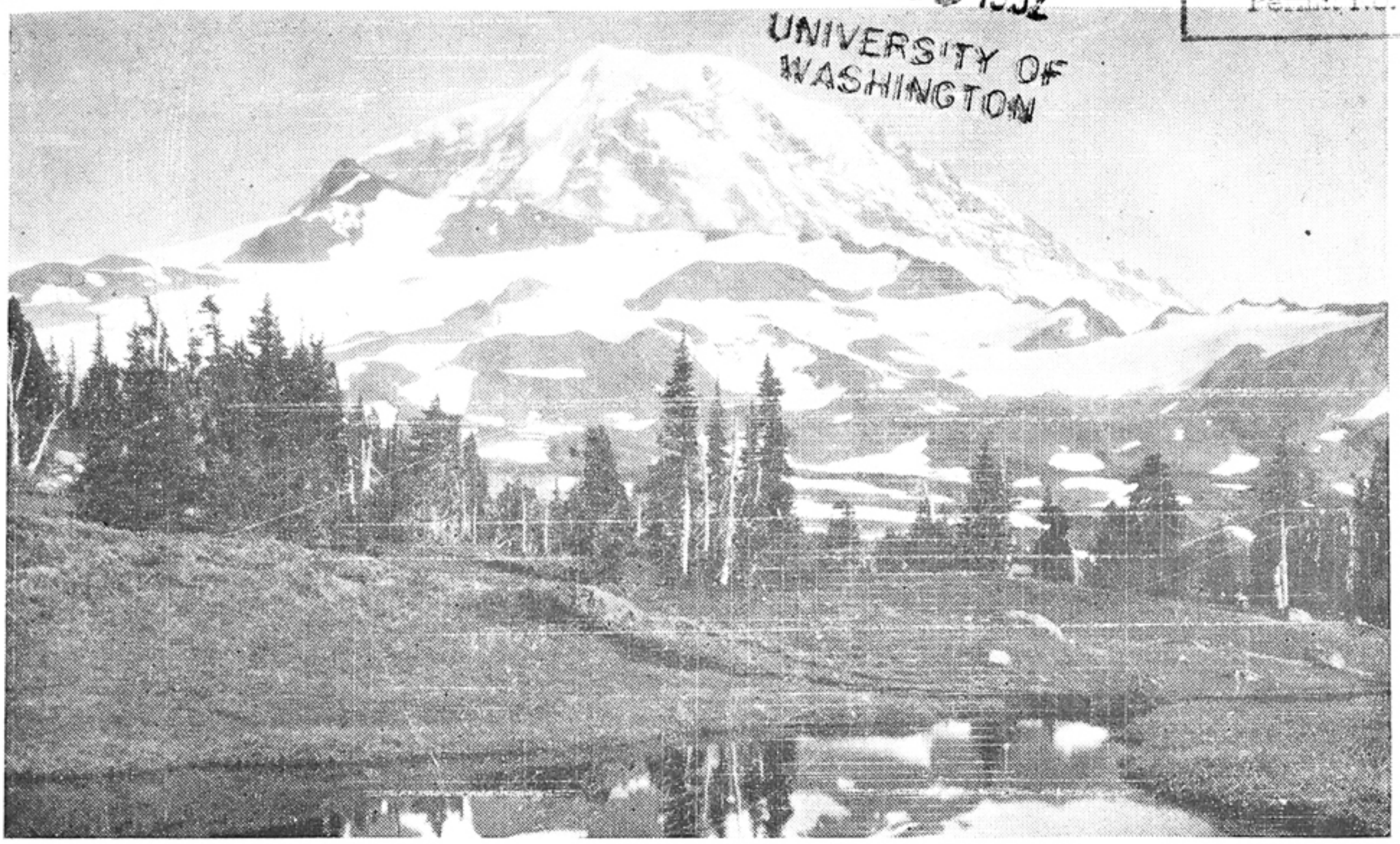


TABLE OF CONTENTS

The

PUGET SOUND CHEMIST

BULLETIN OF THE PUGET SOUND SECTION OF THE AMERICAN CHEMICAL SOCIETY

APRIL, 1952

PETROLEUM CHEMISTS have many uses for time-saving 'Baker Analyzed' *REAGENTS*

—high in purity

For every product manufactured in the huge petroleum industry, chemists must make constant tests for quality and uniformity. For accuracy, and to save valuable testing time, petroleum chemists prefer 'Baker Analyzed' Reagents, with **the actual lot analysis on the label.**

Pictured above is 'Baker Analyzed' Potassium Hydroxide—in convenient pellet form. Note it is low in Chloride, Carbonate, Sulfate, Heavy Metals and Iron. Note, too, the purity is defined to the decimal.

Listed are other 'Baker Analyzed' Reagents helpful to petroleum chemists. Whether you are determining Neutralization Values, Aniline Points, Bromine Numbers, Water and Sediment Content and Tetraethyl-lead, or making other determinations important in the field of petroleum, you'll find the proper 'Baker Analyzed' Reagent to help you speed your tests. Order from your favorite Laboratory Supply House.

J. T. Baker Chemical Co.
Executive Offices and Plant, Phillipsburg, N. J.

Other 'Baker Analyzed' Reagents Valuable to Petroleum Chemists:

Acetic Acid	Potassium Biphthalate
Aniline	Potassium Iodide
Benzene	Silver Nitrate
Iso-Propyl Alcohol	Sodium Thiosulfate

Baker Chemicals

REAGENT • FINE • INDUSTRIAL

'BAKER ANALYZED' REAGENTS ARE SOLD IN YOUR AREA BY:

SCIENTIFIC SUPPLIES CO., 122 Jackson Street, Seattle, Washington

The PUGET SOUND CHEMIST

Published by the Puget Sound Section of the American Chemical Society

Monthly from September through June. Non-member subscription rates, $1.50 year. For non-receipt of copies or change of address, notify Puget Sound Section Secretary. The Puget Sound Section of the A. C. S. assumes no responsibility for the statements and opinions advanced by contributors to its publication. Views expressed in the editorials are those of the editors.

4

MAY MEETING

PUGET SOUND SECTION

of

AMERICAN CHEMICAL SOCIETY

TIME—Thursday, May 15, 8:00 P. M.

PLACE—Seattle, 131 Bagley Hall, U. of W.

SPEAKER—Dr. W. H. Urry

SUBJECT—New Developments in the Reduction of Free Radicals in Solution

Symposium on Colloidal Electrolytes

IN HONOR OF

DR. H. V. TARTAR

MAY 19 - 20 at UNIVERSITY OF WASHINGTON

Dinner in Student Union Building

SPEAKER: PETER DEBYE

MAY SPEAKER

W. H. URRY

BIOGRAPHY

W. H. Urry was born in Salt Lake City, Utah, in 1914. After a typical boyhood with the usual preliminary training in his home town, he entered the University of Utah in 1933. After two years dominated by a growing interest in chemistry, he transferred to the University of Chicago. One year away from his feminine interest since high school was more than enough, and in 1936 he married Miss Dion Brown. He obtained a B. S. degree from the University of Chicago in 1938.

