



The
**PUGET
SOUND**

CHEMIST

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MAY, 1950

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May Meeting

Puget Sound Section

AMERICAN CHEMICAL SOCIETY

Time

Thursday, May 11, 1950, 7:30 p.m.

Place

Seattle, 131 Bagley Hall, University of Washington

Speaker

DR. G. W. BEADLE, California Institute of Technology

Subject

CHEMICAL GENETICS

No Host Dinner at 6:00 p.m., Student Union Building.

For Reservation Phone Jim Drury, DE. 4500, not later than May 8th

June Meeting

REGIONAL MEETING - A.C.S.

JUNE 9 - 10

at

RICHLAND

. . .

FOR RIDES OR RIDERS

Call

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RICHLAND SECTION AMERICAN CHEMICAL SOCIETY

The Pacific Northwest Regional Meeting of the American Chemical Society will be held at Richland, Washington on June 9th and 10th under the joint sponsorship of the Puget Sound, Oregon, Washington-Idaho Border, and Richland Sections, with the recently organized Richland Section acting as host.

Preliminary plans of the general program:

Friday, June 9th

8:00 a.m. to 12:15 p.m.—Registration, Desert Inn, Lobby.

1:30 p.m. — General Meeting, Carmichael Junior High School Auditorium, with Dr. B. Weidenbaum, Chairman of the Richland Section, presiding. Mr. G. R. Prout, Vice-President of the General Electric Co., and General Manager of the Nucleonics Department, and Mr. F. C. Schlemmer, Manager of the Hanford Operations Office, Atomic Energy Commission, will speak.

3:30 p.m. to 5:30 p.m.—Divisional Meetings.

8:00 p.m.—General Banquet, Carmichael Junior High School Cafeteria. Dr. K. S. Pitzer, Director of the Division of Research of the Atomic Energy Commission, will deliver the address of the evening, on the relationship of chemical research and the Atomic Energy Commission.

10:00 p.m. — General Mixer, Corral Room, Desert Inn. Open only to registrants at the meeting. Beer and conversation will be featured.

Saturday, June 10th:

8:00 a.m. to 11:45 p.m.—Divisional Meetings.

12:00 Noon — Luncheon, Carmichael Junior High School Cafeteria. Dr. L. R. Donaldson, Director, Applied Fisheries Laboratory, University of Washington, will speak on Bikini experiments.

3:00 p.m. to 4:30 p.m.—Divisional Meetings.

Many papers are still required to

complete the general program. The deadline date for submitting abstracts is April 10, 1950. The title, author's name, and a 200 word abstract must be in the hands of the appropriate program committeeman before that date. Abstracts on Chemical Education should be sent to Dr. A. H. Kunz, Head, Department of Chemistry, University of Oregon, Eugene, Oregon, while on abstracts on Analytical Chemistry, Industrial and Engineering Chemistry, Inorganic Chemistry, and Organic and Biochemistry should be sent to Mr. A. Armstrong, Jr., 1216 Gowen Place, Richland, Washington.

Hotel reservations for 300 will be available at the Desert Inn, in Richland, and the New Pasco Hotel at Pasco. In addition, reservations will be available at several motels in the vicinity of Richland.

All of the arrangements are well in hand. Get your abstract in to the program committeeman before April 10, and make plans to come to the meeting. Information on registration and hotel reservations will be forwarded soon.

D. M. KNOTT,

Chairman, Publicity Committee, Pacific Northwest Regional Meeting A.C.S.

SEATTLE NEWS

Mr. R. W. Harrison of Lyle Branchflower Co. gave a talk entitled "Recent Developments in Evaluating Vitamin A" at the 1950 W.S.C. Nutrition Conference at Seattle. The Conference is sponsored by the State College of Washington and the Washington State Feed Association.

Dirk Verhagen, Chief Chemist of Lyle Branchflower Co., reports that their new laboratory is now in operation and that the offices and plant will also soon be occupied.

A somewhat rare specimen of opah, or moonfish, taken in local waters, may be seen at the refrigeration warehouse of the Halibut Producers Association, 15th N.W. at Shilshole.

PUGET SOUND CHEMIST

Mr. Roger Harrison, Technical Director of the Lyle Branchflower Co., recently returned from the meeting of the California Hay, Grain and Feed Dealers Association held in Los Angeles.

. . .

Bob Parent and John Shackleford report that a course in Statistics is now being offered at the night session at Seattle University. This course and a companion course. Tests and Measurements, may be offered again in the fall if there is sufficient demand.

. . .

TACOMA NEWS

The new buildings appearing on the property of the Hooker Electrochemical Company indicate that the proposed expansion is underway. Much of the expansion program will take place under the present roof when replacement of the older-type cells by the Hooker-type gets under way.

. . .

Research at the Western Washington Experiment Station received added impetus last week when the director announced a gift of money and materials to be used in furthering study on Western Washington soil. F. T. Tremblay, ACS and K. Baur will carry on the work.

. . .

Dr. Finholt, the March speaker, stopped off enroute from Portland to Seattle to see Tacoma and visit Pacific Lutheran College. Accompanied by Mr. Ramstad and Dr. Olsen, Dr. Finholt was shown the Science Departments, heard PLC's "Choir of the West" in concert, got a glimpse of the Mountain, and was taken to his hotel in Seattle.

—Robert C. Olsen.

. . .

OLYMPIA NEWS

Construction on the \$50,000 addition to the State Highway Materials Testing Laboratory in Olympia has begun. The primary object to which this added space will be given is extended research on asphaltic road building materials. Mr. Bailey Tremper is Director of the Laboratory.

