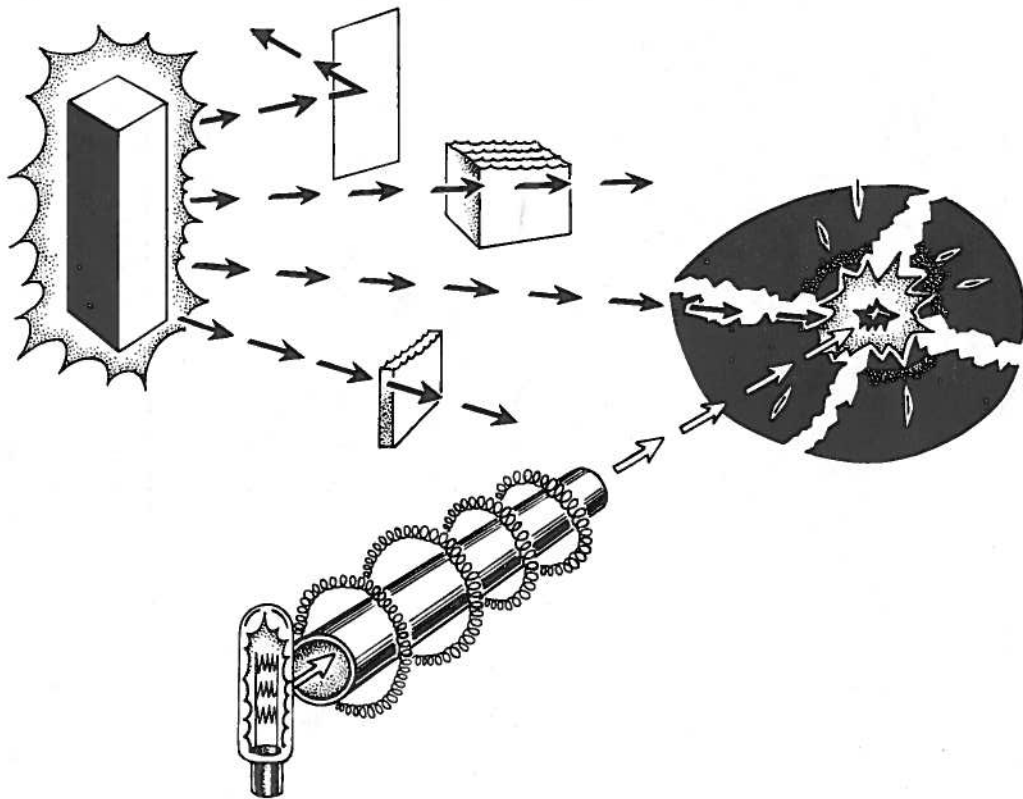




THE CHESAPEAKE CHEMIST

March, 1959





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MARCH, 1959

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Our cover represents radiation treatment of foods as presented by our speaker for March.

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THE MARCH MEETING

Date:

Friday, March 27, 8:0 P.M.

Place:

Bennett Hall
Maryland State Dept. of Health
20 E. 23rd Street, Baltimore, Md.

Speaker:

Dr. Bruce H. Morgan
Asst. Mgr. Packaging Engrg.
Metal Div., Res. & Dev. Dept.
Continental Can Co., Inc.

Dr. Bruce Morgan was graduated from Purdue University in 1947 with a B.S. degree in Bacteriology and obtained his Ph.D. in Microbiology from Rutgers University in 1953.

Dr. Morgan has worked as a research bacteriologist with Continental Can Co. and U. S. Army Research & Development office, Biological Warfare from 1941 to 1949. In 1949, Dr. Morgan entered Rutgers University as a Celanese Research Associate for his Ph. D which was granted 1953. He has also worked for National Canners Assn. as a research bacteriologist and Deputy for Radiation Preservation, Office of Scientific Director, Quartermaster Food & Container Inst., Chicago (1954-1957), before returning to Continental Can Co.

Dr. Morgan is a member of the Society of American Bacteriologists, Institute of Food Technologists and Sigma Xi. He has published many articles in Food Technology magazines, agricultural magazines, Radiation Research magazines, various meat and food processing magazines and many others.

