If waste disposal is the key element in spray irrigation with cannery wastes, how the cannery can combine waste disposal with another "crop" is indicated by operations of Lamb-Weston, Inc., Weston, Ore. Paul Lamb told those attending the conference that his company plans to combine cattle raising and spray irrigation of pea cannery wastes. Not only will cull peas and pea vines from the cannery serve as cattle feed, but spraying gives an excellent pasture for the cattle.

Where a cannery has no other way for disposal than some form of treatment, a more economical waste treatment should result by segregating various process step wastes and treating them according to their waste content. State College of Washington's Gene V. Leete says that a study of the Dayton, Wash., pea cannery of Green Giant Co. last year shows that much of the waste has a B.O.D. of about 500 p.p.m., a level which can generally be safely discharged to city systems. Leete found that blancher overflow and waste from spray reels account for about 5% of the volume of plant waste but actually account for 67% of the B.O.D. load. Separate treatment of these concentrated wastes could do much toward reducing the large volumes of wastes that need to be handled.

Detergent Insecticide. A fraction of a per cent of detergent in berry wash water may be the answer to thrip infestations (thrips are small winged insects about 0.04 inch long which plague both growers and processors of various cane berries). Such are the indications from a progress report given by J. E. Brekke, USDA's Bureau of Agricultural and Industrial Chemistry at Puyallup, Wash.

The apparatus consists of a tank for the detergent solution and an endless belt, one end of which is near the bottom of the tank and the other end of which rises out of the tank in such a way as to drop the berries into a regular shaker washer. Berries normally float, but the detergent causes them to become wet and fall to the tank bottom, where the belt picks them up and conveys them to the regular shaker washer containing clean water.

Food Packages Hold First Place as Subject for Improvement

Application of antioxidants to packaging materials prevents deterioration of packaged foods

CHICAGO.—A full two miles of exhibits, requiring the entire capacity of the Navy Pier, made this year's American Management Association's National Packaging Exposition the largest packaging show in history. Total attendance reached 27,700 by closing time on the fourth and final day, April 23, having exceeded preliminary estimates of 25,000 by late afternoon of the third day.

Probably in no other area is packaging more important than in the food field; aside from considerations of eye appeal to improve sales, packaging methods and materials applied to foods must meet rigid standards of cleanliness and nontoxicity and often must perform extra duties in the preservation of freshness and even of nutritive value.

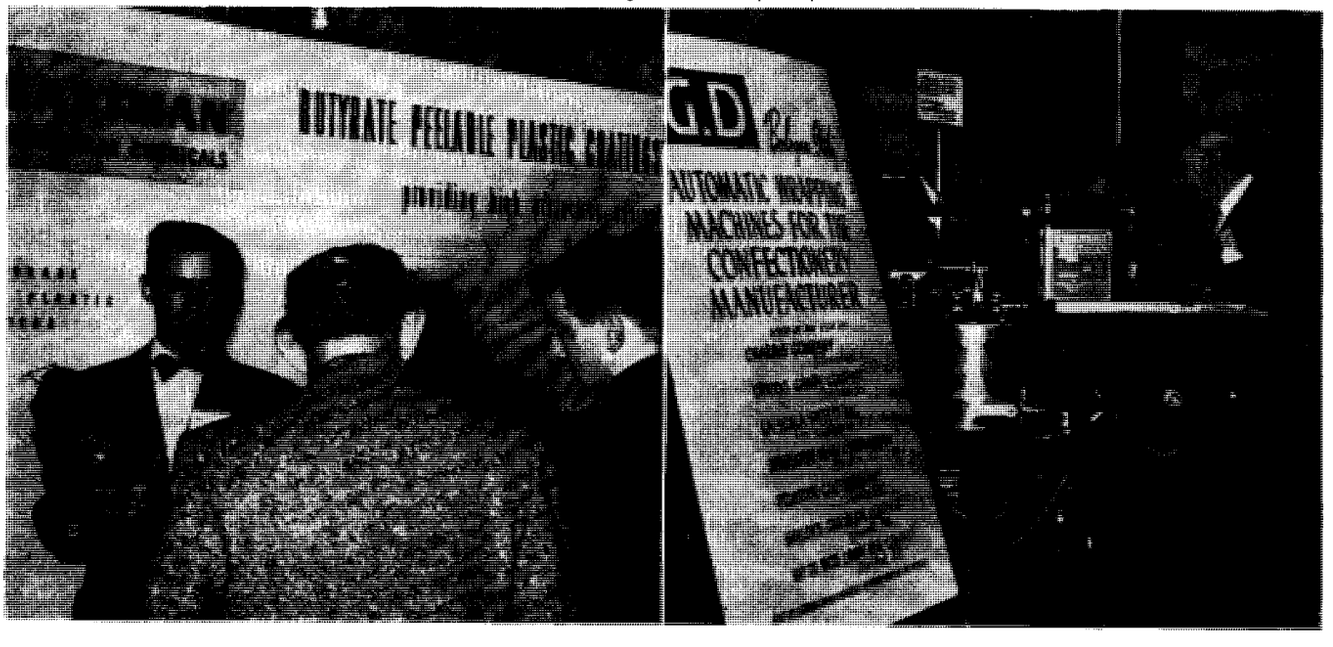
It was no cause for wonderment, then, that a large proportion of the 350 packaging displays should have been devoted to equipment and materials for improving the packaging of food products. From preservatives and processes to gadgets and gimmicks, every phase of food packaging was treated.