MAY, 1950

NOTICE!

PROPOSED CHANGES IN BY-LAWS

1. That from Section 1 of Article VIII the word "Library" be deleted from the list of standing committees.
2. That Article V, Section 3 be changed to read as follows: "The Executive Committee shall consist of the officers of the section, the immediate Past Chairman, the councilors, and the Editor of the Puget Sound Chemist."

Note: The change that is proposed is the addition of the Editor of the Puget Sound Chemist to the Executive Committee.

A date has been set for the joint meeting of the Student Affiliate Chapters of the A.C.S. of St. Martin's College and the College of Puget Sound. The C.P.S. Chapter will be the guests of St. Martin's on May 9 for an all-day program comprising six papers to be prepared and delivered by the students of the two colleges, a tour of the Olympia Brewing Company's model fermentation plant, and a no-host dinner in the evening for which an outside speaker is to be engaged. The general arrangements for the meeting are under the direction of Mr. Joe Dougherty of St. Martin's and Chairman Morrison of the College of Puget Sound student contingent.

. . .

Under the title, "Nose Know Where Student Flunk," the Daily Olympian published a humorous account of the system used at St. Martin's College to inform the student of the professor's opinion of his examination paper. Excellent papers receive a few drops of wintergreen; average papers are sprayed with pyridine and poor papers are treated with butyric acid.

The Science Division at St. Martin's College recently added two projectors to their equipment for visual education: a keystone overhead projector for slides, experiments, and drawings; and a Bioscope projector for microscopic illustration.

—Bede Ernsdorff.

OREGON NEWS

Chemistry Teachers to Form New Association

A Northwestern Association of Chemistry Teachers will become a reality at the Richland Regional Meeting of the American Chemical Society according to current plans of an advisory committee under the chairmanship of Professor A. H. Kunz of the University of Oregon. The ground work for this association was laid at the San Francisco meeting of the Society a year ago when Professor Otto Smith invited interested parties to discuss the need for regional association of chemistry teachers. As a result of that meeting a Pacific Southwestern Association of Chemistry Teachers, PSACT, has been formed and the corresponding Northwestern ACT plans to hold its first meeting when the Society meets at Richland this June.

The association will be affiliated with the Division of Chemical Education which, in addition to the Pacific Southwest ACT, also sponsors the New England ACT and the Illinois ACT. The inaugural meeting will be held under the auspices of the Division of Chemical Education at Richland. The Division is holding space on the program for a few additional papers relating to the teaching of chemistry. Tentative titles should be sent at once to Dr. A. H. Kunz, Head of the Department of Chemistry, University of Oregon, Eugene, Oregon.

The members of the advisory committee for the Northwestern ACT, who may be consulted regarding specific aspects of the association, are as follows:

Arthur Livermore, Reed College, Portland

Leo Friedman, Oregon State College, Corvallis

Baird Milne, Washington State College, Pullman

Edward Lingafelter, University of Washington, Seattle

Irving Jolley, University of Idaho, Moscow

T. J. O'Leary, Gonzaga University, Spokane

A. H. Kunz, Chairman, University of Oregon, Eugene

Dr. Pierre Van Rysselberghe, Professor of Chemistry at the University of Oregon will spend the coming academic year in Europe on sabbatical leave. Prior to sailing for Europe, Dr. Van Rysselberghe will take part in the Gordon Research Conference on "Electrical Measurements in Corrosion" to be held at Colby Junior College, New London, Connecticut in the week of July 24. At this conference he will lead a part of the discussion of the session on the fundamentals of electrode corrosion. This subject forms the main part of the research which Dr. Van Rysselberghe has directed on the subject of "Polarographic Studies of Corrosion Phenomena" under a contract between the Office of Naval Research and the University of Oregon. This project will be interrupted during Dr. Van Rysselberghe's sabbatical year.

Following the Gordon Conference Dr. Van Rysselberghe will go to Belgium, his original home, and will take part in the Solvay Chemistry Council in Brussels which will discuss "Mechanisms of Oxidation." This topic also is closely allied to corrosion studies. Some of the work carried out in collaboration with Dr. Pourbaix of Brussels when he visited Eugene in the spring of last year will be discussed at these meetings.

Immediately following the Brussels meeting Dr. Van Rysselberghe will be in Milan to preside at the second meeting of the Committee of Electrochemical Thermodynamics and Kinetics. Problems of corrosion will again be considered and the Committee also hopes to make recommendations on fundamental definitions and sign conventions in electro-

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chemistry. Any chemist who has studied more than one book on electrochemistry will appreciate the value of uniform sign conventions and it is to be hoped that these recommendations will meet with universal acceptance.

Dr. Van Rysselberghe plans to remain abroad for the whole academic year lecturing, writing, and doing research in various universities where electrochemical research activities have connections with his own.

Excavation for the new science building at the University of Oregon will begin late this week, according to I. I. Wright, superintendent of the Physical Plant.

Work will be done by the Ross B. Hammond company of Portland who won the general construction contract for the building March 21.

The new structure will house the departments of biology, chemistry, and physics. It is scheduled to be completed in approximately 18 months. R. B. Dean.

About a dozen Sigma Xi members met March 29th at the University of Portland to plan formation of a Sigma Xi Club. An organization dinner and meeting will be held the first part of May at the University of Portland.

J. S. McGrath and P. S. Skell were elected President and Secretary-Treasurer of the new club.

. . .

