

standard of living with the present rate of increase of population is perhaps the real problem.

With a limited potential expansion of the acreage of cultivated land he believes that methods of increasing production on present land will become increasingly important as the population of the nation grows and as he told the Associates, "We have not been turning our our findings at a rate equal to the rate at which they are being used. We need to start the research frontier moving upward at a more rapid rate. Since the response of the average producer follows most research advances by a time delay of 10 to 15 years the time to start moving the research frontier is now."

Industry

Cottonseed Oil to Be Extracted By Package Plant Process

A new process for the solvent extraction of oil from cottonseed will go into operation this summer at the plant of the Mississippi Cottonseed Products Co., Jackson, Miss. Known as the Package Plants process, the plant has been designed and engineered by the Lukenweld Division of the Lukens Steel Co.

The process eliminates the prepressing operations formerly required in other types of oil extraction schemes. Automatic and continuous operation results in reduction of labor costs by 75%, according to Lukenweld.

The plant will have a capacity of 150 tons of cottonseed or 75 tons of soybeans daily and is scheduled to be in operation sometime this summer.

B₁₂ Concentrate From Sewage Waste

The Milwaukee Sewerage Commission and the Alden Engineering Co. of Chicago have signed an agreement which may put the sewage people in the vitamin feed supplement business. Under terms of the contract the Chicago engineering firm will construct a plant to extract and concentrate vitamin B₁₂ from Milorganite, the dried disinfected sludge from the sewerage disposal plant.

Initial plans call for the engineering firm to build a pilot plant to study an extraction process developed by the commissions research group. The pilot plant will be built in the Chicago area, and is to be completed within 60 days. From 40 to 90 tons of the sewage sludge will be processed, if the process proves efficient and the engineer firm can prove that an adequate market exists, then they will decide whether or not to go ahead with construction of a \$1 million plant to be

coordinated with the already existing disposal plant near Milwaukee.

The original process for extraction of B₁₂ from sewage was developed on a recent contract with the Milwaukee Commission by Bernard Wolnak of the Miner Laboratories in Chicago.

The process should yield about a kilogram of B₁₂ for each 500 tons of processed fertilizer, according to the Commission.

If the process proves feasible, they plan to market B₁₂ concentrate either as a 40% aqueous solution or as a spray dried powder.

The concentrate on a dry basis would contain a minimum of 40 milligrams of B₁₂ per pound. The concentrate would be marketed for supplementation of animal and poultry feeds.

Food and Drug Administration has approved of the supplement for this purpose.

Foreign

Ozone Extends Storage Time for Bananas

Preliminary reports on some experiments conducted by British workers on the gas storage of bananas seem to indicate that low concentrations of ozone will extend the storage life of bananas by reduction of ethylene in the storage areas. The effect of trace amounts of ethylene on the ripening of bananas and other fruits has been recognized for some time (AG AND FOOD, April 29, page 264).

The British work was the result of study of the effect of leaf spot disease on the premature ripening of bananas in shipment from Jamaica, B.W.I., to the British Isles. In shipment the infected fruit would begin to ripen and by production of ethylene stimulate the premature ripening of the rest of the cargo.

By the use of ozone to reduce ethylene content in the refrigerated cargo holds of vessels it was found possible to hold the fruit cargo up to 20 days without any onset of ripening. After treatment with ethylene the fruit then ripened normally. The operating conditions for the ozone treatment have not yet been developed and the British conclude that further work on a pilot plant scale is necessary before the scheme can be generally recommended.

Nicaraguan Milk Plant to Start Production in August

The first milk drying plant in Central America is expected to start production this August. The plant, constructed as part of a program to provide milk for 40,000 Nicaraguan school and pre-

school children, has been partially financed by a \$115,000 loan from the United Nations International Children's Emergency Fund. The cost of the plant to the government will eventually be amortized through milk purchases from the operating company.

Reinaldo Lacayo, general manager of the plant, has offered the facilities to train interested Central American dairy personnel.

In a recent conference with representatives of the Dairy Industries Society, International, and representatives of the UN Food and Agricultural Organization, the training program was advanced as a means of developing the Nicaraguan plant as a practical training school to assist other Central American countries in developing their own dairy industries.

Mr. Lacayo's company has already established a pasteurizing plant in Managua, which has been in production for about two years and they expect to set up another soon in nearby Leon.

Research

USDA Processes Animal Fats For Tin Plating Purposes

Animal fats such as lard and tallow when slightly modified can be substituted for imported palm oil used in hot dip plating according to a recent announcement of the U. S. Department of Agriculture.

The process for modification of animal fats was developed at the Armour Research Foundation of the Illinois Institute of Technology under a contract sponsored by the USDA. The process has proved successful in stabilizing, hydrogenating, and deodorizing animal fats to yield a product which is equal and, in some ways, superior to the previously imported palm oil.

According to USDA, the development of a satisfactory tinning oil from commercial grades of grease and tallow results in three important advantages. It provides a cheaper tinning oil, creates a ready potential market for surplus fats, and reduces dependence on imports of palm oil.

Wilt-Resistant Canning Tomatoes Object of UC Research

A good canning tomato should have the following qualities—good yield, early harvest, small vine to permit easy picking, and resistance to *Fusarium* and *Verticillium* wilts as well. The answer to this problem for California growers and processors may be coming from the Agricultural Experiment Station at the

University of California's Davis Campus. Says Gordie C. Hanna cautiously, "If two selections we now have prove on further testing to have the firm flesh of Pearson (currently the popular type with California growers) but without the large core of Pearson, we may have a variety to release in two or three more years."

