FIFTH ANNUAL REPORT

OF THE

HORTICULTURAL SOCIETY

AND

ERRATA.

AGE 50: In resolution *re* feeding Salmon, read *Hogs* instead of "Hops" in first line.

GE 85: Third last section read *Ponds* for "Japan" seedling.

GE 87: Sixth line, read *180 Trees* instead of "180 acres."

GE 89: Nineteenth line, read *Canker* for "Plum."

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BRITISH COLUMBIA

HORTICULTURAL ⁘ SOCIETY

—AND—

FRUIT GROWERS' ASSOCIATION.

NEW WESTMINSTER, May 2nd, 1893.

Meeting of Directors of Horticultural Society and Fruit Growers' Association. Present:—J. Kirkland, Ladner's, president, in chair; N. Butchart, Port Moody; Wm. Arthur, Ladner's; E. Hutcherson, Ladner's; Peter Latham, New Westminster; Thos. Cunningham, New Westminster; George Mead, New Westminster; Thos. Earle, Lytton; J. P. Davis, Nanaimo; A. C. Wilson, New Westminster; D. S. Curtis, New Westminster; J. J. Wilson, Haney; B. R. Hill, Burnaby; H. T. Thrift, Surrey; Geo. Raymond, New Westminster; G. W. Henry, Hatzic; and A. H. B. Macgowan.

The President opened by thanking the members present for having (during his absence, which he regretted,) elected him President.

Minutes of January 26th, 1892, were read and on motion adopted.

In addition to routine correspondence the following was read:

It was decided to include with the Annual Report an amended and enlarged Pest and Remedy Supplement.

Tenders for printing were referred to Committee on Annual Report with power to act.

Moved by Mr. Mead, seconded by Mr. Hutcherson, Resolved, "The Horticultural Society and Fruit Growers' Association, of British Columbia, respectfully recommend Mr. Alex. McD. Allan as a juror on fruit at the World's Columbian Exhibition.

Mr. Hutcherson then read a paper on—

CLIMATIC INJURIES.

BY E. HUTCHERSON.

"In taking up the question of the prospects of the fruit crop of 1893, and damage done by frost last winter, from my observations in the district, so far, no extensive damage has been done, as far as killing of trees is concerned, with the exception of peaches. Some are killed outright, while others, though greatly damaged, may recover. As to the fruit crop, it is too early at the present time to speak authoritatively on the subject. There are three principal causes of fruit failures :

1. Injury to buds during winter or dormant season.

2. Continued rains, and damp weather during blossoming period, thereby preventing bees, flies and insects from doing the work of fertilization.

3. Frost, or continued cold, blasting winds, during setting season, that is just after the blossom has fallen to the ground.

Now supposing the crop is a failure, how can one prove positively to which of the three causes the failure is due ; it may be one, or it may be owing to the whole three combined. So you will readily understand the reason why as yet it is impossible to predict the future outcome of the fruit crop.

In taking up the first clause, injury done buds during winter or dormant season, it is safe to say that peaches, Bartlett pears and apricots will be a short crop ; apples, plums, prunes and cherries are showing good, strong, healthy buds, in large quantities, most trees being completely covered with blossom buds. We have every reason to expect a full crop of the last named fruits.

Small fruits, currants, gooseberries, blackberries and strawberries are showing well, with every prospect of large returns."

Mr. Cunningham expected a good report of Bartlett pears, having formed his opinion from reports from different parts of the Province.

Mr. Hutcherson said his information was from personal experience.

Mr. Hutcherson had about 1,000 two-year old Bartlett pear trees killed.

Mr. Latham always thought that Mr. Hutcherson's trees would be short-lived. A few days since he saw in this city some most healthy, well bloomed pear trees.

Mr. Cunningham said his experience conflicted with Mr. Hutcherson's. He always thought a man ran a great risk in planting pear trees on low land : he never had better promise of a crop than at present.

Mr. Henry said his Bartlett pears had been injured by the hard weather worst on low land. At first appearance of sap he feared much more injury

had been done, but now thought some of this may be outgrown. He put in several hundred peach trees. Last year's looked well and made good growth, but inside wood being dark—all hardy. Fruits promise well.

Mr. Mead said his peaches looked well, but now feared he would lose them all. Bartlett pears were affected much like Mr. Hutcherson's, dark when you cut the trees. There is a small, dark spot that appears on bark, and goes right into the tree.

Mr. Cunningham had met this trouble and thought it best to keep parts clean and free from insects.

Mr. Earle, Lytton, reported that out of his whole orchard he had lost but one or two trees. He had grapes in good order. Weather was cold, 22° below zero, with three feet of snow. He protected his trees by banking them with earth about one foot high.

Mr. Bucherat found his peach trees affected like Mr. Hutcherson's, dark inside. He had over 1,000 trees without a bloom. About the black spot, he thought he knew a remedy. His neighbor used lye, one can to five gallons of water, using soap after spraying. In summer used one can of lye to ten gallons of water, soaping them afterwards. In February he rubbed them with a brush and the lye followed with soap lather with same brush. Had cut out some of the spots and used white lead, coal tar, etc., on cuts very successfully. His name was Joseph Cole, Port Moody. Before this Mr. Bucherat had been using lye. Two years ago he used lye and last year missed, and found the missing had been disastrous. The year he sprayed the spots did not appear, when he missed they did. On pears he saw no injury done.

Mr. Mead had used lye and whale oil soap, but they were still spotted. Had washed them two years and appearances were worse than heretofore. Had cut out spots and applied cow manure, which healed well, also had used an equal portion of resin, beeswax and tallow with great success, applying it warm with a brush. This was a corrective, not a preventative.

Mr. Hutcherson used concentrated lye for five years, and had no black spot.

Mr. Arthur had used whitewash successfully, keeping trees clean.

Mr. Cunningham thought black spot hereditary.

Mr. Hutcherson said that if you keep your tree clean, you can discover the spot readily and remove it.

Mr. Thrift confirmed.

Mr. J. J. Wilson, Haney, for four years had been fighting this disease and found the best cure was to promptly remove spots on first appearance, using

the following wash, consisting of lime, crude carbolic acid and concentrated lye after cutting out spot, in the following proportions: say 5 gals. water, 5 lbs. lime, teacup coal oil, teacup carbolic acid, half tin of lye, adding handful of salt.

Mr. A. C. Wilson recommended autumn whitewashing.

J. J. Wilson said he had taken slips for grafting on to wild crab, and found spot show out.

The President said that remarks had been made against the Delta. He would like to be further enlightened. He knew water to be nearer the surface even in Westminster than the Delta. Would not drainage improve the low lands.

Mr. Cunningham thought that excessive growth was at times against a tree, making the tree tender.

Mr. Latham advised cutting a drain between the trees to improve their health.

Mr. Hutcherson said his orchard was all underdrained.

Mr. G. W. Henry, read a paper as follows—

MARKETING AND HANDLING OF SMALL FRUITS.

BY G. W. HENRY.

As the season for small fruit is advancing, a few timely hints as to the management of it might be of advantage to some who are growing these fruits and have not had experience in marketing them. It will not do to wait until the fruit is ripe before preparations are made for marketing it. An estimate should be made early in the spring as to about the number of packages required, and these should be all ordered in time to receive them before the shipping season commences. It is better to order more than is thought necessary, in case the crop should turn out more than is expected; and a loss of fruit might be thus sustained owing to the difficulty of procuring packages in the latter part of the season.

The baskets and packages should all be stored in a convenient place, and where they will be sure to keep clean and dry; use the best packages always: never buy up second-hand quart baskets, or use those which have contained berries before, unless perfectly clean and dry, for they are often mouldy and affect the quality of the fruit, and besides that, a clean, attractive package helps fruit to sell, for fruit is to a certain extent looked upon as a luxury yet.

Therefore, the more attractive we can make it appear, the greater demand there will be for it.

Another important thing to attend to before shipping season is to have your markets all looked up. If possible, make an arrangement with some good dealers to buy from you direct, and thus save a percentage paid the commission man. The nearer home you can find a market for the small fruits, the better; distant transportation is both expensive and injurious to the soft fruits.

Too much care cannot be exercised in the gathering and putting up of the fruit. Strawberries and raspberries should be gone over and gathered at least every other day. The way I manage my crop is to go over one-half of it only in one day, and the other half the following day, keeping this up through the season, and have every berry gathered that is in a fit condition, for, if only a few are left which are ripe, by the time of the next picking they will be too soft, and if then gathered by the pickers (which they are apt to be) and put in the basket with the other berries, they not only mash themselves, but injure the appearance of the whole. Never allow any over-ripe, inferior or dirty berries to be put in the basket, for they will do you far more injury in the end, than present profit.

Let every basket of fruit be well assorted, clean and bright; then there is little danger but they will meet with ready sale, even though the market may be full of dirty, inferior fruit. There is no doubt but that in a short time berries will be grown so plentifully that there will be danger of a glut in the market at times. To avoid this the growers must send in their fruit regularly every day, and keep up the supply of fresh fruit. Even though it be rainy weather, the fruit should be gathered just the same, and marketed in order to supply the daily demand, and keep the ripened fruit well cleared from the vines. All the small or injured berries that are ripe, though not fit for market, should be gathered. A good plan is to use one or two of the quart baskets, which are carried in the field basket, for over-ripe or inferior fruit. These can often be made use of in some way after being assorted, although they would not stand shipping.

The grower of small fruits must bear in mind that the essentials are to have the fruit fresh and clean, and looking as attractive as possible; the packages, neat, convenient and tasty, thus creating a larger demand in the market with more profit, even though all the inferior fruit is thrown away. By keeping this fact in view, the grower need have no fear of a glutted market or a fair profit

Moved by Mr. Cunningham, seconded by Mr. J. J. Wilson, Resolved, "That the sum of $400 be appropriated toward expenses of making exhibits of fruits, etc., at eastern and other fairs, such sum to be at the disposal of a committee to be named by the President."

Moved by Mr. Hutcherson, seconded by Mr. Thrift, Resolved, "That the next meeting of Directors be held at Nanaimo, on Tuesday, August 1st, at 7 o'clock p.m."

Mr. Latham's name was substituted for that of Mr. Brandrith, who was absent.

On motion, the meeting adjourned.

NANAIMO, B.C., August 1st, 1893.

The quarterly meeting of Directors was adjourned for want of a quorum, only E. Hutcherson, Ladner's; J. P. Davis, Nanaimo, and A. H. B. Macgowan, Vancouver, being present.

The absence of residents of Nanaimo was owing to a strike amongst the coal miners being on.

VANCOUVER, B.C., November 7th, 1893.

Quarterly meeting of the Directors of the Horticultural Society and Fruit Growers' Association. Present—John Kirkland, Ladner's, president, in chair; E. Hutcherson, Ladner's; A. C. Wilson and J. King, New Westminster; W. J. Harris, Hammond; W. H. Lewis, Westminster; A. H. B. Macgowan, Vancouver; J. W. Sexsmith, Richmond, and others.

Minutes of May 22nd, 1893, were read and, on motion, confirmed. A lot of routine correspondence was presented, also a letter of October 21st from C. Tonnesen, Tacoma, re appointment of representatives to a convention at Spokane on February 7th. All present favored the idea of sending delegates and paying their expenses.

Moved by E. Hutcherson, seconded by W. J. Harris, Resolved, "That a delegation of three or more be appointed to attend the convention of fruit growers and others to be held at Spokane on 7th February next, and that their necessary expenses be paid by the association."

Moved by Mr. Wilson, seconded by Mr. Harris, Resolved, "That the delegation be selected from among the following, viz.: S. M. O'Kell, Victoria; A. Postill, Vernon; G. W. Henry, Hatzic; E. Hutcherson, Ladner's; A. H. B. Macgowan, Vancouver.

The following programme was suggested for the annual meeting.

President's address, Secretary's report; papers—"Varieties of Fruit for House Use and Shipment," by G. W. Henry and W. J. Harris; "Varieties of Fruit best suited for Canning and Preserving," by Walter Taylor, Vancouver; "The Prune," by E. Hutcherson, Ladner's; "Why," by Tom Wilson,

Harrison River; "Flowers," by A. C. Wilson, New Westminster; "Markets," by W. H. Lewis," Burnaby; "Planting and Pruning," by John King, New Westminster; "Experimental Work," by T. A. Sharpe, Agassiz; "Apples," by T. G. Earle, Lytton; "Dairying," by Mr. Wells, Chilliwack; "Hop-Growing;" "Transportation," by A. Postill, Vernon; "Pollenation of the Pear," by R. M. Palmer, Hazlemere; "Ornamental Trees and Shrubs," by Peter Latham, New Westminster.

The completion of the programme was left in the hands of the Secretary.

Moved by Mr. Hutcherson, seconded by Mr. Wilson, Resolved, "That the annual meeting be held at New Westminster, on Wednesday, January 24th, at 2 o'clock p.m.

FIFTH ANNUAL REPORT

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HORTICULTURAL SOCIETY

AND

FRUIT GROWERS' ASSOCIATION

OF

BRITISH COLUMBIA.

The fifth annual meeting of the society was held in the City Hall, New Westminster, on Wednesday, January 24th, 1894, Mr. John Kirkland, president, in the chair.

There were present—W. J. Harris, Maple Ridge; G. W. Henry, Port Hammond; J. R. Anderson, Victoria; H. T. Thrift, Surrey; H. A. Hicks and P. Latham, New Westminster; Wm. Knight, Popcum; B. R. Hill, Westminster; J. King, Westminster; H. Davis, Langley; R. M. Palmer, Halls Prairie; W. R. Austin, Westminster; E. Hutcherson, Ladner's Landing; T. A. Sharpe, Agassiz; A. B. Mackenzie, Westminster; H. F. Page, Matsqui; A. H. B. Macgowan, Vancouver; W. H. Ladner, Ladner's Landing, and others.

The minutes of last meeting having been published, were taken, read and adopted.

The President then read his annual address, as follows:

GENTLEMEN,—On this the fifth anniversary of the Horticultural and Fruit Growers' Association of British Columbia, we are brought to the close of perhaps the most eventful season in the history of fruit culture in the Province. Soon after our last anniversary one of the most severe frosts known in our history swept over this Province and the States adjoining, which was followed by cold and almost incessant rains during the spring and early summer months. This condition of affairs naturally gave rise to gloomy forebodings and anxious

solicitude, not only for the safety of the year's harvest of fruit, but also lest trees of the more tender varieties should be entirely destroyed. Subsequent experience has, however, proved that though the peach trees were unable to withstand the ordeal, few other varieties were damaged to any appreciable extent. The fruit harvest proved to be an extremely light and variable one; and in the cases of some of the leading varieties, such as the Bartlett pear, there was a total failure. A lesson has, however, been taught which intending orchardists would do well to take note of, and that is to catalogue the varieties which have withstood the effects of the climatic extremes of the year, and have come through unscathed by disaster.

The year's drawbacks, however, can only be looked upon as temporary, and of rare occurrence, such drawbacks indeed as are incidental to every industrial pursuit, and instead of this partial failure being a cause of discouragement, it should rather act as an incentive to a more careful selection of varieties suited to the variable nature of climate, and to a more assiduous endeavor to overcome any obstacle which may intervene to deter fruit culture from taking the place which nature has designed it to occupy, as an important coadjutor in the aggregation of the many natural resources with which a beneficient Providence has so liberally endowed us.

It is gratifying to know that the Government not only shows sympathy with the objects of this Association by the granting of financial aid, but that upon presentations made by the Association, they have established an Horticultural Board, whose duty it shall be to guard as far as possible against the introduction and dissemination of insect pests, which in other places have proved to be a blighting scourge to the fruit culturist. The influence and efficiency of the board will be entirely dependent upon a rigid and impartial enforcement of the rules and regulations promulgated by it, by which not only shall the ubiquitous and irresponsible tree peddlar have his wares inspected and rendered innocuous by a judicious application of disinfectants, if found to be diseased, but that the same vigilance shall be displayed to prevent the possibility of the pest evil being propagated or distributed by the product of our own nurseries. It is also to be hoped that all needed information shall be cheerfully and freely given to the board by those engaged in fruit culture, so as to enable the board to discharge its onerous duties with the promptness and efficiency which the importance of the duties entrusted to it emphatically requires.

A cordial invitation has been extended to this board, by the Secretary of the Fruit Growers of the neighboring State of Washington, to send delegates to a convention of fruit growers at the city of Spokane, on the 14th proximo, at which also the states of Oregon and Idaho are to be represented. The benefits to be derived from an interchange of ideas on all subjects pertaining to fruit culture is so obvious that I think it is in the interest of the association to respond to the invitation so kindly given, by making such arrangements as

may be necessary to secure the attendance of one or more persons to represent this Association at the approaching convention at Spokane.

And now, gentlemen, let me say, in conclusion, that the potency of the influence which this association shall exert as an agency in encouraging of fruit culture in the Province, will be in exact proportion to the degree of development, performed year by year, by the individual effort of each member of the Association. Personal example is much more inspiring than precept, whether it be written or orally given, and in view of the increasing population, which year by year is becoming permanently located in our great North-West, the possibilities for expansion in fruit production would seem to be practically illimitable. Nor should it be lost sight of that a failure on our part to grasp and retain the vantage ground of trade in this particular, which is our birthright by both political and geographical ties, would surely result in others, more enterprising than ourselves, profiting by our experiences, and who would reap a harvest, which by well directed effort would naturally be garnered by us.

The Secretary then read the financial statement, and spoke as follows :—I am pleased to meet the members of the Horticultural Society and Fruit Growers' Association convened for the purpose of mutual benefit and also the less selfish purpose of laying down lines of instruction for the unskilled fruit grower. That the efforts of the association are appreciated is made manifest by the numbers of letters received. Our reports have been largely sought after, and so far as we can learn are doing much towards improving and advancing this important branch of production.

Each paying member has been placed on the subscription list of the *Canadian Horticulturist*, and should be receiving the valuable reports of the Ontario Fruit Growers' Association. We also supply paying members with a copy of Bailey's *Horticultural Rule Book*," a work treating on an almost innumerable number of topics of greatest importance to our subscribers. Among others we find the following titles to chapters : "Insecticides—Injurious insects with remedies and preventives ;" "Plant Diseases—Weeds and moss ;" "Grafting Wax—seed tables ;" "Planting Tables—yields ;" "Keeping and Storing Fruit."

A very important part of our work has been attendance at exhibitions at different places, for the purpose of assisting in fruit departments and the correct naming of different varieties. Most of the exhibition committees of the Province have availed themselves of this help. Committees during the season attended as follows : B. C. Exhibition, Victoria, August 7th to 12th, Messrs. T. A. Sharpe, E. Hutcherson and A. H. B. Macgowan ; September 20th, Glenwood, Messrs. E. Hutcherson and A. H. B. Macgowan ; September 21st,

Chilliwack, Messrs. E. Hutcherson, T. A. Sharpe, John King, T. Wilson and A. H. B. Macgowan; September 22nd, Cloverdale, Surrey, Messrs. G. W. Henry, T. A. Sharpe and E. Hutcherson; September 26th to 30th, New Westminster, Messrs. T. A. Sharpe, G. W. Henry, A. C. Wilson, P. Latham, E. Hutcherson and A. H. B. Macgowan; October 4th to 6th, Vernon, Messrs. T. A. Sharpe, E. Hutcherson and G. W. Henry; October 10th to 14th, Inland, Ashcroft, Messrs. T. A. Sharpe and E. Hutcherson; October 17th, Ladner's Landing, Messrs. A. C. Wilson, E. Hutcherson and A. H. B. Macgowan.

Meetings.—At New Westminster, May 2nd, we had a well attended Directors' meeting, and an interesting discussion took place, led off by Mr. Hutcherson, on the prospect of the fruit crop of 1893. Mr. Henry also favored us with an excellent paper on "The Marketing and Handling of Small Fruits." The August meeting of Directors was called for at Nanaimo, but was not held owing to a strike being on at the time, Messrs. Davis, Hutcherson and Macgowan being the only ones present. The November meeting prepared the programme for presentation to-day, and I trust that it will be considered of sufficient interest to lead those present to feel that they have had a profitable meeting.

Correspondence.—I will not detain you by referring at any length to the large amount of routine correspondence that has passed through the hands of the officers of the Association. I cannot, however, pass this order of business without noticing my indebtedness to the officers, directors and members for valuable advice and assistance, particularly would I refer to the President and Messrs. E. Hutcherson, T. A. Sharpe, G. W. Henry and T. Wilson.

The financial statement was referred to the Auditors to report at next session of the present meeting.

Mr. Harris moved that Mr. T. A. Sharpe and Mr. Mackenzie be appointed auditors for this purpose.—Carried.

Mr. W. H. Ladner moved the adjournment of the meeting to 9 o'clock tomorrow morning (January 25th). There had unfortunately been no steamer up the river to-day, and consequently many members from the Delta were unable to be present. Besides, there was a most enjoyable concert this evening in the Opera House, which no doubt many of those present would like to attend.

The President—The meeting was called for three o'clock, and it is now eight. As the delay was caused in a great measure through my having missed the early boat, I think it would be unfair to further delay business by adjourning.

Mr. Thrift—I am sorry to disagree with Mr. Ladner, but as for myself, I am obliged to go away in the morning, and would much rather the meeting went on now.

The President asked if it was the sense of the meeting to go on. Several members said "Yes." The question was then put and the motion was negatived by a large majority.

Mr. Henry then read the following paper:—

VARIETIES OF FRUIT FOR HOUSE USE AND SHIPMENT.

BY G. W. HENRY.

This is a question of a good deal of study and consideration and one which should be thoroughly discussed and gone over at our meetings in order to bring out the opinions and experience of every one who has in any way experimented with or tested the different varieties in different localities. The locality in which fruit is grown, the treatment it receives and other conditions have such varied effects upon different varieties that it is next to impossible for any one man, no matter how great his experience, or extensive his knowledge, to give such information as would at all times be best for everyone. One needs but to read the different reports in fruit papers given by various people as to their success with some certain variety of fruit to have this verified. One may recommend it as being valuable for shipment, another for home use, another for both, while still another may condemn it entirely. We cannot, therefore, be too careful in recommending any variety too strongly for general planting except in such localities and under such conditions as we have seen it prove a success, and even then we may err in the matter for the season has such an effect on the different varieties, that one year we may see a certain variety give wonderful favorable results and another variety may be very poor, while the next year it may be just be vice versa. In fact I have noticed, in my great experience in growing and handling fruit, that it was almost invariably the case, that in certain seasons certain varieties were very much more successful than others.

In Ontario, where I have had more experience than in this country, in handling and shipping apples, out of the four or five standard varieties which are mostly grown there, each year some one or two of these varieties would yield far in excess, both in quantity and quality of the other. We must, therefore, watch very closely a number of years before we recommend or condemn any variety in comparison with others. True there are certain varieties which have been generally tested enough to thoroughly identify them as being specially valuable both for shipping and for home use, and these no doubt are all worthy of trial in every locality. Every person, therefore, before planting an orchard should, if possible, learn what varities have been tested in that locality and under what conditions and with what results.

In giving the names of varieties for home use and shipping, I do not consider it necessary to make two distinct lists for in so many cases the one variety is suitable for both, as I think in making a selection for home use, we should always select varieties which are good for market also, for no matter

how few trees a man may plant out, there are often seasons when he will have more than are required for his own use and he could ship them into market and thus save what would otherwise be lost. Out of our best shipping apples we can easily make a selection excellent for home use so that there is no excuse for a man to plant any variety that has not a good market value.

For the list I give therefore and recommend as worthy the attention and notice of all who intend to grow fruit, I will name such old standard apples as we in America are acquainted with, that have gained for themselves a reputation in the markets of the world as being especially valuable, and also some of the newer varieties, which possess to a great degree such qualities as have made the others valuable, but have not yet become generally known from their own reputation. In naming each variety I will make such remarks upon its particular value or faults as I may have noticed from my personal experience with it, or from what I have seen and learned from observations and reading, and more especially will I comment upon its adaptability and value as far as I know in this Province.

Commencing therefore with Winter varities I would name the following old standards as being the most valuable of those with which I am acquainted. The Newton Pippin has for years where it is known always brought the highest prices of any variety, especially in the English market, but it is so very unreliable, and adapts itself to so small a portion of the apple growing district in the east, that it is hardly looked upon as a standard variety there, and is but little grown for that reason. I have never noticed the trees bearing in this Province, though the young trees seem to grow fairly well, and the fruit I have seen is a very good sample, so that they are probably worthy of further testing here.

Perhaps the next highest selling apple in the market is the King of Tompkins. This fruit has when it reaches perfection all the qualities to make it valuable in its season, both for home use and market, being of large size, a beautiful red color and the very highest flavor. Its faults are that it is not a long keeper. In Ontario we have never found the tree prolific enough to be profitable; in this part of British Columbia the trees are prolific, but the fruit as a rule does not reach perfection and they can only be looked upon as a Fall apple. In the upper country the fruit I believe reaches perfection, but the trees are scarcely hardy enough to be reliable.

The next highest selling standard variety with which I am familiar when properly grown is the Northern Spy. This apple when in perfection is but little behind the King in the qualities which make the apple valuable in the market or for home use, but has other points in its favor which cause it to be planted where it succeeds much more extensively than the King of Tompkins. It is a long keeper when grown so that it colors up well and not too large in size, and though it takes a long time in coming into full bearing, when it does it will perhaps exceed in prolificacy any of the other standard varieties, unless it

be the Baldwins. It is fairly hardy and where the fruit grows and colors to perfection it will no doubt prove to be one of the most, if not the most, valuable apple to grow. It has been a great favorite amongst some of the growers in this part of the Province; one man especially I know who has probably grown and sold more apples than any other in this district, has found it far more profitable than the Baldwin or Russet or any other Winter variety he has—but this year it has proved a poor crop here. It has also of late been considerably affected by the black spot or fungus, so that this with its long time in coming to bearing, the uncertainty of getting a season favorable for coloring and ripening of the fruit in this district, detract (in my opinion) considerably from its value, and we also do not find it a good keeper here as a rule.

The next in value as a market apple probably lies between the Baldwin and Golden Russet, but their qualities are so different they can hardly be called rivals. The Baldwin being a red apple will no doubt as a rule, bring the highest price in the market where qualities are not known. It is doubtful if we have any better cooking variety than the Baldwin, but its flavor as a dessert apple is very inferior. A great many look on the Baldwin as being the most valuable Winter apple for this part of the Province, and if we took the past year as a test, we would all have to give it that place amongst the old well tried varieties, for it has given a fine crop of clean fruit under almost all conditions, while most other kinds have been almost a failure. The growth of the tree and its bearing qualities certainly rank it with the highest, as a profitable variety, and also its freeness from black spots so prevalent in this part of the district. But the tree does not seem to be sufficiently hardy to be valuable for the cold part of the Province.

The Golden Russet is not without its advocates in this district, and we still find it largely planted by growers. A few years ago, I believe, it had far more admirers than any other variety; and certainly is a fine fruit, being a good keeper of excellent flavor as a dessert apple, and the tree a nice healthy grower, giving as a rule a fine crop of clean fruit.

The Ben Davis has now become sufficiently well known to take its place in value amongst the old standard varieties and has no doubt many claims in its favor. Its great productiveness, beginning at an early age, together with its long keeping qualities and its color are very strong points in its favor; the quality we know as a cooking apple even is very inferior and it is not to be thought of as a dessert apple. I have always looked upon this variety as a profitable one to plant where it succeeds and presume it will be always where color and appearance of fruit is so highly valued in the market as at the present time. The past season it has hardly done so well in this part of the Province as previously, having suffered with most other varieties the conditions of an unfavorable season. The tree is a very fine healthy grower and exceedingly hardy and seems to succeed well and give beautiful fruit in the Upper Country, but where the highest flavored apples can be produced to such per-

fection as there it would seem wiser to me not to desert them entirely for that of an inferior quality.

The Rhode Island Greening can hardly be left out of this list of old varieties for its value as a cooking apple can hardly be excelled. Its yielding qualities also are very much in its favor: but its color is against it in the market and its liability to spot and crack make it of less value for this part of the Province, but I saw last year in the Okanagan Valley, Rhode Island Greenings of such color and appearance as would make them valuable in any market, and certainly was a strong point in favor of their adaptability for that district.

There is another variety which we should not neglect entirely, that is the Spitzenburg, as it has perhaps had as high a record as any known variety, but in the East it seems to have run out to a certain extent and at the present time is but little planted. Yet the specimens I have seen growing here are so fine that I would not think it wise for us to desert it holding as it does, such fine qualities.

I will now mention a few of the new varieties which are being tested here. First and foremost in value of these I place the Stark. A variety not very generally known or tested, but from the reports from all those who have grown it and from what I have seen myself and my own experience during the last three years in this district, I would place it almost at the top of the heap for Winter apples in this district. The strong points in its favor are these: The tree is a strong, healthy grower (easy to be distinguished among other trees by its stout growth of wood and foliage) and an early and abundant bearer. The fruit though not all we could desire in color, is of a greenish yellow hue with red cheeks, showing as a rule nearly as much color as a Baldwin of about the same size only a little more elongated. In keeping qualities it far exceeds any of the other named varieties unless it be the Ben Davis, and is much superior in quality to that variety (being of an extra fine flavor for so long a keeper). These advantages give it in my opinion a very high place as a profitable shipping variety. During the past season although such a poor one generally for apples, all the trees of this variety that I have seen which are large enough to bear have been loaded down with fine clear fruit.

Next in value to the Stark amongst the varieties which are new in name at least, I place the British Columbian. This is claimed to be identical or nearly so with the old "Canada Reinette." However, that does not alter the fact that it was brought before the notice of our Association by Mr. Bales, of Nicomen, who claimed to have grown it from a seed and the Association named it the "British Columbian." Nor does it alter the fact that it is a very valuable apple for this country, the tree being a very strong grower and an annual bearer of very large crops. The fruit is large, a little rough or ribbed, of yellowish russet with a red cheek, a good keeper and of fair quality.

The Peewaukee is also a new claimant for favor but has not yet to my knowledge shown itself to be of any particular value, though the tree is certainly a very fine grower and hardy, and on farther trial may develop some strong points in its favor.

The Mann is another new variety which has been highly recommended and perhaps its strongest claim is its keeping quality ; the tree is a very straight pretty grower but is not, I think, a very prolific or early bearer.

There are a number of old and new Winter varieties such as Wolf River, Grimes' Gold, etc., which are being planted in the Province and have yet to show their value. I do not think it wise for me to speak at length on them as I have not seen them sufficiently to do so with any certainty.

I will now mention some of the most valuable Summer and Fall varieties, and I might here state that my opinion is that in Summer apples especially, we can grow as fine specimens as can be produced in any country and although I would not recommend Summer varieties for general planting, yet the real fruit grower should bear the fact in mind that we cannot expect to compete with the Okanagan and some other parts of the upper country in producing Winter apples, nor yet with Ontario. Our Summer apples are equal to the best of them and as we expect to supply the market of the North West principally with our plums and other Summer fruit we can use our Summer apples in making up carloads for these markets, thus helping us to get cheaper rates for our plums and supply to better advantage the wants of the market.

Of the various kinds of Fall apples grown in this Province the "Wealthy" I suppose is fairly entitled to the lead, its beautiful appearance, fine quality, early and productive bearing, and cleanliness from foreign growth, all combine to give it that place. We are able to keep this variety until the Xmas holidays, which I believe we can by careful storage. Very fancy prices could be expected for them no matter how full the market might be of other kinds.

Another Fall apple which is a very close competitor with the Wealthy is the Maiden's Blush. This variety has not been so generally planted, but what I have seen of it, both the tree in bearing and quality of fruit, has highly prepossessed me in its favor. The beautiful golden yellow of its skin, touched up with a rich rosy cheek, gives it a beautiful waxlike appearance, the beauty of which even the rich crimson of the Wealthy cannot shame. Owing to the mellow flesh of these two varieties they require very careful handling in shipping. Mr. Butchart, of Port Moody, has an an apple very similar in color to the Maiden Blush, even more waxlike in appearance, but longer and not so pretty in shape, nor so smooth in surface, which he claims is by far the most profitable apple he has in his extensive orchard. This variety unfortunately we cannot name, and I regret very much that I have neglected so long in sending samples to some of the experts in the East with the hope of getting it correctly named, for there is no doubt it is worthy of propagation, being like the Wealthy

and real Maiden Blush very clean and free from the black spot. The above mentioned varieties are too near Summer fruits to supply the demand until our Winter apples are really ready for use.

We. therefore, want the vacuum filled up and the two well tested varieties best qualified for that purpose are without doubt the Blenheim Orange and the Ribston Pippin. These are two valuable fruits, being somewhat similar in appearance and quality, the Ribston Pippin having the advantage in flavor and coloring, and the Blenheim in size. They are both prolific in bearing, clean and free from spots. The King of Tomkins really comes in season with these varieties in this country and should be classed as a Fall apple instead of a Winter one.

Of the Summer apples for very early use we have the Yellow Transparent which for its season stands almost alone. The Tetofsky and Early Harvest are somewhat similar, but the former is somewhat inferior in quality and appearance, and the latter is badly affected with spot. The beautiful waxlike appearance of the Transparent makes up to a great extent for its being so light a color in a home market or for home use, but I fear even for shipment in the North West we can only expect them to be a success with the most careful handling.

The Red Astrakan comes in almost immediately after the Yellow Transparent, but it has not proved very satisfactory in this country, it ripens so unevenly not coloring up until fully ripe and will keep so short a time after ripening. These faults with its liability to spot and crack all injure its value to a great extent, although this variety when grown to perfection no doubt would bring as high a price in the market as any of our Summer fruit, but unless the trees are young and kept well pruned and older trees sprayed we need not hope for perfection in this district.

Coming in a little later is the Duchess of Oldenburg, a most excellent apple both in appearance and quality, excepting its being a little too tart for dessert purposes until fully ripe. This fruit seems to reach the highest perfection in this portion of the Province, and the fact of its coloring up so long before ripe makes it particularly valuable as a shipping fruit. The tree though a slow grower is very productive and at a very early age. It is also free from spots. In order to keep up the vigor of the tree under its heavy loads of fruit it requires the best of cultivation.

Next in season in the Gravenstein, an apple more generally known and grown for its season than perhaps any other variety in this district. The last few years they have been attacked by the black spot considerably, which has injured their reputation somewhat, but there is no doubt that in quality at least they are far ahead of any other Summer apples. The fruit is also very beautiful when perfect, its appearance being a rich yellow ground striped and splashed with red almost entirely over the surface. They too, color up well

before ripening. Another feature of great importance in them, which makes them especially valuable as a shipping variety, is that they receive their flavor so early and hold it so long a time, there being no other variety ripening so early having this quality. The tree is a very strong, healthy grower, and succeeds admirably in this part of the Province, but is rather tender for the upper part.

I do not think it necessary to describe or name any other apple, for, in the list I have given will be found sufficient varieties for any person to select from in planting an apple orchard for market or home use There are no doubt many other varieties of all seasons that have strong claims to favor, but they have not been either sufficiently tested here or adapted themselves to this climate to warrant planting them extensively in an orchard intended as a commercial enterprise or for real value. I do not by any means say others should not be tested, for I have no doubt we will yet find many varieties that will be of more value to us than some have, and I think it is every fruit grower's work to help to find this out by testing new varieties in their localities.

Now that I have pretty well exhausted my subject, I suppose you want to hear, before closing, which of these mentioned varieties and what proportion of each I would choose for planting an orchard of—say five or ten acres in this district for commercial value. Well, to begin with, I am not one of these men who run entirely on one or two varieties; I don't believe in having all my eggs in one basket. I know it has been advised by many to plant entirely of one or two varieties in Winter apples especially. Now, my past experience inclines me not to confine myself to so small an assortment in a large orchard, for, as I have said, the seasons seem to affect the varieties so differently (and I believe the bloom fertilizes better with a large number) that I would feel much safer to have four or five of the very best. Again, if I was only planting an acre of Winter-apples I might then plant only one or two varieties from the fact that it might pay better to have all your crop in one year and none hardly the next, than to be bothered with a few of different kinds each year, making more trouble and expense in marketing.