Mr. and Mrs. John Crowe of Wellington, New Zealand, visited in Portland recently as the first stop in their combined business and pleasure air trip over the United States. Mr. Crowe is managing director of Boracure, Ltd., a New Zealand company specializing in certain aspects of wood preservation. Mr. Crowe reports that the New Zealand climate favors many more wood destroying insects than are known over here. Not only foundation timbers, but practically every item of wood in the house is subject to attack. Pentachlorophenol is the toxic chemical most used

in New Zealand wood preservation for it is very effective against insects as well as the decay fungi, and the treated wood is clean and paintable.

Mr. Crowe will attend the American Wood Preserver annual meeting in Houston and the Forest Products Research Society meeting in Portland (June 25-29). Between meetings, he is visiting wood preserving plants and laboratories for ideas to take back to New Zealand.

—A. W. Stout.

B. C. NEWS

The final monthly meeting for the present season was held on Wednesday, April 26th, at 8:00 p.m. in the Province Auditorium.

Mr. William Hill, head of the Food and Drug Division, Vancouver office, discussed "The Food and Drug Act."

The Second Annual Banquet of the B. C. Food Technologists is scheduled for 6:30 p.m., May 5th. This banquet will be held in the reception hall of Kelly-Douglas & Co., 3700 Kingsway. Except for the representatives of contributing firms and the honorary guests, the attendance of the banquet will be restricted to members only. Tickets will cost \$1.50. Dress informal.

Chemical Properties of Women

SYMBOL: W_o .

ATOMIC WEIGHT: 120.

OCCURRENCE: Found everywhere and nowhere.

PHYSICAL PROPERTIES: Boils at nothing; freezes at any minute; melts when properly treated; bitter if not well used.

CHEMICAL PROPERTIES: Great affinity for gold, silver, platinum, and precious stones; violent action if left alone absorbs great amounts of food matter; turns green easily.

USES: Highly ornamental; tonic for acceleration of low spirits; equalizer for the distribution of wealth; most effective income reducing agent known.

CAUTION: Highly explosive in inexperienced hands.

SCIENTIFIC SUPPLIES

INCORPORATES IN CANADA

In order to more efficiently serve its Canadian customers, the Scientific Supplies Company has recently incorporated a new firm in British Columbia. The new company is known as Scientific Supplies Company, Ltd., located at 736 Granville Street, Vancouver, B.C. Mr. T. E. Murphy, formerly of the Seattle office, has been appointed resident manager.

CORNING PYREX PIPING NOW AVAILABLE LOCALLY

The Scientific Supplies Company of Seattle has been appointed an authorized contractor for Corning Industrial Piping. This is coincident with Corning's announcement of a new type of industrial glass pipe, to be known to the trade as Pyrex brand double tough glass pipe. The new material is tempered heavy wall tubing which is machine drawn to assure uniformity and made from Pyrex brand glass 774—the glass used for Pyrex laboratory equipment.

Pyrex brand pipe is outstanding for its resistance to acids; the prevention of contamination; its visual characteristics which permit inspection of every foot of the line; its low installation and service cost. The high chemical stability of Pyrex pipe plus its resistance to physical and thermal shock have made it an important plant and pilot plant equipment material.

A complete line of pipe is available at Scientific Supplies company, ranging in diameter from 1" to 4" and in length from 6' to 10'. Spacers, reducers, tees, crosses, including flanges and fittings as well as adapters for hooking in Pyrex pipe line with present plant equipment, are also stocked. Complete descriptive material and prices are available upon request.

Not being willing to do more than the average is what makes many an average man so average.

PUGET SOUND CHEMIST

WESTERN NEWS AWARDS MADE FOR SCIENCE

Members of the Oregon Academy of Science Saturday concluded their eighth annual convention at Lewis and Clark college by electing officers and voting citations to three Oregon men for their contributions to learning.

Officers elected were Dr. Frank L. Griffin, Reed college, president; Dr. E. L. Packard, Oregon State college, vice president, and Dr. A. L. Soderwall, University of Oregon, treasurer. Dean F. A. Gilfillan, Oregon State College, was reelected secretary.

Citation Winners Listed

Voting citations for their work furthering scientific knowledge were Dr. A. A. Knowlton, professor emeritus of physics, Reed college, for his work in training physicists; Dr. Warren D. Smith, professor emeritus of geography and geology, University of Oregon, for advancing learning in his field, and Dr. Thornton T. Munger, Portland, ex-head of the Pacific Northwest forest experiment station, for outstanding contributions in forestry.

Principal speaker at Saturday's session was Dr. Griffin, who talked on "Is Mathematics a Science?"

Dr. E. J. Kraus, professor emeritus of botany, University of Chicago, now a Corvallis resident, was named an honorary fellow of the academy for his work in plant chemistry.

—Sunday Oregonian, 4-23-50.

MONSANTO TO BUILD PLANT FOR POLYSTYRENE IN WEST

Monsanto Chemical Co., St. Louis, has announced plans to build a new plant for the production of polystyrene plastic molding compound at Long Beach, Calif. The operation, the first of its kind on the West Coast and the first styrene output west of the Mississippi River, will be managed by the company's western division, which has its headquarters at Seattle, Wash.

MAY, 1950



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Food, Chemical and Research Lab Building

FOOD, CHEMICAL AND RESEARCH LABORATORIES, INC., ENTERS THIRD YEAR

The Food, Chemical and Research Laboratories, Inc., located at 1201 E. 38th St., in the University District, starts its third year of operation this spring. This youngest of the Puget Sound Area's enterprises in the commercial laboratory field is unique in the type of service performed, and is the only laboratory in the United States offering a complete food quality control program including certification of grade for frozen fruits and vegetables.

