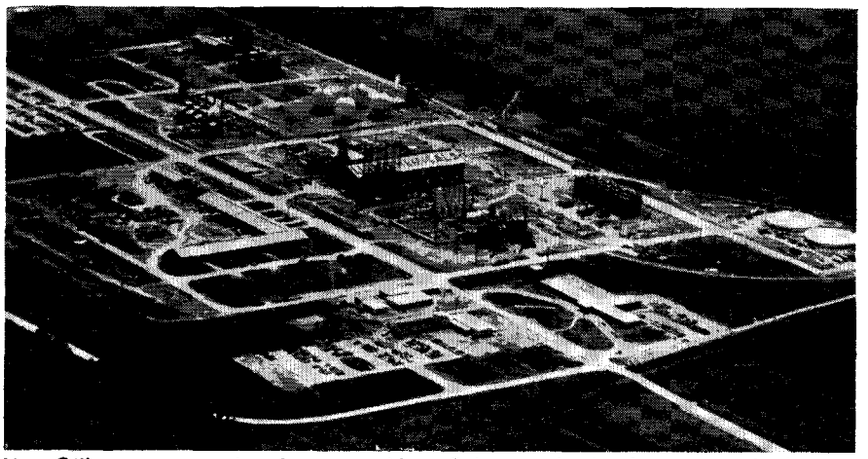
tanks in which the counter-current steeping operation is carried out. Activity dropped to zero in the center tank and subsequent tanks in the sulfur dioxide end of the battery.

Inoculum of lactic acid bacteria comes chiefly from process water which is drawn from other milling operations for use in steeping, although some comes from the raw grain. Poorest grades of corn give best inocula, but since it is desired to mill the better grades, the wet miller must rely on process water for the major source of lactic acid bacteria in steeping.

Correction

The report of the meeting of the Nutrition Foundation (AG AND FOOD, May 26, page 540) contained an error in the discussion of the effects of trace elements in bone and muscle development. George Davis of the Florida Agricultural Experiment Station reported that rats on a low copper high molybdenum diet suffered almost complete noncalcification in ribs. Higher manganese supplements alleviated, but did not completely eliminate, the trouble in rabbits. The previous report was incorrect in the statement that the rats suffered almost complete calcification of ribs.

Industry



Lion Oil's new ammonia plant near New Orleans. In the foreground is the anhydrous NH_3 area and, behind it, the nitric acid plant. Pelleting area for ammonium nitrate is in the background

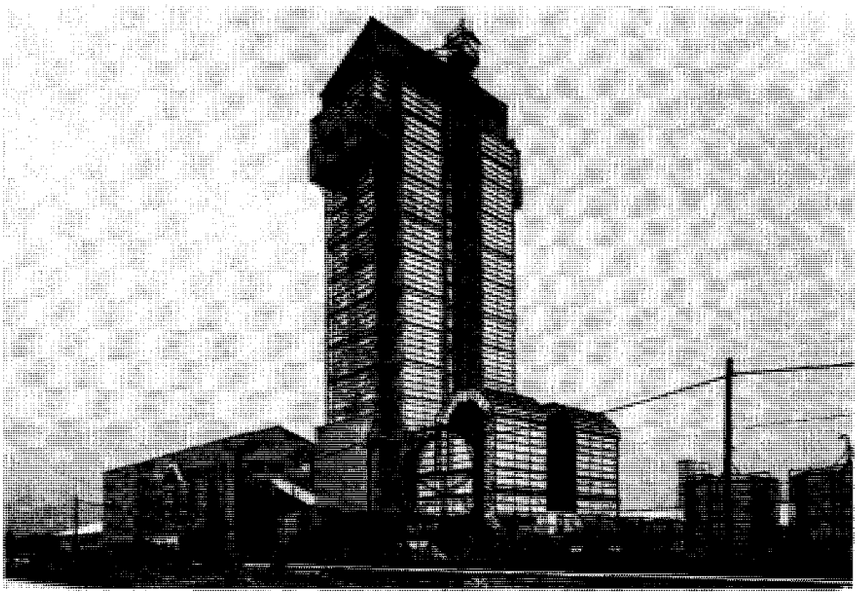
Lion Oil Starts New Ammonia Operations

Barton plant's 90,000-ton annual nitrogen capacity raises Lion's production to more than 250,000 tons

LULING.—Production of Lion Oil's new plant in St. Charles Parish is now up to design capacity, 300 tons per day of anhydrous ammonia. Located on the West bank of the Mississippi River 14 miles upstream from New Orleans, the Barton plant, added to the El Dorado operations, provides Lion with the largest chemical division of any oil company of proportionate size.