Dr. Morgan is well known in Microbiology and in the preservation of foods. He is especially outstanding in the radiation preservation of foods. His talk will be given in two parts: (1) the nature and principles of treating foods with ionizing radiations and (2) the chemistry of changes in foods resulting from this treatment.

Dinner:

Dinner and cocktails will be at Love's Restaurant, 25th and Charles Sts. at 6:30 P.M.

No reservations required.



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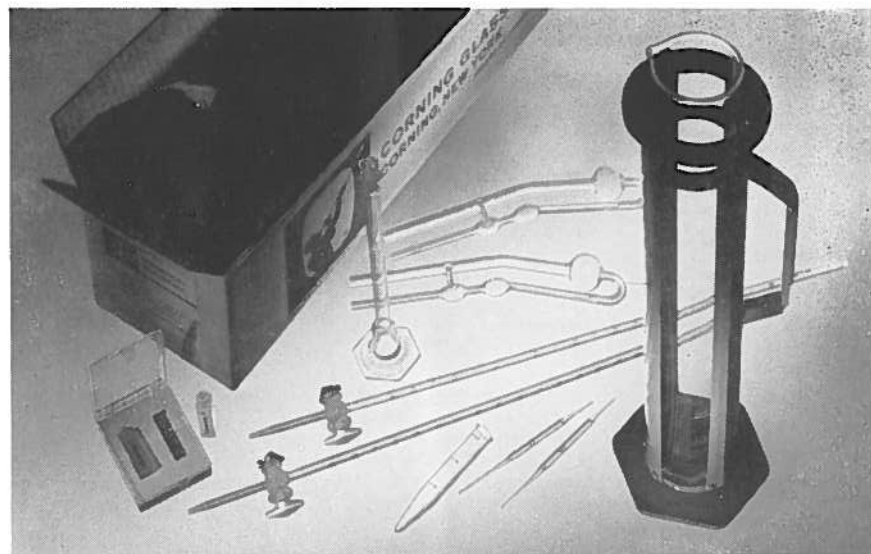
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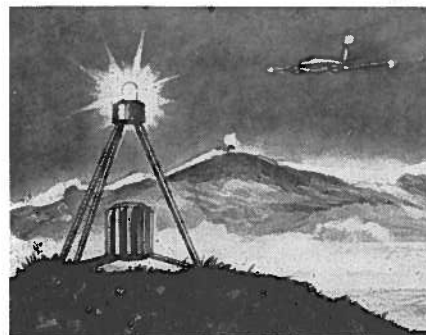
NEW RESEARCH AT THE MARTIN COMPANY

Work has already begun on a system to transform Strontium 90—the radioactive "villain" of atomic fission—into a safe and useful source of additional power, the Atomic Energy Commission revealed today in its semi-annual report.

The report disclosed that the Nuclear Division of The Martin Company, in Baltimore, Maryland, is conducting research and development under the supervision of the AEC's Office of Isotopes Development on a ground-based generator to be fueled by a compound of Strontium 90 and designed to operate for almost a decade without servicing or refueling.

The new 100-watt device would use the same basic principle as "SNAP-III," the demonstration-model radioisotopic generator developed by Martin for another branch of the AEC and unveiled for the first time two weeks ago at the White House. Like "SNAP-III," the Strontium generator would have no moving parts. Heat liberated by the spontaneous decay of the radioisotope would be changed directly into electrical energy by a highly efficient thermoelectric conversion system.

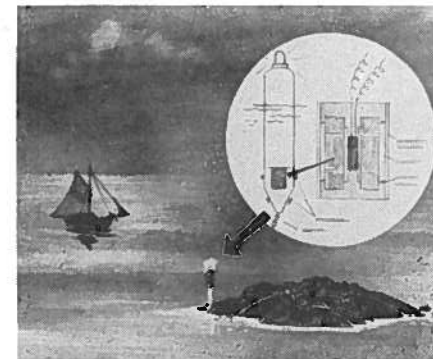
Because of the 28-year half-life of Strontium 90, the new type generator could be expected to produce continuous power over many years. If it were linked to an energy-storage system, it could provide intermittent bursts of much higher energy than 100 watts (e.g., for a high-powered radio transmitter which might be required to broadcast for only a few minutes each hour).



