

SIXTH
ANNUAL REPORT
OF THE
HORTICULTURAL SOCIETY
AND
Fruit Growers' Association
—OF—
BRITISH COLUMBIA.
1895.

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THE COMMERCIAL PRINTING COMPANY, LIMITED, PRINTERS AND BOOKBINDERS.
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BRITISH COLUMBIA
HORTICULTURAL SOCIETY
AND
FRUIT GROWERS' ASSOCIATION.

MISSION CITY, May 1st, 1894.

The quarterly meeting of the Directors of the Horticultural Society and Fruit-Growers' Association was adjourned owing to delayed trains. T. G. Earle, Lytton; T. A. Sharpe, Agassiz; and H. F. Page, Matsqui, who, with G. W. Henry and others met at Mission City, came west, and at Westminster Junction were joined by the Royal City and Delta contingents, including President Kirkland and E. Hutcherson, who, as well as those from Vancouver, had been detained by the eastbound train leaving the latter place four hours late. At the Leland, on the same evening, a meeting was held with Mr. Earle in the chair, and Messrs. Sharpe, Hutcherson, Postill, Page, Macgowan and others in attendance, where, in addition to other business, it was decided to hold the next quarterly meeting at Agassiz on Friday evening, August 10th, making a field day with Mr. Sharpe, of the Experimental Farm, on Saturday.

AGASSIZ, August 10th, 1894.

Quarterly Meeting of Directors of Horticultural Society and Fruit Growers' Association. Present:—E. Hutcherson, Ladner; W. J. Harris, Hammond; A. C. Wilson, New Westminster; W. Arthur, Ladner; T. A. Sharpe, Agassiz; D. McGillivray, Chilliwack; W. H. Ladner, Ladner; H. F. Page, Matsqui; T. G. Earle, Lytton; John Murray, Spence's Bridge; C. B. Semlin, Cache Creek; A. C. Wells, Chilliwack; H. Webb, Chilliwack; G. W. Henry, Hatzic; M. J. Henry, Vancouver; A. H. B. Macgowan, Vancouver; H. Kipp, Chilliwack; T. Cunningham, New Westminster; R. M. Palmer, J. R. Anderson, A. Ohlsen, Victoria, and a large number of members.

On motion of Mr. Harris, seconded by Mr. Earle,

Resolved, "That Mr. Hutcherson take the chair."

A large amount of routine correspondence was presented.

Letter of March 8th, 1894, from John Ball, Abbotsford, *re* Pests.

Moved by Mr. W. J. Harris, seconded by Mr. A. C. Wilson,

Resolved, "That letter of Mr. Ball be referred to Board of Horticulture."

Letter of August 2nd, 1894, from C. E. Renouf, *re* Committee to take charge of fruit and vegetables at Victoria show.

On motion referred to Standing Committee for this purpose, with power to act.

Some discussion *re* Committee for Attendance at Exhibitions took place. About all who spoke favored an allowance being made by the Association.

Moved by Mr. Ford, seconded by Mr. W. J. Harris,

Resolved, "That the Exhibition Associations requiring the assistance of this Association for exhibitions be notified that they can procure same on application to the Secretary, and if any special man be desired, that his name be given by applicants, and that a copy of this resolution be sent to secretaries of the different Exhibition Associations."

Moved by Mr. Hadwen, seconded by Mr. Harris,

Resolved, "That the November meeting be held at Duncans."

Meeting adjourned.

As a result of the call of the Quarterly Meeting at Agassiz, and through the efforts of the officers and members of this Association, one of the largest and most important meetings of agriculturists ever taking place in the Province was held. It was of two days duration. Interesting papers were read and discussed, and able addresses were delivered. An extended report would occupy too much space, but the following is part of the work :

At the Convention of Farmers held at Agassiz on 10th and 11th August, 1894, the following resolutions were unanimously adopted, viz.:

Moved by Mr. Thomas Cunningham :

"Whereas this Convention is informed that tuberculosis has been discovered in some herds of this Province which may seriously affect our dairying industry and entail very great loss to dairymen, be it therefore resolved that this meeting appoint a committee to investigate this subject with the view of taking such precautionary measures, as may be found necessary, in preventing the spread of the disease,

and the reimbursement of those whose herds are being destroyed in the interests of public health, and the enactment of such legislation as may be deemed expedient, and that such committee have power to act in the matter." Carried.

Moved by Mr. Cunningham :

"Whereas the disastrous freshet in the Fraser Valley, during the present year, has fully demonstrated the absolute and pressing necessity of immediate steps being taken to protect the rich and fertile lands in said Valley, by a thorough system of dyking ;

"And whereas, the Provincial Government is in a position to obtain the necessary funds for this undertaking at a much lower rate of interest than either private individuals or corporations ;

"And whereas, the permanent prosperity of this Province depends on the immediate development of our agricultural resources by the cultivation of the soil and the production of such food supplies as are now imported into the Province and paid for in cash ;

"Be it therefore resolved, that this Convention, composed of agriculturists from every portion of the Province, respectfully request the Provincial Government to take such action as is necessary to obtain the needed capital by the guarantee of a loan or otherwise, so that the work may be prosecuted before the recurrence of another flood. It is the opinion of this Convention that this is the most urgent and vital question to which the Government can devote its energies at the present time, for the dyking of the Fraser really means the restoration of confidence in the future permanent prosperity of the Province by an increase of the producing population, the investment of a large amount of capital in farming operations, and the prevention of the heavy importations of farm and dairy produce which is draining the country of its financial resources to an alarming extent. We plead urgency in this matter and earnestly pray that no further time may be lost in meeting and overcoming the difficulties and perplexities of the situation." Carried.

REPORT OF COMMITTEE.

To the Chairman and Members of the Farmers' Convention :

Gentlemen :—Your Committee appointed to report upon the causes which most seriously affect a thorough development of the agricultural possibilities of this Province are of the opinion that any legislation, agitation or co-operation that will lead towards the removal of the following will be beneficial :

1. Large areas of land suitable for cultivation are held for speculative purposes ;
2. The high price at which land partially cleared is held ,

3. The large size of many holdings and their partial cultivation ;
4. The agriculturist not adapting himself to the needs of the country.
5. The lack of sympathy between town and country.
6. The inability of young agriculturists obtaining scientific education within the Province.
7. The necessity of small experimental stations for the Province.

And your Committee are of the opinion that a more thorough system of Government and Municipal taxation will lead to remove causes 1, 2 and 3, and recommend that a system of specific taxation having a low rate on land in cultivation, as its basis, be adopted ; and that all speculative land be taxed at a rate which would make this class of tenancy unprofitable, and that all improvements be exempt from taxation, and that the system be enforced throughout the Province. Your Committee hopes that by careful observation and a continued study of the products which are imported into the Province and which might be profitably produced within the Province, and by the placing of products in such a marketable manner as will ensure profitable returns will remove cause 4. The remedy as suggested in the previous clauses will, in a great measure, strengthen the sympathy between producer and consumer. Your Committee recognize that the Press can, in a very great measure, accomplish this very desirable end, and your Committee hope that the Press of this Province will agitate the removal of the causes which so materially affect our agricultural possibilities. Your Committee are of the opinion that the time is now most opportune for the establishment of an Agricultural College in the Province, and your Committee believe that there is a large number of young men here who are anxious to avail themselves of such education.

In pointing out the necessity of small experimental stations throughout the Province your Committee strongly recommend that the Government be urged to expend a small amount annually towards this, as the large extent of the Province and different conditions under which horticulture has to be pursued, points out forcibly that a number of small experimental stations are essential to successful horticulture.

Your Committee recommend that the suggestions in this report, if adopted by your Convention, be referred to a Committee for presentation to the Government.

Your Committee consider that the large attendance at this Convention is a matter of great congratulation, and having been so happily inaugurated hope its usefulness may continue yearly. All of which is respectfully submitted.

Moved by Mr. D. McGillivray, seconded by Mr. G. W. Henry,

“ Whereas large areas of good agricultural land, situated east of the Cascade Mountains, cannot be utilized for the want of convenient water for irrigation, and

“ Whereas, if said lands could be cultivated by irrigation, it is well known that large quantities of the best quality of wheat could be produced to supply the demand of the Province ;

“ Therefore, be it resolved that the Provincial Government be respectfully asked to take such steps as may be deemed expedient to bring about, if possible, the irrigation of said lands.”

Moved by T. E. Kitchen, Esq., M.P.P., seconded by Mr. A. C. Wells,

“ Whereas extensive hydraulic mining operations are being carried on, and many others projected, on the banks of the Fraser between Hope and Lillooet, and that the Fraser is being used as a dumping ground for the debris, and,

“ Whereas, serious fears are entertained that the debris will be permanently deposited in the bed of the said river between Hope and the sand heads, thereby filling up the bed of the Fraser and causing said river to overflow its banks, being serious loss to the agricultural settlers along the Fraser Valley, such as was caused on the tributaries of the Sacramento River by hydraulic mining operations ;

“ Therefore, be it resolved that this Convention would respectfully urge upon the Dominion and Provincial Governments the necessity of an investigation with a view of regulating and controlling the said operations so as not to damage the agricultural and shipping interests of the lower Fraser.”

Moved by Mr. D. McGillivray, seconded by Mr. Thomas Cunningham :

“ Whereas the annual freshet in the Fraser River bears along an immense amount of silt and debris, which, becoming deposited in the bottom, obstructs the passage of the surcharge of water from finding speedy outlet to the sea ; and,

“ Whereas such freshets, having occurred for many years, has contracted the channels and filled up the mouth of the river to such an extent as to dam the water back, causing floods and much devastation ;

“ Therefore, be it resolved that this Convention of representative agriculturists, from every portion of the Province, respectfully requests the Dominion Government to take immediate steps to have such obstructions removed and the channel of the river deepened and straightened, and make such other improvements as will be found necessary to confine the water to its natural channel, thus preventing

a repetition of the sad calamity which has overtaken us in the valley during the present year."

Moved by Mr Hutcherson, seconded by Mr. G. W. Henry :

" Resolved, that this Farmers' Convention, being representative of the different sections of the Province, convened at Agassiz, desires to place on record its hearty appreciation of the kind attention shown by Manager T. A. Sharpe, of the Experimental Farm, and of the great benefit to our Province in placing such a competent man in such an important position. Particularly do we of the Fruit Growers' Association feel that some expression is due Mr. T. A. Sharpe for the many useful and instructive lessons we have received from him."

Moved by Mr. A. St. G. Hamersley, seconded by Mr. N. Butchart :

" Resolved, that the Government of B. C. be requested to make the necessary financial arrangements so that loans may be granted by the Province to farmers on approved security on real estate at a rate of interest of 5 per cent per annum, repayable on a term of years as may be thought advisable, the loans to be advanced simply for the purpose of improving the farms of the borrowers."

Meeting adjourned.

DUNCANS, December 15th, 1894.

Quarterly meeting of Directors called for this date, but a quorum of the Board not being present, a meeting of fruit growers was held. Following present: G. Hadwen, G. T. Corfield, C. Price, H. O. Wellburn, A. Robinson, C. H. Dickie, Capt. Richardson, W. P. Jaynes, W. C. Duncan, W. Ford, H. Evans, Major Mutter, M.P.P., C. Livingstone, G. Bartlett, W. S. Lomas, R. Wilson, G. W. Horne, T. A. Wood, J. Evans, Hy. Kipp, E. Hutcherson, J. T. Wilkinsou, Thos. Cunningham, J. R. Anderson, R. M. Palmer, Guy Macgowan.

Major Mutter was called to the chair, and, after addressing the meeting, called upon J. R. Anderson, Vice-President of the Fruit Growers' Association, to preside.

(1) A letter was then read by Mr. Hutcherson from John B. Shipley, Hounslow, Eng., addressed to the Secretary of the Society, asking for information about farming and fruit-growing in British Columbia, claiming to be a practical man in fruit-growing and gardening.

On motion Mr. Hadwen, Secretary of the Cowichan Agricultural Society, was asked to reply to the letter.

(2) E. Hutcherson moved the following resolution, which was seconded by W. S. Lomas :

"Resolved, that we believe that it would be most desirable that some representation should be made to the Government with a view of authorizing, under the Assessment Act, the assessment of those parts of the farm that are devoted to the orchard, in the same way as the rest of the farm is assessed; that is acre for acre. At the present time there is no provision in the assessment list to assess orchards otherwise than at their full value; whatever the assessor may think that should be. Furthermore, we believe it would be in the best interests of horticulture that all farm lands planted to orchard should be exempt from taxation for at least five years after planting." Carried.

Mr. Hutcherson said the question had been brought to his mind forcibly in 1892, when an assessor spent nearly a whole day in his orchard counting trees and finding their value. An acre in some cases contains from 108 to 335 trees, and he was valuing them at \$1 to \$3 each, when the value of the trees to him was some 10 cents each from the nursery. He was, therefore, paying an enormous taxation on his improvement, when his neighbor across the way got off with an assessment of \$70 per acre.

T. A. Wood spoke to the resolution, stating what rate of assessment was usually levied, and that improvements were only taxed at half their value.

Major Mutter thought that the question of assessing improvements had already been brought up, but he was of the opinion that it would require a good deal of consideration.

G. Hadwen asked if there was a law in California on the subject.

Mr. Hutcherson said there was a premium given sometimes.

Mr. Musgrave also spoke to the resolution.

On the motion being read a second time Major Mutter thought, as the land was exempt from taxation for the first five years, he might support the resolution.

T. A. Wood asked if small fruit was considered the same as an orchard.

This was not answered.

J. Evans considered that to exempt the land would be unfair, as land, when improved, is always assessed accordingly.

Mr. Hadwen thought that the resolution should be supported as an encouragement for fruit-growers, since it contained some good suggestions.

The motion carried.

J. R. Anderson at this juncture had to leave to catch the train, and asked Thomas Cunningham to take the chair.

On doing so Mr. Cunningham stated that he was pleased to be present, and allowed Mr. Hadwen the privilege of reading a communication from the Victoria Board of Trade, which dealt at length with the dairying business in the Eastern Provinces, the injury being inflicted upon this country by the drain of capital for produce which could be grown here, and urging that cheese factories and creameries be established throughout the Province to be aided by the Government, such bonus to be restricted to a grant for every pound of butter and cheese produced and marketed. Copies of the resolution were sent to the Federal and Provincial Governments and the several Boards of Trade throughout the Province. The value of the butter and cheese annually imported into British Columbia was placed at \$500,000.

Mr. Hadwen was not in favor of bonusing.

W. C. Duncan thought that the creameries in the east were not a success, as they had brought butter down to 10 cents.

The Chairman thought he was mistaken, and if not misinformed it was selling in Montreal at 20 cents per lb. and upwards.

Mr. Hutcherson thought that dairying should be encouraged, and, although not in favor of bonusing, he would be in favor of exempting creameries from taxation.

Major Mutter said if there were papers on horticulture or any discussion on the same he would like to have these proceeded with, otherwise it would be well to go on with the dairy question.

In response to the question asked by the Chairman if anyone present had papers prepared to be read before the meeting, G. Hadwen came forward and read a carefully prepared essay on Agricultural Chemistry, as follows:

A SHORT TALK ON AGRICULTURAL CHEMISTRY.

BY G. HADWEN.

The subject I have chosen to-night is that of Agricultural Chemistry, and I need not say that I can but touch on the edges of this large field of work. I may say on this subject, like many others, that the more you learn the more ignorant you find yourself. It has been built up piece by piece by many men and many years of patient study of experiments, and to cultivate the land, to grow crops and animals in the best possible manner we ought to take advantage of the labors of these men and utilize the knowledge they have put before us.

The *constituents of plants* do not vary to any considerable extent. We can modify them, as in the case of exceptionally large roots and fruit shown at our exhibitions; given an increased supply of manure water, and even gin, the proportion of water increases principally at the expense of the percentage of the more valuable constituents. Apart from this we have but little control over the constituents of plant life and their proportions one to another.

There are always found in plants carbon, hydrogen, oxygen, nitrogen and sulphur. These form the combustible portions, and potash, magnesium, calcium or lime, iron and phosphorus forming the ash.

These ten elements have been found absolutely essential to plant growth by numerous experiments. These experiments consisted in growing plants in artificial soils having a foundation of pure white sand and adding thereto these ten different elements. If only nine were introduced plant life was impossible. Besides these, the ash may contain sodium, silica, chlorine, and manganese, but these are, so to speak, accidental, and, though often discharging useful functions, do not appear to be essential.

Thus analysis of the soil will tell us at once whether the soil is favorable to plant growth, if these ten elements are there and in what proportions. It will tell us also if there is any poison in it, hurtful to vegetation, such as sulphate of iron.

We will now take up some of the constituents and compounds in the plant.

Carbon forms about 50 per cent. of the dry combustible and is taken from the air.

Carbonic acid gas (CO_2) forms a very small portion of the atmosphere. There is 1 lb. of carbon in 3,500 cubic yards of air, but it is very readily taken up by the plant and the currents of air assist this operation.

Water, as we know, is composed of hydrogen and oxygen. This is taken in principally by the roots and serves as a medium of transportation of the different substances in the plant besides entering into composition with other elements, principally, however, with carbon, nitrogen and sulphur. With carbon it forms the starches, sugar and fats, commonly called the carbo hydrates.

Starch, to be translocated, must be changed into sugar, and its movements depend in some way on the presence of potash. Lime and other alkalies will not take the place of potash in this work.

Fats are probably also changed into sugars.

Carbon, hydrogen, oxygen, nitrogen and sulphur form the albuminoids. White of egg is the simplest form of this class, hence the name.

They form the most valuable and nourishing portions of the plant. There is a close relationship between these and movements of the phosphates.

The phosphates are of a very movable character and when the plant reaches maturity they are principally found in the seed.

All metals occur in the plant in the form of salts, viz., in combination with different acids, such as phosphoric, nitric or sulphuric, and various vegetable acids such as oxalic, malic, tartaric or citric.

Functions of the Leaves.

1. The leaves absorb carbonic acid gas (CO_2) to supply the carbon of the plant. This is brought about by the action of chlorophyl, the green coloring matter in the leaf.
2. They absorb small quantities of oxygen from the air, especially when maturing fruit and in growth in the dark.
3. Absorb ammonia and water, the latter in a very much smaller degree than is generally supposed.
4. Give off oxygen, water and carbonic acid gas.
5. The constituents not necessary, such as silica for instance.
6. Dissolve and work over all food.

Functions of the Roots.

1. Support of the plant.
2. To loosen the soil (physical action).
3. To dissolve food by its juices.
4. To take in soil, viz., all the substances dissolved as above mentioned.

Movements in the Plant.

Osmosis, a power which two liquids, separated by a cell wall or membrane, have of mixing.

Capillary attractions. A small tube has the power of lifting liquids, hence the tubes and passages in the plant raise the liquids in the soil, which evaporate by the leaves, establishing a pumping action bringing up constant supplies of fresh food.

Lime and magnesia have close relationship. Lime (CaO) preponderating in the straw, and magnesia in the seed.

I have left the sources of plant food till now as they can be modified, to a large extent, by man, to suit the requirements of the plant.

From the air we have already seen that the plant obtains its carbon in the form of carbonic acid gas (CO_2), the latter being decomposed by the action of the chlorophyll and the oxygen thrown off.

Air is composed of nitrogen and oxygen in proportions of 4 to 1, it contains also :

Water, variable.

Carbon dioxide, .04 per cent.

Ammonia (NH_3) and kindred compounds.

Sulphurated hydrogen, variable.

Salt, the latter principally on the sea coast, particularly a stormy one.

In some places in England it is calculated to be deposited on the land at the rate of 50 lbs. per acre per annum.

The *soil* is the source of nitrogen and sulphur, and the ash constituents, potash, phosphorus, calcium (lime), iron, magnesia, silica, alumina, zinc, sodium, etc.

The nitrogen question, viz., the manner in which the main portion of the nitrogen of the plant is absorbed is the most difficult question we have before us.

It cannot be absorbed in a free state ; in the form of ammonia and of all nitrates it is taken up readily. It occurs principally in humus, viz., decaying vegetation, and in the farm manures we apply. It must to be absorbed, be changed into a salt, this occurs as the process of decay continues. This process is called nitrification. The conditions of nitrification are as follows :

1. Organic matter containing nitrogen
2. Bacteria (work between the first 3 feet).
3. Proper temperature, 30 to 40 centigrade about 70 degs. Fahr.
4. Alkalinity of the soil, water logged soils are acid.
5. Presence of a salifiable salt capable of producing a salt (lime).
6. Moisture.
7. Aeration.
8. Darkness.

