

until it comes to the wood. It there remains feeding upon the soft outer layers of the wood, and thus excavating a shallow round cavity under the bark, the size of a half dollar; though where two, three or more worms are lodged in the same tree, as they always preserve a narrow partition between their cells (one never gnawing into that of another), the cells, by crowding upon one another, become of an irregular form, and almost girdle the tree. The cell is always filled with worm dust, crowded and compacted together, some of which becomes crowded out through a crack in the bark, or through a hole made by the worm; and it is by seeing the sawdust like powder protruding from the bark that we detect the presence of these borers in the tree. The worm continues to feed and enlarge its cell under the bark for about twelve months, until it has become half grown, and from a half to three-fourths of an inch in length. Its jaws have now acquired sufficient strength for it to attack the solid heartwood of the tree, and it accordingly bores a cylindrical hole from the upper part of its cell, upward to the solid wood, to a length of three or four inches or more, this hole inclining inwards towards the centre of the tree, and then curving outwards till its upper end again reaches the bark. It then stuffs the upper end of this passage with fine chips of wood, arranged like curled locks of hair, thus forming an elastic bed on which to repose during its pupa state. These operations being completed, it throws off its larval skin and becomes a pupa, usually at the close of the second summer, or about fifteen months after it is hatched from the egg. In this state it lies through the winter, and changes to its perfect form the following spring, but often continues to be dormant several weeks after its final change. Awakening then into life and activity, it crawls upwards, loosening and pulling down the chips and dust that closes the upper end of its burrow till it reaches the bark. Through this it cuts with its jaws a remarkably smooth round hole of the exact size, requisite to enable it to crawl out of the tree. The sexes then pair, and the female deposits its crop of eggs.

Various remedies have been prepared to prevent the beetle from laying its eggs in the bark. A mixture of tobacco water, soft soap, and flour of sulphur, applied to the bark in the form of a wash; or soft soap alone, used in the same way, has been attended with partial success. The application should be made towards the end of spring, and repeated for a few weeks if washed off by rains. But the best and most perfect remedy is the examination of the tree, and the destruction of the young insect as above described.

Liquid Grafting Wax.

Mr. L. Houme Lefort invented, not many years ago a grafting composition which is very cheap, very easily preserved, and keeps, corked up in a bottle with a wide mouth, at least six months unaltered. It is laid on in as thin a coat as possible by means of a flat piece of wood. Within a few days it will be as hard as a stone. It is not affected by severe cold; it never softens or cracks when exposed to atmospheric action. When applied to wounds in trees, it acts as an artificial cuticle. After a few days exposure to the atmosphere in a thin coat, it assumes a whitish color and becomes as hard as stone, being impervious to water and air. As long as the inventor kept the preparation secret, it was sold at very high prices. It is made after this formula: Melt one pound of beef tallow, and stir it well; take it from the fire; let it cool down a little, and then mix with it a tablespoonful of spirits of turpentine, and, after that, about seven ounces of very strong alcohol (95 per cent.), to be had at any druggist's store. The alcohol cools it down so rapidly that it will be necessary to put it again on the fire, stirring it constantly. Still the utmost care must be exercised to prevent the alcohol from getting inflamed. To avoid it, the best way is to remove the vessel from the fire, when the lump that may have been formed commences melting again. This must be continued till the whole is a homogeneous mass, similar to honey.

This is undoubtedly a valuable recipe. I have heard that gum shellac, dissolved in alcohol, was one of the most useful of preparations that a gardener could have, and it should always be kept on hand and used like paint, to coat over any wounds in trees. In budding, it is a good saving of labor when you wish to cut away branches to give the new one from the bud an opportunity to grow, as it excludes the air until the wound heals.

Orchard Grass.

We have had more enquiries about orchard grass. Is it hardy? Is it good for pasture? Is it good for soiling and for hay? It is hardy—it is indigenous in Canada, and so it must be well able to endure the climate. We have not seen the Cocksfoot (orchard grass) in some years—not since we left Europe—till we met it growing among other natural grasses and weeds in the angle of a snake fence, here in the county of Middlesex. It had been self-sown, grown without culture, eaten close and tramped by the hoofs of cattle; it had borne the scorching heat of the dog-days and the frigid cold of the winter; and despite all, it continued growing and flourishing. It is a perennial, not short-lived, as some other grasses, and maintains possession of the ground till ploughed or dug out. It is good pasture. It starts earlier in its spring growth than any other grass. After eaten close to the surface it is again fit for pasture in a very short time. It stands the drought remarkably well, and it bears frequent cropping or cutting. It is succulent and nutritious, but must not be allowed to grow too strong before it is cut down, as the stem might become hard and tough. If cut for soiling, it will give two or three heavy cuttings in a season. A farmer who grows it says he can keep a cow on a half acre of orchard grass during the summer, and have some hay for winter use on the same plot of ground. This must, we think, be taken to be an exceptional case. The farms must be few on which the yield of orchard grass, though more productive than any other grass, will afford pasture for a cow to the half acre, and have some to spare. If cut for soiling it will do all that is claimed for it. It makes good hay, but it should, for hay, be cut before it is ripe, and then the stalk becomes hard and fibrous, and is less nutritious. Ripening the grass is, besides, injurious to the future growth of the plant.

English Oak Trees.

