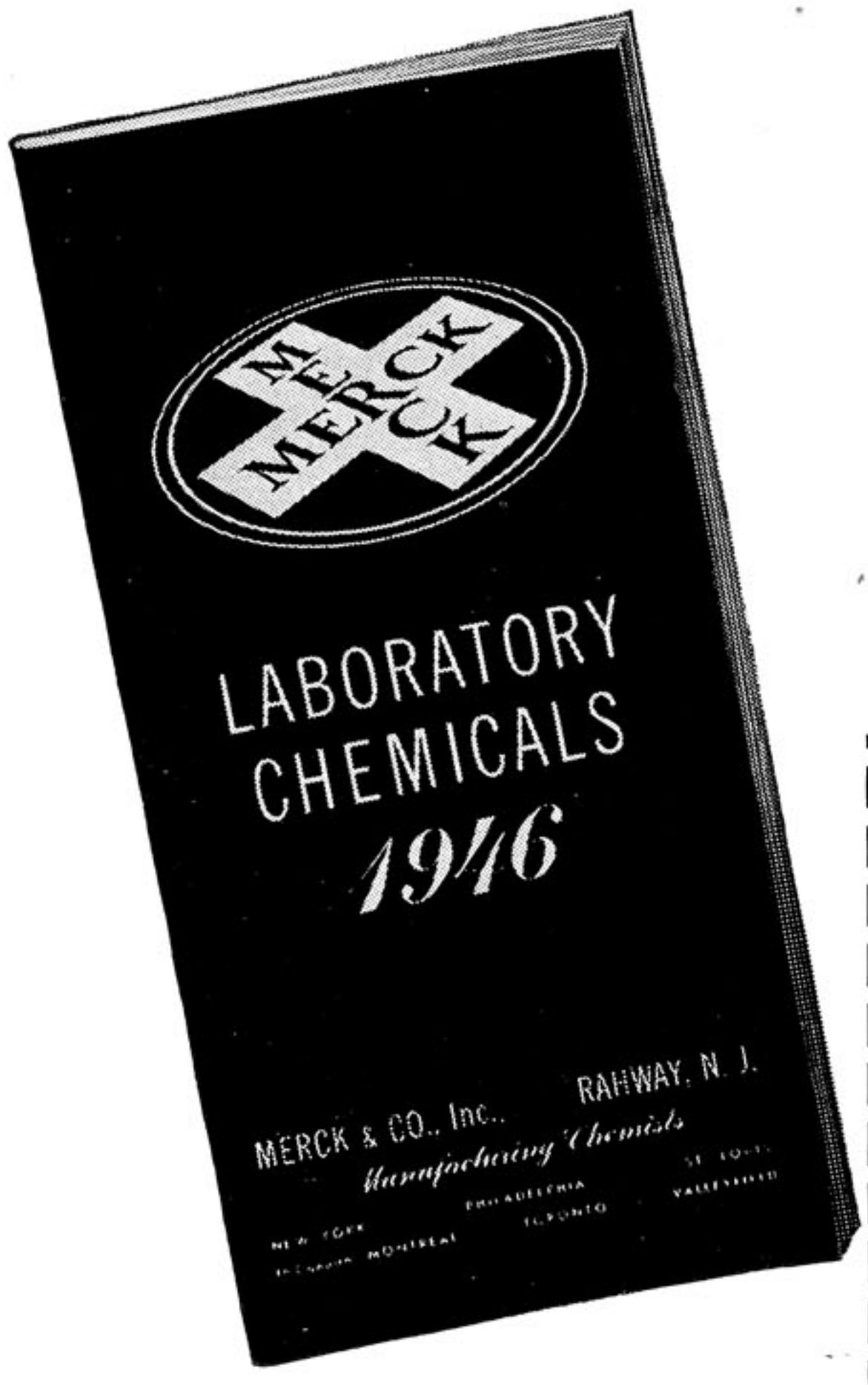


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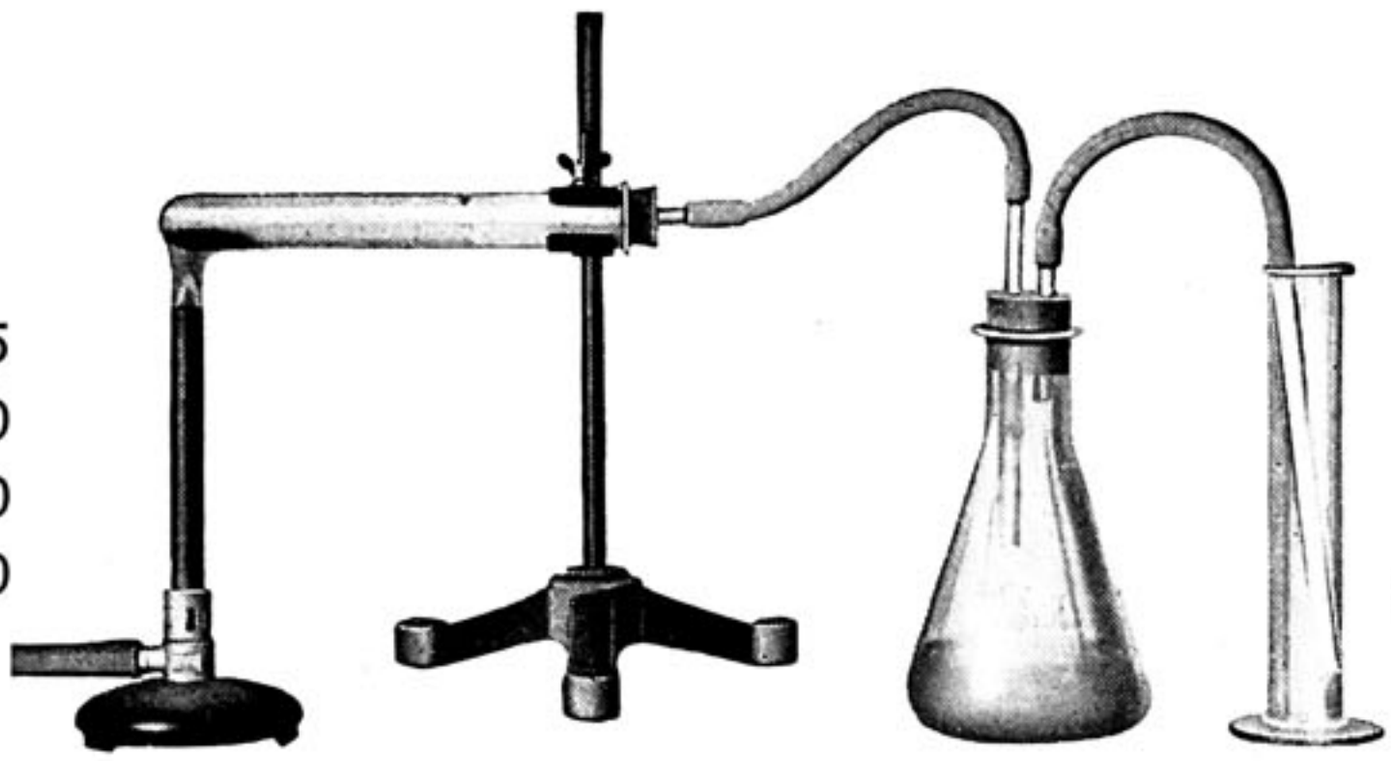

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# The PUGET SOUND CHEMIST

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# IRVING F. LAUCKS—MANUFACTURING CHEMIST

**"Nothing is easier than to inherit the accomplished. But, to recognize the substance of a thing unproved — the substance of what is as yet only hoped for — here is the peculiar mark of vision." — CHARLES H. WATTS.**

***"In the September issue of this publication, the career of Irving F. Laucks to the year 1923 was presented. Until this time Mr. Laucks' efforts were directed towards developing and directing an analytical service laboratory. With the development of soya bean adhesives, the organization found itself faced with a much different set of circumstances than those involved in analytical work."***

***Irving F. Laucks***

In 1923, after several years of development work on soya bean adhesives, Irving Laucks was at a potential turning point in his career. He could continue as analytical chemist or he could start a manufacturing enterprise based on the soya bean development. The former was a clear cut open road which was quite familiar to him; the latter was an unblazed trail. The events of the first forty years of Mr. Laucks' life show his adventuresome spirit; he was ready to gamble that the rewards at the end of the unchartered trail would be greater; so he elected to manufacture the product he had developed. But it was not quite that simple.

