The feed industry does not have a long history of experience with fats and is still learning how to handle them. It is learning, for example, that copper base alloys should be avoided in fat handling systems. Copper tends to dissolve in hot fat, and in solution it catalyzes reactions that produce rancidity. The same is true of rubber. Piping layouts and sizes also must be specially designed to handle hot fats.

Fats are heated generally with steam, but they must nevertheless be kept as dry as possible; water is probably the most important enemy of stability in fats. When clean and dry they keep fairly well, but storage capacity should be so balanced with rate of use that the quantity in storage at any time can be held to a minimum.

The amount of fat going into an animal feed must be carefully controlled because it is an expensive ingredient relative to most other feed components. Also, high fat content can be harmful from the nutrition viewpoint.

Animals regulate their eating generally by caloric content; if the fat content of a feed is too high, the animals will get the necessary calories, but they may not eat enough total feed to provide all of the vitamins and protein supplied in other feed components.

While fats are still sold to feed manufacturers on the basis of soap industry standards, characteristics like titre and free fatty acid content seem to have little relation to what is needed in the animal feeds.

Bethke would like to see a separate set of standards for feed grade fats. He sees also a need for much education in quality matters, among both users and suppliers of fat products.

The place of fats in large livestock feeds is yet to be determined. Poultry feeds have been the major outlet to date because poultry are raised on a much more easily controlled diet than are livestock, and it is much simpler to prove an advantage in using fats. Swine, sheep, and cows get a large part of their food directly from the farm.

Feed supplements are the only items that can be carefully controlled, and seem therefore to be the place for fats. This is being done to some extent, but the difficulty of proving results on an only partially controlled diet remains.

In addition, the price of fats has gone from 2 and 3 cents a pound to 7 and 8 cents a pound in the last few years, making accurate control and visible results even more important to the farmer.

Industry

NFA–APFC Consolidation Plans Proceeding

PROPOSED CONSOLIDATION plans for joining the National Fertilizer Association and American Plant Food Council into a single new organization advanced another step Oct. 28, when the APFC board approved the merger. NFA members will vote on the proposal at their meeting in Hollywood, Fla., Nov. 10.

Approval of the amalgamation by both organizations will bring into existence the National Plant Food Institute as spokesman for the American fertilizer industry. That industry has a long history of trade association activity, extending back to 1876 when the National Association of Chemical Fertilizer Manufacturers was formed in Baltimore. The original National Fertilizer Association came into being seven years later as the result of a meeting in the same city. That organization lasted less than five years and from 1887 until 1893 the industry was without a general or national association.

The nucleus of the present associations developed from an informal meeting of twelve "western" fertilizer manufacturers at Columbus, Ohio, March 6, 1894. That group held its first convention in Buffalo, N. Y., as the Association of Manufacturers in the West. In 1901 the name was changed to Fertilizer Manufacturer's Association and membership was opened to all fertilizer manufacturers. The name was changed again in July 1906 at the convention at Put-in-Bay, Ohio, to the National Fertilizer Association.

The next step was an expansion. The Southern Fertilizer Association, an organization of long standing, became a part of the NFA at the latter's 32nd annual convention at White Sulphur Springs, W. Va., in June 1925.

Charles J. Brand, a leader in the development of the Bureau of Agricultural Economics of the USDA became the chief full-time official of the organization at about this time. His position was executive secretary and treasurer.

Unhappy days came upon the organization during the zealous crusade for antitrust actions beginning about 1939. NFA was one of the many organizations attacked. Despite the roughness of the battle, the organization survived.

In 1945 another organization came into being in the fertilizer industry. It was named the American Plant Food Council and included some former members of the NFA. It was headed by Clifford Woodrum, a former Virginia congressman.

During 1945 Charles Brand retired to be succeeded by D. S. Murph, who had been administrative assistant and attorney for the NFA for 12 years. He was followed in 1946 by Maurice Lockwood, who became the first full-time president. He held that position until 1948, when he joined International Minerals and Chemical Corp., of which he is now a vice president.

Russell Coleman, director of the Mississippi Agricultural Experiment Station, succeeded Lockwood as NFA President, a position he still holds.

Paul Truitt, former president of the National Association of Margarine Manufacturers, succeeded Woodrum on the latter's death and is current president of the APFC.

Russell F. Coleman

Paul Truitt

Army Ends Contract for Daniels Nitrogen Process Plant

The Army Ordnance has terminated its contract with Food Machinery and Wisconsin Alumni Research Foundation for operation of the demonstration unit for fixing atmospheric nitrogen directly as dilute nitric oxide. This process was developed by Farrington Daniels and Frederick Cottrell.

