

dust castings should be renewed at intervals through the fall, winter and early spring, so that none of the borers shall escape.

The BARK-LOUSE (*Aspidiotus conchiformis*). In every part of the Province this destructive pest may be found. Its appearance is that of a minute scale, in form like a muscle or an oyster-shell (hence the name *conchiformis*, shell-shaped), adhering to the bark of the tree. It is about an eighth of an inch in length, colour brown, or nearly that of the bark; and, in the winter and spring, will be found to cover from a dozen to a hundred eggs. Towards the end of May these eggs are hatched, and the young larvae scatter themselves over the tree. These, after feeding on the juices of the tree, are changed into pupae, and then into the perfect insect, the males only having wings, and, after pairing with the females, perish, while the females remain on the tree. Their bodies dry up and form the scale covering the eggs that subsequently are hatched into another generation. The best remedy for these insects seems to be a sort of paint, made by boiling leaf tobacco in strong lye until it becomes an impalpable pulp, and then mixing with it cold-made soft soap (which is ropy, not the jelly-like soap) until it is about as thick as paint is usually applied, and, with a paint brush apply it to all parts of the tree where these bark-lice are found, before the buds swell in the spring. If this be carefully and thoroughly done, the bark-lice will be surely killed, and the tree will make a thrifty growth.

The TENT CATERPILLAR (*Clisiocampa Americana*). This enemy of our orchards is also distributed throughout the Province. As the buds of the apple trees burst and the young leaves put forth, the young caterpillars are hatched on some warm damp day, and creeping out of the eggs feed upon the soft glutinous substance with which they are covered. When this is consumed, they move down the limb, and selecting some convenient fork, spin a web or tent. This tent is their place of abode, from which they go in search of food, and to which they return when they are satisfied, all going out and returning together in regular procession. When full grown, they are about two inches in length, color deep black with a white stripe extending along the back, and on each side of this stripe are numerous, irregular yellow lines, and a row of pale blue oval spots. About this time they leave their tents, and are scattered about seeking some secure place in which to spin their cocoons. These are oval, pale yellow, loosely woven, and the meshes filled with a fine powder resembling sulphur. In this cocoon the caterpillar changes to the pupa state, and from the pupa comes forth the moth, which works its way out at one end of the cocoon. The moth is of a dull reddish buff colour, with two parallel, nearly white stripes, or bands, running obliquely across the fore wings. Early in July they are the most abundant, and in a few days after they come out of the cocoons, the females lay their eggs upon the twigs of the trees in a broad belt, usually encircling the twig, and cover them carefully with a thick coating of glutinous matter, which serves to protect the eggs until the next spring, and then become the first food of the newly-hatched caterpillars.

The best method of destroying these insects is to search the orchards carefully early in the spring, before the buds are swollen, and take off all the belts of eggs from the twigs and burn them. These belts will be found from one inch to twelve from the end of the shoot, and as there are about three hundred eggs in a belt, the gathering of these is a very rapid way of destroying the insects. Yet some will probably escape observation, and it will be necessary to pass through the orchard just as the young leaves make their appearance, and search for the webs or tents in the forks of the branches, and by means of a light ladder ascend so as to be able to grasp the nest in the hand, which may be covered with a good thick buckskin mitten, and crush the worms. It will be necessary to go through the orchard several times, until every tent is destroyed and there are not sufficient stragglers left to form another.

There is another caterpillar much resembling the foregoing, which sometimes gets into the apple orchards, and which was very abundant during the past summer (June, 1868) in the orchards between London and St. Thomas. This caterpillar is *Clisiocampa Sylvatica*—the Forest Tent Caterpillar, and may readily be distinguished from its congener by the row of white spots along the middle of the back. Its nests or webs are not placed in the forks of the branches, but along the side of the trunk or of some of the larger limbs, and is of so slight a texture as to be seldom seen. When nearly grown, they congregate together upon the trunk or some large limb when at rest, and may be then killed in a body. Fortunately they very seldom appear in such legions innumerable as swept over the orchards near St. Thomas last June; but when they do come, the only possible method of saving the orchards is to make a business of killing the caterpillars.