Leguminous plants, clover, peas, etc., have a special power to

absorb nitrogen. This is partly because they are so deep rooted. The roots of clover plant weigh as much as the crop above ground.

On the roots are found small tubercles on which are found bacillis which appear to appropriate nitrogen for the use of the plant. This fact has been fairly proved by experiments in literally vaccinating fields with soil in which leguminous plants had been grown and finding good results from this course.

These bacteria work principally in the summer. From this will be seen that we manure our grain crops, which grow in the spring, before the effects of nitrification is seen, with nitrogeaneous manures, whereas root crops, finding an abundant supply of nitrogen in the autumn, are more benefitted with superphosphates.

To assist this work draining is very necessary, it removes the excess of water, lets in rain water containing ammonia, etc., air, raises the temperature, and raises water in times of drought.

Effect of Lime on the Soil.

1. Sets free plant food. Calcium combines with the acid, setting free the base. (Take, for instance, sulphate of potash. The lime will unite with the sulphuric acid, making sulphate of lime, setting free the potash).

2. Supplies plant food.

3. It is a most important aid to nitrification.

4. In sour soils it neutralizes the acid.

5. Improves heavy soils and is destructive to parasites, insects and mosses.

Farm yard manure consists of solid and liquid. The solid consists of:

1. Undigested food.

2. Indigestible food.

3. Refuse from wear and tear of stomach, etc.

Liquid represents the digested portions.

Ton of farm yard manure contains:

9 to 15 lbs. of nitrogen, worth commercially 16c. a lb.

9 to 15 lbs. of potash, worth commercially 3c. a lb.

4 to 9 lbs. of phosphoric acid, worth commercially 6c. a lb.

The liquid contains very much less phosphoric acid but 3 to 4 times as much potash.

In the case of animals being merely maintained, the manure contains all the phosphoric acid, all the nitrogen, all the potash.

In milk producing animals only 80 per cent.

The manure of birds is very valuable, 3 or 4 times as rich.

In the poultry house wood ashes should not be used as they contain carbonate of lime which sets free the ammonia.

Wood ashes are very valuable, containing 6 per cent. of potash, 2 per cent. of phosphoric acid.

In conclusion of these rather scattered items, I would like to add that it is our privilege, in some cases, to be cultivating virgin soils, and it is our duty to do this intelligently and keep up their natural fertility. Many of the fields of the settlement have not been given a fair treatment, and the result is we hear of fields being oat sick. The time has passed when hay can be sold year after year without a corresponding value put on the land. Every ton of hay represents a value of 6 or 7 dollars worth of nitrogen, phosphoric acid and potash taken from the soil, which debt will have to be paid for sooner or later. The more we reduce our products for sale to articles containing principally elements obtained from the atmosphere, such as butter or cheese, or fruits, the better it will be for ourselves and descendants.

The merits of the paper were discussed, all concurring in according praise to Mr. Hadwen for his very able and instructive contribution, which it was agreed upon should be published in the next annual report of the Association.

For the same on motion of Major Mutter, seconded by Mr. Palmer, Mr. Hadwen was accorded a vote of thanks.

Major Mutter read extracts from a California paper relative to the meeting of fruit-growers held there in November, 1894, and spoke at some length on the importance of the industry. He complimented the Government on the action that they have taken in inspecting orchards and nurseries, and keeping diseased fruit out of the Province, and yet, he continued, some people growl because this is done. He thought the fruit-growers of British Columbia should take up the several questions of grading, packing, shipping and marketing fruit.

Mr. Palmer wished to speak on the cropping of orchards. Some orchards, he said, would be the better for having crops taken off, when the land was exceedingly rich. He said that there was a good market here for fruit. He spoke of the amount of fruit which was imported into the Province, there being from four to five thousand boxes to Victoria alone in November. He reminded the audience that copies of the *Horticultural Gazette* give particulars of an excellent spray for trees.

In answer to a question as to how to kill green aphid, he said to use the No. 1 wash of the Board of Horticulture, lime, sulphur and salt in winter, tobacco wash in summer.

Mr. Wood spoke of a wash that he had used with success.

Mr. Palmer stated that the only trouble with the wash he employed is that it is hard to make, but W. J. Pendray and E. G. Prior & Co., of Victoria, are making it in large quantities. It can be diluted and is then ready for use.

Mr. Wellburn asked if there were any insects which feed on the woolly aphids.

Mr. Palmer said there were, and that he had the promise of a couple colonies from the State Board of Horticulture of California.

J. P. Booth, M.P.P., of Salt Spring Island, said in his experience of 35 years, he believed that there were more orchards killed with grass in his section than by insects. He believes in putting a root crop in an orchard and cultivating the ground. He would keep orchards on high land, where the sub-soil is porous. The bench land is the best for orchards. No tree can be healthy unless the sub-soil is porous; the ground must not be wet. He spoke of the growth of trees drawing water up from the trunk, and said that fence posts, when placed with the small end in the ground, would last much longer than putting the butt end in, as the cells are closed when the small end is down.

He thought the Lemon Pippin, Canada Reinette and King of Tompkins well adapted to his section. He liked the russets also.

Many dressed trees with fish oil instead of spraying. The oil keeps them clear of borers and moss. It can be put on at any time. Theo. Trappe uses oil and wood ashes principally.

A vote of thanks was tendered to Mr. Booth for his address.

Mr. Duncan thought that Mr. Palmer should have the best idea of keeping an orchard clear of vermin, as he sees so many in his travels. He was also pleased to hear Mr. Booth speak of the high land being the best for an orchard.

He spoke of his experiment in growing trees on high and low lands. At first he had not good success with either, but has now found the high land much the best.

This fall he dug a well on a spot where he took out a maple tree, and found that the roots were down fifteen feet, through nine feet of gravel and six feet of clay.

Mr. Palmer thought that with thorough underdraining much of the flat land would grow good orchards.

David Evans said he knew of an orchard planted twenty years, and it has been in grass nearly all the time, and is yet healthy.

Henry Kipp, of Chilliwack, said, that as it was late he would not say much. He liked the western and southern aspects for an orchard. Like Mr. Booth, he had killed some trees when experimenting. Had tried about seventy odd varieties and thought he had sixty-eight varieties too many. Had made up his mind to let Peck's Pleasant, Swaar and many other varieties go.

The Baldwin, Ben Davis and King apples were good; he liked the Gravenstein apple, but not the growth of the tree. Oldenburg and Astrachan apples were good for summer use, also the Early Strawberry and Pewaukee.

As to spraying, the question should be, not exact'y how, but when. That time, in his opinion, was now. He liked the lime, salt and sulphur wash, the formula for which he got four years ago from California.

As to cultivating an orchard, it depended much on the distance the trees are set apart. His were put 40 feet apart at first. Grew cultivated crops between, to keep the "pot boiling." Had filled in trees now, so that they are 20 feet apart and intended to cultivate and keep clean.

Timothy is not good in an orchard. Buckwheat, he found, very useful, and it would keep the chickweed in subjection.

Mr. Kipp also said he kept a few bees, and that a neighbor of his, Mr. Smith, made a business of it.

This was a good country for fruit growing and dairying, no irrigation was required here or in the lower Fraser River sections.

Mr. Palmer said that Mr. Kipp's experience in a great many varieties should be borne in mind. Only a few varieties pay best, and they are now pretty well known. So far as he could learn, the Baldwin and Canada Reinette were among the best for winter use, and the Wealthy the most profitable as a fall apple and Dutchess of Oldenburg for summer.

The meeting then adjourned for supper, which was served in the Quamichan Hotel. C. H. Dickie, the genial and well known proprietor, had prepared a sumptuous repast, which was greatly enjoyed by the large gathering that repaired to that well known hostelry.

After the inner man was fully satisfied, Major Mutter proposed that the business be resumed where they were seated in the dining room. This was unanimously agreed upon.

Major Mutter thanked the Directors for the honor conferred on Duncans in choosing it as the place for holding the meeting. He spoke at length and made a telling address.

Mr. Cunningham was then called on and said that the first piece of property he ever owned was in Cowichan, which, he was sorry to say, he lost. It happened in this way :

A young lady appeared on the scene, she was a Mainlander ; he was infatuated, and won the lady, but lost his farm. He soon after went into fruit growing on the Mainland, and hoped always to be engaged in agriculture and stock raising.

He was pleased to see that two members of the House, both good farmers, were present.

The crying necessity of the Province was cheap transportation to the Northwest. The reduction of freight charges would be one of the first questions that the Board of Horticulture could take up. He considered that the best land should be planted to fruit.

The insect pests were next spoken of. Some 1,700 empty barrels have been cremated in Vancouver since October 8th, in which there were larvæ of the codling moth. The best thought in Canada now allows that British Columbia is ahead of Ontario in keeping the orchards clean. He had read where 12,000 nursery trees were dug up and burned on the other side. He had just returned from a hunt in the Interior where trees had been distributed before inspected. In reference to those matters the Board has had some trouble, but it proposes to carry out the law.

He outlined fully the work of the Board of Horticulture. They were determined, by the help of Providence, and the aid of the Government, to exert every effort to keep infested fruit and trees out of the Province.

George Bartlett claimed that trees from the east were the most successful in Cowichan. He had seen black-hearted trees in the east, and also here ; they die after a time. He claimed also that deer have destroyed many orchards.

Much valuable time is lost in each man experimenting. What we want is practical experiments for the farmers generally.

A. Ohlson took exception to what Mr. Bartlett said in reference to the nurseries. He could raise trees free from black-heart, at any rate.

Mr. Cunningham agreed with Mr. Ohlson in that respect. He was strongly in favor of trees grown in British Columbia.

W. Ford said he purchased trees in Victoria on different occasions which were affected with borers.

J. S. Shopland stated that his eastern trees made poor growth, and he had also been deceived by trees purchased at a Mainland nursery.

His orchard now is thrifty and bearing well, although many people told him that his land would grow nothing.

W. H. Lomas had found that borers were in nearly all the maple trees.

Mr. Bartlett said he found that ashes and dog fish oil mixed was an excellent remedy for the borer.

The characteristics of the codling moth were then discussed by a number present, and in every instance they approved of the Board destroying all infected fruit and packages.

Mr. Booth considered that farmers were the backbone of the Province. People, in the first place, did not want to engage in farming; they wanted to get rich quickly. Many of the trades are overdone, and now, from choice, there are those who have to return to the land. He was certain that in Kootenay, Cariboo, and in time, up North, there would be a big market for fruit.

He was sure that the Board was at a good work, which would redound to its credit, and be of value to the Province.

Henry Kipp said, that what others had said, reminded him of his experience. He was in favor of buying trees in the Province. A party he knew sent off for trees and they had plenty of thoroughbred woolly aphis on them. To buy from far-away nurseries you have no redress; wherein if you buy at home you can always get back at the nurseryman.

Mr. Palmer knew of trees from the east, the half of which did not grow, and which were affected also with bud moth.

Mr. Hutcherson said he was pleased to hear so much on fruit growing. He explained the black-heart, which does not exist in British Columbia, it being caused by very severe cold. He, as a nurseryman, was pleased to have his trees inspected. He purposed to keep his trees clean. The place of delivery, he thought, was the best place to inspect trees. Was it not a hardship, he said, to have fruit destroyed after it was once shipped into the Province? Could it not have been dried or canned?

Major Mutter—Who would want to eat dried or canned codling moth? (Loud laughter).

Mr. Hutcherson thought that Bradstreet's was in error not to rate the merchants of the Province, because of the late flood. The natural resources of the Province were not hurt. The mines, gold, silver and coal, were not damaged, nor were the fish drowned out. (Laughter). They did not rate the merchants because a part of the farming district was flooded.

Mr. Kipp—That shows where the revenue came from. (Laughter).

Mr. Hutcherson—Now, I want to speak on the fruit question.

Mr. Kipp—That is what we want.

Mr. Hutcherson—Shipping to commission houses did not pay. From Ladner the expressage this summer amounted to as much as \$100 per day. Supposing, from several other places, a like amount was paid, the money would have paid for two or three cars at a time. All that is wanted is co-operation. It is a question whether it pays to ship strawberries to Winnipeg. They do not keep well. If ours can be grown to stand shipment, it will pay big, as they bring 25 cents per lb. in Winnipeg. A party from there came here, last spring, and offered 12 and 13 cents per lb., but he had to go to Portland to get them.

The Peach Plum is the best early one to grow. It comes in about the middle of August and sells at a good price. The tree is tender, and will not do well on low land. The Bradshaw is next best to grow. The Victoria comes later. A number of later varieties were mentioned.

Mr. Palmer, by request, spoke of shipping fruit to Winnipeg. He said that 2 lbs. of strawberries for 35 cents at Winnipeg was a good price. There is also a good demand for currants, gooseberries and crab apples. Regarding plums it is a question of shipping in car load lots to make a success of the business. Early and late plums pay best. He considered that we have a big advantage over California in freight rates to the Northwest. He would not encourage the planting of early apples for that market to an unlimited extent but to make up car load lots of mixed fruits.

Mr. Booth said that the question of co-operative shipping would have to be looked into carefully, as there was a danger to be encountered. He referred to the co-operative fish dealers in the States, where they start up opposition men if the retail dealers do not buy from them. It has not affected the shipping or sale of fruit in anyway yet.

Mr. Hutcherson called attention to lemons imported from Australia, which were affected with scale.

Major Mutter thought it was a good thing to bring up, for he felt certain that if the Board communicated with the Australian authorities they would at once have the matter looked into, for they are very particular. In tuberculosis they have been very vigilant, and it has been found that there is not 2 per cent. of cattle in the Australian colonies affected.

Mr. Cunningham said that lemons and oranges would be looked

into later. Such was under consideration, but owing to the large amount of work they have under way, no decided steps have yet been taken.

D. Evans asked what was considered the best way to cultivate an orchard.

Mr. Booth said he always used oxen, and by this means could get close to the trees.

Mr. Kipp was asked how he cultivated them. He said that he started with a hoe, but, although he loved hoeing, he got tired of that, and as for oxen, he considered their digestion too slow. (Laughter). He thought a one-horse plow the best means to work in the orchard near the trees.

The present was the third meeting he had ever attended.

In a barrel of apples, he had inspected, was a letter, which had been placed there by the shipper, asking the consumer to write and let him know how they suited. He took the liberty of answering the letter himself, and first told the party that the letter was enclosed in a very heavy envelope, and that he had laid himself liable by defrauding the Government out of 3 cents, but he would be pardoned for that offence, and the best thing he could do would be to start right in at the codling moth before he shipped any more apples.

Mr. Cunningham stated that the next annual meeting of the Society would take place at Victoria.

A vote of thanks was tendered to the visitors, also to the host and hostess of the hotel.

The meeting was closed about 11 o'clock p.m., by the singing of Auld Lang Syne.

SIXTH ANNUAL REPORT
OF THE
HORTICULTURAL SOCIETY
AND
FRUIT GROWERS' ASSOCIATION

The sixth annual meeting of the Society was held in the Board of Trade Rooms, Victoria, on Tuesday, January 29th, 1895.

Those present were—Messrs. J. R. Anderson, Thos. Cunningham, R. M. Palmer, H. Kipp, J. D. Bryant, T. G. Earle, D. Grahame, M.P.P., Thos. Kidd, M.P.P., G. W. Henry, G. Hadwen, H. E. Webb, L. E. Erb, E. Baynes Reed, A. Ohlson, Major John Nicholles, F. L. Sear, W. J. Moggridge, Colonel E. G. Prior, M.P., A. Johnson, M. Baker, J. W. Winnett, Dr. Crompton, A. Clearihue, S. Jackman, — Watson, J. McNeill, H. R. Breeds, Wm. Thompson, Rev. D. Macrae, A. Savory, Munro Miller, Wm. Todd, Major Mutter, M.P.P., — Layretz, J. Skinner, G. T. Corfield, S. M. O'Kell, P. Bayne, J. W. Sayward, W. H. Price, Dr. I. W. Powell, W. Patching, Fritz Helliger, T. Partridge, G. W. Anderson, ex-M.P.P., A. H. B. Macgowan and numerous others, among whom were a number of ladies.

The meeting was called to order at 10:45 a.m., J. R. Anderson, second vice-president, in the chair, in the absence of President Kirkland and the first vice-president.

The Chairman in opening the Convention, said :

Since our last meeting, a year ago, at New Westminster, there has been two meetings of Directors held, one at Agassiz, which also included a general convention of farmers, and was a very successful meeting. Since then, there was another meeting at Duncans, but, although unfortunately without a quorum of Directors, there was a good meeting nevertheless. I regret that many people from the Mainland have been unable to attend this meeting, general depression, combined with the disastrous floods, having no doubt disheartened many who would otherwise have attended and made this gathering a much larger one. However, it is not because of ignorance, seeing it has been so well advertised. It is to be hoped that in future a great deal more interest will be taken in these meetings, so conducive to the welfare of the community at large; agricultural interests being

the principal ones in the country, and, if properly fostered, will largely advance the general prosperity.

I am sorry that our President is unable to be with you. As I have been called upon at such a short notice I have been unable to prepare a set speech for the occasion.

We will now proceed to the general order of the programme, as published, but before doing so I wish to read you the following letters :

(a) From Geo. I. Sargent, Secretary Board of Horticulture, of Oregon, giving particulars of American Pomological Society.

(b) From J. Fletcher, Entomologist of the Central Experimental Farm, enclosing paper to be read, etc.

In connection with this last letter, the Chairman remarked that the May meeting might be arranged to fall in with the proposed visit of Mr. Fletcher.

(c) From Mr. Craig, Horticulturist, Central Experimental Farm, together with

(d) Report on experiments in spraying.

Minutes as printed in the Fifth Annual report were, on motion by Mr. C. E. Renouf, seconded by Mr. G. Hadwen, taken as read and adopted.

Chairman—Mr. Macgowan will now read his report.

Mr. Macgowan—Mr. Chairman, Ladies and Gentlemen: Anticipating that Mr. Kirkland would be present, I have not made a very extended report, trusting, rather, to his usual ability in that direction. Unfortunately, at a late hour, I learned that, owing to illness, he would not be able to be with us, so at the last moment I made a few notes to give an idea of what has been done the past year.

Having a good knowledge of the fact that there is a great deal of most valuable and interesting work to be done by this meeting, I will not detain you by any lengthy remarks, merely referring shortly to the work of the year.

The most important meeting of the term has been the Farmers' Convention at Agassiz. It was called under the auspices of the Dairyman's and this Association, was well attended and was largely representative of the best interests of Agriculture, and, unless the proceedings are elsewhere printed, I think they might to advantage be included in our annual report. Out of this Convention has sprung the Central Farmers' Institute, which I have no doubt will be well supported by the establishment of local institutes, out of which it is the intention to have the Central altogether supported.

I understand it is the intention to hold another Convention at the same place in the early part of August next, when it is expected that several specialists, well up in agricultural matters, will be present and make addresses.

Agassiz being centrally situated, easily reached from the different sections of the Province, the home of the Experimental Farm, and for other reasons, is peculiarly suitable as a place of gathering for our agriculturists and such others as are interested in these pursuits. I need scarcely add that the attentions of Mr. Sharpe, the able and affable manager of the Experimental Farm were highly appreciated by those who had the pleasure and profit of a few hours in his company.

The May meeting at Mission City was thrown out on account of the detention of the train, the president and several other officers, including the secretary, were delayed and unable to reach the meeting in time. It was adjourned and a short meeting held on the same day at Vancouver, when it was decided to hold the next meeting at Duncans.

At Duncans much interest was shown and although there was not a quorum of Directors present a large meeting of residents assembled and a most interesting time was had. The papers presented and a report of the proceedings will be published in our annual report.

Our annual reports have been greatly sought after, and it is evident that much interest continues to be taken in our work and that good must be the result of the wide spreading abroad of such useful information as is contained in these reports.

The Committee appointed to assist in the fruit departments of the various exhibitions of the Province has done good work, and those assisted have clearly shown that this assistance was valued.

The naming and classifying of the fruits by card has been found to be profitable and instructive to exhibitors and visitors.

The following shows were attended by the parties named, viz.:

Victoria—T. A. Sharpe, E. Hutcherson, A. H. B. Macgowan.