The demonstration unit, located at the Sunflower Ordnance Works in Kansas City, will be shut down, but laboratory and small pilot plant operations will be continued.

In announcing termination of the contract, Food Machinery said that the process was technologically feasible, but that the economics of commercial production did not prove to be in line competitively with other processes now being operated on a large and integrated scale.

The process has been the subject of much interest and speculation on the

part of those in the nitrogen industry since 1952 when construction of the demonstration unit first started. The plant was completed in April 1953.

Heart of the process is heating of the air to 2200° C. and rapidly cooling combustion gases to prevent dissociation of the nitric oxide. One of the earliest problems connected with the process was to get furnaces which would withstand the high temperatures for long periods of time. At the time work was started the practical temperature limit of commercial furnaces was 1550° to 1650° C., so furnace materials had to be developed.

The contract termination announcement said that the unit had proved its ability to take continuous operation at 4000° F.

Diamond Starts Chlorine Operations at Muscle Shoals

Diamond Alkali made its first down payment on a $20 million chlorine-caustic soda plant at Sheffield, Ala., Oct. 28 during a ribbon-cutting ceremony. The government received a $1,950,000 check, a $50,000 bid bond, and will get the rest of its money over a 10-year period at 4% interest.

The 225 ton-per-day chlorine installation, Diamond's 15th plant, and the fifth to produce chlorine and caustic soda, will be in operation by the first of the year, says J. A. Sargent, company president. Diamond is now taking orders for the plant's production (which includes 250 tons per day of 50% and 70% caustic solutions) and expects to make deliveries at that time.

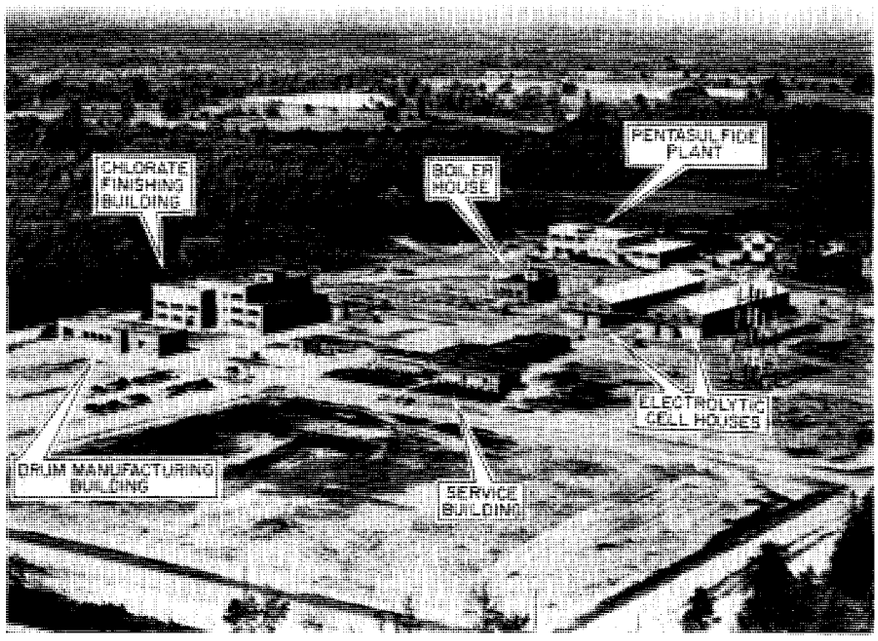
Except for a 30-day trial run when the plant was completed in July 1952, the plant has been held on a stand-by basis by the government. (In 1952 the plant demonstrated its ability to operate at its design capacity with 50% of the 232 cells in operation.)

The plant uses Monsanto-deNora mercury cells, and has been designed to operate with reasonable efficiency when producing at less than 50% of rated capacity. The process eliminates the need for caustic evaporation facilities.

Oldbury Puts Mississippi Sodium Chlorate Plant on Stream

More sodium chlorate for weed control and cotton defoliation will soon be on the market, announced Oldbury Company officials Oct. 26 during plant dedication ceremonies at Columbus, Miss.

To meet increased demands, Oldbury has completed a new $3.5 million installation with a storage capacity of 4 million pounds. The company's move southward from Niagara Falls was encouraged by nearby markets, cheap power, Mississippi's 10-year ad valorem tax, the abundance of high grade ground water at relatively shallow depths, and the company's need for additional manufacturing space.