To support a growing family (present status: two boys, 14 and 12; two girls, 9 and 6) and a graduate education, he worked as a lecturer in science and later as supervisor and designer of chemical exhibits at the Museum of Science and Industry (1936-1944) on Chicago's lake front. During the same period, he carried on graduate studies in organic chemistry at the University of Chicago. When his work for the Ph. D. was finished (1944), he became Instructor in Chemistry there and he was promoted to Assistant Professor in 1947.

During World War II he was associated with Professor M. S. Kharasch in his academic research and in various war projects for the N.D.R.C., the Rubber Reserve and the Quartermaster Corps. His principal researches have been in the field of free radicals in solution. These have included the study of peroxide reactions, olefin-addition reactions and free radical rearrangements. Recently he has studied the mechanisms of these reactions with isotopic methods.

He is a member of the American Chemical Society, the American Association for the Advancement of Science, Sigma Xi and Phi Beta Kappa.

SUMMARY

New Development in the Reaction of Free Radicals in Solution

BY W. H. URRY

The recent study of the chemistry of free radicals in solution has provided the organic chemist with many new synthetic tools. For example, carbon to carbon condensations can be effected by reactions of diacetyl peroxide and di-t-butyl peroxide with various organic substances, thermal decomposition of azo-bis nitriles, and metal-salt catalyzed Grignard reactions. Unique products can be prepared by the peroxide, and light-initiated additions of polyhalomethanes, aldehydes, and bromoesters and other substances to olefins. The recently-reported reactions of diazomethane with polyhalomethanes are probably of this type.

Free radical substitution reactions proceed with ease with saturated hydrocarbons and aliphatic substances. Chlorination with chlorine and light or with sulfuryl chloride and peroxides, bromination with bromine and light, carboxylation with oxalyl chloride, and light-initiated sulfonation with sulfuryl chloride and pyridine are examples.

Other reactions such as the autoxida-

(Continued on Page 3)

What this label means to you—

. . . . accurate information . . . . . .

The Mallinckrodt AR* label provides unmistakable legibility and gives complete information: On side panels are the Maximum Limits of Impurities, molecular weight, chemical formula, caution statement, and the Mallinckrodt control symbol. But the most important element on the label is the name Mallinckrodt, for 85 years a symbol of fine chemicals.

. . . maximum limits of impurities . . . . . .

Maximum limits of impurities mean published, pre-determined standards—the analytical chemist's guarantee of reagent quality. They are standards which cannot be changed to accommodate variations in quality of production. They insure that Mallinckrodt AR's contain negligible quantities of impurities—unvarying from package to package and lot to lot.

. . . . Complete stocks . . . . . .

Mallinckrodt distributors, more than sixty-five of them, in every part of the country can make prompt delivery of your order from complete stocks. And standing behind them are extensive Mallinckrodt facilities for service and production, keeping them constantly stocked to supply your needs.

. . . . . .

MALLINCKRODT CHEMICAL WORKS

Mallinckrodt St.: ST. LOUIS 7, MO. 72 Gold Street, NEW YORK 8, N. Y.

Chicago • Cincinnati • Cleveland • Los Angeles • Philadelphia • San Francisco • Montreal • Toronto

*TRADEMARK **ANALYTICAL REAGENTS**

Mallinckrodt Analytical Reagents are distributed by:

SHAW SURGICAL COMPANY

902-912 S. W. YAMHILL STREET PORTLAND 7, OREGON

SUMMARY (Continued)

tion of organic substances and the controlled decompositions of hydroperoxides promise to be useful in synthesis. These reactions, and their importance as a new and rapidly-developing part of organic chemistry, will be discussed.

●

INFRARED ANALYSIS — UNIVERSAL TOOL

By Dr. Van Zandt Williams
The Perkin-Elmer Corporation
Norwalk, Connecticut

Infrared spectrometry is a paradox in the industrial chemical laboratory. Its rate of growth is amazing. Its use ten years ago was less than 1 per cent of that today. Yet this growth has been intensive in certain companies rather than extensive throughout the field.

Today there exists a laboratory which lists 130 different infrared analyses in its standard process control manual, and there are new processes which exist only because of infrared application, there are sites where infrared is the primary standard for unknown identification and material characterization. Yet there coexists many sites where infrared is little more than a vague word, where its potentialities are quite unknown and its use has never been considered. Why such a paradox?

The answer probably lies in the intensive nature of the rate of growth. Where the methods have been tried they have been so successful and have advanced so rapidly that the lull point in time and progress required for publication has not occurred. A successful application means a competitive edge and such a situation inhibits publication. Again the initial cost of instrumentation and the shortage of personnel experienced in the field may seem to be a barrier.

In short, although there has been considerable infrared publication in the original literature, the applications are not yet taught in college chemistry, elementary textbooks are not available, and little has been presented in the survey literature to remove infrared from its ivory tower.

The key to infrared spectrometry is an understanding of the relationship between the absorption of infrared light by a molecule and the structure of that molecule. For present purposes a very close analogy to any given molecule (as H2O) can be obtained with a mechanical model constructed in the following way. Ball bearings whose masses are proportional to the masses of the atoms are arranged in space with a geometry identical to that of the molecule. These ball bearings (atoms) are connected by simple Hook's Law springs whose strengths are proportional to the strengths of the chemical bonds in the molecule.

If this mechanical model is struck a sharp blow with a hammer, the ball bearings will seem to undergo weird motions having no consistent pattern. If the moving model is examined with stroboscopic light, definite frequencies of the light will be found for which the model appears to stand still. Essentially, the model will be found to have several characteristic vibrations, vibrational modes in which each ball bearing is moving in a definite path with the same frequency. If the model has N ball bearings 3N - 6 such modes will be seen. All these vibrational modes are occurring simultaneously and the weird pattern of motion first observed in steady light is simply the summation of these motions.

These vibrational modes or characteristic vibrations that were measured experimentally can also be calculated by the methods of mechanics substituting in known equations the ball bearing masses, the geometrical angles and distances, and the strengths of the connecting springs. If in these equations one substitutes, not the mechanical model data, but rather the actual data of the molecule itself atomic masses, chemical bond strengths, and geometry there is obtained characteristic vibration of the molecular motions are found to be in the same range as infrared light frequencies 12x10 to the 13th—0.6x10 to the 13th cy-

APPROVED FOR *Your* LABORATORY

CENCO

Cenco High Vacuum Pumps are renowned for high speed evacuation and performance. Write for 48-page technical Bulletin 10 "High Vacuum Appartus."

These tested and approved Cenco products assure efficient control in your laboratory. The **Cenco Tenslometer** serves reliably for the measurement of surface and interfacial tensions. Completely described in Bulletin 102 "Surface Phenomena". The **Cenco Cylindrical Oven** provides dependable temperature control to 210 degrees. Write for Bulletin 5 "Constant Temperature Equipment."