First obstacle was the patent granted to Otis Johnson in 1923. Although Mr. Johnson attempted to produce a plywood adhesive based on soya bean, he never succeeded; whereas the Laucks organization was having some success. Further, because of the period of time that soya bean adhesives had been under development in his laboratory, Mr. Laucks was considering interference proceedings. A settlement was made with Mr. Johnson and the first blaze was made on the trail.

At that time, the then infant plywood industry was just stirring to life in the Pacific Northwest. Nature had provided the pioneers of plywood in the Douglas fir area with the finest stand of soft wood known anywhere in the world. But the glue was another matter. None of the then used glues (starch, casein, and hide or bone glue) exactly suited the needs of the fir plywood industry. Neither the starch nor hide glue had any appreciable water resistance. The casein glue was water resistant if handled properly but it was expensive and the supply and quality were erratic. These early plywood pioneers knew they needed something different from what they then had as a glue and in their need they turned to a chemist.

It should not be assumed that the plywood producers received I. F. Laucks' glue with open arms. Mr. Laucks' organization was having all the troubles usually encountered when a concern puts a brand new product on the market. The raw material came from Manchuria 10,000 miles away and the soya bean cake was far from uniform at that time. The plywood producers had established habits in mixing and applying glues which were a handicap to the soya bean adhesive. The glue equipment was designed for use with glues other than soybean.

