NUTRITION

New Flavors for Feasts

New Unit for the Household Makes It Possible to Have Frozen Fresh Vegetables, Meats, Fruits for Holidays

By DR. FRANK THONE

THANKSGIVING and Christmas, the two great feasts in the American calendar, are close upon us. From our earliest days, both have called for well-laden dinner tables, and for variety as well as abundance, too. In the pioneer epoch, the proud housewife brought out her choicest preserves and pickles, to wedge in among the platters of meat and bowls of fresh vegetables.

Later, canned goods of all kinds increased the number of dishes.

Science's latest contribution to America's festal board (and to everyday meals as well) has been the frozen pack method, which permits the appearance of practically any meat, vegetable or fruit on the table at any season without loss of the full flavor and aroma of freshness. If you happen to fancy strawberry shortcake for dessert on Thanksgiving, instead of the day's traditional pumpkin pie, you can have your strawberries, fresh as the morning they were picked.

At present, the prevailing method of handling frozen foods is to sell them out of glass-walled refrigerator cases. The customer either prepares them immediately or stores them for a short time in the coldest part of her electric refrigerator.

Soon on Market

However, new household storage units have been developed, and will soon be on the market. These can contain as much as a barrel of assorted ready-packaged frozen foods, and are adjusted to the low temperatures necessary for long-time keeping. The purchaser can therefore lay in a very considerable quantity of provisions drawing on the cache as occasion requires.

This device is essentially a reduction to house or apartment scale of a considerably larger unit that has already proved a substantial success in country districts, the food locker. Food lockers are usually installed by rural refrigerating plants, to enable cooperating patrons to kill, freeze and store their own meat, and draw upon it when they want it. Whole beeves and pork carcasses are now being stored this way by thousands of farmers who used to have to sell their animals and then buy small quantities of meat over the counter, unless they wanted to live entirely on salt or smoked meat.

Frozen-pack foods already have an established and growing share of the American market, but their promoters (all of them enthusiasts) are not satisfied. They are constantly seeking new foods to freeze, and new ways to improve the ones already being commercially frozen. Research first made frozen foods possible, and research is being applied on a hundred fronts to increase their number and quality. Government and industrial laboratories vie with each other in making new advances.

Useful for War

Improvements which they are making today and will make in near tomorrows will have more than a festal significance, for provisioning the hosts of new soldiers and sailors now being added to the nation's defense forces will tax this new food-handling technique as well as older ones. And, incidentally, the frozen-pack method has already proved a major contribution to America's welfare, for it made possible the preservation and subsequent use of vast quantities of surplus foods that would otherwise have been unsalable during the worst days of the depression.

The frozen-pack method consists essentially in exposing foods to temperatures of an Arctic blizzard, so that a sudden stop is put not only to the action of germs of decay but also to that of their own internal digestive juices or enzymes. Cold checks them in physiologically fresh condition, and as long as they are held at a sufficiently low temperature they remain in that state of timeless youth—like Sleeping Beauty in the fairy tale.

The method was first applied to fish. Tradition has it that Clarence Birdseye, now a leader in the industry, was fishing through a hole in the ice during a bitter winter in Labrador. He noticed how the fish froze as soon as they were tossed out on the surface, and also that no matter how long they were kept that way they stayed unspoiled, and were as good as fresh when thawed out. (Some, it is said, even came to life again!)

Commercially applied, quick freezing proved highly successful with many kinds of fresh fish, with lobster and crab meat, even with oysters. It was successful, too, with meat—but with a difference. The sooner fish and other sea-foods are frozen after catching, the better, but meat must be kept for a certain period before freezing. This is because the self-digestive processes that always go on in tissues produce off flavors in sea-foods, whereas a certain amount of this gives the flesh of warm-blooded animals a better taste. The exact point at which meat and poultry should be frozen is one of the most interesting research subjects in the industry.

Government Pioneered

Vegetables and fruits entered the picture a little later. A great deal of research on these was pioneered at the Frozen Pack Laboratory maintained by the U. S. Department of Agriculture in Seattle, under the direction of H. C. Diehl, a well-trained plant physiologist. Now there are scores of frozen fruits and vegetables available, ranging from peas and beans to mushrooms, from red raspberries to the makings of cherry pies.