This $3.5 million plant of Oldbury Electrochemical adds 12,000 tons to U. S. annual sodium chlorate capacity (43,221 tons in 1953). Plant is designed for safe operation, while maintaining maximum efficiency. Cell buildings are located some distance from chlorate finishing buildings; phosphorus pentasulfide unit is further away

The plant's manufacturing process consists of eight stages. Brine preparation, electrolysis, cell liquor purification, cell liquor evaporation, and continuous crystallization are followed by centrifuging, washing and drying, and packaging of the crystals.

Oldbury's plant has five cells in parallel banks, two banks in each of two cell buildings. Although much of the process is continuous, the cells operate batchwise on a 16-day cycle. Raw material for the cells, salt, comes from Louisiana.

Drums needed to package the product are manufactured in a separate building on the premises, operated by International Cooperage. Two men convert sheet metal to finished drums in the rolling, forming, assembling, and painting operations. Finished drums are transferred from the drum fabricating building to the chlorate finishing building. The return trip is made in five minutes.

Demand for bulk shipment in tank cars has risen in recent years to a point where Oldbury decided to provide bulk storage for efficient handling and for leveling out seasonal sales. A screw conveyor removes chlorate from the concrete bins at ground level and transfers the material up to weighing bins for rapid loading of tank cars. Oldbury's new plant, in addition to supplying agricultural needs, will serve chemical manufacturing industries and paper pulp plants in the South more effectively.

General Foods to Build Larger Research Lab in Tarrytown

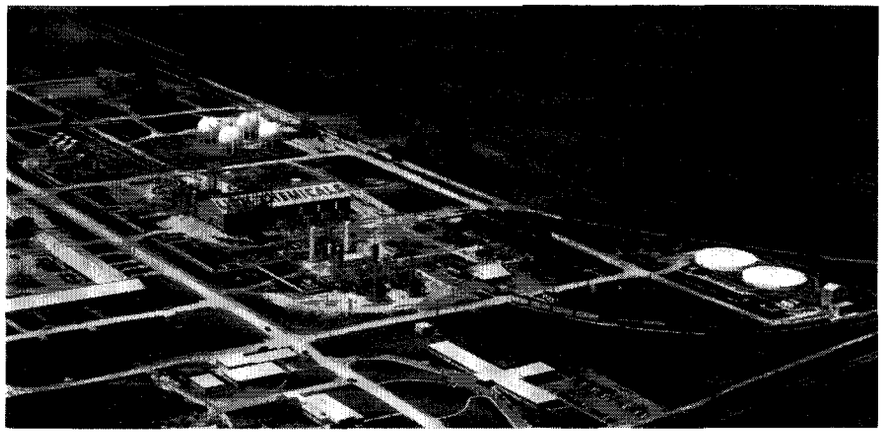
General Foods has completed negotiations for 55 acres at Tarrytown, N. Y., to be used as the site of a proposed enlarged food research center, it was announced today. The land lies along the Hudson River just south of the Thruway bridge now under construction.

Announcement of the transaction was made by Ray M. Schmitz, vice president responsible for research and development, who explained that the company has outgrown its present laboratory facilities in Hoboken, N. J.

The purchase is contingent on obtaining a zoning change for a portion of the property, and application for the change has been filed with the Village of Tarrytown, according to GF attorneys.

Plans call for the construction of several two-story-and-penthouse buildings on the Tarrytown site. The campus-type structures will be air-conditioned and soundproof and will furnish working space for some 600 employees—executives, research scientists, and office personnel of the GF laboratories. Architects planning the project are Voorhees, Walker, Foley & Smith, the same firm which designed the new GF general office buildings in White Plains.

Roy H. Walters, director of research and development for General Foods, ex-



Lion Oil's Barton plant near New Orleans has annual nitrogen capacity of 90,000 tons. Part of the anhydrous ammonia (300 tons per day) is sold; the rest is converted into pelleted ammonium nitrate

plained that the Tarrytown site was selected because it was the most desirable of many considered, being accessible to institutions of higher education in the New York area and located in a suburban region favorable to research.

Lion to Make Ammoniating Solutions at Barton Plant

Anhydrous ammonia and pelleted ammonium nitrate production is now running at full capacity, Lion Oil officials indicated during plant dedication ceremonies on Oct. 25 at Luling, La. A new unit to manufacture ammoniating solutions will be operating in February, they say. The plant addition is estimated to cost $250,000.

