

constant but in which the last was varied, Dr. Marshall was able to compare cation uptake with the free energy change involved. The plants were grown in dilute suspensions of Amberlite IR-120, Wyoming bentonite and Putnam clays containing adsorbed calcium or potassium ions, as well as solutions of the chlorides and bicarbonates of these elements. Potassium and calcium uptake were measured by analyzing the roots and the tops of the plants.

An example of the type of results obtained in these experiments is found in the comparison of potassium uptake for three substrates having different free energy changes in their ion interchange reactions. For the potassium chloride solution, with a free energy change of 0, 74 milliequivalents of potassium were taken up per 100 grams of root material. For the potassium bicarbonate substrate, with a free energy change of 3300 calories per equivalent, the uptake was 118; for the potassium Amberlite IR-120 suspension the free energy change was -100 calories per equivalent and the uptake was 32. It is readily seen that the greater the free energy change the greater is the cation uptake.

Calcium behaved in a similar manner. Dr. Marshall pointed out that there was considerable variation in his experiments because he was dealing with living plants and also because free energy changes are not easily measured. However, now that a start has been made it may some day be possible to correlate growth with free energy differences of only a few hundred calories.

Industry

Mathieson Hydrazine Plant Goes on Stream at Lake Charles

The first large-scale plant in the United States for making hydrazine was put into operation by Mathieson Chemical earlier this month at Lake Charles, La.

Hydrazine has many important uses in the agricultural chemicals field, as well as military and industrial uses. A hydrazine derivative, maleic hydrazide, is showing good results as a plant growth retardant. Another hydrazine derivative is said to kill mites without poisoning the birds that feed on dead mites.

Some of the over 200 hydrazine derivatives reported in the literature are useful in preparing drugs, antioxidants, textile processing agents, explosives, and photograph developers, and large numbers of other useful products. Military uses, for rocket fuel, will probably account for the major portion of the production of the Mathieson plant, which cost around \$3 million.

One other company, Fairmount

Chemical Co., also produces hydrazine at its \$150,000 plant in Newark, N. J., by a different process than the one used by Mathieson.

Phosphoric Acid Plant to Be Built by V-C near Cincinnati

Virginia-Carolina Chemical Corp. has announced that it will construct a new production unit for phosphoric acid, sodium tripolyphosphate, and other sodium phosphates at Fernald, Ohio.

The plant will be located in the vicinity of the atomic energy plant and the Miami research laboratory of Procter & Gamble near Cincinnati. V-C has a fertilizer plant in the area also.

United Industrial Constructors will begin construction immediately, the announcement says.

V-C has a plant under construction in Nichols, Fla., a contact sulfuric acid plant and a wet-process phosphoric acid plant with provision for uranium extraction.

Lunsford Buys Out Hayes-Sammons

C. S. Lunsford has bought out the interest of Hayes-Sammons in their joint company, Empire Chemical and Supply Co., Inc. (AG AND FOOD, June 10, page 431). The Texas company, no longer incorporated, is under the sole direction of Mr. Lunsford.

People

Frankenburg Made VP for Research by General Cigar

Walter G. Frankenburg has been elected vice president in charge of research and development for General Cigar Co., Inc. Dr. Frankenburg established General Cigar's research laboratory at Lancaster, Pa., in 1942



and is credited with being the first to organize a purely scientific research laboratory in the American cigar industry.

In announcing Dr. Frankenburg's election, the president of General Cigar, Julius Strauss, stated that: "By his election the directors recognize the tremendous importance of scientific research in the future development of our company and the industry."

Dr. Frankenburg, who serves on the advisory board of AG AND FOOD, came to this country after resigning his position with I. G. Farbenindustries and leaving Germany in 1938 because of political

conditions there. His research in Germany was concerned with photography and a photochemical process for producing vitamin D from ergosterol. In this country, his research on the chemistry of tobacco has led to improvements in curing and fermenting tobacco, seed selection, and growing methods.

Paul L. Salzberg has been promoted to director of the chemical department of Du Pont Co. He succeeds Cole Coolidge who died recently. Dr. Salzberg has been with Du Pont since 1928 and has moved up through various positions to his most recent one as assistant director of the chemical department.

George D. Wilson has been appointed chief of the newly created division of food technology of the American Meat Institute Foundation. Dr. Wilson has been an instructor at the University of Wisconsin and has been engaged in research on the effects of hormones on lambs and pigs and on the influence of protein levels, aureomycin, and B₁₂ supplementation on pork carcass values.

Truman E. Laningham, former entomologist at the Shell agricultural laboratory, has been made a field representative for the Eston Chemicals Division of American Potash & Chemical Corp. His headquarters will be in Modesto, Calif.

Leonard S. Silbert has been appointed senior fellow under a multiple fellowship recently established by the National Renderer's Association at the USDA's Eastern Regional Research Laboratory at Wyndmoor, Pa. The fellowship is part of a new research program being initiated by the association to find new uses for inedible tallow and grease.

Max F. Mueller has been made chief technologist of Grace Chemical Co.'s nitrogen plant now under construction near Memphis, Tenn. He was formerly chief engineer for J. T. Baker Co. A chemical engineering graduate of the University of Michigan, he has been engaged in project and process engineering work. Mr. Mueller will be at the company's development department in New York until he takes up his duties as chief technologist at the plant.

Christian H. Aall has been made director of development for Monsanto's phosphate division in St. Louis. He has been assistant research director for the division in Anniston, Ala., since 1949. Donald A. Roper will replace Dr. Aall as assistant research director for the division.

E. C. Stakman has retired from his position as head of the department of plant pathology and botany at the University of Minnesota. He is now professor emeritus.