The firm was organized early in 1948 by Dr. T. L. Swenson, a native of the Northwest, born in Michigan and reared in Chehalis, Washington. He is a graduate of Washington State College in pharmacy, and received his graduate training in bacteriology and biochemistry at American University in Washington, D. C.

In 1939 Dr. Swenson was chosen by the Department of Agriculture to organize and direct its new three million dollar Regional Research Laboratory at Albany, California. Dr. Swenson served in this capacity until 1947, and was responsible for many research developments of value to the Pacific Coast agricultural and food industries. During the war years he worked in close coopera-

tion with the U. S. Army Quartermaster Corps in developing new food processing, preserving and packaging methods.

As a result of his regional laboratory experience, and a year spent in organization of a food technology program for the Stanford Research Institute, Dr. Swenson recognized the need for a laboratory devoted to research, new product development and service for the food processing and allied industries in the Pacific Northwest.

Associated with Dr. Swenson on the permanent laboratory staff are Dr. D. L. Morris, research supervisor, John Spinelli, chief analyst, and Kenneth E. Kautz, office manager.

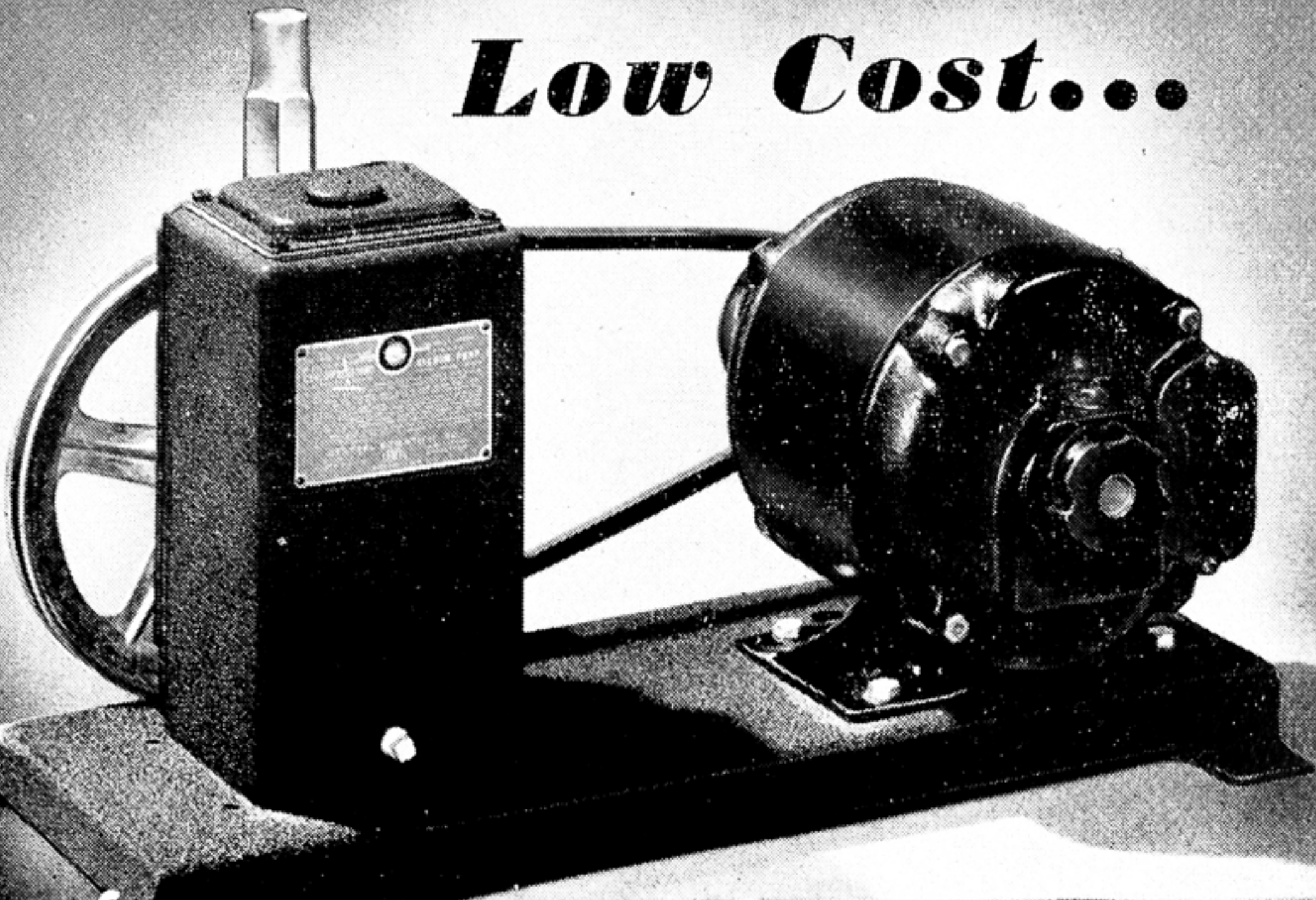
Dr. Morris received his Ph.D. degree in biochemistry at Yale University in 1934, and came to the laboratory from Mead Johnson & Co. of Evansville, Indiana, where he was in charge of carbohydrate research. John Spinelli is a recent graduate of the University of Washington in chemistry.