In planting a few trees for home use only—a person wants if possible a constant supply of ripe apples from the earliest Sommer to the latest Winter—and in order to get these will require to plant quite a number of varieties, a tree or two of each. In making my selection then at the present time in my own location—for say—500 trees of Winter apples, I would put them in about the following varieties and proportions:

One hundred and fifty Baldwins; 150 Stark; 50 Ben Davis; 50 Golden Russet; 50 Northern Spy; 50 British Columbians.

This is made out slightly different from what it would have been a year ago, and probably another year I might make it slightly different again, and perhaps in five years time there would be quite an alteration.

In a selection of say—200 trees of Summer and Fall varieties, I would extend the number of varieties somewhat and make it about as follows :

Twenty-five Yellow Transparent, 20 Maiden's Blush, 10 Red Astrakan, 40 Wealthy, 25 Duchess of Oldenburg, 20 King Tompkins, 40 Gravenstein, 20 Ribston Pippin or Blenheim Orange.

I sincerely hope that this subject will receive some discussion for I am anxious to know whether others who have tested the different varieties or have observed them closely will agree with me in selection and proportion. I should also like to hear if there are any new or other varieties I have not mentioned which they have found more profitable than some of these, as I said in the beginning. This question of variety is very important to the fruit grower, and and I hope will receive your best attention.

Mr. Harris' name was on the programme also for a paper on the same subject. After the conclusion of the reading Mr. Harris remarked that after so full a paper had been read there was very little left for him to talk about, and as there was a general feeling among the members that a paper should be discussed after reading, he suggested that a discussion should be held on the paper just read.

The President—I was not present at the last anniversary, but I thought it was the custom to do so.

Mr. Harris—No, it is a new departure ; but I think it will be very beneficial to the society to discuss the papers. As a rule the papers are filed when read, and that is the last of them, and so the benefit which might otherwise be derived is lost. I consider this one of the most important papers to be read this evening on the apple. There are several gentlement present who wish for information on this subject, and they will be able to ask and answer questions.

Mr. Hutcherson—I would suggest that Mr. Harris commence the discussion on the paper.

Mr. Thrift—That is a good idea, especially as Mr. Harris should have also read a paper.

Mr. Harris—Mr. Henry has given his opinion of the varieties named in his paper rightly, because he is most familiar with them. I, too, have had some experience with the Stark and some others, and I quite agree with Mr. Henry when he says that the Stark is one of the most prolific apples. It is undoubtedly so, and it is of very delicate flavor. It is crisp and juicy, and never gets that dry taste that the russet sometimes acquires. As far as my experience goes I consider it a better apple than the Baldwin or the Ben Davis, though they are both good apples. I can recommend it as a dessert apple, or to keep. I think the Wealthy is the best fall apple, and I would recommend the Duchess of Oldenburg as a good summer one.

Mr. Thrift—I did not quite understand whether Mr. Henry said the King of Tomkin was a good keeper.

Mr. Henry—Not a long keeper.

Mr. Thrift—In my experience it is a large apple, and good for cooking after it is red, and the longer it is kept the better for dessert. In fact, I never saw a better apple. I believe Mr. Henry said the coloring of the Baldwin was defective.

Mr. Henry—No, no; I said the flavor was defective.

Mr. Thrift—The Wealthy with me is keeping first rate. They are as good now as when they came off the tree, both in quality and quantity. I like the tree for its open growth; and the fruit ripens regularly and alike. My trees are from various places; some from local nurseries and some from back east. I have brought a specimen with me, but it is more for its peculiar appearance than for its quality. (Mr. Thrift handed his specimen to the President; it was of double growth.)

Mr. Anderson asked if the Northern Spy was a good tree.

Mr. Henry—Yes, but it cannot be depended upon; you cannot depend on getting a perfect apple.

Mr. Palmer asked how Mr. Thrift kept his apples.

Mr. Thrift—Just as you would potatoes; I earth them up.

Mr. Henry—By cold storage, perhaps?

Mr. Harris—What is the nature of the soil—I mean, where the trees are grown?

Mr. Thrift—Clay loam and bottom land alongside of a creek. I put considerable ashes around the trees. My trees are eight years old. The Wealthy and King of Tomkins bear continuously. I have had a good crop every year. They bear when five years old. I have a large number of other varieties. I have the Ben Davis, but they have not done so well as the King or Wealthy. I have also the Greening. It is not quite a success in our neighborhood. The Golden Russet and Yellow Transparent do well. I have not the Duchess.

Mr. Anderson—I understood Mr. Henry to say the Ben Davis does better in the drier portions of the Province.

Mr. Henry—Yes; the apple is more perfect and the flavor is higher. When the apple grows to perfection the flavor is more likely to grow to perfection.

Mr. Latham—Mr. Henry just mentioned the Blenheim Orange. I think this apple ought to be grown more. It is a fall apple, but I have seen the

same apple kept until May in Ontario. It is more largely cultivated in Ontario now than ever before. It is a fall apple in boxes, but it keeps until May in a root house. I knew it in the old country, too. It is a well-known fruit there. Another apple that does well in this Province is the Ribston Pippin. I have seen splendid apples here on the tables in the exhibition. It is a dessert apple. I think the preservation of apples is most important. I have found that the plan adopted in the east is the best—to keep them in a root house at an even temperature. The most common mistake in apple-keeping is to have them too warm. If they were sunk well down and kept at just above freezing point they would come out well in the spring. I have had apples that have been put up in barrels wilted before Christmas. If we wish to keep apples for shipment we must adopt some other means of storage than that hitherto adopted.

The President—I can agree with Mr. Latham regarding the Blenhiem Orange, although I have only a few myself.

Mr. Henry—There is such a variety of soil here that only a few of us have the same apples.

The President—I have found the Baldwin, the Golden Russet and Northern Spy three very good varieties.

Mr. Thrift—With regard to keeping apples, those I have kept in pits are most perfect. I just keep them covered up so as to prevent freezing.

Mr. Henry—I agree with that; but the defect is as soon as they are exposed they begin to decay quickly. But they keep a very long time that way in a perfect condition. That has been my experience and that of other persons I have known.

Mr. Hutcherson—There are many instances in which I can quite agree with Mr. Henry regarding the varieties he mentions—that is, speaking of the lower country, below Yale. I cannot understand why he mentions some of these varieties, as in planting his orchard of five hundred trees there were some of them he did not plant at all.

Mr. Henry—I only mentioned them as being valuable in the markets of the world, not as being particularly adapted to this country.

Mr Hutcherson—Did you recommend the Yellow Newton Pippin?

Mr. Henry—I did.

Mr. Hutcherson—I think it is one of the worst I have ever known for this country. My idea is that many of these varieties should be dropped as far as B. C. is concerned. I fail to see the good of Pewaukee; it is not entirely a new apple either.

Mr. Anderson—It has been condemned in the east.

Mr. Hutcherson—Then the Ben Davis. I could not recommend any man to plant that apple for profit on the lower Fraser, and it is profit we are speaking of. The question of the best apples to grow for home use and shipping purposes is so nicely combined that it is hard to distinguish. I have never got good fruit from the Ben Davis myself. On a sunny side hill in a bright season you get a fair Ben Davis, but I have failed to see them grow on a low or rich land. The Spitzenburg I cannot speak in favor of either; it is not worth cultivating. What is the use of growing an apple if it is no good after it is grown? The tree is very tender. It must be planted on high, dry land. It won't stand water. It grows well about Spence's Bridge.

Mr. Henry—There were some fine specimens at the New Westminster exhibition.

Mr. Hutcherson—There is an apple Mr. Henry calls the "British Columbia." It is a very fine apple, but I object to the name. I object to the double naming of any fruit. We have been trying to get our varieties down to a single name if possible, and as that was a new variety I think we might have had a single name. It is a very nice apple to look at. With regard to the Mann I fail to find where it is profitable to grow. It is not productive. As far as profit goes I would not recommend any person to grow the Mann, nor the Rhode Island Greening either. It is a fine quality apple, but not profitable in this country, being liable to spot. Another apple has been mentioned—the King of Tomkins County. I have not found where that apple is profitable; it may be to the dealer, but not to the grower. It carries a high price in the English market and in Europe, but, in my experience, the dealer will not give any more for it than the Baldwin. You can grow two barrels of Baldwin to one of King. But the dealer makes more mony out of it, and so the cry arose "plant King of Tomkin." That was the dealer's cry. I am glad Mr. Thrift has found it a success; it has not proved so with me. With regard to summer apples, all those Mr. Henry mentioned are good. The red Astrakan is a valuable apple and fine, but it requires particular conditions to get good fruit. I can quite agree with former speakers that the Blenheim Orange is of great value to this country There is one apple Mr. Henry failed to mention—the Keswick Codlin. It is a good table fruit, and the tree bears young and heavily and every year. It is like the Baldwin: the blossom carries a tremendous lot of pollen. It is owing to the large amount of pollen carried by the Baldwin that we have such a crop. Well, the Keswick is the same; you can depend upon them every time. Now, with regard to the spot, I think it is only temporary. I think the fruit growers should take hold, and I think they will be able to abolish it.

The President—The Canada Red is a good cropper also. It is not of first-class flavor, but it is a good keeper.

Mr. Hutcherson—Did it show black spot?

The President—This year, but not before.

Mr. Anderson—Where does this new apple, "British Columbia," come from?

Mr. Harris—It comes from Mr. H. P. Bales' place at Burtons Prairie. It came from a seedling.

Mr. Hutcherson—The society ought to take up the matter and have that apple named differently. I don't like to appear to doubt Mr. Bales' word in any way, but Mr. Knight had that same apple in his garden.

Mr. Harris—It was probably taken from there.

Mr. Knight—I got it from Johnson.

Mr. Anderson—I was at the exhibition, and I saw the same apple and recognised it immediately. I was told it was a seedling. It was very light.

Mr. Henry—This was an individual tree, standing by itself, and it came from a seed. He is willing to take oath on it. It is almost identical with the Canadian Reinette. He said there was difference enough to make it a different apple. Whether that was all the difference it is hard to say. One thing is certain, the tree, by Mr. Bales success, is proved to be a good tree for this country, and I think we ought to keep to it. It is a good apple; if Canadian Reinette is as good, keep to it. I was against the name myself, but now I think the society ought not to repudiate it.

Mr. Harris—I don't see why Mr. Hutcherson should object; it will knock the thing on the head.

Mr. Hutcherson—A friend of mine applied to me for information regarding it. He had ordered from an Oregon dealer a number of "B.C." apples on the strength of its being a new variety. I would move the appointment of a committee, and thus settle the matter, and not keep it under discussion for ever.

Mr. Henry—How are we going to prove that Bales did not plant the seed? There are a great many varieties that may have two names, and our society does not object to it. They have received such names on this coast and we ought not to make any difference.

Mr. Hutcherson—But as it is so very like Canadian Reinette, call it Canada Reinette (British Columbia), or else British Columbia (Canada Reinette).

Mr. Palmer—What is the use of discussing an outside question?—refer it to a committee.

Mr. Hutcherson—This is an inside question indeed, Mr. Palmer. One of my reasons for objecting is that a firm in Washington is palming off this variety as a new one, and the gentleman I mentioned is buying it in good faith as a new variety, and paying a stiff price on that account

Mr. Henry—It is peculiar that a man should pay a larger price without making enquiries. If a man believes all the dealers say, he is very liable to be taken in. (Hear, hear.)

Mr. Hutcherson—When this society gives out a name for an apple and calls it a new variety, and it is afterwards found to be an old one, they ought to say so and put it in their book. I know that the firm I speak of carry around with them the notice we gave the tree, and of course people think it is all right. If we have done wrong, let us own it and do right now. If our present discussion is published it will pretty soon settle this question.

Mr. Anderson—The naming of apples should certainly take up the attention of a society like this. Any apple about whose name there is any doubt should be referred to a committee.

Mr. Hutcherson—I think a committee should be appointed to name all new varieties.

Mr. Harris—Why not get Mr. Bales to read the history of his apple?

Mr. Hutcherson—I found the same apple in several places in Chilliwack, and they denied having the scions from Mr. Bales.

Mr. Henry—The only thing to say, if we say anything, is that they are nearly identical.

Mr. Thrift—May I ask if this man is interested in this new variety.

Several members—No, no; he will give scions to anyone.

Mr. Thrift—Then I think we ought to repudiate it.

Mr. Harris—I must say that the discovery of this apple rests with Mr. Bales. He found it to be a superior apple, and asked the association to name it. They could not. He then asked that the name of British Columbia be given to it. This was done. Mr. Knight says he had the same apple; I would like to know where he got it from.

Mr. Knight—From Mr. Johnson, about 19 years ago.

Mr. Harris—If Mr. Thrift wants any of these apples Mr. Bales will freely send him scions.

Mr. Henry—It was at the desire of the society that Bales brought the apple before them. Everybody heard of it, and Bales explained it to us at length—gave us the whole history of it—and we were glad to get hold of it. After the society has named it, it is much better to let the name stand, even though it is similar to the Canadian Reinette. Any outsider wishing to get the apple because the society has named it can do so, and if he wishes information about it let him write to the Secretary.

Mr. Thrift—According to that, Mr. President, we must believe that some enterprising Yankee has got hold of a number of scions, has propagated them, and is now selling them. (Laughter.)

Mr. Henry—Very likely. I know that someone came to Mr. Bales and asked for the sole right to sell the scions, but he refused.

Mr. Harris—The name belongs to Mr. Bales, and as it pleases him let him have it.

Mr. Anderson—As there seems no doubt it is a seedling, I don't see why the name should not stand.

Mr. Hutcherson—I move that, in future lists, the name be called Canada Reinette and the words British Columbia in brackets.

This was seconded.

Mr. Henry—That would be acknowledging it was a Canadian Reinette. *I move that in future we give a short description of its discovery. We can mention Canadian Reinette separately, and say it is similar to the British Columbia, but that these two apples be classed as different varieties.*

Mr. Thrift—I don't like undoing work that has been done, but I will second Mr. Henry's amendment.

Mr. Harris—I beg to move an amendment to the amendment, that the name remain as it is. If Mr. Bales is entitled to the name let him have it.

Mr. Henry—Well, that is just what my amendment means.

Mr. Harris—Then I withdraw my amendment.

Mr. Henry's amendment was then put and carried.

Mr. Hutcherson—Now, anyone reading this report will have a very good idea of the facts of the case.

Mr. Henry—Yes; that is what we want.

Mr. Hutcherson—I firmly believe there is a fraud being perpetrated on the public, and that is why I wished the matter to be fully discussed.

Mr. Harris—I think committees should be appointed each year to revise the lists of varieties. I, therefore, move that a committee be appointed to name a certain number of each variety of fruit.

Mr. Latham—I hope the committee will reduce the number of varieties mentioned in the list; it is far too large for ordinary persons.

Mr. Harris—I agree with that; and I wish to add to my motion that a standing committee be appointed to name the best varieties of fruit adapted to

the climate of British Columbia, to report next year. I beg to name Mr. Hutcherson, Mr. Henry and Mr. Palmer.

Mr. Thrift—I second that motion. I should imagine that very valuable information can be obtained from the Agricultural Society's report. The committee could gather from that the best kinds.

Mr. Palmer—I was about to remark myself that the varieties named are far too numerous.

Mr. Anderson—That is quite true; and, in consequence, when a dealer sends for fruit he gets one or two boxes of a kind and the others are all mixed up.

Mr. Harris—I would like to add to the committee Mr. Thrift and the mover, making five members.

This was agreed to, and the motion was then put and carried.

The President—Well, gentlemen, if there is no further discussion required on Mr. Henry's paper, I will call on Mr. Hutcherson to read his paper on The Prune.

Mr. Hutcherson—I thought the paper would be of very little practical use unless I took up the drying part of the prune business, and having made no notes on that part of the subject I decided not to write the paper. I have no objections to writing a paper for the annual report; but I prefer now to take up some question that should cause discussion. I have jotted down a few notes here and, with your permission, I will read them.

Mr. Hutcherson then read his paper, entitled—

NOTES OF THE SEASON.

BY E. HUTCHERSON.

Another year with its horticultural trials and troubles has past. I feel that it is a great privilege to again have the opportunity of meeting friends who are pursuing the same avocation in life.

Our meetings certainly afford a great deal of pleasure in exchanging views and relating the successes and failures in our work. Failures we must have, for it would not be well for us to succeed in everything. But I have thought sometimes during the past two years that our successes have been overbalanced by failures. I will now enumerate a few instances wherein we, as fruit growers, have failed.

The fruit growers of British Columbia have failed to eradicate or stop the ravages of that most destructive fungus the *Apple Scale*. My experience has shown me very conclusively that it pays to spray for this fungus, and it pays handsomely.

The Apple Scale is a parasitic fungus growing upon the leaf and fruit. The effect of the scale is to cause a large proportion of the blossom and small fruit to drop from the tree, and reduces the size and market value of that which matures. The growth of the fungus may be checked by spraying the trees at a proper time in the spring with dilute Bordeaux Mixture. The effect of judicious spraying with this fungicide is to check the dropping of immature fruit; to cause it to grow larger in size, and more free from blemishes; to cause it to hang better to the tree while ripening; to cause it to take on higher color, and to improve its keeping quality, and will add 150 per cent. to crop. The general opinions of persons whom I have spoken to on this matter, and who have used the dilute Bordeaux Mixture, is that they would now spray apples and pears if there was no scale, for the reason that it makes the foliage much better and more vigorous, and prevents the leaves and fruit from falling from the trees. Have we, as a fruit growers' society, done our duty in this matter? We should have before us to-day a report of a line of experiments, showing clearly the benefits to be derived from spraying for this fungus in the Province.

I move that a committee be appointed to take up this matter, issue a bulletin dealing directly on this question, also formalize some plan for a system of experiments in different parts of the Province, and report at the next annual meeting.

I would call your attention to a new French fungicide from Professor Pamieux, of the National Agronomic Institute at Paris, which he claims to be superior to the Bordeaux Mixture.

The following is the formula:

For 25 gallons of the spraying liquid slake and make into milk of lime four pounds of quick-lime; dissolve four pounds of molasses in a gallon of water and mix with the milk of lime. This will make a solution of saccharate of lime. Stir thoroughly and let stand for a few hours. Next dissolve four pounds of blue-stone in eight or ten gallons of water and pour into the lime-mollasses solution while stirring briskly. The mixture becomes very turbid with the gypsum formed, which may be allowed to settle out, leaving a clear, greenish solution of saccharate-copper, which may be drawn off from the sediment, thus preventing all danger of clogging the spray nozzle, and leaving the leaves clean; or if to be used on leafless trees, it may be at once thinned down to the 25 gallons wanted, since even thus the liquid is much thinner than the Bordeaux of equal strength.

Black spot, blight or canker of the bark of apple trees.

As to the cause, we have many theories. My belief is that it is caused by a parasitic fungus, though in Oregon it is called fire-blight, and is said to be caused by the sun's rays at certain seasons of the year. The remedy there is to wrap the trunk with burlap or straw. The same remedy is used at Duncans

on Vancouver Island. If, as I say, it is caused by parasitic fungus, then concentrated lye wash is a remedy. On the Jubilee Farm, where several thousand apple trees get their annual lye wash, this disease has not yet affected the trees. This is the same remedy which Mr. Lewis offers us, only in another form. And now that it has been found that the curl leaf of the peach is due to a parasitic fungus, and that lime, sulphur and salt is a preventative, we may hope to have soon a full history of the canker of the bark.

We have several remedies given for this disease, still no reliable data as to their success or failure in other locations. Would it not be well to have a committee on this question, and send out circulars to fruit growers, and collect some reliable information as to extent of damage, with list of questions as regards varieties most affected, nature of soil, where trees came from, etc. Answers to these questions would be of great value.

Again, the bursting of the bark and gumming of the cherry trees is a question of vital importance to the Province. In my opinion it is caused by sudden extremes of heat and cold and the contraction and expansion resulting therefrom, which bursts the bark of the tree. I am unable to explain the various functions which the roots, stems, leaves and flowers have to perform and the changes which take place during the growth of these organs. When the orchard continues to grow late in the fall, or the warm weather of mid-winter causes the sap to flow into the branches, succeeded by low temperature, the trees are liable to injury.

Our climate is such as to render this subject one of great importance to the fruit grower; and to advise the best and most practical means of protecting the tree from the sudden transition from the growing state to frosty and freezing weather should be the study of a committee of this association. Information as to varieties most subject to gumming would be valuable, and I would suggest experiments in top grafting on the wild cherry, which would be free from gum and a clean, healthy stock.

There is another question that is being agitated by fruit growers' societies all over the Dominion, as well as in many States of the Union, for some legislative act to control the sale of trees and, to some extent, take charge of the nurseryman and the pestiferous tree peddlar—the man with the pretty picture book. I have given the matter some thought of late, and one cannot visit the orchards of this Province without having the matter brought very forcibly before him. That something should be done in this matter I do not hesitate in saying. Within the past fifteen years sufficient money has been lost in this Province by the planting of worthless varieties of fruits to pay for a bridge across the Fraser river, which I would value at half a million dollars.

Now, this may appear a rash statement to those not familiar with the subject. You who have had experience in growing and marketing fruit will bear me out in it. No; I do not believe that all nurserymen are dishonorable,

nor all tree agents; but experience has taught me that a number have been here for the money there was in it. Is it not time this society made a move in the matter and lay the question before the Minister of Agriculture?

The sale by agents of all new varieties, or old varieties under new names, should be prohibited until such time as they had been tested at the experimental farm and reported on. Each and every person handling nursery stock, agents and nurseymen, should be forced to register with the Government with full particulars as to where the stock is grown, etc., also to put up bonds as a guarantee that the stock is true to name and free from pests. That clause in all agents' order sheets which reads, "If you have not the varieties called for, you may substitute them for others equally desirable," should not be allowed under any circumstances.

There is one more matter I wish to bring up for your consideration—that is the imports of agricultural products for the year 1892. I cannot allow this meeting to pass by without entering my protest against the following figures:

Agricultural products importation, 1892, $2,656,698. Here are some of the items:

Pork, bacon, ham, lard, $429,247; poultry, $21,795; eggs, $102,510; butter, $409,372; cheese, $41,043; condensed milk, $42,416; green apples, $29,206; plums and prunes, $10,366; cherries, $8,309; small fruits, $2,479.

The last four items will probably come nearer home to the members of this society than some of the others. How about that $124,305 for poultry and eggs? Would that we could say as it is said of the Canadian hen:

Sweet fowl!

Gallus Domesticus!

Honest, painstaking, conscientious, time-defying hen!

Begetter of the Big Egg of every country sanctum!

Denying herself of many comforts that she may raise a family and supply the market with spring chickens at 60 cents a pair.

Gifted by nature with that faculty known as hen-sense, which teaches her to scratch for sustenance where it is most likely to be obtained.

Fond mother of her flock!

Noble bird, the Canadian hen!

Never despairing, even when Uncle Sam clapped a tax of 5 cents a dozen on eggs.

Self-denying, steady-going, patriotic hen!

Be you Dorkin, Brahma, Plymouth Rock, White Leghorn, Brown Leghorn, Hamburg, Wyandotte, Spanish, Cochin China or Bantam.

It is all the same.

Time cannot wither or custom stale your infinite variety.

The nation gives thee thanks.

For when the clouds of McKinleyism lowered most heavily in the sky you kept right on with your daily duty and never skipped an egg.

Feathered fairy of the breakfast table !

More power to your elbow !

Or more properly speaking, wing !

For thou art all wool and a yard wide, and once more freedom is thy gift.

Where are we at ?

The Wilson bill !

Freedom for thy eggs in the American market !

No more 5 cents a dozen levied at the boundary on the products of the Canadian hen.

No more long-range eggs for the British market.

But short-range eggs by the million to sell to Uncle Sam.

No pent-up Utica confines thy powers, the whole boundless continent is yours.

And eggs just now are 25 cents a dozen, without regard to sex, size, age, creed or previous condition of servitude.

Hurrah ! for eggs is eggs !

That is to say, those of them that are not spring chickens.

And the whole world wants them—eggs, I mean, not immature chicks.

Boiled, fried, poached, done on one side or both, made up in omelets, scrambled, baked, dropped, or put in egg-nogg and other succulent concoctions.

Dishes fit for godesses, nectar fit for gods !

Blessed bird !

Bride of the barnyard boss !

Patriotic producer of hen-fruit !

Thirteen million dozen eggs for export every year.

All this we owe to thee !

" Lay on Macduff, and cursed be he who first cries hold, enough ! "

Hail to the Canadian hen !

Flap your wings, O hen, and fling your tail feathers to the breeze !

There is no duty on eggs.

Hurrah !

Excelsior ! Egg-shell, sir ;

Cock-a-doodle-doo !

This rhyme, sir, has, I believe, a lesson in it for us. But it is the matter of the production of the cow to which I wish to call your special attention. Butter, cheese and condensed milk—half a million dollars paid out by this Province for these products during the year 1892. What a libel on the gentle-eyed cow of British Columbia ! Nearly sufficient money to pay for our new Capital buildings which so stirred up our politicians a few months ago. And, sir, can it be true that, in the face of these facts, the great questions which are agitating our members at the present time in the legislative assembly are redistribution, parliament buildings and wild land tax ? I believe, sir, the great question of the day is How can we stop this great drain of wealth from

our Province? Are our great natural resources of such extent that we can go on from year to year and hold our own, or will we at last have to give up the country again to the Siwashes? I for one say, emphatically, No. Let us find a remedy for this great waste as is being done in the interests of horticulture. I believe that when the exports of fruit from this Province to Manitoba and the North-West are taken into account, we are holding our own at least in this industry.

Dairying, I believe, is the question to which I specially called your attention. Neither time nor space will allow me to dwell on the benefits that could be derived from a Dairymen's Association, and the holding of a convention in the interests of dairying, where questions of importance could be taken up and discussed—such as a dairy station at Agassiz by the Dominion Government; appointment of a dairy commissioner for this Province; assistance and aid by the Provincial Government towards starting creameries and cheese factories in different parts of the Province: and, sir, I hope that this meeting will take up the matter at the present sitting.

Mr. Hutcherson—I will now stop to allow of some discussion.

Mr. Harris—Well, Mr. Hutcherson himself is the best authority on the subject now present, and I would like to hear from him.

Mr. Hutcherson—I have given my experience in the paper, and, with permission, will go on reading.

Mr. Hutcherson then resumed the reading of his paper, finishing up with an eulogy on the great Canadian hen.

Mr. Harris—If the association has done nothing else but caused the author of that wonderful tribute to the hen to become known, it has not existed in vain.

Mr. Anderson—What time of the year do you spray, Mr. Hutcherson?

Mr. Hutcherson—In the spring, just before the leaf comes out, and again just after the blossom has dropped.

Mr. Anderson—I think about 50 per cent. of the spores germinate, and it is practically useless to spray afterwards.

Mr. Hutcherson—Oh, no; you can spray afterwards with advantage, as it will keep down the growth. Of course you cannot take it out after the growth has once begun.

Mr. Palmer—The most effective time to spray is before the germs have started to grow—whilst in the dormant state. After they have taken hold of

the fruit it is practically impossible to destroy them. This is important to remember—to kill them before the growth begins.

Mr. Thrift—Can Mr. Hutcherson recommend any particular kind of sprayer? Mine throws too much of a stream instead of a fine spray.

Mr. Hutcherson—It is probably the nozzle that is wrong.

Mr. Thrift—It is a hand-pump, but I can also work it with my foot. put it into a barrel. It throws a stream of 100 feet.

Mr. Henry—The Nixon nozzle answers pretty well, and the Vermont is still better; but the kerosene and coal oil emulsion will clog it up every time when cold, but when warm it is all right. I must use it warm to be effective.

In reply to a question by Mr. Austin, Mr. Hutcherson said he would make the second spraying just after the blossom had fallen. Some spots only appear when the fruit is as large as a marble. This year it had attacked trees with no blossom. The season, no doubt, was depended on. Mr. Palmer had observed that if the spores on the tree are killed there is nothing further to be done; but Mr. Hutcherson contended that the spores were so general that the whole farm would have to be sprayed to be really effective; that three sprayings are quite effective; that where trees had been missed, by way of experiment, no fruit was yielded, while a very fair crop was had from the others—about 150 per cent.

Mr. Anderson—You quoted some figures just now about importation: were they for 1892?

Mr. Hutcherson—Yes. I combined poultry and eggs.

Mr. Anderson—I have an idea that the item of poultry alone figured $18,000.

The President—How will you deal with this paper, gentlemen? It deals with a variety of subjects.

Mr. Palmer—I think we had better take one subject at a time.

Mr. Harris—I would like to know something about the gumming of the cherry trees. I have had some trouble with that. Last year the branches became soft and died. I had one tree that was nearly gone, though it did not entirely die; after the soft branches were cut off it recovered. The curly leaf in peach trees I had very little of last year.

Mr. Hutcherson—Salt, lye and sulphur is the remedy.

Mr. Palmer—There is a formula right here in the *Northwest Agriculturist*.

Mr. Hutcherson—You use it in the form of a spray. The Bordeaux Mixture is also good.

Mr. Harris—I have several seedlings which never have had the curl leaf. They bear a very fine peach. I must put a name to them and give Mr. Hutcherson a chance to "kick" over it. I know they are seedlings. One is early, and one is rather early. They are of good color and flavor. They never have had curl leaf, while all the imported ones have had it. I had some very nice peaches from them this year.

Mr. Henry—I think the idea of a committee to experiment is a good one. Two or three gentlemen could be appointed to do such work in their own orchards and report.

Mr. Harris—Will the President name a committee?

Mr. Henry—I move that a committee be appointed to do work of an experimental kind in their own orchards and report next year.

Mr. Harris—What about the Board of Horticulture—are we to do its work?

Mr. Henry—But this is more especially for fruit growers. The board teaches and we do the work: we put their teaching into practice. It would really be a good thing to have a committee appointed for the various districts to make and keep a record of experiments regarding pests and fungi diseases and report to us. If you will consider, it would be of very great use indeed. I will not mention any names, but surely there are some among us who would be willing to do it. Perhaps Mr. Hutcherson would do it in his district; I myself would do it in mine. Probably from three to five would be enough.

Mr. Harris suggested that three be named—Mr. Hutcherson for Ladner's, Mr. Henry for this side of the Fraser, and Mr. Thrift for Surrey. By request Mr. Hutcherson read the motion again. He thought it would be desirable for the committee to issue a bulletin, and that there was enough information to prove that it pays to spray.

Mr. Henry—I thought the idea was that we should put it into practical use.

Mr. Hutcherson—If the fruit growers think such a thing is required let them ask the Board of Horticulture to do it.

Mr. Anderson—The board is always glad to publish bulletins if the material is furnished; and if this society would furnish the material, the board, would, doubtless, publish it free of cost. It might also be posted free, (Hear.)

The President—There would be no difficulty in five of you mutually agreeing to use the best means adapted and report the different results at the next meeting.

Mr. Hutcherson thought some one ought to be appointed for the Island.

Mr. Henry—We cannot force anyone to do it. Does anyone know who would be willing?

Mr. Anderson suggested Mr. Treggie and Mr. Ohlsen.

The Secretary asked Mr. Henry to kindly define what the committee would be expected to do.

Mr. Henry—They would do their own spraying as usual, only they would carefully note the results. They would have to use their own judgement in the matter to a very great extent.

The President—But to use the most approved means.

Mr. Henry—Yes; to read up and carry out the instructions.

Mr. Anderson—Well, all that information would be published by the fruit inspector at the end of the year.

Mr. Henry—But we have no really effective information at present to put before the public.

Mr. Anderson—But the inspector furnishes all that.

Mr. Hutcherson—You will remember that in my paper I said it would be well to have a man to attend to this thing alone. The inspector has to be away from home a great deal, and is not in a position to conduct lengthy experiments requiring constant observation. If I want information from an experiment I must be on the spot all the time. It requires close watching, and you cannot leave another man to do it. Dates have to be kept, and results of different applications noted down as they occur. Different varieties of fruit require different kinds of spraying. I mentioned about the desirability of collecting information regarding these diseases, and putting it in a circular to fruit growers, with reliable data relative to the nature of the soil and the varied means which have been found effective. Some methods are much more effective than others. We have had several lists before, but they have dealt with only one side of the question. We are most interested in the matter and should do something.

The President—That would come within the province of the special board.

Mr. Henry—Yes; but the practical part of the work must be done by the fruit growers themselves.

Mr. Harris—Many of the questions asked by the Horticultural Board are similar to those asked by Mr. Hutcherson, and we have placed them in the hands of most of the people in my district; but, of course, you cannot do too much.

The President—It seems to me that these experiments would bring about more practical results than simply answering those questions.

Mr. Thrift—Would it not be well to ask the board to issue questions to the parties willing to do this work? It does appear to encroach somewhat on the duties of the board. If it would send out a request to those parties to furnish the data required, I think that would be the most straightforward way of dealing with it.

Mr. Harris—But the Horticultural Board is an offspring of this society.

Mr. Henry—Well, they are sending out papers from time to time, and these questions could be issued as others are. But, still, if this committee is appointed and carries out the work it would be of very great use indeed.

Mr. Anderson—The board is, of course, always glad to issue questions of this kind.

Mr. Hutcherson—Yes, they do. But if you will notice, the one question, "Are your fruit trees troubled with canker?" sets a man thinking. He will examine his trees and fine out. Suppose our President was asked that question, what would his answer be?

The President—I have really not troubled myself about it?

Mr. Hutcherson—Did you reply to the question whether they were or were not? Suppose you got a circular asking you the question, would you answer it?

The President—Yes.

Mr. Hutcherson—Yes; and if you took the trouble to inquire you would find that your trees are in fact very much troubled with canker of the bark. (Laughter, in which the President joined.) I went through your orchard a short time ago and found it so, much to my surprise.

The motion was, after amendment, passed "That a committee be appointed to experiment in spraying for the various diseases, and report the results to this society, and that the committee consist of the following gentlemen: Mr. Hutcherson, Ladner's; Mr. Henry, Hatzic; Mr. Thrift, Surrey; Mr. H. Davis, Langley; Mr. Knight, Popcum; Mr. T. Wilson, Harrison River; Mr. J. Kipp, Chilliwack; Mr. A. Ohlson, Victoria, and Mr. T. Treggie, Beaver Point."

Mr. Hutcherson—It was almost entirely in connection with fungus diseases that I wished the committee appointed, and I would like added to the motion "That the committee keep in view particularly spraying for fungus."

This was duly carried.

Mr. Hutcherson—I would like to ask Mr. Page to give us some information on dairying. I am glad to see him present.

The Secretary—There is a long letter from Mr. Cunningham among the correspondence, apologising for his absence and dwelling at some length on the dairy question; perhaps the members would like to hear it read.

Mr. Harris—Although there are a number of papers before it, I think it might be well to hear it first.

Mr. Anderson—I thought this association dealt exclusively with fruit. Is this a branch of the fruit growing business? In other countries there are separate societies for these objects.

Mr. Harris—For the past two years there has been some talk of forming a dairymen's association out of the members of this association. Nothing, however, has been done up to the present, and there is a strong feeling among the members that the matter ought to be taken up.

The President—It is a subject occupying the minds of the farmers more and more every year.

Mr. Harris—Then let us take it up now. Mr. Hutcherson stated in his paper that we imported annually something like a million and three-quarter pounds of butter.

Mr. Page—Would it be in order to move that a dairymen's association be formed independently of this association?

Mr. Harris—I have had a lot of experience with associations of this kind, and the fact that the Fruit Growers' Association has taken such a hold on the people shows that it filled a long-felt want and has done a deal of good. The small association formed in Ontario some time ago has assumed very large proportions, and if this one is taken hold of it will soon follow suit. This society has, I may say, spread its knowledge over the whole civilised world. Were we to take up the formation of a dairymen's association we could make a success of it. Let us apply to the Government for a grant and make a start this year. (Hear, hear.)