Fusarium and *Verticillium* wilts have plagued tomato growers in many parts of the U. S. Workers in Wisconsin, Utah, Missouri, Connecticut, and other states have tackled the problem off and on for a number of years in addition to those at UC.

Dollarwise, it is difficult to pin down the cost of the diseases. Yield reductions in California, where half of the nation's crop is grown, run as high as 50% because of *Fusarium* with 20% for *Verticillium*. While this may reduce farmer income, there is the anomalous possibility yield will result in a sufficiently higher price to offset or even exceed the income from a "normal" crop. From the consumer point of view, however, there is only one result—a higher price.

It may be a blow to the pride of the pesticide chemist, but to date there are no successful (and economical) chemical control methods. The fungi infect the soil and enter the plant's system through its roots, soon killing it. Soil fumigation can be successful, but it is much too costly a procedure to be used on a crop like tomatoes. Some growers have used chemicals such as chloropicrin to fumigate their seed beds, but then only a relatively small area is involved and the cost can be justified. Where the field is infested—and such infestation is on the increase in California—the grower has two routes open to him—hope or move to another field.

This does not mean that all hope for chemical control has been abandoned. On the contrary, workers at Connecticut Agricultural Experiment Station, for instance, have made promising progress. Their approach has been to develop systemic fungicides which will enter the plant system and kill the fungi there. Pending a successful systemic, however, breeding resistance into the tomato, the approach taken by Hanna, seems to be the most promising line of attack.

Breeding *Fusarium* wilt resistance started at Davis in 1940. At that time, a wild red current tomato resistant to *Fusarium* was crossed with Santa Clara, the leading commercial variety then in use in California. While this gave a resistant strain, the fruit was small and backcrossing with Santa Clara to gain fruit size was necessary. After three backcrosses, a fruit comparable to Santa Clara had been developed.

By the time these strains were ready

for distribution in 1945, however, a type known as Pearson had become popular with California growers because of its smaller vine (consequently easier to harvest). Small vines may have made Pearson the growers' favorite, but the large core was not to the liking of processors, requiring more processing labor and resulting in higher wastes. So Dr. Hanna had to start all over to develop a *Fusarium* resistant Pearson without a large core.

This task was more time consuming than discouraging, however, since sources of resistance were available. By 1952, Hanna had a number of small core strains resistant to both *Verticillium* and *Fusarium*. Some of them are equal to or superior to Pearson in such qualities as yield, earliness, fruit size, and color. But all, with two exceptions, have softer flesh than Pearson and therefore do not carry as well. An additional disadvantage is the fact that in all of them a high percentage of stems remain attached to the fruit at harvest, a situation not to the liking of processors.

"Soft fruit and adhering stems present the real difficulties to overcome," Dr. Hanna says, as work continues at Davis.

People

Dairy Research Labs Honors Five Scientists

Five members of the staff of the National Dairy Research Laboratories, Oakdale, Long Island, were honored earlier this month by their associates. **L. B. Hitchcock**, president of the laboratories, presided over the function and the laboratory's vice president, **A. H. Johnson**, presented the awards.

E. H. Freund and **G. H. Haugaard** were awarded fellowships to give them greater freedom of action in choosing their fields of investigation. Dr. Freund has worked on synthetic fibers, cellulose acetate films, plastics, emulsifiers, antioxidants, and lactose derivatives. Dr. Haugaard's work has been in the amino acids, carbohydrates, the glass electrode, and chromatography. He is probably best known for his work on the identification of protein-bound sugars.

E. G. Stimpson and **Harold Young** shared the National Dairy Research Laboratories' Achievement Award for their research in the application of enzymology to human and animal nutrition.

H. G. Harding was elected to the rank of senior scientist for his work on detergents and sanitizers.

Charles H. Fisher, director of the Southern Regional Research Laboratory was awarded an honorary doctor of science degree by Tulane University for his accomplishments as a teacher,

research chemist, and research administrator. Dr. Fisher is a member of the AG AND FOOD Advisory Board.



Laurence B. Hitchcock has resigned his position as president of National Dairy Research Laboratories. He has opened a consulting practice with offices in the Chemists Building,

50 E. 41st St., New York City. Dr. Hitchcock is a member of the Advisory Board of the JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY.

Edward T. Oleskie will become assistant extension specialist in dairy husbandry at the college of agriculture, Rutgers University, July 1. He has been teaching at the college for the past six months.

D. M. Doty has become assistant director in administrative charge of the analytical and physical and organic chemistry divisions and the analytical service laboratory of the American Meat Institute Foundation. Also appointed assistant directors are **C. F. Niven, Jr.**, and **B. S. Schweigert**. Dr. Niven will be in charge of the bacteriology, home economics, and food technology divisions. Dr. Schweigert will be in charge of the biochemistry and nutrition and histology divisions and in charge of research on hides and animal feeds.

Ernest Hart, executive vice president of the chemical division of Food Machinery & Chemical Corp., has received an honorary doctor of agriculture degree from Michigan State College.

Herbert N. Frank has been named manager of the new products development department of General Foods. Paul Elliott-Smith becomes assistant manager of the same department. Mr. Frank was formerly manager of staff operations for the sales division.



Harry B. McClure becomes executive vice president of the Carbide & Carbon Chemicals Division of Union Carbide. He has been vice president since 1944, having

joined Carbide in 1928 as a research fellow at Mellon Institute.

Sidney M. Cantor has resigned his position as director of research for American Sugar Refining Co. to open a consulting practice. His offices will be located at 1717 Spruce St., Philadelphia 3, Pa.