New Westminster—T. A. Sharpe, E. Hutcherson, G. W. Henry, W. Knight, A. H. B. Macgowan.

Chilliwack—T. A. Sharpe, G. W. Henry, W. Knight, A. H. B. Macgowan.

Duncans—T. A. Sharpe, E. Hutcherson.

Mission—G. W. Henry, A. H. B. Macgowan.

Nanaimo, Ladner, Kamloops, Vernon—E. Hutcherson.

Langley and Surrey—G. W. Henry.

As separate reports from each Committeeman are expected I will not detain you.

At Victoria and New Westminster the fruit exhibits were good considering the disadvantages of the year. Particularly would I mention the up country apples, not forgetting those which came from the orchards of an old Director of our Association, Mr. Earle, of Lytton.

Mission City made a good start in exhibitions—they have a great advantage in having a building large enough to contain exhibits in every line. Perhaps you will excuse me just here for noticing the fact that to this section and to the Fruit Growers' Association of Mission City belongs the credit of taking some most practical steps towards opening up a market for our fruits in the Northwest and Manitoba. The proper cultivation of this, what must eventually be an immense market will be of incalculable benefit to our fruit growers.

An interesting feature of the Chilliwack show, and one that clearly showed the immensely productive nature of the Province) was the exhibit of fruits, vegetables, &c., grown after the subsiding of the waters. This exhibition generally was a credit to the section.

That there has been a very considerable improvement in the growing, packing, selecting, &c., of British Columbia fruit, I feel fully satisfied. That this improvement has been stimulated by the Fruit Growers' Association, I feel just as fully satisfied. There is, however, a great work before us. In a country of such varied conditions of climate and great variety of soils as that possessed by British Columbia great care is necessary in adapting the crops to the different sections, greater care in fact, judging from the past, than is likely to be adopted by the average farmer. It would seem that one of the best ways to overcome this would be by experimental stations, which might be operated at some small expense to the Government, and under the care of a special committee of this Association. I can see no better way of finding a suitable superintending committee than through the Fruit Growers' Association, the active members of which have always shown a deep interest in this kind of work and a thorough confidence in the Province as being destined to become a great fruit producing country. On this subject a paper from the pen of an experienced member will be presented to you.

After the producing comes the marketing. In other places co operative organizations have been found most satisfactory, and they, as a rule perform the following services to advantage:

Collect and distribute information.

Establish uniform methods of producing, manipulating, grading and packing.

Open and develop new markets.

Act as agents for sale and shipment of fruits and other products, for members and others.

Seek better and cheaper transportation facilities.

These are a few of the uses that might be made of a co-operative organization, thereby developing our fruit growing industry and disposing of the product.

I have considerable information on the subject in my hands and would like to see an active committee of this Association take the matter up at an early date.

We might, under the auspices of this Association, at a small expense, and with some little co-operation on the part of our members establish a permanent exhibit, which would make our office a regular show room in the interests of the producing capabilities of the Province. Outside the city of Victoria there is nothing of the kind in the Province, and I think the time has come when other places should participate in showing what we are already possessed of, and what promises we have of future greatness.

Mr. Macgowan, continuing, said:

This report has been very hurriedly prepared, in fact, I didn't have time to read it over and any mistakes which may appear I ask you to overlook.

The Chairman then called upon the Secretary-Treasurer, Mr. Macgowan, to present the financial statement, which was as follows:

1893.	CREDIT.	
Nov. 32.	By balance forward.....	\$ 154 86
	" Government grant	1,000 00
	" Membership fees	44 00
		<hr/> \$1,198 86
	DEBIT.	
To	Printing, advertisements, etc	\$ 417 00
"	Paid Stenographer.....	25 00
"	" Expressage.....	3 60
"	" Exhibition Committee	73 00
"	" For cuts	8 00
"	" Expenses Spokane Committee.....	21 50
"	" Canadian Horticulturist.....	18 40
"	" Postage, cards, etc	32 00
"	" Secretary's Salary	360 00
	Balance.....	240 36
		<hr/> \$1,198 86

It was moved by Mr. C. E. Renouf, seconded by Mr. G. W. Henry, that this report be received and referred to auditors to report at the afternoon session. Carried.

The Chairman then named the mover and seconder as auditors of the report.

A telegram was read from Mr. Hutcherson, saying he would be down in the evening.

Mr. G. W. Henry, of Hatzic, was then called upon for his paper.

Mr. G. W. Henry said :

Mr. Chairman, Ladies and Gentlemen—I have not prepared a paper in any way, but have taken a few notes in a general way, as I attended exhibitions, and Mr. Macgowan has given you a pretty comprehensive idea of the progress made.

I was called upon by the Association last autumn to visit the following exhibitions for the purpose of naming the different varieties of fruit and also to act in the capacity of judge thereon :

Langley Prairie, October 3.

Mission City, October 4.

Surrey, October 5.

Westminster, October 9 to 12.

Chilliwack, October 17.

The work of assisting at exhibitions as taken up by this Association has, perhaps, resulted in more direct benefit to the farmers and fruit growers generally, in the Province, than any other branch of its operations. It has been our endeavor to have one or more of our best informed members in attendance at all the different shows each year, and the information imparted to the farmers there seems to have been more effectual than at any other time. This season, especially, have I found the beneficial results very marked.

There is no time of the year when more attention will be given to fruit matters than just at the time when fruit is being handled, and especially at exhibitions, when the different exhibitors are all anxious to excel each other and have their display not only the finest in appearance, but made up of the best varieties correctly named.

To show the improvement there is in the farmers in regard to naming their fruit and entering it correctly, I think I may safely say where I found this year not one variety in ten but what were correctly named, four or five years ago I did not find one in ten that was named correctly.

When a person brings a plate of very fine apples or other fruit to the exhibition, and instead of seeing the expected red ticket put thereon finds a card stating the fruit has been ruled out for being wrongly entered, such person marking very closely the name which was put on the cards the next year, finds this fruit entered correctly.

There was some dissatisfaction expressed at this course at first, but we found it the only effectual way of getting the growers to remember the names; as long as the prizes were given to fruits entered wrongly, so long was there no improvement in the naming.

Another improvement is noticeable, in the better class of fruits we find on the show tables. It used to be only the great large apples, regardless of quality or variety, that found their way to the exhibitions. Gloria Mundi was king of the show. Now, the classification as made out by the Association calls forth the most valuable varieties, and as the prizes are granted those fruits which are nearest perfect of their kind, instead of overgrown specimens, a much more desirable exhibit is presented.

I am glad to say nearly all the exhibitors of fruit seemed pleased to find such an attendant at the exhibitions and took advantage of the opportunity to become posted in the different varieties and other matters affecting fruit culture. Though sometimes, when two or three are calling at one in different directions at once, it is a little confusing, still we have tried to give all the assistance in our power. I think I never spent two busier days than at Westminster fair last fall, but the pleasing sight of those many tables laden down with the finest apples ever produced in any country was enough to make the most arduous task a pleasant one.

Mr. Henry's report was received with applause, and, on motion of Mr. Cunningham, seconded by Mr. Kipp, was received and adopted.

The Committee making experiments in spraying was then called on for their report, Messrs. Henry, Kipp and Ohlson being the only members present.

Mr. Henry—I regret being unable to put in a report, because I have not been in a very good position to go into it systematically as my trees are very young, this year bearing only a little for the first time, although I have a large orchard, and sprayed the young trees in a way, but have not had a chance to see results and cannot personally attend to it, therefore thought it better not to make a report at all this year. But another year I shall be in a better position and some ground to work on, and be able to give the results in a way that will be of practical value.

Mr. Kipp:

Mr. Chairman, Ladies and Gentlemen—For some years I have

been experimenting upon this matter of spraying. I woke up some time ago to the fact that something had to be done to restrain these pests and fungus, and I felt highly honored by this Association to be appointed on this Committee. I have a few notes on my work, and although I did not succeed as well as I had hoped, I have kept at it, and by persistent efforts my neighbors have been induced to give it attention also, and by another year, I hope we shall have much more tangible results of interest and profit to the Province.

I must go back three years to begin with. I took a trip to Fresno Co., California, in February, 1892, to visit an old friend, and also on other business, and while there he received a notice to spray his fruit trees and vines. The notice was similar to the one now used in British Columbia, but the spray was packed up with printed directions on the back, so every man could mix his own if he preferred. I asked my friend for the formula and brought it home. I procured the lime, sulphur and salt, and sprayed just as the blossom was falling. In a few days my trees had a spotted appearance; the mixture was too strong and had injured both the fruit and foliage. But the insects seemed to thrive as well as ever. That ended my first year's experience, with a small pump more fitted for shrubs and plants than anything else.

The second year I began again. I ordered a larger pump from S. Cawley, but it got lost in shipment and did not put in an appearance until February, 1894, so that I was left with my old squirt-gun again, had not my neighbor, J. C. Henderson, purchased a knapsack pump, which I borrowed from him. He told me he was going to use IXL, made and sold by Nicholles & Renouf. I sent to Victoria and got a supply too. This year I tried it later, after the fruit had formed; and sprayed ten and fifteen days apart. This mixture I also found too strong, as it turned the leaves brown and left the fruit, especially apples, as spotted as ever. I destroyed several trees altogether, dug them out and burned them; but very few apples were clean except the Golden Russet, so that the second year passed with very little gained, except experience, bought with a short crop of apples.

When 1894 dawned on us again my pump was unearthed somewhere in New Westminster, and was forwarded to Chilliwack. This year I determined to change my spray. The mixture I began to use was four pounds vitriol, four pounds lime, fifty gallons water, and began on April 11. I had just got nicely started when a young man from Napa valley came along, and being of a communicative turn of mind he told me I had not enough sulphate of copper, and kindly helped me to mix and apply the spray as they did in the Napa Valley, viz., four pounds lime, ten of blue stone and fifty gallons water. I used the spray at this strength three times. When my early apples

NOTE.—In the next to the last line, read *six* of bluestone, instead of *ten*, as printed.

Care should be taken to use good, unslacked lime.

were ripe I found that about a quarter of them were not fit for the market, the spray having, possibly, failed to strike them. The rest were lovely bright apples, and found ready sale at \$1 per box. The later fruit I found was somewhat discolored, but of a russet hue. There were no black spots on them as before, except those missed by the spray, and the foliage was uninjured. I am pleased with my work of 1894.

I am troubled with woolly aphids and saw coal oil recommended to be put on with a swab. I used it persistently for weeks. Every few days I applied it, but with no success. Then I sprayed with tobacco, in the proportion of seventeen pounds to forty gallons of water. This I did on August 20th, and again on the 22nd of that month. I have looked for the aphids, but find none at present. I shall report later on as to this spray, as I intend to watch those trees closely this summer.

I would recommend all who have trees to keep the soil loose by cultivation, to have the grass and weeds cut away from the trees, and to spray as directed by law. This being done, in the near future the fruit growers of British Columbia will have sufficient fruits to supply our growing markets here, and thus retain the thousands of dollars now going out of the Province for fruit.

If it is any consolation to my fellow orchardists, I may say that I too, am troubled with the woolly aphid, and that my neighbors are troubled too, in fact the whole district is infested. They will have to go, however, because the spray pump, with the knowledge procured by the assistance of this Association, will be bound to eradicate them, and we shall soon see our markets stocked largely with the finest samples of fruits which at present we find such difficulty in bringing to maturity.

Our people, I think, are laboring under a lack of knowledge how to deal with these matters, and are willing to take hold as soon as someone points out to them the remedy. We have an industrious, intelligent class of settlers who only require proper guidance to be able to enter into legitimate competition with all comers, and who would by no means take advantage of their fellows.

We cannot afford to overlook the value of fruits as food. We cannot be perfectly healthy without an abundance of it. It is almost half of my living, and this aspect of the question is of no small importance, outside of the mere financial part of it. I respectfully submit the results of my experiments in spraying.

Mr. A. Ohlson, said he had no report made on spraying experiments, as his experience was thoroughly in accord with the rules and regulations as printed by the Board of Horticulture. Had found the whale oil soap and lye a splendid remedy, but there was a difficulty

in the soap, if used in too large quantities, filling up the pores of the bark. With regard to the remedies recommended later, I do not think sufficient time has elapsed to enable me to give a good report on their qualities.

Mr. R. M. Palmer—I wish to say that we have here some specimens of pears brought in by Mr. Todd, of Cedar Hill, and would ask him to tell us of his results in the matter of spraying.

Mr. Todd—My orchard was very badly affected with the spot or pear-scab and I used the Bordeaux Mixture. The year before last I had scarcely a pear fit to sell, they doubled over where they were attacked by the fungus, growing distorted; but this year they are much straighter, as these specimens show. I used the Mixture twice before the blossoms were out and three times after the bloom had fallen. Last spring was not a good season for spraying on account of the great amount of rain, but the results were very gratifying to us. I shall repeat the experiments this season, and expect to have to spray against the insect pests as well, and not having any experience in that shall just follow the remedy recommended by the Board.

The Chairman—Did you try this mixture on your apples as well?

Mr. Todd—Yes. The results were very plain indeed. The year before I had hardly an apple to sell, but I disposed of a great many this year. I did not have such success as with the pears, which were almost all perfect. I think it may have been on account of the rainy weather that the results were not so good on the apples, as the rain washed off the solution.

Mr. Palmer—As far as the pear trees are concerned, they having suffered so much more from the fungus than insect pests, that this experience of Mr. Todd is one of considerable value, pointing out, as it does that if sprays are used properly and persistently, good results are certain to be obtained. There is scarcely a pear tree in the neighborhood of this city that is not injured by this fungus, and many people think that one application of the Bordeaux Mix late, ought to suffice, and they quit, and give up if they do not see beneficial results at once. At least three or four applications are required. The spores or seeds of the fungus germinate in the spring and early summer, and the treatment is largely preventative in its nature. If we allow the fruit to become affected before we commence spraying, only partially effective results will follow our labor.

Major Mutter—Do you think it would be of utility to scrape the bark? One gentleman here thinks it would have a bad effect to do so. I have seen some trees scraped perfectly clean of the rough bark, so as to get at the crevices in which insects collect.

Mr. Palmer—It is not injurious, although I have known an instance where, on recommendation to scrape the bark, the party advised removed the bark entirely. But to remove the loose or rough outside bark is decidedly beneficial, as it deprives many insects of a harboring place, in fact, it aids the process of nature, which is constantly throwing off the old bark as the tree grows larger. However, I should like to hear some other opinions upon this matter.

Mr. Ohlson—Scraping off the bark does not ensure the killing or removing of the insects. The first care the grower takes is to clean the stem of his trees. The branches, however, are full of all kinds of lice, spoiling the trees, while the bark will take care of itself.

The Chairman—The question is, whether removing the bark injures the tree, not as to whether all the insects are destroyed, Mr. Ohlson.

Mr. Renouf—I see some trees around here that have been perfectly cleaned, and the No. 1 Mixture recommended, applied, and now they have new bark, just like young trees. They do not scrape all the limbs, as that is too much work, but the results seemed to be very beneficial.

Mr. Kipp—I have tried this operation, but found it very expensive, no use spending two dollars to make one. Gillott's concentrated lye, 1 lb. to 5 gallons water and go over the trunks with a scrubbing brush or coarse broom, and within a very short time you won't find moss enough to build a humming-bird's nest. This is the quickest and easiest way, according to my experience, of cleaning the trunks of the trees and larger branches, but you are liable to take the bark off your hands at the same time if you are not careful. (Laughter). Thoroughly syringe the branches, and the old bark will gradually curl up and fall off, and new bark will form and appear bright and clean. I did this in the early spring. (Hear, hear). And the mixture was strong enough to destroy any insects or their germs deposited in the crevices of the bark.

Mr. Renouf—Mr. Munro Miller, of Mount Tolmie, who is not able to be here this morning, asked me to give you his experience as regards three trees. He followed the public directions, but without benefit, and then applied bi-chloride of mercury, 1-1000 solution, and found that effective.

Mr. Ohlson—I had occasion to inspect Mr. Miller's trees referred to, and found them and his orchard the worst infected in the district. (Laughter).

The Chairman—These three particular trees?

Mr. Ohlson—I could not say about them in particular.

Mr. Layritz said it was necessary to spray the crown of the tree with a much stronger solution than that recommended by the Board. The whale-oil soap and lye were very good if the proportion of lye were increased, 1 lb. of lye to 4 gallons of water, and the ground and trunk of the tree were well saturated. It would at any time be sufficient to also destroy the woolly aphid and other pests. Applying this to the trunks with an old broom was quite good enough.

The Chairman—You believe the solutions recommended are not of sufficient strength?

Mr. Layritz—No sir. I have found the green aphid and the woolly aphid flourishing, apparently, as unconcerned as before using the solution.

Mr. Ohlson—That's the mixture we used last year, in the proportions recommended by the Board last year.

The Chairman—It seems reasonable that the trunks of big trees might be scraped, without much expense, by applying this strong solution.

Mr. Cunningham—We are getting near the danger line here. I could not at all recommend the pound of concentrated lye to four gallons water, as there is great danger of destroying the buds, as I have had a little experience, and the strongest I would use would be 1 lb. lye to 8 gallons water, which I know will take off the rough bark, insects and fungus, and increase the yield of fruit at least 50 per cent. on badly infected bushes. My trees were badly affected with moss, and wherever I used this solution of one gallon of lye to say two coal oil tins of water. it effectively removed it. But six to one is quite strong enough, and we must not use this except early in the season. It is when the tree-life is perfectly dormant that you should apply this strong solution for the removal of moss. Mr. Kipp I think is quite right that scraping the bark is unnecessary work and expense. If you take a strong brush or broom and thoroughly swab the trunks with this solution the old bark will curl off without scraping, and he is very correct in his remark that there is no use spending \$1.50 when two bits will do the job.

Mr. Palmer—The thickness of the bark is an object, some of the roughest bark would have to be removed before the lye would have any effect, at any rate removing the bark would facilitate the operation of the spray.

Mr. F. L. Sere—The solution of 1 to 5 or 1 to 4 would not only remove the moss, but would remove the rough bark as well, and facilitate the entrance of the spraying solution to the crevices afterwards, but it must be done while the buds are dormant, or it will do injury.

To the Chairman—It leaves the bark quite bright and smooth. I think the spray pump the proper instrument to apply it with. I bought the lye at Pendray's soap factory. It can be had cheap.

The Chairman—You are persuaded it would be dangerous to use the strong solution except in the dormant season?

Mr. Sere—Yes, decidedly.

The Chairman—If you are prepared, Mr. Palmer will read the report of Mr. Craig's experiments at the Central Experimental Farm in this matter. I think it would come in very appropriately, and give us further ground for discussion.

Mr. Palmer then read the report as enclosed from Mr. Craig, and stated that the results there tabulated were borne out by his own observations in this Province, where the proper attention had been bestowed upon the operations. We can obtain equally good results in British Columbia, if the same care be taken. (See report in supplement).

Mr. Kipp—With all the different formulas and sprays and troubles discussed, there has been nothing bearing on the "Borer." I have some recipes here which I got while down the Coast some time ago, which I think would apply to the twig borer, some of whose handiwork you will notice on this sample I have here, where the woodpecker has taken the insects out, leaving the holes made by the borer. One of the recipes I have here is for destroying this, and another is specified as a sure remedy against the codlin moth, which I believe I have never seen except in imported fruit. However, the mixtures in these recipes are said to be effectual remedies, and the codlin moth, when subjected to it, must do as the Chinaman, simply "go."

Mr. Cunningham—The Board of Horticulture for the Province has charge of these different insect remedies, and we should be careful how we take them up. The Board intends to thoroughly test them all before recommending them, and when tested the data will no doubt be reliable as applied to our own needs and climatic conditions.

Mr. Kipp—Mr. Cunningham is quite right, but I merely offer these as suggestions, and would not wish them to be adopted until properly authorized locally. Of course these formulas have been in use and have been found invaluable in the United States, and as such, the Association may have the suggestion for what it is worth, showing what is being done and used by other fruit growers outside of this country. The Board of Horticulture will, no doubt, recommend these if we find them of advantage.