*(Continued on page 6)*

# IRVING F. LAUCKS . . .

*(Continued from page 5)*

Yet the chemist could not hope to ask the plywood manufacturer to remodel his plant so he would be in a position to buy and use what was to him a new product to be observed with some suspicion. The new product was different in its properties from what the users had been accustomed to seeing. Stickiness was one of these properties which a plywood man thought was essential in a glue. Unfortunately, the new soybean glue did not exhibit any of the tackiness which was common in the accepted glues. When subjected to a wet stick test it behaved like so much wet clay and many prospective users condemned it because it failed to meet this test. The new soybean glue was often referred to by plywood operators by the derisive term "bean soup."

But with all these growing pains, soybean glue kept on sticking plywood together and the Laucks organization was learning more and more about how to make a better glue and how to use it in making plywood.

Meantime, the infant plywood industry was growing up. New plants were being built and new uses were being found for plywood. The first plywood produced had mostly gone into doors and wall panelling, but in a few years industrial uses were showing up. One of these was on automobiles; for floor boards, instrument panels and finally running boards.

The 1925 Chevrolet had running boards made of plywood, much of which had little or no water resistance. Many a car was in evidence with running boards which were delaminating. This came very forcibly to the attention of the plywood producer who logically attributed the trouble to the glue line which threatened to spoil a new and promising market for plywood. The plywood industry got together to discuss the problem — a committee was appointed to examine all glues then known and to arrange competition tests to determine the best glue for the industry to use. The industry was going to standardize on the glue that won the competition. Obviously, this competition caused considerable interest and concern to I. F. Laucks, Inc., for if they did not come out on top in the competition they faced the loss of their budding business. In the few weeks left before the competition every man on Irving Laucks' staff was busy.

By this time Mr. Laucks and his staff had discovered a number of accessory chemicals that had considerable affects on soybean material. One of them was carbon bisulfide. It had the property of making the glue much more water resistant, but they had not as yet used it in plywood adhesives because of its odor and inflammability. Considering what was as stake in the competition, Mr. Laucks decided to put out the most water resistant glue possible and to use carbon bisulfide in the formulation. At the appointed time I. F. Laucks, Inc., demonstrated a glue based on their new formula and the competitors demonstrated their products. The result was that Laucks soybean glue showed up better than any in the competition, especially in its water resistance. The chemist had gambled and won.

This, then, was the turning point in the history of soybean glue and of Irving Laucks' manufacturing enterprise. After that I. F. Laucks, Inc., took on more customers until by late 1927, about one year after the competition, every plywood plant on the Pacific coast was using soybean glue.

In the meantime what was happening to Irving Laucks' analytical service laboratory? We have seen that in 1918 I. F. Laucks, Inc., was established not as a manufacturing concern, but as a research and analytical customer service lab. The work of developing and producing soybean glues had carried them somewhat afield. In 1926, the year of the plywood glue competition, Mr. Laucks organized Laucks Laboratories, Inc., as a separate concern from I. F. Laucks, Inc. The former was to carry on in customer service analytical work; the latter to be the manufacturing concern.

From 1926 on, Mr. Laucks, as head of a manufacturing concern, met with con-

siderable success. Not that it was easy, for the company was expanding rapidly; developing new products, building new plants and expanding old ones in what seemed a never ending growth which kept Irving Laucks consistently occupied.

A number of uses for soybean in the paint field were developed and I. F. Laucks began to produce commercial water paints, using soybean adhesive as the binder. Outside the plywood industry the biggest use developed for soybean adhesives was for paper coatings. This was started in an attempt to replace casein, starch, etc., in the paper field, but the Laucks concern soon found that the soybean adhesive as used in plywood was not the answer, so the project was shelved. Sometime later the idea of washable wallpaper came along and whereas the formulations developed for gloss coatings had not worked out in the paper industry, they were exactly suitable to the washable wallpaper application. Later the gloss paper coatings application was solved through isolating the protein from soybean and patent rights for this were later sold to the Glidden Company for the manufacture of their Alpha Protein.

Besides all of these technical and commercial developments, Irving Laucks found himself concerned with patent protection. After the competition for plywood glue in 1926, other products began to appear which seemed to be more of an imitation than a new approach. A lot of patents had been issued to I. F. Laucks, Inc., and the chemist decided to learn the value of patent protection. After repeated warnings to certain competitors, suit was brought against them. There followed several years of patent infringement litigation which filled thousands of pages of records and which was finally decided in favor of I. F. Laucks, Inc.

After 1927 several I. F. Laucks plants were established throughout the world; in Stockholm, Sweden; Vancouver, B. C., one in eastern Canada and another in

*(Continued on page 8)*

## OUR COVER PHOTO

*Courtesy of*

NORTHWESTERN MUTUAL FIRE ASSOCIATION

**"The Majesty of Mount Rainier"**

*A number of the section members who are ski enthusiasts will soon be indulging once again in this winter sport. Not only Mount Rainier but Mount Baker and Snoqualmie Pass offer excellent skiing within easy reach of those who work in the Puget Sound area.*

# NOVEMBER MEETING

## *November 19, 1946*

★

## R. F. BULLER

Shell Chemical Company,
will address the Section on

***"The Chemistry of the Ketones"***



## IRVING F. LAUCKS . . .

*(Continued from page 7)*

Australia to serve the Australian plywood business.

