

diately begin to produce alcoholic fermentation. Yeasts are carried in the air, and are found on most ripe fruits.

The yeasts reproduce themselves by a process of "budding," that is, every small cell appears on the surface of a mature cell, which rapidly grows larger until the size of the mother cell. During growth and multiplication certain enzymes are produced, the enzymes being substances of a chemical nature which decompose the sugars, alcohol and gas being produced.

BACTERIA.

These plants are much more minute than either moulds or yeasts, and can only be observed with a powerful microscope. Bacteria vary in size, but it may be said that from 10,000 to 15,000 can be placed end to end, and 30,000 to 50,000 placed side by side, within the space of one inch.

Bacteria reproduce themselves by fission, that is the cell divides into two equal parts. Such division, or reproduction takes place, under normal conditions, once every 30 to 45 minutes, and within 24 hours the progeny of one cell may amount to millions. As these bacteria grow they decompose the material upon which they are growing, such changes in foods being known as putrefaction or decay.

Many bacteria produce very hardy and resistant bodies within the cell, known as spores. These spores are surrounded by a heavy covering or wall, which makes them very resistant to heat, light and chemicals. They are formed by the bacteria when the conditions for growth become unfavourable, as lack of food, moisture, etc., and thus serve as a means of tiding the organism over conditions which would otherwise result in death. As soon as the conditions become favourable the spore germinates, an active cell is formed, and the rapid reproduction soon leads to the presence of millions of cells in the material.

Due to their light weight bacteria, and spores of bacteria, are very prevalent in the air, being carried about by air currents. If the air is heavily laden with dust the numbers are greatly increased, every particle of dust carrying hundreds of bacteria. Anything exposed to the air is soon contaminated with these minute organisms, and if the substance is favourable for growth, the bacteria are soon present in large numbers and make themselves known by the changes they bring about.

The souring of milk is due to bacteria entering from outside sources, on dust or dirt, etc. Putrefaction of foods is brought about by a similar cause. Canned goods are often spoiled by the action of bacteria.

PREPARATION FOR CANNING.

It has been shown that a single cell, or a single spore, can set up fermentation, putrefaction, or spoilage of foods. Also that everything the housekeeper works with, utensils and fruit and vegetables, carries the organisms. This is especially so with the fruits and vegetables. This being the case all care possible must be taken to remove as many organisms as possible and when the fruit is put in the jars those organisms remaining must be killed.

The first part is accomplished by thorough cleanliness; that is, dust and soil must be very carefully washed off the fruit or vegetable to be canned. By removing dust or soil the greatest source of contamination is removed, since these materials abound in spores and active cells. Bruised or cracked fruit should be avoided if