The Chairman—Regarding the codlin moth, it was, I believe, reported last year to the Board of Agriculture, that Wm. McDonald, of Aldergrove, and Thos. Marshall, of Cowichan, both found the moth

in those districts, but there has been a good deal of controversy on this subject with the eastern people. We maintain we have never had this moth here, and it is time that it should be known if it is in existence. I took the trouble to ask Mr. Marshall about it a short time ago, and it is evident from his description that he is not fully acquainted with the appearance of the moth and the worm which attacked his apples was not, it seems, the codlin moth. It is a smaller worm, which we call the "apple moth," and I fancy the same thing occurs at Aldergrove, in fact, I am sure it is, and that the question is still in our favor, and that there is not an authenticated case of codlin moth so far known.

Mr. M. Baker—Although not a member of your Society, but intend to be so immediately, I am one of the oldest fruit dealers in the Province, handling apples from almost every orchard, and importing from Australia, Eastern Canada and the States to the south, California, in particular, supplying nearly all our early apples, and have taken some interest in their growth and culture, but I have not yet seen one apple produced in British Columbia which has been affected by the codlin moth, and with this experience, after the large numbers of the Red Astrachan and the other white varieties, which are so much subject to this insect, and the large quantities of rotten apples hauled out upon our gardens for manure, this Association need have no fear as regards the importation of the pest in these apples. And I think that in some cases the dealers have been treated unnecessarily hard in many cases where they have been compelled to destroy their packages infected with this moth. As to the other diseases I know very little, but the easiest and simplest remedy is usually the best, and for this purpose, and, I think, that for the purpose of fruit growing, many of our old orchards are past redemption, but many of the younger ones may be remedied. I recommend fresh-slaked lime thrown into the tree while the branches and limbs are damp, will effectually remove the fungus and moss. You can try it at your convenience on the mossy side of the house, or sidewalk, and demonstrate it instantly.

This Association ought to have some one well up in the packing of fruit. Apples are usually of good enough quality, but so badly packed that we can only sell them at a reduction of from 25 to 40 cents per box. This is a matter that the Association should look into. I have some notes on these matters I would like to submit later on, and would be glad to render any assistance in my power to any of your members in this connection, and in sorting and picking.

The Chairman—This subject was brought up at the last meeting of the Association, also at Spokane and other places. It should be well considered and a uniform size of package adopted, so that "a box of apples" would be a known quantity.

This ended the discussion on this matter, and the Secretary read a letter from Mr. H. T. Thrift, of Hazelmere, as follows :

HAZELMERE, B.C.,

January, 24th, 1895.

A. H. B. Macgowan, Esq., Secretary Fruit Growers' Association, Vancouver, B.C.

DEAR SIR :—I very much regret the fact that I cannot possibly attend the annual meeting at Victoria, much as I should like to be with you.

In *re* a report on spraying, I am sorry to say through being away from home so much last spring and summer in my capacity of collector of voters, and returning officer for the Delta riding, I could not devote that attention to the subject that its importance demanded. However, I carefully swabbed the trees (apple) in the winter, and large numbers I sprayed once or twice after the spring growth commenced, but as the experiments could not be carried on (for reasons given above) all the fruit was more or less damaged by fungus growths, except those varieties noted. Those appeared to outgrow the evil effects of the fungus spots.

Varieties of apples that did not spot: Wealthy, King of Tompkins County, English Russets, Gravenstein.

Those that were bad were: Haas, Ben Davis, Western beauty.

I observe that a great many of the orchards around will soon become useless unless the trees are thoroughly attended to. Another thing that I think requires the attention of the Association, and that is the expediency of either restricting or disallowing the importation of American fruit trees at this point, unless properly inspected and disinfected. The people, because they can obtain the American trees so much cheaper than on this side, do not consider the quality, hence a great many trees are brought in without a thought as to the future results.

Trusting you will have both a profitable and enjoyable meeting,

I am, Sir, respectfully yours,

HENRY T. THRIFT.

Mr. Hadwen wished some information regarding cherries. In some districts he found them do extremely well, but he had noticed that, although much bloom appeared, there was no fruit, presumably from lack of fertilization or pollination, and thought that, perhaps, the planting in proximity to the barren trees some other kinds, the results might be fruitful.

Mr. Palmer referred the matter to Mr. Cunningham, who was well up on the cherrytree subject.

Mr. Cunningham—There has been many seedling cherries sold in this country, and they will never bear fruit unless topgrafted or budded. Some seasons are less favorable to the pollinization of the cherry. A wet spell while the trees are in bloom always shortens the crop of cherries; also the absence of bees. Every cherry grower should keep bees, so should every orchardist. The cherry is, probably, as profitable as any other fruit we grow. We never find any difficulty in getting a market. While we have to compete with the east in apples, we have the whole Province, the Northwest and the east to ourselves, practically, as regards cherries, because they are not successful in the growth of this fruit in Ontario and east of the Rocky Mountains, the black knot troubling them greatly. And I would here caution the buyer of stock for cherry orchards, not to buy any east of the Rockies, or introduce this scourge. We have drawn our stock chiefly from the Pacific States, Oregon, Washington and California, and you should buy your plantings from those already in the Province, or from the Coast nurseries, otherwise if you introduce the black knot, you are laying up difficulty and disappointment in cherry culture. I may say that the prospects are very good for an excellent cherry crop this year, judging from the appearance of the buds and trees. It is hard to estimate the damage done to the country by the sale of these seedling cherries.

Napoleon Bigareau or Royal Ann, Black Tartarian, May Duke and Black Republican are the four varieties I would tie to. These would give you a crop when all others have disappeared from the market.

The soil for cherries should be light, not very rich. They do not thrive well on rich soil, as I have experienced and lost by it. The upland benches, dry spots where apples or pears do not succeed, these are the places I would plant a cherry tree, as they are not so likely to go to gum, which has been one of my troubles, too. I find the cause of the gum is the separating of the bark from the wood, a vacuum is the result, which, if not cut out, or the circulation of sap restored, will fill with gum. I bind up the place with old cloths.

While on this point, I wish to say that it is all important that cherry trees should be grown low. I have no cherry tree higher than my knee. If allowed to grow too high they suffer from sun scald, all of our fruit growers know what that means, and the foliage should be kept low to protect the trunk. If the trees are headed out and the trunks too long, wrap them with Chinese matting, sacking, or any old rags. Whatever you do, keep your cherry trees low. It is not advisable to cultivate the land too much for cherry trees. This is the gist of 25 years' experience with cherries. (Hear, hear).

Mr. Henry—I notice what our friend from Duncans (Mr. Hadwen) says about many trees not bearing, which we account for in different

ways, from being self-sterile and otherwise, and there are seedlings which you cannot tell from the grafted tree as far as appearance goes.

Last year cherries formed to quite a size, and then all fell off, I do not know whether it was generally noticed, but we had looked for a heavy crop and were disappointed. I expect it was caused by too much dampness or frost knocked them off. This uncertainty is one of the difficulties we meet with in the weather. But there is no fruit we can calculate on making money out of better than the cherry. The general demand is always good—that is for large, sweet cherries that stand shipping—even as it is they have been profitable.

I wish Mr. Cunningham had mentioned the Windsor, a rather new cherry, but it is, perhaps, the hardiest and firmest one we have, and seems to endure the climate well. Mr. Sharpe, at the Experimental Farm, considers it one of the best there, an early fruiter, healthy grower and good shipper. The other varieties, the May Duke or the Late Duke, was it, Mr. Cunningham?

Mr. Cunningham—The May Duke I spoke of.

Mr. Henry—These varieties are fine for canning and for home consumption, but will not carry as far as Calgary, hardly, rather soft, being so very juicy. The Napoleon or Royal Ann is, perhaps, the best shipping cherry we have. The Windsor I am satisfied with, although we have not established it, and it is a new variety, but according to reports of its qualities, it cannot be excelled for shipping.

I quite agree with Mr. Cunningham about the soil, and this gumming is, I think, often caused by the frost and cold of the winter, when the sap starts up, becomes frozen and thaws out again. This is the reason we cannot grow cherries successfully in Ontario. Two years ago, after our cold winter our trees were very badly gummed or killed outright. I have not noticed it so much other years. Many of my tender varieties and young trees suffered also, and I think it is on account of the frozen sap bursting the bark, which pulls up. Doubtless bandaging would remedy it somewhat.

Mr. Hadwen—What about height?

Mr. Henry—No doubt low topped trees are preferable to a high one, as it is a better protection from frost and sun. I think we are too low in our apple trees, as we must have sunlight and ventilation beneath the trees to carry off the dampness which is the cause of much of our fungus. In the upper country, of course, where it is dryer, we cannot get them too low. The lower head is preferable in almost every respect.

Mr. Renouf—How about cultivating?

Mr. Henry—You do not need much. Good cultivation is all right,

but they do not need much manure. You must prune them carefully, but, after they get pretty well under way, they require little attention, as the growth stops to great extent.

Mr. Cunningham—Regarding my omission of the "Windsor" from the number of cherries enumerated, I would have included it but am afraid of the "Black Knot." I am dead against any tree that comes from a country or locality where this disease occurs. Hardly a tree is grown in Ontario without this, and I could not recommend any buyer to take chances on this cherry. Of course, if the "Windsor" can be had from a nursery on the Coast free from the trouble I would speak very highly of it. I may say that I have shipped the "Black Republican" as far as to Nova Scotia, and found it carried well, also to Montreal, Ottawa, and Kingston. If we select a good, firm variety we can ship as far as we wish by quick despatch.

Mr. Ohlson—Mr. Henry has remarked that the young, vigorous cherry should be cut back. It is well known that the more you prune, the more wood is made.

Mr. Henry—There is no danger, in a young tree, of getting too much wood, so long as we get it where we want it. The young cherry is likely to throw out a long stem at the top, with one or two arms, and this must be overcome. The idea is to correct this, and get a stronger stem with a properly formed top. You must cut them back in order to get them to stand up properly, but after they come into bearing they need no pruning at all. You must not have them sprawling out as the plum and cherry trees do in this country, and they should be cut back about June, so as to allow them to get hardened, otherwise they are tender for winter.

Mr. Layritz said he was dead against pruning cherries too much, and was of the same opinion as Mr. Ohlson. After a tree once takes root well, it will not be of advantage to prune much, unless you pay more attention to mere form. It is a mistake made by many growers about here that they prune too much.

Concerning gumming of the trees, he found it important to observe the cultivating of the ground, because the cherry needs it more than any other tree, and have noticed that when you stop cultivation, the gumming begins at once, especially in young or recently started orchards. The difference is easily noticed by comparing trees growing in garden patches where the soil is frequently broken, with trees in a more neglected part.

The Chairman—Before adjourning for luncheon, which we must do in a few minutes, I wish to say that those present who desire to join the Association may do so by giving their names, together with the subscription of \$2.00 to the Secretary-Treasurer.

We should hold a Directors' meeting immediately after convening this afternoon.

AFTERNOON SESSION.

The meeting was called to order at 3 p.m., and the business announced was the election of Directors for the ensuing year. The Secretary read the names of the Directors for the past year, and propositions were then received, the Directors being as follows:

Agassiz, T. A. SHARPE	Saanich, WM. THOMSON
Ashcroft, Hon. C. F. CORNWALL	" JNO. SLUGGETT
" J. C. BARNES	" H. R. BREEDS
Cache Creek, C.A. SEMLIN, M.P.P.	Salt Spring Island,
Chilliwack, H. KIPP	" J. BROADWELL
" A. STREET	" THEO. TRAGGE
" E. A. WELLS	" J. P. BOOTH, M.P.P.
" J. H. BENT	Spallumcheen, DONALD GRAHAM
" M. GILLANDERS	Armstrong P.O.
Chemainus, H. N. BONSALE	Spence's Bridge, J. MURRAY
Comox, A. HALIDAY,	" A. CLEMES
" W. R. ROBE	Somenos, MAJOR J. M. MUTTER
Cowichan, G. T. CORFIELD	Squamish, E. B. MADILL
Dewdney, H. P. BALES	Sumas, ALLEN EVANS
Duncans, G. HADWEN	" GEO. CHADSEY
Donald, G. E. MANUEL	Surrey, J. PUNCH
Enderby, A. L. FORTUNE	" H. T. THRIFT
Esquimalt, Hon. C. E. POOLEY	Kamloops, H. McCUTCHEON
" WM. ASHLEY	" J. A. MARA
Hall's Prairie, W. J. MOGGRIDGE	" WM. M. FORTUNE
P.O. Blaine, U.S.	" W. GRAHAME
Hatzic, G. W. HENRY	Ladner, E. HUTCHERSON
Hammond, W. J. HARRIS	" WM. ARTHUR
" R. L. CODD	" T. MCNEELY
Harrison River, T. WILSON	" W. OLIVER
Loch Erroch P.O.	Langley, JNO. MAXWELL
Haney, J. J. WILSON	" JAS. MCADAM
" H. FERGUSON	" HY. DAVIS
Howe Sound, GEO. GIBSON	" J. M. JOHNSON
New Westminster,	Lytton, THOS. EARLE
" P. LATHAM	Lulu Island, S. BRIGHOUSE
" THOS. CUNNINGHAM	" JAS. MELLIS
" A. C. WILSON	" THOS. KIDD
" T. R. PEARSON	Lillooet, C. A. PHAIR
" M. SINCLAIR	" A. W. SMITH
Nicola, JNO. CLAPPERTON	Matsqui, C. B. SWORD
North Thompson, A. NOBLE	" H. F. PAGE
Pender Island, W. GRIMMER	Mission City, J. B. CADE
Port Moody, N. BUTCHART	" J. A. CATHERWOOD
Saanich, J. D. BRYANT	Mayne Island, W. H. MAUDSLEY

Mayne Island, W. H. COLLINSON	Vernon, T. E. HAUN
" J. M. BENNETT	Victoria, DR. I. W. POWELL
Nanaimo, A. HASLAM	" D. W. HIGGINS
" W. H. HOLMES	" F. L. SERE
" S. M. ROBINS	" D. R. KER
South Vancouver, J. HURRELL	" C. E. RENOUF
" W. J. BRANDRITH	" E. G. PRIOR
Vancouver, J. M. BROWNING	" J. R. ANDERSON
" S. SHERDAHL	" AND. OHLSEN
" R. T. ROBINSON	" R. E. GOSNELL
" WALTER TAYLOR	" W. TODD
" M. J. HENRY	" MRS. P. WILSON
" A. H. B. MACGOWAN	" S. M. O'KELL
Vernon, LORD ABERDEEN	" G. H. KNIGHT
" PRICE ELLISON	" M. BAKER
" A. POSTILL	" R. M. PALMER
" G. WHELAN	

On motion of Mr. Henry, seconded by Mr. Kipp:

"That the names as above, read by the Secretary, be the Directors of the Association for the ensuing year." Carried.

On motion of Mr. Cunningham, seconded by Mr. Kipp:

"That the meeting of members now adjourn for five minutes."

This was carried and a meeting of Directors for election of officers was then convened, Mr. Anderson still in the chair.

Mr. G. W. Henry was proposed for president, the motion by Mr. Earl, seconded by Mr. Kipp.

The nominations were then declared closed on a motion of Mr. Renouf, seconded by Mr. Hadwen, and the Chairman declared Mr. Henry president for the ensuing year.

Mr. Macgowan nominated Mr. T. G. Earl as vice-president, which was seconded by Mr. Kipp.

Mr. C. E. Renouf was nominated as second vice-president by Mr. M. Baker, seconded by Mr. Macgowan.

Nominations for vice-presidents were then declared closed, and Mr. Earl declared vice-president, and Mr. Renouf second vice-president.

Mr. Henry moved, seconded by Mr. Renouf:

"That Mr. A. H. B. Macgowan be secretary-treasurer of this Association for the ensuing year."

Mr. Hadwen moved, seconded by Mr. Kipp:

"That the nominations for secretary close."

This was declared accordingly and Mr. Macgowan elected to the office for a further term.

The officers having been thus elected unanimously, the Directors adjourned, and the regular routine of the Association was re-commenced by the nominating of the following committees:

ON ANNUAL REPORT.

G. W. HENRY, Hatzic	G. HADWEN, Duncans
THOS. CUNNINGHAM, Westminster	E. HUTCHERSON, Ladner
MICHAEL BAKER, Victoria	T. A. SHARPE, Agassiz
R. M. PALMER, Victoria.	

FOR ASSISTING EXHIBITION ASSOCIATIONS IN FRUIT DEPARTMENTS.

M. BAKER, Victoria	T. A. SHARPE, Agassiz
A. OHLSEN, Victoria	P. LATHAM, New Westminster
G. W. HENRY, Hatzic	G. HADWEN, Duncans
E. HUTCHERSON, Ladner	J. E. HAUN, Vernon
T. G. EARLE, Lytton	PRICE ELLISON, Vernon
A. H. B. MACGOWAN, Vancouver.	

ON TRANSPORTATION AND PACKAGES.

T. G. EARLE,	M. BAKER
C. E. RENOUF	S. M. O'KELL
E. HUTCHERSON	T. CUNNINGHAM
W. J. MOGGRIDGE, Blaine P.O.	G. W. HENRY

ON RECOMMENDING VARIETIES OF FRUITS BEST SUITED TO B.C.

G. W. HENRY	E. HUTCHERSON
R. M. PALMER	W. J. HARRIS, Hammond
T. G. EARLE	T. A. SHARPE

A. OHLSEN.

COMMITTEE TO MAKE EXPERIMENTS IN SPAYING, MORE PARTICULARLY FOR FUNGUS DISEASES, AND BY SEPARATE PAPERS TO REPORT RESULTS AT NEXT ANNUAL MEETING.

E. HUTCHERSON, Ladner	GEO. MELHUISE, Chilliwack
G. W. HENRY, Hatzic	W. J. MOGGRIDGE, Blaine P.O.
T. WILSON, Loch Erroch	PETER LATHAM, Westminster
WM. KNIGHT, Popcum	S. SHERDAHL, Mount Pleasant
W. TOD, Cedar Hill, Victoria	HY. KIPP, Chilliwack

While debating the matter of the Committee on the Annual Report, Mr. Cunningham said that the constitution, rules of order, etc., should be given due prominence in the report, so that any person taking it up could see at once what the Association consisted of.

Next in importance as to position should be a sort of guide to the selection of and preparation of the soil, selection of varieties for certain soils and localities, that the novice or amateur grower might intelligently begin the superstructure for a successful industry. These matters should be set out in our report. Then comes pruning, fruit gathering, and fruit packing, in fact, a comprehensive guide, so that any intelligent person might know what he ought to do to become a successful orchardist.

Mr. Ohlson agreed with the suggestion of Mr. Cunningham, and although he did not wish to cast any slur on the Annual Report Committee of last year, it seemed that the report was simply a copy of the minutes of the meetings of the Association, and an endeavor should be made to embody in the report such matters of general information as would be of interest and value to every fruit grower. At present we stand in need of much practical knowledge that ought to be put in the next year's report.

Mr. Earl also agreed with this suggestion, and would go a step further, and specify in it the kind of trees which were thought to best suit the different parts of the country. This would be of great benefit to the people at large, especially to those new to the business.

Mr. Palmer suggested that the members of this Committee on the Annual Report should be allowed their expenses in connection with getting it up, and moved a resolution to that effect.

The motion was seconded by T. G. Earl, and carried unanimously.

The names of the Committee on Annual Report, as drafted, were then read by the Secretary, and

On motion of C. E. Renouf, seconded by T. G. Earl:

"That the committee, as read by the Secretary, be the Committee on the Annual Report." The same was carried.

The Secretary then read the names as drafted for the Committee on Exhibitions, etc., and

It was moved by C. E. Renouf, and seconded by H. Kipp:

"That these be the Committee on Exhibitions," and so ordered.

Mr. Earl wished to see the Committee on Transportation composed of live, energetic men who would look closely into the matter of freight rates, especially as regards the upper portions of the Province, as it is a question of vital importance to the fruit industry of these sections at a distance from the coast.