This artist's conception shows an aircraft warning beacon powered by the Strontium 90 generator now under development for the AEC. The radioisotope will be "locked" inside a stable, insoluble compound at the core of the generator, which will be similar in principle to SNAP-III, the Martin-built thermoelectric device demonstrated publicly at the White House early in February.

A spokesman for the Isotopic Power Department of Martin's Nuclear Division said that several designs are being considered, but that the final generator would probably use more than 200,000 curies of Strontium 90 and be about the size of a kettle drum.

At present the entire yearly output of refined Strontium 90 at the Oak Ridge National Laboratory (the principal source of radioisotopes) is rated at only about 250,000 curies, but the country's supply could be multiplied readily if separation facilities were set up at other atomic plants around the country. Martin scientists estimate that by 1975 the normal radioactive waste products of the nation's nuclear energy industry will be great enough to supply 50 million watts of heat energy. Assuming a conversion efficiency of five per cent, this would amount to 2½ million watts of electrical power.



Here's how a radioisotopic generator fueled by Strontium 90 might fit into a navigation buoy. The Nuclear Division of The Martin Company is developing a generator of this type for the U.S. Atomic Energy Commission. Inset shows the system of coolant passages which would help to dissipate the heat of the radioisotope.

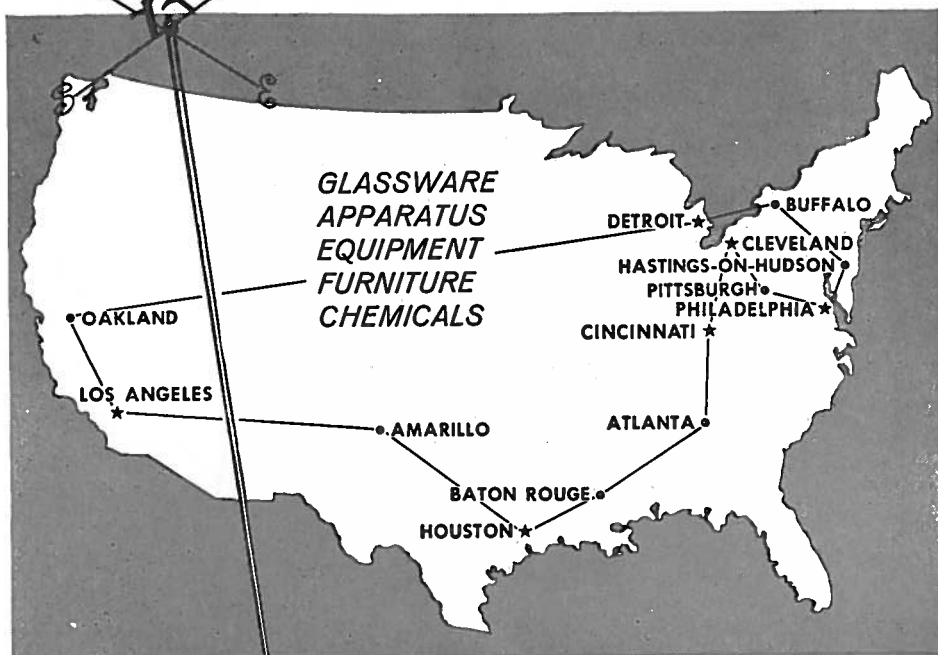
Because of present day cost, the most practical uses of radioisotopic power appear to lie in unattended power sources, where long life and reliability are vital factors. Remote weather stations, aircraft warning beacons and sea buoy markers are possible civilian uses.

Concern about the biological effects of Strontium 90—which has limited much of the work on it so far to studies of disposal methods—is based on the fact that Strontium is a "bone-seeker" (a chemical element similar to Calcium which spreads rapidly through the body if inhaled or ingested in soluble form). Martin officials explained, however, that this danger can be eliminated by "locking" the radioisotope safely inside an insoluble compound.

(Continued on page 13)



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INDUSTRIAL

MARTIN-NUCLEAR NAMES NEW CHIEF ENGINEER

The Martin Co.—The Nuclear Division of The Martin Company today announced the appointment of Dr. Clare P. Stanford as Chief of its Engineering Department.