We have before us a statement of an English planter that he has two acres of oak timber, planted in 1845, now with trees fifty feet high. We have seen English oak do better than that in this country, and believe the timber, from some few observations we have made, to be better than any of our own species. We believe the time will soon be when a plantation of English oak will be one of the most profitable parts of one's farm. In less than ten years it would play no small part in fencing.—*Gardener's Monthly*.

I find that all tar compositions do more harm than good. They form a waterproof covering, it is true; but if the surface is broken and the water once gets into the wood, the tar covering prevents its exit.—*English Mechanic*.

Poultry Yard.

Eggs and Chickens.

An egg is a little house filled with meat, containing also the germ of a new life, provided with an air-chamber for the perfection and vitality of this life. (I had been told that an egg without an air-chamber visible would never hatch; I tried it, but it did hatch.) An egg consists of white and yolk. Properly speaking, there are two albumens or whites in a newly-laid egg. The first is thin and watery; the second consists of a thicker fluid, more jelly-like, which serves to hold the yolk in place, which in a new egg is the centre of the whole mass, with two threads reaching out lengthwise through the second albumen. The shell is furnished with minute pores, which convey a certain moderate degree of moisture and air to its contents, which keeps the embryo germ in a natural state. The shell is lined with a thin skin, which in all fresh eggs is of a delicate sea-shell hue. During the process of incubation their skin thickens and toughens, and grows stronger than even the shell itself, holding the moisture about the growing body. This skin is soft and elastic, while the shell grows more stiff and brittle and smooth. The air-chamber is situated between this skin, or sack, and the shell, and in a newly-laid egg is about the size of a three-cent piece in some; in others not larger than a pea, while in others it cannot be discerned; still the egg will hatch. If an egg be taken in the hand, between the thumb and two forefingers lengthwise, placing the thumb on the small end and the fingers on the large end, and

turned slowly around in front of a strong lamp, or candle-light, the air-bladder will be discovered. In the course of a week this air-bladder enlarges, and at two or three weeks attains the size of an old-fashioned penny. Such eggs will be thin and watery, not fit for boiling, and their incubation very questionable. It would be well for those purchasing eggs of precarious dealers, to give a thorough examination before setting, when they purchase them for fresh eggs. Eggs will hatch when three or even six weeks old, in cool weather, if only fertilized and not allowed to become chilled; but, as a general rule, success is not certain with old eggs.

There is no established theory whereby the sex of the egg can be determined before hatching. I had heard that if the air-bladder be directly across the top or crown of the egg, the chick would be a cock; if considerably at one side, the result would be a pullet. I experimented on this theory pretty effectually the past season. I set only those eggs having the bladder decidedly at one side, discarding those directly over the crown. The result was as near and decidedly one-half male, and the other female, as one might wish, where I expected only females. I exchanged a sitting with one of my neighbors, giving him what would be termed all cock eggs, with the air-bladder evenly balanced all around on the top. He hatched five chicks, only three of which proved to be cocks. This was farther and decided evidence, which went to convince me that no dependence whatever can be placed on the bladder theory. This experiment was tried with Brown Leghorn eggs, and the parent birds were both young. Some years ago I raised a brood of twenty-three Spanish chicks, twenty-one of which proved to be pullets. I did not pick the eggs, but set them as they were laid. I have never met with such luck since. I had a fine flock of breeding hens, and a magnificent cock. Both hens and cock were of an age—two years. I find, where a majority of pullets is desired, it is more successful to breed from old birds, and from those as near of an age as possible. They give finer, stronger, larger chicks, that better withstand the diseases to which early chickenhood is more or less subject.

In selecting birds for breeding purpose, secure only the very best, discarding all weakly ones and those with bad or indifferent points. Mature birds give larger eggs, and the chicks will be more uniform in size and plumage. When long silvery hairs are discovered extending beyond the feathering on the thighs and lower part of a bird, be assured it is a direct indication of health and hardiness. I have observed that long-pointed eggs do not hatch as much per cent. as short, round ones; they are very seldom fertilized. Why it is so I have never yet been able to ascertain for a certainty, but have attributed it to some weakness of the bird producing them, which renders her incapable of breeding. The shape is rather unnatural. Eggs that are gathered for the purpose of setting should be as even-sized as possible, and if placed under the hen before the animal heat escapes, will hatch a day earlier, and produce better, stronger birds. Where one has a breeding flock of twenty or more hens, this can readily be done. Birds laying eggs for hatching should not be kept in too high a condition or forced. If so, the eggs are not so well fertilized; the shells are apt to be thin, and consequently cannot go through the period of incubation.

Hens should run at large as much as possible where it is convenient, and they are not in danger of the approach of breeds different from their own, or exposed to an indifferent cock. This must be avoided. With the black Spanish, one active cock is sufficient to impregnate the eggs of twenty hens; the smaller, early maturing breeds, about eight or ten is the limit.

Turkeys and Ducks.

The sunflower seed is used extensively in the best Western henneries for fattening turkeys and ducks. It has been observed that fowls carefully fed on this seed and fattened for the holiday market in the Western States, are tenderer, sweeter, and command a higher price than those which are fed on other food.

No soil or climate in the world is better adapted to the cultivation of the sunflower than that of California, especially the southern counties. Fine hedges can be made of the plant as well, and the seed may be used profitably for feed. People who complain of the lack or high price of feed for their fowls, would do well to try this experiment.