Mr. Hutcherson—I would like to hear my resolution discussed. At the present time popular sentiment is in favor of a Dairymen's Association being formed, and coming from this Society the resolution would have more strength. Mr. Hutcherson then read his motion again as follows:

Moved by Mr. Hutcherson, seconded by Mr. A. B. Mackenzie:

Whereas, at the present time public sentiment is strongly in favor of the development of the agricultural interests of this Province, particularly the fruit growing and dairying industries—the importation of agricultural products for 1892 and other years being out of all proportion to the population and exports;

And whereas this meeting has been informed that steps are being taken toward the formation of a Dairymen's Association;

Resolved, that we respectfully request the Provincial Government to favorably consider the advisability of granting substantial aid toward the formation and carrying out of the objects of a Dairymen's Association for the Province.

Mr. Anderson—There's no doubt the dairy business is most important, and if I had known the matter would come up at this meeting I would have brought some information from Australia with me, showing that although some years since that colony had to import butter, now they can supply others. They have had travelling dairymen to instruct the farmers, and the trade has grown to enormous proportions.

The President—A memorial had, perhaps, better go from this Society and from the Agricultural Society.

Mr. Hutcherson—There could be nothing better than that one should go in from every similar society.

Mr. Henry—Yes; ask them to make a grant and afterwards to appoint a Dairy Commission.

Mr. Anderson—They are quite ripe for the question anyway.

The President—Mr. Hutcherson, did you wish that resolution to pass at this meeting?

Mr. Hutcherson—Yes.

Mr. Anderson—You would have to provide for the formation of the Society.

The Secretary—I think the shorter way would be to form a committee here to see the Minister of Agriculture and impress the importance of the matter upon him. They could present it much more fully at a personal interview, and the committee could ask for a short bill similar to our own. There is very little doubt the Government would pass such a bill and would probably give a grant towards the formation of such a Society in this Province. With regard to going about the matter we have no need to go to Australia for examples. We have plenty in Canada, really practical things in the way of dairying. In the Lower Provinces the cheese trade has increased to tremendous proportions through the practical aid of the Government. Butter making ought to be more largely carried on in this Province. Cheese making would follow. I think the proper way is for a good, strong committee to be formed, and for that committee to apply to the Government in the way I have named.

Mr Hutcherson—You will observe that is one of the questions I spoke of in my notes. I am quite in favor of it and will do all I can to help the thing

along, although I am not a dairyman. The Act, of course, would be necessary, but the Association should be first formed. A certain number of members would be required.

The Secretary—Twenty-five are called for.

Mr. Anderson—But the Act for Agricultural Associations says that the forming members—25 I think—shall signify their intention by a bond to that effect—they are then entitled to a grant of money. It is not necessary to get the Act passed first.

Mr. Hutcherson—It would be well to know if we are going to have 25 members.

Mr. Henry—Form the Association first and let the Association bring the matter before the Government and report their wants and wishes. It would be better to come from them than from us—that is, the request for a commission or financial assistance.

Mr. Hutcherson—My resolution only wishes an expression of opinion on the part of the Fruit Growers' Association. I would like the Agricultural Society and such like societies to pass similar motions. Mr. Patterson and myself were appointed at Ladners to see the Minister of Agriculture, and a resolution was passed at that time asking us to bring this matter before him, especially regarding the assistance required.

Mr. Anderson—I think the Secretary's idea very good—you can explain things so much better by word of mouth than by letter.

Mr. Hutcherson—Yes, but my idea is just to show our sympathy in the matter.

Mr. Page—I move that Messrs. Harris, Hutcherson and Knight be a committee to form such an Association and report here to-morrow. They can solicit the names and report on the same.

The President—You can appoint yourselves into a committee.

Mr. Anderson—You can hardly form yourselves into an Association before asking the Government.

Mr. Henry—You could appoint your officers and all that and draw up rules, etc.

Mr. Mackenzie—It would never amount to anything unless you should get the power.

The Secretary—The Fruit Growers' Association was formed before the Government were asked to pass a bill. Then they passed a short bill in connection with agricultural societies, including a few special clauses authorizing an Association to be formed whenever 25 members were secured.

Mr. Harris—We would have to adjourn and then be called as a public meeting. Then a motion would be moved that we be a Dairymen's Association. Officers would be appointed at a general meeting and the officers would make rules, etc.

Mr. Page—Another way would be to form an Institute and have Instructors. Mr. Hutcherson could teach us horticulture and someone else could teach us dairying. We had something like that in Nova Scotia and it proved a great success.

The President—That would be a good way to do.

Mr. Page—We could call it a Provincial Association.

Mr. Mackenzie—I second Mr. Page's motion and that the three gentlemen named be a committee to draw up rules.

The President—I think the best way is to call a public meeting at the close of this meeting—to form a Dairymen's Association.

Mr. Page—Then I move:

That a meeting be held at the close of this meeting to form a Dairymen's Association.

Mr. Mackenzie seconded and the motion was declared carried.

Mr. Hutcherson—But my resolution is as going from this Society. It will strengthen the hands of the committee.

Mr. Mackenzie—I second Mr. Hutcherson's motion.

The motion was put and carried.

Mr. Hutcherson—I have something else I wish to bring forward. It is a resolution calculated to bring out the opinions of this Society with regard to the importation of fruit. Mr. Anderson and myself, as belonging to the Board of Horticulture, would like to have the opinion of this Society.

Moved by Mr. Hutcherson, seconded by Mr. Anderson.

Whereas, the fruit industry is becoming of great importance to the Province of British Columbia and promises to reach great magnitude in the near future if properly encouraged;

Whereas, the Horticultural Society and Fruit Growers' Association of British Columbia have reason to believe that several nurseries situated in this Province are badly infested with wooly aphis and other insect pests; also that trees are imported from infected districts in Oregon and Washington, as well as from the East.

Believing as we do that the interests of the fruit growers and nurserymen are so allied that they are mutual, and they must thrive in inter-dependence on each other. It is therefore of greatest importance that no infested trees be distributed throughout this Province, thereby causing great damage and proving disastrous to the future planting of fruit trees and additional expense to the proper care of those now planted;

Whereas, it is known that apples and pears are being imported into the Province infected with San Jose scale and Larva of the Codlin Moth, and as these most destructive insects have not as yet got a hold in this Province, our earnest desire is that the importation of such pest ridden fruit be specially forbidden;

Resolved, that we respectfully present these for the consideration of Hon. F. H. Turner, Minister of Agriculture, and request that rule 1 of the rules and regulations of the Provincial Board of Horticulture for this Province be strictly enforced.

Mr. Hutcherson—Last year imported fruit was seen here with scale on it. I ordered it to be destroyed wherever I found it. Pears from California I found with worm holes in every box. Apples from California and Oregon were infested with the Active (?) worm. I could not undertake to stop the importation then, but I believe it should be stopped. If they send us fruit at all they should send us good fruit. To inspect all the fruit imported means a lot of work. When Mr. Anderson mentioned about the Inspector taking up the spraying of fruit I said he has his hands full—and so he has. But if we mean to keep the country free of pests the work has got to be done.

Mr. Henry—It is a very difficult matter to enforce these rules from the beginning. Many people don't quite understand them, and to stop business is going to make trouble. The Pest Inspector should be well posted on these things and let the people know, not to come down on them too heavy at first. There are many things the people don't understand. Information has not yet been disseminated through the country, and people are not aware of the many pests there are. We are anxious to have our orchards kept clean. Every man should keep his orchard clean. It is no use keeping the young trees clean in the nurseries and letting the old trees in the orchard remain dirty. This thing should be taken hold of in the right way. We wish to hurt nobody but to do good to all. The appointment of the Pest Inspector was to help the country, not to hinder trade.

Mr. Hutcherson—This is no new thing. I have kept quiet for two years, but it is high time we made a move. I claim the infested orchards come from the nurserymen. The nurseryman is to blame. Probably not the nurseryman here but elsewhere. There are districts in this Province which are clean from insect pests. We have no pests in the Delta. I have never yet seen the

Woolly Aphis there, and it would be a hardship to send a shipment of trees there with the Woolly Aphis infesting them, and therefore I claim the Act should be enforced so that the districts not yet infested may be kept clean. I would like to hear Mr. Henry's opinion on the Codlin Moth.

Mr. Henry—Did you ever open the fruit to see if the insect was inside? You seldom find the worm after the fruit is ripe. In my part of the country this was the only insect that injured the fruit. But we generally found that the worm was gone out when the apple was ripe. They go through certain stages before coming into the winged state again. In some orchards you would hardly get any clean fruit at all. I have found the worm is not much in the fruit itself after it is gathered.

Mr. Anderson—I have found them in the California fruit.

Mr. Hutcherson—But we get the fruit from California in all stages.

Mr. Anderson—As far as the dealers go they have had every considera. tion from the Board. Not only have the Act and rules and regulations been sent to them privately, but letters have been sent to them calling their attention to the provisions of the Act, and the nurserymen, as you know, have got the letter.

Mr. Henry—Oh, yes; in the past year the Board has been working, but I think the Inspector should go around and spend his whole time in showing the people.

Mr. Anderson—Just what he is doing now.

Mr. Henry—It has not been done and I think it ought to be done. He should go around and point out to the people the insects that infest their orchards. He has certainly been making trips here and there where he was called.

Mr. Anderson—The Inspector goes around and is greatly enlarging his circle, and in time will doubtless take in the whole of the Province, but it is a pretty big one to go over.

Mr. Henry—I suppose we wish to benefit the fruit growers.

Mr. Palmer—I am of opinion that in some places pretty strong measures will have to be taken or the fruit business will very soon be ended. Some of it is ignorance, but a great deal of it is wilful ignorance. So long as some people get fruit from their trees they don't care.

Mr. Hutcherson—I have had more experience than some of you, perhaps, and I find that a farmer requires more information as to the varieties he grows than other things. With regard to the Codlin Moth I claim it is one of the greatest scourges of the orchard next to the Woolly Aphis.

Mr. Anderson—I see nothing unusual in Mr. Hutcherson's motion and I second it. I think it is a very good one.

The motion was then put and was carried.

Meeting adjourned until 9 a. m. Thursday.

NEW WESTMINSTER, January 25th, 1894.

Adjourned annual meeting.

Moved by Mr. Page, seconded by Mr. Hutcherson:

That, whereas, the common practice of feeding salmon to hops by farmers along the Fraser River and tributaries has an injurious effect in the meat and renders it unfit for use, particularly in the packing business, which, shortly, will consume a great proportion of the hogs raised in the Province; and,

Whereas, packers refuse to purchase salmon fed hogs, or hogs suspected of having been so fed, the industry in this district is threatened with serious damage from this practice, therefore be it

Resolved, that this Association condemns in unmeasured terms the practice of feeding salmon to hogs, and recommends to all farmers in their own interests to abandon the practice, and so establish a reputation beyond suspicion, and in this way protect from disaster one of the most promising industries in agriculture.

Mr. Knight moved the appointment of delegates to the Washington convention.

Mr. Henry—A resolution was passed at the last meeting to send delegates there. I understood it was arranged that three should be sent.

Mr. Hutcherson—The Washington people impressed upon us at that time and since to name certain delegates to attend that convention. They wish to know who the persons would be. At the November meeting there were some names mentioned, but it was not in our power to elect them. The Secretary has the correspondence in the matter and perhaps it will be better for him to read it before definite action is taken. I believe a motion was carried to provide $150 to send delegates.

Mr. Henry—There were four or five nominations. No nominations could be made now.

The President—The object of this discussion is to enable the Secretary to give an answer to a communication.

The Secretary then read the resolution mentioned and also the communication from Washington. He said at the last meeting it was thought desirable to have representatives from two firms in Winnipeg and went on to read the programme to be followed at the convention. He had replied to these communications saying he would write fully as soon as the delegates were appointed.

Mr. Hutcherson—I think the first thing to be done is to appoint delegates. The proper person would seem to be our President, whoever he may be.

The President—I would like to hear the opinion of the members generally upon the matter.

Mr. Henry—There are many advantages to be gained by some of our people going there. I would therefore advocate the sending as many as possible—as many as we could afford. I suppose we all agree in that. Although the resolution passed at last meeting provides for three, there is nothing to prevent more going.

The President—It is for this meeting to suggest how many should be sent.

Mr. Henry—It would be well for the meeting to first consider how many it would be to our advantage to send and what amount we can afford to spend in sending delegates. If we have the means we could hardly spend it in a better way than by sending delegates there.

Mr. Hill—May I ask where the meeting is to be held.

The Secretary—At Spokane Falls.

The President—It is a convention of Idaho, Washington and Oregon fruit growers and they have asked us to join them.

Mr. Henry—I suppose $50 per delegate would cover all expenses.

Mr. Hutcherson—We estimated that $125 would pay for the four. It was not expected to pay more than the actual travelling expenses. If more than three go the $150 could be divided up. Supposing five went that amount would go a long way towards paying expenses.

The President—As we are a new Society we ought to discuss and decide it now.

Mr. Henry—The money is given to us by the Government to do with as we think best for the country. We ought to pay a man's actual travelling expenses even if all five go, especially as we didn't hold our exhibition this year. Even coming to this meeting costs individual members a deal, and the

meetings do the country a great deal of good. I think even if we send five it would be better.

Mr. Hutcherson—The question was pretty clearly discussed at last meeting. It was then concluded that one from the Interior, one from the Lower Fraser and one from Vancouver Island would about fill the bill. The more that go there the greater amount of good is going to be done.

Mr. Sharpe—I don't see that that follows. If three can bring back as good a report as five, let three be sent. If the $150 were spent among five two of them might have to walk back.

Mr. Hutcherson—I don't quite agree with Mr. Sharpe.

Mr. Henry—People from local places had to be sent. A man from any upper district can do good to that district when he comes back.

The President—You cannot expect the delegates to pay their own expenses.

Mr. Hutcherson—I think $150 is enough for the Society to pay away.

The President—Certainly.

Mr. Sharpe—Have the hotels given special rates for this at Spokane.

The President—I think so.

Mr. Henry—If the Society pays $200 that ought to be ample, and if the delegates require anything over that to have a good time let them add it themselves.

Mr. Palmer—How many days will the trip be likely to cover.

Mr. Hutcherson—Five or six.

Mr. Anderson—More likely seven.

Mr. Hutcherson—I move that a delegation of three be appointed to attend the convention. The proper way to find out the names is to take a ballot.

Mr. Henry—Let us first find out how much we are to spend. I move that $200 be laid aside for the purpose, and see how many that would send.

Mr. Latham—I think three would be plenty to attend the convention and $150 is as much as the Society can stand, and I second Mr. Hutcherson's motion that three be sent.

Mr. Hutcherson's motion was then put and declared carried.

The Secretary—The resolution of that directors' meeting will come out publicly. If you are going to cancel it you had better do something that can be shown on the report.

Mr. Hutcherson—Well, if there are any more nominations they can be added.

The Secretary—But I mean that the motion ought to be amended so that the original motion will not clash with it. If this meeting cancels the former arrangement without explanation it will look awkward. The resolution reads: "That three delegates be sent to the convention at Spokane on the 14th February and their necessary expenses be paid by the Society."

Mr. Henry—It can be added to that resolution that the matter be left to be finally settled at the annual meeting of the Society—at this meeting.

Finally the resolution passed by the Board of Directors was amended to read "and that the delegates be selected from among the following named gentlemen, subject to the decision of the annual meeting."

The President called for nominations.

Mr. Henry—We might take up the election of officers first and then we can see who the President will be as it has been suggested that the President should go.

Mr. Hutcherson—The President should be there to read the address.

The Secretary—Yes, it would look odd for the President to stay at home, and send a response to the address of welcome. If he was there he would hear the address read and could bring his ideas into line in his response.

Mr. Hutcherson—The reason I mentioned it is that it is one way of getting along with business without going back to election of officers.

The President—This is really business appertaining to last night.

Mr. Henry—Whoever the President is for the coming year, if he cannot go someone else will have to go in his place.

Mr. Anderson—Well, let us proceed to election of officers.

The Secretary—This resolution does not preclude the election.

Mr. Henry—Then I move we proceed to elect our officers for the coming year and afterwards take up this matter.

Mr. Anderson seconded and the motion was carried.

The following were declared elected directors for 1894.

DIRECTORS

Agassiz, T. A. Sharp
Ashcroft, Ex-Governor Cornwall
Dewdney, H. P. Bales
Cache Creek, C. A. Semlin, M.P.P.
Chilliwhack, E. A. Kipp
" E. A. Wells
" H. Kipp
Comox, Sandwich, J. A. Haliday
Cowichan, J. N. Marshall
Donald, G. E. Manuel
Esquimalt, Hon. C. E. Pooley
Halls Prairie, W. J. Moggridge
Hatzic, R. L. Codd
" G. W. Henry
Hammond, W. J. Harris
" J. W. White
Harrison River, T. Wilson
Haney, J. J. Wilson
Howe Sound, Geo. Gibson
Kamloops, H. McCutcheon
" J. A. Mara
Ladner's Landing, E. Hutcherson
" " J. Kirkland
" " W. H. Ladner
" " Thos. McNeely
Langley, Jas. McAdam
" Hy. Davis
" Wm. Johnson
Lytton, Thos. Earle
Lulu Island, O. D. Sweet
" S. Brighouse
" Jas. Mellis
Lillooet, C. A. Phair
Matsqui, J. B. Cade
" H. F. Page
Mission City, F. S. Timberlake
Mayne Island, W. H. Maudsley
Nanaimo, J. G. Halpenny
" J. P. Davis, Box 112
Nicola, John Claperton
New Westminster,
" Peter Latham
" Thos. Cunningham
" A. C. Wilson
" T. R. Pearson
" Marshall Sinclair
Pender Island, W. Grimmer
Port Moody, Norval Butchart
Riverside, C. B. Sword
Saanich, J. D. Bryant
Salt Spring Island,
J. P. Booth, M.P.P.
Spallumcheen, Donald Graham
Spence's Bridge, John Murray
Squamish, E. B. Madill
Sumas, Allen Evans
Surrey, J. Punch, M.P.P.
South Vancouver, W. J. Brandreth
" " J. Hurrell
Vancouver, J. M. Browning
" R. E. Gosnell
" R. T. Robinson
" Walter Taylor
" A. H. B. Maccowan
Vernon, Alfred Postill
" Geo. Whelan
" Lord Aberdeen
" Hon. Majoribanks
Victoria, G. A. McTavish
" Dr. J. W. Powell
" D. W. Higgins
" Mr. Jay
" D. R. Ker
" C. E. Renouf
" W. H. Bainbridge
" J. R. Anderson
" R. M. Palmer
" R. E. Gosnell
" Andrew Oleson

Mr. Henry—I move that this annual meeting do adjourn for a few minutes to permit the Board of Directors to elect the officers.

The Secretary—To save time you might go on with the general meeting and elect Mr. Kirkland as representative to Spokane Falls, as you are now aware he will be President.

The President hoped they would not be too hasty as he might not be able to go.

Mr. Henry—Well, I will withdraw my motion and move that we proceed with the election of delegates to Spokane convention.

Mr. Hutcherson—This thing might be done by ballot. However, I move that Mr. Postill, the President and Mr. Palmer be delegates.

Mr. Anderson—We have an engagement on the 17th at Duncan's.

Mr. Hutcherson—I myself am engaged there, too, but some of us may be spared to visit the convention. The Inspector should go as he is the man who can give the information, and if he can gain any information there he should be sent.

The President—A practical man should certainly be sent. I don't call myself a practical man—that is, in the sense of taking part in such a convention.

Mr. Anderson—How would it be—would the Board have to meet and direct Mr. Palmer to go there?

Mr. Hutcherson—Mr. Palmer's expenses would come out of the appropriation of the Fruit Growers' Association, and Mr. Palmer is, to a certain extent, free to do as he thinks best from one meeting to another. He would go to Spokane to obtain information for the benefit of the Province.

Mr. Sharpe—Half his expenses would be paid in that connection and it would leave our money free to pay for some other man going. You see he is allowed a certain amount of discretion.

Mr. Hutcherson—The Board could not spend the money in a better way than by sending Mr. Palmer there. When he is travelling around here the expense is about the same as if he went there.

The President—It is very essential that some one should go who can talk to the convention intelligently.

Mr. Palmer—Of course it is for the meeting to decide which is the most important.

Mr. Hutcherson—He would meet many men with whom it would be as well for him to be acquainted, and get their views as to the cause of failure and their experience. I get a deal of information in this way.

The President—With all deference to Mr. Hutcherson's remarks as to Mr. Palmer being the proper person to go, I think some one should go from the Association who has been identified with it from its inception, and who could take part in any question which might be asked about the Association. For my part I would not be in a position to give such information. I have not been identified with it to the extent some other members have. The one best posted in the history of the pests that infest the fruit trees of British Columbia should be the one sent.

The Secretary—I think with you, Mr. President, that some of the really active members of the Board should go. Three or four names suggest themselves to me—there's Mr. Hutcherson, Henry, Sharpe and Harris have been, perhaps, the most active members we have had. They are connected with it by its work, and some of them are not only nurserymen, but actual fruit growers, and I think their experience would cover the scope necessary to intelligently bring back the full benefits of such a convention as the one proposed to be held. These names ought to have some consideration in making the appointments. If we could also send Mr. Palmer it would make our delegation stronger. He could make his official report to the Horticultural Board and our delegates could make their report to us, and we should thus have a double report.

Mr. Anderson—Mr. Palmer's expenses would have to come from the Board, according to the Act, so that there is no doubt but he is the best man to go. It would be his duty to report to the Board. If this Association delegated him of course he could go, but this Society would in that case have his expenses to pay.

Mr. Henry—It is desirable for Mr. Palmer to go as a member of the Horticultural Board, but I think our cash ought to be used in sending some one else. If the Horticultural Board could send Mr. Palmer and our delegates go besides that would be the best.

The President—Well, let us send our three delegates now and if the Board decide to send Mr. Palmer all the better.

Mr. Burchart (Port Moody)—I think Mr. Sharpe and Mr. Hutcherson and Mr. Henry are the fittest to be sent. They have, as the Secretary said just now, been identified with the Society as long as anyone.

Mr. Anderson—There is no reason why Mr. Palmer should not go if the Society paid his expenses, but if the Board had to pay them it would be awkward.

Mr. Knight (Popcum)—I move that Messrs. Sharpe, Henry and Hutcherson be sent as delegates.

Mr. Anderson—That motion does away with the former idea of sending them from different parts of the Province. One from the Island, one from the Upper and one from the Lower Country.

Mr. Palmer—I think it would be advisable to send at least one from the Upper Country.

The Secretary—I notified Mr. Postell that he was on the committee from which would probably be drawn the delegation to go to Spokane, but he is in Vancouver laid up with la grippe, and has sent me his paper to read to this meeting. He said if he was here at the meeting he would tell me if he could go. It might be well to have his name on and have other names as alternatives.

Mr. Anderson—Yes, and a good alternative man is Mr. Ohlsen.

The Secretary—If Mr. Palmer is not going a report to the Board ought certainly to be sent from this Society.

Mr. Hutcherson—I see no reason why Mr. Ohlsen should be sent. He has never taken a great deal of interest in this Society. The original motion was passed to send Mr. O'Kell. But whoever else goes I think Mr. Palmer should be sent, as he is the best in the interests of the Province. If he cannot go then I think Mr. O'Kell should certainly be sent.

The Secretary—Mr. O'Kell is in England and will not be back for a couple of months.

Mr. Hutcherson—Then there is no other way than to come back to the motion. I don't like to force the position on any man who has not shown an interest in the thing.

The President—Well, gentlemen, time is passing.

Mr. Henry—It would be well to get the opinion of the whole meeting by means of the ballot.

The Secretary—I think if the Horticultural Board would send Mr. Palmer, Mr. Sharpe would take it on himself to go as joint representative of this Board and the Experimental Farm. We could name three in addition and that would make a strong delegation. The names of Messrs. Sharpe and Palmer could be coupled with our selection.

Mr. Sharpe—If I could spare the time I would represent to the Government that it would be better for the Province that I should go, but I have also to go to Cowichan, and have many other things to do. You had therefore better choose your own representatives independently of me. I will promise to go, if possible, and I can only leave it in that way.

Mr. Hutcherson—It is very cold at Spokane.

Mr. Sharpe—Well, if the President goes he would probably lend me his overcoat.

The Secretary then read the resolution.

The President—As I said before, it is essential that some of the delegates should be familiar with the work in hand.

The motion carried as follows:

Resolved, That the delegation to Spokane be composed of the President, Messrs. E. Hutcherson, A. Postill and G. W. Henry, they to arrange which of the three are to go; and that Messrs. R. M. Palmer and T. A. Sharpe be requested to accompany the delegation.

The President—Shall we go on with the reading of the papers.

Mr. Harris—If we have no other business of importance—I suppose the Directors decide on the next place of meeting.

The Secretary—I have several more letters to read, although I believe a pretty full report on correspondence was published in this morning's paper. Here is a circular regarding the formation of a World's Horticultural Society. It can be referred to the Directors. (The circular was read.) I think it is desirable for our Association to become a member of that organization. The fee is only $5 per year.

Mr. Henry—I think we can stand that.

The Secretary read an apology from Mr. Earl and from Mr. Starratt and remarked that Mr. Hutcherson had a paper to read for the last named gentleman. Mr. Starratt asked in his letter if any of the members had had experience in manuring fruit trees with fish or fish offal. A letter was also read from Mr. Cunningham dealing with dairy matters.

Mr. Hutcherson—Is it the wish of the meeting that the letter be published in the annual report? If so I beg to object to one clause in the letter. He speaks of the country to the South as being well adapted to fruit growing and thereby throws a wet blanket on the fruit growing industry of this country. Of course that country is as well adapted to dairying as this.

Mr. Anderson—It is only an expression of opinion by a single member. Because a member expresses an opinion this Society does not necessarily adopt it.

The President—I think that letter might well be handed over to the Dairy Association formed last night. It deals with the subject they have taken up.

Mr. Anderson—I don't think it need be printed among our list of communications.

Mr. Henry—Then I move that the letter from Mr. Cunningham be referred to the Dairymen's Association, as it refers more particularly to the subject taken up by them.

This was seconded and carried.

Mr. Sharpe moved and Mr. Henry seconded that the whole of the communications and circulars received be referred to the committee on annual report.—Carried.

The President—The letters being disposed of, the next order of business is the resumption of the reading of papers. I see Mr. Wilson's name is the next on the list.

The Secretary—I received an apology from Mr. Postill and I see Mr. W. H. Lewis has left the room, and Mr. Wilson is not here.

Mr. Henry—Mr. King is the next in order and perhaps he will read his paper on planting and pruning.

Mr. King then read his paper on

PLANTING AND PRUNING.

This subject I have just mentioned is of great importance to the public in general. Most farmers and fruit growers are trying to make a success of growing fruit without a proper knowledge of this most important art, who will find in time the necessity of practical men, especially in a new country like this. Most all the fruit trees we see in gardens show this want already. Most of the information they get is from the Fruit Growers' Association and books, but books written on this subject by impractical men are not much for a new beginner alone.

Pruning by guess work, as many do, will not answer. There is a greater art in pruning than many think. Pruning can never be thoroughly understood from paper unless taught by a practical teacher, therefore we have a right to give plain instruction, so that every person may understand the management of young trees as nearly as can be done on paper. My way may seem simple to you practical men, but many do not even know how to plant a tree. I would like to explain the proper training and pruning of the espalier tree, but time will not permit. All our small gardens should grow their apples and pears on the latter tree, and not shade their small gardens with standards, as the latter trees are for orchards only, but the former is for small gardens, and require very careful Summer pruning, as this tree and the pyramid is often ruined for the want of proper Summer pruning. I will give my time on the standard tree, as it is generally grown by the farmers.

A fruit tree should never be planted before the land is trenched from two to three feet deep, for if the roots have not free growth it will affect both tree and fruit. If the land has not been trenched, first make a round hole four feet across and two and one-half feet deep, take all the good soil and place by itself, and the balance, which is poor, is not to be used. This will not be any deeper than the drainage should be if the land requires it, and if not done the water will lay in the bottom of the hole. Drainage is the first thought in planting fruit trees. Now take the good soil and place in the hole in the shape of a mound, so that the tree when placed properly on it will be four inches below where it is to be left. If you have no one to hold the tree place a piece of wood across the hole and tie the tree to it in proper position. Be very careful and place the roots naturally on the mound. When this is done you must have a heap of mixture composed of good loam, a little sand, a small quantity of bone dust and a little salt, well mixed. Be sure and not have any fresh manure with this mixture. Take one barrow full of this and shake it over the roots with your spade. When well covered untie the tree and shake it gently and at the same time raise and bring the tree three inches above the level of the land, for the whole mass will sink. Add the balance of the mixture to the roots which will be bare through the raising of the tree. Now take a barrow of good manure and place all around the open space at the outer part of the hole for the roots to feed on. Cover with any good soil and press down firmly. You will not lose many trees planted this way. This will give plenty of wood to form the tree. Stake the tree, but not to the top, for the top buds must not be injured. Cut the tree off from three to four feet high, for a standard, according to the kind, leaving only three good top buds. One-year-old tree is best for planting, as you can start this tree for your own purpose.

The following June will be first pruning. Head the three shoots back to one foot from the trunk of the tree, also to an outside bud. Keep all buds rubbed off except the two top ones on each shoot.

The following Winter these six shoots will require Winter pruning, leaving them one foot long, rubbing off all buds but nine instead of twelve. Three shoots are not to have but one bud each, and the other three shoots two buds. The following June prune the same as before, keeping all shoots and buds clean but the eighteen two on each shoot. The next Winter prune out all ill-shaped shoots, leaving those in proper position. Heading back stops at this stage of the tree, unless there should be a vacant place in the tree, then head the one shoot nearest to the vacant place back to a good bud pointing in the same direction. Some people think spurs should be left on this growth, but that is a mistake, for if buds are left the growth cannot be made, for fruit is not wanted while forming a tree. This plan of pruning makes four growths in two years. At this age of the tree, which is only four years, it will be well formed and can start into bearing. The wood will make spurs now and the growth will not be so strong.

There often arises the question when a young tree ought to bear. The young tree generally bears the best fruit, the only danger there is, is letting it bear too much fruit, so don't be afraid to shake off half of it when in its young stage. Young wood is for the purpose of growing good fruit, therefore if a tree is not well planted and has something good for the roots to feed on, this kind of wood will not be there when wanted. There will be nothing but old mossy, scrubby-looking wood and the fruit the same. Also blight and disease will follow on such trees. At this age of a standard tree different kinds of fruit require different pruning. I advise cutting out all cross limbs and the centre well thinned out. This is one of the main objects in pruning standard trees, and if the tree makes too much wood and no fruit you must do some root pruning and that will throw the tree into bearing. Do this instead of heading back. Many people prune a standard tree the same as a thorn hedge should be clipped to make it thick, and you would think to look at some trees they were meant for hedges instead of trees. In planting fruit trees situation is of great importance. (Applause.)

Mr. Hutcherson—What is the proper season for root pruning?

Mr. King—Any time in the winter before the sap begins to work. You have to cut the running roots to make fibre—or any time after the tree becomes dormant in the Fall. I told one gentleman how to prune one-third the side of the tree and it bore well, and the other side was poor.

Mr. Hutcherson—What would be the cost of planting fruit trees after your pattern?

Mr. King—If you want good fruit you must not stint a little cost. I don't hold with sparing labor in planting fruit trees. I cannot state the cost. It would not take long to plant 100 trees. It is absolutely necessary to have two feet of soil under them. I recommend staking them by placing the stake two feet and a half up the tree; you don't want the stake right up the tree, which is liable to injure the buds. Cross the band over two or three times and once or twice in the branches; the string will be perfectly tight and will be in the figure of eight. If trees were better planted we would not have so much blighted fruit.

Mr. Knight—In planting trees on a clay soil it would not be so good to make such a deep hole?

Mr. King—No, a heavy clay soil don't suit a fruit tree; I would rather throw bricks or stones in the bottom of the hole in such land. The roots of a tree must have thorough circulation. Even an oak tree won't grow unless the roots grow straight down. The roots will not grow down because they have no good soil below them.

Mr. Knight—But as it is difficult for roots to make their way and spread on a clay ground, they are bound to grow straight down on such land.

Mr. Latham—I think making a hole two and a half feet deep is simply making a well for the tree, unless your soil is loose all around.

Mr. King—But then your land must be loosened all over, Mr. Latham.

Mr. Latham—That is all right for loose soil, but not in clay land.

Mr. King—But trees should never be planted in clay soil; the reason of the miserable tops is because of the poor soil, and the roots are starving.

Mr. Latham—I think it is poor policy to give a man a contract to plant trees. The greatest attention should be paid to planting trees well, either in large or small quantities.

Mr. King—I always see to the planting of my own trees. I have seen a tree growing in this town, the roots of which were sticking out of the ground.

Mr. Burchart—Have you an orchard? Did you ever see Black Spot?

Mr. King—No, I have never seen the Black Spot. I don't know the disease. A good deal of blight is owing to the unthriftiness of the trees.

The President—I have listened to Mr. King's paper with a good deal of interest. It seems to be thoroughly practical. (Hear, hear.)

Mr. T. A. Sharpe was then called upon to read his paper on experimental work.

Mr. Sharpe—A deal of the work is not sufficiently advanced to warrant my reading a paper at this meeting. I prefer waiting another year before making a report or writing a paper. With regard to large fruits, I may say that none of my pears bore last year, and the prunes I planted only began fruiting.

This apology was accepted. A letter was read from Mr. Earle, of Lytton, apologizing for his inability to be present to read a paper on apples. Mr. Wells, of Chilliwhack, was not present to read his paper on dairying.

Mr. Henry then read a paper by Mr. Postill on

TRANSPORTATION.

Civilised man is dependent upon two things for the proper sustenance of life, and for its convenience, comforts and luxuries; I refer to production and transportation. These two very important factors are at the foundation of the physical and material well-being of the human race, and the development and growth of both are the result of the keenest mental and most persistent physical attributes of which we are capable. Further, production and transportation are interwoven one with the other in such a way that whatever disturbs the one must affect the other, and vice versa; the proper development of the one must stimulate the growth and tend to the advantage of the other.

It therefore follows that these two fundamental branches of trade, being at the foundation of the prosperity of every community, should receive that care which their importance demands, and every legitimate means be used to assist production and make the cost of transportation as light as the laws regulating such matters will allow. In this way both producer and consumer will be placed under the least possible restraint, and the natural deficiencies of one section of the country will be supplied with the natural capabilities of another, and thus trade will flow easily back and forth to the advantage of all concerned, and the building up of rich and populous communities endowed with all the advantages those terms imply.

In this paper it is not the intention to enter into a general discussion of transportation, but only that branch of it that relates to the industry which those composing this Association are endeavoring to advance. With costly transportation, the growing of fruit for profit is not to be thought of. If it cannot be sold at such a price as to be within the reach of people of moderate means, the planting of orchards is a delusion, and the whole fruit-raising industry a myth, in so far as money making is concerned; and must bring discouragement and disaster to those engaged in it, besides locking up natural wealth and depriving those who sorely need it of a health-giving article of food. It is true that those living in favorable localities can enjoy and in a measure profit by the limited cultivation of fruit, but this does not allow the full development of an industry that should be limited only by the extent of land available for fruit growing, and not by the fact that the difficulty or costliness or both of transportation renders the production of fruit beyond a certain limit unprofitable.

After the coast cities and mining districts of British Columbia, the great Northwest is our natural market, and so far as extent is concerned, this part of the Dominion of Canada affords a market that is practically unlimited, and capable, by proper management, of taking all the fruit that British Columbia can produce. Not only so, but the people there are anxious to see the bars removed and the admitted fruit-producing capabilities of British Columbia given full swing. It is not as if we had a section of country to deal with poor in natural resources and unable to pay for a continuous and natural supply; on the contrary, the Northwest, while debarred by its climate from growing fruit for home use, is particularly rich in a soil and climate unrivalled for the production of the three great staples—wheat, milk and meat; commodities that must find a market and bring to the inhabitants of the Great Lone Land the means of purchasing all that they require in the maintenance and enjoyment of life that is not grown in their own country. And this country is so placed that we can have no successful competitor. In regard to the sale of fruit we hold the key to the position, the Californians having to send their products through our Province, and the fruit country to the East being so far away that cost and risk owing to distance render the shipments of large consignments of fruit impracticable.