Dr. Stanford, who has an extensive background in nuclear physics, comes to Martin from a high-level advisory post with the Westinghouse Electric Company. He succeeds Dr. J. A. Hunter, who has been assigned to the office of Martin's Vice-President for Engineering.

As head of the Engineering Department for Martin-Nuclear, Dr. Stanford will supervise the technical effort on all projects within the division. These include reactor systems, radioisotope-fueled generators, propulsion systems, and a wide variety of research and development efforts.

Dr. Stanford was born in Ewen, Michigan, on April 4, 1922. He received his bachelor's degree in physics from Albion College, Michigan, in 1943, his master of science degree from the University of Tennessee in 1950, and his doctorate from the latter institution in 1954. In 1956-57 he attended the Graduate School of Business Administration at Harvard University.

From 1943 to 1946 he served as an officer in the U.S. Army, first in a radar assignment and later as a liaison officer at the uranium separation plant in Oak Ridge, Tennessee. After leaving the service he remained at Oak Ridge as a physicist until 1954, when he joined the staff of the Westinghouse Research Laboratories in Pittsburgh.

After supervising plans for the establishment of a radiation center, including both its facilities and its program, Dr. Stanford was appointed to the post of Advisory Scientist, first with the Research Laboratories and later with Westinghouse's Atomic Power Division. In this capacity he coordinated efforts on problems in analytical and experimental nuclear physics, mathematics and shielding.

Dr. Stanford is the author of more than 20 published articles in his field, including several in the *Physical Review* and one presented at the Geneva Conference on the Peaceful Uses of Atomic

Energy in 1955. He is a member of the American Physical Society, The American Nuclear Society, the Research Society of America, the Atomic Industrial Forum and the Instrument Society of America.

He is married to the former Ann B. Crismyre, of Chicago, and has three children.

CRIPPEN LABORATORIES, INC. EXPANDS

On March 1st, just 10 years after its founding, Crippen Laboratories, Inc., now a subsidiary of Foster D. Snell, Inc., moved into its new and completely modern facilities at 1500 N. Guilford Avenue.

The move was made over a week end to prevent disruption of their activities in services to the chemical industries in Baltimore.

The chemical laboratories were the first to move into the new quarters followed several weeks later by the mouse colony. These were housed in completely modern air-conditioned, sanitary quarters. The entire colony has been inoculated to prevent out-breaks of disease. Thus a steady and dependable supply of completely healthy and uniform animals are assured to researchers in Maryland and surrounding areas.

Open house is planned for the middle of next month. All friends, associates and clients are cordially invited to inspect these facilities.