ALL IN THE HOUSE

The young housewife selects vegetables for dinner, out of the ample store in the well-refrigerated household cache of frozen foods.

FROZEN CANNED BERRIES

When opened in a U. S. Department of Agriculture laboratory they come out as fresh and flavorful as they were when the cans were sealed, months ago.

You don't just freeze any old thing, for the frosted-vegetable market. Some varieties give much better results than others, due to peculiarities of internal biochemistry. That is where plant physiology comes in. Also, probably, genetics; for it now appears likely that the best way to get first-class frozen vegetables and fruits is to breed them especially for the purpose.

Retail marketing of frozen foods is to a considerable extent a matter of attractive packaging, as is marketing of all kinds. Commonest, perhaps, is the simple rectangular carton, now frequently provided with a transparent window, so that the customer can see what she is getting. However, many other types of container are in use, including glass jars and tin cans. These latter, being liquid-tight, have particular advantages when fruits are being offered in their own juices or in syrups.

Fresh fruit juices are also being marketed in the frozen state. This offers considerable advantages over the older methods of handling in glass or tin, in many instances, for certain kinds of fruit juices lose flavor or vitamin content when heat-treated, as is necessary in bottling or canning. Moreover, you do not need to put ice cubes into your juice if you want to serve it cold: just dump a sufficient quantity of orange or grapefruit juice cubes into a pitcher, and when they have partly melted go ahead and fill up the glasses.

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MEDICINE

Cancer Fight Advanced by Success of Slow Neutrons

CURE of a certain type of cancer in mice by slow neutrons is announced by Dr. Paul A. Zahl, Dr. Franklin S. Cooper and Dr. John R. Dunning, of Memorial Hospital, the Haskins Laboratories, and Columbia University, in a report to the National Academy of Sciences. (*Proceedings,* Oct.)

This appears to be an important step toward the better treatment of human cancer which physicists and physicians have hoped would come from the atom-smashing cyclotron in which the neutrons are produced.

Fast neutrons, like X-rays, can destroy cancer but their usefulness in treatment is limited by the fact that they also destroy other living tissue. Slow neutrons, of the kind used in the spectacular splitting of the uranium atom, should be able to pass through the body with little or no damage to the tissues. When slow-neutron-capturing chemicals, such as boron or lithium, are injected in or around a cancer, the action of the neutrons on the capturing chemical should result in destruction of the cancer, while surrounding body tissues are unharmed.

Test-tube experiments with cancer tissue removed from the body showed that the boron-slow-neutron attack on cancer was five times as effective as a fast-neutron attack on cancer. This was reported by Dr. P. G. Kruger, of the University of Illinois.

The mouse experiments now reported by the New York investigators show the effectiveness of the slow-neutron-boron attack on cancer in living animals.

For any possible future use of this attack in treatment of cancer, the New York investigators believe that a better device than hypodermic injection should be developed for localizing either boron or lithium in the cancer tissue. Attaching lithium to large-particle colloidal dyes and injecting this into the veins is a promising improvement in the technic now being investigated.

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ENGINEERING

Diesel-Powered Buses Prove Good To Cross Continent

BUSES operated by Diesel engines have proved satisfactory in more than a year's service between Chicago and California, W. A. Taussig, of the Burlington Transportation Co., told the National Fuels and Lubricants Meeting of the Society of Automotive Engineers in Tulsa.

In the first few months of operation, during the summer of 1939, he said, a great deal of trouble was experienced with engine failure. However, these difficulties were overcome and changes were made in the engines to improve their service. As a result, 17 more buses were added to the original fleet of 21.

"A fuel saving of approximately 30% has been realized by the introduction of Diesels," Mr. Taussig stated. "While there have been some exceedingly discouraging experiences in the past, it now appears that the hardest part of pioneering is over, and unquestionably, in the future, more and more operators will avail themselves of the possibilities of fuel economies through Diesel operation."

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At the National Bureau of Standards, the most accurate of *thermometers* show an error of at least a twentieth of a degree.