The **Cenco Electroanalyzer** saves time in the quantitative electroanalysis of metals. Ask for Circular 1200.

Cenco News Chats, a quarterly magazine published for laboratory workers in industry, education and research will be sent on request. Professional people are invited to send in their names for future editions.

CENTRAL SCIENTIFIC COMPANY
OF CALIFORNIA

Scientific Instruments CENCO ***Laboratory Supplies***

6446 Telegraph Road, Los Angeles 22, California

cles/sec (in infrared wavelength 2.5 - 50 microns). Twenty years ago Boss Kettering of General Motors used this molecular approach to study the infrared charcteristics of benzene.

Now if one shines infrared light of successive frequencies (or wavelengths) on a sample, it will be observed that the light is the same as one of the characteristic frequencies of the molecules of a sample (There is a further requirement that the characteristic vibration of the molecule must cause a change in dipole moment in order that light be absorbed. This is almost always true in industrial compounds.) If the light frequency does not match a molecular frequency the light is transmitted.

INDUSTRIAL APPLICATIONS

Thus an infrared spectrum, a graph of light absorption vs wavelength, is essentially an analysis of the mechanical motion of the molecule. An infrared spectrometer is the apparatus used to irradiate a sample with successive infrared wavelengths and to measure the degree of light absorption by the sample. In fact the spectrometer may be considered an infrared stroboscope to analyze the molecule, in direct analogy to the stroboscopic light used to analyze the mechanical model.

It should be noted that an infrared spectrum, the analysis of the mechanical motions of a molecule, depended on three characteristics — the atomic masses, the type of chemical bonds, and the geometry of the molecule. These are the same characteristics which differentiate one molecular species from an other. If two molecules have these three characteristics identical, the molecules are identical.. If they differ in any one of the three, they are of different types.

Because an infrared spectrum and the definition of molecular specificity have the same basis, one can infer the following general applications of infrared spectrometry in the chemical field:

1. Identification - Fingerprint. The infrared spectrum is accepted as the most nearly unique single characterization of a material. It is the first choice in unknown identification, in material matching, process tracing, and similar operations.

2.—Qualitative Analysis. Chemical compounds, especially organics, are made up of various combinations of atomic building blocks such as OH, CH3, CO Since such building blocks have the same three characteristics of mass, bond, and geometry, their presence in a molecule gives rise to characteristic infrared absorption bands. Classical qualitative organic analysis of an unkown can be done from a spectrum of that unkown.

3. Quantitative Analysis. Species uniqueness is the primary desideratum of mixture analysis. Since spectral characteristics are largely retained on component admixture, accurate rapid analyses can be performed from measurement of an infrared spectrum of a mixture.

If one adds to these versatile possibilities the generality of sampling attributes, the value of infrared can be seen. Almost all materials have an infrared spectrum. They can be examined in the solid, liquid, vapor, or solution state (except in H2O). Required sample is small, 25-30 micrograms in special cases. A permanent infrared record is obtained. The sample is unharmed and can be recovered easily for further examination.

The first application discussed above, that of material characterization, is of general value in any type of organic chemical laboratory and is rapidly becoming a requirement. Articles in the J.A.C.S. describing new compounds list the infrared spectrum as a characteristic along with the older standards as melting point, boiling point, index of refraction, etc. Certain branches of the patent office particularly those dealing with antibiotics are requiring an infrared spectrum in an application. If one remembers that a molecule of N atoms can have 3N-6 absorption bands specific in wavelength value (spectrum abscissa) and absorption intensity (spectrum ordinate) the statisti-

(Continued on Page 12)

French Chemist Given Permanent Resident Visa

by Private Law No. 633

We had lunch last month with an interesting personality, a well-traveled French Chemist named George Alpier, who, incidentally, is a member of the Puget Sound Section of the American Chemical Society. Currently finishing work on a process for a marketable fresh frozen apple juice with real fresh-apple flavor, Mr. Alpier will soon be looking for new fields to conquer.

Mr. Alpier has had quite a distinguished industrial career. A graduate of the Sorbonne in 1920, Mr. Alpiar has worked in such diversified fields as pharmaceuticals and soaps, coking and distillation of coal tars, textiles and perfumes. More surprising than the diversity of his experience is the number of countries in which he has worked.

From the manufacture of pharmaceuticals, alkaloids from opium, and soap in Turkey, he went to Spain where he worked in a coking plant extracting by-products from coal tar. From Spain he went to Roumania where he spent 10 years in the textile industry. In 1946 when the Russians came in, Mr. Alpiar returned to France and entered the perfume and cosmetic business.

Before coming to the United States, Mr. Alpiar made a study of the researches of the Swiss, French and Germans on fruit juice processes. On coming to this country in 1949, on a Tourist Visa, Mr. Alpiar made this knowledge available to the Liberty Orchards Company of Cashmere, Washington which sponsored his current project.

At the request of many prominent citizens, Private Law No. 633 was passed giving our colleague the status of a permanent resident.

It is a pleasure to welcome a colleague from France and to wish him every success in a new career in this country.

E. T. R.

cal probability of two different compounds having the same spectrum is remote.

In many laboratories an unknown is considered identified if its spectrum is shown to be identical with that of a known compound. Similarly a synthetic material is considered a match for a natural one of the spectra can be matched. The first successful attempt to synthesize penicillin G produced about one milligram of sample. One half of this was immediately used for infrared sampling to establish identity with the natural product. The penicillin problem illustrates another valuable use—that of compound tagging. In the early stages of penicillin study it was desired to isolate a pure sample of the penicillin from the fermentation broth. The only analytical measure immediately available was the bio-assay—a tedious and inaccurate procedure involving twenty-four hours incubation. As purification progressed samples were submitted for infrared study as well as bio-assay. When the material reached a stage of about 20 percent purity certain absorption bands were observed whose strengths could be correlated with the results of bio-assay. At that point infrared took over and the purification chemist could advance rapidly. He could set up a series of procedures—selective solvents, chromatographic separation, crystallization—and submit his fractions for infrared measurements. Within ten minutes the results were available to guide further purification.

A similar example is the infrared characterization of a distillation. Accurate distillation of an unknown multicomponent mixture may result in over one hundred fractions of which only one or two may be of primary interest. The spectra of selected cuts are obtained, perhaps the beginning, middle, and end of each plateau with one in the middle of each temperature rise. Twenty to thirty such spectra can be obtained in a day. Inspection of these results permits the analysts to follow the appearance and disappearance of each component and to make rough statements of cut purity. With this knowledge the cuts of interest can be selected, pooled, and reworked.

(Reprinted by courtesy of Industrial Laboratories.)

(Continued Next Month)

●

REGIONAL MEETING

The Northwest Regional meeting of the American Chemical Society will be held on the Oregon State College campus June 20 and 21, 1952. This regional meeting will be held in connection with the Pacific Division of the American Association for Advancement of Science held on our campus June 16-21, 1952. It is hoped that a great number of Northwest Chemists can avail themselves of the opportunities offered by these meetings.