Although soybean glue would produce water resistant plywood, this plywood was not "waterproof." Interest in exterior plywood led to the development of plywood adhesives based on the phenol formaldehyde condensation. As more and more hot presses appeared in plywood mills the market for phenolic resin adhesives increased and through the background in developing and servicing soybean adhesives, Mr. Laucks' organization was in excellent position to supply a phenolic adhesive for plywood.

Irving Laucks had worked hard in building up a thriving concern of manufacturing chemists. The unblazed trail had become a well paved highway. If he were to continue as head of I. F. Laucks, Inc., which was still a growing concern he would be kept completely occupied in business matters. Irving Laucks was always and still is a chemist. The desire to do work once again as a chemist was strong. In 1943 Monsanto Chemical Company obtained controlling interest in I. F. Laucks, Inc., through acquiring Mr. Laucks' interest.

Mr. Laucks retained his interest in Laucks Laboratories. He now resides at Deer Harbor on Orcas Island on a farm which was homesteaded by an ex-sailor about the time that Irving Laucks went to work for $40 a month. The original shack of hand-hewn logs still stands on the property. In a laboratory overhanging the water with a view of adjacent islands, Irving Laucks, the chemist, is once again at work and this time on pure rather than applied science. His work on proteins has led him to an interest in metal complexes of the proteins, by means of which he hopes to establish certain fundamental concepts of protein chemistry.

It will not be surprising if the same vision, enthusiasm and vitality which served him so well in the past, will bring Irving Laucks success in this new venture.

# Report Of the Committee On Professional Status

**By D. M. RITTER, Committee Chairman**

Few of the professional status and economic problems faced by other sections have arisen in this area to require attention by the local committee on professional and economic status. The many debates on licensing, certification, unionism, salary scales, employment contracts have been excellently reported from time to time on a national scale in the News Edition by the committee acting for the whole society. Although statistics can be related on a country-wide basis, in the end the action begins on the local scene. Though rather silent, your committee is constantly alert to the appearance of professional and economic problems within our own section, and is prepared to consult with individual members in need of assistance.

There are a few topics, such as those mentioned above, which are readily recognized as related to the chemist's interest in his professional standing. Some of these can be treated by statistical methods, others can be easily analyzed. On the national scale there are two problems confronting the membership which defy easy analysis and solution. One is the necessity that we soon distinguish in some precise and definite fashion between those truly qualified by training and experience to practice the profession of chemistry and those "hangers-on," the camp-followers, who claim our designation, but possess none of our skills or judgments. The high school graduate, taught a few simple manipulations as he serves as "dienster" in the laboratory, becomes a chemist, as does the assistant in some assay office. A similar abuse is the profession by some of our members of a specialty such as "organic chemist" or "physical chemist" without the advanced training, preparation or experience needed to qualify as a specialist. The other much more complex problem deals with the practice of the profession of chemistry in relation to remuneration. Surveys of income in relation to years of experience, degree of preparation and the like are not very meaningful unless they include the terms under which such salaries are earned. As the result of numerous surveys made in our behalf we all realize that we are on the average well paid. The rewards awaiting the successful aspirants to administrative positions are well known, but little thought is given to the fact that, though ours in an experimental science, the experimenter reaps the lesser reward. One of the problems we face is to preserve the opportunity and the respectability of the experimenter, and to help him obtain a share of the reward commensurate with his great contribution.

While we deal with areas for improvement in professional and economic status, we must recognize progress. Time was when our profession was one of low respectability. In the late middle ages a princeling of the Holy Roman Empire reserved a gibbet expressly for hanging alchemists. Since then our position has improved and, though we are still regarded as practitioners of black magic, our machinations are recognized to produce such convenient items as magnesium, rayon, and nylon hose. Our status will in the end depend upon our own efforts, upon how well we acquit ourselves before our fellow citizens. Each of us must, therefore, be one who worthily professes. Ours is a profession.

