

GARDEN & ORCHARD.

HORTICULTURAL PROGRESS.

Prepared for "The Farmer's Advocate" by W. T. Macoun, Horticulturist, Central Experimental Farm, Ottawa.

THE CONTROL OF PEAR BLIGHT.

Report of the Plant Pathologist, Ralph E. Smith, to July 1st, 1906, Agricultural Experiment Station, Sacramento, Cal.; Bulletin No. 184.

Every fruit-grower in the pear districts of Canada should be interested in this bulletin, which not only treats of pear blight, but of many other diseases with which the fruit-growers of California have to contend. It is, however, the account of the work of controlling the pear blight which is of the most interest to us. During the past few years thousands of dollars have been lost to fruit-growers in the Province of Ontario from the destruction of their pear trees by this disease. The blight is a bacterial disease, which cannot be controlled by spraying. Infection takes place through the flowers and tender shoots of the trees, or through injured places in the bark, insects being principally responsible for its spread, as they carry the germs from one tree or branch to another. Once the disease gains an entrance beneath the bark it is impossible to reach it with a spray. The germs or bacteria multiply by division very rapidly, and if conditions are favorable the disease soon spreads through the orchard, often killing whole trees, while at other times merely destroying branches.

The pear is one of the most important fruits grown in California, there being immense numbers of trees there; hence when the blight began to attack the trees in the chief pear centers in 1904 great alarm was felt. This alarm has been justified by the great ravages the disease has already made in the orchards. The California Government, recognizing the great peril in which the pear orchards stood, voted \$10,000 for the investigation and control of this disease. This money became available in 1905, and since that time there has been a regular campaign against the pear blight. With the advice and aid of Prof. M. B. Waite, of the Department of Agriculture at Washington, who has made a special study of the pear blight, together with twelve other assistants, the Plant Pathologist of the California Station, Prof. Ralph E. Smith, determined to stamp out the disease. As the life history and treatment for the pear blight had been well worked out by Prof. Waite, the method of control which he recommended was adopted. This consists "in inspecting the trees carefully in winter, cutting off all the affected branches below the point to which the disease has extended, and disinfecting the cut surfaces and the tools with an antiseptic solution. (The antiseptic recommended is one part of corrosive sublimate to one thousand parts of water.) Trees in which the butt is affected are condemned and removed. The method also insists on keeping the butt and main limbs of the trees free from all sprouts and fruit spurs (as these are vulnerable points of infection); recommends a certain style of pruning (a branching or vase-shaped top rather than a pyramidal one, so that if one branch is affected the others stand a good chance of escaping), and advises as much moderation as possible in cultivation and irrigation, since a rapid growth of the tree favors the disease. Cutting out the blighted twigs as they appear in spring and summer is recommended with some reserve, the danger being that at this season, when the disease is active, careless cutting or disinfecting may spread rather than eradicate the blight. Particular stress is laid upon the necessity of complete eradication of the blight in large districts rather than single efforts in individual orchards."

Up to July, 1906, no less than 647,300 pear trees had been inspected, and if the co-operation of the growers could be obtained, as it was in most cases, the diseased trees were treated. In this work it was found that it was not enough to simply walk through an orchard looking for blighted limbs, but each assistant or inspector was provided with a gouge or chisel, and a thorough examination of the trunk of every tree was made, as the blight is often hidden in winter.

Following are the results and conclusions reached, which should lead pear-growers in Ontario and other parts of Canada to take some combined action in eradicating the pear blight:

1. That thorough work in winter eradication prevents blossom infection in spring.
2. That the larger the district which can be covered in winter the less will be the infection next spring, and all the infection will come from blight which remained over winter.
3. That so long as sources of infection remain over winter, producing infection even in well-worked orchards near by, frequent, prompt summer cutting and removal of butt sprouts and spurs must be practiced in order to prevent serious damage and loss of trees.
4. That if not exposed to extremely abundant infection from neglected trees near by, a pear orchard can be profitably maintained in good condition and cultivated, pruned and irrigated in the manner necessary to secure a crop, by thorough winter-blight work and prompt summer cutting and sprout removal. The farther away the blight can be held the less will be the trouble.

age for ten years; and in its whole successful history not one of its users has suffered one cent's loss through leakage. But it may leak—the writer of the article says he once had a hot-water incubator which did leak; ergo, every hot-water incubator leaks. To such an amazing postulate, I, as a maker of hot-water incubators, might reasonably enough point out the countless losses that have resulted from hot-air incubators catching fire. And I might with equal reason deduce that every hot-air incubator is a menace.