The Codlin Moth (*Carpocapsa pomonella*). This little insect does not feed upon or in any way injure the trees or their foliage, but when numerous make sad havoc with the fruit, causing it to drop prematurely, and disfiguring it with their burrows and rendering it useless. The perfect insect or moth is quite small, yet one of the most beautiful of a beautiful tribe. The expanded wings will scarce extend over three-quarters of an inch; the fore wings are crossed with numerous grey and brown lines, most beautifully scalloped, giving at a little distance the appearance of a watered silk, and near the hind angle of each of the fore wings is a dark brown oval spot, edged with a bright copper color. The hind wings are a light yellowish brown, as lustrous as satin. During the month of July these moths deposit their eggs in the cavity at the blossom end of the fruit; in a few days these are hatched, and the little caterpillar eats its way into the apple to the core, where it feeds upon the fruit until it has attained its full size, at which time it is of a light pink or flesh color. About this time the fruit usually falls to the ground; the caterpillar soon after makes its way out of the fruit, seeks a hiding place, very frequently under the rough bark of the tree, and here spins a thin silken cocoon, like very fine tissue paper, in which it changes into a chrysalis. Some of these are hatched in a few days, and the moths which come out of them lay their eggs in the blossom end of the fruit that had escaped before, and from these eggs is hatched a second brood of caterpillars, many of which find their way into our fruit cellars in the apples. Yet the greater part probably remain in the cocoon all winter, and do not come forth as moths till the following spring.

The remedy for these fruit eaters is to destroy them. This can be done by gathering the fallen fruit every day and using it in such a way as to kill the caterpillars within, or by allowing swine to run in the orchard and devour the fallen fruit. Also by placing pieces of old carpets or other cloths in the forks of the trees, or twisting a straw band around the trunks of the trees, for the caterpillars will seek these as convenient hiding places and here form their cocoons, where they can be easily found and destroyed. Also by building numerous little fires in the orchard about the end of June and during July, for these and many other moths, attracted by the light, will fly into the flame and be burned.

VARIETIES.—A large part of the Province is well adapted to the culture of the apple, and with the exception of the very cold and exposed sections, nearly every variety can be grown. Yet the really valuable varieties are not many, and those that are profitable to the orchardist are still fewer. Of course there will be personal preferences, and as tastes vary very much the nurseryman's list is necessarily large, so as to meet the various and often conflicting wishes of his customers; but he is by no means a wise man who plants a tree or two of every variety he finds in the catalogue, and he will wish when they come to bear that his collection was more select. It will usually be found that an orchard for family use, comprising the following varieties, will give good returns in fruit and furnish a supply throughout the season, namely:—For summer, the Early Harvest and Red Astracan as sour apples, and the Sweet Bough; for early autumn, the Duchess of Oldenburgh; Gravenstein, Primate, and Jersey Sweet; for late autumn and early winter, the Ribston Pippin, Hubbardston Nonsuch, Fall Pippin, and Snow Apple; for mid-winter to March, the R. I. Greening, Northern Spy, Esopus, Spitzenberg, Pomme Grise, and Talman Sweet; for spring, the Golden Russet and Roxbury Russet. With these varieties there will be plenty of good apples until the strawberries ripen.

For market, the most profitable varieties are Red Astracan, Duchess of Oldenburgh, Gravenstein, and Hubbardston Nonsuch, ripening in the order in which they are named, for a near or home market; and for shipping, the R. I. Greening, Baldwin, Golden Russet and Roxbury Russet, will yield the largest pecuniary returns.

In the colder parts of the Province, those parts that are removed from the influences of our large lakes and rivers, it is necessary to plant the hardier varieties. The following will probably succeed well in any part of the Province, and will give a succession of really good fruit, namely, the Red Astracan, Duchess of Oldenburgh, Saint Lawrence, Snow Apple, Borassa, Pomme Grise and Golden Russet. If there be any spot so chill and inhospitable that these varieties will not thrive, recourse must be had to the still more hardy crabs, of which the Yellow Siberian, Golden Beauty, Montreal Beauty, Transcendant and Hyslop Crabs, are the best.