Mr. Cunningham shared the wish of Mr. Earl in this matter. Fruit in large quantities is crowded in upon our market from Oregon, Washington, and California, which ought to be supplied by our own

growers who are literally prevented from the sale of their own products almost at their doors by a prohibitive freight tariff. Canadians are said to claim that this Province is heavily indebted to the Dominion on account of the construction of the C.P.R. to this Coast, but, if I had time to go into the question I think I could show clearly that they have made a mistake, and that the C.P.R. has come deplorably short of the mark, and have not developed the home market. It is the "long haul" they are after always. To-day they are not carrying one-twentieth part of what can be produced in the upper part of our Province. We find the best tomatoes grown anywhere in Canada, rotting by tons in our fields, because the freight cannot be paid to the Coast. Whose fault is that? The fault of a narrow, inconsiderate policy which seeks for the long haul. However, I see they are beginning to suffer for it, as there seems to be a deficiency in earnings, because they have not been fostering the development of the country along their lines. I feel keenly on this point, and think it time for this Association to take steps to secure cheaper rates, not only to the Coast, but from the Coast and upper points in the country to the eastern districts of the Northwest and Manitoba. The inquiry is often heard, "Why can we not send our fruit to Manitoba as well as shippers from Oregon and California?" I tried it, and came out behind, as many of you have also experienced. But I am sure that if proper pressure were brought upon the railway people, the rates would be reduced and this excessive drain of our money to the United States stopped, otherwise we shall be bankrupt. Our cities have grown up expecting the development of the country at their backs, but the country is deficient in its production to support the investment in the cities. It is hardly time to bring this question up, but I think the appointment of this committee should be done very judiciously, and the men upon it should be such as can take the matter up in such a way as to show the railway people that their policy, so far as the development of this Province is concerned, has been a miserable failure.

Mr. S. M. Okell was pleased to hear this discussion. As managing director of the jam factory started here some years ago, he understood the matters referred to. He had sent samples of his manufacture to Manitoba to a commission house, and sold a large order contingent upon the freight rate, but found the C.P.R. give the preference to Ontario shippers, the difference being about 25 per cent. It is high time we looked into these matters. They have cheaper rates from the east to the west, notwithstanding the fact that empty cars are being sent back daily rather than give us a rate that would enable us to compete with the eastern manufacturers in the Northwest markets. At present we have been able to get a considerable reduction to enable us to compete to some extent, and if the C.P.R. would only meet us

honorably, I am sure we can develop a fine trade, as many carloads of jam and preserved fruits can be annually supplied by the fruitgrowers of B.C.

Mr. Henry—I have had considerable experience in shipping of fruit since the C.P.R. was opened, but am not going to stand up for it, although I do not think we need be discouraged even if we cannot get their rates cut down. They are stiff people to deal with, but we are already getting a good deal of reduction from them, express rates, especially. But as I have a paper to read in regard to this, I shall not press the subject now. I might say, however, that rates are considerably lower than when Mr. Cunningham tried the experiment he mentions. For instance, early in the season we paid 4 cents per pound, while lately the charge was $3\frac{1}{2}$ cents, and we might get a further reduction of half a cent.

Regarding shipments from Oregon and Washington, they have got so far as to consign in carload lots, which as yet we have not been able to do, but I believe their rates on smaller lots are as high as we have to pay—this has been ascertained by correspondence, but carload rates are much lower, and it is said that the main cause for the high charge from the Coast on the C.P.R. is on account of the expensive hauling over the mountains. However, if we grow good fruits and can ship in car loads, we should be able to get a material reduction in the cost of shipment. We cannot try too hard to have them reduced.

Mr. Baker pointed out that there need be no difficulty about rates, as the railway people had promised him as good a rate on apples from the upper parts of the Province to Victoria as he could get from Portland or 'Frisco. He said there were about 1,500 boxes of apples a week brought to Victoria by the C.P.N. Company, and he had received quantities from Chilliwack district at a cost of from 8 to 9 cents per box. People on the Island can use all the fruit likely to be grown in the upper country for the next ten years, unless they make more rapid progress than during the last ten. I think Mr. Clerihue will bear me out when I refer to the quantities of fruit imported here from California every five days during the fruit season, a good deal of which goes to the Northwest. But my trade is largely in this city, while Mr. Leiser and other dealers handle outside business. We can take all your produce, if it be properly packed, but what can you expect if you send us down, say plums, in 100 lb. packages? Nothing but jam. That's where Mr. Okell would come in. (Laughter.) Our weekly sales of apples is about 40 boxes a day during the season. Messrs. Leiser and Clerihue each about the same. You must try and supply your own market first, and then go after distant business. Your fruit must be in good shape, of good quality, and if such is the case, we can handle it all in our own market, at good prices. These

points should be thoroughly looked into at the same time as you look after freight rates.

Mr. Earle—I have to pay \$10.40 per ton for sending down my produce 165 miles, on some goods \$14 per ton, as pears, water melons, tomatoes, etc. Last year, in Westminster, I saw water melons weighing 40 to 50 lbs., they said they came "from the other side." I asked the price. They sold for 25 cents less than I could get them carried to Westminster for, and I have better melons going to waste than any sent in from foreign countries, but what is the use of growing them? Unless this matter is properly laid before the C.P.R. and other companies, and they help us, we cannot afford to grow such produce. But, as Mr. Baker says, I think they will make concessions. and, as we already have such a good market on the Island, we only need cheap transportation. Look at those tables, gentlemen. Where can you get better apples and pears and other fruits to equal those specimens in size and quality? There is no question as to our produce, or the market, so it must be the transportation, and this we should have.

Mr. Henry—In reply to Mr. Baker's assertion as to the capacity of his markets here, I do not think Mr. Baker has any idea of how much goes to waste in the country every year, nor the kind of shipments we made to the Northwest. This year we put plums up in fine shape, and made well out of them, and they gave excellent satisfaction to the buyers, but plums put up equally well, as good an article in every way, realized in Vancouver only about half the price received at Winnipeg, because the market was full at the time, and I am aware that large quantities of plums went literally to waste. I do not speak of apples, because I feel satisfied this country can use all our product, if they are good and well taken care of.

The Committee, as read by the Secretary, was, on motion of Mr. Renouf, seconded by Mr. Ohlson, adopted.

The Committee on Recommending and Selection of Varieties was then drafted, names read, and, on motion of Mr. Renouf, seconded by Mr. Hadwen, adopted.

The Committee on Experiments in Spraying was then drafted, and, on motion of Mr. Palmer, seconded by Mr. Renouf, unanimously adopted.

Mr. W. H. Price, who had prepared a paper to read before the Association, was then introduced to the meeting, and read his observations upon "Hints to Fruit Growers, by a Fruit Preserver," and illustrated the same by specimens of fruits preserved by himself in the establishment of Messrs. Okell & Morris Co., at Victoria, the whole matter being listened to with much interest, and received with hearty applause.

HINTS BY A FRUIT PRESERVER.

BY W. H. PRICE.¹

When Mr. Anderson requested me to read a paper, he chose for me the subject of "Fruit Preserving," but I thought that my impressions and observations of the fruit preserving trade, and the difference in the quality and variety of fruits would be more to our advantage. So, whilst touching on the fruit preserving trade, I have chosen for my subject "Hints to Fruit Growers, by a Fruit Preserver."

Fruit preserving has grown to be quite a science, for, to-day, a fruit preserver must have, besides other accomplishments, a thorough knowledge of sugar boiling, and also know what acids (citric or malic) are in the fruits to be preserved or canned, and though perfection can never be attained, a high degree of excellency may be reached, and better results got by close attention to the nature and condition of the fruits and sugar used.

The acids in fruits have a peculiar action on the sugar, and unless the fruits have that acid in them there is every probability of the preserves granulating or graining. Experience teaches the fruit preserver that his greatest care must be in the selection of his sugar, and if the fruit has not the required amount of acid to destroy the grain of the sugar artificial means must be used to aid the fruit in its work.

The fruits used in preserving and canning are a part of my subject. As far as British Columbia fruits are concerned, I shall be unable to give the names of all the varieties with any degree of authority. As fruits have been sent in I have made enquiries as to their names, though, strange to say, if anyone were asked the name of any fruit which did not seem first-class they knew nothing.

As to gooseberries, I am afraid to speak. We had them from different parts of this Province, and only in one instance could I say they were satisfactory, being small and dwarfish. They were, I think, the costliest fruit to make into preserves, and the only satisfactory fruit of this kind came, I believe, from Ladner's Landing. The varieties which are the most popular in the Old Country are Whitesmiths, Warringtons and Ashton Reds. The two first are of the green family. The other variety is, as its name denotes, a red berry. Of other kinds, Lancashire Lads and Brown Bobs are a fine looking berry, but they turn a brownish color, which is their greatest fault.

Some of the strawberries I preserved and canned, last season, were splendid cookers. Their flavor is not so pronounced as those I have used in the Old Country, yet they had a strong, gelatinous body. The finest I had were some grown on the outskirts of Victoria. Strawberries for preserving should always be picked before they become ripe, and, in fact, all fruits should be picked before they reach the

stage in which handling and carrying affect them. Whitehearts and Double Giants are the two most popular preserving varieties used by English preservers.

I believe that the black currants grown in this Province are the finest I have ever found. I have seen the best known varieties in the Mother Country, but I have never come across any to beat the black currants of British Columbia. They were large, full flavored, and of a strong, gelatinous body, and a first-class fruit for preserving.

What I have said about your black currants I can repeat of your raspberries. They are of good color, full flavored and have a strong body, being a splendid fruit and admirably suited for preserving and canning. I made enquiries and found that those which recommended themselves most to me were called the Cuthbert. In Great Britain the favorite is the Carter raspberry, a fine scarlet.

The red currants are, generally speaking, very small and very expensive picking, but they carry an exquisite flavor. Some I bottled that came from Ladner's Landing were of fair size.

Plums, in fact all the fruits I have seen carrying stones, are of a much larger kind than those I have seen in England. They are excellent for preserving and canning. I am sorry I was unable to obtain the names of the different varieties.

The Damsons have not the flavor that the Worcester, Shropshire, or Cheshire damsons carry. In fact, I have disputed the fact of their being Damsons at all for they seem to be a sort of Damasiene plum.

I am afraid that anything I may say about apples may not be of much service to you. I have had some tons of apples and I should think a score of varieties, but I have not had the opportunity of getting acquainted with their various names. To the fruit preserver it is not of much consequence whether it be of perfect shape, ruddy cheek or spotted. A sour apple, one with a gelatinous rather than of a saccharine nature, is the one that finds favor with the fruit preserver. The most popular preserving and profitable apples are the Wellingtons, Kerwicks, Goffs and Siberian crabs, they being best. For preserving and jellying purposes, I have had apples this year in British Columbia, of which I had not the name, but which equalled anything I have ever used.

This year I came across many fruits of which I should like to have known the name, and I wish to make a suggestion to the fruit growers. I would like you, in case of fruit being picked, no matter what kind, to contrive to send the name with it. It might be of some benefit for the grower to make known the name of the fruits which are most useful for canning and preserving, and at the same time it would help the preserver. However nature may favor the fruit growers of British

Columbia, they may require the help and assistance of the fruit canners, for it is a means of working off the surplus product. Canning and preserving is a means of sending the fruits of this Province to parts of the world which never knew them before. British Columbia, I believe, is so favored that she will become one of the finest fruit gardens of the world.

The fruits put up by the Okell & Morris Fruit Preserving Company obtained the gold medal at the British and Colonial Exhibition, held in Manchester, England, and they also had many inquiries through their exhibit at the International Exhibition held in London, England, last September.

I have one thing to ask you to beware of. I am quite aware of the ravages that the pest has made on fruit this last year and the cost of it to the fruit growers; but there is something quite as bad, and when you have rid yourselves of that you will have another. I mean the unscrupulous manufacturers, who are committing the foulest libel on the name of British Columbia's fruit. I am moved to speak like this on account of the many times I am met with the question of how it is there are so many imported preserves?

Gentlemen, when the reliable export firms sell you the article you ask for you can rely on it being properly manufactured. The utmost cleanliness is observed and the packages have all that is required to make them what they should be. Here, unfortunately, we have some who, for their own personal gain, send out goods which are not what they are labelled. If a customer or person wants a certain class of jam, he or she should have it.

Preserves, if made right, should be of almost equal parts of the fruit named and sugar. For instance, if for raspberry preserves, 100 pounds of fruit should be accompanied by 100 pounds of sugar, and I can conceive nothing worse to happen to the fruits of the Province than that they should get into the hands of men who turn out mixtures called preserves, which only contain 40 per cent. of the fruit from which the preserves takes its name. It is the fruits which suffer in name, and I think the greatest boon the Government of this Province could bestow on the fruit growers would be an Act to stop all adulterated jam from being made or imported into this Province.

Preserves are now being sold at a price we cannot get the fruit for, and it is for the fruit growers to take this matter up and have the name of the fruit of the Province protected. You must take care of the character of your fruits, so that your products will be asked for. British Columbia fruits, be they canned or preserved, should be synonymous with purity and excellence of flavor.

Mr. S. M. Okell, Managing-Director of the Victoria Preserve Factory, then gave a short history of their efforts to build up an

industry that has been so beneficial to the fruit business, and said Mr. Price's statements regarding the adulterated goods of this kind coming here were perfectly true, as he knew for a fact that there were about five or six car loads of jam—what is called jam—brought into the Province every year, of which not more than 25 per cent. was fruit. We have had samples of it analyzed, and could tell you what it is composed of. We have tried always to put upon the market an honest article, composed of the best granulated sugar, and clean, pure fruit, and our customers are finding it out and testify to its quality. I think it is a fraud of the worst kind to put these compositions into the preserves, and you, as fruit growers should see to it that the good name of your products is not trifled with. We are trying to do an honest business, but have to compete with foul adulterations, and if it were mentioned to the authorities, it would be beneficial to the country. I should be pleased to receive a visit from any of your members, or all of them, if they wish to have a look around our establishment and see how we manufacture preserves.

Mr. Okell's invitation was noted by the Chairman, and many of the members decided to avail themselves of the opportunity after lunch.

Mr. Cunningham here rose and said :

Mr. President, Ladies and Gentlemen,—I do not wish to break in upon the regular business of this Association, or to delay the presentation of the papers which are of so much interest to you all, but there is a matter that ought to be brought up here that deeply concerns the welfare of British Columbia, and, though not strictly in the line of fruit growing, it is a sister industry which deserves every consideration from this intelligent and representative assembly.

I am, however, pained to find that the Mainland delegation is not as large as it would have been under other and more favorable circumstances. Why are not more people from the Mainland at this convention? Is it that they are not interested in fruit growing and the practical work of this Society? It would be unjust to attribute their absence on this account. What is the cause, then? I regret to say, ladies and gentlemen, it is undoubtedly on account of the deplorable effects of the late floods in the Fraser Valley, in consequence of the sad catastrophe which last summer overwhelmed the country tributary to the Fraser River. You all know the history of that dreadful freshet, hitherto unprecedented in this section of the country or elsewhere, wherein thousands of acres of valuable crops were completely wiped out, fences carried away, fruit trees destroyed, homes broken up, and the necessary provisions for carrying over the winter stock and conducting dairying operations practically destroyed.

It has been a painful thought to me that the various agricultural societies have never, to this day, taken up the question of urging the Government to come to their assistance. How to do this has been the subject of careful consideration upon my part. We do not propose to beg, but we wish financial assistance, and the Government ought either to provide the money or the seed so badly needed—the money or the seed to be returned at the end of the harvest. This is not an uncommon method to pursue. It has been done in other parts of the Dominion, and it is in practice in the United States under similar circumstances.

I propose this in my resolution, and wish the Society to give a strong expression to the request that the Provincial Government provide the necessary seed to plant the large areas of land already prepared and being ploughed in the Fraser Valley. I know many men who have the necessary help and teams to put in crops, but have not the seed or money with which to procure it.

It may be asked, why cannot the merchants provide them with this and wait for their pay? I may say that this cannot be expected from the merchants. In the present depressed state of business, they are positively unable to extend the usual credits in these farming communities, by reason of the destruction of property and the consequent interference with their trade. Besides, this is a matter affecting the whole Province, and it will continue to do so. Unless measures are speedily taken to develop the agricultural, horticultural, and dairying industries more than has been done in the past, we shall suffer much more. (Hear, hear).

The settlement of this Province has been going on for forty years—I, myself, have been thirty-six years in the country, and we have never had an intelligent, comprehensive system of agricultural or horticultural development placed before us by the Government.

But, ladies and gentlemen, I wish to here bear testimony that, as far as one man could do, that you, Mr. Chairman, are doing your best to awaken the interest of the people of this Province on this subject. But what can one man alone do towards the development of the latent industries of agriculture in this Province?

Our Government provides liberally for every other interest. Railways are subsidized—properly enough, perhaps—and means are provided for the encouragement of mining and other enterprises—nothing, I may say, has been neglected, excepting the all-important agricultural industry. The policy of development has been largely the encouragement of investments and locking up capital in the cities—capital that ought to be put into the agricultural industries.

Of what avail are these great blocks of stores and buildings in Vancouver, Victoria, and Westminster, and other parts of the Province?

They are not productive of anything of value—they do not encourage the production of those commodities necessary for man's support.

Sir, I maintain that the present depression which prevails upon this Coast to-day, and has prevailed for some time past, would have come upon us had there been no general depression all over the world. It was caused, not by external influences, but by internal neglect. (Applause).

A large amount of money is being spent on fine Government buildings. This is all right, sir, but what is it all depending upon? Without agricultural development they are no more use to the Province than the Tower of Babel is to Mesopotamia. (Laughter and applause).

This country must be made productive. We shall go behind unless we can obtain adequate assistance for our suffering brethren in the Fraser Valley. What is their condition there to-day? I am afraid that the facts are only partially known. I, myself, have been to considerable pains to post myself, recently, as to how the matter stands, and I have found that there are hundreds of industrious farmers suffering, from no fault of their own, not only for food for their cattle, but, in many cases, have not sufficient food for themselves, and absolutely unprepared and unable to provide themselves with seed for spring planting.

I am sorry to say that the agricultural societies on the Island and the Mainland have not yet made a single move to aid these people, but I feel that we should be glad that it has fallen upon us, as representative fruit growers to perform this duty.

Sir, I can say, without flattering ourselves, that there is no other body of men more interested in the welfare of their fellows than the Fruit Growers' of British Columbia. (Hear, hear). We are broad in our sympathies, and always ready to help our neighbors when we have information that will benefit them, and, above all, we are interested in everything that promises to advance the interests and true prosperity of the Province.

The sufferers whom I have referred to are likely to suffer a great deal more, and if seed is not provided for this season's planting, they will not have the usual yield of grain, fodder, and root crops that they otherwise would have.

I am coming now to the point, and would like an expression, an emphatic expression, from this Society of their sympathy with our friends on the Fraser, and an appeal to the speedy development along the lines which we have met here to discuss. I understand there is a movement on foot to pledge the credit of the country to subsidize another line of railway. It may be all right, I have not given much

thought to it, but if the credit of the Province is pledged for this purpose, it will have as much effect on the prosperity and future welfare of this Province as the Giant's Causeway, in Ulster, Ireland, has upon the industries of that country, unless we develop agricultural pursuits and interests proportionately. It depends entirely upon what we take out of the soil.

Your own report, sir, shows the fact that nearly three million dollars go out of the country, year after year, to pay for what we can grow in our own soil. But this is a hard country to settle. Men can go to the Northwest Territories and put in their plows immediately, but it takes years of patient toil and industry to prepare for crop here, as many of us know.

I have spent many years of time, and all my available money, in developing my land. I had my crop in last year, a beautiful crop. I thought I would be in comfortable circumstances this fall, almost felt myself rich, but, from no fault of mine, without warning of any kind, the water rushed down, leaving me helpless. What is true of me is equally true of hundreds of my neighbors—deserving, industrious, painstaking, enterprising men—men upon whom the prosperity of this Province depends as much, or more, than anything I know of.

I dare not encroach more upon your valuable time, or I would proceed with this subject, so interesting to me and to many of my suffering friends, but I wish to voice the sentiments and intense desire of many of my brother fruit growers, and, as I have already said, they are the very persons to take this matter up. They are doing what they can to develop and foster agricultural and other interests in this Province. They commenced under many difficulties, first, by planting inferior nursery stock, learning from time to time the best varieties for the climate and soil. But we have mastered these now, I think, and I am safe in stating that the future outlook for horticulture in British Columbia is very bright and favorable. I wish I could say as much for farming. I think the fruit growers can step in and help it along.

I ask you now to come to the rescue of the suffering agriculturists in the Fraser Valley and to endorse this resolution :

"Whereas, the unprecedented freshet of 1894 has occasioned serious loss to the settlers on lands tributary to the Fraser River by the destruction of growing crops, fruit trees, fences, buildings and bridges, and

"Whereas, the said freshet rendered it impossible for farmers so affected to plant and mature sufficient seed for the spring's planting now at hand, and

"Whereas,] the present business depression which has been intensified by the before mentioned destruction of property makes it practically impossible for said farmers to provide the seed necessary for planting land already prepared, and now in process of preparation, without financial assistance; be it, therefore,

"Resolved: That we respectfully, but urgently, request His Honor the Lieutenant-Governor-in-Council to take steps to provide suitable seed in such quantities as may be required, and furnish the same to all who need and will contract to plant said seed, on such terms as may secure the Government against loss and yet render possible a bountiful harvest, on which the safety and welfare of this Province so much depends.