TIME: Friday and Saturday, June 20 and 21, 1952. Registration, Friday 8:00 - 10:00 a. m. Scientific sessions, Friday 10 - 12 — 1:30 - 5:00. Saturday 9-12 — 1:30 - 5:00. Banquet Friday evening — Speaker Dean Henry Eyring of the University of Utah.

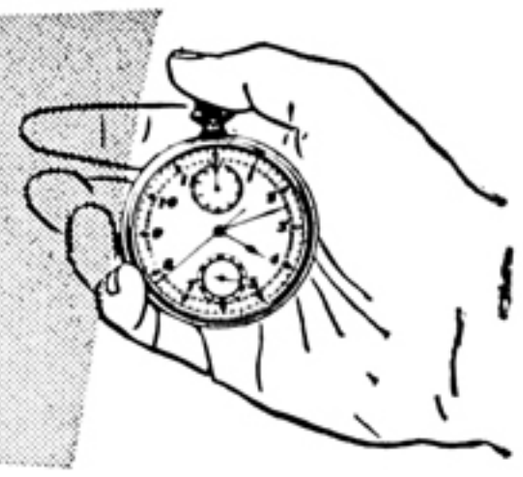
ACCOMODATIONS AND MEALS: The College is making available to guests the new ultra-modern million-dollar dormitory for use as a hotel during the meeting. Rates are low, $3 the first night, $1 each succeeding night for each adult, children $1 per night.

Cafeteria meals will be served at the dormitory. Hotels and meals are also available in downtown Corvallis.

PAPERS: Papers can be presented in the following sections, organic, bio-chemistry, physical, analytical, inorganic, general, chemical education and industrial chemistry. If enough interest is shown, several symposia are in the formative stage; namely protein chemistry and chemical education.

Titles and Abstracts (200 words) must be in our hands by April 28, 1952. The papers must conform to A.C.S. regulations.

Speed up your work . .

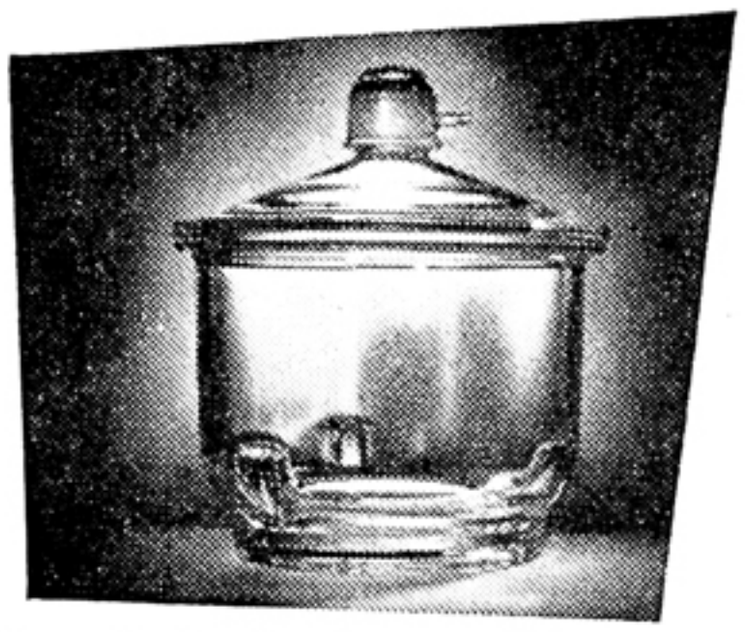


with PYREX® brand LABORATORY WARE

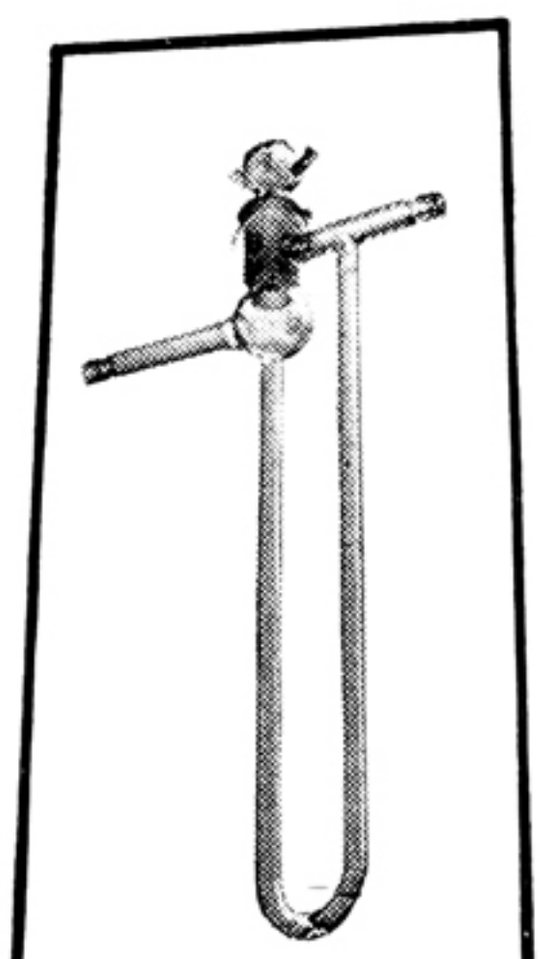
For that extra convenience that means important savings in time and money, specify PYREX brand laboratory glassware. Each item is carefully designed to make your work easier. Whenever possible, parts are interchangeable. Construction permits easy cleaning and speedy assembly.

There's no extra charge for longer service life. The extremely low thermal expansion coefficient of PYREX brand glass No. 7740 provides exceptional resistance to thermal shock. It also permits heavy, rugged construction, protecting against mechanical breakage.

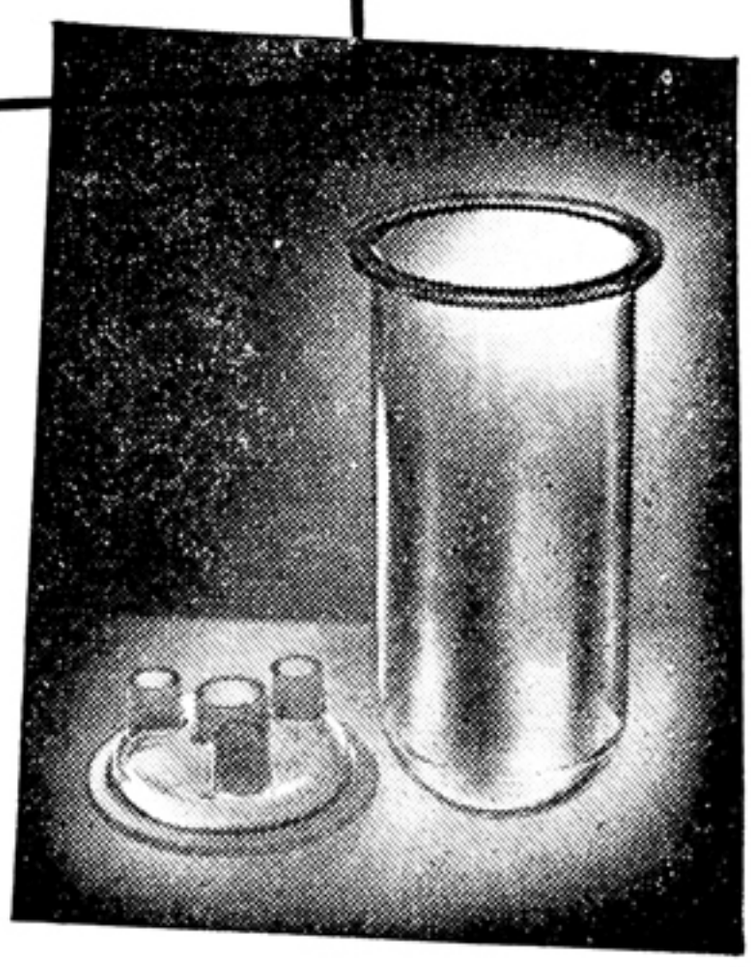
Three examples of durable, economical, easy-to-use PYREX ware are illustrated. Your laboratory supplies dealer stocks the complete line. Call him today.



