

## Food preservation

Men have preserved their foods from ancient times in order to keep the results of harvesting for winter months, for resale, for storage, and for transporting from sea to inland, overseas, or cross-country. To do so, they generally used nature's methods, which are drying, parching and fermenting. Parching is the most natural method, but for many thousands of years, others have also been used. Direct fermentation of liquids, usually by the introduction of yeast, has not only preserved liquids but also enhanced their quality, the same of course applying to salting. Smoking has preserved, and sometimes improved both fish and meat. Hickory wood is generally used for the fires, and natural juices are contained by a slight coating of wood creosote.

It was not until recently that the causes of rotteness were understood, these being the reactions of bacteria, moulds, yeasts and micro-organisms. Some fermentation and moulds are, of course, necessary in the production of food and drink; moulds, for example, being used in cheese-making. But the real 'breakthrough' in preservation against the causes of rotteness came, when it was learnt how to deal with the micro-organisms present in all foods and drinks, and which react chemically over a period to produce unpalatable or poisonous food or drink. There are three basic methods.

Firstly, food may be preserved by cooling or freezing, to a very low temperature when long-term preservation is required. This was originally done by packing in a mixture of salt and ice; today, cold storage is big business and refrigeration is a highly-developed science. 'Dehydration' may be bracketed with this method, as the principle involved is the same, namely to suspend the operation of bacteria which requires normal temperatures for chemical reaction. This is why reconstituted eggs cannot be against dehydrated, and melted ice-cream refrozen. The second method of destruction is by heat-processes, which destroy all the bacteria present in food and drink. This process is used before canning foods in hermetically-sealed containers, great care being taken not to allow the foods or drinks to become re-infested after cooling and before canning. The third method is to preserve by the addition of chemicals, which control or destroy bacteria. This is merely a follow-up of the old systems of salting, smoking and candling.

Eventually, the method of 'cold sterilization' is expected to supersede most of the others; this amounts to exposing the food-stuffs to ionizing radiation.