But I do not do such thing. I know, as every reputable and honest incubator maker does know, that as between the best of hot-air machines and ours there is no such wide gulf of merit fixed that we may not grant the other certain excellencies. The issue between ours and the hot-air method is one of principle, of mechanics. We maintain, and we have sufficiently proved, that hatching by radiated warmth is more efficient, more economical, and more trustworthy than hatching by diffused heat (the hot-air method). The question is by no means finally settled. It will, probably, never be finally settled, since it can never be possible to hatch the same lot of eggs twice, nor to hatch any two lots of eggs by different methods under precisely identical conditions.

But, in so far as comparative tests go, in so far as actual comparison can demonstrably be carried, our hot-water method has, decidedly, obviously, and profitably, the best of the argument. The question of artificial incubation is primarily one of even heat, of simplified operation, and of results, cost as compared with results produced, dealing with averages. Again, the Peerless justified its name; and it does this on the very face of the article you reprint. For example:

In the 9th paragraph of that article, in the second column of page 530, the writer you quote says, referring to eggs placed in his favorite hot-air incubator: "Those in the center of the egg chamber, where the temperature is slightly higher, lying furthest from the source of heat." This "slightly-higher" temperature contravenes with the first fundamentals of correct artificial hatching, which is, as I understand it, to simulate as closely as may be, the natural method—in which the temperature is not slightly higher in any part of the nest. Every hot-air incubator has, and must have, its hot and cold spots. But in our hot-water incubator the temperature everywhere in the hatching chamber is identical—as it should be for right hatching. It cannot help being so—just as no hot-air machine can help being otherwise.

Again, the article you quote states (paragraph 12, 3rd column, page 530) that "there is a period in each hatch when moisture is absolutely necessary, namely, at hatching time." Doubtless this is true of certain wrongly-built hot-air machines; and it is true because the heating method of these incubators so robs the embryo chick of its moisture that extraneous means must restore the balance. But I would remind you, and your readers, that the most eminent authorities on embryology and on artificial incubation have long ago reached the final conclusion that the egg itself contains all the moisture needed to hatch any fowl properly.

That machine which requires additional moisture in any climate, is built wrong, and cannot hatch right. Our machine uses no moisture at any stage of hatching; and it has made hatching records which have yet to be excelled.

But, says the writer you quote, a hot-water machine once leaked. My answer to that—the one possible answer—is that the Peerless, at least, does not—and under any normal usage, cannot—leak. On page ten of our catalogue you will find this asserted as follows:

"We further guarantee this incubator, with ordinary usage, to develop no leakage in its heating tank or pipes within ten years from the date below, under penalty of replacement free of charge." Remove this objection after this fashion; cite the fact that the Peerless method of ventilation has been declared absolutely perfect by engineers, and by the actual cold-cash results of practical poultrymen; add the truth that no properly-constructed incubator has any need for added moisture in its hatching; consider that we definitely assert, and can prove, that hot-water heat is clean heat (and the only clean heat possible for an incubator), that hot-water heat is even heat (and the only even heat possible for an incubator), that hot-water heat is safe heat (and the only safe heat possible for incubation), that the ventilation, the heat regulation and the question of moisture are dealt with and solved practically only in the Peerless—and not in any hot-air hatching machine—and—

Does it not seem to you that the advocate of the hot-air machine has set up a false and delusive guidepost in his so-called "General Directions?"

THOMAS W. LEE,
Manager, The Lee-Hodgins Co., Limited.

Frequently the question is asked about hens eating eggs, and a cure? I cured a flock of hens that were eating dozens of eggs daily, in two days, by giving free access to oyster-shell, and have never since had any bother. Keep constantly before them.

Brant Co., Ont.

F. M. LEWIS.

In thanking you for reply to question re trap-nests, I beg to enclose my subscription to your valuable paper, "The Farmer's Advocate," for ensuing year, \$1.50—a paper without which no Canadian home is complete.