PYREX brand Desiccators — Streamlined body for easy handling and cleaning. Sleeve outlet replaces awkward stopcock—prevents breakage. Vacuum tested for 24 hours.



PYREX brand Flow Meters — Simple convenient construction. Interchangeable hollow stopper is equipped with four orifices—¼, ½, 1 and 2 mm. diameter. Turn stopper to choose correct size orifice.



PYREX brand Resin Reaction Kettles— Wide mouth permits easy access to interior. Top openings accommodate three ⅋ 24/40 and one ⅋ 34/45 interchangeable joints for quick assembly with condensers, stirrers, funnels, etc. Tops are interchangeable with all size bottoms. 2, 3, and 4 liter sizes.

CORNING GLASS WORKS, CORNING, N. Y.

Corning means research in Glass

VISIT THE NEW CORNING GLASS CENTER

AMERICAN BOARD OF CLINICAL CHEMISTRY, INC.

The American Board of Clinical Chemistry, Inc. came into being after long and thoughtful study of the professional problems of the clinical chemist by the Committee on Clinical Chemistry of the American Chemical Society and the American Society of Biological Chemists, Incorporated (Chemical and Engineering News, 28, 4446, December 18, 1950). It was logical and proper that these two organizations and the American Institute of Chemists long established professional societies which have been active for years in raising the standards of chemistry and developing the professional status of the chemist and which include among their membership essentially all chemists in the country, should take the initiative in the organization of such a certifying board. There is a history of more than twenty-five years of efforts by these organizations, through conferences and negotiations with the other professional groups concerned in the operation of the clinical laboratory, to obtain for the clinical chemist the status necessary for his professional development and for the best use of chemistry in the care of the patient. Two articles one by Victor C. Myers ("Some Problems of Clinical Chemistry," Chemical and Engineering News, 25, 2615, October 10, 1946) and one by Warren M. Sperry ("The Professional Status of Clinical Chemistry," Chemical and Engineering News, 28, 159. January 16, 1950) summarize the status and problems in this field, recount the history of the efforts of the Committee and present the reasons for the decision that certification is one step required in the efforts to improve the standards of clinical chemistry and the status of the clinical chemist. The judgement of the Committee that the organization of such a board would involve many problems that would require time to straighten out proved to be correct. However, the Board is now organized ("Board of Clinical Chemists Open for Business, "Chemical and Engineering News, 28, 4446, December 18, 1950), and although there are still problems, there are no basic reasons to feel they can not be solved with time, understanding and patience. The Board asks all those interested to join in making this development as sound and as rapid as possible.

The Board is analogous in purpose and function to the various medical specialty boards which have served for many years to establish standards and qualifications for persons wishing to practice in a specialized field in medicine (Directory of Medical Specialists, The A. N. Marquis Company, Chicago). The aim of the Board is to establish and improve a standard of competence for those who practice clinical chemistry in the interest of the public and the development of the science, and to certify as specialists those who voluntarily comply with the requirements of the Board. The action of the board is based upon the candidate's ethical and professional record, training, experience and attainment, as well as results of a formal examination. While the Articles of Incorportion permit the Board to engage in activities, in addition to certification, in the interest of clinical chemistry, the Board feels that its principal function should be certification and that it should not promote any activity which might prejudice this function.

The Board is founded on the following basic principles which the Board and the sponsoring societies believe the necessary for maintenance of its competence, integrity and sound development:

1. The Board should be an independent organization, free from pressures of any kind from its founding societies or any other organization, group or individual.

2. The structure of the Board should be subject to change to meet new problems and situations, but by a process of due thought, deliberation and substantial agreement.

3. Membership of the Board should be balanced so as to include those persons experienced in the various aspects of the field.

4. While qualification for certifica-

tion should be as clearly stated as possible, interpretation and judgement by the Board are necessary for workability.

5. Standards for certification should be set as high as feasible under the present circumstances and raised as conditions permit.

The original members of the Board were necessarily selected by the sponsoring societies. Thereafter, they are to be elected by the Board from lists of nomination and election the individual serves only as a member of the Board and not as a representative of the society which nominated him. There would be no surer way of undermining confidence in such a board than by having it develop into an organization of competing groups.

The Board must be of a judicial, rather than of a legislative character. Tenure is limited to five years to provide for turnover of members of the Board, and provisions have been made by which new or additional members may be elected from nominees requested from other than the sponsoring societies and from at-large. The Board is cognizant of the importance of maintaining balance in the experience and location of its members, and elections from others than the founding societies can be expected as the Board develops.

The requirements for certification as listed in the By-laws are guiding principles under which the Board functions.

Experience has shown that is is practically impossible to state such matters in enough detail to cover all situations which arise or to convey the same meaning to all persons. One of the principal functions of a board is the administration of the principles under which it functions to practical situations not easily foreseen in detail. For this reason it is necessary that the Board be free from pressures and bias and be of the highest integrity.

If the standards of the Board are placed too high the group of Certified Clinical Chemists becomes an honor society and the Board fails in its function just as surely as it fails if it certifies those who are obviously incompetent. The Board has tried to set its present standards at a reasonably workable level. With time it will be possible and even imperative to raise this level. Experience has shown that in the beginning it is necessary in order to avoid unjust action, to certify certain candidates on the basis of their experience in the field in lieu of formal advanced training. It should be made clear that while the Board will undoubtedly make some errors in judgement, its purpose is to certify as to competance in the field of clinical chemistry, and that both competence and activities in the field will be required of candidates.

The Board recognizes the difficulties of stating an exact and unequivocal definition of a clinical chemist, but believes it must consider for certification those who are expert in the understanding and performance of chemical methods as an aid in evaluating the state of health, and in the diagnosis, prognosis and study of disease. The clinical chemist may work in a hospital laboratory, a teaching institution, a private laboratory, a public health laboratory, or a laboratory of pathological chemistry or toxicology. The kind of skills required, the responsibilities involved and the professional problems arising are similar in all these situations and are those in which the Board is interested. It is, therefore, necessary that the membership of the Board be such as to provide experience and judgement in dealing with applications for certification from whomever they may come in this wide group.