.35(540) = 200

7000 cal/gm

# October Meeting

## PUGET SOUND SECTION OF THE AMERICAN CHEMICAL SOCIETY

# Tuesday • Oct. 29, 1946

## Bagley Hall • Room 140

**7:30 p.m. — Business Meeting — Report of Nominating Committee**

**8:00 p.m. — Address — [See Inset Below]**

## KERMIT M. BLEEZE BLAZEE

**Chemist for Northern Pacific Railway Co.**

**SUBJECT**

## *"The Low Temperature Carbonization of Sub-bituminous and Lignite Coal"*

**REFRESHMENTS AND SOCIAL HOUR IMMEDIATELY FOLLOWING THE ADDRESS AND DISCUSSION PERIOD**

## Articles of By-Laws Referring to Election of Officers:

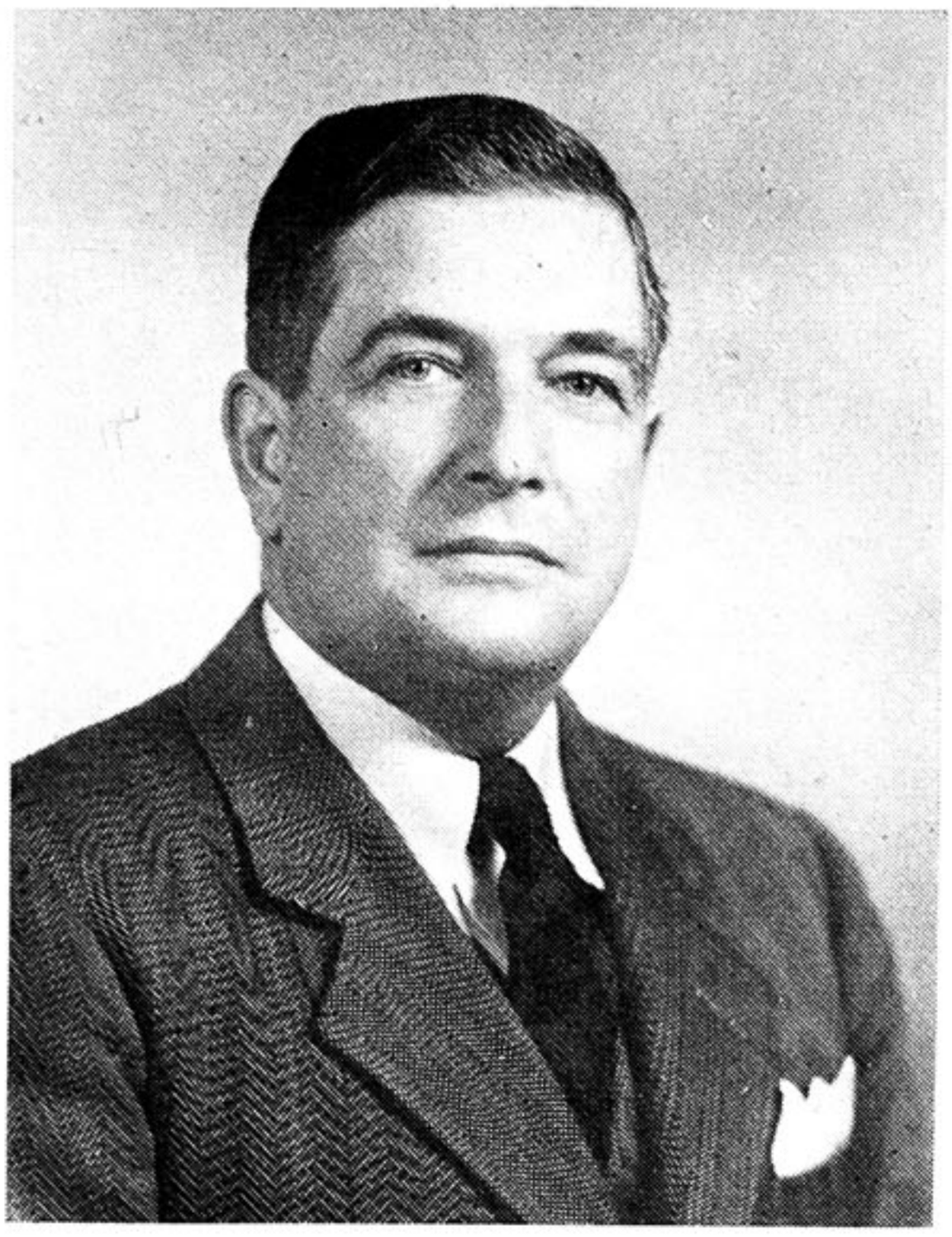
ARTICLE IV — *Election of officers:*

*Section 1.* The officers shall be elected by ballot at the annual meeting of the section.

*Sec. 2.* Nominations for the various offices shall be submitted by the nominating board appointed by the chairman and approved by the executive committee. Such nominations shall be submitted at the October meeting, at which time nominations may also be made from the floor. A ballot containing the names of all nominees shall be distributed to members of the section. Ballots shall be returned to the secretary on or before the November meeting to be valid for the purposes of election.

*Sec. 3.* The term of office of the officers shall be one year beginning January 1st.

# October Speaker . . .



**Kermit M. Bleese**

Mr. Kermit M. Bleese is with the Northern Pacific Railway Company. He is the chemist in the Water Service branch of the Engineering Department, having charge of boiler water analysis, analysis of locomotive water supply and its chemical treatment, for the railroad's Tacoma division.

Mr. Bleese, a native of North Dakota, entered the Enderlin, North Dakota, high school and subsequently North Central College, Naperville, Illinois, after two years entering the University of North Dakota, graduating with the Degree of Bachelor of Science in 1927.