The new plant (designed by Chemical Construction) will have a year-round average daily production of 300 tons of anhydrous ammonia; approximately 250 tons will be converted into 550 tons of pelleted ammonium nitrage, the remaining 50 tons will be sold for industrial and agricultural uses. As part of the basic production Lion's nitric acid plant will manufacture 430 tons of acid per day to be used in the

A view of one of the 210-foot pebbling towers at Lion Oil's new ammonia plant near New Orleans



production of ammonium nitrate. By-product gases from the ammonia synthesis will be converted into 42 tons per day of dry ice and liquid carbon dioxide by a $550,000 recovery unit now under construction. Full nitrate production is expected sometime during June.

A $31 million installation, the Barton Plant marks Lion's third entry into the chemical industry. Lion took its initial step when it leased a government-owned ordnance plant at El Dorado, Ark., in 1946 (operated by Lion during the war). The plant, purchased outright in 1948, was expanded from 440 tons per day of anhydrous ammonia to 570 tons in 1949. Improvements were made in ammonium nitrate production; Lion took its second shot at the chemical business in 1949 when it installed ammonium sulfate and sulfuric acid facilities. The Barton plant, or third round entry, is the greatest single expansion project undertaken by Lion during the company's history.

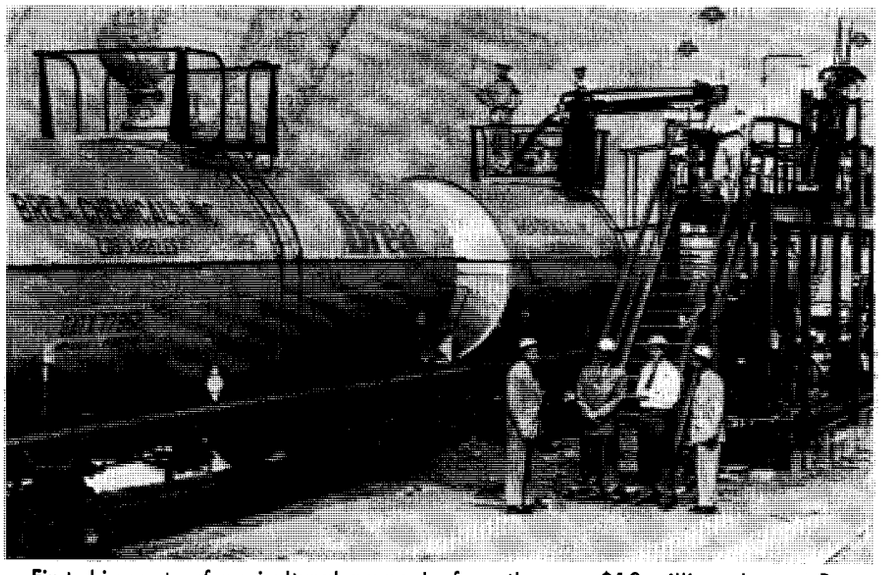
Profitable Nitrogen. Last year Lion produced 210,000 tons of anhydrous ammonia, 1000 tons of aqua ammonia, 75,000 tons of sulfuric acid, 104,000 tons of nitrogenous solutions, 148,000 tons of ammonium nitrate, and 95,000 tons of ammonium sulfate at El Dorado. Total revenue from these products exceeded $24 million in a market area covered principally by Arkansas, Louisiana, Mississippi, Alabama, Florida, southwestern Georgia, southern Missouri, eastern Texas, and western Tennessee. Sales during the first quarter of 1954 were the highest in any previous period, exceeding the first quarter of 1953 by 24%. When Lion speaks of average production at El Dorado last year, they mean 570 tons of anhydrous ammonia, aqua ammonia as needed, 345 tons of ammonium nitrate solutions, 400 tons of prilled ammonium nitrate, and 380 tons of ammonium sulfate per day. Production can be, and is, shifted to meet seasonal and market demands. The Barton Plant will add 90,000 tons of annual nitrogen capacity to Lion's chemical division, bringing the total to more than 250,000 tons.