Every effort will be made by the Board to co-operate with the specialty boards of other professions which function in the clinical laboratory. This is most necessary for the best service of chemistry to medicine. However, this relationship must be not on the basis of competition between academic degrees and the like, but must be guided by mutual respect for competence and responsibilities in the respective fields, and, above all, by co-operative endeavor of each to contribute the best in the service of a common goal. (Con. Page 16)

Theoretically, certification should improve the quality of clinical chemistry and the status of the clinical chemist, if chemists and laboratories co-operate in this step. It should be realized, however, that translating this objective into practical results cannot be attained without considerable effort and understanding by all.

Signed: American Board of Clinical Chemistry, Inc.

CREATION OF PHONIUM

The following announcement is reprinted from the October 10 issue of the Chicago Tribune, Line O'Type column.

"Creation of phonium, a new metal which will revolutionize the airplane industry, has been disclosed by the government. Named for Dr. Phonius P. Hecht, in whose laboratories it was perfected, the metal has a specific gravity lower than that of air.

"Dr. Hecht explained that the weight of a substance corresponds roughly to the number of electrons present in its atom, and that phonium has been developed by a process of removing electrons from metallic atoms.

"Phonium will permit the construction of aircraft unlimited in size and armament, the only requirement being that enough heavier materials be used to hold the craft on the ground when it is not in use.

"Since release of bomb loads and use of fuel would make the plane so light that it could not be landed, it is felt in aviation circles that ballast of phonium will have to be employed and be jettisoned prior to making a landing. The ballast will rise when released, and will come to rest at a predetermined altitude which will then be restricted to aircraft. The blocks of ballast will contain steel cores so that they may be recovered by magnets.

Minutes of the Executive Committee Meeting Puget Sound Section American Chemical Society

January 25, 1952

Bagley Hall
University of Washington

The meeting was called to order at 10 p. m. by Mr. C. V. Smith, Chairman.

Present were the following:

Charles Smith, Norman Gregory, Jim Drury, Edward Lingafelter, Robert Paquette and Eric Reaville.

A quorum was present.

HIGH SCHOOL STUDENTS DAY

Due to the large amount of time required for the selection of students and organization of an adequate program it was decided not to hold the affair this year.

FINANCE COMMITTEE REPORT

The chairman of the Finance Committee, Dr. Norman Gregory, reported on the operating statement of the Section for 1951 and proposed a budget for 1952.

His report and budget, after discussion was approved and accepted by unanimous vote. (Report and budget attached to these minutes.)

APPOINTMENT OF STANDING COMMITTEE CHAIRMEN

Mr. Smith appointed the following as chairman of committees:

Committee & Chairmans

Public Relations, Dirk Verhagen; Finance, Norman Gregory; Employment, Carl Castle; Social, Albert Wakefield; Professional Practice, Robert Lent; Regional Activities, Edward Lingafelter; Membership, Clifford Higer; Engineering Council, Senior — Gerald Freeman, Junior — Lou Miller.

A. C. S. NATIONAL AWARDS

Mr. Smith briefly outlined the awards administered by the Society and suggested by the Society and suggested nominations for possible recipients. After discussion it was decided to publish the list of awards in the Puget Sound Chemist and appoint a committee to aid anyone wishing to nominate.

The meeting adjourned at 11:40 p. m.

Respectfully submitted,
Jim C. Drury, Sec.
Puget Sound Section
American Chemical Society

To have a thing is nothing if you've not the chance to show it, and to know a thing is nothing, unless others know you know it.—Lord Nancy.

★

Good will is the mightiest practical force in the universe.—Dale.

★

By gnawing through a dyke, even a rat may drown a nation.—Burke.

★

There is no royal road to anything. One thing at a time, and all things in succession. That which grows slowly endures.—J. G. Holland.

A STRANGE BEING

Verily, I say unto you, marry not an engineer, for the engineer is a strange being and possessed of many devils.

Yea, he speaketh eternally in parables which he calleth "formulae." And he wieldeth a big stick which he calleth a slide rule, and he hath one Bible—a Hand Book.

He talketh always of stresses and strains and without end of Thermodynamics.

He showeth always a serious aspect and seemeth not to know how to smile.

And he picketh his seat in the car by the springs there of and not by the damsel beside him.

Neither does he know a waterfall except by its power, nor a damsel except for her specific heat.

Always he carrieth his books with him and he entertaineth his maiden with "Steam Tables."

Verily, though she expecteth chocolates when he calleth, she opens the package to disclose samples of iron ore.

Yea,, though he holdeth his damsel's hand, but only to measure the friction, and he kisses only to test the viscosity.

For in his eyes shineth a far-away look, which is neither love nor longing, but a vain attempt to recall a formula.

There is one key dear to his heart, and that is a Tau Beta Pi key, and one love letter for which he yearneth, a "C".

And when to his damsel he writeth of love and signeth with x's, mistake not these symbols for kisses, but for unknown quantities.

When a boy, he pulleth a girl's hair to test the elasticity, but as a man he discovers different devices.

For he would count the vibrations of her heart beat and he reckoneth her strength of materials.

For he seeketh ever to pursue the scientific investigation, even his heart flutterings he counteth as a vision of beauty, and inscribeth his passion in a formula.

And his marriage is a simultaneous equation, involving two unknows and yielding diverse answers.—Anonymous.

Annual Banquet of Institute of Food Technologists — Governor Langlie is Speaker

The Puget Sound Section of the Institute of Food Technologists extends t the members of the American Chemica Society, a cordial invitation to atten their annual banquet to be held Apr 24, 1952 at the Seattle Chamber of Com merce Building. A social hour will b held at 6:00 p. m., followed by dinner a 7:00 p. m.

Governor Langlie has accepted an in vitation to attend. His message shoul be of interest to all of us. The progran will also include entertainment and doo prizes for everyone.

The price of the dinner is $2.50 pe plate and tickets can be purchase through Raymond Way, Crescent Mfg Co., Seattle; Glenn Danielson, Nalley' Inc., Tacoma; Clarence Hurlbut, Blu Banner Foods, Kent; Milan Groby, Sick' Brewing and Malting Co.; and John An dussi, Industrial Chemical Co., Seattle.

Chicago Exposition To Show New Atomic Energy Exhibit

Chicago, — The industrial uses of a tomic energy will provide an importan part of the program to be presented a the Seventh National Chemical Exposi tion in the Chicago Coliseum Septembe 9 to 13.

A committee headed by Richard I Trelease, consulting with representatives of the Atomic Energy Commission, is ar ranging for an atomic industrial exhibi while a full day's program is to be de voted to the subject. Exhibits scheduled will be nearly all new. Details and speak ers will be announced later.