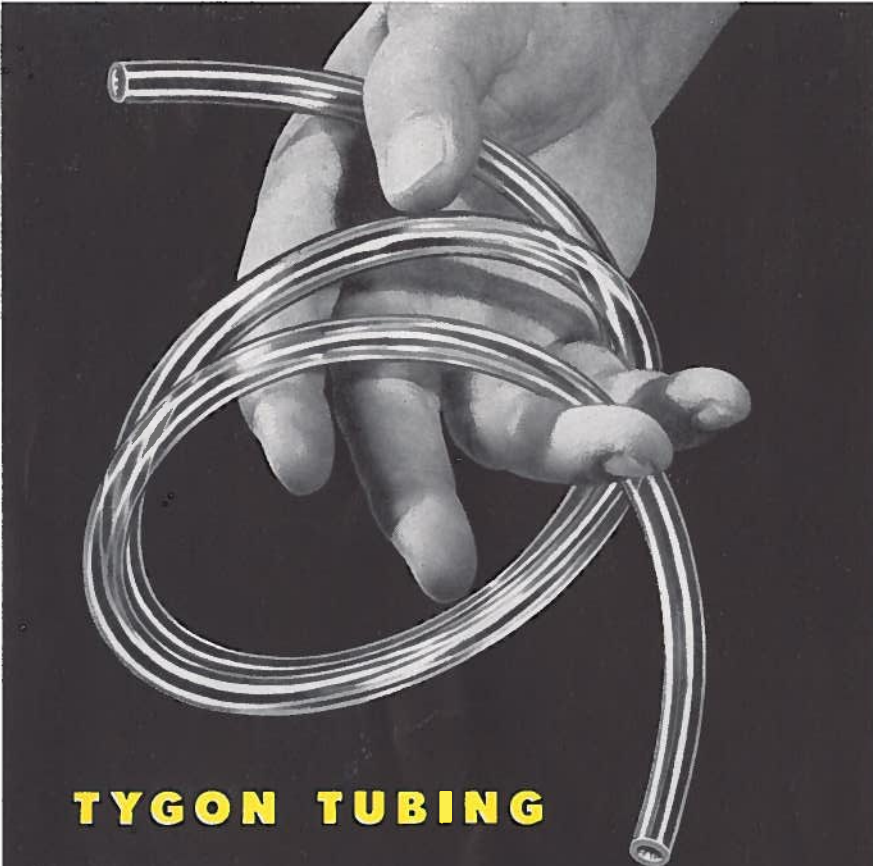
W. R. GRACE & CO., RES. CENTER

Dr. George L. McNew—Spoke before a group of chemists at the Washington Res. Center on Feb. 6. His topic was the volume of agricultural chemicals increased fivefold in the past two decades by the development of about 25 remarkable new pesticides. The benefits to the human race increased even more because the very potent new materials are 3 to 15 times as effective as the corresponding pesticides of pre-World War II and they control diseases and insects that were beyond the limits of the inorganics.

Much of the progress has been made by laborious, empirical testing but gradually a substantial body of new knowledge on the toxicology of insecticides, fungicides and herbicides has accumulated. Although toxicology is still in a primitive stage of development much more is known about the design of molecules for specific functions and the modification of ability to permeate living cells and inactivate vital metabolic functions.

As investigators turn their attention to the metabolism and degradation of

(Continued on page 14)




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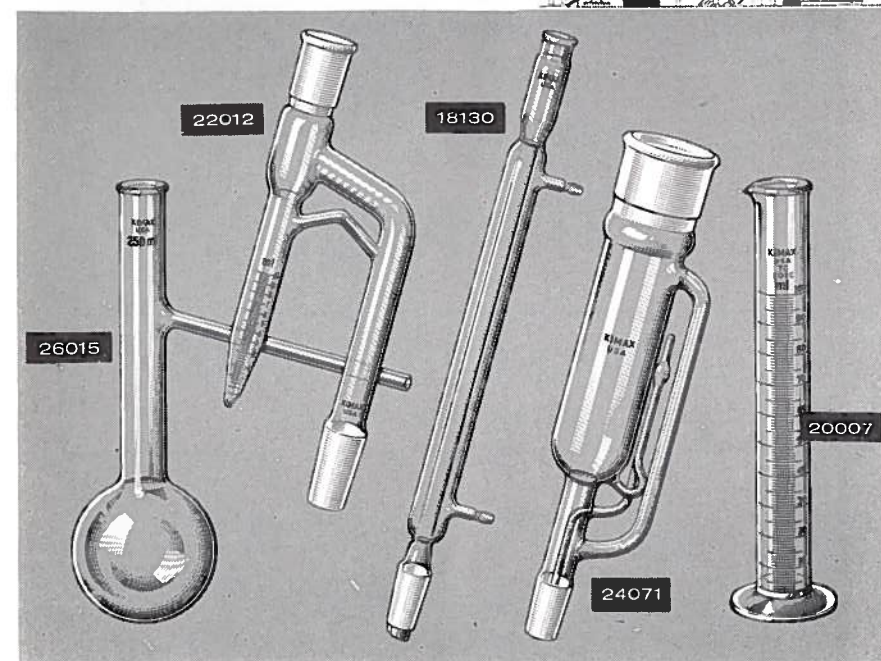
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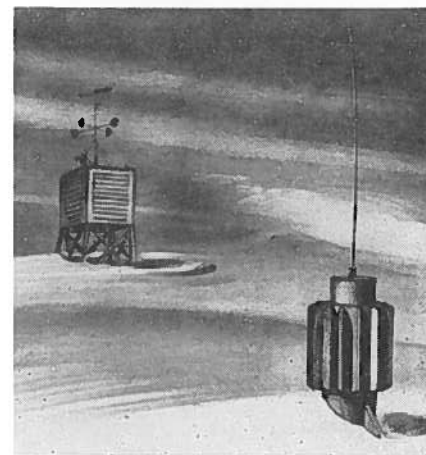
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(Continued from page 7)



This drawing shows how a remote weather station powered by a Strontium 90 radioisotopic generator might look. The Nuclear Division of The Martin Company, which is developing the generator for the AEC, said that "radiator" fins would facilitate cooling of the power source, which is located at a short distance from the weather recording instruments to keep from interfering with their measurements. A transmitter atop the generator would relay data to a manned station at some more accessible point.