Prior to joining the Engineering Department of the Northern Pacific Railway Company in January of 1946, Mr. Bleese for the greater part of twelve years was engaged in the low-temperature carbonization of sub-bituminous and lignite coal and the development of by-products therefrom. He developed a successful process for the recovery of pure meta-para cresol from low-temperature tars. This process was approved by the United States Naval Research Laboratories, Anacostia, D. C., and the OPRD of the War Production Board, Washington, D. C. In 1940, Mr. Bleese designed and built a low-temperature carbonizing pilot plant in North Dakota, approved by the United States Navy Department and the War Production Board as a war measure to develop an additional source of meta-para cresol and to produce storable fuel for the Middle West.

During 1937 to the beginning of the war did research and development work in a small laboratory in Minneapolis, Minnesota, on purification and separation of tar acids from low-temperature lignite tars and production of synthetic resin. Mr. Bleese also did consulting work for several large firms on low-temperature carbonization.

During the early period of low-temperature carbonizing of low ranking coal in 1934 to 1937, Mr. Bleese did extensive work for the Lehigh Briquetting Company, Dickinson, N. Dak., on briquetting of the carbonized lignite, activated carbon and the utilization of the liquid products.

## Low-Temperature Carbonization of Sub-Bituminous and Lignite Coal

Low-temperature carbonization of coal is the heat treatment of coal in the absence of air at a temperature of 500 deg. C. to 700 deg. C. High-temperature carbonization differs by using temperatures of 900 deg. C. to 1200 deg. C. The purpose of low-temperature carbonization is to prevent the light oils and primary tar from cracking, thereby recovering a two to three times greater yield of liquid products and produce a smokeless fuel.

Sub-bituminous and lignite coal are high oxygen content non-coking coal and therefore cannot be processed by high-temperature methods. They are being successfully processed by low-temperature carbonization.

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# REPORT OF COUNCIL MEETINGS AT THE NATIONAL ACS MEETING IN CHICAGO

**By GEORGE H. CADY**

The Council of the American Chemical Society met in Chicago during the morning and afternoon of Saturday, September 7. In spite of the fact that this date was two days in advance of the opening of the national meeting, attendance appeared to be in the neighborhood of 300 councillors and substitutes. President Bradley Dewey presided in an interesting and forceful manner which made it possible to cover the assigned business in one day.

To those of us in the Puget Sound Section the most interesting topic brought up was the possibility of holding a national meeting of the society in Seattle or Portland in the summer of 1948. Our secretary, Alden Emery, told the Council that invitations had been received to hold the meeting in each city, and he indicated that both locations were being carefully considered. There was no other open discussion of this proposed meeting place by the Council and the matter was not settled.

The discussion and actions of the Council were largely influenced by two factors:

(1) Membership in the society reached the new high, 48,071, on August 28th. This large and increasing number appears to make changes in the plan of organization desirable.

(2) The Hancock Committee which has been set up to study the society and to recommend changes has not reported. On this account, a number of proposed changes in the constitution of the society have not been made. The policy is to wait for the report of the committee before changing.

An extended debate about the licensing of chemists brought out several conflicting ideas but only led to referring the matter back to a committee. In order that the committee might have an idea of the sentiments of the Council an informal vote was taken. This indicated that most of the members opposed to requiring all chemists to be licensed, but were in favor of a system permitting any chemist who wished to do so to obtain a license. The opinion was expressed during the discussion that the society should take a stand on this matter very soon, because licensing laws are now being considered by some state legislatures.

One important motion came up as new business and passed very quickly without opposition. It was to the effect that the national office should run the national meetings. This action will decrease the work required by the local sections which serve as hosts, and it must be welcome news to those who have managed the meetings at Chicago, Atlantic City, and New York. These three cities are the only places which have adequate housing and meeting rooms for our large national meetings in the northeastern part of the country.

Some time was spent discussing means of reducing the size of national meetings. One plan proposed was to hold several regional meetings to take the place of a national meeting. Another proposal was to hold divisional meetings at different cities. No change in the present plan was adopted.

One who attended the meeting could not avoid being impressed by the good health of our robust society. Its troubles in organization are only growing pains. Our old suit of clothes is getting pretty tight and we are about ready for a new one whose cut may be largely determined by the Hancock committee.

—GEORGE H. CADY

# PAPERS OF THE MEMBERS OF THIS SECTION PRESENTED AT THE NATIONAL ACS MEETING

## A Diffusion Study of Lignin Sulfonic Acids in Sulfite Waste Liquor

***DERROL PENNINGTON and D. M. RITTER***
***University of Washington, Seattle***

Results from previous molecular weight determinations on lignin sulfonic acids have been obtained by methods not suited to give satisfactory values for high polymeric strong electrolytes. Free diffusion coefficients descriptive of the heterodisperse and polymeric nature of the lignin sulfonic acids. Analytical data on total solids, methoxyl and sulfur content, and periodic acid reducing power of the diffusate have been used to calculate average integral diffusion coefficients of ammonium lignin sulfonate in sulfite waste liquor, for which values in sq. cm. per day have been found covering the ranges 0.26-0.17, 0.16-0.12, 0.32-0.18, and 0.36-0.24, respectively. Molecular weights have been calculated by application of the Sutherland-Einstein quotation using the experimentally determined average integral diffusion coefficients for methoxyl transfer. The values obtained show 60 per cent of the ligneous material to have molecular weights of 10,000 or over with a minor fraction as low as 3,000. The diffusion analysis method is being applied to guide separation and structural studies.