In addition, the Exposition committee of the Chicago Section of the American Chemical Society, sponsor of the Expo sition, is planning a half-day symposium on the general theme of the future o achievements in the preceding half cen tury.

This year, Harold W. Schultz, Exposi tion chairman, says, it is the committee's

Five different grades of

Hydriodic Acid Merck

These diversified grades of one laboratory chemical typify the determination of Merck to go beyond ordinary practice in order to be of greater service to the chemical profession.

On your next order *specify Merck* for laboratory chemicals of dependable purity and uniformity.

Reagent

ACID HYDRIODIC MERCK

For Methoxyl Determination
Sp. Gr. Abt. 1.7 Assay: 55%—58% HI
Maximum Impurities

Non-volatile	0.010%
Chloride and Bromide (as Cl)	0.05 %
Phosphorus (P)	0.0003%
Sulfate (SO_4)	0.005%
Heavy metals (as Pb)	0.001%
Iron (Fe)	0.001%

Mol. wt. 127.93

ACID HYDRIODIC MERCK

SP. GR. 1.50

Contains

Hypophosphorous Acid

As Preservative

ACID HYDRIODIC MERCK

SP. GR. 1.70

Contains

Hypophosphorous Acid

As Preservative

ACID HYDRIODIC

DILUTED MERCK

U.S.P.

Contains 9.5 to 10.5 grams HI

in 100 cc.

Reagent

ACID HYDRIODIC MERCK

Sp. Gr. Abt. 1.5
With Preservative
Conforms to A. C. S. Specifications
Assay: Minimum 48% HI
Preservative (H_3PO_2): Abt. 1%
Maximum Impurities

Chloride & Bromide (as Cl)	0.01 %
Sulfate (SO_4)	0.005%
Arsenic (As)	0.0005%
Heavy metals (as Pb)	0.001%
Iron (Fe)	0.001%

Mol. wt. 127.93

Merck Laboratory Chemicals

PRECISION TOOLS FOR ACCURATE ANALYSIS

Research and Production

for the Nation's Health

MERCK & CO., INC.

Manufacturing Chemists

RAHWAY, NEW JERSEY

In Canada: MERCK & CO. Limited—Montreal

plan that the symposium speakers, each an expert in his field, will talk of the chemical opportunities and possibilities of the rest of the 20th century. This program is now being set up.

Meanwhile exhibition booth reservations, the central fact of the Exposition, have reached nearly 90 per cent of the scheduled floor area, James J. Doheny, Exposition manager reported. Some 200 manufacturers of chemical supplies and machinery will exhibit their latest wares.

Other features of the Exposition will include the Trail Blazers (new chemical ideas), the Second International Exhibit of Art by Chemists, a series of carefully selected technical motion pictures, a chemical consultation service for business, and a special session devoted to students.

A number of cooperative activities are being worked out with the Centennial of Engineering, dates of which partly coincide with the Exposition.

Manufacturing Chemists' Warned Congress of Wage-Price Controls

The Manufacturing Chemists' Association today warned Congress that the way in which wage-price controls are being administered threatens to throttle incentives necessary to expand production of chemicals vitally needed in defense.

John A. Sargent, Executive Vice-President of Diamond Alkali Company of Cleveland, Ohio, charged that "profit control" is being imposed under the guise of "price control." Mr. Sargent appeared before the Senate Committee on Banking and Currency, considering extension of the Defense Production Act, on behalf of the Manufacturing Chemists' Association, composed of companies producing over 90 percent of the nation's chemicals.

"Congress did not intend to establish profit control," Mr. Sargent said. However, the clear effect of important segments of the administration of the act is profit control. Price control in an emergency, which permits within its framework the operation of the profit motive and competitive principle, is consistent with the American way of doing things. Profit control by administrative fiat is utterly inconsistent with the American way of life."

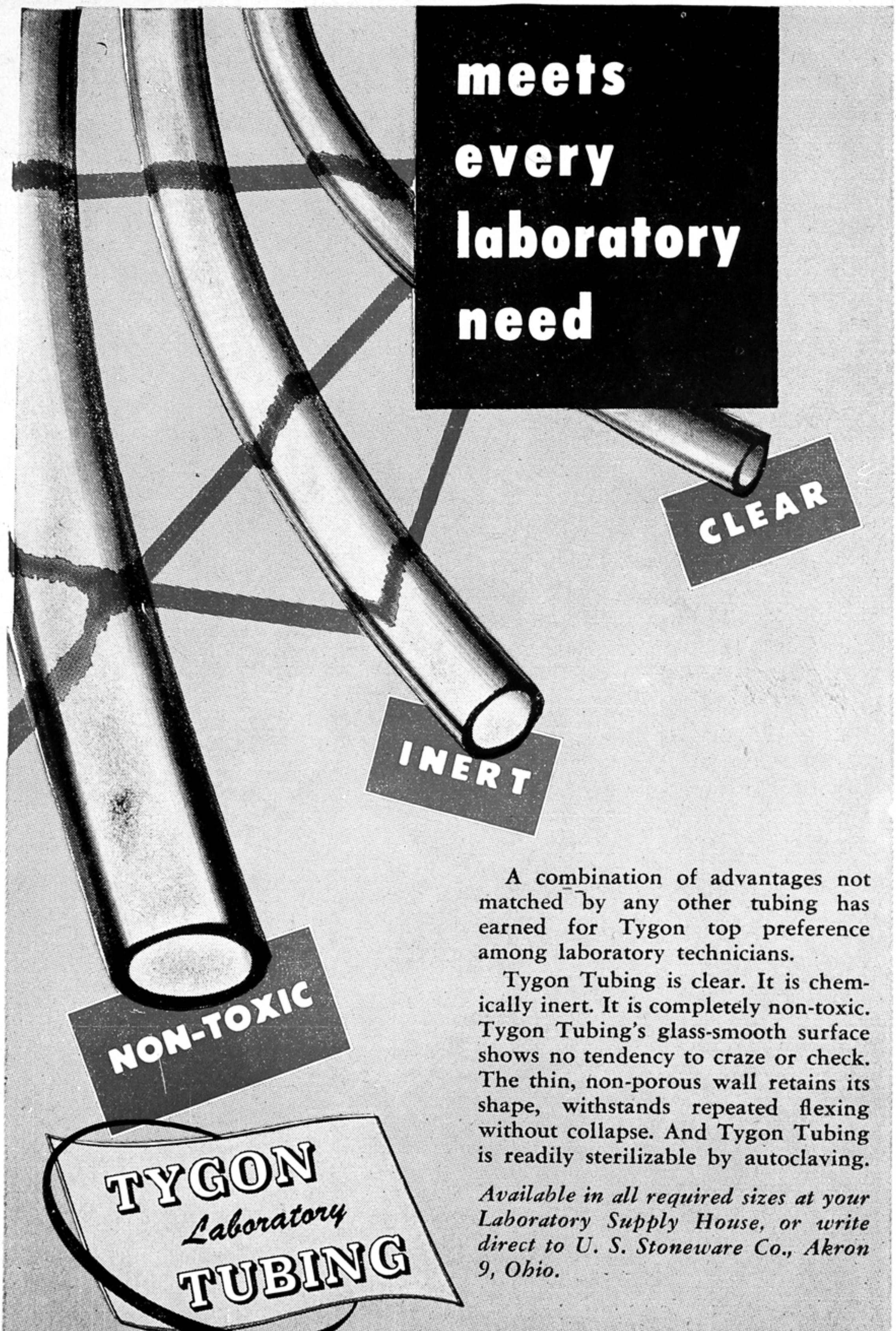
Mr. Sargent also pointed out that the wages have been allowed to rise far out of proportion to prices, contrary to the intent of Congress. The plain intent of the law, Mr. Sargent said, is that "when a seller's prices are frozen, his labor costs are also to be frozen. Everybody knows this was not what happened. There were threats of work stoppage, a boycott by labor of services on the WSB, and threats of political reprisals." The Government then permitted further wage increases, but limited the right of manufacturers to reflect these wage costs in higher price ceiling, Mr. Sargent said.