"Resolved, that a committee be appointed to wait on the Government and present the foregoing resolution at the earliest possible moment, as the urgency and importance of the matter will not admit of delay."

I have been careful in wording this resolution, to show that we do not wish to beg for the seed, nor do we propose to supply any man who will not enter into a contract to put it in and take off his crop and restore it to the Government again after it has been harvested. I think this should have been done earlier, because the plows are busy and the ground, in many cases, ready for the seed, and we are only awaiting the advent of spring to plant the fields. The Government is perfectly safe in extending this help. There is no risk of loss, but there is a grand opportunity for the Government to give poor needy settlers a helping hand, and a bountiful harvest will be the result, because, I think you will agree with me, that there has been enough suffering in that section of the country to last for some time, and we have every reason to believe that Providence will help us out in the future. (Applause).

Mr. Renouf, in rising to heartily endorse this resolution, and seconding the same, said:

The reason why this request was put in this way is, that although the Government had expended something like \$30,000 among the sufferers by the floods, and supplied a great deal of seed, none of the settlers have been able to harvest any of it, except for fodder, the grain having had to be cut green and put into silos. The relief came too late for the usual planting, and the green crops were used in this way. Consequently, the settlers are still without seed to plant the ground in the coming spring. The large areas in the Fraser Valley, which had been sowed to timothy, were so completely submerged that the grass has been entirely destroyed. No one knows better than I do, sir, the condition of these farmers. They are not in a position to get seed, and the storekeepers, who otherwise might have been in a

position to supply it on credit, and although still willing to trust their old customers, are unable to extend that credit.

We would not like to see our friends put to the humiliation of becoming beggars, and Mr. Cunningham's resolution is sure to meet with hearty support from you all. It practically asks the Government to furnish seed for six months, free of interest, and they can safeguard the measure with such penalties as would prevent anything like fraud, but we don't think anyone of our friends, whom we desire to help would dare to use such seed for any other purpose. The time is too short or I would echo more fully Mr. Cunningham's appeal. And as to the absence of the many well known horticulturists from this Convention, and also as to the cause of the depression prevailing in our country—the large amounts which you are every day sending out of the country, amounting from \$2,500,000 to \$3,000,000 for the products that we could and should raise in our own country, is a very strong object lesson. Put this money in the hands of our farmers and fruit growers in British Columbia and we would be done with hard times.

The motion was then put by the Chairman to the meeting, and carried unanimously, amid loud applause.

Mr. Cunningham, in rising again, said :

We are such a small community in British Columbia that we cannot suffer in one part without its effects being felt by the whole. The fruit growers have no sectionalism. With us it is "British Columbia," and I am very glad that there has been such an unanimous vote on this question, because it shows that the farmers of the Fraser Valley can always find in the British Columbia Fruit Growers' Association ardent and consistent friends.

The Chairman then appointed as a committee, under the above resolution, the mover, seconder, and Messrs. G. W. Henry, and Henry Kipp, together with the Secretary, Mr. A. H. B. Macgowan.

AFTERNOON SESSION,

Convened at 3:45, after the Directors' meeting.

Mr. A. Ohlson's paper on "Drainage" was then presented and read by Mr. Ohlson, and received with considerable satisfaction, as follows :

Drainage is a subject of very great importance both to the farmer and the gardener, so much so, that it is now generally admitted by the most successful cultivators of the day that neither grain nor fruits can be profitably grown on wet land. I will, therefore, endeavor to

show the necessity for drainage and the reasons why tender plants, and fruit trees in particular, do not grow successfully on land that is for any considerable length of time saturated with water. It is well known that a certain degree of heat must be present in the soil before any activity of the roots can take place, and that at a very low temperature root-action must altogether cease. This is just what takes place with trees planted in wet land.

The specific gravity of water is greatest at a temperature slightly above freezing point—from about 34 to 38 or 40 degrees. This is generally the temperature of the water that falls during winter, and, being heavier than the water of the spring and summer rains, is not displaced by it, but remains in the ground until evaporated by the heat of summer.

The temperature of wet land taken in the early part of the month of June, by inserting a thermometer 9 inches below the surface, was found to be about 40 degrees Fahrenheit, while that of the air was 80 degrees, and of drained land at the same time and depth, viz., 9 inches, was 60 degrees, showing a difference of 20 degrees of heat in favor of drained land, and a difference of 40 degrees between the temperature of the air and that of the wet land.

The reason for the higher temperature of the drained land is very clear, because as the heavier water that falls during winter is draining away, the lighter and warmer water of the spring and summer rains is taking its place, and, as this in turn drains away, the air must follow, and with the air the increasing temperature of the season, which is always in proportion to the activity and progress of vegetation.

Those who are engaged in forcing vegetables and fruits well know that, unless the temperature at the roots is in proportion to that of the air, failure will be the result.

Instances are known where a high temperature was kept up in vineries for nearly three months without the canes coming into leaf, the cause being a wet condition of the border outside in which the canes were planted, and although a tropical heat at the top there was the cold of winter at the roots, and hence the result.

While it is quite true that many of our hardier trees, shrubs, and plants will grow on comparatively wet and cold land, it is equally true that fruit trees that are either natives of warmer climates or varieties raised from these by high cultivation will not do so without becoming diseased and cankered.

I may mention the apple tree in illustrating this point. On well drained land this tree is generally healthy, healthy stock having been planted, but on wet land the best stock will soon become unhealthy and show canker (that is patches of dead bark, and also part of the wood on young trees and on young branches of older trees).

Long and very scientific articles were written by horticultural editors on this subject, some sixty years ago, attributing the cause of canker in apple trees to the cold weather in the spring occurring during the rising of the sap. Beautiful theories were in vogue calculated to explain the cause of canker by describing the flow of the sap, the opinion then held was that if frost occurred at a particular time canker would result. These theories have long ago been abandoned, those who held them have probably died out or have, perhaps, adopted more modern views. The fact is simply this, that as the warm weather of spring commences and the sap begins to rise there is no assistance from the roots the sap-vessels simply burst, and dying away of the bark and part of the wood takes place.

Experiments have been made by planting perfectly healthy apple trees in wet ground, that is, where the holes filled with water as soon as dug. The roots being examined three or four days afterwards it was found that decay had actually set in. The length of time after the trees were planted until the roots showed any decay was found to be shorter as the season advanced.

On drained land the roots are more or less active during the whole winter storing up nourishment for the coming season, this is particularly the case in this country where the winters are so mild, and, consequently, trees or plants grown on such land are more hardy and of a decidedly healthier constitution than those grown on wet land with the temperature of winter at their roots and that of summer at the tops.

Apart from the increase of temperature drained land is benefitted by the access of the air, indeed, a volume might be written on this subject alone, but it is sufficient here to say that certain gases of the air are carried down by the rains and deposited in the soil or absorbed by drained land from the air, acting on substances already in the soil, and making these more suitable for plant food.

Another advantage of draining land consists of the longer period of growth obtained thereby, in some cases two, and in others, three months. For instance:

By sowing oats on wet land during the month of June or July, after the water has evaporated sufficiently to make such an operation possible, the result would be very different from that of sowing on well drained land in March, and the difference would be as great as that between straw and grain.

"There is a season for everything" is very true in agriculture as in horticulture. The balmy air and heavy dews of spring are favorable to the development of roots, leaves, and wood, the warmer air and strong sunshine of summer to mature these, and the man who is

not able to sow or plant in season is simply "out of season," or behind time in the truest sense of the word.

I will not dwell at any length on the operations of drainage, nor on the materials used, for as good results may be obtained by using one material as another, so long as the main object, that of carrying off the water from wet lands, is attained, ærating the soil: But whatever material be used, whether tiles, rocks, or wood, the drains should have a proper outlet and regular fall, and ought to be, whether open or covered, not less than three feet in depth, if possible, but drains four feet deep are much to be preferred. At this depth the material is out of the reach of the spade or plow and if the work be well done the drains are more effectual.

Those who make the drains just deep enough to enable them to plow without tearing up the material often point to the withered grain or dead trees planted above the drains and say that drainage is a failure. Yes, that kind of drainage is a decided failure. But this does not prove that drainage is a failure if done in the right way.

Our climate, though moist, is, on the whole, favorable to fruit growing and general farming, but when the rainfall is so great draining is absolutely necessary, and, if not adopted, disappointment and loss must be the inevitable result.

Mr. Cunningham endorsed the principles enunciated by Mr. Ohlson, as he knew from experience fruit cannot be properly and efficiently grown on wet, muddy land. When he began his orchard, he had no results or encouragement until he drained it at considerable cost, putting in stone drains 8 feet down, and is always sure of a good crop in the vicinity of this drain, from apples, plums, pears and even raspberries, which are thought to do better in wet soil, do infinitely better than at some distance from the drains. One of the first things to do after laying out an orchard is to remove the surface water. Trees whose roots are imbedded in wet soil will develop the fungus and other diseases rapidly. Too great prominence cannot be given to this paper, and complimented the author of it on presenting to the fruitgrowers such valuable suggestions. (Hear, hear).

The Chairman said that in going about the country he had repeatedly pointed out to him the marked beneficial effects of good drainage in the fields and orchards. Grass will grow much better close by the drains than at some distance back, although some people appear to think that draining has the effect of drying up the land too much. This is a mistaken idea. Practical demonstration proves the contrary, that the effect is decidedly beneficial.

Mr. Geo. Deans, in congratulating his friend Mr. Ohlson on the ability with which he had treated the subject, said he thought this

was a subject which could not be too much discussed, as its bearing upon horticulture, agriculture, and other pastoral industries was unlimited. As yet we hardly understand its true value, but we are coming to understand that these matters cannot be longer neglected. Since the small factory has been demanding fruits from us, we see that it will pay to give it our best efforts. He gave an instance of where the effect of moderate draining upon a field was such as to increase the yield of spring wheat from less than 20 bushels per acre to over 30 bushels per acre. We must adhere to a strict system of drainage if we expect to get the best results from our farms and orchards.

Mr. Hadwen enquired as to the position and proper grades, two very important factors in a matter of this kind.

Mr. Ohlson said that the fall should be selected, and if the drains were laid diagonally with the fall, it would be of more advantage. Vegetation is not produced or fostered by the stagnation of the elements, but by the continual changes of heat, light, water, and air, yet the simple effect of land draining, it will be found, is to make that land more fertile. This is no longer a theory, but well established by practice.

Here ensued a long discussion, impossible to report accurately, upon the direction in which it was best to place a drain, whether straightaway to the fall or diagonally as advocated by Mr. Ohlson in his paper. Several contending that it was better to carry the drain directly to the fall, as, for instances, straight down hill, while others sided with Mr. Ohlson, that diagonally slanting drains gave service to more ground. It fell out after the debate had progressed somewhat that Mr. Ohlson's point was ceded, as applied to the majority of cases in B.C., while for flat, marshy land, the system advocated first by those who disagreed with him, was considered best adapted, in fact, Mr. Ohlson had all the while been speaking with reference to local draining, not as to general principles.

Mr. T. Partridge, an old Eastern Counties England farmer, gave some interesting experience which he has just had in the growing of spring wheat samples on drained and tiled plats in his garden, and others on undrained soil, the advantage being overwhelmingly in favor of the drained soil.

Mr. Partridge, although not an active member of the Association, expressed his hearty sympathy with their objects, and would always be pleased to render it any assistance in his power in the advancement of the interests of the Province.

Mr. Geo. Deans found his experience to lead him to think that it was best to run small lateral drains down hill into a main drain,

but whether these lateral drains would be better if laid diagonally down hill he did not know, but inclined to Mr. Ohlson's plan.

Discussion here took a turn upon the effects of draining and drying the land too much, and the paper of Mr. J. E. Haun, on the "Uses and Abuses of Irrigation in Okanagan" was presented and read by the Secretary, and created considerable interest.

USES AND ABUSES OF IRRIGATION IN OKANAGAN.

BY J. E. HAUN.

Irrigation is a subject which, in this decade of the world's history, is being very carefully studied, not only in all arid and semi-arid regions, but even in Ontario and other eastern portions of the American continent where rain is generally expected to supply sufficient moisture for the growth of crops. At the last International Irrigation Convention Mr. John F. Pierce, of London, Ont., was elected one of the vice-presidents.

By means of irrigation in many of the Western States vast deserts are being made resplendent with luxuriant vegetation, treeless wastes are turned into fruitful orchards and money-making gardens. In irrigation lies one of the best solutions for the over-population problem of the eastern sections of America. In Okanagan are extensive tracts of land which with water supplied to them could be turned into gold-producing fields. In lower Okanagan the peach, grape, and apricot attain great perfection. All that is required to make lower Okanagan the greatest fruit growing district in B. C. is the adoption of some comprehensive scheme of irrigation. In this district all the peaches and apricots used in B.C. and the Northwest territories, both evaporated and in the green state, could be grown. However, my paper will deal more particularly with the irrigation question in regard to its bearing on fruit growing in upper Okanagan. I am rather loath to attempt to write on this subject, but I do so in hope that this paper may have the effect to provoke a discussion which may prove useful to many members of our Society.

The question is often asked me, "how often shall I irrigate my young orchard, and at what time of the season shall I cease?" My answer invariably to all such questions is, "Avoid, as much as possible, irrigation in the newly planted orchard." My reason being that water applied, as it is usually, by means of surface irrigation has a great tendency to induce the trees to become surface feeders, a condition of growth we, in Okanagan wish to guard against. Irrigation in the young orchard is very often abused. The past summer my attention was called to an orchard on which the water had been running during May and June, after which it was turned off. In

August the trees were wilting, the ground being baked hard on the surface and dry as a bone as far down as you could dig.

I would never put water on my orchard, unless I grew other crops between the trees, until it came into bearing, but when irrigation is resorted to, once every two or three weeks is quite sufficient to furnish moisture to promote a vigorous and healthy growth in the trees. About the middle of August all irrigation should cease in order to give the wood time to ripen up properly.

In many parts of Okanagan the rainfall during the spring and the occasional showers of May and June, together with the moisture furnished by the melting of the snow, is quite sufficient to meet all the demands of the young orchard providing this moisture is properly husbanded.

The great question, then, is how best to preserve this soil-moisture furnished by these natural means. Different cultivators advocate different methods. The two methods most commonly in vogue are by mulching or by shallow tillage. My favorite plan is the latter. A great deal of ink and paper has been expended in discussing the pros and cons of shallow tillage as a means of preventing the exhalation of moisture from the soil. The movement of water in the soil is a question that calls into play some of the most intricate problems and abstruse theories in natural science with which I am wholly unable to deal, but the generally accepted theory regarding the evaporation of water from the soil is, that it freely rises by capillary attraction through an impacted surface and is then given off in vapor. Therefore, in order to check this waste of moisture, we must place between the soil and the dry atmosphere something that will act as a non-conductor. Now, shallow tillage furnishes us with this desideratum to a nicety, as a couple of inches of pulverized soil on the surface acts as a non-conductor (the same as sawdust thrown over ice), helping to retain the supply of moisture in the ground where it may be utilized by the roots of the trees whenever required.

Some few years ago a number of experiments were conducted at several of the American agricultural stations to collect data bearing on the question of evaporation of moisture from the soil. It was discovered by a careful comparison of the different results that the land covered with sod gave off water most freely, followed next in order by land without vegetation of any kind. The ground which retained the greatest amount of moisture the longest time was that which had been subjected to shallow tillage. To obtain the greatest benefits from shallow tillage the cultivation should begin as early in the spring as the ground is dry enough to permit a team to work on it. Cultivation should be prosecuted at short intervals during the entire summer and by all means immediately after a light rainfall.

An old gardener, from whom I learned many useful lessons, once told me the ground often lost more moisture through the agency of a light rainfall than it gained, for the reason that the surface became hard and baked and before the crust could be again pulverized a larger amount of water had been given off than had fallen during the rain.

In Okanagan, where the fruit grower is to depend on shallow tillage to carry his trees through the dry period, the orchard should never be cropped as every spear of grain or blade of grass acts as a pump and is night and day exhausting the moisture from the soil and giving it off in the form of vapor through the leaves.

Two advantages in the orchard of shallow tillage over mulching are, first, the ground is kept free from weeds at a less expense; and, secondly, by the frequent turning of the surface soil a large amount of nitrogen is assimilated from the atmosphere and the need of barn yard manure is to a great extent obviated, as the chief fertilizing material in barnyard manure is, according to analysis, nitrogen, which is chiefly instrumental in promoting wood growth.

I must crave the indulgence of my listeners while I quote an extract from an article published in the Pacific Rural Press a year or so ago.

"It is stated by General Chipman, of Red Bluff, California, that he once left off cultivating his vineyard at a critical time, having been advised that since the weather was hot the earth which he turned up would soon lose its moisture and that each cultivation would turn up a new layer to dry out. He was told that the crust which had formed on the top of his land would check the water from passing off in vapor, but his vines began to languish as cultivation ceased and he was compelled to rig up a portable tank and haul water a mile to assuage their thirst. In his dilemma he wrote to Professor Hilgard, who reminded him, in reply, that if a dry brick was laid on a wet sponge the brick would soon absorb all the water. If a dry sponge was laid on a wet brick, however, the sponge would not absorb the water. Professor Hilgard compared the crust on top of the ground to a brick on a sponge and suggested that the impacted surface was rapidly taking up the moisture and letting it off in vapor, and that, therefore, the true course was to keep the ground tilled on the surface.

The implement to use to accomplish the best results in shallow tillage is the slant-tooth harrow, but any tool that does not work the soil too deeply will do. An inch or two of fine soil on the surface is all that is required. Cultivating deeper than this in dry, hot weather will be followed by disastrous instead of beneficial results.

In Okanagan the fourth or fifth year after planting, if your orchard contains such varieties as Ben Davis, Wealthy, or Oldenberg, the trees

will begin to bear fairly good crops of fruit. At this juncture, my plan would be to lay the orchard down in grass, clover being the best, but by all means avoid timothy.

With a good clover sod the danger of souring your land by over irrigation is reduced to a minimum. And, again, you need have no fear of your ground becoming baked as the roots of the clover will help to keep it loose and porous. Each season you can plow down the clover on a third part of your orchard to furnish the trees with a coat of green manure, the following year re-seeding the portion plowed down. Avoid barn yard manure when using green manure as there is a great danger of producing too heavy a wood growth by supplying an excess of nitrogen, but treat the trees to plenty of ashes when obtainable, as all fruit trees require potash.

After the trees begin to bear the orchard should receive water without stint as the growing crop of fruit will require a large amount of moisture to bring it to its greatest state of perfection. Irrigation should begin as soon as the fruit sets and continue until it is well grown. It is from the bearing orchard the greatest benefits of irrigation are derived.

No fruit, perhaps, gives such increased returns through the liberal application of water during the bearing season as the strawberry. I will give my method of handling water on a strawberry bed.

In the first place, if you are not prepared to underdrain never choose a piece of land with a hard, impervious subsoil, but on the contrary pick a plot which has good, natural drainage and the subsoil of which is porous. I give this advice because often disastrous results follow the use of water on the strawberry bed from the fact that a large amount of superfluous water gathers beneath the surface, where it becomes stagnant and sours the land. In laying out the bed I plant the rows three and a half feet apart. In the spring just before blossoming season I take a Planet, jr., garden plow and run between every other row, opening a furrow through which I run the water from the head ditch. By this plan every second space between the rows is left for the use of the pickers in gathering the fruit. I irrigate twice a week from the time the plants begin to blossom until the fruit is of good size. After each application of water I stir up the soil with a bean cultivator. When the berries commence to ripen I turn the water on every evening and allow it to run until early in the morning. During picking season I never cultivate. In all surface irrigation great care should be taken not to allow the land to wash.

In irrigating cane berries the same general directions given for strawberries will apply, but just before fruiting season my plan is to give the plants a good mulching of straw or coarse manure, which greatly aids in the preservation of the moisture furnished by irrigation.

I should very much like to say a few words regarding sub-irrigation, but my paper is already far too long so I shall reserve my remarks on this system of irrigation for a future time.

