

around country houses a fence that would make a good chicken yard if put in some other place, and these unsightly fences go a long way towards spoiling the appearance of the house. (Applause).

The SECRETARY: I do not see why all our fruit growers particularly cannot make their surroundings very attractive, somewhat after the suggestions made by Prof. Short. They are always planting trees and orchards around their places, but too often they set them off one side and fence them in by themselves when they might be made an extension of the surroundings of the house. They would form a good addition to the house-yard, and the land and garden surrounding the house might gradually unite with the orchards which surround them, and not be shut off by those palings or tight board fences we often see.

FERTILIZATION OF FRUIT TREES, AND SOME CAUSES OF FAILURE.

By PROF. FOWLER, OF QUEEN'S UNIVERSITY, KINGSTON.

The professor first showed a model or diagram of flower, and described its parts, calyx, corolla, stamens, anthers, pollen, pistil, ovary, etc. The stigma, he explained, is without epidermis and always moist, the only part of the organism which exposes living tissue. After describing its action and the effect upon it of external agents, he described the process of fertilization, and said:

To understand or explain the process of fertilization we must notice that the pollen grains of different plants are of different forms and of different sizes. So distinct are they that any one accustomed to examine them carefully can tell at a glance the kind of plant to which any specimens of pollen grains that may be presented to him belong. The grains may be smooth, rough, dotted, covered with prickles, ridges, etc., and they may be dry or moist, attached to each other, or light and separate. Each grain is covered with two coats or membranes, the outer coat being perforated with one or more pores or openings. In the pollen of wheat there is one pore, in the Evening Primrose there are three, and in some plants the number reaches eight. When a pollen grain is placed in water, especially if the water is sweetened, it swells by the absorption of the liquid; its membranes expand and the internal one protrudes through pores in the outer one. (A diagram was shown in illustration). When one of those grains is placed on the moist surface of the stigma, it absorbs moisture and begins to expand; the interior membrane gradually pushes its way through one or two of the pores in the interior coating in the form of delicate tubes which lengthen by degrees and penetrate the substance of the pistil. Each tube elongates and grows by absorbing nourishment for the pistil and insinuates itself into cellular tissue of the style, and traversing its whole length, penetrates the ovary and comes into contact with the ovules or young seeds. Each ovule possesses a small opening (the micropyle), through which the pollen tube passes till it reaches the embryo sac, into which its contents or a part of them containing germinative cells pass and produce the effect which is called fertilization. In many cases a few hours or days are sufficient for the pollen tube to reach the ovule, but in some plants months are required. The ovule now acquires a new character and begins to grow.

In some cases the ovules may grow and attain the size of seeds without being fertilized, but they have within them no living germ and are incapable of independent life and growth. Unless they receive the germinative cell from the pollen tube they soon wither and die. This point I wish specially to emphasize, that without the action of the pollen, no seed would set and no fruit be produced.

Our next point is how does the pollen reach the stigma? (The professor here illustrated the difficulty on the diagrams.)

The botanists of the last century and the first sixty years of the present one held the belief that the adjustments in flowers possessing stamens and pistils were such on the whole as to secure the application of the pollen to the stamens of its own pistil. It was