## Preparation of Fluorocarbons by the Catalytic Fluorination of Hydrocarbons

***G. H. CADY, Univ. of Washington, Seattle***
***A. V. GROSSE, Marcus Hook, Pa.***
***E. J. BARBER, L. L. BURGER,***
***ZACHARY SHELDON***
***Columbia University, New York***

The technique for catalytic fluorination has been developed to such an extent that a desired saturated fluorocarbon may be produced in a moderate to a high yield by the reaction of the corresponding hydrocarbon with elementary fluorine. The hydrocarbon vapor and the fluorine are each diluted by nitrogen and are mixed gradually in the presence of fine copper turnings or ribbon, coated with a thin layer of fluorides of silver. A slight excess of fluorine is passed and the catalyst is kept at a temperature between 140° and 325°C. This procedure has been used to produce straight or branched chain fluorocarbons ranging from perfluorobutane to perfluorohexadecane and napthenic fluorocarbons from $C_6F_{12}$ to $C_{18}F_{30}$. Volatile hydrocarbon lubricating oils have also been fluorinated.

Among the fluorocarbon products obtainable are gases, fluid liquids, waxy crystalline solids, lubricating oils, and brittle sorinlike solids which soften to form oils when heated.

## Chemical and Physical Properties of Fluorocarbons, CxFy

***A. V. GROSSE and G. CADY***
***Columbia University, New York***

A new vast field of fluorine and simultaneously carbon industry — namely, that of the fluorocarbons, such as CxFy and their derivatives—has been opened. Fluorocarbons range in physical properties from the previously known gases $CF_4$, $C_2F_6$, and $C_3F_8$, through liquid and solid §-paraffins, $C_NF_{2N+2}$, §-olefins, $C_NF_{2N}$, and the isomeric §-napthenes, boiling in the gasoline range, to §-lubricating oils, greases, and waxes. (The symbol §, from the Greek phi for fluorine, indicated complete substitution of all hydrogen atoms attached to carbon atoms in the compounds following.)

The saturated fluorocarbons as a class are characterized by their great thermal stability and inertness towards even the most reactive chemical reagents. This is due to the great stability of the C-F bond. This fact is evidenced by the extreme exothermicity in the direct substitution of hydrogen by fluorine. For example, 1,630 kilocalories per mole are given off in the reaction:

$$C_7H_{16} + 16\ F_2 \qquad C_7F_{16} - 16\ HF$$

A great variety of saturated fluorocarbons can be prepared from hydrocar-

*(Continued on page 16)*

## PAPERS OF MEMBERS . . .

*(Continued from page 14)*

bons by means of such fluorides as $CoF_3$ (R. D. Fowler's method), by catalytic fluorination with elementary fluorine (Columbia method) or by others to be described at this symposium.

Saturated fluorocarbons can be heated to 400° to 500°C. without cracking. They are stable towards air and no not burn by themselves. They are not attacked by nitric acid, concentrated or fuming sulphuric acid, or nitrating mixture, nor by acid chromate and permanganate solutions. They also are stable towards dilute and concentrated alkalies even to about 100°C.

§-olefins, such as $CF_2{:}CF_2$, add bromine and polymerize like typical olefins.

Tables showing various physical properties of various §-fluorocarbons will be shown.

### Microdetermination of Alkaline Earths as Normal Molybdates

***REX J. ROBINSON and ROBIN MOSER***
***University of Washington, Seattle***

The alkaline earths may be determined on the micro scale as the normal molybdates. For precipitation the pH of the solution is adjusted to 6 or 7, the molybdate concentration made 0.06N, and the mixture boiled gently for 2 or 3 minutes. After cooling 15 minutes or longer, the precipitate is filtered and ignited at 700°C.

An acidified molybdate reagent is stable for considerable periods of time. A neutral or alkaline reagent solution absorbs carbon dioxide from the air, resulting in low yields because of subsequent precipitation of alkaline earth carbonate.

Magnesium, if its concentration is not in excess of about 0.1 N does not interfere. With higher concentrations of magnesium the alkaline earth molybdate should be double precipitated.

The accuracy of the method is of the order of 0.5% and the more rapid than the standard method of analysis.

# News Items..

### Editor of Chemical Industries Visits

Among the recent visitors to the Pacific Northwest was Mr. Robert L. Taylor, the Editor of *Chemical Industries*. He stopped off to inspect some of the recent developments in the chemical industry and also called on all interested firms and people to find out about their plans for the post-war period. Mr. Taylor was returning from Bikini Atoll, where he was an accredited press correspondent for "Operation Baker."