As we have one principal market for our fruit, so we have only one way of getting our produce out of the country, and as our one market needs careful looking after, and its requirements need study in order that we may the better fulfil its demands and the more profitably handle it, so does our one means of transportation require the careful attention of every one interested in the growth of the fruit business of British Columbia, or any other industry situate within its borders. To us the C. P. R. is the open sesame that must unlock our vast stores of latent wealth. If they are to be made available, it must be done, in many respects, through their agency. However hard or unpalatable the fact may be to many, it still remains—we are under a monopoly, and for the purpose of getting our fruits to market, we are and must be, for some time to come at least, dependent upon the great company I have named.

The aim of the C. P. R. is very similar to that of each member of this Association, and that is to attain success, and I for one have nothing to say against them on that head. They are a corporation that has successfully faced obstacles supposed to be insurmountable; and in the presence of the most collossal opposition, they have shown their sterling worth and brilliant ability by carrying out their plans in spite of all hindrances, opening up desolate places and establishing prosperous communities and thriving cities where formerly stagnation and solitude reigned. To every loyal Canadian the growth and power of the C. P. R. must be a source of pride, and all who desire to see Canadians and their undertakings hold an honored place among the nations of the world must wish our great railway company abundant success. But, while the company under discussion has accomplished so much for the western part of Canada, and while its rates in some respects are fair and equitable, I cannot dismiss this part of my subject without noting the undeniable fact that there is deep discontent in regard to high rates on the line of railway through British Columbia and the Northwest. And while the C. P. R. has done wonders in bringing forward civilisation, there is still much to be done in the way of cheapening transportation between points outside the influence of rival roads. To the pioneer struggling under a load of unavoidadle difficulties, the charge of from two to four times the rate paid in the East is a serious drawback, and when, after paying what to him seems the excessive charge for freight, there only remains a small and insufficient sum for his labor, the railway, that should be a ready means of turning labor to profitable account, seems to him a monopoly whose business it is to make the cost of transportation so high that the producer is in almost Egyptian bondage. Rightly or wrongly, there are people who take this view both in this Province and in the Northwest, and look upon railways in general as so many legalized extortioners. The business of producers, however, is not to carry on a profitless war against the company, but to bring before those at the head of affairs any grievance in the shape of unjust rates as unitedly, clearly and forcibly as circumstances will allow.

The fruit growers of British Columbia have no quarrel with the Canadian Pacific Railway. That company has opened up the Province, and at the same

time has opened the eyes of those interested to the possibilities of fruit growing in British Columbia, and now the problem to be solved is, on the one hand, the production of a first-class and well packed article by the fruit growers, and on the other hand, the cheap and rapid transportation of the same by the railway company.

The prosperity of any branch of trade means greater business for the railway, and it seems to the writer that men of such wide views and undoubted wisdom as those at the head of the railway company must see that a liberal policy in regard to the fruit industry will tend to the advancement of the railway interests as well as the country in which we live. The welfare of the one is, in a measure, bound up with the other, and production at present is kept in check for the simple reason that people are afraid to embark freely and extensively in fruit farming until the shipment of their products can be done at such a price as will allow them a fair margin after supplying the consumer at reasonable prices. In the Northwest, under present prices, only those in very prosperous circumstances can use fruit as a daily article of food, and the great majority do without it, or use it in such small quantities as to be scarcely noticeable. It is fairly within the province of the British Columbia Fruit Growers' Association to take this important matter into careful consideration, and endeavor to place the fruit industry of this Province, which is as yet without system or organisation, on a firm and satisfactory basis in regard to the handling and shipping of fruit. And with this end in view, the appointment of a Board with headquarters in Vancouver, whose business it would be to negotiate rates and arrange for the transportation of the fruit of the whole Province, would doubtless help to make matters better for the shipper, and much more satisfactory for the company. In connection with this Board, local societies might be formed at principal shipping points for the united handling and shipping of fruit, all fruit to be classified and branded, the inspection and branding to be done by a competent person and one duly authorised to act in that capacity. The idea of branding apples for shipment has been tried with success in the apple trade between Annapolis Valley, Nova Scotia and England. A Society has been formed at Mission City, with Mr. Henry as president, one of the principal objects being the shipping and handling of fruit. Again, there should be at the chief distributing point to receive and dispose of the fruit, wholesale and retail, an agent, whose business it would also be to distribute fruit from that principal point to the whole country around. These suggestions are only made as such for the consideration of the Society, with the hope that, although they may not be found practicable, some systematic and workable measure may be adopted that will be the means of bringing about that unity of action so much needed in the carrying out of any scheme for the general good, where so much depends on intelligent co-operation and the wise marshalling of scattered interests.

Then the fruit industry would grow, and year by year larger areas would be placed under cultivation, so that in the near future localities that

now import apples and other fruits would be sending out those commodities by the carlood, and British Columbia, beautiful in scenery, invigorating in climate, and rich in wealth producing resources, would take the position as a fruit growing country for which she is in every respect eminently fitted.

The President—That is a well written paper.

Mr. Hutcherson—Yes—Yes, the subject of the paper is very interesting to fruit growers at the present time, but the question cannot be properly gone into at this meeting—it would take too long, but I would like to move that our delegates be instructed to take up the question of transportation for British Columbia at the Spokane convention. The matter will have to be taken up outside of the Fruit Growers' Association. There should be a head office somewhere in the Province and I think a good scheme could be laid before the Association by the committee.

Mr. Sharpe—The committee that goes to Spokane would go better fitted if the question was first discussed here and we got the office. The committee could then be instructed. The points would be brought out here.

Mr. Hutcherson—It would hardly be necessary to say there should be cold storage. There is some now, but not much. I have looked into this at Mission City and find it is a good thing, but headquarters for such a Society might be found more central. Still I would be willing to go in with them there for the present. There is the freight question, too.

The President—The question of the reduction of freights is a question of time and depends much upon the volume of freight to be carried over the road.

Mr. Henry—I think we are in no shape at this juncture to go in for cold storage, except for a day or two at a time. The principal fruits are small fruits and plums. The Mission City Society is purely local. Some of them had a little fruit and some just going in for it, and many wanted encouragement. I believe I was the first to ship strawberries to the East. We met and decided to help the new beginners to send it down to Victoria, but they hardly got anything for it. By all turning in together we found we could make a little out of it It is worked on the co-operative system entirely. I didn't know Mr. Postill had mentioned anything about it in his paper until I read it. I sent him the rules and regulations at his request. We intend to go more fully into it this year. We have made it a joint stock concern on a co-operative basis, with limited liability. A cannery will be erected as soon as there is sufficient fruit, or until it rises in price, sending it directly up the line without its first going to Vancouver and then coming back. At the present time I don't think any stock company could be formed and make it profitable, unless other branches were taken up also. Some people would have to go into it as a speculation if they did.

Mr. Hutcherson—My ideas are just the same as Mr. Henry's. At Ladner's we may start a local Association; also at Chilliwhack and at Victoria, the idea being, of course, to sell the fruit—but without a central office of some kind we should not know what the others were doing, and some day all these various Associations would rush a lot of fruit into Calgary or somewhere else and it would be a drug in the market. My idea is to have a central office of some kind so that information could be sent to each local Society as to what was being done by the others. Of course it cannot be done all at once. But I hope the matter will not be allowed to drop.

Mr. Henry—Yes, I think it would be a good plan to have a central office where information could be collected and furnished to all the local branches. I second Mr. Hutcherson's motion.

The Secretary—There is a standing committee on transportation—Messrs. Browning, Oppenheimer, Henry and Harris.

The President then put the question that the committee appointed to go to Spokane form a standing one on transportation and report at next meeting. Carried.

Mr. Palmer then read his paper on

THE POLLINATION OF THE BARTLETT PEAR.

He said his paper was not intended to finally settle the question, but merely as a peg to hang discussion on.

The pollination or fertilisation of the blossoms of frrit trees is a most important matter, our crops of perfect fruit, all other necessary conditions being fulfilled, still depending upon its proper performance.

The process of fertilisation is effected in the following manner: The pollen or fertilising matter is set free by the bursting of the mature anthers at the end of the stamens or male reproductive organs of the flowers, and is deposited on the stigma of the pistils or female reproductive organs falling there, or conveyed by means of the wind, and often by bees and other insects as they move from flower to flower in their search for honey, etc. From thence the pollen reaches the ovary containing the ovules or rudiments of seeds, where impregnation takes place, new cells are formed and the embryo plant produced.

From experiments made it has been discovered that the Bartlett pear, although its flowers are hermaphrodite, having both stamens and pistils, does not fertilise itself, and the fact that this variety has been largely planted in this Province, requires us to give the subject careful attention. A large orchard of Bartlett pears on the James river, Virginia, containing about 15,000 trees, had for a number of years been unfruitful, and at one time it was thought that the cause of this might be blight attacking the flowers, or other

diseases affecting the trees, but after a series of careful experiments, conducted by the Division of Vegetable Pathology of the United States Department of Agriculture upon trees in this orchard, and also in New York upon trees belonging to Messrs. Ellwanger & Barry, it was proved that to obtain fruit from trees, the blossom required to be fertilised with pollen obtained from blossoms of a different variety of the pear. In these experiments a large number of flowers, after removing the stamens, were bagged to exclude all chance of outside pollination, and then fertilised by hand in five different ways:

(1) From the same flower.
(2) From another flower of same cluster.
(3) From a different cluster of same branch.
(4) From another tree of same variety.
(5) From a tree of different variety.

For results it was found that no fruit whatever formed where Bartlett pollen was applied, even when taken from another tree. On the other hand, wherever the pollen of a different variety was used, a large percentage of the blossoms were fertilised and produced fruit, pollen from blossoms of the Anjou pear fertilising the Bartlett and vice versa. This clearly indicates that we should not plant large blocks of the Bartlett pear apart from other varieties, and as it is probably our best paying variety, I suggest that in planting on a large scale every fourth row of trees should be of the Anjou variety. In the case of orchards already planted top-grafting with the variety mentioned would meet the difficulty.

I also advise the keeping of bees in larger numbers than is customary. It sometimes happens that cold, wet weather prevails just at blossoming time and the quantity of fruit blossoms fertilised is in direct proportion to the number of bees and other insects of similar habits, close at hand to make use of the sunshiny hours we are favored with.

In conclusion the latest information on the subject of pollination, gives tentatively the following general principles, viz.: that pears and apples and some of the stone fruits either require cross-fertilisation for successful fruitage, or are decidedly benefited by it.

Mr. Palmer gave the following list of self-sterile and self-fertile apples and pears:

Self-Sterile Pears—Bartlett, Anjou, Clapps, Favorite, Clairgeau, Sheldon, Lawrence, Mount Vernon, Gansel, Bergamotte, Superfine, Pound, Howell, Boussock, Louis Bonne de Jersey, Souvenir de Congres, Columbia, Winter Nelis, Bose, Jones' Seedling, Easter and Gray Doyenne.

Self-Fertile Pears—White Doyenne, Le Conte, Kieffer, Duchess, Seckel, Buffum, Manning, Elizabeth, Flemish Beauty and Tyson.

Self-Sterile Apples—Talman Sweet, Spitzenburg, Northern Spy, Chenango, Strawberry, Bellflower, King, Astrachan, Gravenstein, Rambo, Roxbury Russet, Norton Melon and Primate.

Self-Fertile Apples—Codlin (partially), Baldwin and Greening.

Mr. Burchardt—I planted out forty of these trees five or six years ago and they have bloomed but never bore fruit, and to that extent I can corroborate Mr. Palmer. I have no other variety near them and could not understand why it was so, and wondered what I ought to do.

Mr. Henry—There is evidently more in this subject of cross-fertilization than we have yet discovered. Scientific men are finding out more and more about it every day. Animal life and plant life are more intimately connected than was suspected. If we breed animals from the same stock year after year they will degenerate, and it is so in the case of fruit. Still more will be found out in course of time. From all accounts it appears that four or five varieties of fruits—either apples or pears—do better in an orchard than any single variety.

Mr. Burchart—I have some cherries the same way, planted ten years since, and only one small crop in that time. I have other varieties in different places, four or five years old, which likewise fail to produce crops.

Mr. Anderson—What kind of season was it when the cherries did bear?

Mr. Burchart—There were only two that bore, except some from common cherries.

Mr. Hutcherson—There is something very interesting in this question. I have given it considerable attention. In experimenting a man must give due consideration to the phenomena seen before jumping to conclusions. I have a thousand Bartlett pears in one block and truth to tell I have not had any fruit from them for the past three years, but I do not ascribe it to the want of fertilization, because I have others the same way which grow among other varieties. I intend, however, to enter into some line of experiment with the Bartlett. It is very easily done. Cover up certain parts of the tree and keep the bees and flies away and see whether they will fertilise, and state the result. Reports of experiments of this sort that took place in our own country, if made by reliable men, are far more valuable than opinions expressed by people of other countries whom we do not know. But many men jump to conclusions too rapidly. We ought certainly to take up this question as a body—as the Fruit Growers' Association, in fact.

Mr. Burchart—I have thirteen of some other varieties that bear very meagrely. Perhaps they have been planted five years. They bloom and bear a little and are thrifty and look well.

Mr. Hill (Burnaby)—Are not some of the American varieties self-sterile. I would like to know if the Red Egg plum would do alone.

Mr. Palmer—Yes, the Red Egg plum would do quite well planted alone. Most of the varieties grown in this Province are European, and they are self-fertilising.

Mr. Sharpe—The danger is greater in stone fruit than in others. I found it so in my past experience. There is very little information on this subject and it offers a wide field for investigation. I cannot quite see the connection which Mr. Henry thinks there is between animal and plant life. Fruit trees will go on bearing for years without any crossing in the way animals are crossed. But fruit trees must be fertilised. For instance the Baldwin, if not fertilised from year to year by other varieties, would cease to grow.

Mr. Henry—Yes, that is what I meant. It is like breeding animals in and in.

Mr. Sharpe—But it is the present crop that is dealt with in every case. If you were sowing the seed to reproduce, it would be as Mr. Henry says, but we are growing successive crops from the same trees. The fertilising only affects the seed. It is different with an animal. The last crop of a thousand year-old tree ought to be as good as the first one—all other things being equal.

Mr. Palmer—I think that is very likely to be the case.

Mr. Sharpe—Anyone knows what we can or cannot cross-fertilise. It has been thought by a great many people impossible to be done. Up to a year ago even that great French seedsman—I forgot his name for the moment—thought even the two rowed barley could not be crossed by itself. It is thought to take the cross separately, but the two rows will each produce two-rowed barley, and this cross will reproduce this variety. I myself have barley of that description. I mention this to show we have very little information on the subject.

Mr. Henry—I said I thought it would be before cross-fertilisation.

Mr. Sharpe—I understood you to say the fruit would degenerate on account of the crossing.

Mr. Hutcherson—Mr. Henry means as regards quantity and Mr. Sharpe as regards quality.

Mr. Sharpe—Take for instance the Baldwin. Plant it a thousand miles from any other tree and keep it a thousand years. The fruit would be just as good at the end of that time as at first. But if you tried to grow trees from the seed of that fruit you would probably fail. But the original tree will be good and produce fruit, and it is the fruit we want. I consider the fruit from the Baldwin self-fertilised just as good as from cross-fertilisation. The fruit is

nothing more than a cover for the seed, remember. It is like the shell of a clam—only we don't eat clam shells. (Hear, hear.)

Mr. Palmer—The Baldwin is completely self-fertilising, but the codling is not. With a cross-fertilisation, therefore, I think we should get a good variety of fruit.

Mr. Burchart—You may like to hear another fact about my Bartlett pears. When they bloom they form a fruit about the size of a pea, which afterwards drops off. Does that fact bear on the question?

Mr. Palmer—The fruit will not fall unless the seed is unfertilised.

Mr. Hutcherson—But there is another fact. Do not forget there is a seedless fruit. In fact the better the apple the less seed.

Mr. Palmer—Yes, that is so. We have no information on that question.

The President—This is a very interesting subject, but perhaps we had now better pass on to the next paper.

Mr. Anderson then read his paper on

GRADING AND PACKING FRUIT.

Perhaps the grading and particular ways of packing fruit may seem of little importance and not worthy of much consideration to some people, but I wish to assure those, if there are any of that opinion, (and it would seem, from the specimens of fruit packing daily to be seen in our markets, that there are many of that way of thinking), that it is no small matter, but is a subject which I consider of vital interest to the fruit industry of the Province, for, as much of the success depends on the grading and packing as on the growing and picking.

I feel that I can speak on this matter with some degree of confidence, inasmuch as I have had considerable practical experience in the matter, and I know that fruit, however good generally, if mixed with a proportion of indifferent specimens, is difficult of sale, even at low prices, and if not packed properly, it might almost as well be thrown into the Fraser River, and certainly much better fed to the hogs at home than sent to the market.

I was some years ago engaged in the fruit business, principally shipping to the Northwest, and I found that by buying the fruit here and packing it, I could send it fresher and equally good as that imported from California, and decidedly cheaper. Of course I found, after a few ineffectual attempts to induce people to pack the fruit as it was picked, that if I wanted it done properly, I had to do it myself. I therefore bought the fruit and had it graded and packed in my own warehouse. Some of the very people from whom I purchased could not recognise their own fruit when they saw it properly

packed in neat boxes, and many a time the question was asked, "Is it Californian fruit?" As a consequence not only was the local fruit better for sending away, but wholesale dealers in the Province bought it at an advance, thus packed, while otherwise they would not have looked at it. This goes a long way to show what careful grading and packing will do.

I have adverted to this subject in my official reports, from which perhaps I may be pardoned for quoting, as some of you may not have seen them. In my report of 1891 I say, "With regard to the grading and packing of fruit there is great room for improvement, and we cannot do better than follow the example of California in this respect. With us, in the majority of cases, not only is fruit put anyhow in any kind of package, of all shapes and sizes, without regard to appearance or cleanliness, but the fruit is not graded, and the consequence is that all the fruit only fetches a third-class price. These points should engage more of the attention of fruit growers and means devised for the proper grading of fruit and uniform size of packages." And in my report of 1892 I say, "On reference to the tables of imports it will be seen that a large quantity of dried apples and other fruit, plums and prunes dried, fresh apples, small fruits, cherries, cranberries, peaches, plums, canned fruits and vegetables (not distinguished), jams and jellies, melons and tomatoes, were imported, amounting in the aggregate in value to $149,096, the duty on that portion from foreign countries being $14,340, making a total of $163,436. In the item of fresh apples I daresay that a proportion of the 7,701 barrels from foreign ports were imported from California at a time when our own were not ready for use. I find, however, that about 75 per cent. came in between the 1st of September and 31st March, these being the months in which I can, I believe, safely say that our apples are better than those of California. Therefore it is evident that at least 5,775 barrels from foreign ports, and 1,624 barrels from other Provinces, should not have entered this country. This is a matter which will, no doubt, in the course of time, right itself as the young orchards come into bearing; still, a large quantity of apples are imported when there are plenty of local ones in the market, the dealers preferring them, even with the duty and transportation charges to pay. One has not to go far for an explanation, and it is this: The apples from California, Oregon and Washington are graded, all undersized, misshapen, scabby or otherwise unmerchantable fruit being rigorously excluded; and then they are carefully packed (not thrown in) in clean, sightly boxes of a uniform size (four of which are called a barrel), whereas most of our fruit is sent to market ungraded, and often in packages of all descriptions, many of them not of the cleanest; and therefore a dealer naturally, who, as a rule, does business for anything but patriotic motives, prefers the foreign fruit, even if it costs a little more."

Another phase of the question of fruit packages is the size, a most important point, and one which should be settled once for all; for instance, the contents of a box of apples should be so many cubic inches, so that when a box of apples is spoken of it should be understood what is meant. And I

think the proper way to arrive at a conclusion is for the Fruit Growers' Association to invite delegates from all similar associations in California, Oregon and Washington, and decide what shall be the size and shape of all kinds of fruit boxes. Perhaps it may seem a little forward for us to take the initiative, but someone should do so, and if it is considered that we are taking too much upon ourselves by asking representatives to meet us in the Province, then by all means let us send delegates to any place which may be designated as most suitable. Probably some of us would not object devoting a few days of our valuable time to the public good.

The writer added that the packing was of paramount importance to fruit growers.

Mr. Hutcherson—One thing strikes me, and that is the difference in the sizes of packages. It is truly wonderful to see such a diversity. We made an attempt once to alter this state of things. Nearly every shipper has a different size of package. It would be a good idea if one standard size could be decided upon and adopted for this coast as a whole. This subject could very well be brought up at Spokane. Some law must be passed before anything definite can be done.

Mr. Anderson—If the growers could arrive at a size laws could then be passed in the respective countries making that size legal. I had in view this subject as one to be mentioned at Spokane.

Mr. Latham was then called upon for his paper on "Ornamental Shrubs and Plants," but stated he only saw his name on the paper on coming to the meeting and had no time to prepare a paper—but would give one at the next meeting.

Mr. Hutcherson—The question is very interesting to me and I for one wish very much to hear about it. The fact of Mr. Latham being in charge of the Park gives him good opportunities to study this subject.

Mr. Latham—Yes, I am at the Park, but there are very few evergreens there at present. Some other time I will be happy to give all the information I can on the subject.

Mr. Henry moved the adjournment of the meeting.

Mr. Palmer wished to move a resolution first:

That it is desirable to limit the number of papers to be read at the annual meeting and prepare a list so as to give members an opportunity of knowing beforehand what would be read. By being fewer in number they would no doubt be more select and instructive, and elicit a fuller discussion.

Mr. Sharpe thought it would be better to assemble for a meeting in the afternoon and discuss such papers as remained, as well as

to more fully discuss those which had already been read. He thought this would make the meeting of some value to the members present. They could also discuss what papers to be read next meeting.

Mr. Latham—I agree with Mr. Palmer. If there were fewer papers and a fuller discussion on each it would be better for the Society. There is no good got by reading a lot of papers and then relegating them to the waste basket. Discussion is the soul of the matter.

Mr. Hutcherson—I beg to second Mr. Palmer's motion. I also agree with Mr. Sharpe that we should take up the matter of papers in advance. There are hardly two growers who will agree on any particular matter regarding fruit cultivation. But I like to hear a man give his experience in any particular line. I would be willing to take up a line of experiment with the Bartlett pear and give an account of my experience later on as to the failure or success of it. If gentlemen would leave on record what branch they would like to take up, or mention any subject they would like taken up, some of us would see into the matter and write a paper upon it.

Mr. Palmer's motion was then put and carried.

Mr. Anderson—I move:

That the delegates sent to Spokane Falls be instructed to elicit the the opinion of those present there on the matter of packages and try to have the matter settled satisfactorily.

Mr. Sharpe—It would be fixed by statute.

Mr. Anderson—Well, if the size was arranged there it could be settled by statute afterwards.

The President then put the question and it was carried.

Mr. Henry's motion to adjourn was then passed, the Secretary stating the business of the afternoon session would only take a short time. The financial statement and auditor's report were ready.

Mr. Burchart—I hope as many will come back as possible as there will be a gentleman here who will be happy to give pointers on California fruit growing.

Several gentlemen here expressed an opinion that a further session could be dispensed with. The President asked for a show of hands and decided a majority were in favor of meeting after lunch. The meeting was then adjourned.

MEETING OF THE HORTICULTURAL SOCIETY.

AFTERNOON SITTING.

January 25th, 1894.

The meeting in the afternoon opened with the following gentlemen present:

Messrs. J. Kennedy, New Westminster; R. B. Hill, Burnaby; Hutcherson, Ladners; Sharpe, Agassiz: Macgowan, Vancouver; Kirkland, Ladners; Knight, Popcum; Russell Smither, New Westminster; Palmer, Inspector; Burchart, Port Moody; J. King, New Westminster; H. A. Hicks and a number of others.

The financial statement as follows was presented:

HORTICULTURAL SOCIETY AND FRUIT GROWERS' ASSOCIATION OF BRITISH COLUMBIA

IN ACCOUNT WITH

A. H. B. MACGOWAN - - SECRETARY-TREASURER.

1892.

Dec. 1.	To Balance forward	$ 241 59	
Aug. 7.	" Government grant	1,000 00	
	" Membership fees	78 00	
			$1,319 59
	To Printing and ads	$ 459 10	
	" Paid Stenographer	20 00	
	" Stationery, etc.	2 65	
	" Expressages	15 05	
	" Engraver	45 00	
	" Canadian Horticulturist	33 60	
	" Baille's Rule Book	53 83	
	" Postage and stamps	25 50	
	" Secretary's salary	360 00	
	" Expenses of delegation to convention of Fruit Growers and others at Spokane	150 00	
			$1,164 73
	Balance		$ 154 86

(Signed) President.

A. H. B. MACGOWAN, Sec.-Treas.

Audited and found correct,

(Signed) THOS. A. SHARPE,
A. B. MACKENZIE.

New Westminster, B. C., January 24, 1894.

Adopted on motion of Mr. Henry, seconded by Mr. Anderson.

Mr. Hutcherson asked that Mr. Cunningham's letter be re-read in order that it might be discussed. This was done. The greater part of the letter related to dairying matters and their importance to the Province. Vast sums of money were annually spent by the country for various farm products which could be raised at home. The writer thought dairying was neglected to some extent by the farmers of British Columbia and too much attention devoted to fruit. He wished it remembered that there was a country a thousand miles in extent to the South which was the finest fruit country in the world, and it was better to go more in for dairying than to try and compete with that territory. At any rate the two industries ought to go hand in hand.

New Westminster, January 24th, 1894.

Dear Sir,—I sincerely regret not to be able to attend the annual meeting of the fruit growers to-day. I have been in the toils of la grippe since December 7th, and cannot with safety venture out.

There are questions of more than ordinary interest coming before the Society to-day, and none of more importance than dairying. The experience of the past three years fully convinces me that the interests of British Columbia, west of the Cascades, lie in successful dairying more than any other branch of agriculture. Our climate is treacherous and uncertain, but exceptionally favorable to the dairying industry, and there is not the slightest danger of this business being overdone. If we can retain the $350,000 annually sent out of this Province for the purchase of dairy produce, we shall add greatly to the stability and welfare of the country, and improve the productive capacity of the soil at the same time. We may as well realise the fact at once that we have a country lying south of us over 1,000 miles in extent with a climate not less favorable for fruit growers than our own, and that we shall have to compete with this vast country in our own and other markets, especially the Northwest, where American fruit is delivered at cheaper rates than our own. I know this by personal experience, but with dairy produce we have an immense advantage.

I would, therefore, urge upon you to keep this important subject well to the fore in your deliberations of to-day. I intended to have devoted myself to this one question had I been with you. I hope that Mr. Wells may be on hand to advocate an industry in which he has been very successful. Any suggestion coming from such an authority will deserve the highest consideration, and I earnestly hope that he may infuse the members present with this fact, that dairying and fruit growing should go together, and that a combination of the two industries will be safest for all concerned. A man might lose his fruit

crop through unfavorable weather, but the produce of his dairy would not necessarily be affected.

Wishing you a prosperous and successful meeting, I am,

Yours faithfully,

THOS. CUNNINGHAM.

Mr. Knight then moved and Mr. Hutcherson seconded that the attention of this Association, having been directed to the publication in the *News-Advertiser* of the letter addressed to the Secretary of the Association from Mr. Cunningham reflecting upon the climate of the Province as being treacherous and uncertain, this Association most emphatically repudiates the sentiments therein expressed as being at variance with the experiences of fruit growers within the Province during the last twenty years and upwards, and calculated to have a baneful influence upon the present and future interests of the industry in the Province if not contradicted.

Mr. Hutcherson thought the letter ought not to go uncontradicted. The future prosperity of the country might be seriously affected by it.

The motion was adopted unanimously.

The President—Is any further discussion wished for on papers read this morning?

Mr. Hutcherson—Regarding the pollination of fruit trees I have been considering the matter since this morning and have also been speaking to a young gentleman from California, where trees are grown in great blocks to great advantage, and I would like to have an expression of opinion from him as to how the matter stands there. The gentleman I refer to is now present. He is Mr. R. A. Harron, of Nappa Valley.

The President—We would be very pleased to hear anything Mr. Harron has to say.

Mr. Harron—If I can give you any information I shall be only too pleased. I have lived in California all my life and have raised a deal of fruit. I have had to do principally with the Bartlett pear. We have 25 acres of that variety and not another tree—fruit tree—within three hundred yards of the orchard, and no other kind of pear tree on the ranch. We took three thousand boxes of pears from that orchard last year. Cherries are different. We have had to plant different varieties of cherries in alternate rows. Black Republicans will not bear so well alone as if planted in alternate rows with other kinds. There are thirteen acres in my section, and they have all been top grafted and are all bearing very full. I certainly believe in having different kinds near together. Mr. Teote, who is acknowledged the best horticulturist

in California,' had a lot of non-bearing trees, but the year after planting other varieties near them he gathered seven thousand boxes. Still, the reason of trees not bearing is not always owing to non-pollination so much as to unprolific stock. The nurseryman had been careless and grafted on bad stock. Immediately the trees are top grafted they become good bearing trees. Sometimes the scale gets in. I have seen 150 trees planted in one orchard of different varieties of plums.

Mr. Sharpe—Some varieties of plums I have seen grow four inches in diameter, and in ten years I never got a plum to grow; but on clearing away the bush (which was so dense bees would not go through it—preferring to fly a long way round) they bore fairly well and I have picked plums off myself.

Mr. Harron—Mr. Toole has a number of Cling Drop. There are no other plum trees. He has some fruit trees at the other end of the orchard. He has a most prolific crop.

Mr. Sharpe—He may have a certain variety. The prunes and the plums can be crossed successfully. I am not aware that plums and cherries can be crossed. But as an instance of cross-fertilization the wild gooseberry and the plum can be crossed. And that is a very reliable cross. In the East we have the prickly gooseberry and a cross between this plant and the black currant is considered very fine. The cross spoken of by the gentleman from California is very likely the cross between the plum and the brown cling drop (?) which would be very prolific.

Mr. Harron—I have never heard them speak much of pollination at home. I have attended all the meetings of our Association within the past two years, but the subject has never been mentioned to my knowledge. The thing we go in for is exterminating insects. We get our trees pretty clear now with spraying. I am using a spray consisting of lye, sulphur and salt to kill the scale. It also kills the woolly aphis. Then after the bud breaks we spray with blue stone and lye (or lime) and so keep our trees very clear We put 6 pounds of bluestone to 50 gallons of water.

Mr. Sharpe—That is Bordeaux mixture.

In reply to Mr Palmer Mr. Harron said they sprayed three times a year. The first time while the tree is in bud, then when the fruit is as big as a cherry. Then when the fruit is stoning. If afterwards any bugs are found on the tree we spray again. We are not troubled with the black spot and hardly ever see the natural wood color. We use "kill worm"—we just apply it where the knot is, but are very little troubled with it. The scales and the fungi are the worst things we have to contend with. We have no early leaf at all.

Mr. Sharpe—We are hardly troubled with it here.

Mr. Hutcherson—Lye (or lime) does first rate as a preventive of curly leaf, and the best time to apply it is in the spring of the year. There is a specialist in California, I believe.

Mr. Harron—I don't think it is if the leaves are bent. Professor Hillgard is working on this thing.

Mr. Henry—Last year I tried bluestone and lime but it burnt them all up.

Mr. Palmer—I should think it would be a bad thing for the peach trees in the leaf.

Mr. Henry—When curly leaf comes it is very hard to get rid of. If we have many foggy mornings we have curly leaf.

Mr. Hutcherson—Two years ago my trees were full of bloom and the peaches set the size of buckshot. The leaves curled and the fruit dropped off.

Mr. Harron—Lime, sulphur and salt is the best thing we have found for the sarcite scale.

Mr. Sharpe—We have a great many varieties. The imported peach is the only one that has escaped. Once in a while I have got Hales Early to escape. The Early Crawford also. I have only two imported trees, but I have never seen a curly leaf on them yet. The winter last year was so severe I have never seen anything on them since, but the curly leaf, even trees recently imported from England, were infested with it.

Mr. Harron—The Susquehanna is most infected with us; the white Clings and Freestone also being affected. The yellow Freestone are more exempt from the pest.

Mr. Sharpe—If a remedy is not soon found we cannot make peach growing a success. Hales early is the only one that has escaped. I don't know much about it yet; it is a new one.

Mr. Henry—I never heard of it before.

Mr. Palmer—With regard to pollination, California is well supplied with bees and the climate favorable for their work, which might have some influence on the fruit blossoms.

Mr. Burchart—The climate is more important than bees. It is warm and damp, and if there are early rains they are warm.

Mr. Palmer—I would suggest that Mr. Sharpe make some experiments this season and give us the result if possible.

Mr. Sharpe—I have some experiments on the way, but one season does not demonstrate the facts sufficiently.

Mr. King—There is another question: What is the kind of subsoil there? The California pears bear well; Bartlett pears will not stand a cold, wet bottom. You can make Quince trees grow on a very dry soil.

Mr. Henry—That is so.

Mr. King—If you give Quince trees plenty of water you can get them as big as your head. A good deal depends on the subsoil To grow a Merrell cherry you want a north wall, and you will then get them to perfection. If planted on a south wall in a hot sun they will scorch. But you cannot get Quinces to grow on a hill like we have in town here. High, dry hills are not good.

Mr. Hutcherson—I don't quite agree with Mr. King in his last remark with regard to Quinces. Take the Delta: that is wet enough, but they will not grow there.

Mr. King—It will if it is rich enough (laughter.)

Mr. Hutcherson—I have never succeeded in getting Quinces there yet, whilst on the hill here I have got plenty of them. I intended to say something in reply to Mr. Burchart's remark on the climate of California being better for the reproduction of fruit than the climate of this Province. I cannot agree with this. There is no country under the sun where seeds can be grown better than in this country. For instance, Cauliflower—the Washington seed is the best in the world, and it grows here so well that it proves this country to be the best in the world for them.

Mr. Burchart—I bought some onion seed and they rotted away. I bought some California onions and they grew well.

Mr. Hutcherson—I was speaking of the reproduction of seed by itself.

Mr. Sharpe—You will find also that the Bartlett pear, the Northern Spy apple, etc., bear more perfect seed here than in the East. There is a greater amount of good seed in a box of Bartlett pears grown on this coast than you would find in a box grown in New York State or Pennsylvania. The red and white clover seeds more freely here than I ever saw it in any other place, either in the East (Ontario) or Ohio. In those places the first crop is never reckoned on as a seed crop. There is not sufficient seed to make it worth while to save.

Mr. Burchart—But I was talking about fruit.

Mr. Sharpe—We were talking about pollination, and that includes every kind of seed bearing plant.

Mr. Burchart—For my part I would like to see no seed at all.

Mr. Sharpe—It is pollination that is under discussion. Fertilization is absolutely necessary in fruit as in everything else.

Mr. Burchart—I have not particularly examined my pear blossoms, but so far as I have seen it has been perfect. I would like to mention that a gentleman from England told me salt water was a good thing to spray fruit trees with. I would like to hear the experience of others.

The President—Has any gentleman present had any experience in that particular? If so, he might please state it.

Mr. Burchart—I refer to the natural salt water of the sea.

Mr. Harron—To refer again to Bartlett pears, I don't quite agree with Mr. Hutcherson's opinion that it is necessary to grow them on dry ground. I have seen water rushing through one orchard days together and the trees standing in the water. That was in the winter, too. The next year the trees that had stood soaking in the water bore the largest and finest fruit, strange to say.

Mr. Hutcherson—We get plenty of water in the Delta, but it does not seem to agree so well with the pears.