When Lion started production earlier this year, its carbon dioxide unit hadn't been completed, but the unit is now turning out 42 tons daily of the solid and liquid product. Located 14 miles upstream from New Orleans the Barton Plant has been at its rated capacity since midyear, 300 tons of anhydrous ammonia per day. Part of the ammonia is sold for agricultural and industrial use, the rest is converted into ammonium nitrate.

The Barton Plant has increased Lion's production of elemental nitrogen by more than 50%. Output at Luling (90,000 tons) brings the total company production to almost 250,000 tons annually.

Davison Fertilizer Plants Grouped; New Appointments

Plants of the mixed fertilizer division of Davison Chemical Co. Division of W. R. Grace & Co., have been grouped into three districts, with managers reporting to W. N. Watmough, Jr., Davison vice president, at Baltimore headquarters, it is announced.

Mr. Watmough announced appointments as follows:

B. C. Manker to be central district manager at Lansing, Mich. He has been responsible for sales and operations of Davison's plants at Lansing and at Alliance and Columbus, Ohio. He now has assumed, in addition, responsibility for plants at New Albany, Ind., Nashville, Tenn., and Findlay, Ohio.

John W. Ground, III, to be western district manager, with headquarters at Joplin, Mo., where he has been located. He will be responsible for sales and operations at plants in Trenton, Mo., Tulsa, Okla., Perry, Iowa, and New Orleans, La., as well as at the Joplin plant.

Joseph F. Stough, former general sales manager for International Minerals & Chemical at Chicago, will join Davison Nov. 1 as southeastern district manager with headquarters at Charleston, S. C. He will have the responsibility for sales and operations, in addition to Charleston, for plants located at Wilmington, N. C., Spartanburg, S. C., Ft. Pierce and Jacksonville, Fla., and Savannah, Ga.

George Klein, for a number of years district manager at Nashville, Tenn., under the former set-up, is now general sales manager of the mixed fertilizer division, with headquarters in Baltimore.

W. P. Stansbury is promoted from operations manager to director of branch plant operations, mixed fertilizer division. His headquarters will continue at Baltimore.

Joseph E. Reynolds, Jr., formerly at Joplin, Mo., is transferred to Baltimore as operations manager of the division and E. L. Carnell, superintendent at Savannah, is transferred to Baltimore as production planning supervisor.

In Mr. Manker's district, John Detgen is made assistant manager at Columbus, Ohio, where M. C. Evans is manager, with responsibility for sales in the territories served by Alliance, Columbus, and Findlay, Ohio, plants, and E. S. Jackson, assistant manager at Nashville, is made manager at that plant.

Under Mr. Ground at Joplin, A. C. McCall is appointed manager with responsibility for sales and operations at Joplin and Trenton, Mo., and Tulsa, Okla. He was formerly assistant branch plant manager at Columbus, Ohio.

Under Mr. Stough, U. S. Aaron is promoted from sales manager at Savannah to manager for sales and operations at Charleston and Spartanburg, S. C., and sales at Savannah, Ga.

Chandler Smith is promoted from manager at Ft. Pierce, Fla., to assistant manager in charge of sales for Charleston and Spartanburg, S. C., and Savannah, Ga. He will also be located at the Charleston district office headquarters. A. C. Gordy will be branch plant manager at Ft. Pierce, Fla. R. L. Johns will be branch plant manager at Jacksonville, Fla.

Foreign

Fertilizers in South Africa

The rapid development of agriculture in South Africa has resulted in a number of peculiar problems for the fertilizer industry in that area. Superphosphate has been the principal ingredient of most fertilization programs. However there seems to be trend developing, now, toward more balanced application of plant nutrients. When the virgin grasslands were first broken there was a pressing need for phosphate fertilizers, in 1949–50 about 60% of the total tonnage applied on South African farms was phosphate. However with the continued farming in the area it has now become apparent that something in addition to phosphate is needed on this relatively new land.

One major difficulty to any sound fertilizer program is the lack of basic work on soil fertility and crop response to various nutrient ratios. However with the trend toward more intensive farming on a large scale the government has announced plans to undertake basic studies on soil fertility.

D. Meredith of African Explosives and Chemical Industries has recently completed a survey of fertilizer usage in South Africa for the 25 year period 1924–1949. He reports that the ratio of application of plant nutrients in Africa has been: 1 N - 5 P_2O_5 - 1.2 K_2O. The removal of nutrients according to Dr. Meredith has been in the ratio of 3 N - 1 P_2O_5 - 1.5 K_2O. Consumption of fertilizer is reportedly on the increase in the area and he says there is a definite trend toward balanced fertilizers.