Antioxidants and Strippable Coatings. Two food packaging techniques of strong interest were presented by Eastman Chemical Products, in the use of antioxidants in wrapping materials, and the development of food-grade strippable plastic coatings.

The food-grade antioxidant, Eastman's Tenox, had been used for some time in such products as lard, vegetable oils, and potato chips, but its use in the material in which such foods are packaged has only recently become commercially practical. The antioxidant is applied as a stable emulsion to paperboard, vegetable parchment, glassine, or other papers or plastics, and thereafter serves as an oxygen trap to prevent degeneration of the packaged materials.

Eastman's strippable plastic coating is a pure form of its well-known butyrate. Eastman displayed hams which had been coated with the butyrate to afford protection while leaving the meat easily visible for inspection. Removal of the

Strippable transparent coatings move into food protection service. Right. All the way from Italy came GD'S high speed candy wrapping machines to attract confectioners with their capacity

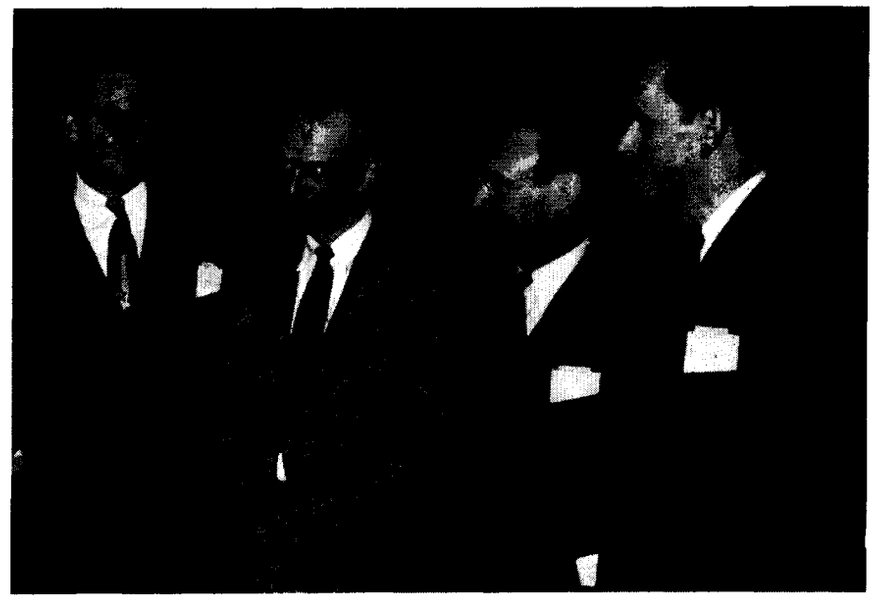


plastic coating is comparable to peeling a banana.