HARVESTING.—A little care and expense bestowed upon the gathering and putting up of apples intended for market or for winter use will be found to be a very profitable investment. The fruit should be carefully gathered by hand, so that it shall not be bruised, and then should be carefully sorted. Usually

it will be found most profitable to make three grades, the first composed of fair, full sized, perfect fruit; the second of the sound but smaller sized apples; the third of inferior sized, knotty, scabby, wormy or imperfect specimens. The first grade will bring the very highest price, the second may either be kept for home consumption or sold at as much or more per barrel than could have been obtained for the lot unsorted, and the third may pay to make into vinegar. A reputation once obtained for putting up apples according to quality will cause that brand to be sought after, and secure a ready sale at the best prices. A little practice will enable one to barrel the fruit securely, first paving the bottom, and gently shaking down as the barrel is being filled, and pressing in the head with just enough of pressure to keep the apples from shaking in the barrel. After securing the hoops, the barrel should be marked on what was the bottom, so as to be opened from that end, then laid on the side and kept in a cool place, under cover from sun and rain, until put into the cellar or sent to market. A dry cellar, that can be kept as near as possible at a temperature just above freezing, is an excellent place in which to keep apples through the winter.

Thus it will be seen that, in order to secure a good crop of profitable apples, there must be care, watchfulness, labor and judgment exercised from the first preparation of the ground for planting to the final disposition of the fruit; and so the motto of this essay shall be: "The price of good fruit is eternal vigilance."

Mr. Arnold's New Grapes.

The following opinion of these grapes by the Rev. Henry Ward Beecher, who is a thorough judge of fruit, will probably interest some of our readers.

"The box containing five varieties of grapes and two of raspberries came safely, with the fruit in excellent condition. Accept my thanks for your kindness.

"I have duly and properly examined the specimens, and am much pleased with the whole lot.

"The raspberries, for fall bearers, must be valuable. The yellow is not inferior to the Brinckle's Orange in sprightliness, and only a little inferior in richness. The red, too, is tender and juicy.

"Of the grapes I find No. 2, *Cornucopia*, hardly ripe enough, I imagine, to disclose its full merit, slightly foxy, pulp tending to break up in the month. I should think good wine could be made of it.

"No. 1, Othello, is good, with just a nice trace of mild flavour, solid meat, or jelly-like, but sweet skin.

"No. 16, Canada. This is a really good grape, melting, sprightly and sweet—I should have said good enough, if you had not sent with it No. 8, Brant, which I think the best coloured grape of the five, and as good a grape as one should desire. The pulp has nearly disappeared in this, and juice takes its place. I can easily imagine that one might strive in vain to choose between 8 and 16, and at last end in taking both.

"No. 5, the White Grape (Autuchon) has unmistakable Chasselas blood in it, and as tender (if I remember Chasselas aright), a sub-acid dash in it—a mere suggestion of sour, which I think finer than Chasselas.

"Judging simply from the specimens sent, if I were shut up to the choice of one, I would take No. 8, but on the express condition that No. 5 should go with it.

"I regard all of them as decided acquisitions, but Nos. 8, 16 and 5 as great horticultural treasures."

New York State Grape Growers' Exhibition.

We extract the following account of the New York Grape Show, of which we have previously given intimations, from the *Boston Cultivator*:—

"The first Annual Exhibition of the New York State Grape Growers' Association, held at Canandaigua on the 7th and 8th of October, was pronounced by distinguished horticulturists the finest show of grapes ever witnessed in this country. We have never before made as large a collection of varieties, and kinds that heretofore have only scantily appeared on exhibition tables, were here in profusion. Eighty-one exhibitors spread their collections on the ample tables, and, including seedlings and a few kinds of hot-house grapes, the varieties numbered something more than one hundred. Judged by this Exhibition, New York would be placed in the front rank of grape-growing States, a position she justly merits, not only by reason of the extent of vine culture within her borders, but for the uniform health and high productiveness of the grape in the same limits. Also in the manufacture of those important products of the