But before closing this paper I cannot too strongly impress on all who use water artificially the great necessity of cultivation after each application. Neglecting to stir the soil after irrigation is the greatest abuse to which this useful servant of horticulture is subject.

Mr. Henry gave his testimony to the value of light tillage in retaining moisture for the benefit of his crops during the hot summer.

Mr. Cunningham also laid great stress upon the importance of trying to get along without the use of so much water in our gardens. A friend of his in California, with whom he had a great deal of correspondence on this matter, was instructing the people in his vicinity to get along without much water. His practice was deep subsoil ploughing eighteen inches below the ordinary furrow, with free cultivation from time to time. The people there were astonished at his crops being better with apparently less labor than those upon irrigated land. He took 90 premiums at the California fairs after his first year's trial of this method. I would recommend some of my friends in the upper country and even in the lower parts, especially where Mr. Henry's nursery is on the elevated ground, to practice this subsoil ploughing. Break up the hardpan, loosen up the soil to the action of the frost in winter and the sun's action in summer, and you will do away with the effects of drouth, as we understand it, on the higher ground. In some places they go to the extreme of putting dynamite cartridges in a hole where they plant a tree to break up the soil thoroughly and let the moisture rise to the top. This is directly in line with the subject of sub-cultivation. This method of treating the soil has enabled my California friend to raise a very large percentage more from his farm than can be grown upon the adjoining one, which has not had the treatment. And I think this new Horticultural Board, which it is said we are to have, ought to take up such questions and provide the information and sometimes the means, such as new seeds and ideas, to give valuable aid to the cultivators of the soil in this Province. Much useful and necessary information could be propagated in this way without much expense to the Government. We have a number of good, observant men who would be only too glad to carry on such experiments if only put on the right track. It is the only way to get at the facts. We possess such a diversity of soil and climate that our knowledge must be gained largely by actual experience. I have pleasure in expressing my sincere appreciation of the paper just read.

Mr. Earle—It depends on the character of the soil largely; on clay sub-soil, such as Mr. Haun has, it might be easy to get along without irrigating, but on a very sandy sub-soil, you must have water.

A lady member desired information as to the best method of cultivating her orchard, whether the use of a mulch, or tillage of the surface. She had tried both to some extent, but the results were so similar that it was difficult to decide.

Mr. Palmer, in answer to the lady's query, said this was a very difficult question to decide, especially on account of difference in the conditions that might enter into the matter. As Mr. Haun pointed out in the paper just read, it will be better on some soils to follow one method, and the reverse on other soils. Where weeds are troublesome, he thought it was better to keep up the cultivating. In the first place, the orchard ground should be deeply broken, drained, and surface cultivated to keep out the weeds and prevent too much evaporation.

Mr. Kipp said he had a good deal of experience in this matter. His soil was a clay loam — some clay sub-soil, and sandy loam on top. This he keeps cultivated well to keep the weeds and grass. Early in spring (it is probably done now) he mulches with straw or coarse barnyard manure to keep back the buds and sap so as to avoid injury from spring frosts. The plot lies rather flat, and is not under-drained but slopes to a blind slough which draws off the water. Mulching is most important to retard the rising sap after the frost begins to go out, but after the warm weather comes, cultivation must be kept up to prevent the soil becoming too dry.

Mr. Cunningham thought that Mr. Haun was a little "off" on the usefulness of barnyard manure, as he himself had found it one of the best stimulants that could be used in fruit growing.

Mr. Palmer—But it is deficient in potash, and the amount you use for securing potash is likely to be injurious by reason of the more abundant nitrogen.

Mr. Cunningham—It is the best one I can find.

Mr. Palmer—Because you have a soil rich in potash, but if your land was deficient in this, you would not find so much benefit in using the manure. Of course, manure of this kind, if used as a protection to the crops in early spring, would be all right.

Mr. Cunningham—I never yet knew a man get rich farming who did not use lots of this manure.

Mr. Henry—But it must be supplemented by other things.

Mr. Ohlson, after an experience of many years, found nothing equal the barnyard article. Other fertilizers were all well enough in theory, but not what they are "cracked up to be." It is the most complete fertilizer he knew of, and will strengthen any of the artificial manures.

Mr. Palmer—What about wood ashes—it is generally accepted as being the most perfect fruit manure?

Mr. Cunningham and Mr. Ohlson both agreed that wood ashes was a very good addition to barnyard manure, and the discussion then turned on the value of clover as a manure, and Mr. Cunningham proceeded to read some extracts from Mr. Terry's experience in the use of clover as a fertilizer upon a run-down farm. He also paid a tribute to the value of the same crop used as ensilage.

The following letter was then read:

CENTRAL EXPERIMENTAL FARM,
Ottawa, January 11th, 1895.

J. R. ANDERSON, ESQ.,
Statistician, Dep't. Agriculture, Victoria, B.C.

MY DEAR SIR: I yesterday posted to you a short paper which, if you consider suitable, I shall be much obliged if you will present or get Mr. Palmer to do it for me, in case you are unable to do so, at the meeting of the Fruit Growers' Association.

I am very glad to tell you that I have great hopes of being able to visit your lovely Province again this summer. Mr. Saunders has been good enough to say that he will recommend this to the Minister. My object in coming will be to make observations as to insect injuries and to give any information in my power likely to be of use to the farmers and fruit growers of British Columbia. I shall, of course, make as large collections as possible of insects, botanical specimens, seeds and roots. I shall be glad if you will give out at the meeting that I am most anxious that my visit should be useful to farmers and fruit growers, and, if the different members will take notes or write to me concerning injurious insects, I shall be very much pleased to make a special study of the various species. I shall be glad also to give help whenever required about remedies and their application. You might also lay stress on the fact that all letters and parcels addressed to me here come free of postage. Please also impress on Mr. Palmer that I consider myself at his service in this matter of injurious insects.

I received to-day your letter of the 4th inst., notifying me that the next meeting of the Fruit Growers' Association is to be held on the 29th inst. I wonder when your June meeting will be held; I suppose, toward the end of the month. That would suit me very well, and I think I could arrange to get there then. I hope we shall be able to manage a trip or two together.

With kind regards, believe me

Yours very truly,
(Signed) J. FLETCHER.

GENTLEMEN—It is with much pleasure that I accept the invitation of my friend, Mr. Anderson, to present a short paper before your Association. The object of this paper is very simple, it is merely to make known in a way which I believe will reach the largest number of the leading fruit growers of your Province, that I am anxious to give any assistance in my power to enable farmers and fruit growers to treat successfully or prevent the attacks of the many injurious insects which yearly levy so heavy a tax on their incomes by diminishing crops of all kinds. I believe I am well within the mark when I say that at least one-tenth of all cultivated crops is annually destroyed by insect enemies. Of this loss, undoubtedly a large proportion can be saved by the adoption of some of the simple and practical methods which have now been discovered and which have been brought to your notice, both in the most excellent reports of the Statistician of the Department of Agriculture, and in the useful "Pest and Remedy Supplement" which appears in your own annual reports. This latter, if carefully studied by the members, and discussed at your annual meetings, should be of great value to them in their business.

The capabilities of British Columbia as a fruit producing country are now demanding wide recognition, and the vast possibilities of the development of this industry can only be guessed at. Any subject which materially affects this important source of wealth to the Province must be of the deepest interest to every member of the community. Such a subject, I believe, is "Economic Entomology," or a practical knowledge of the habits of injurious and beneficial insects. I am aware that many of your members, with some of whom I have had the privilege of corresponding for the past ten years, understand this, and I have pleasure now in gratefully acknowledging the valued assistance I have on many occasions received, among others, from my highly esteemed correspondents Messrs. E. Hutcherson and G. W. Henry. I have no doubt that these gentlemen must have been equally useful to their fellow members of your Association as authoritative sources of reference on all matters connected with fruit growing, as they have been to me. There are, too, doubtless, many other members of your Association who have been doing similar good work, with whom, as yet, I have not had the pleasure of corresponding.

I have noticed with particular pleasure the active policy which has been adopted by the Provincial Government to assist fruit growers. The securing the efficient services of Messrs. Anderson and Palmer, and the efforts which are being made to prevent the introduction of infected fruit and fruit trees, cannot but result in much good and the saving of great loss. It is a difficult matter to select a subject which will be of practical value to workers in a distant country which the writer, as in the present case, has not visited for ten years.

I shall endeavor, however, in the short time at my disposal, to lay before you some ideas connected with your work, which I trust may be found of value, and I hope to be able to make arrangements to meet the members of your Association at their next June meeting, when it will be far easier to give and receive definite information concerning the insects injurious to your fruit crops than is possible through any article treating of the question in general, and I would request that observations and notes may be made during the season covering any points with regard to injuries or remedies concerning which information is required, or difficulties may have arisen in the treatment of your crops. There is one point to which I would draw the particular attention of your members, namely: the importance of the exact identification of any insect pests which may trouble them. This can best be done by sending specimens of the insects and, when possible, of their work also. It frequently happens that, owing to the imperfect knowledge of the nature of an insect enemy, or by seeking for information concerning it under a wrong name, a useless remedy is tried, and, as a consequence, there is failure to attain the desired end, as well as loss of time and money, to say nothing of the discouragement of the experimenter, which really is an important matter, for the opinion is too prevalent that the injuries due to insects are an exceptional visitation which must be put up with and that little can be done to prevent them. Indeed there are yet very few who fully appreciate to what extent and with what comparative ease many of even our most injurious insects may be controlled if only a good remedy and the best time and manner of applying it be known and practised. It is the conviction that I can give your members advice which will enable them by simple, easy, and cheap methods, to keep down a large proportion of their usual insect enemies that has induced me to write this note for your meeting. Although the number of known insects is enormous those species which bring themselves conspicuously under our notice by their ravages are comparatively few, and I believe distinctive English names can be found for all of these without danger of error or misunderstanding.

The chief thing necessary when a farmer finds his crops attacked by insects is to find out the nature of the depredator so that the proper remedy may be applied, and it matters little to him what the culprit's scientific name may be or how it differs from its nearest relatives. What concerns him most is to recognize the nature of his enemy by the conditions of his crops, and by this discover the best means of putting a stop to its ravages.

To enable him to do this some knowledge of the life histories of our common insect pests is indispensable, at any rate sufficient to enable him to recognize them in the four different stages through which all insects pass. As you are all probably aware the life of an

insect is divided up into four well marked periods, during each of which the habits are entirely different, these are--(1) The egg. (2) The caterpillar or larval stage, during which, as a rule, insects are most injurious. (3) The chrysalis or quiescent stage, in which, except in a few orders, the insects lie quiet and are without the power of motion; and (4), The perfect insect. In this last stage there is great variety of structure as well as habits, and in accordance with these differences insects are classified or divided up into the various natural orders. Some insects are injurious in the last three of their stages; but the larger number in the larval stage only. If, however, by studying their life histories, we can find out their habits during all stages of their development, we have the surest means of knowing which is the best time to attack them with the greatest chances of success. Let me illustrate this by a few examples:

The Hop Aphis. This insect passes part of its life-cycle on the plum; by treating plum trees with insecticidal washes myriads of the hop plant lice are destroyed.

Timber Borers. The eggs of many of the longicorn beetles, the grubs of which yearly destroy millions of feet of lumber, are laid in crevices of the bark of injured or newly felled trees. The young grubs burrow through the outer bark and feed on the soft layer beneath, which, if the bark remains intact, keeps in the moist condition necessary for a long time. Lumbermen find that if the bark is removed the wood dries up and no insects attack it, and that even by the operation known as "rossing," by which a strip of the bark is cut through to the wood and removed, the bark separates from the tree and few of the young grubs come to maturity and penetrate the timber.

Borers in Fruit Trees. By finding out the time when the parent beetles of the borers of apple and other fruit trees deposit their eggs, experience has shown that these can be entirely prevented by washing the trees with a cheap and easily made wash composed of soft soap thinned with a strong solution of washing soda.

Scale Insects. These pernicious insects, in most species, are active for a few days only in the year, if trees are sprayed with kerosene emulsion at this time the insects are very easily destroyed.

Pear Leaf Blister Mite. This enemy of the pear, which is spreading in British Columbia, passes the winter in the bud scales of pear trees, and although spraying trees in summer has proved useless against it, it may to a large measure be controlled by spraying early in spring when the buds begin to burst.

Clover Seed Midge. Perhaps the most remarkable instance of advantage from knowing the life history of a serious pest is the clover seed midge, which a few years ago reduced the crop of clover seed,

which for years had been worth half a million dollars, down to less than nothing ; for whereas formerly large quantities of Canadian seed had been exported after this insect spread into Canada not only was no seed exported but it was necessary to import seed for our own use. As soon as its life history was studied it was found that alsike clover was not attacked at all, and that a crop could be secured of red clover seed, if the first crop were cut by 20th June, only ten days sooner than the usual custom, in this way the larva is destroyed before it is full grown. Under natural circumstances it matures at the end of June and leaves the heads of clover and finishes its development in the ground, from which it emerges just as the second crop is coming into head and destroys the seeds. By the destruction of the first brood of the insect the second crop is free from attack and a good crop of seed is secured.

With reference to remedies I can only now say that the general principles upon which these are applied are very simple indeed, and with very little study, easily understood. Stated briefly they are as follows:

All remedies for injurious insects are devised according to the method in which the crop is attacked. Insects either bite their food with jaws, or suck it up in a liquid condition through a hollow tube. For the first, poisonous materials which will not injure the plant treated, but which will kill the insects, distributed over the crop to be protected, are all that is required. In this class Paris green is the most useful substance available. It may be applied in the strength of 1 lb. to 250 gallons of water to which 2 lbs. of fresh lime have been added. For the second class, suctorial insects, poisons of the nature of Paris green would be useless, for the insects would pierce through the applications on the surface of their food and would extract the juices upon which they feed from the interior of the leaf. For such insects remedies which act by mere contact with their bodies are required. For this purpose coal oil (kerosene) and carbolic acid as well as the vegetable insecticides, white hellebore and pyrethrum, or insect powder are most useful. Of these the standard kerosene emulsion (see page 101 of your third Annual Report, 1893), solution No. 5 is probably the best.

There is little, Mr. President and Gentlemen, in this paper, but it is, I believe, all that on this occasion I could say with good taste, to summarize the above. I congratulate the fruit growers of British Columbia on the progress they have made and their bright prospects ; they are, however, losing yearly a great deal owing to the attacks of injurious insects. I have for several years made a special study of these pests and such information as I have is freely at the disposal of your members. When your crops are attacked try and find out how the injury is done and what the enemy is. In using remedies try to

find out which is the best and then stick to that one faithfully and perseveringly. Follow the advised formulas and instructions closely and do not try to improve on a remedy before you have tried it. In making up remedies weigh or measure the ingredients exactly, and use no such indefinite rule of thumb quantities as "a pinch," "a teaspoonful," or "a little." If failures occur try and discover the reason. In this work discussing the matter and talking it over with a neighbor is very useful. Finally, please remember that the Dominion Entomologist is a public official who, although he lives at Ottawa, is paid by you and the other taxpayers of Canada, and is as much at the service of every farmer in British Columbia or Nova Scotia as of those who live within a mile of Ottawa, and further that he will be at all times pleased to do his utmost to help you in your continuous fight against your insect enemies.

Mr. Palmer drew the attention of the assembly to specimens of the "woolly aphid" and other of the fruit pests with which we are troubled.

These were examined by the members.

Mr. Palmer, in introducing his paper, "Shipping to the Northwest," referred to the statement made earlier in the day by Mr. M. Baker, that there was sufficient demand for all the fruit the Province could produce for the next ten years. This might be true of one or two varieties, but not all round. It is the export trade that furnishes the staple market, and regulates the price, and for no other reason, the markets of the Northwest ought to be cultivated. He would have gone more fully into this subject of shipping but found that Mr. Henry had a similar subject in hand, which I am sure he is more able to handle than I am.

BRITISH COLUMBIA FRUIT FOR MANITOBA AND THE NORTHWEST TERRITORIES.

BY R. M. PALMER.

The export of fruit from British Columbia to Manitoba and the Northwest Territories already amounts to a considerable business, notably from Mission City on the C.P.R. main line, principally plums and strawberries shipped per express.

This trade, if carefully and systematically developed, will, in a few years, reach large dimensions in those fruits which reach a high degree of excellence in our favored Province, the demand for choice fruit being great and constantly increasing as the country is developed and settled up. In the month of July last I visited Winnipeg, and made exhaustive enquiries concerning the demands of the market and the future possibilities of the trade. I called on the wholesale

merchants and principal retail dealers in fruit and obtained all the information possible from them.

The price of strawberries in Winnipeg and other towns, up to the present time has been very high, averaging over 25 cents per box, nominally holding 1 lb., but usually less. Up to a certain amount the quantity of this fruit which can be sold, depends upon the price being lowered, so that they will be within the reach of a larger class of consumers. During the past season I was informed that from 40 to 60 crates (each containing 2 dozen boxes) were marketed, but if the price to the consumer could be reduced to say 15 cents per box, five times that quantity could be sold.

The kind of strawberry required is one that is firm, that will stand up for at least one day after reaching market, it should be of bright color, and fair medium size (over large berries are not desired), and of as good quality as possible consistent with the above requirements.

"Clarke's Seedling" strawberries grown in the Hood River district, Oregon, have been shipped to Winnipeg, and gave great satisfaction to both dealers and consumers, and there is, I believe, no reason why this particular variety should not succeed in the fruit growing sections of the dry belt, or upper country, of British Columbia, but as this variety does not keep up its reputation when grown near the coast in Oregon, we may expect similar results in lower British Columbia, and for shipping long distances from the lower parts of the Province I would advise the growing of "Warfield," "Lovett," or the old reliable "Wilson."

In the strawberry business, regular daily shipments are necessary, and the markets should be kept supplied, if possible, up to their requirements, and nothing beyond, or prices will be uncertain, and, probably, some fruit wasted if any surplus goes forward, to which loss the carrying charges would have to be added, if the fruit was not sold before shipment. The dealers and their customers are used to the American size and style of package and probably nothing would be gained by using one of different capacity, at any rate, I found this to be the opinion of the fruit dealers.

As strawberries are so perishable and require most careful handling, it is obvious that nearness to shipping points on the C.P.R. is a very important matter to producers, but where this condition obtains, with proper care as to varieties and packing, the business should prove very profitable.

Gooseberries, raspberries, red and black currants, are all in demand during their season, but as these fruits are raised locally in Manitoba and the Northwest to some extent, prices do not usually run so high in proportion as for strawberries, but as, excepting rasp-

berries, these fruits are not so perishable, I hope arrangements will be made for shipping them cheaper than by express, so that profitable shipments can be made. The British Columbia fruit is much superior in size and appearance and would no doubt be preferred.

I observed in some of the Winnipeg stores gooseberries from Ontario, which were being retailed at 10 cents per lb., this is also about the average price there of red and black currants.

The demand for plums is very large, especially for canning and preserving, and in the production of this fruit the lower portion of British Columbia fairly excels. The development of business in this fruit to its fullest extent, depends upon supplying the market at the time when the customers are accustomed to buy in large quantities for replenishing their winter stores of preserves and canned fruit, and in shipping large quantities at low rates of freight, so that the plums can be sold as cheap or cheaper than the Californian product, which at present largely supplies the market. The plums should also be graded and packed in a similar manner to the California fruit, to compete with that on level terms; this is a most important point, as poor packing will ruin the finest fruit.

During the height of the season, Winnipeg wholesale dealers distribute about a carload of plums per day, and, I believe, exceeded that amount the past season. As is well known, California commences shipping plums very early, and it is very important that British Columbia, too, should have plums in that market as early as possible, to get a fair share of the trade, and prolong the shipping season.

This, I think, can be accomplished by growing a judicious selection of varieties. The Italian prune, Victoria, yellow egg, and Pond's seedling plums, as they are when well grown in lower British Columbia, would command the market if we could get them there soon enough, but we should also have something earlier in ripening.

The peach plum does well on certain soils, but should be shipped when quite firm to ensure its being in good condition on arrival.

I would suggest that the Tragedy prune, so successful in California as an early shipping plum, be given a trial in British Columbia, the trees being grafted on plum stocks.

Fancy packages are not required for preserving plums, the ordinary 20 lb. box suits the trade and packs well in the cars. Choice dessert fruit is preferred in the 5 lb. veneer packages, 4 in a crate, also well known.