Polyethylene. Polyethylene continued to hold the spotlight as the most rapidly ascending of food packaging materials. In the last three years, according to George C. Miller of Bakelite Co., the amount of polyethylene used for packaging has increased approximately 260%; it is estimated that by 1956, packaging consumption of polyethylene will have risen another 365%. About 28% of the more than 10 million pounds of polyethylene produced each month now is used for packaging, and many applications are only now in the early testing stages. Some new uses offer large tonnage requirements; a polyethylene wrap for bananas alone could require as much as 10 million pounds of polyethylene per year, Miller stated.

In the packaging conference held in conjunction with the exposition, C. M. Woodcock of General Foods Corp. pointed out, however, that polyethylene should not be looked upon as a panacea for all the aches and pains of the packaging business. It will do many things better, perhaps, than any other material, said Woodcock, but some things it does no better than many competitive materials, and others it will not do at all.

Combinations of packaging materials are often the answer to specific problems, Woodcock said. The basic types of plastic packaging film—cellophane, polyvinyl chloride, Pliofilm, polyethylene, and saran—all have valuable properties, but each has drawbacks. Proper combinations, he observed, can minimize such drawbacks as handling difficulties or deficiency in certain functional properties. For a frozen orange juice envelope recently introduced, for instance, a combination of cellophane and polyethylene provided oxygen resistance and printability in the cellophane layer, and strength, low temperature properties, and weld-type heat sealing in the polyethylene portion.



Speakers at the ACS New York Section meeting were: Howard K. Nason of Monsanto, Firman E. Bear of Rutgers University, Charles G. King of the Nutrition Foundation and Columbia, and Conrad A. Elvehjem of the University of Wisconsin

Soil Conditioners Improve Utilization of Fertilizers

NEW YORK.—Of potential major significance to the agricultural and horticultural industries is the apparently improved utilization of fertilizers when added to soils treated with chemical soil conditioners, said Howard K. Nason of Monsanto Chemical Co. Speaking before the ACS New York Section on April 10, Dr. Nason indicated that, by the addition of 0.19% Krilium soil conditioner to properly fertilized soil, corn yields have been increased to 116 bushels per acre, where unconditioned soil produced only 86 bushels per acre. Where soils had received no fertilizer, the yield for Krilium-treated soil was 75 bushels per acre, for untreated soil, 68 bushels.

During the past 16 months, Dr. Nason continued, every effort has been made to chart the limitations of chemical soil conditioners. As a result of this deliberately realistic approach, it has been found that the moisture-retention characteristics of soils are not materially affected by treatment with conditioners. In addition, it is not reasonable to expect, he said, that soil conditioners will produce yield increases in the case of all crops. In some experiments at Ohio State University, for example, treatment resulted in a 40% yield increase in oats, but no increase in sugar beets on an adjoining plot. Yet it is accurate to emphasize, he said, that yield increases have been reported for a sufficient number of crops to warrant further intensive study of the yield increase–soil conditioner relationship.

Soil Chemistry. The importance of soil chemistry was highlighted by Charles Glen King of the Nutrition Foundation, who served as moderator of the New York meeting. The need for food throughout the world, he said, is both a quantitative and qualitative problem. Quantitatively, there is an ever-growing population that demands more and more food. Qualitatively, there is the urgent need for foods of increasing nutritional value. Dr. King went on to say that, of the major causes of death in the U. S., the first four are degenerative diseases related to nutrition. These are heart

On The Cover . . .

Man's Servant in the Study of Nutrition

MOST PEOPLE affected by agricultural and food chemistry probably consider the rat only an enemy or a competitor in the fight for food. But in laboratories throughout the world, thousands of rats, somewhat like the curious creature on the cover, are depended upon to guide the course of research work. What is the effect of a given amino acid imbalance in the diet? Studies on the rat will serve as a guide in the approach to human testing.

On the other hand, the producers of agricultural chemicals work constantly to produce more effective rodenticides. In fact, the very potent rat-killer ANTU was discovered by a research worker who observed that humans found α-naphthylurea either virtually tasteless or extremely unpleasant to taste. Curious to learn if such a variation in reactions existed in animals, he fed it to rats. They all died and a new rat poison, safe to humans, was found.

The rat is deeply involved in man's efforts to feed himself better.