Lion officially shipped its first trainload of anhydrous ammonia from the plant on May 17; the first tank car was consigned to the Harvey, La., plant of Swift & Co.'s plant food division.

Chemical, Industrial Engineers Form Consulting Firm

Formation of Brown, Blauvelt & Leonard, chemical and industrial engineers, with offices at 470 Fourth Ave., New York City, has been announced by Francis L. Brown, Harold A. Blauvelt, and Jackson D. Leonard.

Brea Ships First NH_3 from New Plant



First shipments of agricultural ammonia from the new $13 million plant at Brea, Calif., were announced by Brea Chemicals, Inc., subsidiary of the Union Oil. Half-capacity trial runs of the new plant are nearly completed and full production is scheduled for mid-June. The ammonia is converted to Brea aqua ammonia for tank ship or barge delivery to seven Brea storage terminals. Five other terminals receive the product as ammonia and convert it to a nitrogen fertilizer solution, aqua ammonia, for delivery to local growers. Shown with members of the loading crew are left to right, R. S. Ogilvie, plant superintendent; Robert S. Ray, manager of manufacturing; T. C. Henderson, operations superintendent, and Jack Tielrooy, manager of development

Services offered by the firm include: work on chemical processes, planned maintenance programs, drafting and design, consulting services, and project engineering. Special emphasis will be on chemical processes involving methyl amines, carbamate fungicides, dimethylformamide, synthetic detergents, titanium dioxide, pentaerythritol, ethylene oxide, aluminum oxides, and other processes of current importance.

The new company will be affiliated with the consulting engineering firm of Brown & Blauvelt.

Jackson D. Leonard, third principal in the new firm, formerly headed J. D. Leonard & Associates, consulting chemical engineers. Prior to the establishment of his own firm, Mr. Leonard was associated with General Chemical, Du Pont, and Merck.

Research

Rutgers Dedicates Microbiology Institute

RUTGERS UNIVERSITY formally opened its new institute of microbiology on the New Brunswick, N. J., campus June 7 and played host to a gathering of scientists discussing the achievements and prospects in the field of microbiology.

The new institute, which cost $3.5 million, is a tribute to Selman A. Waksman, codiscoverer of streptomycin, and was built with the royalties from streptomycin. The new institute, four stories high, will be devoted to research in the fundamentals of microbiology. Although not divided into departments, research will center around the following aspects: general microbiology, microbial physiology, antibiotics of microorganisms, vitamins and enzymes, ecology of microorganisms, and applied microbiology.

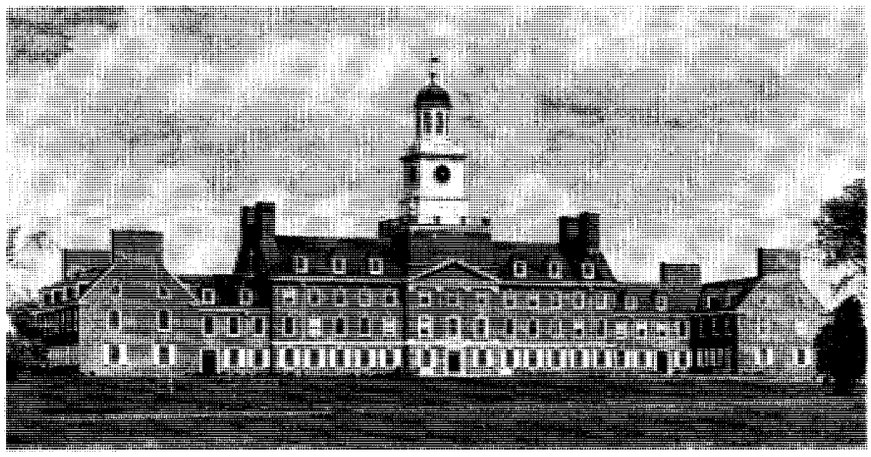
The staff of the institute will include the director, Dr. Waksman, and bacteriologists, mycologists, virologists, physiologists, biochemists, and organic chemists. In addition, the institute will provide facilities for 20 to 30 graduate students, five to 10 postdoctoral fellows, 10 to 25 visiting investigators from this country and abroad, and several honorary investigators.