Affiliated with Dr. Swenson as consultants are Alvin W. Green, in Sanitary Engineering; Dr. W. H. Hastings, in Feeds and Fish Products; Dr. Paul V. Gustafson, in Zoology and Parasitology; and Dr. Quintin P. Peniston, in Organic Chemistry and Chemical Engineering. Dr. Peniston also serves as Secretary-Treasurer of the corporation.

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In the field of quality control, the laboratories have aided the wineries of the State of Washington to develop standards for all of the wine types produced in the area, and serve these wineries as a reference laboratory to maintain and improve wine quality. In two years operation, the laboratories have graded and certified many millions of pounds of frozen fruits and vegetables. Certificates issued by the laboratory are now recognized and esteemed by brokers, buyers and bankers in all parts of the United States. Frozen food packers in the Pacific Northwest area have learned to rely on the laboratories for prompt and efficient service, and for accurate and dependable evaluation of their products.

NOPCO FORMS NEW PACIFIC DIVISION

Nopco Chemical Co., Harrison, N. J., has formed a new Pacific division. The division will be headed by Percy S. Brown, a company vice-president, assisted by Harold A. Swanson as general sales manager and will handle sales of the company's industrial chemicals and bulk vitamin and pharmaceutical products in California, Washington, Oregon, Idaho, Montana, Arizona, Nevada, Utah, Colorado, Wyoming, New Mexico and British Columbia.

A lot of nicely reared girls are not so bad from the front either.

Time tells on a man—especially a good time!

CONTAMINANTS

An undertaker found a donkey dead in front of his premises and went to inform the police. The officer had a sense of humor.

"Go ahead and bury it," said the officer. "You're an undertaker, aren't you?"

"Yes," said the undertaker, "but I thought it only right to come around and inform the relatives first."

No, darling, a boycott is not a male davenport.

OUCH!

A crowded elevator was ascending rapidly in a downtown business building when, suddenly, a piercing scream brought the elevator to a screeching halt and a portly lady bustled out indignantly. The crowd turned to look at a small red-faced boy, who blurted out: "Well, it was in my face so I bit it."

The old country doctor was a practitioner of the old school who believed in large families. When a bride-to-be asked for information on birth control he said: "All you have to do is drink a glass of buttermilk."

"Oh, Doctor; how wonderful!" she gushed. "Before or after?"

"Neither," he grunted. "Instead of"

"Before we were married you told me you were well off."

"I was, but I didn't know it."

Customer: "What kind of a pie is this—apple?"

Waitress: "How does it taste?"

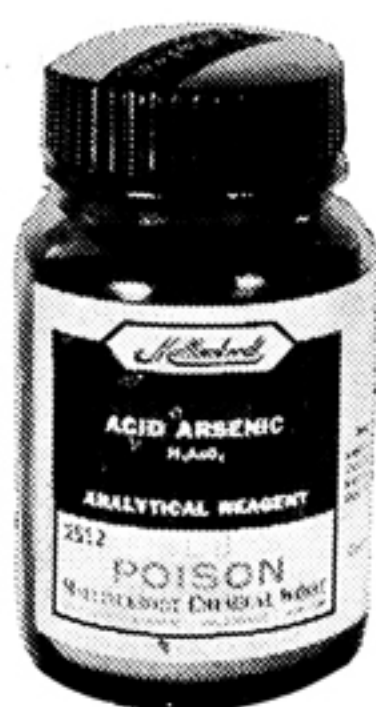
"Like glue."

"Then it's peach. The apple tastes like putty."

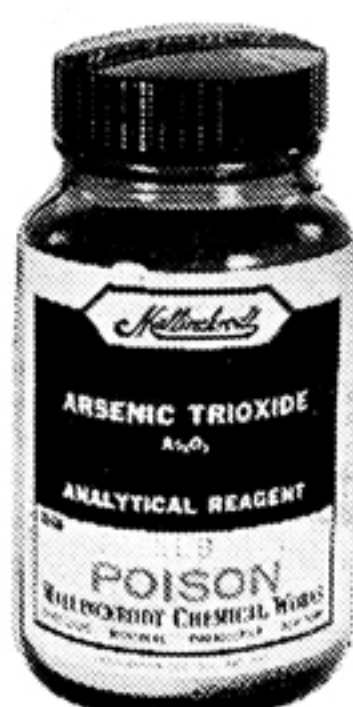
One reason why the big apples always are on top of the basket is the fact that a lot of little apples are holding them up there.

He who looketh upon a woman loseth a fender.

PUGET SOUND CHEMIST



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APRIL SPEAKERS SUMMARY

Dr. J. G. Hooley

Dr. Hooley grinned when he remarked that glass will ultimately be the only structural material used, metals being employed for only specialized purposes such as electrical conductors. However, he was serious in his assertion that great expansion is to be expected in both the volume and variety of the uses of glass. As indication of the variety of these uses at present, he cited the fact that one plant produces two hundred different compositions on a commercial scale, for use in a thousand applications. Many more compositions have been investigated but are not in production. A further indication of the wide variation in the applications of glass is the fact that forty-five of the elements are used in commercially produced glasses. While silica is the major constituent of most of these glasses, for special uses many glasses are made which contain essentially no silica. Thus for instance the silicon is replaced by phosphorous in the phosphate glasses, the applications of which include light filters for specialized uses and articles

for use with hydrofluoric acid. Dr. Hooley supervised the preparation and testing of 1500 different compositions of phosphate glass in one year. Other glasses containing no silica include a lanthanum-tantalum-tungsten composition which on account of its great clarity and high refracting index has found optical uses, and a lithium-beryllium borate which, because of the absence of heavy atoms, relatively transparent to X-rays and is consequently useful in this field. Glasses in which silica is replaced by vanadium or germanium oxides offer interesting possibilities which so far have not been investigated.