The Secretary—Mr. Sterratt, of Hope, asks by letter if any of the members have had any experience in manuring fruit trees with fish.

Mr. Sharpe—Mr. L. A. Agassiz tells me he has used salmon on his trees most successfully. Mr. Wilson has also put about 2,000 salmon on his trees.

The Secretary—It is to be hoped the salmon won't affect the fruit as it does when fed to pigs (laughter).

Mr. Sharpe—I cut up a lot of deceased sheep one year and put them to the trees. I have not yet seen any wool (loud laughter).

Mr. Palmer—With regard to fish, it is not a complete fertilizer. Fruit needs the application of potash. Wood ashes used with the fish would make a complete manure.

Mr. Hutcherson—Can we finish the other business and take our own time to discuss these things? I beg to move that this meeting adjourn and the Directors' meeting be called at once.

This was seconded and carried, and the meeting adjourned.

The Directors' meeting was then called.

Officers as follow were elected:

JOHN KIRKLAND, Ladner's Landing	President
WM. KNIGHT, Popcum	First Vice-President
J. R. ANDERSON, Victoria	Second Vice-President
A. H. B. MACGOWAN, Vancouver	Secretary

And committees as follow were struck:

COMMITTEES

On Annual Report

G. W. Henry, Hatzic
T. R. Pearson, New Westminster
E. Hutcherson, Ladner's Landing
T. A. Sharpe, Agassiz

For Assisting Exhibition Associations in their Fruit Departments

Wm. Knight, Popcum
G. W. Henry, Hatzic
E. Hutcherson
A. H. B. Macgowan
T. A. Sharpe

On Transportation and Packages

E. Hutcherson
G. W. Henry
R. M. Palmer, Victoria
A. Postill, Vernon
T. A. Sharpe
John Kirkland, Ladners

On Recommending Varieties of Fruits Best Suited to B.C.

G. W. Henry
R. M. Palmer
W. J. Harris, Hammond
T. A. Sharpe
E. Hutcherson

Committee to make Experiments in Spraying, more particularly for Fungus Diseases, and by separate Papers report Results to this Association

E. Hutcherson, Ladner's
G. W. Henry, Hatzic
Wm. Knight, Popcum
T. Wilson, Harrison River
Hy. Kipp, Chilliwack
Hy. Davis, Langley
Andrew Oleson, Victoria
Theo. Trage, Beaver Point

It was decided to hold next meeting of directors at Mission City.

Directors' meeting then adjourned and the annual general meeting was proceeded with.

Mr. Hicks asked for information about the culture of hops. He was about to start a hop garden and would be glad of any pointers. As to the best varieties to grow here—whether it was likely to be a profitable undertaking and so forth.

Mr. Sharpe—Mr. Hammersley said he has raised some which fetched as high price as the English ones. The "English Cluster" is the variety raised on the Sound. The "Cluster" is the popular hop.

Mr. King—I happen to come from Kent in England where hops are grown to some extent, and have been grown for some hundreds of years. We used to have a few cherry trees, but our main crop was hops. They used to grow the Jenns (?) for early. The second crop was Cling Drop and the "Coquette" was the last. They had hop poles 16 or 18 feet long. The later ones we grew on the outside poles for shelter. I have seen as many as two thousand pickers at work. The drying process was particular. They used charcoal and Welsh coal. At a certain time the sulphur was put in. My father was a grower.

Mr. Sharpe—The charge against the hop of this country is that it has a black currant flavor. Whether it is the hop itself or whether the flavor is caused by the fir I don't know. Mr. Hammersley is going to try charcoal next year to see if it gives them a different flavor. It may give a better flavor than the fir.

Mr. King—It will. They cut up all their old poles in Kent to make charcoal, and the Welsh coal was the balance of the fuel used. My father threw two sticks of sulphur on the fire first to color them. That was the usual plan and there are thousands of bushels grown there. We took out the sticks, etc., with the machine. There is more in pulling hops than people think. If you ever pole a hop it will dishearten it. We never used to pole over 12 feet. The hop seems to want to turn over after growing a certain height and take a rest.

Mr. Burchart asked if Mr. Harron would state what he knew of the products of California and their value.

Mr. Harron—There is an article in the "Weekly Chronicle" which I will read. It is dated January 18, 1894, and is as follows:—

HOW FRUITS YIELD.

"Fruit raising is like any other crop in respect to crops which vary greatly. Peach trees begin to bear at two years from planting; apricots at

three years; prunes at four years; cherries at six years—even earlier. The time of bearing varies with the style of the pruning, soil, location and other causes. A good crop of prunes is eight or ten tons to the acre. More than this is an extra good crop, and good growers get them even to ten tons of apricots, and some get fourteen or more. Cherries at twelve years old yield from eight to fifteen tons per acre in the best locations. The ordinary income from a cherry orchard is $450 per acre, and good to extra orchards give from two to three times these amounts. Peaches begin with a crop of two to the acre the third year and increase to eight and ten and fifteen tons per acre. Neglect to cultivate and prune, hunt gophers, kill pests and watch out for the welfare of your orchard and your crop will be small—very small. Good care means good crops." I may add to that article that I have seen cherry trees from which we took 2,900 pounds of cherries. It was the variety known as the Daisy—a white cherry like the Royal. It is well known as the largest cherry tree in the Nappa Valley. We had six men packing all day from 6 a. m. till 8 p. m. I have a photograph of that tree. There is one orchard, but it may be an exception, as the owner is the best horticulturist in California, his authority is law anywhere in the state, he has seventy acres and two thousand Bartlett pear trees. He took from them 13,000 boxes of pears, and from the rest of the orchard he took 12,000 boxes of cherries and 13,000 boxes of peaches, besides 50 tons of other fruits. He is a deacon in the church and reckoned a good Christian, and he told me he cleared $1,500 to $15,000. What he does not know about fruit raising and orchard work is not worth knowing. He is known throughout the country. There are a great many exceptions of course. I read in another paper of a place where they took 1,300 lemons from one tree three years old. We grow nothing but fruit and we take great care of them. Our trees are 20 feet apart; cherries 25 to 30 feet apart. Another practice we have is to plough and cross plough.

The President—How near to the hole of the tree do you cultivate?

Mr. Harron—I plough right close up to the root. We only plough shallow, and we cross over. We have a disk harrow also, which I think you have not got here We do not apply manure. Our orchard is 16 years old. The subsoil is a black adobe. In some places we have a deal of draining and in other places ditches. On the bottom land beside a creek where our pears are, as I said before, the water rushes through the trees and bears the roots, even causing the trees to lie on their sides. We use open ditches and plough over them every year. Sometimes after the first rains we plough across. We plough a furrow to the root and then come back and make a ditch, not very deep. In some places where the land is wavy there may be a knoll and afterwards a low place where the water lodges, and people who don't drain sometimes lose their peaches. Where a great deal of gravitation is required to drain the water off, the ditches must be deeper. Every man can make the average of the man I have mentioned if he would take care. Black adobe is not the rule. There is very little white adobe, however. We have found the

black adobe is the best soil for peaches and prunes. I don't know what the sub-soil is like. I have struck hard-pan. I had a peach tree would not grow; I dug it out and at the bottom I found a mixture of clay and rock, but still trees all around were growing in excellent condition. This is the only piece of sub-soil I have seen there. I attribute the failure of the average fruit farms in California to defective cultivation. Some people let their trees overbear until they stagger and fall down. The twenty acres of pears belonging to Mr. Toole I have seen are almost of the same size. They are pillow shaped. I consider a box to a tree a good average. Two boxes of pears. Plums we take five to ten boxes. They weigh 20 pounds per box. Ours yield sometimes 10 boxes and more. In the "Nappa Register" I read of a man who shipped 70 tons of plums from 40 acres of land, about two tons to the acre. There are many exceptions to the rule. It is good care that gets good fruit. From the time of starting you have to watch your trees like a cat watching a mouse. When we plant a young tree we generally place a stake on that side from which the wind usually blows to break its force. We have very little of bursting of the bark. When we top graft a tree we tie a sack around it. We have 200 Hungarian prunes and I think them very good. Not for drying purposes, however. Nor so good as some others for bearing. The shape of the fruit is something like a French prune, like an egg, only it is pointed at one end.

Mr. Hutcherson—The nearer you get to the South the warmer it is and the smaller they are. In the Okanagan the red egg plum is larger.

Mr. Harron—We have another large red plum, the meat of which is a light brown color. We have got 60 cents per box more for them. The best plum we have is the French prune. Ours are made black by washing them. It is a blue or purple color. They don't grow as large as some others, but are a most prolific prune. The Bulgarian is not quite equal to the others in yield. We have German prunes also, but I have not had any. We do not use the Italian.

The President—The French prune with us splits badly. I suppose that would not injure it in drying, however. It may be the weather.

Mr. Henry—Mr. Harron, I have had them split, but it was through the gathering too ripe in the hot weather.

The President—They have a habit of splitting here before they get ripe, and as they get ripe will split into four quarters and the stone drops out of them.

Mr. Hill—The Hungarian prune—is that what is known as the Japan seedling?

Mr. Harron—Yes.

Mr. Thrift—Have you the Yellow Legate?

Mr. Harron—No.

Mr. Hutcherson—The Scameron is of very little use in this country.

Mr. Harron—It is the last tree to ripen in our country.

The President—We are under a great obligation to the gentleman for the information he has given us.

Mr. Burchart—I am growing the Italian and German prunes and also some of the French, and I find they all crack open here and are apparently unsuitable for this climate. I have watched them very closely and picked them as soon as I saw the least tendency to crack. I think it is the wet climate.

The President—Probably so.

The Secretary then read a paper by Mr. Sterratt of Hope on

HOME INDUSTRIES.

The principal resources of British Columbia are its timber, fish, mines, stock raising, dairying, and last, but not least, fruit growing, which is only, as yet, an infant industry, but has excellent chances of speedy development.

I believe British Columbia to be one of the best horticultural districts on the continent. I also believe there are several kinds of fruit that cannot be grown here successfully, and that no country yet known will produce all kinds of fruit. Take for instance a locality adapted to growing oranges and lemons and you will find it a very poor apple country. Now, this being a good apple country, and the apple the best fruit extant, we as horticulturists are quite satisfied with it and willing to buy our oranges and lemons, etc. Although we have a diversified climate in British Columbia, we can't grow tropical fruits in the open air. Take the Lower Fraser, or Fraser Valley, as it is commonly called, and we find that we cant grow some of the late keeping ironclad apples as well as they grow them in Okanagan or anywhere in the interior of the Province, but as for Summer, Autumn or early Winter varieties of apples, Bartlett pears, plums or prunes and cherries, we *challenge the world*. We also grow excellent peaches. Therefore I suggest the advisability of any person owning or holding land to set out fruit trees, and in purchasing trees to plant to patronise our local or home nurseries. And the person so purchasing, if he be an amateur, will find it greatly to his advantage to consult the nurseryman as to the kinds best adapted to the locality in which he intends to plant the trees.

Now, this is what he would be very likely to do if buying from a stranger peddling trees for a foreign nursery. Don't forget the old saying, "Better deal with the devil you know, than the devil you don't know." Our local nurseryman will inform you what varieties will be suitable to plant for your

own profit. The peddler will sell you any or all the trees he can C. O. D., not caring a "continental" what they amount to.

Now, I will explain why I advocate the patronage of "Home Industry" in purchasing your trees from a local nursery, from experience gained by myself, and judge for yourselves whether I am right or wrong. When I set out my first trees, or rather the first trees I set out, the 180 acres cost me $101 C. O. D., of course, no tree costing less than 50 cents; but, of course, "Longshanks," from the East, had several specialties which my orchard would be insignificant without. One in particular was the wonderful "Tetofsky," an extra early dessert apple of Russian origin, much noted for its "high acid flavor," etc., etc. For those trees he only charged $2.50 each. Another still more wonderful apple for Winter dessert (everybody buys a few), named "Lady." I surely wouldn't think of planting an orchard without a few of them. The apples sell readily in New York city at $10 per barrel. He only charged $4 each for those trees. Now, gentlemen, it is only since I joined the Horticultueal Society, some two years ago, that I learned anything about horticulture or what trees were worth or what kind is best to plant for profit. Recently I purchased trees from a nursery on the mainland, leaving the selection of varieties entirely to the nurseryman, who was a perfect stranger to me, and he gave me a very square deal. He sent me 20 or more good trees for the same amount of money that I paid "Longshanks" for one "cultus" tree named "Lady."

Were I the only "hayseed" that those "Longshank" gentry came in contact with, it wouldn't matter much. But they play it on everyone who deals with them. In fact they have to do it in order to make up for their travelling expenses, which are not incurred by our local nurseryman, as they don't peddle their stock, nor employ peddlers. Therefore the purchaser has that benefit, which is considerable. Furthermore, the trees I received from our home nursery last fall, 250 trees in all, only cost $50 delivered, and just 48 hours from the time they left the nursery (almost 100 miles distant, with several transfers from boat to rail and vice versa) I had them "heeled in" on my own place.

Now, I believe that any man with common sense—yes, even the Siwashes would naturally say that those trees will stand a better chance of amounting to something useful than trees brought across the Rockies and several thousand miles beyond. Instead of being 48 hours in transit, probably in the latter case they would be 48 days, and part of that distance exposed to a pretty low temperature. Perhaps even infested with pests, as it has been already proved that our worst pests have been imported with trees and fruit not grown in our Province.

I would further suggest that all persons owning or holding land in British Columbia join the Horticultural Society.

The old proverb, "Get wisdom, get understanding; forget it not," written about 30 centuries ago, holds good till yet, *and ever will*. It applies as much to fruit growing as to any other calling. In becoming a member of the Fruit Growers' Association, they will soon learn to shake off the hayseed, and "Mr. Longshanks" from the East or South will become like hen's teeth—few and far between. If there are any persons in the country who are in the least sceptical of the benefit of science applied to horticulture, I would urgently request that they inspect the experimental farm at Agassiz, under the superintendence of Mr. Sharpe.

Finally, I will state that it is gratifying that our Provincial Government is lending a helping hand to guard against fruit pests. In fact it is a very good stand-off for the injury done the Mainland in locating the Parliament buildings on the Victoria peninsula. This is most important!

Mr. Palmer—With regard to next year's papers I think Mr. Hutcherson might carry out some experiments in pollination.

Mr. Hutcherson—That is why I wrote that paper. In any experiment a committee of three or four can put in a better report than any one man can. Mr. Sharpe may make a complete success with an experiment, whilst it may be a complete failure with others. It depends who does the work.

Mr. Palmer—The others could take up the same line so as to check Mr. Sharpe.

The President—How would it be to come to a conclusion as to the number of papers to be taken up?

Mr. Hutcherson—The subjects of most interest to this society are those I mentioned in my notes, together with those Mr. Palmer brought up. I note that one of my topics was the fungus.

Mr. Palmer—I cannot take up the prune this year. I am making arrangements with the Knights to put up a little drying-room for prunes, plums, etc. I think that would be a good subject for Mr. Knight to take up. I would aid him in every way by giving him samples, etc.

The President—Then we will consider that one subject—"Prunes," by Mr. Knight (Popcum).

Mr. Hutcherson—The Fungoids would be another good subject. Perhaps a committee had better put in a report. The Secretary has the names. They might see to that, and another thing I mentioned was the Black Spot or Canker.

Mr. Palmer—Would that not come under Fungi?

Mr. Hutcherson—We are not quite certain what it is yet.

Mr. Palmer—Mr. Burchart would probably give a paper on that?

The Secretary—A committee was appointed last night on spraying.

Mr. Sharpe—Three or four papers will be enough. Next year we shall have the President's address, and that will cause a deal of discussion.

The Secretary read the resolution passed at last night's meeting, and it was finally arranged that each member of the committee on spraying should put in a separate report.

Mr. Hutcherson—That will pretty well take up the whole of one day.

Mr. Sharpe then promised a paper dealing more directly with pollination.

Mr. Hutcherson—Ought we not to do something towards going to Mission City?

Mr. Palmer—What time is the meeting there?

The Secretary—The first Tuesday in May.

Mr. Hutcherson—Perhaps I had better prepare the paper on Prunes at that meeting. How will it do to put down Mr. Burchart for a paper on Black Spot and Canker?

This was adopted and Mr. Palmer promised a paper on Pests.

Mr. Hutcherson—I would like to hear a paper on the plum. If lye wash is used it kills the spot at once.

Mr. Sharpe—I have had 40 young trees more or less damaged and some killed, and yet they will live long after they are encircled by the spot. The damage seems to be done when it is big enough to be recognised.

Mr. Latham was then put down for a paper on Ornamental Trees and Shrubs, also a paper on Hops.

Mr. Sharpe asked how soon the annual report would be out. Secretary replied it would be in shape in a couple of weeks. But we can hold it over for a report from these committees and from the gentlemen named in the list.

Mr. Hill brought up the question of peddling vegetables by Chinamen. He objected to them peddling without a license. In Vancouver it was not allowed. He did not object to a Chinaman who grew his own stuff. Here a Chinaman could peddle any produce, and the white man had very little chance against him. He thought if a communication could go from this Society to the City Council to ask them to prevent it by by-law it would do good.

The President—A more direct way would be to petition the Council first.

Mr. Hutcherson—Any influence that can be brought to bear on the powers that be comes under the sphere of this Association's operations.

Mr. Hill—Many people around my place are running market gardens and complain they cannot compete with Chinamen as the latter peddle without license from house to house. They are supplanting them by degrees, but it is hard work.

Mr. Palmer—A petition could do no harm and might do good.

Mr. Sharpe—Put them all together—whites and Chinese.

Mr. Hill—I believe peddling is not allowed in Vancouver.

Mr. Macgowan—They shut off both races from it, but the Chinamen put up $200 and burst the by-law there and are peddling still. They said the stuff was grown by them.

The President—You can hardly believe them. They have been known to buy the produce in the market, take it home and then peddle it as their own.

Mr. Hill—But these men I speak of have no land at all. If they were producers we cannot stop them I suppose.

Mr. Sharpe—If they own no land and are not producers it is easy enough to frame a by-law to stop them.

The President—Will Mr. Hill frame such a motion.

Mr. Boycott informed the meeting that such a by-law was already in force, and on referring to the City Clerk this was found to be the case. And the subject dropped.

Mr. Sharpe moved a vote of thanks to the City Council for the loan of the City Hall which was seconded by Mr. Hutcherson and carried.

Meeting adjourned.

It is hoped to carry out the suggestions made for next annual meeting as follows:

Separate reports from each member of committee on experimental spraying.

Experimental Work, dealing more particularly with pollination, by T. A. Sharpe (Agassiz).

Growing and Drying Prunes, by Wm. Knight (Popcum).

Black Spot or Canker, by N. Burchart (Port Moody).

Ornamental Trees and Shrubs, P. Latham (Westminster).

THE FRUIT GROWERS' CONVENTIO .

From Rural Northwest.

The Fruit Growers' convention opened at Spokane at the Auditorium Wednesday evening, February 14th, 1894, with a large attendance of fruit growers and an audience of 2,500 people. This session was taken up with addresses and music.

Mayor Powell delivered the address of welcome and was followed by President Dwight of the City Council, and Colonel Feighan, all of them pleasant speakers. After music, the visitors responded to the cordial and eloquent addresses of welcome. Mr. C. H. Ross spoke for the fruit growers of Washington and expressed the pleasure of the visitors on account of the magnificent reception which had been accorded them by the city and people of Spokane. He said that this is the age of fruit. The whole Northwest is especially adapted to pomology. Carefully prepared estimates show that at the end of the planting season of 1894, Washington will have 45,000 acres of fruit, and the product of the coming season will not be far from 20,000 tons. Whitman county will take the lead in fresh fruits with about 400 carloads, while Clarke county will furnish the most dried fruit—about 55 carloads.

S. A. Clarke spoke for Oregon and gave a sketch of early pioneer life in Oregon and Washington.

The speaker for Idaho was L. A. Porter, of Lewiston. He said Idaho had been a little slow in taking hold of fruit, but since it has started the increase in the number of trees planted each year has been enormous.

John Kirkland, for British Columbia, said they were making rapid progress and in the near future fruit growing would be one of their important industries.

Other speakers of the evening, H. S. Blandford, of Walla Walla, S. L. Moore, of the N. P. R R., and Moses Folsom, of the Great Northern Railway, W. C. Corbett, of Minneapolis, and G. H. Barnett, of Chicago, spoke for the commission men and spoke in a very pleasing vein.

The convention was formally organised Thursday morning, Dr. J. E. Gaudy, of Spokane, was chosen chairman, and J. M. Gilbert, of North Yakima, Wash., secretary. Committees on plan of organization, resolutions and transportation were appointed.

Col. E. F. Babcock read an able paper on the subject of fruit pests which brought home to the convention the necessity of efficient and uniform legislation for the protection of our orchards. Considerable time was spent in a profitable discussion of this question.

In the afternoon the matter of packing and preparing fruit for shipment was taken up by Dr. Blalock, of Walla Walla. He explained the proper

methods of picking and packing fruit. All first-class apples should be wrapped in paper. The second grade might be shipped without wrapping and the third grade should never be shipped. He found the most profitable disposition he could make of his low grade fruit and vegetable was to feed it to hogs.

J. R. Wallace, a commission merchant of St. Paul, followed on the same topic. He advised grading carefully in three grades. He complimented the Snake River Association for its enterprise in selecting a grader and packer who was familiar with the excellent California methods. In no other country had he found more salable fruit than that grown in Oregon, Washington and Idaho.

G. W. Barnett, of Chicago, President of the International League of Commission Merchants, said that the future of the fruit industry of this country is in the hands of the packers. "You have the fruits and it only depends upon your own actions as to how great your profits shall be." We should put nothing in our boxes that we would be ashamed of in St. Paul and Chicago. Mr. Barnett called attention to the fact that we should learn by the experience of others as well as of ourselves, it is the fool who learns nothing except by his own experience.

Mr. D. M. Holt, of Snake River, gave a good talk on the subject of tree planting, and much interest was shown.

Mr. Barnett, in reply to a question as to the best fruits for the Eastern markets, spoke very highly of our apples. Almost any sample on exhibition would be a good seller in the East. The apple which brings the highest price in the Chicago market in January is the Northern Spy, and the next is the Baldwin. In December the Rhode Island Greening and the Spitzenberg stand first.

At the evening session papers were read by Miss Howard and Professor Fullmer, of the Washington State Agricultural College, and the committee on organisation presented its report upon which action was deferred until the following morning.

The first business taken up Friday morning was the report of the committee upon organization. There was considerable discussion upon the plan of organisation proposed and some changes were made.

The constitution adopted provides the organisation shall be known as the Northwest Fruit Growers' Association, comprising the states of Washington, Idaho and Oregon; that the object shall be the co-operation of the horticulturists of the entire territory embraced in the Association for promoting and encouraging proper methods of producing, handling and marketing their products; the officers are president, one vice-president each from Washington,

Idaho, Oregon and British Columbia; a secretary, a treasurer, and an executive committee. The duties of the several officers are defined and are such as are usually performed by the officers named. The executive committee is given large but vague powers. It is to recommend a system of local, county and state organisation, and shall have power to do all things needful and necessary to carry out the purpose of the association. Each member is to receive as compensation for his services $5 per day and necessary expenses while attending to the business of the Association and attending the meetings thereof. The annual meetings of the association are to be held on the first Wednesday in February of each year. Each district organisation shall be entitled to one delegate at large and one additional for each 25 members.

Membership in the Association shall consist of district organisations only. Each district organisation is to pay the Association the sum of one dollar per annum for each of the members for such local organisation. This money is to be paid at least 30 days before the annual meeting and in 1894 is to be remitted monthly.

Under this constitution the following officers were elected:

President, Dr. Blalock, of Walla Walla, Wash.

Vice Presidents, C. P. Wilcox, of Yakima, for Washington; R. S. Schliecher, of Lewiston, for Idaho; Dr. J. R. Cardwell, of Portland, for Oregon; John Kirkland, of Ladner's Landing, for British Columbia.

Secretary, S. A. Clarke, Salem, Ore.

Treasurer, W. S. Offner, Walla Walla.

Resolutions were adopted recommending the adoption of the California laws relative to fruit pests in the Northwest states and in British Columbia.

The committee on transportation reported that assurances had been received from the representatives of the Northern Pacific, Union Pacific and Great Northern railways that the rates would always be as low as those enjoyed by California shippers, and that in addition thereto the use of refrigerator cars would be furnished without extra charge; also that the cars may be loaded at different points for through shipment without extra charge, and that local refrigerator cars will be run at regular intervals between Portland and St. Paul with charges only enough above through rates to cover cost of icing. The committee was also given to understand that such rates would be made on apples as would enable us to compete with Eastern grown apples.

The committee on sizes of fruit packages reported as follows:

Apple boxes	$18\frac{1}{4}$x12x$11\frac{1}{2}$
Pear boxes	$18\frac{1}{4}$x12x$8\frac{1}{2}$
Peach boxes	$18\frac{1}{4}$x$11\frac{1}{2}$x$4\frac{1}{2}$
Prune boxes	$18\frac{1}{4}$x$11\frac{1}{2}$x4

All the above inside measurements. Twenty-pound grape crate 16x16x4½, containing four packages. Ends of boxes to be three-quarters of an inch thick; pear and apple box side one piece; pear and apple box tops and bottoms, two pieces. The size of cherry boxes will be reported later.

In our next annual report we hope to give a full report from British Columbia Delegates.

WAXES FOR GRAFTING AND FOR WOUNDS.

Common Resin and Beeswax Waxes.

1. Reliable Wax—Resin, 4 parts by weight; beeswax, 2 parts; tallow, 1 part. Melt together and pour into a pail of cold water. Then grease the hands and pull the wax until it is nearly white. One of the best waxes.

2. Resin, 4 lbs.; beeswax, 1 lb.; tallow, 1 lb.

3. Resin, 6 lbs.; beeswax, 2 lbs.; linseed oil, 1 pint.

4. Six lbs. resin; 1 lb. beeswax; and 1 pt. linseed oil. Apply hot with a brush one-eighth of an inch thick over all the joints.

5. For warm weather—4 lbs. of resin, 1 lb. of beeswax, and from half to a pint of raw linseed oil; melt all together gradually, and turn into water and pull. The linseed oil should be entirely free from cotton-seed oil.

6. Resin, 6 parts; beeswax, 1 part; tallow, 1 part. To be used warm in the house.

7. Resin, 4 or 5 parts; beeswax, 1½ to 2 parts; linseed oil, 1 to 1½ parts. For outdoor work.

Waxed String and Bandage.

8. Waxed String for Rood Grafting—Into a kettle of melted wax place balls of No. 18 knitting cotton. Turn the balls frequently, and in five minutes they will be thoroughly saturated, when they are dried and put away for future use. This material is strong enough, and at the same time breaks so easily as not to injure the hands. Any of the resin and beeswaxes may be used. When the string is used it should be warm enough to stick without tying.

9. Waxed Cloth—Old calico or thin muslin is rolled on a stick and placed in melted wax. When saturated it is allowed to cool by being unrolled on a bench. It is then cut in strips to suit.

Waxes for Wounds.

10. Any of the more adhesive grafting waxes are excellent for dressing wounds although most of them cleave off after the first year. Stiff and ochreous paints are also good.

GRAFTING.

There are very many apple and pear orchards throughout British Columbia unprofitable on account of the varieties planted. Many kinds also, once profitable, are so no longer on account of the apple scab, as, for instance, the Fameuse, the Early Harvest, and the Fall Pippin.

Now any man, who has a little skill in the use of tools, can easily transform such trees to kinds that are valuable, by grafting; an art by many looked upon as difficult, and invested with many secrets.

The first thing to do is to secure scions of the kinds wanted, for these must be cut while the buds are yet dormant, and be laid away packed in earth, or in fresh saw-dust until needed. If near a good city market it will pay to grow a few such fancy apples as Red Astracan, Duchess and Wealthy, and scions may be secured at a very small cost, from almost any nurseryman.

Apples and pears may be grafted much later in the season than stone fruits, for while the latter may be done as early as possible in the spring, the former need not be done until the last of May, or even the early part of June.

Cleft Grafting is the usual method, and for the small limbs it is the best. For this, the tools required are a sharp saw for cutting off the limbs where the graft is to be inserted, a sharp knife to sharpen the scion, a grafting chisel, such as is shown in Fig. A *c*, to open the cleft where it is to be inserted, a mallet to drive the chisel, and a small kettle, with a lamp so fixed in it as to warm the water in which the wax is placed till needed.

Our illustrations will represent the process. The scion, Fig A *b*, is bevelled equally on both sides, with the outer edge if anything a trifle thicker than the other to ensure firm contact between the cambium layer of the scion, and the stock. It is an advantage to have a bud on this edge as shown if the stock is small, one scion may do, as in the engraving; but if large, it is better to have one on each side, and thus if one fails, the other may succeed.

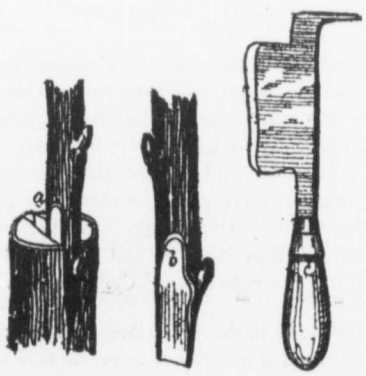

Fig. A.

The stock should be smoothly cut across with the saw, and then split with the grafting chisel, the narrow projection on the back of which is used to open the cleft for the insertion of the graft. All the cuts are then covered with grafting wax and the work is complete.

Grafting wax may be made in a variety of ways, but in all the ingredients are resin, tallow or linseed oil or beeswax, and it is more or less expensive according to the proportion of beeswax used. A very good recipe is one pint of linseed oil, one pound of beeswax and four pounds of resin. The resin and the beeswax should first be melted together, and the tallow or oil be added, when the whole should be well stirred up together. The mixture is then poured into cold water, and when cooled, worked by hand until ready for use.

A very simple method of grafting has been most successfully practised by the writer, at Maplehurst, during the past few years, which requires very little skill, few tools and no wax. An illustration showing it appeared in the *Rural New Yorker*, under the name of Crown Grafting, which engraving we have copied, because it shows the process so well that very little is needed in the way of description. One advantage of this method is that it may be used on limbs as large as six inches in diameter, and on trees of considerable age, for as the wood is not split the wound is the easier healed.

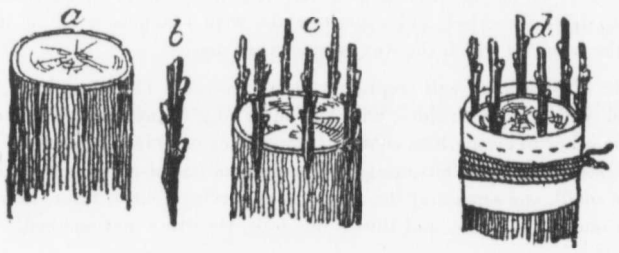

Fig. B.

In Fig. B *a*, is shown the stock cut, and prepared for the insertion of the scion, the cut down the bark simply reaching through the wood. At *b*, is a scion, beveled on one side only, which is the side to go next the wood. At *c*, the scions are set, but only a very large limb would need as many as are here represented; the writer has found two or three, in most instances quite enough, since nearly every one lives. At *d*, is shown the same, wound with stiff manilla paper, and tied firmly with a string. The paper is made to project upwards about half an inch above the cut, and the basin thus formed is filled with mud, which will dry and remain until the wound has begun to heal over.

The grape vine, too, may be easily grafted, and a knowledge of this may transform a profitless vineyard into one of great value. This work must be done early in the season before the buds begin to swell. The scion should be

about six inches long, and is inserted very much in the same way as described for cleft-grafting the apple, except that the old vine is cut some three or four inches below the surface of the ground, and that no grafting wax is used. Instead, the cleft stock is tied with a string (Fig. D), and the earth is carefully heaped about the scion so as to leave but one bud above the surface.

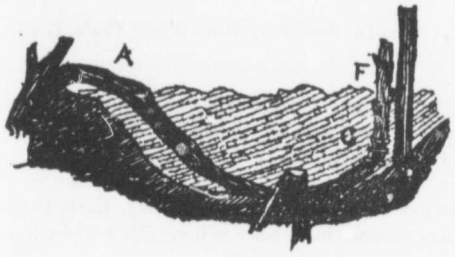

Fig. C.

Fig. D.

In case the old vine is too knotty for cleft-grafting, the work may be accomplished by splice-grafting a smaller branch, as is shown in Fig. C. This is done at a distance of two or three feet from the stump, at *g*, and the grafted branch is then laid down and fastened in place with a peg. The earth is pressed about the scion, leaving a bud above the surface, which is the only one that should be allowed to grow.

WHAT TO PLANT.

At a meeting of the Fruit Growers' Association a special committee was appointed to gather what information they could and report upon what varieties of fruit they thought were best to grow for profit in British Columbia. After considerable investigation by this committee it was decided to recommend the following varieties:

Apples — Early summer, Yellow Transparents, Red Astrachan; late summer, Oldenburg, Gravenstein, Keswick Codlin; fall, Wealthy, King, Maiden's Blush, Blenheim Orange; winter, Northern Spy, Baldwin, Ribsten Pippin, Grime's Golden, Golden Russet Ben Davis, Canada Red. Sweet apples—Summer, Golden Sweet; fall, Bailey's Sweet; winter, Talman's Sweet.

Crabs—Transcendent, Hyslop, Montreal Beauty.

Pears—Summer, Clapp's Favorite, Bartlett; fall, Beurre, Clairgeau, Beurre d'Anjou; winter, Lawrence, Beurre Easter.

Plums—Peach plums, Bradshaw, Imperial Gage, Lombard, Red Egg, Yellow Egg, Victoria, Gueii.

Prunes—Bulgarian, Italian, Pond's Seedling, Hungarian, Coe's Golden Drop, Silver.

Cherries—Sweet, Early Purple Guigne, Governor Wood, Black Tartarian, Napoleon Bigarreau (Royal Ann), Yellow Spanish, Windsor. Cherries—sour, May Duke, Large Montmorenci, English Morello.

Peaches—Alexander, Waterloo, Early Rivers, Hale's Early, Early Crawford and Wager. (The last three seasons have been unfavorable for peaches).

Apricots and Nectarines—Not sufficiently tested to be recommended.

Quince—Orange.

Grapes—Moore's Early, black; Worden, black; Delaware, red; Brighton, red; Niagra, white; Concord, black.

Strawberries—(For Home Market) Crescent, Sharpless, Improved Jocunda. (For Shipping) Clark's Seedling, Lovett's Early, Warfield No. 2, Wilson.

Raspberries—Cuthbert, Marlborough, Golden Queen.

Black Caps—Gregg, Tyler, Souhegan.

Blackberries—Snider's, Kittatiny, Erie, Taylor, Lawton.

Gooseberies (English)—Industry, liable to mildew in some localities. (American) Champion, Downing.

Currants (Red)—Fay's Prolific, Moore's Ruby, Cherry Currant.

Currants (White)—White Grape.

Currants (Black)—Lee's Prolific, Black Champion, Black Naples.

List of varieties not thoroughly tested but worthy of trial—Apples, summer, Alexander; fall, Haas, Colvert, Princess Louise, Red Betigheimer; winter, Pewaukee, McIntosh's Red, Hubbardson's Nonesuch, Seek-no-further, Rhode Island Greening, Stark, Newton Pippin, Yellow Bellflower.

Pears—Summer, Madeline, Marguerite, Brockworth Park; fall, Beurre Bossock, Duchess d'Angouleine, Howell, Sheldon; winter, Josephine de Malines.

Plums—McLaughlan, Moore's Arctic, Jefferson, Shipper's Pride, Smith's Orleans.

Cherries—Rockport Bigarreau, Olivet, Mezel, Black Republican.

Peaches—Foster, Shumaker, Wheatland and Coolidge's Favorite.

Grapes—Moore's Diamod, Meyer.

Strawberries—Haverland, No. 2, Triomphe de Gand.