They emphasized that work conducted at Martin so far has been limited to non-radioactive Strontium, which has the same chemical properties as Strontium 90 but which emits no radiation whatsoever. Several compounds are being studied, but one that currently shows promise is a purplish crystalline substance called Strontium Hexaboride. Since stability and lack of solubility are safety factors, the properties of this compound are particularly attractive: it remains a solid at temperatures up to 2235 degrees Centigrade (4055 degrees Fahrenheit), and it is so insoluble that the crystals are normally washed in boiling hydrochloric and sulfuric acids as part of the refining process.

In the actual generator, an additional safety factor would be provided by completely sealing the Strontium compound in corrosive-resistant capsules inside a massive heat sink. Studies are underway to determine the rate of diffusion of the isotope out of the system even in case the whole generator were immersed in either fresh or sea water.

RECENT MEETINGS— JANUARY

Thanks to the pleasant weather and an excellent program, the January meeting of the Maryland Section was a complete success. The host W. R. Grace & Company, Washington Research Center at Clarksville, Maryland.

The dinner, attendance 40 members and friends, was held at Candle Light Lodge, Route 144 and Rolling Road, in Catonsville.

Tours of the facilities at Clarksville, Maryland made in group of approximately 10 people to the group, proved so interesting that the meeting was delayed about ½ hour. Dr. M. G. Sanchez, acting as chairman, opened the meeting with a welcome to the A.C.S. members and guests. He introduced Mr. E. M. Hoshall who made a few brief announcements as Chairman of the Maryland Section. Dr. Sanchez then introduced the speaker of the evening, Dr. F. X. Werber, who gave an enlightening presentation on "Polymerization of Olefines on Supported Catalysts." The meeting was formally closed at 10:15 p.m. at which time refreshments were served by the host.

A movie, shown after the meeting, depicting the various enterprises of the W. R. Grace & Company was additional "topping" for a delightful evening.

Attendance at the meeting, a gratifying 110 members and guests.

EVENTS OF INTEREST TO MARYLAND CHEMISTS

Mar. 26.—Pittsburgh Conference on Anal. Chem. & Applied Spectroscopy, Penn-Sheraton Hotel, Pittsburgh, Pa.

Mar. 10—Balto.-Wash. Spec. Soc.—Nat. Inst. of Health, Bethesda, Md., 8:00 P.M. Henry Fales, Heart Inst., "Applications of Absorption Spectroscopy in Biochemical Research." Dinner—see Ed Garlock.

Mar. 27—Md. Section ACS—Bennett Hall, Dr. Morgan, Continental Can Co., "Ionization Radiation in treating Foods." 8:30 P.M.

April 5-10—Nat. Meeting A. C. S. Boston.

April 8—A. C. S., Div. Chem. Marketing & Economics—Symposium on Chem. Public Relations, Boston, Mass.

Want AD Area

As an assistance to unemployed chemist, The Chesapeake Chemist will list blind ads to active members of the section only or requests from Employers.

(Continued from page 9)

organic molecules in the living organism and its immediate environment, new concepts are emerging as to the types of molecules that can be designed for specific uses with a minimum of hazard to crops, domestic animals and other beneficial organisms. Examples of such research are the active herbicides from beta oxidation of aryloxy alcohols, the evolution of fungitoxicants by oxidative decomposition of alkylene biadithiocarbamates, the activation of nematocides by dehydrochlorination of dichlorothio-phenesulfoxide and the development of aryl carbamate insecticides with ability to inactivate cholinesterase.