The glass used for glass electrodes contains lithium and cesium oxides.

Thus there are endless varieties of glass and while many of the compositions may be produced in small amounts they may be very important.

Dr. Hooley described a number of the operations in the industrial fabrication of glass. A large glass melting furnace may contain 1500 tons of glass, and may be in continuous use for as long as two years before the fluxing action of the glass on the walls necessitates rebuilding. The operations of drawing, casting, etc., by which many of

the items in large production are made, were described.

Dr. Hooley described several methods by which the weakness of glass, caused primarily by surface scratches, is partly overcome. One is by a plastic protection on the surface. Another is by tempering, which puts the surface under compression and increases the stress necessary to cause a failure due to tension at one surface. Laminating is a further method. A useful structural material is made by impregnating a glass cloth with plastic. The strength of the individual fine fibers of glass is tremendous, but can not be fully used because of the development of surface flaws due to abrasion.

Photosensitive glass, in which a permanent image may be created by methods similar to photographic processes, is one of the spectacular applications. Another is metallized glass, in which a metal is incorporated into the glass surface and can be used, for instance, as a resistance heating element.

Of particular interest to the chemical industry is the use of glass pipe, available now in sizes up to six inches. This material, and also glass tanks, have been developed to such an extent that breakage is not as great a hazard as it once was. The ease of cleaning and relative freedom from corrosion have made this equipment very attractive in many industries, for instance, the food industries.

—A. E. Markham.

. . .



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BRIEF HISTORY OF THE SEVEN SYNTHETIC ELEMENTS

CHARLES D. CORYELL

THE classical work of chemists and radiochemists established by patient isolation the fact that the span from hydrogen through uranium comprises 92 elements, and this was certified by Moseley's determination of atomic numbers by X-rays. Five of these elements are transitory radioactive elements with various isotopes in the decay chains of Th^{232} , U^{233} , and U^{238} : $_{84}\text{Po}$, $_{86}\text{Ru}$, $_{87}\text{Ra}$, $_{89}\text{Ac}$, and $_{91}\text{Pa}$. By 1926 there remained only four holes in the periodic system, those for elements 43, 61, 85, and 87. Element 87 was identified as a natural radioactive species via the 21 min. β -emitter 87^{227} by Miss M. Perey in 1939, and has been named Francium, Fr.

By the mid-thirties great progress had been made in synthesizing nuclear species by bombardment of stable nuclei with charged particles p, d, and α , and with neutrons n formed by charged particles. The target atom assimilates the projectile, and then emits another similar particle or a Gamma ray. If the product is a nuclear species not found in nature, it is certain to be radioactive, and its reactions can be followed even at great dilution, by the course of the radioactivity. The most versatile machine for bombardment is the cyclotron.

Various people applied nuclear synthesis and radiochemical analysis to study of the missing elements and to extension of the periodic system to higher atomic numbers. In this latter work the important new nuclear reaction of fission was discovered in 1939 by Hahn and Strassmann, the splitting of a heavy atom into two major parts. This reaction was developed in the United States under war-time pressure to give the chain-reacting pile, which provides a tremendous source of fission products and neutrons for nuclear synthesis.

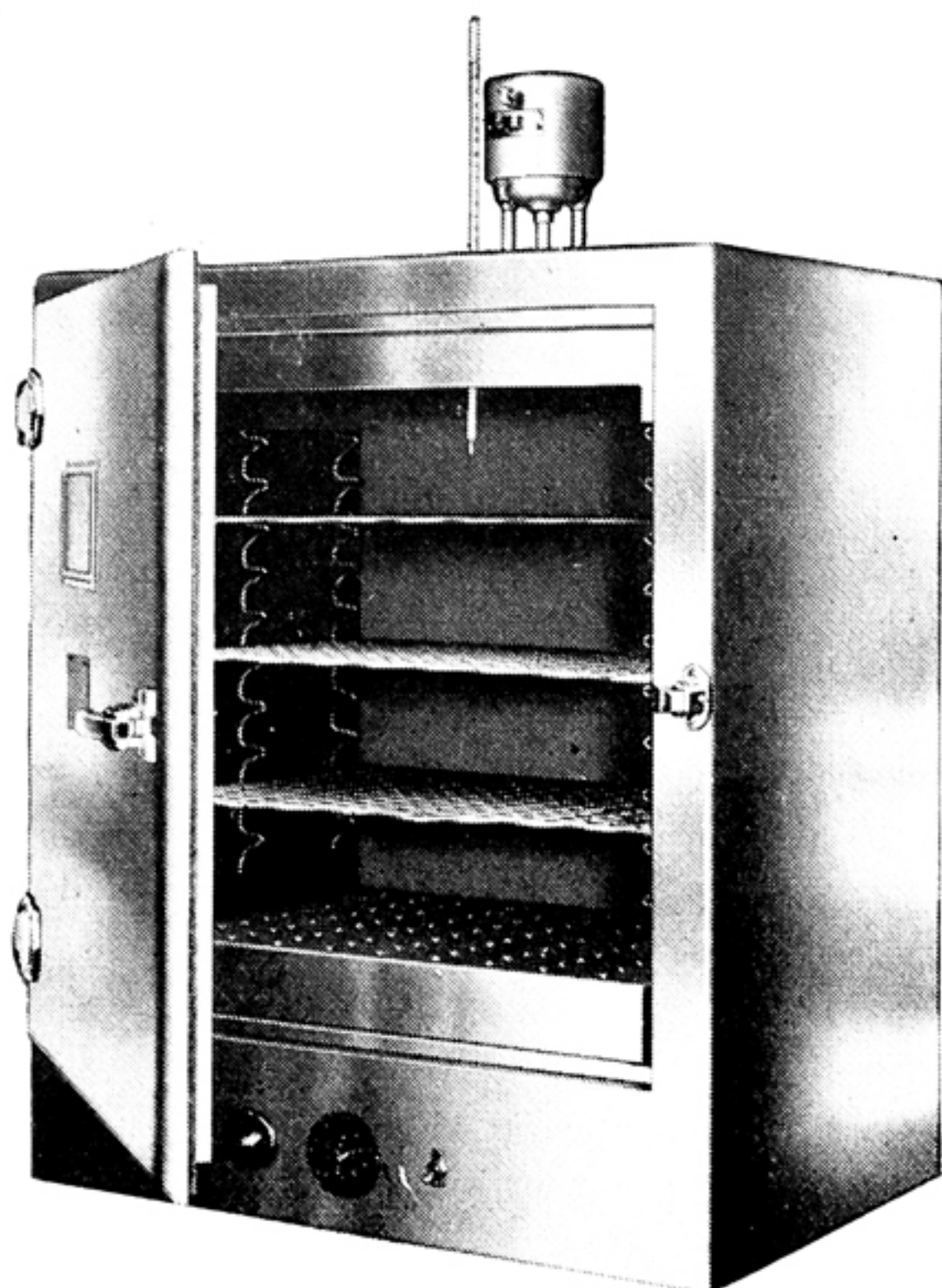
In 1937 Perrier and Segrè in Palermo identified several isotopes of element 43 prepared by deuteron bombardment of molybdenum. They showed that the chemistry was closer to that of rhenium than that of manganese. The name technetium, Tc, was given to signalize the element as the first man-made one. Several technetium isotopes are found among the products of fission, especially Tc^{99} , a β -emitter of 10^6 yr. half-life, of which milligram preparations have been made.