### T. S. Carswell in New Position

The Editors were just as surprised as you will be to learn that upon his return from South America, Tom S. Carswell resigned from his position with the Monsanto Chemical Company and has accepted one with the Commercial Solvents Corporation of New York City as Manager of the Research and Development Department.

*(Continued on page 19)*

# ACS NEWS ITEMS . . .

*(Continued from page 17)*

### *New Additions to Chemistry Staff*

Several new men have been added to the staff. Dr. Frank B. West has been appointed Asst. Professor of Chemical Engineering, teaching the Senior course in Unit Operations. At one time after completing his graduate work at the University of Minnesota he served as an instructor at the University. He returns now from the Central Engineering Department of the E. I. DuPont Company at Wilmington, Delaware.

Dr. Carl Quether will act as Asst. Professor of Biochemistry and will handle this subject for the First Year students in the Medical School. Obtaining his doctorate from George Washington University, Washington, D. C., he comes to the campus from the staff of the Medical School of Western Reserve University at Cleveland.

Dr. Norman G. Gregory, an alumnus who received his doctorate from Ohio State University, returns to serve as an Instructor in Inorganic and Physical Chemistry. Recently he was engaged in War Research work at the Radiation Laboratory at the University of California.

Dr. Arthur G. Anderson will act as an Instructor in General and Organic Chemistry. A graduate of Illinois, he received his doctorate at the University of Michigan. After engaging in War Research Work at the Manhattan project at Oakridge, Tennessee, he returned to the University of Illinois to continue some Organic Research under Dr. Roger Adams.

Dr. Tartar said that no new courses were being offered at the present time, but that several were being considered for the Spring Quarter.

***But darling! I even looked in Beilstein and I can't find what morinate means.***

# Abstracts of Papers Presented by Puget Sound Section Members at AICHE Meeting, San Francisco

## DR. MOULTON REPORTS ON PHOSPHATE-OLIVINE FERTILIZER

A new type of fertilizer to help increase the Nation's food supply will soon be made commercially available in the Pacific Northwest.

In a paper presented before the "New Western Chemical Industries" symposium, Dr. R. W. Moulton of Manganese Products, Inc., Seattle, Wash., outlined the process to be used by this firm in producing the new fertilizer material. The plant, believed to be the first of its kind to go into commercial operations, will use a process developed in recent years largely by engineers of the Tennessee Valley Authority.

The new fertilizer will be produced by fusing olivine, a mineral found abundantly in this country, with phosphate rock from the vast deposits of Montana. The furnaces will be heated to a high temperature (about 1,500 degrees Centigrade) by means of electricity. The two rock materials react and fuse, and the resulting molten slag will be hit by a stream of high-velocity water as it is run out of the furnace. This cools the material rapidly in the form of granules, which are then dried and sized.

The finished fertilizer product is different from ordinary superphosphate fertilizer in that it has an alkaline instead of an acid reaction, a property which makes it particularly suitable for certain types of agricultural soils. It has, furthermore, a high magnesium content that makes it particularly effective on soils having a deficiency of this important plant nutrient. Such a deficiency, for instance, occurs in many places in western Washington and Oregon.

With abundant deposits of olivine and phosphate rock raw materials and cheap electric power, the process is especially adaptable to the Pacific Northwest, it was stated. Manganese Products, Inc., has perfected the process through experimental work extending over a period of about two years.

## ERICSSON REPORTS ON WASTE SULFITE LIQUOR ALCOHOL

How a waste material from a pulp mill is now aiding in the "Fight for Food" was described by a chemical engineer at the western regional meeting of the American Institute of Chemical Engineers in San Francisco. By producing annually over two million gallons dustry, from waste liquids instead of from critical wheat or corn, the plant of the Puget Sound Pulp and Timber Co. of Bellingham, Washington, is aiding materially in the present food conservation program of the nation. The plant, the only one of its kind in the United States, was described by E. O. Ericsson, a chemical engineer connected with the firm, at the "New Western Chemical Industries" symposium.

The plant, which began commercial operation last year, is capable of producing annually over 2 million gallons of high-grade industrial alcohol from waste liquors of its sulphite pulp mill. By using these liquors, the company has also eliminated to a considerable extent a major and costly waste disposal problem. The plant alone now makes available annually to the west coast an amount of alcohol almost equal to the prewar output of all the alcohol plants in the west and thus makes available to the region an abundant supply of alcohol which can be used as a cheap raw material in chemical industries.

Waste liquors from the pulp mill are treated with steam to remove harmful gases, then cooled and concentrated lime is added, after which a yeast nutrient is added and the liquor fermented into alcohol in the usual commercial manner over a period of 12-20 hours. The plant is capable of producing 22 gallons of high-strength alcohol from the liquor produced from each ton of sulfite pulp made in the firm's adjoining pulp mill.

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