Apricots—Moorpark, Early Golden, St. Catherine, St. Ambrose, Early Montgamet.

Nectarine—Boston, Early Violet.

Quince—Rhea's Mammoth, Champion.

ADVICE TO GROWERS AND SHIPPERS OF FRUIT.

The fruit industry of British Columbia is a growing one; in fact, it is practically in its infancy yet, and all growers ought to increase their acreage and encourage new horticulturists to set out orchards, with the firm belief that the fruit business is *not* overdone nor likely to be overdone in the near (or even remote) future.

Our markets for all varieties of fruit are increasing in number, and the territory into which fruit has been shipped during the season of 1893 extends eastward to the Atlantic.

The demand is continually increasing for all the better varieties of apples, pears, plums, prunes, peaches and cherries, and we would suggest to those contemplating the setting out of new orchards or the increasing of their former acreage, to consult the commercial demands as well as the suitability of location. The serious mistake in the past has been the number of varieties of trees planted as compared with the total number of trees. Avoid this error. If you have ground cleared for five hundred trees, it is better, for your own interest, to plant the entire amount in one class of fruit, even though you select two or three varieties from that class. Orchardists should understand that they are not raising their fruit for home consumption; their largest profits will be in the shipping trade. And if they have a sufficient quantity of any one variety of fruit to load a car, they are in a position to dictate prices to the shipper, whereas if they have but a small portion of a car, and the shipper is compelled to look into a dozen orchards in order to buy a sufficient quantity of one given variety to make up a car load, the shipper

can dictate. Another view is this: wherever large orchards exist, there the larger buyers congregate first, and the owner of the orchard realizes all the benefits of active competition among the buyers. California horticulturists know this, and make money by having large orchards and plenty of each variety of fruit.

Those owning old orchards should take every means to clean them and keep them so. Cut out all the old branches and trim up the trees generally. *Burn your rubbish.* Don't let it remain piled up in a corner near a fence, for such piles are the breeding grounds of all kinds of pests. Burn it at once. Don't let the weeds grow in your orchard, but keep the ground thoroughly cultivated all the time. It will pay you well in the long run.

MARKETING FRUIT.

It is hard to explain just how ripe fruit should be when picked for market. In all instances, it is best to consult the wishes of the shipper or dealer. If fruit is intended for the local market, it should be ripe enough for immediate use, and yet firm enough to "stand up" for two or three days before showing signs of decay. For shipping purposes, much depends on the distance the fruit is to go and the length of time it is expected to "stand up" before reaching the consumer. Take the suggestion of a shipper in every instance, for, as a rule, he knows what he wants and how he wants it. The writer, has had much success with shipping peach plums, simply because they were picked before they had their full growth and just after they had turned from green to their peculiar white cast—before getting even a blush of color. During previous seasons he had lost money on them because he had invariably waited for them to get a "blush" before picking them for distant shipping purposes.

PEACHES.

Peaches for distant shipment, should be firm and fairly well colored, and wrapped and packed in boxes containing about 20 pounds net of fruit. Grade the fruit so as to make two tier boxes of the larger and three tier boxes of the smaller peaches. Do not ship anything under a three tier peach to market; it is not saleable, and being offered hurts the sale of the better stock. For local use, riper peaches should be packed in common splint baskets containing about 18 pounds.

PEARS.

All varieties of pears should be picked as soon as they will leave the trees without pulling or breaking the stem. A gentle twist of the wrist should bring the fruit off the tree. Don't bruise the fruit in transferring it from your baskets to the orchard boxes, and under no circumstances gather fallen fruit for shipment. For distant shipment, pears should be wrapped and packed in standard pear boxes containing 45 pounds of fruit.

APPLES.

All varieties should be carefully gathered in their season and allowed to remain in orchard boxes or small heaps for a week or more before packing for shipment. Cull out all small or wormy fruit and be sure you pack only selected apples. It does not pay to send unmerchantable apples or any unsaleable fruit to market. Always use new standard boxes and face the first layer. Then fill in the box tightly and full, so that when the bottom is nailed down not an apple in the box will move in its place. Make your name, branded on the box, a guarantee of the fruit contained therein, and you will soon see how shippers will seek your brand and pay top prices to secure your pack. It pays big to build up such a reputation.

DRIED FRUIT.

Every large orchardist should have an evaporator of some kind on his place. All over-ripe fruit and fruit that is too inferior for the market can be easily taken care of in a small evaporator. If you have a large prune orchard a good sized evaporator will be necessary. Of the different systems of drying it will be impossible to say anything in this article. Each system has its peculiarities, its advantages and disadvantages. Use only new boxes (either 25 pound or 50 pound standard spruce boxes) or new cotton sacks for marketing your dried fruits. When packing in boxes line them first with clean white paper, and next to that lay a sheet of waxed paper. Always face your fruit on this sheet of waxed paper, then fill it to the required weight and press into the box. The neater the package and the style of packing, the more readily your dried fruit will sell, and the higher the price realized therefor.

Attractiveness has much to do with the selling qualities of everything offered. Your fruit may be equal, and perhaps superior, to that of your neighbor's, but if your neighbor has packed his fruit more carefully or more attractively, he has undoubtedly been able to sell his output for a higher price than you.

PEST AND REMEDY

SUPPLEMENT

AS ADOPTED BY A COMMITTEE

APPOINTED AT THE

ANNUAL MEETING

OF THE

HORTICULTURAL SOCIETY

AND

FRUIT GROWERS' ASSOCIATION

OF

BRITISH COLUMBIA

Insecticides and Fungicides.

USEFUL INFORMATION FOR FRUIT GROWERS GATHERED FROM RELIABLE SOURCES.

That Spraying *is* necessary there is no doubt or question, as a science each succeeding year brings its valuable experience to aid us in a successful effort to rid our orchards, nurseries and vineyards of destructive insects and injurious diseases.

SPRAYING MIXTURES.

The substances used in spraying may be divided into two classes: insecticides and fungicides; the former being used against insects and the latter against fungi.

INSECTICIDES,

or the mixtures used for the extermination of insects, may also be divided and classed according to their mode of action: 1. Those which take effect by being eaten along with the ordinary food of the insect; and 2. Those which act from the outside, closing the breathing pores, or causing death by irritation. The first are for insects that destroy by eating, and the second for those that suck the juice. The most popular insecticides of the first class are the various combinations of arsenic known as Paris green, London purple, slug shot, etc., while those of the second class are kerosene and soap emulsions, lime spray, tobacco decoction, helebore, pyrethrum, etc.

FUNGICIDES.

The fungi are an entirely different class of enemies to contend with. A fungus is a plant that feeds upon organic matter adapted to its wants. At certain stages of their existence most parasitic fungi may be checked quite easily, and at such times they should be attacked. When a fungus has become established in a plant, it cannot be reached without destroying the host in the affected places. The parasite must be destroyed before it reaches the host,—this is the principle underlying the application of most fungicides. The application should be preventive, not curative, for the the latter is practically impossible when the fungus is once established. The principal fungicides used in spraying are certain salts of copper in the following various combinations: Bordeaux mixture, eau celeste, carbonate of copper, Galloway's mixture, potassium sulphide, etc.

Fungous diseases will in all probability increase in proportion as the food plants upon which they prey are multiplied, and as climatic and other con-

ditions are favorable to their development. Spraying, therefore, must be resorted to, and in order to derive the greatest benefit, it should be generally practised. The value of the efforts of one man who faithfully sprays his orchard is greatly lessened if his neighbor neglects preventive measures and so allows his orchard to serve the purpose of a breeding ground for the spores of fungous diseases such as pear and apple "scab."

HOW TO SPRAY.

As the treatment is entirely preventive, in order to make spraying effective it must be commenced early. All parts of trees or plants must be reached with the preventive agent. Drenching is not necessary and is expensive. A thin film or coating of the fungicide deposited upon the foliage will prevent the development of the spores as well as a complete soaking ; but it is important that all the leafy surface should be wetted at least on the upper side. For orchard work a good force pump, which may be fitted into a barrel—side or end—will give satisfaction. It must be of sufficient strength, and fitted with a nozzle which will project the spray in a fine state of division, yet with sufficient force to enter the deeper recesses of the foliage. More expensive pumps drawn and operated by horse power may be purchased, but are seldom necessary except for large orchards.

CO-OPERATIVE SPRAYING.

Some factors which are deterrents to the progress of spraying may be enumerated as follows. This work, like the introduction of spraying for the prevention of insect enemies, on account of involving new lines of thought and action, is sometimes regarded by the farmer as impracticable on a large scale. It *must* be done at certain periods of the year—otherwise it is ineffectual. It involves the purchase of implements and materials which are sometimes difficult to obtain just when required. The success of the work depends also on intelligent adaptation of the treatment to the climatic conditions existing during the spraying period.

To obviate some of these difficulties I would suggest the adoption of a co-operative plan of spraying.

First, where orchards are not large, a few farmers might combine and purchase a spraying outfit, which would serve the community, and if it were possible to have it continuously operated by the same individual, whom practice would lend superior facility in using it, an additional advantage would be gained. Another arrangement could be made as follows :—

A complete spraying outfit, including chemicals, might be purchased by a person who would be prepared to spray under contract, by the acre, or at a stated figure per tree. If this system of combating fungous and insect enemies was introduced, it would obviate much of the prejudice and inconvenience now connected with the work, and spraying would probably in a few years, to the great benefit of orchardists, become the general practice.

Most seasons, from November to April, is the time for thorough work in destroying fruit pests in orchards, on various trees and plants of this Province.

It is the only season when successful work is done with a view to exterminate the pests, entirely without injury to plant life.

Summer spraying is beneficial, but results only in holding the damaging insects in check, while the washes given in thfs supplement for winter spraying are of such strength as will destroy the egg germs if properly applied. The soap and lye, also the sulphur and lime washes are excellent fertilizers, and will benefit trees wherever applied. These washes should be used in every orchard.

Every person purchasing young trees should see that the same have been disinfected, as advised in this supplement.

The San Jose Scale or Greedy Scale and Woolly Aphis are the insects to be guarded against more than any other, and for protection it will pay to wash every tree being planted, or that is now in the orchard.

Merchants should be forbidden to dispose of fruit boxes, etc., for the use of fruit again, unless fumigated. All growers should avoid the practice of picking up boxes promiscuously from fruit stands, unless they have been thoroughly disinfected, because from this course many orchards have been infested

There are many beneficial insects, which destroy the injurious insects; the practice of growers should be to learn and distinguish these and their habits, in order to best protect them. Most birds are of great benefit to horticulturists, destroying the injurious insects, and should be protected.

CAUTION.

The special attention of all using any of the washes recommended is called to note carefully the difference between those for use in the winter season, when the trees are in a dormant condition, and those to be used during the spring and summer months, when the trees are in foliage. The winter washes cannot be used without injury to the fruit buds, after they have commenced to swell, and the summer washes are not of sufficient strength to be of any value for use in the winter months, when insects are in the pupal state, and therefore require much stronger solutions to destroy them than they do after they are hatched.

LONDON PURPLE.

In the use of London purple for the destruction of Codlin Moth, owing to the fact that there is no uniformity in the strength of it, the

safe plan is, to make a test of it by spraying a few trees and letting them stand for twenty-four hours; and if the foliage is found to be affected, reduce the strength by adding more water.

AGAIN,

Do not use the lye washes to destroy the Codlin Moth, or the London purple or Paris green to destroy the Aphis. In other words, note carefully, and use the washes for the specific purposes as recommended.

Professor Maynard, of Massachussetts Agricultural College, sums up the following facts now pretty well settled, viz.:

(1) That of the arsenites, Paris green gives the best results as an insecticide.

(2) That the longer the mixture containing the arsenites stands, the greater the injury from soluble arsenic.

(3) That the foliage of the peach, plum and cherry is more susceptible to injury than that of the apple and pear.

(4) That the injury varies with the varieties, some being more susceptible than others.

(5) That young leaves are less injured than those fully developed, and are more injured on weak trees than on those that are vigorous and healthy.

(5) That Paris green cannot be used alone with safety, stronger than one pound to three hundred gallons of water, but with the lime mixture it may be safely used at one pound to from fifty to one hundred gallons.

(7) That the foliage is most injured when kept constantly wet by light rains or foggy weather, but that heavy rains lessen the injury.

(8) That the least injury is done when the liquid dries off most rapidly.

(9) That the time of day when the application is made is unimportant.

SPRAY CALENDAR.

PLANT.	First Application.	Second Application.	Third Application.	Fourth Application.
Apple ..... *(Scab, codlin moth, bud moth.)*	When buds are swelling, copper sulphate solution.	Just before blossoms open, Bordeaux. For bud moth, Arsenites when leaf buds open.	When blossoms have fallen, Bordeaux and Arsenites.	8-12 days later, Bordeaux and Arsenites.
Cabbage ..... *(Worms, aphis.)*	When worms or aphis are first seen, Kerosene emulsion.	7-10 days later, if not heading, renew emulsion.	7-10 days later, if heading, hot water, 130°F.	Repeat third in 10-14 days if necessary.
Cherry ..... *(Rot, aphis, slug.)*	As buds are breaking, Bordeaux; when aphis appears, Kerosene emulsion.	When fruit has set, Bordeaux. If slugs appear, dust leaves with air-slacked lime. Hellebore.	10-14 days, if rot appears, Bordeaux.	10-14 days later, Ammoniacal copper carbonate.
Currant .... *(Mildew, worms.)*	At first sign of worms, Arsenites.	10 days later, Hellebore. If leaves mildew-Bordeaux.	If worms persist, Hellebore.	
Gooseberry ..... *(Mildew.)*	When leaves expand, Bordeaux.	10-14 days later, Bordeaux.	10-14 days later, Ammoniacal copper carbonate.	10-14 days later, repeat third.
Grape ..... *(Fungous diseases.)*	In Spring when buds swell, copper sulphate solution.	When leaves are 1-1½ inches in diameter, Bordeaux.	When flowers are open, Bordeaux.	10-14 days later, Bordeaux.
Peach, Nectarine..... *(Rot, mildew.)*	Before buds swell, copper sulphate solution	Before flowers open, Bordeaux.	When fruit is nearly grown, Bordeaux.	5-7 days later, Ammoniacal copper carbonate.

SPRAY CALENDAR—Continued.

PLANT.	First Application.	Second Application.	Third Application.	Fourth Application.
Pear..... *(Leaf blight, scab, psylla, codlin moth.)*	As buds are swelling, copper sulphate solution.	Just before blossoms open, Bordeaux. Kerosene emulsion when leaves open, for pyslla.	After blossoms have fallen, Bordeaux and Arsenites. Kerosene emulsion if necessary.	8-12 days later, repeat third.
Plum..... *(Fungous diseases, curculio.)*	When buds are swelling, copper sulphate solution.	When blossoms have fallen, Bordeaux. Begin to jar trees for curculio.	10-14 days later, Bordeaux.	10-20 days later, Bordeaux.
Potato..... *(Blight, beetles.)*	When beetles first appear, Arsenites.	When vines are two-thirds grown, Bordeaux and Arsenites.	5-15 days later, Bordeaux.	
Quince..... *(Leaf and fruit spot.)*	When blossom buds appear, Bordeaux.	When fruit has set-Bordeaux.	10-20 days later, Bordeaux.	10-20 days later, Bordeaux.
Raspberry..... Blackberry..... Dewberry..... *(Anthracnose.)*	Before buds break-copper sulphate solution.	During summer, if rust appears on leaves, Bordeaux.	(Orange or red rust is treated best by destroying the plants.)	
Strawberry..... *(Rust.)*	As first fruits are setting, Bordeaux.	As first fruits are ripening, Ammoniacal copper carbonate.	When last fruits are harvested, Bordeaux.	Repeat third if foliage rusts.
Tomato..... *(Rot, blight.)*	At first appearance of blight or rot, Bordeaux.	Repeat first if diseases are not checked.	Repeat first when necessary.	

For aphides or plant lice use kerosene emulsion on all plants.—*Cornell University Bulletin.*

Apples, grapes, peaches, pears and plums may need a fifth and even a sixth application, for the best success.

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BLACK KNOT.

It is noticeable that Prof. Farlow, of Harvard University, has successfully used red oxide of iron with linseed oil as a paint to destroy black knot on plum trees. Would not a liberal dressing of copperas around our plum and cherry trees fortify them to some extent against the attack of fungus by absorbing some of the iron, or would plum or cherry trees not absorb it?

Again, would not iron sprayed on the trees in the early spring, before the foliage appears, be destructive to the fungus spores which might be blown upon them?

SUBSCRIBER.

The plum and cherry trees would not be likely to absorb a sufficient quantity of iron to prevent the spores of the black knot from growing upon them, for trees will not take up more than a certain percentage of this element from the soil, even though it be very abundant there; but spraying the trees with sulphate of iron in early spring has not only been highly recommended, but has proved itself to be a valuable remedy for black knot. This substance is used in the proportion of one pound to twenty-five gallons of water, and, although too strong to be applied when the foliage has developed, it can safely be applied while the trees are yet in bud, and will serve to destroy, not only a large number of spores of the black knot, but also of the scab, mildew, rust and other fungi.

KEROSENE FOR BLACK KNOT.

My next door neighbor had several plum trees bearing fine fruit, and all died covered with knots; but before dying I had secured a few sprouts and had some fine young trees, on which, when they were about six feet high, knots began to break out on the trunks, some six inches long. Having filled a small sewing machine oil can with coal oil, I gave the knots a dose; they stopped growing, but in about a month a few more made their appearance and some old ones began to swell again, then another dose finished them. The next year (last summer) a few spots appeared, they were treated before they broke out, and all the trees are now very thrifty, only scarred where the large knots were, all the knots died and fell off like loose bark, leaving dead spots over which the new bark is growing. If the trees are very badly affected, it is better to cut them down, they are so unsightly. The oil does not seem to have any bad effect on the sound part of the tree; but, like all other medicine, too much might be injurous, but I'd rather kill trying to save than let the disease have its way.—R. N. Y.

(*Rot, blight.*) |blight or rot, Bordeaux.|are not checked. |necessary.

For aphides or plant lice use kerosene emulsion on all plants.—*Cornell University Bulletin.*
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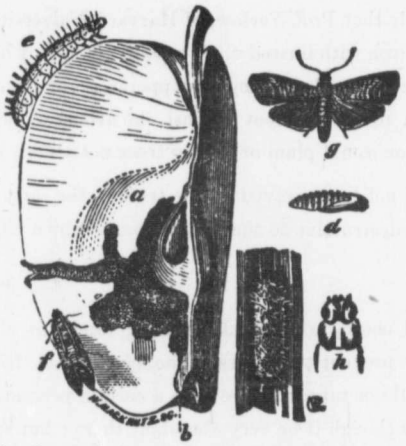
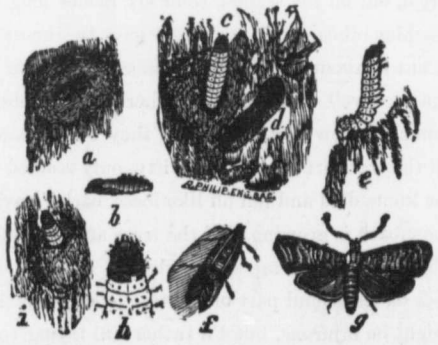
THE CODLIN MOTH.



The puncture made by the moth is represented at (b), the borings of the larva at (a), the mature worm at (e), the moth with wings closed at (f), the moth with wings expanded at (g), and the cocoon at (i); (d), the chrysalis, and (h), the anterior part of the body, magnified.

This insect, which appears in the early worm-eaten apples and pears, in the form of a reddish white grub, was introduced into this country with the apple tree from Europe. It causes the fruit to fall prematurely from the trees. "The perfect insect," says Charles Downing, in his work on *Fruit and Fruit Trees of America*, "is a small moth; the fore wings grey with large round brown spots on the hinder margin. These moths appear in the greatest numbers in the warm evenings of June, and lay their egg in the eye or blossom end of the young fruit, especially of the early kinds of apples and pears. In a short time, these eggs hatch and the grub burrows its way till it reaches the core. The fruit then ripens immediately and drops to the ground, here the worm leaves the fruit and creeps into the crevices of the bark and hollow of the tree and spins its cocoon; which usually remains there till ensuing spring when the young moth again emerges from it.



(a), Nest of larva on outside of tree, under the old bark; (b), pupa; (c), larva exposed from nest; (d), old nest; (e), larva about to build nest; (f), the moth at rest; (g), moth with wings spread; (h), head of larva.

REMEDIES AGAINST THE CODLIN MOTH.

There are two modes of fighting them generally made use of—one is to prevent the hatching of the egg, or the killing of the young worm while working into the fruit; the other is the catching of the worm in traps as it is escaping from the fruit, or having the fruit eaten by hogs as soon as it drops from the tree and before the worm escapes. The first mode is without doubt the most successful, and is also the least expensive. This is accomplished by spraying the trees with London purple or Paris green, using one pound of either to one hundred and fifty gallons of water. Paris green is a compound of arsenic and copper. It is a far more powerful poison than arsenic alone, and is not soluble in water, hence it will remain much longer on the trees. London purple is another arsenical compound. It is the residue from the manufacture of aniline dye, and contains lime, arsenuous acid and carbonaceous matter. It is soluble, more adhesive and less poisonous than Paris green. It is better to wet the powder thoroughly and make a paste before putting it into the vessel of water, that it may not form lumps. The liquid should then be strained, thereby removing the sediment that is in the London purple. Some have reported to this Board that the London purple burned the foliage, This, doubtless, arises from difference in the strength of the London purple, and we recommend that care be exercised and tests be made before using, so that it shall not be too strong. The spray is caused by forcing the liquid, by means of a force pump, through a fine perforated nozzle, made specially for the purpose. The finer it is the less liquid will be required. The important thing is to scatter the spray on all the fruit.

FOR SPRAYING FOR CODLIN MOTH.

Sulphur 100 parts, Lime 100 parts, Blue Vitriol 8 parts. Slack the lime with enough water to make a thick paste. Dissolve blue vitriol in hot water and add to the lime. Dissolve the sulphur by thoroughly boiling and add to the lime and blue vitriol. This mixture will keep any length of time. When ready to spray take 1lb. of the mixture to 2½gals. hot water for winter use, applying it lukewarm. For summer work, take 1lb. of the mixture to 8 or 10 gallons of water.

For Codlin Moth add ½lb. Paris Green and ½lb. London Purple and water enough to make 300 gallons. In using Paris Green first mix it with water to consistency of paste before adding to the mixture.

WHEN TO SPRAY.

The Codlin Moth, soon after the fruit sets, lays her eggs upon the calyx or blossom end of the young fruit. The grub, as soon as hatched, eats its way into the centre of the sound fruit, and there, growing with its growth, works its mischief. In its early state the young fruit is erect, its calyx or blossom end upwards, and the least particle of poisoned water falling upon it is sufficient to destroy the young worm when it attempts to eat its way into the fruit. Therefore, the best and most opportune time for spraying the tree is

soon after the fruit is set, and when it is about the size of a small pea. Experience teaches, however, that it is not safe to depend upon the one early spraying to accomplish the results sought for, whether coming from a second, and perhaps a third, crop, which many affirm and others deny, or from those that from some cause have not matured as rapidly as others; still the facts remain that in many places the Codlin Moth does not sting the fruit and lay the eggs until later in the season. Therefore, to obtain the best results, the spraying should be continued with an interval of two weeks until the first of August, and even later than this on some varieties. Care should be observed that vegetables are not sprayed with these mixtures, and no animals be allowed to eat the grass that has been saturated with the spray, and that the spraying is not done when the trees are in bloom, for then it is that bees are present.

PEAR AND CHERRY TREE SLUG.

Growers should be on the look-out for this destructive pest about middle of June and again in early August, and if the young slugs are then abundant, they should be then promptly attended to, since if neglected, they soon play sad havoc with the foliage, feeding upon the upper side of the leaves and consuming the tissues, leaving only the veins and under skin. The foliage deprived of its substance, withers and becomes dark colored, as if scorched by fire, and soon afterwards it drops from the tree. Trees badly infested often become as bare of foliage in July as they are in January. In such cases the tree is obliged to throw out new leaves, and this extra effort so exhausts its vigor as to interefere seriously with its fruit producing powers the following year. Although very abundant one season, they may be very scarce the next, as they are liable to be destroyed in the interval by enemies and by unfavorable climatic influences.

REMEDIES.

Powdered Helebore 1oz. to 5gals. water for spraying.

Fresh air slacked lime, sand, ashes or road dust on the foliage is said to be an efficient remedy. But these latter are unsatisfactory measures and usually of little value, especially if applied late in the season.

The Eye-spotted Bud-moth *(Imetocera ocellana)* has made its appearance in the vicinity of Vernon on young trees imported from the East.

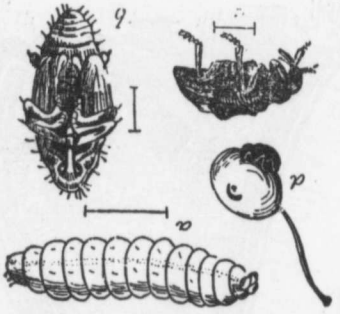
The caterpillar of this insect selects the opening bud as its point of attack.

It is a small, naked larva about three quarters of an inch long when full-grown, of a pale, brownish colour, the head and top of next segment are black.

It is very partial to the blossoms and newly-formed fruit, attacking both apples, cherries and plums. Its tenement is a dried, blackened leaf, portions of which are drawn together to form a case, which is lined with silk. The only remedy suggested by Prof. Saunders is to pull off and crush the withered clusters of leaves containing the caterpillars or chrysalids early in Spring.

PLUM CURCULIO.

(Conotrachelus nenuphar.—Herbst*).*



The different stages are shown in the accompanying wood-cut: (a) represents the grub much magnified; (b) the chrysalis, and (c) the beetle, both magnified; (d) the young fruit, showing the crescent-shaped mark made by the insect, and the curculio, life size, at its work.

There is perhaps no insect so well known by name as the Plum Curculio, the perfect insect belongs to the family known as the snout-beetles, from the shape of the head, which is elongated into a beak. It is a small, rough, grayish beetle, about one-fifth of an inch long. The females lay their eggs in the young fruit of plums and cherries, frequently destroying the whole crop.

REMEDIES.

The beetles are sluggish in the early morning, and drop from the trees if a sudden jar be given to the trunk. For this purpose a metal spike is driven

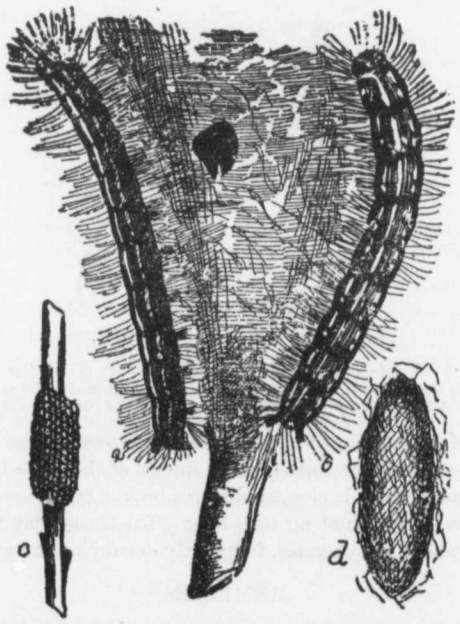
into the trunk, which is struck sharply with an iron hammer. This gives the sharp jar necessary to dislodge the beetles which fall on sheets or into receptacles placed beneath the trees. They are then collected and destroyed.

Of late years abundant evidence has proved the efficacy of spraying the trees, as soon as the fruit has formed, with Paris green, 1 pound to 200 gallons of water, and ten days afterwards a second time with a weaker mixture, one pound, to 300 gallons. Should heavy rains occur immediately after these sprayings, they must be repeated.

POISONING.

Poisoning by using arsenical poison, Paris green or London purple, the last seems preferable, as it is cheaper, more readily mixed and more effective. One pound to 200 gallons of water is strong enough, spraying trees, Weir, says: "First, just before the blossom buds open: second, two weeks after the petals fall. If a weak, soapy kerosene emulsion is used at this spraying to mix the poisons in, it will also destroy the leaf lice, aphides, bugs and all other insects injurious to the fruit and foliage: and then a third spraying about June 10th, and your fruit is safe."

THE APPLE-TREE TENT CATERPILLAR



(a), Side view; (b) back view, full grown at about six weeks old; (c), cluster of eggs; (d), cocoon, oval of pale yellow color.

The moth is of a pale, dull reddish or reddish-brown color, crossed by two oblique parallel whiteish lines, being usually paler than the general color, although sometimes quite as dark, or darker. It lives but a few days in the winged state, merely long enough to provide for a future generation, by the deposition of eggs. The moths are usually most abundant during the first two weeks in July. The eggs, conical, and about one-twentieth of an inch long, and deposited in July upon the smaller twigs in ring-like cluster.

The young caterpillars are fully matured in the egg before winter and thus remain until favorable spring weather, when they begin to move about and soon construct for themselves a shelter by extending shoots of web across the nearest fork of the twig upon which they were hatched, for retreat at night and stormy weather. In five or six weeks they become from one inch to one and three quarter inches in length.

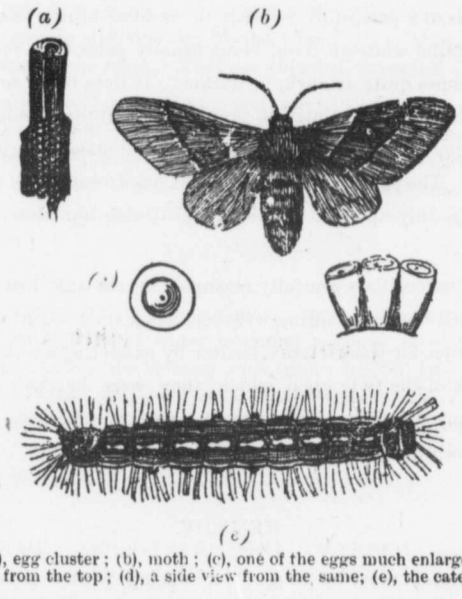
REMEDY.

The egg clusters must be sought for during winter months, when the trees being leafless, the eye will readily detect them, after being hatched out, their nests are so conspicuous that there can be no excuse for neglecting to destroy them, and where any of these pests appeared last season thorough search must be made for these rings of eggs (which are generally found on the small branches), collecting and destroying by pouring boiling water on them or by burning them.

Paris geen mixed with water in the proportion of one ounce to six gallons, and applied to the foliage with a sy ringe or a spray pump, will promptly destroy this insect.

THE FOREST TENT CATERPILLAR.

This insect closely resembles the common tent caterpillar described on another page. The eggs are of almost uniform diameter, and from three to four hundred in each cluster, squarely cut off, as shown in (a). After the insects are hatched in spring they are often seen marching about in single or double column. In about six weeks these insects are full grown, as shown in (e).



(a), egg cluster; (b), moth; (c), one of the eggs much enlarged, as seen from the top; (d), a side view from the same; (e), the caterpillar.

They are from one to one and one-half inches long, pale, bluish color, with black points and dots. On the back is a row of ten or eleven oval or diamond-shaped white spots, by which it may be at once distinguished from the common tent caterpillar, while on the sides there are pale yellowish stripes somewhat broken and mixed with grey. These insects were numerous in several sections last season. In some of the old orchards the foliage of the apple trees was entirely devoured.

While particularly injurious to the apple, the insect also attacks various species of forest trees, such as oak, thorn, ash, basswood, plum, cherry, walnut, etc.

When full grown the larva spins its cocoon in some suitable place, when after two or three days there is a change to a chrysalis of a reddish-brown color, densely clothed with short hair and after two or three weeks the moth appears, when, having deposited its egg, it perishes.

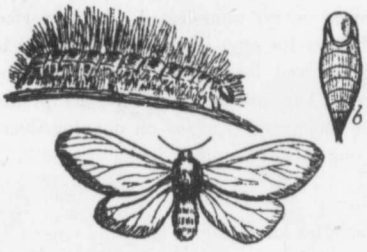
REMEDIES.

These egg clusters must be sought for and destroyed during the winter months. They can be readily detected, and are easily dislodged and destroyed. If left unmolested they will hatch out in spring and be the cause of much damage. See also, remedy recommended for Apple-Tree Tent Caterpillar.

THE FALL WEB-WORM

(Hyphantria Textor.)

(a)

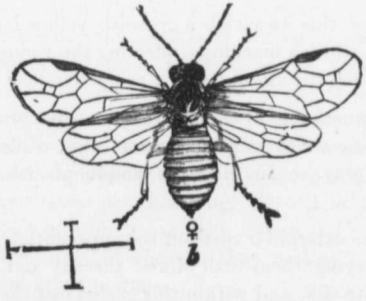


(c)

This insect appears towards the end of the summer and is totally different in all its stages from the common tent caterpillar. The moth of this species deposits her eggs in broad patches on the under side of the leaves near the end of a branch in the month of June, hatching out in July and August.

As soon as the young larvæ appear they begin to eat and to spin a web over themselves for protection. They devour only the pulpy portion of the leaves, leaving the veins and skin of the under surface untouched. From their birth the web-spinning habits of these larvæ promptly leads to their detection as soon as seen they should be removed, by cutting off the twig or branch and destroying it. As they remain constantly under the web for so long a period the removal of the branch insures in most instances the destruction of the whole colony. See also remedy recommended for apple-tree-tent caterpillar. This insect was destructive around Chilliwack last season.

CURRANT FLY.



This insect has not yet, as known by this Board, visited the gardens of this Province, but has been found in the neighboring state. Hence we deem it important to be on the watch for it, with the proper remedies for its extermination.

The perfect female is shown in the above figure, the lines showing the actual size.

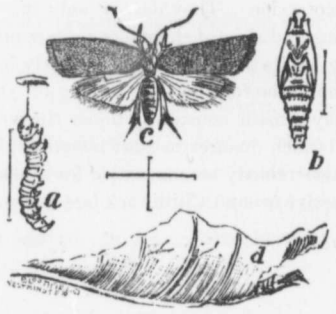
This insect will ruin the currant and gooseberry crop, if once it has gained entrance and is allowed to go unmolested. In its perfect state it is a small two-winged fly which lays its eggs on the fruit while it is small. The larvæ enter the fruit yet green and feed on its contents, leaving a small black scar at point of entering. The affected fruit ripens prematurely and shortly decays and drops to the ground, when on opening them a small white grub will be found, about one-third of an inch long.

REMEDIES.

The following remedies have proved effectual where tried in other places: Use one large tablespoonful of powdered white hellebore dissolved in a pailful of water, spraying the bushes just before they bloom and again after the fruit has set.

THE LESSER APPLE-LEAF ROLLER.

(Teras minata.)



The caterpillar of this species is a greenish yellow larva, smooth, with a pale brown head and whitish markings, affecting the young leaves of the terminal twigs, with which the insect forms a protective case.

This species is remarkable in that two of the three broods of moths which appear during the year are of a bright orange color, while those of the third brood are reddish-gray. It is an example of what naturalists call dimorphism.

When mature the caterpillar casts off the upper cuticle of a leaf and brings the edges together, tying them with silken threads and then lines the enclosure with fine white silk, and within this curled leaf the caterpillar changes to a brown chrysalis, about three-tenths of an inch long. Spraying with hellebore or Paris green are promising remedies, and on young trees or nursery stock they may be advantageously destroyed by crushing the larvæ in their cases.

CURRANT AND GOOSEBERRY SLUG OR WORM.

(Nematus ventricosus).

The full-grown worms are about three-fourths of an inch long, and are shewn at (a); (b) gives the position of the black spots upon a magnified joint of the body.

This voracious insect differs from the Cherry Slug. The flies are yellow, not black. The slugs are green, or green dotted with black, and not brown. They feed on the gooseberry or currant, and eat the leaf entire, instead of merely removing the cuticle; It is so readily dealt with by the timely application of remedies, that there can be no possible excuse for the shocking damage often seen done to these useful fruits about town and country homes.