Several groups studied the possibilities of the synthesis of element 61 by bombardments of neighboring rare earths. The decisive preparation and identification is that in 1945 of Marinsky and Glendenin at the Oak Ridge National Laboratory, who used the new rare earth ion exchange techniques to identify 61, among the fission products, a β -emitter of 3.7 yr. half-life, and to separate it completely from its neighboring elements. The name promethium Pm was proposed for this element, which also has been isolated in milligram amounts. This claim and name was confirmed at Amsterdam by the International Union of Chemistry in 1949.

The longest-lived isotope of element 85 that is known is 85^{211} produced at Berkeley by Corson, MacKenzie and Segrè by the bombardment of bismuth with very energetic α -particles. This isotope has a half-life of 7.5 hrs. for α -emission or electron capture. The chemical properties of the element can only be observed by tracer studies; it is a halogen with positive oxidation numbers most prominent. It has been named astatine, At, because of its nuclear instability in all forms.

Element 93, neptunium, Np, was discovered by McMillan and Abelson in 1940, as 2.3 da. Np^{239} formed as the result of β -decay of 23 min. U^{239} formed

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by the capture of slow neutrons in competition with fission. Extensive chemical studies have been made with the 2.2×10^6 yr. α -emitter Np^{237} . Np^{239} decays to the 2.4×10^4 yr. α -emitter plutonium Pu (element 94), which has been synthesized in large amounts in nuclear piles for use in atomic bombs. The first known isotope of plutonium is the 50 year α -emitter Pu^{238} , discovered in Berkeley in 1941 by Seaborg, Kennedy, and Wahl. Bombardments of U^{238} and Pu^{239} have produced isotopes of elements 95, americium Am, and 96 curium Cm (Seaborg, James, and Morgan, and Ghiorso, Chicago, 1944-45), the longest lived isotope being Am^{241} (500 yr. α -emitter) and Cm^{242} (150 da. α -emitter). Both elements have been isolated in visible amounts.

A very interesting chapter in chemistry has been opened with the extension of the last row of the periodic system by four members. The sequence ^{90}Ac to ^{92}U shows best evidence of being a 6d transition group analogous to the sequence ^{71}Lu - ^{74}W . The sequence ^{92}U , ^{93}Np , ^{94}Pu shows a halt in the change of properties (e.g. valence pattern) ascribable to the progressive addition of new electrons to the 5f subshell. In ^{95}Am , the 5f subshell overcomes the 6d subshell, and valence recession sets in, and in ^{96}Cm there are apparently seven 5f electrons analogous to the 4f ones in Gd. The chemistry of this region of the periodic table will be presented in detail.