York Co., Ont.

RALPH COUPLAND.

day. To do away with this work, and to secure the workers in the factory their Day of Rest, Mr. Shearer suggests three plans:

(a) The Saturday night's milk to be cared for by the farmer with cold water, ice, etc., at the farm, and taken to the factory Monday morning. At this date ice is not available, and in case of herds of 25 to 40 cows, in hot, muggy weather, to keep the milk sweet, even with spring water, is exceedingly difficult, though it has been done. There must also be provision for drawing the extra day's milk to the factory, and extra factory and vat space for making it up on Monday. Farmers and those with milk routes manage to handle the extra Sunday morning's milk all right, as a rule, but to include Saturday night's milk also adds much to the difficulty.

(b) Factories to put in butter plant, cream Saturday night's milk, and make it into butter the following week, say about Tuesday. The owners of some very successful factories, like that of Harrietsville, Ont., adopt this plan, and report it very satisfactory, as it furnishes the patrons with their butter, and relieves the factory employees of the Sunday work. It requires the maker or assistants to understand butter-making, and adds to the work of salesman and secretary.

(c) The farmer himself making Saturday night's milk into butter. Where he has a separator or other creaming facilities, and a small herd of cows, this is not difficult to do, but with large herds, such as many of our dairymen have, it will hardly commend itself.

Solution (b) appears to be the most feasible and satisfactory of the problem which confronts the factory-owner or company, who are directly responsible under the Act, and doubtless the Lord's Day Alliance and the Crown authorities will be disposed to allow reasonable time for factory management to be readjusted to the situation under the Act. The experience of dairymen in solving the difficulties referred to should be of service.

POULTRY.

HOT-WATER INCUBATION.

Editor "The Farmer's Advocate":

In your issue of March 28th, on pages 530-1, you reprinted from Farm Poultry an article headed, "General Directions for Operating an Incubator." That article expounds certain fallacies. It suppresses certain vital facts. It is, seemingly, conceived in a tone of lofty disregard for the experience of successful poultrymen. In substance and in implication, that article is a veiled attack upon the hot-water incubator, and a plea in behalf of a certain make of hot-air incubator. As I cannot believe that "The Farmer's Advocate" wilfully approves injustice or propagates error, I must assume that you printed this article as the mere expression of an individual opinion, and that you do not endorse its assertions. But I feel that I may reasonably expect you to accord the facts the same publicity and emphasis you granted the fallacies; and to those facts I now ask your attention.

I am a practical poultryman, interested financially in the largest poultry-growing enterprise in Canada. Also, I am identified with the corporation which builds the Peerless Hot-water Incubators; and in your advertising columns—not through the ingenious and inexpensive method of "General Directions," printed as reading matter—that corporation tells in plain English the provable facts about its product. In those facts, and in our incubator, thousands of successful poultrymen believe implicitly, and they so believe for the best of reasons—it has helped them make money.

But, if we are to credit the article you reprint, the hot-water incubator is a failure, and the hot-air machine the sheet-anchor of artificial incubation for profit's sake; and not merely the hot-air machine, but one specific make of hot-air machines—which one, anybody may discern who can read between the lines of the obviously inspired article in question. Now, sir, I say to you, speaking as a practical poultryman, and supported by evidence not even the writer in Farm Poultry can distort nor challenge, that the hot-water incubator, and no other type of artificial hatching device, has proved itself.

The article ingeniously specifies, so that he who can read between the lines can hardly err, which hot-air machine is the one that reduces all other incubators to mere ciphers. The machine which inspires the pen of the writer of that article is, he tells us—and as he declares every incubator must be to be worth while—double cased with double-glass doors in front. Its trays must slope towards the center, its lamp must be asbestos-cased. Moisture must be provided in it during the final stages of incubation. And there are other guideboards dotted through the article to tell us whence came the inspiration which conceived these "General Directions"; while, oddly enough, the animus of the article is aimed not at the competing hot-air incubators, but at the one alternative method of hatching which the hot-air advocate declares he has tried—a leaky hot-water incubator.

The Peerless happens to be the latest against leak-