POWDERED HELLEBORE.

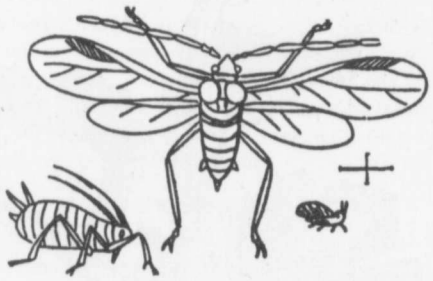
Hellebore is the best of known remedies, and a perfectly effectual one. Properly applied, no harm can possibly result from it. It should, according to Prof. Lintner, be used in the following manner: Early in the spring, as soon as the leaves of the currant have fully put forth, watch for the first indications of the hatching and commencement of the young larvæ. You have only to look for these on the *lowest leaves on the bushes near the ground.* The indications will be numerous *small holes eaten into the leaves.* Sprinkle powdered hellebore over these leaves, renewing it if washed away by rain, and the desired end is accomplished. If the hellebore remains upon the leaves during the time that larvæ are hatching, all will be killed, and none will remain for subsequent spreading over the leaves and for the need of future attention. If the first brood of worms is thus destroyed, there will be few, if any, to form a second brood in June.

HAND PINCHING.

Some find it convenient to watch for the first eaten leaves, and to pinch them off by hand and destroy them. The eggs are always to be found conspicuously arranged in rows upon the veins of the under side of the leaves

THE APPLE TREE APHIS.

(Green Aphis.)



(Greatly magnified.)

During the winter there may be found in the crevices and crooks of the bark of the twigs of the apple tree, and also about the base of the buds, a number of very minute oval, shining black eggs; these are the eggs of the Apple Tree Aphis. also called the Green Aphis, and Apple Tree Louse. These eggs are deposited in the autumn, and when first laid are of a light yellow or green color, but gradually become darker and finally black. As soon as the buds begin to expand in the spring, these eggs hatch very tiny lice, which locate themselves upon the swelling buds and the small tender leaves, and inserting their beaks feed upon the juices. All of the lice then hatched are females, and reach maturity in ten or twelve days, when they commence to give birth to living young, producing about two daily for two or three weeks, after which the older ones die. The young locate about the parents as closely as they can stow themselves, and they also mature and become mothers in ten or twelve days, and are as prolific as their predecessors; they thus increase so rapidly, that as fast as new leaves expand, colonies are ready to occupy them. As the season advances, some of the lice acquire wings, and dispersing found new colonies on other trees. When cold weather approaches, males as well as females are produced, and the season closes with the deposit of a stock of eggs for the continuance of the species another year. The leaves of trees infested by these insects become distorted and twisted backwards, often with their tips pressing against the twig from which they grow, and they thus form a covering for the Aphis, protecting them from rain. An infested tree may be distinguished at some distance by this bending back of the leaves and young twigs. It is stated that the scab on the apple often owes it origin to the punctures of these plant lice.

REMEDIES.

Very much can be accomplished in the destruction of the eggs that have been deposited upon the bark and in the crevices of the trees during the winter months while the trees are in a dormant condition, by scraping the

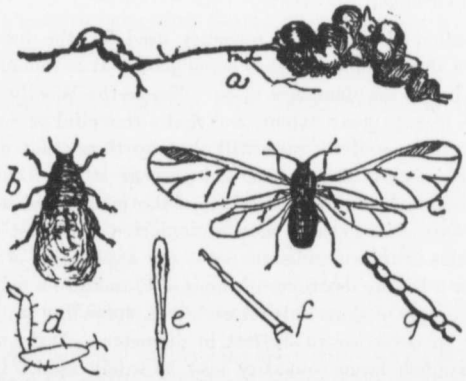
dead bark off the trees, and washing or spraying them with a solution of lye water, made by dissolving one pound of Gillet's concentrated lye in five gallons of water, care being observed not to use this strength of wash after the buds have commenced to swell; this strength of wash will also remove the moss from the limbs and bark of the tree, as well as destroying the larvæ of the Codlin moth which may be reached by it. A frost occurring after a few days of warm weather will kill millions of them. In the egg state, the insect can endure any amount of frost, but the young Aphis quickly perishes when the temperature falls below the freezing point.

The Lady Bird or Lady Bug is one of the most beneficial of the insect tribes to the horticulturist, from the fact that they prey on other insects in all stages of their growth, from the larvæ to the perfect beetle. These should be propagated and protected so far as possible in orchards afflicted with the Aphis, for myriads of them are devoured by the Lady Bird and their larvæ.

KEROSENE EMULSION.

In making the kerosene emulsion for spraying trees for lice, be sure and follow the correct method: Dissolve in 2 qts. of water 1 qt. of soft soap or ½ lb. of hard soap by heating to the boiling point. Then add 1 pt. of kerosene oil and stir violently for from three to five minutes. This may be done by taking a common force pump and putting the end of the hose back into the mixture again. This mixes the oil permanently, so that it will never separate, and it may be diluted easily at pleasure. This mixture should be diluted to twice its bulk with water, or about 14 times as much water as kerosene. The kerosene emulsion is successful in destroying cattle lice and sheep ticks, as well as all varieties of plant lice.

WOOLLY APHIS.



WOOLLY APHIS *(Schizoneura lanigera)*. (After *Riley*).

(a), an infested root; (b), the larva—color, brown; (c), winged adult—colors, black and yellow; (d), its leg; (e), its beak; (f), its antennæ; (g), antennæ of the larva; all highly magnified.

This insect is of a dark russet brown color, with the abdomen covered with a white down of cottony appearance. It attacks the roots, trunks and branches of apple, pear and cherry trees. It does not affect the leaves or fruit.—*Cooke.*

This is, without question, one of the most dangerous enemies to which the apple tree is subjected. That it has secured a strong hold in the larger portion of the orchards in and around Victoria, Nanaimo and New Westminster cities, also a greater part of Westminster district is affected. So far as we can learn little, if any, effort has been made to exterminate it from any of the orchards infested. This, we think, is due to the fact that but few know what it is, and the danger that its presence brings to the orchard.

The Woolly Aphis is a small insect covered with a white, woolly substance, hence its name. Its color is a reddish brown, and when crushed it yields a red juice. They infest the apple tree in particular both roots and branches. They live upon the sap of the bark and produce small warts or granulations on it. They increase with astonishing rapidity, and the wind carries them from one tree to another by the light down in which they are enwrapped, and thus they spread quickly from one orchard to another. Not a moment should be lost in destroying the first one that puts in an appearance.

REMEDY.

The following remedy is taken from the secretary's report, California State Board of Horticulture:

"Four pounds of rosin, three pounds of sal soda, water to make four and one-half gallons; dissolve the sal soda in a few pints of water; when thoroughly dissolved add the rosin; heat until dissolved and add water finally. Use one and one-half pints of this solution to the gallon of water. Use at a temperature of 100 degrees Fahrenheit."

The application of any of the remedies used for the destruction of the Green Aphis are also recommended as being good. It is thought by this committee that owing to the dampness of our climate the Woolly Aphis will not infest the roots to any great extent, and that a shovelful or so of fresh ashes placed around the base of the tree will destroy those that may have commenced operations below the surface and prevent others from doing so. In the drier climates of the Interior and east of the mountains, it doubtless will be found that they will do their most destructive work out of sight at the roots. When this is known to be the case, the application of fresh gas lime has proved to be a lasting destroyer of the insect, and also a valuable fertilizer for the tree—a couple of shovelfuls for each tree, spreading it over the surface around the tree to cover about six feet in diameter. If the soil is deep and well drained, a much larger quantity may be safely used. Care should be taken not to put it around the body of the tree, as the solution of gas water formed by the rains might scald the bark. It will be well also to use in connection with the gas lime a shovelful of fresh ashes around the base of the

tree. This will prevent possible migration of the Aphis from the roots to the upper branches.

This insect appears in two forms, one of which attacks the trunks of the apple tree, the other works under the ground and produces on the roots wart-like swellings and excrescences of all shapes and sizes. While it usually confines itself to the roots of trees, it is sometimes found on the suckers that spring up from the roots, and occasionally the mature lice crawl up the branches of the trees, where they also form colonies during summer, and then are known as the Woolly Aphis of the apple. The insect which attacks the trunk and limbs of the apple tree is of the same species as that which works on the root, having the same cotton-like covering. In October a considerable number of these appear with wings, having but little downy substance upon their bodies. Late in the autumn, the females deposit eggs for another generation the following spring, and thus furnish the parents of countless hosts to infest the trees another season.

There are several friendly insects which prey upon this Woolly Aphis. A very minute four-winged fly, *Alphelinus Mali*, is parasitic on it, and the larvæ of a small beetle belonging to the Lady Bird family, *Scymnus Cervacalis*, feeds on it.

Use Kerosene Emulsion for spraying while the trees are in leaf also.

During the summer months those on the trees can easily be killed by touching them with a swab dipped in coal oil.

SOAP—FOR YOUNG TREES.

Two pounds of home-made soft soap to one and one-half gallons of water, poured around the roots of the nursery stock (young apple trees), destroy the Woolly Aphis, the earth being first cleared away from the trees. The roots of young apple trees should be dipped before planting.

SUMMER TREATMENT FOR THE WOOLLY APHIS.

This most pernicious insect is now showing itself on many apple trees and should be carefully looked after. It may be kept in check by the following measures: Soak 4lbs. waste tobacco in 9gals. hot water for four or five hours; dissolve 1lb. whale oil soap in 1gal. hot water; strain the tobacco decoction into the dissolved soap and apply the mixture to affected trees with a spray pump, using a fine nozzle and all the force possible. Or the mixture may be applied directly to the insects with a swab or brush.

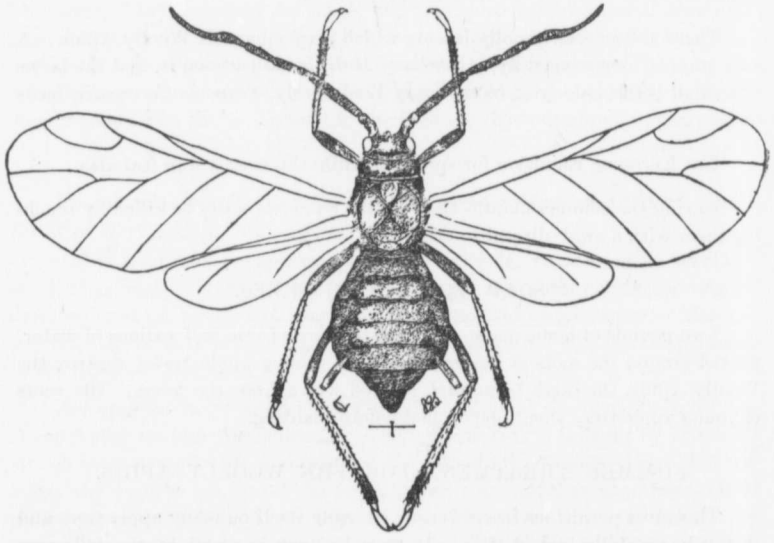
They may also be killed by touching them with a swab dipped in coal oil, but care must be used, as the coal oil will injure the trees if used too freely. The spraying should be done on a cloudy day, or in early morning or evening, to avoid injury to foliage.

SPRAY FOR WOOLLY APHIS.

Sulphur 100lbs., Lime 100lbs., Blue Vitriol 8lbs. Slack the lime with enough water to make a thick paste; dissolve the blue vitriol in hot water and add to the lime; dissolve the sulphur by thoroughly boiling, and add to lime and blue vitriol. This mixture will keep any length of time. When ready to spray take 1lb. of the mixture to 2½gals. of hot water for winter use applying lukewarm; for summer take 1lb. of the mixture to 8 or 10gals. of water.

PEACH TREE APHIS.

(Myzus Persicae).



This aphis begins to work upon the young leaves of the peach trees almost as soon as they burst from the bud, and continues throughout the greater part of the season unless swept off, as sometimes happens with surprising rapidity by insect enemies. The perfect winged females are about one-eighth of an inch long, black, with the under side of the abdomen dull green; the wingless females rusty red, with the antennæ, legs and honey tubes greenish. The winged males are bright yellow, streaked with brown, with black honey tubes. Use the kerosene emulsion, spraying as in direction for the apple tree aphis.

HOP PLANT LOUSE.

The hop louse invaded the hop fields of British Columbia last season to a large extent and if allowed to go unmolested would soon ruin that industry.

"Wherever it occurs, whether in England or on the continent of Europe in New York, Wisconsin or on the Pacific coast, the Hop Plant Louse *(Phorodon humuli)* has substantially the same life round. The eggs are laid in the fall on different varieties and species of the plum, both wild and cultivated. They are small, glossy, black, ovoid, and are attached to the terminal twigs, especially in the more or less protected crevices arounds the buds. (Fig. A).

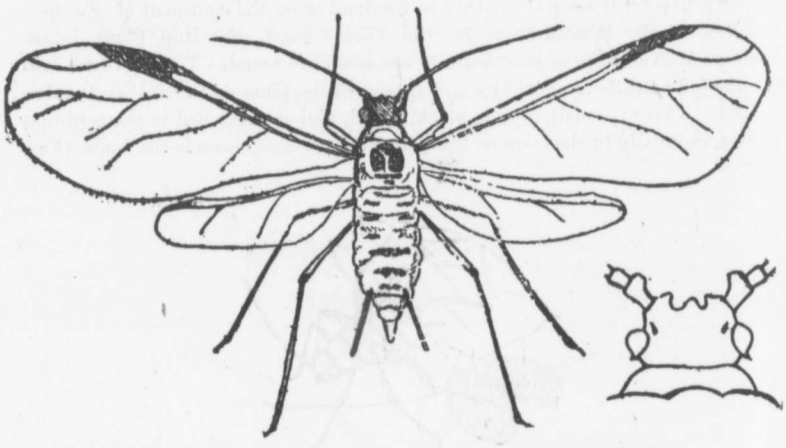
(FIG. A.)

Winter egg of the Hop Plant Louse and shrivelled skin of the sexual female which laid them—enlarged.

From an egg hatches in the spring, about the time when the plum buds begin to burst, a stout female plant louse, known as the stem-mother, which differs from the summer individuals, by having shorter legs and shorter honey tubes.

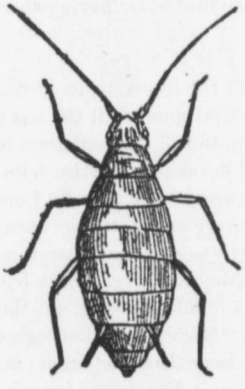
She gives birth, without the intervention of the male, to living young, and this method of propagation continues until the last generation of the season. The second generation grows to full size and gives birth to a third, which becomes winged (Fig. B), and develops after the hops have made considerable growth in the yards. The winged lice then fly from the plums to the hops deserting the plum tree entirely and settling upon the leaves of the hops, where they begin giving birth to another generation of wingless individuals. They multiply with astonishing rapidity. Each female is capable of producing on an average about one hundred young, at the rate of three per day, under favorable conditions. Each generation begins to breed about the eighth day after birth, so that the issue from a single individual runs up, in the course of a summer to trillions. The issue from a single stem-mother may thus, under favorable circumstances, blight hundreds of acres in the course of two or three months. From five to twelve generations are produced in the course of the summer, carrying us in point of time to the hop-picking season.

There then develops a generation of winged females *(sexuparæ)*, which fly back to the plum tree and give birth to the true sexual females (Fig. C), (Fig. B).



The Hop Plant Louse, third generation on plum—the generation which flies to the hop. Head below at right. Both enlarged.

which never acquire wings and never leave the plum tree. By the time this generation has matured, which requires but a few days, varying according to the temperature, belated winged individuals which are the true males (Fig. D) fly in from the hop fields. These fertilize the wingless true females upon



(Fig. C).

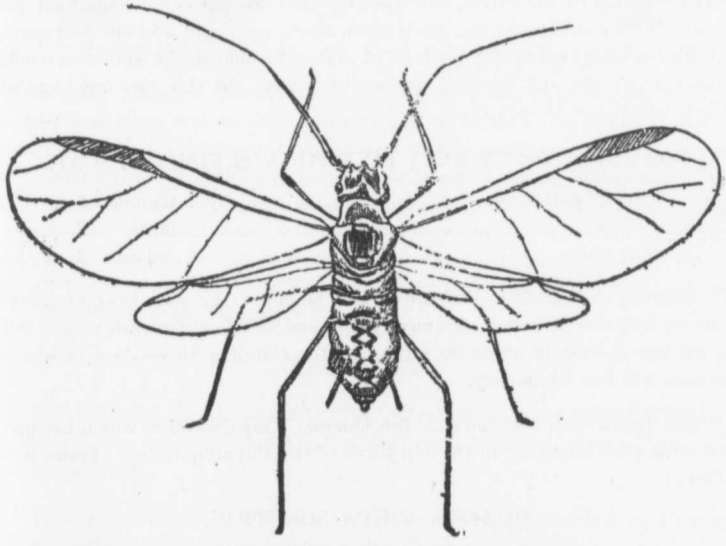
The Hop Plant Louse, true sexual female—enlarged.

the plum leaves, and these soon thereafter lay the winter eggs. Thus there is but one generation of sexed individuals produced, and this at the close of

the life round—the females wingless on plum trees; the males winged on hops. All intervening generations are composed of virgin females only *(parthenayenetic)*. This is the invariable round of the insect's life.

REMEDIES.

From the life history just given, three important facts are obtained: (1). It will pay to make a preventive application of some of the mixtures mentioned further on, with apparatus before described, to all plum trees in the neighborhood of hop yards, either in the spring, before the appearance of the first winged generation and its consequent migration to hop, or in the fall after hop picking and after the lice have once more returned to the plum, and are making their preparations for the laying of winter eggs. The latter time will, perhaps, be preferable, for the reason that in the fall the plum trees will be less susceptible to the action of the washes, and a stronger solution can be applied without danger to the trees. (2). All wild plum trees in the woods through a hop-growing country should be destroyed. (3.) The hop vines should be either burned or thoroughly drenched with kerosene emulsion as sion after the crop is harvested as possible, with a view of killing the males, and thus preventing the impregnation of the females. (4). If the above



(FIG. D).
The Hop Plant Louse, male—enlarged.

measures have been neglected and the lice have attacked the vines, the crop can still be protected by spraying with insecticide mixtures, which, if thoroughly applied will prove effective, and there will be no danger of reinfestation from neighboring untreated yards, since during the summer the lice cannot migrate except by crawling from one yard to another.

SUBSTANCES TO BE USED.

Last season several solutions were used for spraying the vines, but from a majority of the reports received, the quassia chips and whale oil soap seems to have given the best satisfaction. A number of the growers failed to prepare the kerosene emulsion properly, the mixture not forming a perfect emulsion. The formulas in any of these washes should be closely observed and carried out.

FORMULA FOR KEROSENE EMULSION.

Cheap kerosene	pints 8
Water	" 4
Soap	pound ½

Dissolve the soap in the water and add, boiling hot, to the kerosene. Churn the mixture by means of a force pump and spray nozzle for five or ten minutes. The emulsion, if perfect, forms a cream which thickens on cooling, and should adhere without oiliness to the surface of glass. Dilute one part of the emulsion with twenty-five parts of water. A common grade of kerosene, which is good enough for this work, can be bought in most localities at eight cents per gallon by the barrel, and the soap used can be made for one cent per pound. This would make the batch given above cost eight and one-half cents, and diluted with twenty-five gallons of water to one of the emulsion would make thirty-eight and one-half gallons of wash. At this rate one hundred gallons would cost twenty cents.

FORMULA FOR TWENTY-FIVE POUNDS FISH-OIL SOAP.

Crystal potash lye	pounds 1
Fish-oil	pints 2
Soft water	gallons 3

A strong suds made at the rate of one pound of this soap to eight gallons of water will also be found a uniformly safe and satisfactory wash to use, killing the lice and not harming the vines. After standing three days, however, the suds will lose its efficacy.

The Board also recommends the Quassia Chips solution which has been used with great efficiency in the hop yards of the Puyallup valley. Formula as follows:

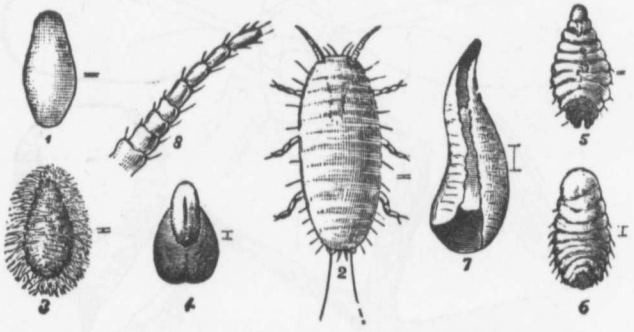
QUASSIA CHIPS SOLUTION.

8 pounds of Quassia Chips.
7 " " Whale-oil Soap.

The quassia chips are boiled in about one gallon of water to each pound of chips, for one hour. The soap is added while hot, and allowed to dissolve. This solution is then diluted with 100 gallons of water. Use with sprayer.

THE OYSTER SHELL BARK LOUSE.

The scale is of a brownish or grayish color, about one-sixth of an inch in length, nearly the color of the bark of the tree, and in shape resembles the shell of an oyster—hence its name.



In some instances the branches and trunks of the trees become literally covered with these scales. Under each scale, as shown in the figure above at 1, may be found a mass of from twenty to one hundred eggs. In May or early June and September they hatch, and appear as shown, highly magnified, at 2. In a few days a fringe of delicate, waxy threads issues from their bodies, as seen at 3. Gradually the insect assumes the form shown at 4; 5 and 6 present the larva as nearly full grown and when detached from the scale. Before the end of the season the louse has secreted for itself the scale covering shown at 7, in which it lives and matures.

REMEDIES.

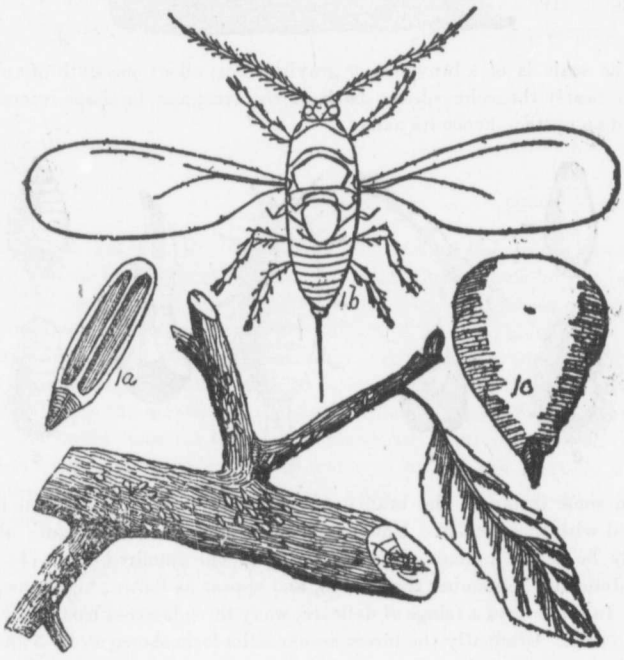
The following is recommended for winter wash; one pound of concentrated lye (American or Babbitt's); one-half pound of rosin; two and one-half gallons of water.

First dissolve the lye in water, and when thoroughly dissolved by heating, add the rosin; use at a temperature of 100 degrees Fahrenheit.

For use when the tree is in foliage, dilute by using ten times the quantity of water. The summer wash is attended with best results when applied when a majority of the insects are hatched out. The first brood generally appears when the cherries are turning color. Badly infested trees should be treated to several applications of the wash with an interval of ten days.

THE SCURFY BARK LOUSE.

(Chionaspis Purpurs).



This insect was found this season in the Okanagan district where it was doing considerable damage. Is resembles in some respects the Oyster Shell bark louse, yet is sufficiently dissimilar to be readily distinguished from it. In this species the scale of the female is oblong in form, pointed below, very flat, of a greyish white color and about one-tenth of an inch long.

It is found chiefly on the apple but sometimes affects the pear and also the mountain ash. It is far less common than the Oyster Shell bark louse and is nowhere anything like as injurious as that insect.

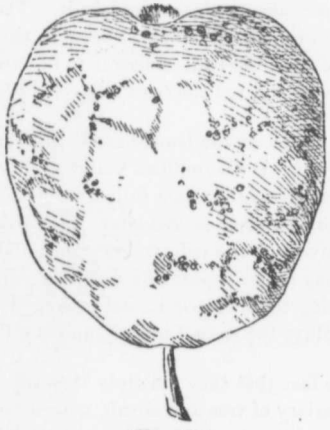
REMEDY.

Same as for the Oyster Shell bark louse.

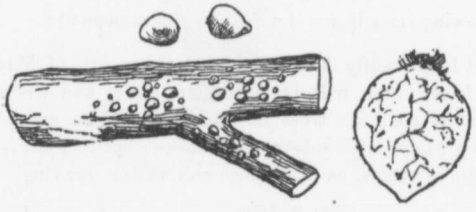
SAN JOSE SCALE OR GREEDY SCALE.

(Asptdiotus Perniciosus or Aspidiotus rapax).

(Fig. A.)



(Fig. C.)



(Fig. B.) (Fig. D.)

A and B, portions of branches infested; C, a pear infested; D, larva of female enlarged.

This dreaded and most destructive enemy of not only the fruit, but the ornamental and forest trees as well, has secured a hold in some of the orchards in Oregon and Washington, and it is feared that it will be ultimately found in this Province. Careful enquiry from parties with whom the Scale is found, develops the fact that they have been brought into Oregon on trees shipped from California. As trees from California have been pretty generally distributed all over the coast by the industrious tree pedlar, so it may be expected that these destructive insects have doubtless gone with them.

The remedy to be applied to the Scale is much more simple than the one to be applied to the tree pedlar or the careless person who buys his trees without first knowing whether they are coming from infested nurseries or not.

This is, without exception, the most pernicious Scale insect known in this country. It affects all the deciduous trees. They have also been found on some of the evergreen varieties. They infest the bark of the trunk and limbs of the tree, also the leaves and fruit. Their presence upon the bark will soon turn the sap part of the wood beneath the bark to a reddish color. Their presence upon the fruit causes it to be covered with bright red spots, and, when badly affected the fruit shrivels up and cracks open.

The scale of the female is circular and flat, gray in color, except the centre, which is of a reddish yellow. The scale of the male is black, and is somewhat elongated when fully grown. The full grown Scale is scarcely one-sixteenth of an inch in diameter. The eggs are yellow. The young larvæ are very active and of a pale yellow color, and barely to be seen by the naked eye. The young scales appear like fly-specs. They multiply with great rapidity, there being three broods in one season. The first hatching is usually the latter part of May, the second in July and the third in September.

The fact that they multiply thus rapidly and infest to the death nearly every variety of tree and shrub, makes their presence in our midst one of great danger to not only our fruit trees, but to the shade and ornamental trees as well.

The following remedy for the Scale is recommended :

This pest is so readily detected during the month of May, that wherever trees are infested they will be noticed at once, and where they were not destroyed last season, the trees or bushes should be sprayed or thoroughly washed during winter with solution as follows ; notice what is stated as to the strength of the solutions, as to summer and winter spraying.

For summer spraying : Take two gallons of water ; put into this one pound sulphur, one pound concentrated lye ; boil for two hours, then add one half gallon fish oil ; boil until it makes a hard soap ; add one half gallon kerosene oil, stir well and boil a few minutes. Add to this twenty-five gallons cold water. For winter spraying double all the ingredients for the amount of water used.

THE WOOLY MAPLE BARK LOUSE.

(Pulvinaria innumerabilis.)

The presence of the Woolly Maple Bark Louse is manifested in the spring and early summer by the occurrence upon the twigs of maple trees, especially on the under side, of a brown, circular, leathery scale, about one-quarter of an inch in diameter beneath which is a peculiar fluffy cotton mass, presenting the appearance of Fig. A. In the spring there may be found in each of these masses great numbers (700 to 1,000) of small white, spherical eggs.

Early in summer these eggs hatch into young lice, which scatter over the trees wandering about on the twigs and leaves for a few days and finally fixing themselves upon the lower leaf surface insert their beaks and suck out the sap.

This scale infests the maple trees, currrant bushes, and fruit trees.

(Fig. A.)

They also attack the quince tree and currant bush.

In autumn the males issue as winged insects, but females remain on the tree, removing, however, from the leaves to the twigs or branches.

The cut shows eggs as hatched in the spring.

There is a species of black ant that destroys the egg sac, and on that account it does not increase as do some of the other insect pests.

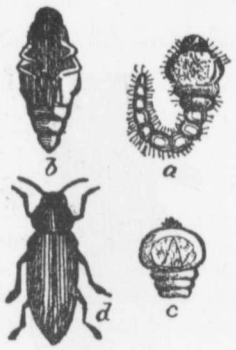
REMEDY—USE WITH SPRAY PUMP.

For summer spraying: Take two gallons of water; put into this one pound sulphur, one pound concentrated lye; boil for two hours, then add one half gallon fish oil; boil until it makes a hard soap; add one half gallon kerosene oil, stir well and boil a few minutes. Add to this twenty-five gallons cold water. For winter spraying double all the ingredients for the amount of water used.

This solution, with a sprayer, will be effective in destroying the Aphis.

APPLE TREE BORER.

(Chrysobothris femorata).



(a), Shows larva; (b), chrysalis; (c), primary stage; (d), the perfect insect.

Of these there are a number of species. The two striped or round-headed is extremely destructive to apple orchards, from the boring of the grub into the wood of the tree. The mature beetle appears during May and June, and being strictly nocturnal, is seldom seen except by those who hunt for it. The female deposits her eggs mostly in June, in the bark near the foot of the tree, and also in the forks of the main branches. The eggs hatched, the minute grub commences boring into the wood, generally downward the first year, and upward and near the bark the second year. The Borer lives in the wood of the tree until the third year when it emerges a perfect beetle. It infests healthy as well as unhealthy trees, and is very destructive.

The flat-headed Borers, while working in the same class of trees, is totally unlike the others. Boring an oval hole twice as wide as high, the beetle flies by day instead of at night, and besides the apple tree, attacks the oak, peach, soft maple, ash, willow, tulip, and even the elm and cotton wood; it also attains its full size in one year from the egg. This Borer attacks limbs and trunk indiscriminately.

REMEDY.

The natural enemies of these insects are the birds of the woodpecker tribe.

Artificial remedies are to find the cast of the larvæ, and kill them by piercing with a flexible wire. Prevention is, however, the only sure remedy. keep the base of every tree clear of weeds and trash, and apply a solution of soft soap reduced to the consistence of a thick paint by the addition of a strong solution of washing soda in water. This, if applied to the bark of the tree, especially about the base or collar, and thence up the trunk and over the larger branches, will dry in a few hours, and form a tenacious coating not

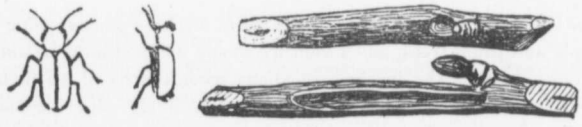
easily dissolved by rain. This soap solution should be applied in May, and a second time the latter part of June.

All trees liable to be troubled with borers of any kind should be examined at least twice each year and the earth removed from about the base of the tree, and wherever the castings of the larvæ are found protruding through the bark an application of unadulterated coal oil should be made by means of a small can. The saw-dust castings absorb the coal oil and it permeates the burrow and soon comes in contact with the larvæ which ends his destructive work. The amount of oil used will in no way endanger the health of the tree and does away with the old process of digging them out with a knife which usually badly mutilates the tree and it is also a great saving of time and labor as a person can inspect and treat many trees in an hour.

The following wash, applied hot to the trunk and large limbs of the tree, in May and again in the latter part of June, will not only keep the trees free from borers but also from any other insects that infest these parts of the tree, viz. : One pound of potash and one pound of lard dissolved in five gallons of boiling water, stirring in one pint of crude carbolic acid, slack four pounds of lime in one gallon of water and while hot mix all together adding four gallons of water.

THE APPLE-TWIG BORER.

(Omphcircus bicaudatus.)



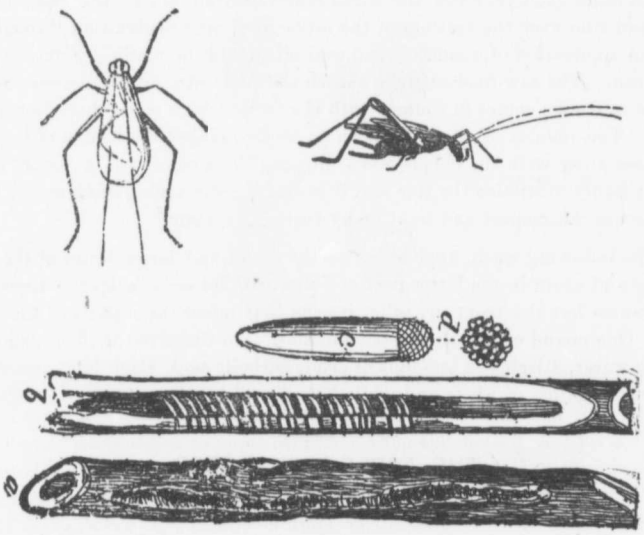
This Borer was found in some numbers in the Chilliwack district. It is a small cylindrical beetle, from one forth to one third of an inch in length of a dark chestnut brown colour above, black beneath.

Unlike most other borers which do their mischief in the larvæ state, this insect works in the beetle state, boring into the branches of apple, pear and cherry trees just above a bud, and working downwards through the pith in a cylindrical burrow one or two inches long. The holes appear to be made partly for the purpose of obtaining food and partly to serve places of concealment for the beetle. They are made by both sexes alike. They work throughout the summer months, causing the twigs operated on to wither and their leaves to turn brown.

This insect does not often occur in such numbers as to inflict any material damage. Should it at any time inflict serious injury, the only remedy as yet suggested is to search for the bored twigs in June and July and cut them off and burn them.

THE TREE CRICKET.

(Œcanthus Niveus.)



In the Okanagan district I found this insect working on the young branches of the apple and plum trees, and I venture to say will be found troublesome on the raspberry canes. The insects are about seven-tenths of an inch long, of pale whitish green colour. They are exceedingly lively, and the males quite musical, chirping merrily with a loud, shrill note, among the bushes all the day. In the autumn they attain full growth, and it is then the female, in carrying out her instinctive desire to protect her progeny, becomes an enemy to the grower. She is furnished with a long ovipositor, which she thrusts obliquely more than half way through the limb or cane, and down the opening thus made she places one of her eggs. A second one is then placed in the same manner along side of the first, and so on until from five to fifteen eggs have been placed in a row.

Owing to the presence of these eggs the limb is much weakened and is liable to break on slight provocation. Sometimes the part beyond the punctures dies, but if it survives and escapes being broken in winter it is very apt to break from the action of the wind on the weight of foliage as soon as it has expanded in spring and the crop which would otherwise be realized is lost. About midsummer, or sometimes earlier, the insects hatch. They at once leave the limb or canes and do no further injury to them. At first they feed more or less on plant lice and later in the season on ripe fruit and other succulent food.

REMEDIES.

Cut out late in the fall or early in the spring all those portions containing eggs and burn them. Wherever the eggs are deposited the regular rows of punctures are easily seen. The mature insects may also be destroyed in the autumn by suddenly jarring the bushes or canes on which they collect, when they drop to the ground and may be trodden under foot before they have time to hop or fly away.

THE IMPORTED CURRANT BORER.

(Ægeria Tipuliupormis.)

This insect has made its appearance in Vancouver and New Westminster cities and is a serious impediment in the way of successful currant culture.

The parent of this destructive larvæ is a pretty wasp like moth and appears about the middle of June, when it may be found in the hot sunshine darting around with rapid flight. The female is said to lay her eggs near the buds when in a few days they hatch into small larvæ which eat their way to the centre of the stem where they burrrow up and down feeding on the pith all through the summer, enlarging the channel as they grow older, until at last they have formed a hollow several inches in length.