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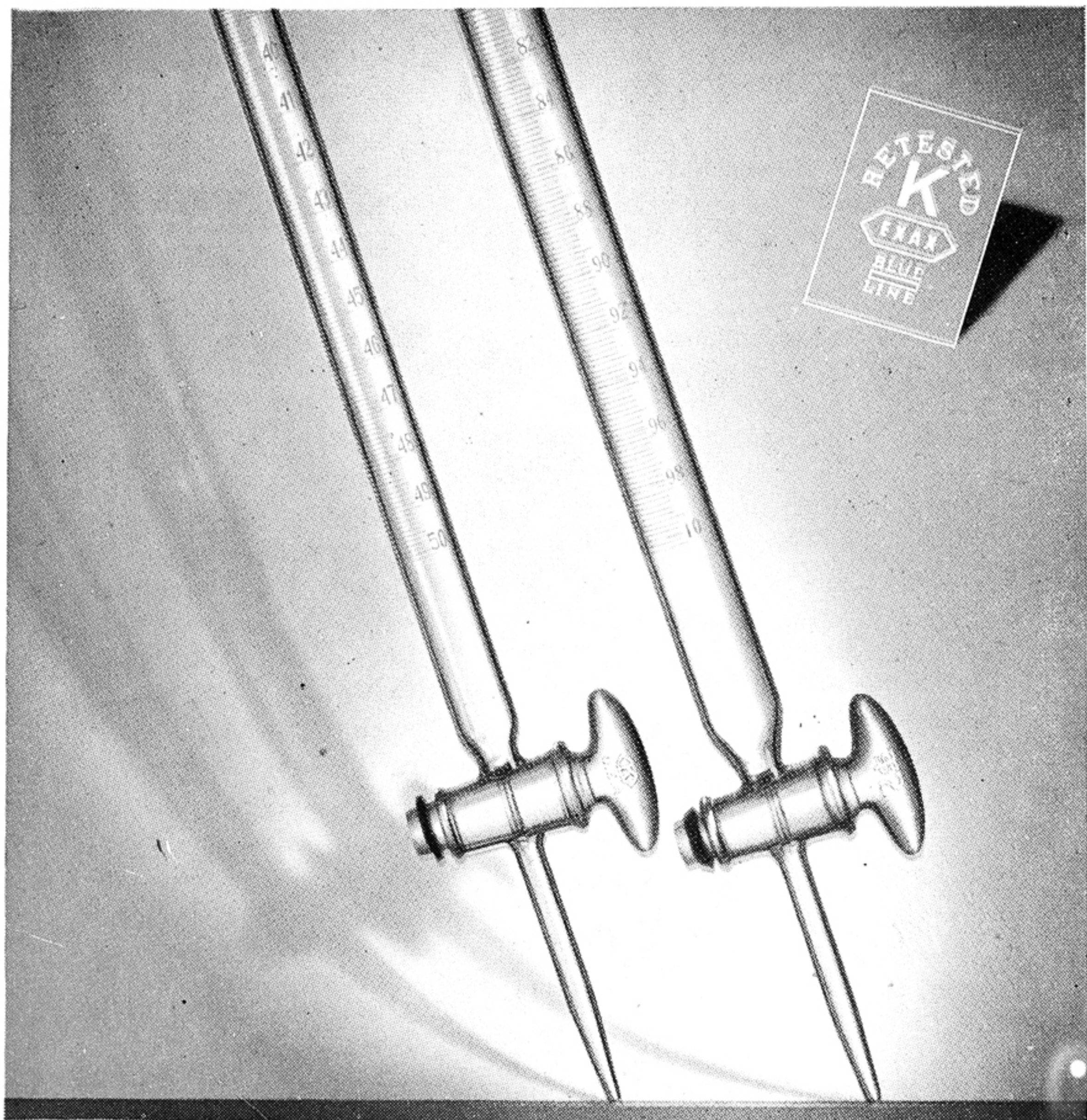
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RESEARCH BY GOVERNMENTAL AGENCIES

Greatest usefulness of governmental agencies devoted to fisheries technology lies in the field of fundamental research, rather than in the study of specific, immediate problems of operation or development, which can be more suitably and properly handled by private enterprise within the fisheries and related industries.

This was the unanimous consensus of the Pacific Fisheries Technologists attending the first annual meeting of their new organization, held at the University of Washington February 24-25, at which more than eighty were present, representing a remarkably broad field.

Aside from public and semi-public research and educational institutions, private and industry-operated laboratories and fishprocessing concerns, the attendance came from such diverse sources as the U. S. Army, chemical and pharmaceutical houses, and equipment manufacturers; and from the fishery areas of Washington, Oregon and British Columbia, with some from California. Their discussions were of correspondingly broad scope—covering technical education; research programs of national and state agencies, and current problems in various lines of production.

Problem Is Application of Existing Knowledge

Need of greater practical utilization of existing knowledge was the main theme of opening remarks by Harry R. Beard, the chairman.

"Technologists can help themselves as well as the industry by selling the industry as a whole on the need for greater application of science, research and technical control," he said. "What is needed is to get our present knowledge into practice, from fishermen on through the chain of handlers to the ultimate consumers. . . . Technical 'know-how' is available; the problem is to get it used." The technologist "must work, and work, and continue to work to get the results of his research into use."

"Only quality properly represented will give us our just share of the food dollars. . . . All segments of the industry must get behind plans to improve quality, combined with informative labeling—and in this effort technologists can play a major role."

Scope of Organization

Organization of the Pacific Fisheries Technologists was effected at a preliminary meeting in December, with Harry R. Beard, technical director of the New England Fish Co., as chairman. At the February meeting Dr. Neal Carter, director of the Pacific Experimental Station at Vancouver, was elected president for the ensuing year, with Dr. Lyle Swain of the same institution as secretary-treasurer. They, with Mr. Beard; Bruce Sanford of the Montlake laboratory, first secretary-treasurer; and three regional members—Roger W. Harrison of the Lyle Branchflower Co., Seattle; Russell O. Sinnhuber of the Oregon Seafood Laboratory, Astoria, and Dr. Wm. S. Hoar of the University of British Columbia—form the executive committee.

Regular meetings will be held annually, with provision for regional group meetings oftener if desired. It was desired. It was decided to hold the 1951 meeting in British Columbia, in February or March—definite time and place to be determined later.

—Pacific Fisherman.

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