ACADEMIC

College of Notre Dame

Dr. John Donayon Strong, head of the Astrophysics laboratory at Johns Hopkins will speak at the March 10th meeting of the Student Affiliate Chapter of ACS at Notre Dame College at 4:30 p.m. Balloons, Earth's Atmosphere and The Atmospheres of Planets will be the subject of Dr. Strong's lecture.

Johns Hopkins University

Mr. F. C. Hettinger, died Sunday, February 1st. Mr. Hettinger was visiting Professor and Chairman of the Department of Chemical Engineering, Johns Hopkins University from 1947 to 1956. He was also known in Baltimore industry; first for his work with the U.S. Industrial Chemicals Company and more recently for his work in Air Pollution. He had not been ill long. About three weeks ago, it was discovered that he had an Embolism, in or near the heart, and was told to remain at home quiet from four to six weeks. Apparently, he was feeling better and his death on Sunday came as quite a surprise to all. His friends and associates mourn his passing.

HOOD COLLEGE

Miss Baird Wigton, a Hood Alumna of class of '57, has just joined the staff as instructor for the spring semester, after receiving her Master's degree from the University of Pennsylvania.

UNIV. OF MARYLAND

Mr. Morris M. Graff a well known biochemist who has specialized in steroids, fats, and food chemistry spoke at the Univ. of Md. on Jan 8 to the pharmacologists. He is the holder of a B.A. in chemistry from New York University and a M.S. in biochemistry from Tulane. Mr. Graff has been employed as a research biochemist by the U. S. Dept. of Agriculture (1942-47), Army Chemical Center (1947-9), and the National Institute of Health (1949 onward). Recently, Mr. Graff was transferred from the laboratories of the Cancer Institute to his present administrative position in the National Cancer Chemotherapy Program. His topic was "Physiological Aspects of Certain Steroids".

DEPARTMENT OF PHARMACOLOGY

A grant of \$7,000 has been received from the Ohio Chemical and Surgical Equipment Co. for studies in the field of volatile anesthetics under the direction of Dr. John C. Krantz, Jr., Professor of Pharmacology. This grant will enable the Department of Pharmacology to establish two fellowships for fundamental studies in anesthesia.

A grant of approximately \$45,000 for a three year period has been received from the United States Public Health Service, National Institutes of Health, for fundamental pharmacologic studies on the action of Hexafluorodiethyl ether as a convulsogenic agent. This substance is now being studied as a substitute for insulin and electroshock therapy in the treatment of the mentally ill. Research is being conducted at the University of Maryland, School of Medicine, under the direction of Drs. John C. Krantz, Jr. and Edward B. Truitt, Jr. and at Spring Grove State Hospital under the direction of Dr. Albert A. Kurland.

Dr. Dominic Coniello, who recently received his Ph.D. in pharmaceutical chemistry under Dr. Walter H. Hartung at the Medical College of Virginia, School of Pharmacy, has joined the staff of the Dept. of Pharmacology as Ohio Chemical and Surgical Instrument Co., Fellow in Pharmacology. He will conduct research in new anesthetic agents.

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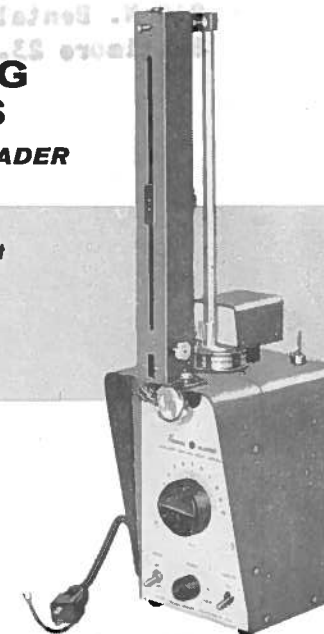
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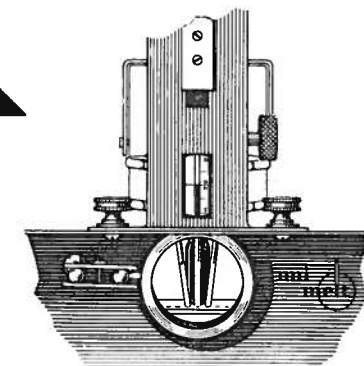
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