

You take a wheat grain and cut it, and in one part you will see the embryo or little plant, which is the point of germination. Take any seed and when examined you will always find a certain part we call embryo or young plant; but you never find an embryo in a spore. Another difference; when you put that little spore in the ground, germination is indefinite. By that, I mean that the spore has not a certain point from which it starts. Now, in the seed there is always a particular spot where the germ lies and from which the seed will start to grow.

*The nature of fungi* will now occupy our attention. Although not true for every one, yet I may make the general statement that in most cases after the spore germinates, it produces a lot of little threads. These interlace and pass in among the cells of the plant upon which the fungus is found, or among the material on which it grows.

Fungi either live on dead organic matter or upon living matter. It is not an uncommon thing for little suckers to dip down into the cells among which the thread-like structures grow. After a time in the history of the fungus spores are produced. As soon as that happens, you will find that from these little threads stalks grow up, each with a little round body at the end. That little structure may contain many spores inside of it. This is one of the ways a fungus produces fruit. There are a great many ways of producing fruit among the fungi, most of which are very wonderful and interesting.

There is a certain class, like the mushroom and toadstool, which grow on dead organic matter. They are called saprophytes. There is another kind, like the rust on the wheat and plum knot on plums, that live on living things; they are called parasites. We have considered the nature of fungi, let us now consider the third point in my chart.

*The different kinds of fungi.* It would take too long to discuss them in detail, but I shall endeavor to give you a general outline of the different types among these peculiar plants. There is nothing that comes home to the fruit grower more than the effects of these fungi upon his crops. I shall now refer to the different kinds, and avoid as far as possible the use of technical names.

The first are the slimes, more troublesome to the farmer than fruit grower, as they attack his turnips sometimes, causing the so-called "clubroot."

The next we notice is the great family of microbes. There are many forms in this group, which is now so much studied, because we find here the cause of many contagious diseases. It seems that we are surrounded on all sides by invisible enemies in the form of these microbes, all of which are exceedingly minute. We can overcome them by keeping in good condition, but if a person is in poor health he does not know at what time the microbe of typhoid fever or some other disease may take hold of him.

Some of these microbes are troublesome in the fruit growers' orchard. For instance, there is one that attacks the pear when affected with pear blight. These microbes are among the lowest forms of fungi. There is an oval type often associated with the rot. There is the unfortunate rod type that causes consumption. We find this not only associated with consumption, but also in a good many diseases. There is one that causes lockjaw; there is one that causes cholera, and there is also one that is often found in sewerage material. Each has a distinct shape and each disease has a specific form of microbe.

We now come to the moulds. If you take a piece of lemon and lay it aside for a few days in some warm place, like this room, you will find it will get covered with mould. Small stalks start up, little knobs grow at the end, each becoming full of spores.

*Mildews* may be divided into two types, the white and the brown. Let us first look into the white type of mildew. One is found on the grape and is called grape mildew. In this case you have all noticed that the under side of the leaf becomes covered with a web-like structure. If you take an affected leaf and cut a thin section and examine among the cells, you will see threads, and dipping down from these into the cells little suckers, which absorb nourishment from the host-plant. Out of the spores (*stomata*) in the leaves some five or six little stalks bearing on the end little round bodies, appear as the fungus develops. Now what happens? One of these oval bodies drops from the end of the stalk, if I may use the expression, and very soon after the contents commence to divide up, and roll out as rounded bodies. These develop a couple of hair-like appendages which enable the spores to move about to reach a suitable spot for develop-