Mr. Sargent recommended the act be extended for only one year. In addition to an amendment that would insure price control rather than profit control, he suggested amendments that would insure removal of all controls on any commodity or product "as soon as possible, without waiting for complete decontrol" and that would recognize cost increases as a "justifiable basis for price increases where Government does not succeed in 'holding the line' on costs."

Mr. Sargent challenged the so-called Johnston-Putnam formula which does not permit industry price increases unless profits are less than 85 percent of the 1946-49 average profits before taxes. "The Johnston standard compels an industry to absorb cost increases until the profits before taxes have been whittled down to the described 85 percent level," he charged.

This penalizes a growing and expanding industry, he explained, pointing out that in 1951 the chemical industry's aggregate sales were over $18 billion, second only to the food industry and greater than other basic industries, including steel. Furthermore, he added, the chemical industry is now engaged in a five-year, $4 billion expansion program, largely in support of defense activities.

Congress attempted to permit manu-



A combination of advantages not matched by any other tubing has earned for Tygon top preference among laboratory technicians.

Tygon Tubing is clear. It is chemically inert. It is completely non-toxic. Tygon Tubing's glass-smooth surface shows no tendency to craze or check. The thin, non-porous wall retains its shape, withstands repeated flexing without collapse. And Tygon Tubing is readily sterilizable by autoclaving.

Available in all required sizes at your Laboratory Supply House, or write direct to U. S. Stoneware Co., Akron 9, Ohio.

95C-1

facturers to reflect increased costs in their prices through the so-called Capehart Amendment, Mr. Sargent said, but administration of this provision has not brought the intended results.

"The relief which Congress sought to provide has disappeared somewhere along the rocky road of OPS administration," he said.

Noting that the chemical industry is involved in the greatest expansion program in its history, Mr. Sargent said, "A large part of this expansion will support the defense program and will be almost entirely financed by private capital. It is a peculiar characteristic of our industry that it requires vast sums of capital investment in facilities in relation to dollar sales volume.

Much of the present expansion was planned and under construction at the time the Korean war began. Therefore, sales in the chemical industry would have risen sharply despite Korea. As a matter of fact, had not this construction been under way at that time the present sales increases in the industry could not have been effected because, on the average, it takes two years from commencement of construction to commencement of production on a commercial basis for most chemicals."

●

ANNOUNCED

FOR THOSE ATTENDING ACS MEETINGS THIS, OR ANY OTHER, SPRING

Got data that you'd rather hide?
Put it on a crowded slide.
If in the lab you tend to fumble.
Don't speak clearly, only mumble.

J.H.P.

●

We learn wisdom from failure much more than from success. We often discover what will do by finding out what will not do; and probably he who never made a mistake never made a discovery.

Sorry friends we missed the boat. By the time you get this P. S. C. you will have missed the dinner.

ANNUAL DINNER

of

Puget Sound Engineering Council

TIME: 6:30 p. m. Tuesday, April 22

PLACE: Student Union Building, University of Washington

SPEAKERS:

Harry W. Morrison, president, Morrison-Knudsen Co., Inc., Boise. M-K is the parent corporation of 68 domestic and foreign construction subsidiaries and affiliates, with engineering projects under construction in all parts of the world.

Mr. Morrison's Subjects: "Engineering Procedures and Construction Methods in Foreign Countries" and "Opportunities for Engineers in Foreign Countries." His first subject will be illustrated by a 30-minute Kodachrome sound movie of work in Afghanistan.

CHARLES N. KEY, Pacific Telephone & Telegraph's lecturer on the new technique of transmitting television and telephonic messages by micro-waves and co-axial cable.

LADIES: Come to chat with Mrs. Harry Morrison who probably is the world's best authority on how to get along with engineer husbands who spend more time out on the job than they do at home. She has written "The Dairy of Ann Morrison" which is "a must" reading for wives of engineers and contractors.

TICKETS — $3 each plus tax. Buy them from the Senior Representative of your society (if you've forgotten his name, see center spread of this issue). Or send your check directly to Robert S. Miller, Council Secretary, 10037 62d Ave. S., Seattle 88, Wash. THIS DINNER WILL BE A SELLOUT. GET YOUR TICKETS EARLY.

SEE — G. O. Freeman at Lauks Laboratories for tickets.

BUDGET INFORMATION

Puget Sound Section of the American Chemical Society

Committee (or office)	1950 Budget	1950 Spent	1951 Budget	%	1951 Spent	1952 Proposed Bud.	%
Program	$320	$242	$360	45.0	249.49	$430.00	45.0
Public Relations	4	7	. 8	1.0	0	9.50	1.0
Finance	0	0	0	0	0	0	1.0
Employment	4	0	8	1.0	0	5.00	0.5
Social	80	71	96	12.0	52.11	104.00	11.0
Professional Practice	4	0	4	0.5	0	4.00	0.4
Regional Activities	4	0	40	5.0	0	4.00	0.4
Special Meetings	8	0	8	1.0	0	9.50	1.0
Membership	16	4	16	2.0	2.00	9.50	1.0
Engineering Council	44	43	56	7.0	50.20	51.00	5.4
Awards (contests)	4	0	4	0.5	7.02	9.50	1.0
Nominations	4	0	4	0.5	1.35	5.00	0.5
Treasurer	4	2	4	0.5	0	5.00	0.5
Secretary	216	81	120	15.0	111.42	142.00	15.0
Chairman	24	11	16	2.0	0.50	19.00	2.0
Misc.		33	(survey)				
To Reserve		426	56		500.65	143.00	15.3
Income	$736	$920	$800		$1019.74	$950	100%

1952

PACIFIC NORTHWEST METALS

and

MINERALS CONFERENCE

Spokane, Wash. (Hotel Davenport) May 8, 9, 10

SITUATION WANTED

Chemist with experience in textile, pharmaceutical, soap and perfume industries. Available in May.

Write: George Alpiar, care Liberty Orchards Company Cashmere, Wash.