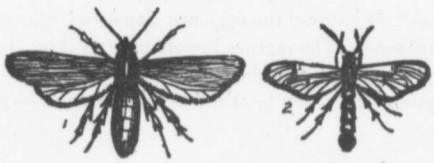
While this insect chiefly infests the red and white currants it attacks the black currant also and occasionally the gooseberry. Where the hollow stems do not break off indications of the presence of the borers may be found in the sickly look of the leaves and the inferior size of the fruit.

REMEDIES.

In the autumn or spring all stems found hollow should be cut out and burnt. During the period when the moths are on the wing they may often be captured and destroyed in the cool of the morning at which time they are comparatively slug ish.

THE PEACH TREE BORER.

(Ægeria exitiosa.).



This pest, so destructive to peach orchards, is very widely disseminated. The moth appears from about the first of June to the middle of September The female deposits her eggs in the bark of ths tree at the surface of the ground. They are very small, oval in form, slightly flattened and of a dull yellowish color. They are deposited singly and are fastened to the bark by a gummy secretion. As soon as the worm is hatched, it works downward in the bark of the root, forming a small winding channel, which soon becomes filled with gum. As it increases in size it devours the bark and sap wood, and causes a copious exudation of gum, which eventually forms a thick mass around the base of the tree, intermingled with the castings of the worm. When full grown the worm measures over half an inch in length and about a quarter of an inch in diameter. It is a naked, soft, round grub, of a pale whitish color, with a reddish horny looking head, and black jaws. In badly infested trees the whole of the bark at the base of the tree is sometimes consumed for an inch or two below the surface. Nor does the insect always confine itself to the base of the tree. It occasionally attacks the trunk further up, and sometimes the forks of the limbs. But exuding gum invariably points out the spot where the enemy is at work. Its operations are not always confined to the peach ; it also works on the plum.

REMEDIES.

Several remedies have been proposed to meet this evil. Where the borers are present they are easily detected in consequence of the exudation of gum. Hence, early in the spring the trees should be examined, a little of the earth removed from about the base of the tree, and if masses of gum are found, the grub should be searched for and destroyed. Hot water has been found very effectual in killing them. It should be used boiling hot, and after the earth has been removed from about the base of the tree.

Among the preventive measures much has been written in favor of mounding the trees, banking the earth up around the trunk to the heigth of a foot or more, and pressing it firmly about the tree Some allow the mounds to remain permanently, but the better way is to mound up late in the spring, and level off the ground again in September, after egg laying has ceased and the moth has disappeared. Another preventive, which we regard as much better than mounding trees, is the use of stiff paper one foot high about the base, extending some two inches below the surface, and fastened at the top with string or wire. The washes recommended for the apple tree borer are also good to be used on the peach.

CLICK BEETLE.

LADNER'S, B.C., August 26th, 1894.

A. H. B. MACGOWAN, ESQ.,
Secretary Fruit Growers' Association.

Dear Sir,—Your letter of August 24th enquiring for information regarding Click Beetle, for use in Supplement to Fruit Growers' Report for 1894, to hand. During, or soon after the blossoming season of, 1893, I was instructed that a very destructive insect had attacked the blossom of fruit trees in and around Mission City. Their season of depredation being over I failed to find a specimen of the insect. In giving a description some said it was a beetle that could hop; others described it as a flea, only much larger than the common insect of that name.

During the blossoming season of 1894 I watched closely for insects of this description, and found a large number of beetles of the Click family destroying certain parts of the fruit buds, eating their way down in the saucer-shaped disc of the bloom, from the centre of which protrudes the styles and leading directly down to the ovules.

Upon close examination of buds that had been visited by the beetles found in all cases the style and stigma were destroyed thereby preventing fecundation or action of the pollen tubes on the ovules. In others I found filament and anthers gone with but petals and sepals remaining, which withered and turned brown in a few hours and with the young undeveloped fruit soon dropped to the ground.

As a remedy we spread a sheet under the tree, giving the tree a sudden jar causing the beetles to fall to the ground, where they remained dormant for a short time, giving ample opportunity for destroying them. We found that by going over the trees every day the trees could be kept comparatively free and save the crop.

I had specimens of the beetle forwarded to J. R. Anderson, of the Department of Agriculture. He in turn forwarded them to Jas. Fletcher, of Ottawa. I enclose you copy of Mr Anderson's letter as well as the one from Mr. Fletcher, also clippings from second report of the Department of Agriculture.

Yours, etc.,

E. HUTCHERSON.

DEPARTMENT OF AGRICULTURE, BRITISH COLUMBIA,

Office of the Board of Horticulture,

VICTORIA, 28th May, 1894.

SIR,—Your favor of the 25th instant, with specimen of blossom beetle, is received. I suppose this is the same as that reported from Mission last year, although from the description given me I thought it was a smaller insect. I have sent them on to Fletcher for identification. I believe they are of the Click or Spring-back Beetle kind, the parent of the wire-worm, if not identical. See page 907 of my last report.

As soon as Mr. Palmer gets back I will see that he does as you suggest.

I have the honour to be, Sir,

Your obedient servant,

J. R. ANDERSON.

E. HUTCHERSON, ESQ.,
Member of the Horticultural Board,
Ladner's Landing.

DEPARTMENT OF AGRICULTURE, BRITISH COLUMBIA,

Office of the Board of Horticulture,

VICTORIA, June 29th, 1894.

Sir,—The following is a copy of a letter from Mr. Fletcher regarding the beetles attacking blossoms, and are, as I suspected, the parents of wire-worms:—

"Your letter of May 28th was duly received, as well as the enclosure from Mr. Hutcherson and the accompanying beetles. These latter are, as you state, Click Beetles, the parents of the injurious wire-worms. This is the same species *(Corymbites caricinus)* which was mentioned in my report for 1892, page 146. The remedy proposed by Mr. Hutcherson was perhaps the best that could be tried."

I have the honor to be, Sir,

Your obedient servant,

J. R. ANDERSON.

E. HUTCHERSON, ESQ.,
Member of the Horticultural Board,
Ladner's Landing.

WIRE-WORMS.

(*Melanotus communis* and *Arigotes mancus*, for it appears by Bulletin No. 4 of the Experiment Station of Washington that there are both species in that country, and therefore presumably in this.)

Are reported from Spallumcheen, Notch Hill, Surrey Centre, Maple Ridge, Howe Sound, Victoria, South Saanich, Shawnigan, Comiaken, Somenos and Salt Spring Island.

This pest has occasioned severe losses, especially in potatoes. The best remedy seems to be well cultivated land, as it thrives best in sods when not disturbed. The following is from Report of Ontario Agricultural Commission, p. 164:

"The wire-worms (*Agriotes mancus*)," says Mr. Bethune, "is sometimes troublesome to wheat. This insect lives altogether out of sight, underground, and hence it is not much observed by the farmers. It is a long, slender grub, with six legs under the anterior portion of the body, usually of an orange yellow or tawny colour, and is very hard, unlike our caterpillars, which are soft to the touch, consequently receiving its name, the 'wire-worm.' It feeds underground upon the roots of vegetation, and is looked upon in England as one of the very worst foes of wheat. In Ontario we have not been able to estimate its ravages as resulting in any great loss, though this may be because they are carried on out of sight. It is frequently observed in ploughing.

"The wire-worm, however, does not cease to be troublesome when it quits its larval state, and appears in the shape of the spring-back beetle.

"The perfect creature," says Mr. Bethune, "is very familiar; it flies into the house at night, attracted by the light, and may be found creeping about sap exuding from trees, ripe fruit, or anything sweet."

He recommends employing children to follow the plough and pick-up the wire-worm, or to turn turkeys and ducks into the ploughed fields as remedies for the too great numbers of this creature.

Mr. Fletcher says (Report 1885, page 17):—"Most of my correspondents agree that the attacks from wire-worms (sometimes called yellow-worms) are much less severe upon well manured, highly cultivated, and well cleaned ground. Mr. William Miller, of Bridgetown, N.S., a gentleman of large experience and a successful farmer, tells me he can clear any ground from wire-worms by high culture and careful cleaning by the third crop. Where potatoes are grown he says they should be picked-up immediately they are dug, and most of the wire-worms will be taken out with them and can be destroyed. He mentioned an instance of a piece of land he had just cleared which, when he took it, was so full of wire-worms that he had been able to gather them up by the handful from the bottom of the cart in which the potatoes were drawn from the field. In confirmation of this I give the following quotation from

the report which has just been issued by Mr. C. Whitehead for the Agricultural Department of the Imperial Privy Council Office in England: 'First and foremost among means of prevention (of wire-worms attacks on crops) is the abolition of weeds from the land and from the outsides of fields. This has been recognized and adopted long ago by some agriculturists, for we find the following passage in Vol. XV. of the Journal of the Royal Agricultural Society of England, in an essay upon the farming of light land, which is always more liable to attacks of wire-worms. 'There is a farm in the neighbourhood of Guildford which presents an instance of a perfectly clean farm, and kept so by deep ploughing and unsparing use of horse and hand hoes. It has often been remarked that root crops and corn are unmolested by wire-worms upon this farm. The owner asserts that he starved them long ago by growing no weeds to sustain them in the absence of a crop.'"

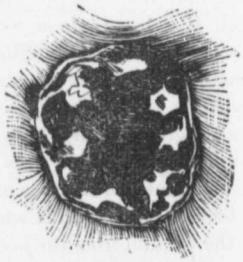
The following is taken from the *American Garden*, December, 1891, page 776, and will do for horticulturists:—

REMEDY FOR WIRE-WORMS.

"Add three or four pounds of unslacked lime to every bushel of soil. This will make the wire-worms so sick that they will give the seedling carnations a wide berth in the future; besides, the health and colour of the plants will be so much improved that we will think that they belong to a new race of pinks. The best way to use lime is to spread the soil in a flat heap ten or twelve inches thick, then place the desired amount of lime in lumps on the top. When the latter has become slacked and pulverised the soil should be turned over two or three times and thoroughly mixed. It is then ready for use."—*American Florist.*

BLACK SPOT OR FUNGUS.

(Fueicladum drudriticum.)



This disease that the apple and pear are subject to is doing a good deal of damage to those fruits in some portions of British Columbia. It is more apparent and destructive on some varieties than upon others. The causes which produce this disease are somewhat uncertain. Suffice it that those longest in cultivation, most productive, and in confined situations, appear to be most liable to it. It is a fungus growth, presenting, when examined by the microscope, a mossy, spongy character, occupying the skin so as to prevent the development of its tissues, and results in checking the growth at that point, thus creating a black spot and a deformity. When the malady spreads, as it sometimes does, over half or more of the apple or pear, it tends to a deeper nature and causes the fruit to crack open and become corky and worthless.

FORMULAS FOR FUNGICIDES.

BORDEAUX MIXTURE.

This fungicide originated in France and has become one of the leading combinations of copper salts. Since its introduction into America there has been a constant tendency to dilute the mixture more and more. The results from the diluted mixtures have been apparently as good as from those of full strength, and of course the cost has been proportionately lessened. The different formulas are indicated below:

The following formula has given entire satisfaction at the Jubilee Farm, Ladner's, used on apples, pears, plums, cherries, currants and gooseberries:—

Dissolve 4lbs. copper sulphate (bluestone) in 4gals. hot water, in an earthen or wooden vessel. In another vessel slack 4lbs. fresh lime in 1gal. of water; strain the latter and add to 50gals. water; now pour in the dissolved bluestone and mix thoroughly. Keep the mixture stirred while using.

POWDERY MILDEW OF THE APPLE.

This fungus differs materially from the species affecting the apple and pear just discussed. Its vegetative system, instead of growing on the inside of the host, is almost wholly external and obtains its nourishment by means of suckers, which it sends into the cells of the leaf or stem as the case may be. It covers the affected parts of its host with a grayish, powdery meat-like growth—hence the name, powdery mildew.

REMEDIES.

Spray the affected trees or seedlings with the Bordeaux Mixture, or with the ammoniacal solution of copper carbonate, first when the leaves are about half grown (or sooner if there is any sign of the fungus) and thereafter at intervals of twelve days. From three to five sprayings will be necessary.

GOOSEBERRY MILDEW.

This disease can be effectually treated by using either ammoniacal copper carbonate or Bordeaux mixture, but as potassium sulphide (liver of sulphur) serves the same purpose, is somewhat cheaper and more easily prepared, it is therefore recommended here.

Treatment should commence with the first signs of growth and continue at intervals of ten or twelve days till five or six applications are made.

POTASSIUM SULPHIDE.

Dissolve one-half ounce of potassium sulphide (lime of sulphur) in one gallon of hot water. When cold apply in a spray. Used to prevent gooseberry mildew and similar diseases. Commercial lime of sulphur costs fifteen to twenty cents per pound.

SODA HYPOSULPHITE.

Dissolve one-half ounce or one ounce soda hyposulphite in ten gallons of water. This is recommended by some for gooseberry dew and apple scab, but it is not in general use.

We copy the following from the first Report of the Department of Agriculture of the Province of British Columbia in regards to this destructive disease :

APPLE TREE BARK DISEASE.

A peculiar disease, the nature of which, as will be seen from the copy of Mr. Fletcher's letter below, is not at present understood. Complaints come from Messrs. W. H. DeWolf and J. Howe Bent, who are planting out a large orchard at Chilliwack (see copy of their letter). From Mr. H. D. Green-Armytage, of Nicola, who says:—"The apple trees seem invariably to be injured in such a manner that part of the wood in the stem dies, and in time kills the whole tree." From Mr. Henry Woodward, of Alberni, who says: "Apple trees are liable to a bad disease which affects the bark." These complaints probably all refer to the same disease.

"WOLFDALE FARM, CHILLIWHACK,
26th December, 1891.

To the Department of Agriculture, Victoria, B.C.:

Gentlemen,—We send by to-day's mail a small box containing a few pieces of limbs cut from our apple trees, showing how some kind of an insect is doing harm to our trees, and in some instances have killed the branch, or small tree, where they have stopped the circulation of the sap.

From the appearance of the tree it looks as if an insect of some kind stung the bark and sucked out the sap.

You will also find enclosed in the box a small bottle containing a few insects we found in the holes, but we cannot say whether these are the insects that do the work, or if they are some other kind that have crawled into the holes for protection from the weather, but we presume these are the insects as we found them on several trees.

They do not attack the old trees, except in the branches, where the bark is smooth, but in the young trees they go for the trunk and branches also, and in some instances have almost girdled the young trees.

We would be glad if you will look into the matter and let us know if there is any remedy to prevent them from destroying the trees.

Yours respectfully,

W. H. DeWolf,
J. Howe Bent."

"Central Experimental Farm,
Ottawa, 9th January, 1892.

James R. Anderson, Esq.,
Victoria, B.C.

My Dear Sir,—I am in receipt of yours of 26th ult., enclosing letter from Messrs. W. H. DeWolf and J. Howe Bent, of Wolfdale Farm, Chilliwack, B.C. The specimens of injured apple stems are also to hand. This injury has been submitted to me three or four times before from different parts of your Province—Harrison Hot Springs, Cowichan, Departure Bay, &c. I regret to say that I cannot give you much information about it. I have submitted specimens to specialists in the United States, but so far they have given me no light on the subject which is of practical use. Prof. Burrill, of the University of Illinois, finds an undescribed species of microscopic fungus on the wounds, but it belongs to a family not previously known to be injurious. One thing, however, is certain, that the caterpillers enclosed with the specimens are in no way connected with the injury; these are caterpillars of tussock moths, which feed on the leaves, and they had only crawled to the holes in the bark to pass the winter. It is a habit with many insects to pass the winter when half grown in the larval condition, and several kinds do this on the trunks of trees and beneath mosses and lichens growing thereon. These caterpillars are dead, but I am able to recognize them by the beautiful barbed hairs and a gland on the back. In sending insects by mail alive it is best to send them in a tin box Moisture gathers inside a tightly corked glass bottle and drowns the enclosed insects. If your correspondents would send me a few more of these caterpillars I should be much obliged for them; they might be packed in a tin box without any holes, and a piece of moss put in with them would prevent their

being injured in transit. I will endeavor to find out more about the fungus disease, and will write to you again on the subject.

I am, &c.,

JAMES FLETCHER,
Dominion Entomologist."

Mr. N. Butchart, Port Moody, gives the Fruit Growers' Association the following as preventative and cure, having been tested for three years by a neighbor Mr. Coltie.

Cut out all dead spots as they appear, using grafting wax to cover the wounds. While the trees are dormant wash the trunks and large limbs with this solution: 1 pound of Gillett's concentrated lye to five gallons of water; also spray the smaller limbs with solution, 1 can of lye to ten gallons of water.

CUT WORMS.

(Agrotis, Noctuidæ, etc.)

(FIG. A)

(Fig. B.)

Of these destructive worms, which have the habit of leaving their places of concealment in the soil at night, coming to the surface and cutting off almost every kind of newly set vegetable and flowering plants, there are now known to be many species. Those of the genus *Agrotis*, being mostly thick, greasy-looking caterpillars of some shade of gray, brown or green, variously marked, are the best known and well to be looked upon with dread.

These troublesome pests, which are doubtless the cause of more loss to farmers in the spring months than any other insects, are the caterpillars of a number of different dull-colored moths (Fig. A.) which fly at night. The worms, one kind of which is shown in Fig. B., are smooth, greasy-looking dark caterpillars, ranging from about ½ an inch to two inches in length at the time they injure crops. They feed at night and hide during the day time. The eggs of most species are laid in autumn, and the young caterpillars make about a quarter of their growth before winter sets in. They pass the winter in a torpid condition, and are ready in spring to attack the young crops as soon as they come up. The full growth of most species is completed by the

first week in July, when the caterpillar forms a cell in the earth and changes to a chrysalis, from which the moth appears about a month later.

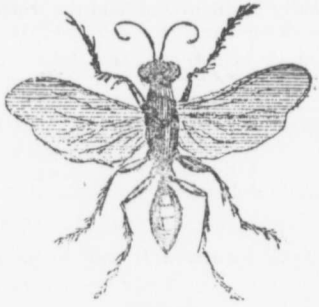
REMEDIES—CLEAN CULTURE.

As the young caterpillars of many species hatch in autumn, the removal of all vegetation from the ground as soon as possible in autumn deprives them of their food supply and also prevents the late flying moths from laying their eggs in that locality. Fields or gardens which are allowed to become overgrown with weeds or other vegetation late in the autumn are almost sure to be troubled with cut worms the next spring.

NATURAL REMEDIES.

There are two enemies which deserve especial notice, and, from the good service they do, should be known by sight to every cultivator. They are the Fiery Ground-beetle or Cut Worm Lion *(Calosoma calidum*, Fab.)—Fig. C.—and the Black Ground Wasp *(Ammopila luctuora)*—Fig. D. Both of these are desperate enemies of cut worms, the former feeding on them in all of its stages, the latter digging them out and storing its nest with them as food for its young grubs.

(Fig. C.)



(Fig. D.)

BANDING AND WRAPPING.

It will be found to well repay the trouble and expense to place a band of tin around each cabbage or other plant at the time of setting out. These may very easily be made by taking pieces of tin 6 inches long and 2½ wide and bending them around a spade or broom handle so as to form short tubes. In placing them around a plant the two ends can be sprung apart to admit the plant, and then the tube should be pressed about half an inch into the ground. I have found this a useful means of disposing of empty tomato and other cans. To prepare these easily, they need only be thrown into a bonfire, when the tops and bottoms fall off and the sides become unsoldered. The central piece of tin can then be cut down the centre with a pair of shears, and forms two tubes.

Wrapping a piece of paper round the stems of plants when setting them out will also save a great many.

POISONING.

Put a teaspoonful of Paris green or London purple in two gallons of water and sprinkle handfuls of grass, green sods or other vegetation, which can then be scattered throughout the patch, walking crossways of the harrow marks. By doing this towards evening after the last harrowing, during the night the cut worms that are deprived of their food will be out looking for fresh pastures, and will appropriate of the prepared bait, the smallest particle of the poison of which will kill. If the worms are very troublesome, the remedy can be repeated, it being easily applied.

SHIELDING THE STEM.

By encircling each plant that is set with a bit of tar paper, or even other paper, the ravages of the worm may be prevented. The paper should extend upwards several inches from a point just beneath the surface of the soil.

HUNTING AND KILLING.

By closely examining the surface of the soil in the morning, in the vicinity of their spoils, through dropping plants or otherwise their place of retreat may usually be discovered, and the worms killed.

CHAPTER **20.**] [*21st March, 1894.*

An Act to consolidate and amend the Acts respecting the Provincial Board of Agriculture.

HER MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of British Columbia, enacts as follows:—

1. This Act may be cited as the "Horticultural Board Act, 1894."

2. There is hereby created a Provincial Board of Horticulture, to consist of two ex-officio members, viz., the Minister of Agriculture and the Statistician (who shall act as secretary of the Board) and five members, who shall be appointed by the Lieutenant-Governor in Council, one from each of the horticultural districts which are hereby created, to wit:—

1. The First District shall comprise the Electoral Districts of Victoria, Victoria City, Esquimalt, and Cowichan:

2. The second District shall comprise the remaining Electoral District of Vancouver Island and the Islands:

3. The Third District shall comprise all of New Westminster Electoral District south of the Fraser River:

4. The Fourth District shall comprise the Electoral Districts of New Westminster City and Vancouver City, and all of New Westminster Electoral District north of the Fraser River, and the Electoral District of Cassiar:

5. The Fifth District shall comprise all the rest of the Mainland of British Columbia.

3. The members shall reside in the districts for which they are appointed; they shall be selected with reference to their study of and practical experience in horticulture, and the industries dependent thereon; they shall hold office for a term of four years, and until their successors are appointed and qualified; but any retiring member of the Board shall be eligible for re-appointment; Provided, however that three of the Board first appointed (to be determined by lot) shall retire at the expiration of two years. All vacancies in the Board shall be filled by appointment of the Lieutenant-Governor in Council, and shall be for the unexpired term.

4. The Lieutenant-Governor in Council may appoint a Treasurer of the Board, who shall give a bond to the Lieutenant-Governor in Council, with two or more sufficient sureties, in the sum of one thousand dollars for the faithful performance of his duties. The Treasurer shall hold his appointment at the pleasure of the Lieutenant-Governor in Council. Before entering upon the discharge of his duties, each member of the Board shall take and subscribe to an oath of allegiance, and to faithfully discharge the duties of his office, which said oath shall be filed with the Provincial Secretary.

5. The Board shall receive, manage, use, and hold donations and bequests of money and property for promoting the objects of its formation; it shall meet in the months of April and October of each year, and as much oftener as it may deem expedient, for the consultation on and for the adoption of those measures that will best promote the horticultural industry of the Province; it may, but without expense to the Province, select and appoint competent and qualified persons to lecture in each of the districts named in section 2 of this Act, for the purpose of encouraging and improving practical horticulture, and imparting instruction in the best methods of treating diseases of fruits and fruit trees, cleaning orchards, and exterminating orchard pests.

6. The office of the Board shall be located at the Department of Agriculture; it shall be kept open to the public, subject to the rules of the Board, every day except Sundays and public holidays, and shall be in charge of the Secretary during the absence of the Board.

7. For the purpose of preventing the spread of contagious diseases in orchards and gardens and among fruits and fruit trees, and for the prevention, treatment, cure, and extirpation of fruit pests and the diseases of fruits and fruit trees, and for the disinfection of grafts, scions, or orchard débris, empty fruit boxes or packages, and other suspected material or transportable articles dangerous to orchards, fruits, and fruit trees, said Board may make regulations for the inspection and disinfection or destruction thereof, or of non-fruit-bearing trees or shrubs which may carry contagion, and also for requiring all cases of contagious diseases, or fruit pests, as aforesaid, to be reported to the Board, which regulations shall be circulated in printed form by the Board among the fruit growers and fruit dealers of the Province, and shall be published in the British Columbia Gazette and, at the discretion of the Board, in papers of general circulation in the Province, and shall be posted in three conspicuous places in each district, one of which shall be a Court House therein; and every such regulation, when published in the British Columbia Gazette, shall, so far as the same shall not have been in like manner repealed or varied, be deemed to be and have the force of law, and be so recognized in all Courts in the Province.

(*a.*) In and by such reglations the Board may fix and impose any fine or penalties for the enforcement of the provisions thereof not exceeding in amount the fines and penalties hereinafter provided in case of the evasion of any of the provisions of this Act:

(*b.*) All fines and penalties imposed by any such regulations shall be recovered with costs upon summary conviction before any Justice of the Peace, in accordance with the provisions of the "Summary Convictions Act, 1889;" and when collected shall be paid over to the Treasurer of the Board, for the purposes of this Act.

8. The Lieutenant-Governor in Council shall appoint, from the number of the Board or from without their number, to hold office at the pleasure of the Lieutenant-Governor in Council, a competent person especially qualified by practical experience in horticulture, who shall be known as "Inspector of Fruit Pests" It shall be the duty of said Inspector to visit the horticultural districts of the Province to see that all the regulations of said Board be made known to the people of the Province, and to enforce this Act and the said regulations in the manner therein or in this Act prescribed. The Inspector shall, from time to time and whenever required by said Board, report to it such information as he may secure from observation, experience, and otherwise, as to the best method of diminishing and eradicating fruit pests and diseases from orchards, and also suggestions as to practical horticulture, the adoption of produce suitable to soil, climate, and markets, and such other facts and information as shall be calculated to advance the horticultural interests of the Province. The Inspector shall, from time to time, under the direction of the Board, hold meetings throughout the Province in the interests of horticulture, and impart such information and instruction to fruit growers and farmers as may tend to the improvement and expansion of the fruit industry of the Province.

9. Any member of the Board, their Inspector or agent, upon the complaint of interested parties, or upon his own motion, may inspect, or cause to be inspected, fruit, trees, plants, grafts, scions, nursery stock of all description, orchard débris, empty fruit boxes or packages, and other material, orchards, nurseries and other places, suspected or believed to be infested with fruit pests, or infected with contagious diseases injurious to trees, plants, or fruits, and for the purposes thereof he shall have full power and authority to enter in and upon any farm, orchard, nursery, or garden, or any barn, warehouse, storehouse, shop, or other place or building, and if he shall find that the said fruit, trees, plants, grafts, scions, nursery stock of all description, orchard débris, empty fruit boxes or packages and other material, orchards, nurseries and other places are infested with fruit pests, or affected with contagious diseases injurious to trees, plants, or fruits, as aforesaid, such member, or Inspector, or agent shall notify in writing the owner or person having charge of such premises or property, within a time to be prescribed in such notice; and such property shall not be removed after the owner or person in charge of the same shall have been notified in writing, as aforesaid, without the written permission of a member of the Board or the Inspector; and if the person so notified shall neglect or refuse to treat and disinfect the said premises or property, in the manner and within the time

prescribed in the said notice, such person shall be deemed guilty of a violation of this Act; and if it appears on the trial that any orchard, trees, nursery, building, or any other structures, premises, or property in charge of or belonging to the defendant referred to in said notice, or any part of such structures, premises, or property, is infested or affected as aforesaid, the Court may order whatsoever of the same is so infested or affected to be disinfected or destroyed within a time to be mentioned in said order, or may make any other order that it shall deem fit; and if such order be not obeyed within the time therein specified, it shall be the duty of the Board, or of some member thereof, or of their Inspector or agent, to execute such order, and the costs and disbursements of the prosecution shall be adjudged against the party convicted as aforesaid.

(*a.*) In case, upon inspection as herein provided, the member of the Board, Inspector, or agent finds any of the premises to be infested with fruit pests or affected with contagious disease, but is unable to take the proceedings herein provided by reason of their being no person in charge, or either the owner or his whereabouts being unknown, he shall be at liberty to cause the same to be disinfected, and the costs and expenses thereon shall be a lien upon the property, which may be enforced by seizure and sale of a sufficient quantity thereof to satisfy the same: Provided, however, that no property shall be destroyed under this sub-section until an order therefor has been obtained from a Justice of the Peace, which order any Justice is hereby authorized to make upon proof of the urgency of the case or of reasonable efforts having been made to ascertain the owner or person who should be in charge of the infected property.

10. It shall be the duty of the Secretary to attend all meetings of the Board, and to procure records of the proceedings and correspondence, to collect books, pamphlets, periodicals and other documents containing valuable information relating to horticulture, and to preserve the same; to collect statistics and other information showing the actual condition and progress of horticulture in this Province and elsewhere; to correspond with agricultural and horticultural societies, colleges and schools of agriculture and horticulture, and other persons and bodies, as he may be directed by the Board; and prepare, as required by the Board, reports for publication.

11. The Treasurer shall receive all moneys belonging to the Board, and pay out the same only for bills approved by it, and shall render annually a detailed account to the Board of all receipts and disbursements.

12. The Board shall, annually, in the month of January, report to the Minister of Agriculture a statement of its doings and any regulations made under this Act, with a copy of the Treasurer's account for the year preceding, and abstracts of the reports of the Inspector of Fruit Pests, and of the Secretary; and such report shall be laid before the Legislative assembly immedi-

ately, if it be in session, or, if not, within fifteen days after the opening of the next session thereof. The members of the Board shall receive as compensation for their services their mileage actually paid out when attending the meetings of the Board, and shall be allowed a sum not exceeding five dollars a day for time actually employed, to be fixed by the Lieutenant-Governor in Council.

13. The said Board shall, when making its annual statement, report to the Minister of Agriculture what (if any) legislation is needed in aid of the horticultural and fruit-growing interests of the Province.

14. The powers and duties devolving by this Act upon the said Board and the Inspector of Fruit Pests, in relation to fruit and fruit trees, shall extend to hops and hop plants, for the purpose of preventing the spread of disease among hops and hop plants, and of extirpating any pests affecting the same.

15. Every person violating the provisions of this Act, shall be liable, upon summary conviction before one Justice of the Peace, to a penalty not exceeding fifty dollars.

16. The "Horticultural Board Act, 1892," and the Horticultural Board Act (1892) Amendment Act, 1893," are hereby repealed, and the foregoing provisions substituted in lieu thereof.

Provincial Board of Horticulture.

RULES AND REGULATIONS.

MADE AND PUBLISHED UNDER AUTHORITY OF SECTION 7 OF THE "HORTICULTURAL BOARD ACT, 1894."

1. These regulations may be cited as the "Horticultural Regulations, 1894."

2. In these regulations the word "pests" shall mean and include woolly aphis, apple-tree aphis, scaly bark-louse, oyster-shell-bark-louse, San Jose scale, red scale, borers, codlin moths, currant worms, or other known injurious insects, and all fungous diseases.

3. All dealers, nurserymen, fruit-growers, and other persons producing, for sale or otherwise, nursery stock, plants, or fruit may give notice to any member of the Board, or the Secretary or Inspector, or the agent of the Board in the district where the nursery, garden, or orchard of such person is situate, of his desire that his nursery, garden, or orchard be inspected, whereupon the Board will cause inspection thereof to be made by a duly appointed officer in that behalf.

Such officer shall, if he finds the same free from all pests, give a certificate to that effect (hereinafter called a "clean certificate"), or otherwise, in accordance with the facts, and shall, in case further directions for disinfection than are contained in these regulations are necessary, give such directions.

Such certificate shall be in force for six months from the date thereof, unless revoked upon further inspection.

4. All nurserymen, fruit-growers, and all persons owning, occupying, or managing an orchard, garden, or nursery infested with any pest shall notify the member of the Board for the district in which such orchard, garden, or nursery

is situate, or the Secretary or Inspector, or the agent of the Board in the district, of the fact of the presence of such pest.

5. All persons having in their possession nursery stock, trees, plants, or fruit infested with any pest shall cause the same to be disinfected and cleansed, in accordance with these regulations, and no such infested nursery stock, trees, plants, or fruit shall be forwarded, distributed, or parted with until the same are so disinfected and cleansed, and a cartificate thereof obtained.

6. All dealers, nurserymen, or persons importing, selling, or distributing nursery stock, plants, or fruit not grown in the Province, or selling or distributing nursery stock, plants, or fruit grown in a nursery, garden, or orchard for which no "clean certificate" is in force, or the agent of any such person, before distributing, offering for sale, or disposing of any articles as above mentioned, shall notify the member of the Board, his agent or representative, in whose district any such article is found, or the Secretary or Inspector of this Board, who shall inspect or cause to be inspected said nursery stock, trees, plants, or fruit, and if they are found to be free from pests, shall issue a certificate to the owner or person in charge, stating said articles appear free from pests.

7. All persons having in their possession boxes, crates, or other packages or wrappings in which nursery stock or fruit has been imported, shall have such boxes, crates, or other packages or wrappings destroyed by fire, or disinfected in accordance with the directions contained in these regulations, forthwith upon the removal of the original contents.

8. All persons shipping, sending, or delivering any fruit, fruit trees, scions, cuttings, or plants within the Province shall place upon or securely attach to each box, crate, or other package or parcel containing the same, a distinct mark, stamp, or label showing the name of the producer and shipper or sender, and the locality where grown.

Methods of Disinfection.

9. Nursery stock or any trees or plants infested by any pest shall, during the dormant season only, be disinfected by dipping in a solution prepared as follows :—Take three pounds of soap (whale oil or good home-made soap) three pounds sulphur, and one pound Gillet's concentrated lye, or lye of equal strength and purity, boil one hour in four gallons of water, add one gallon coal oil, then boil slowly twenty minutes and add twenty-five gallons of water. This preparation is more effective when lukewarm, and it should therefore be used at a a temperature of about 100° Fahrenheit.

10. Where pests are found to exist during the growing season, while the trees are in leaf, spraying must be done and other remedies applied, as shall be recommended by, or under authority of, the Board from time to time, so

that the insects can at least be held in check until the stronger washes of the dormant season can be safely applied.

11. Boxes, crates, or other packages or wrappings shall be disinfected by dipping the same for five minutes in boiling water containing not less than one pound of concentrated lye to every five gallons of water.

12. Where hop fields are infested with hop-louse, spraying must be done as shall be recommended by the Board.

PENALTIES.

13. Any person refusing or neglecting to carry out these regulations, or the directions given hereunder by any member or officer of the Board, or the agent of any such member or officer, and within the time fixed by any notice when the same is by law required, or otherwise evading these regulations, shall for each offence incur a penalty of not exceeding fifty dollars.

Horticultural and Fruit Growers' Societies are requested to work in harmony with this Board, and may, without expense to the Board, elect from their number one or more persons to act as local Inspectors or advisers, who shall report to the member of the Horticultural Board of the district in which such Society is located, or to the Secretary or Inspector of the Provincial Board, cases where the owner or person in charge of plants or trees which are infected refuses to obey the directions of the Society in carrying out the rules of the Board; also any other matters of importance to the interests of the Society.

By Command,

J. R. ANDERSON,
Statistician.

Office of the Provincial Board of Horticulture,
Victoria, 10th April, 1894.

MEMBERS OF THE BOARD.

The Honourable the Minister of Agriculture.

Jas. R. Anderson, Statistician of the Department of Agriculture.

Andrew Ohlson, of Lansdowne Road, Victoria District, to represent the First Horticultural District, which comprises Victoria, Victoria City, Esquimalt, and Cowichan Electoral Districts.

Theodore Trage, of Beaver Point, Salt Spring Island, to represent the Second District, which comprises Nanaimo, Nanaimo City, Alberni, Comox, and the Islands Electoral Districts.

Ernest Hutcherson, of the settlement of Ladners, to represent the Third District, which comprises all that portion of the Westminster Electoral District situated to the south of the Fraser River.

Thomas Cunningham, of the City of New Westminster, to represent the Fourth District, which comprises the New Westminster City and Vancouver City Electoral Districts, all that portion of the Westminster Electoral District situated to the north of the Fraser River, and the Cassiar Electoral District.

Thomas G. Earl, of the Town of Lytton, to represent the Fifth District, which comprises all the rest of the Mainland of British Columbia not mentioned heretofore.

INSPECTOR OF FRUIT PESTS.

R. M. Palmer, Victoria.