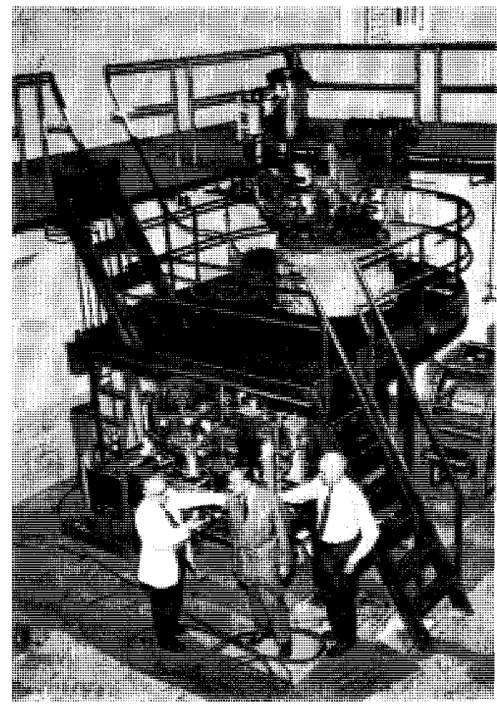
Facilities include laboratories divided into units 10 feet wide with removable metal partitions so that the laboratories can be enlarged in units of 10 feet. There are also teaching rooms, a large lecture hall, teaching laboratories, a microbiological museum, library and reading room. Approximately half of one wing is devoted to a pilot plant housing a number of fermentors from 5 liters to 300 gallons.

The Rutgers Research and Endowment Foundation, a nonprofit corporation, appropriated the money for the new institute. Of the approximately $5 million in royalties on streptomycin patents, 82.5% are assigned to the foundation, 5% goes to the foundation for microbiology, 5% to Dr. Waksman, and 7.5% to associates and former students of Dr. Waksman who helped in the search for streptomycin. Investigators at the institute are expected to assign patents resulting from work there to the research and endowment foundation.

Dr. Waksman, who isolated streptomycin in 1943, was born in Russia in 1888 and came to this country in 1910 and entered Rutgers in 1911. After taking his B.S. in 1915, Dr. Waksman stayed on at Rutgers to take his master's degree and his U. S. citizenship the following year. In 1918, he took a Ph.D. in biochemistry at the University of California, and returned to Rutgers as a microbiologist at the experiment station and lecturer at the University. His early work was on the role of microorganisms in the soil, but in 1939 his work was sharply altered and he began studying the microorganisms which would have therapeutic value.

The $3.5 million Rutgers Institute of Microbiology dedicated recently





Selman A. Waksman (left), director of the institute, shows a visitor, O. Hubner of Copenhagen, around the pilot plant room. Adolph Zimmerli, honorary professor of microbiological engineering, is in charge of the mass production experiments to be carried on in this part of the institute

Animal Fats in PVC Resins

Glycerol derivatives as plasticizers for polyvinyl chloride may have a future, reported H. B. Knight and coworkers of Eastern Regional Research Laboratory. Epoxidized monoglycerine diacetates have been used successfully with PVC, the ACS Division of Paint, Plastics and Printing Ink Chemistry learned at the Kansas City national meeting.

Incompatibility of animal fat derivatives with PVC and other resins has largely limited them to use as lubricants and plasticizer extenders. Introduction of three membered epoxy rings, however, greatly improves the compatibility of long chain compounds with resins. The principle has been put to use in epoxidized oils, which have been on the market for several years.