In all cases the greatest care must be taken to pack nothing but choice fruit of the same degree of ripeness in each package—neglect of the latter precaution was the cause of much loss to Oregon shippers the past season, and we may well benefit by their experience.

There is a good demand for cherries, and the varieties which succeed best here, such as the Royal Ann and Black Republican, would command the highest price if put on the market in the modern style of packages.

I think, however, that our fruit growers should be sure they have suitable soil and location for cherries before planting extensively of this fruit. Where these conditions exist, a cherry orchard of the varieties mentioned should, I think, be very profitable.

Pears, both trees and fruit, have suffered severely from fungoid diseases the last few years, and comparatively few trees are bearing fruit which compares favorably with the California fruit, and this remark applies fully as much to the coast counties of Oregon and Washington as to British Columbia. Choice pears for dessert are always in demand at Winnipeg and other towns, and with proper and prompt attention to spraying and keeping up the fertility of the soil, I believe we can produce this class of fruit. Specimens of Bartlett pears in no way inferior to the California fruit were exhibited at Cowichan last fall, and such fruit could be marketed in car lots at even higher prices than are obtained for the bulk of those from California, as they would come on the market after the glut of fruit is over.

Summer apples are in demand to some extent, and could be grown to advantage for shipping with other early fruits, to make up car load lots and get the benefit of cheap freight rates.

I wish to impress strongly the necessity for co-operation in all the branches and details of fruit growing, grading, packing, and marketing. It is the only way by which our fruit growers can attain a full measure of success. We must bear in mind the great advantages that California has: (1) In already having possession of most of the trade; (2) That from certain points their shipping houses can make up car lots of mixed fruits, which is most convenient for the Winnipeg wholesale dealers; (3) The great degree of excellence attained in putting their fruit before the consuming public in neat, attractive form.

It will, in my opinion, be found advisable to have, in British Columbia, one central or principal marketing organization for the entire export trade in fruit, controlling and handling the shipments to Manitoba and the Northwest. This organization should, I think, be connected with the Northwest Fruit Growers' Association, formed in Spokane February, 1894, if only for this reason: To prevent Winnipeg or other points from being utilized as slaughter markets for fruit, when, as will sometimes happen, there is a superabundance of perishable fruit thrown on the market, and to prevent, so far as possible, the occurrence of such an event, by drying or canning surplus fruit.

Local organizations should be formed or extended for promoting the growing of certain varieties of fruit known to suit their localities, and the markets for which they are intended, and for grading and packing the fruit uniformly, under distinctive brands or trade marks.

No one who has carefully reviewed the situation can doubt that a large and constantly increasing trade in fruit can be built up between this and the prairie provinces and territories. The opportunity exists, and in conclusion I would again urge that growers and dealers ship nothing but the very best fruit, packed in the best way, and then profitable prices may be confidently expected.

Another excellent paper was that on

OUR PLUM MARKET IN THE NORTHWEST, AND THE CO-OPERATION OF FRUIT GROWERS.

BY G. W. HENRY.

When we held the quarterly meeting of this Society in Agassiz last summer, I gave you some notes on the workings of our Fruit Growers' Association at Mission City, and our success with shipments of strawberries and other small fruits to the markets of the Northwest. I also at that time promised to, at my next opportunity, give you some account of how our plums were received in these markets, as we at that time had not begun to ship this fruit.

Plums and prunes are, without doubt, the great fruits of the coast. There is probably no country in the world where they can be grown so prolifically and to such perfection as in British Columbia. It is, therefore, of the greatest importance for us to know whether a good and convenient market can be found where we can profitably dispose of all these fruits which we can so well grow.

I had for the last number of years, in fact ever since the Canadian Pacific Railway was opened, shipped more or less plums and other fruits each season in a private way into the Northwest, but to only a few of the towns, and in no way extensively. The past season is the first time our Association has taken up this work co-operatively and to any extent.

In trying to open these markets in the towns and cities, heretofore untouched, we found the dealers as a rule doubtful as to the quality of our fruit and the manner in which it would be put up. An unfavorable impression of British Columbia fruit seems to have been in circulation somewhat generally throughout that country. We had this prejudice to contend with, and there were reasons also why the past season was not as favorable as it might have been for opening up this trade. The very dull times being experienced there as elsewhere was much against it. Many people who would otherwise have

used much fruit were obliged to do without such high priced luxuries, as they must be in that country. Again, the crop of plums in Ontario was never before known to be so large. Also the crops in Oregon, Washington, and California were large. Carloads of plums were thus being shipped from these places into Winnipeg, and thence distributed throughout the country. Different people have informed me that never before have they known plums nearly so cheap there as the past season. No doubt, had we sent out sample packages gratis to the various dealers in the different towns we could have much more quickly destroyed this unfavorable impression which existed in regard to our fruit, and have more readily opened the markets for our plums in the future. Unfortunately our fruit growers have not arrived at that happy and hoped for condition, when they will not need to value the price of a few packages of fine fruit. So I did not find the members of our Association, even with the alluring hopes I held out to them as to the favorable results which was soon to follow the introduction of our plums into these markets, quite willing to take the chances for the future good to be received, by sending free of charge, their first fine fruit, for which they could, of course, get ready sale in our home markets. On the contrary, I think they mostly wanted higher prices than could be had at home. We, however, sent out quotations and letters to about all the dealers of fruit in Manitoba and the Territories, and although our prices were invariably C.O.D., we received a great many orders for sample shipments—fully as many as could be expected from these conditions and the facts of the high express charges they would have to pay.

Another disadvantage we labored under was that our plums were, nearly all, in our immediate neighborhood varieties that ripened very closely together, consequently, by the time that we could get word back, after sending out sample shipments of ripe fruit, the crop would be far advanced. Our members at Ladner's Landing, Port Moody, and other places helped us out in these matters somewhat by sending a quantity of fine peach plums, first of the season, and having some Pond's seedling and Fellenburg to send after those nearer home were all gone.

We found, also, that some varieties ripened around Mission City about a week in advance of those at these other places, which also helped to distribute the fruit more evenly through the season and showed a good point in favor of co-operation in this work. In fact, I am convinced from the experience of the past season that in no way could our growers have got the same amount of plums into the markets of the Northwest at so great an advantage to themselves.

Now, regarding the success of our plums when they arrived at these distant markets, I could read you letter after letter from the

various dealers to whom we shipped, expressing the greatest satisfaction as to the condition of the fruit, and as to the attractive manner in which it was put up. Immediately the first shipments were received at Winnipeg telegraph messages came back for us to ship carloads at once, if possible. This we found was too late in the season for us to do, as the bulk of the fruit had become too ripe, and we also found we could dispose of all our good marketable plums at good prices, shipping by express as we had been doing, with less risk.

Our first shipment of plums for the season was made on August 15th, and from this date until nearly the end of September daily we had shipments going forward, whilst long after they were all done we continued to receive orders for more.

We shipped altogether to some forty-five dealers, and put our fruit into the markets of thirty towns and cities of the Northwest. We thus covered considerable ground, although our total shipments might not be called very extensive. They amounted to about eighteen tons of plums, or nearly two carloads, and when you estimate the express charges paid on that fruit it means quite a little sum to the express company, at least \$1,400. We got the express company to lower their rates at about an average of $1\frac{1}{2}$ cents per pound, but they are still too high.

I suppose it will also interest you somewhat to know what prices we realized for these plums, for, as before intimated, fruit growers here have not got to that advanced stage yet at which they can afford to grow fruit for glory alone. Our fruit was all, with the exception of what was shipped into Winnipeg, billed at a certain price f.o.b. at our own station. We regulated these prices somewhat, of course, by our local markets, but certainly not by the prices received for fruit slaughtered in these home markets, whether from the fault of the grower having shipped them in a poor condition or the dealer having been overloaded.

Our prices for the various kinds averaged as follows: Bradshaw, yellow egg and other large middle season plums, 4 cents per pound; green gages, Lombards, and other medium size varieties, 3 cents per pound; peach plum (large early), and Pond's seedling (large late), 5 cents per pound. These, I may say, are also the prices received by our members, with the exception in some cases of a little charge by the shipper for his trouble.

I have told you with what satisfaction the dealers received the fruits. I have now to tell you with what satisfaction the growers received the prices for their fruit, especially as they knew that many people lost their plums entirely the past season, either by letting them rot on the ground or after expenses were paid when shipped into markets, realizing nothing further.

We have held our annual meeting and it was attended mostly by the fruit growers in the vicinity. All the members expressed themselves well satisfied, not only with the results from their fruit but the advantage they had gained from being able to get cheaper packages and the trouble they had been relieved of in disposal and shipment of same.

Arrangements for another year were gone into with great vigor, and we look forward to more successful results and to doing a much more extensive business the coming season, as we will start out under all the advantages gained the past one.

There is, no doubt, a limit to the plum market in the Northwest, but when we take into consideration that the demand there will probably increase as fast as the supply here for some years to come, and also that what we have yet shipped has only been a drop in the bucket as it were to what has been sent in from other places, it will doubtless be some time before we have more grown than they can use in a fresh state. I have no doubts but what, as soon as we have sufficient to ship by carloads, we shall be able to drive plums from other countries out of the market almost entirely. Our Society at Mission City is also going to be prepared to can and evaporate fruits as soon as necessity will require it. Our intention is to follow this matter right up, look ahead into the requirements and necessities of the case and be prepared, as far as possible, for all emergencies, and, if possible, not allow a pound of good fruit be lost to our members. Surely there is room in this world somewhere for all our good fruit, canned, evaporated, or fresh. Therefore, we feel to make a success of plum and prune culture in British Columbia, we have but to be alive to the necessities of the case.

Mr. Henry—My paper is more a commentary upon the results of the season's operations in shipping of fruit, so that it will not transgress upon the matters treated of by Mr. Palmer's paper. I do not entirely agree with Mr. Palmer in the matter of co-operation with fruit growers on the other side of the boundary, as we must look after ourselves first. We should control our own shipping and our own market, as far as possible, for our own benefit.

Mr. Baker supported Mr. Henry's contention in this respect.

Mr. Henry, in answer to the request of Mr. Renouf, explained at some length the operation of their co-operations in fruit shipping.

The following interesting paper was presented by Mr. J. R. Anderson.

THE CULTIVATION OF FLOWERS.

I have been asked to make some remarks to-day on the subject of the cultivation of flowers. Many here, no doubt, are better qualified

to give instruction on this engrossing pursuit, and many to whom these remarks are addressed, have no doubt heard them all long ago: still there may be some to whom they may be of some interest, and, possibly, afford some instruction; to those, therefore, these brief remarks are principally addressed.

Perhaps there is no branch of horticulture which is more universally neglected, or at best only half attended to amongst ranchers and farmers generally, than that of the cultivation of flowers; it apparently being considered beneath the dignity of the male portion of the household, and is usually relegated to the female members. Now, whilst I quite believe that women's tender care is much more conducive to the successful management of flowers, it is too much to expect them to do all the hard work necessarily appertaining to this most delightful occupation, and it is too often the case that after infinite labor bestowed in the preparation of the soil, sowing seeds, and putting out plants, to have the whole brought to naught, at one fell swoop, by the depredation of a cow or other domestic animal: all because it was not considered necessary, or that it was waste of time, to build a proper fence or to hang a gate with care. I daresay you have all, at some time, seen the neat animal proof fence and well hung gate enclosing the trimly kept garden ablaze with flowers of every hue, and you have also probably seen the so-called garden, with its tumbled down fence, and gate off its hinges; the garden itself filled, instead of flowers, with empty tin cans, broken glass bottles, earthenware, scraps of bones and rags, scattered about in artistic confusion, with, perhaps, a pig or two rooting amongst it all: and I ask whether a little labor bestowed on the flower garden does not repay itself in the satisfaction it affords, to say nothing of the good opinions of your neighbors and friends, or of the enhanced value which such little attentions attach to your place in the eyes of strangers. In my travels through British Columbia I have seen many such places as I have described and I think I may safely say that the house with its well kept garden is a sure an index of the character of the inmates, and that on such a place one may be certain to find the farm appointments in the condition that betokens care and management in all particulars; as the reverse is in the other case.

Now, I do not wish it to be understood that I mean to say, that the indifferent slovenly farmer can, by merely keeping a good flower garden, expect the rest of his farm to thrive in proportion; nor do I mean to assert the converse, namely, that the farmer who has the rest of his farm in irreproachable condition, invariably of necessity, has a good well kept garden about his dwelling, but I do mean to say that the latter case is the exception, not the rule, and probably in every such instance a good reason could be adduced for it and I furthermore say that in order to instil ideas of carefulness into the

minds of employees about a farm, neatness and order should reign about the dwelling.

The effect also of the cultivation of flowers on the character of people, more particularly, of course, on that of young people and children is very marked, impressions thus formed lasting through life, inculcating a love for, and teaching children to attach a value to, growing plants, and from watching the development of flowers learning their names and habits, and the ills and drawbacks which assail them, they acquire observant habits and a taste for the higher knowledge of plant, or insect life, which, in after life, often serves them in good stead, whether they only pursue the ordinary avocation of a farmer or those of the more scientific, such as botanists or entomologists.

It is by no means necessary in these days of cheap plants and seeds that any great expense should be incurred in the formation of a flower garden. Most people are acquainted with the common, old fashioned flowers, hardy, requiring little care, and very beautiful, but many do not recognize their old friends when clothed in the gorgeous names of the seedsman's catalogue, and frequently disappointment, and sometimes amusement is experienced, when, after watching the growth of some seed with a high sounding title, such as *Erissimum Peroffskianum*, to find that it is only the familiar friend of our youth known as Hedge Mustard. Well, to those I would say, do not trust to catalogues, but ask some friend who knows, for advice, and much disappointment will be avoided. Then there are all the beautiful hardy shrubs, more particularly roses, especially of the ever blooming varieties, which are a host in themselves. But here, again, care is required in ordering, as many, very many, are too delicate to be grown in the ordinary garden of a farm house, requiring more care than can well be bestowed upon them; but there are also many, and some of them of the finest, which are perfectly hardy, requiring little or no care, and most satisfactory bloomers, suitable to be grown in almost any part of British Columbia.

Unfortunately, flowers have, like all other plants, numerous insect enemies, but most of these, if the directions given for destroying insects are followed, can readily be got rid of. Probably the greatest enemy of the rose is a small green caterpillar, with a black head, which forms a shelter for itself by getting into the fold of a leaf and spinning a web over itself, which also serves to prevent the leaf from expanding, thence it works its way into the buds, completely destroying the flower. The only plan which I can recommend to get rid of this pest is to go over the plants every day and pick the caterpillars off by hand. Luckily this pest only attacks the first flowers in the spring.

Water is, of course, a necessity for the successful cultivation of

flowers, but, I believe that more harm is done by its excessive use than by its absence, especially when it is laid on in pipes, and all that has to be done is to turn it on. In such a case it frequently works a two-fold injury, as, besides the liability to give more than sufficient, water, drawn directly from the pipes, is too cold for applying immediately to plants; it should be allowed to stand for several hours before using. In most parts of the Province, to the westward of the coast range a well drained and well cultivated garden will do with little or no water, except in the very driest part of summer. Constant cultivation will do more towards keeping the soil moist than many people imagine, besides having the merit of keeping the weeds down. The excessive use of new stable manure is another fruitful cause of failure in the cultivation of flowers, much better results can be obtained from composts of well rotted manure, rotted sods, leaf mould and road scrapings.

The cultivation of window and greenhouse plants also affords much pleasure, especially to women whose avocations confine them more particularly to the house, and to invalids it is an inestimable boon. This is not the expensive luxury that many suppose; it is surprising how many plants can be successfully cultivated in a modest little conservatory built on the southern part of a house and communicating with it, in fact, nothing much more than a large bay window with a glass roof. A place of this description, if it is well built so as to keep out the wind, can very easily have sufficient heat applied through the agency of a small coal oil stove, or even from the heat of the house, to keep plants from perishing in the coldest weather we experience in the lower part of the Province. Probably the greatest drawback to the successful cultivation of house plants is the great prevalence of insect pests, which naturally thrive in the warmth of a house. Amongst the most troublesome are the different aphides, scales and red spider. The first named are easily detected, and if the usual remedies are applied they can be got rid of, or, especially in the case of scales, they can be picked off by hand or washed off with a stiff brush and strong carbolic soap. The red spider is more difficult to detect, it being almost invisible to the naked eye. The first symptoms of its presence is a sickly appearance of the leaves, which, after a little, begin to drop off. A careful examination will then reveal the web which the so-called spider spins about the stem. A warm dry atmosphere being best adapted to the production and increase of this pest, it follows that a damp, cold atmosphere, is prejudicial to it. Plants affected with it should, therefore, be isolated and placed in the open air, where not too cold, and taken in at nights. House plants should be frequently sprayed with water for the several reasons of cleaning the leaves, whose pores soon get clogged with dust; of keeping insect pests from increasing too rapidly, many of

whom do not like water; and of allowing the plants an opportunity of imbibing moisture through their leaves. Root watering when plants are dormant or only growing slowly, as in winter, should be practiced with care as many plants are lost through overdoses of water. A little experience soon teaches when to apply water and when to withhold it. A simple plan of ascertaining if the soil is dry is to tap the pot with your finger, if it emits a ringing sound you may safely give more water, but if, on the other hand, it gives a dull, heavy sound it is pretty certain that it has enough.

I will not detain you any longer as time is short and there are many things to discuss which, although, perhaps, of greater importance to the general interests of horticulturists, are not so attractive as the subject on which I have had the honor of addressing you to-day, and I only wish that it had fallen into abler hands to deal with. I will now conclude with thanks to you for your kind attention and with the hope that we may all meet at many such gatherings in the future.

Mr. Renouf enquired for a remedy for mildew in roses.

Mr. Palmer recommended spraying as in the case of tungus on fruit trees.

Mr. Ohlson considered that pruning was the most successful way of treating this difficulty. The pruning to be done early in the season, so as to allow the new growth time to harden. If the hybrid varieties are pruned late mildew invariably attacks them. Care is to be observed in cutting out the old and preserving the new wood, which is the secret of pruning in every case. I have found that February is not too early for this operation to be performed. Moss roses should be cut down to the ground in winter. Tea roses can wait till March or beginning of April. This is the result of twenty years' experience with roses, and I believe it is the only correct and effectual method of preventing mildew. But after it has become established upon the bush, the only way to do is dig up the bush and burn it. Sulphur is a good remedy, but not the proper one. Roses are very susceptible to neglect, but yield readily to proper treatment. In covering up roses in the fall, you must remember that what keeps out the frost also excludes the air and sunshine. I never cover my roses in winter, and carry over about 4,000 plants, including the more delicate varieties such as Marechal Neil.

Mr. Renouf—You do not believe in a mulch, then?

Mr. Ohlson—I do not. It is all right in early spring for some plants, but it is very likely to weaken roses by excluding the sun. People also make a great mistake by mixing other small truck with their roses, such as pansies, mignonette, etc., and the poor roses have a very precarious existence, indeed. Our climate is very favorable to

roses, which seem to bloom much more abundantly than in England. It is verily the "Queen of Flowers," and not difficult to cultivate if ordinary care be observed, especially in pruning. The Aphis affects the Moss Rose badly, in some parts, and shrubs attacked by it should be cut out and burned, as should also be done in other diseases.

The Chairman—Is this the mildew that comes upon too late planted trees?

Mr. Renouf—The same thing.

Mr. Ohlson—I cannot say whether it is or not, although I have made a special study of it.

Mr. Renouf—I find that in pruning too early, the part cut becomes blackened for two or three inches. I also water about the lower part of my bushes, but my experience teaches me that we use the hose too much and the rake and hoe too little. Too much water and not enough muscle is the cause of most of the trouble, I guess.

The Chairman here called the attention of members, especially Mr. Booth, M.P.P., to a specimen of "black knot" disease from Salt Spring Island. The branch was cut from the Choke Cherry, but it appears it has not been very commonly observed, and as yet has not affected garden trees.

Mr. Palmer here read his paper on "Insects Which Destroy Pests," and exhibited a collection of the pests and the friendly insects which were calculated to instil a little hope into the breasts of those fruit growers who had not sufficient faith in the spraying operation.

TWO INTERESTING PAPERS.

BY R. M. PALMER.

So far as insect pests are concerned, I have hopes that in course of time we may be able to do without so much spraying as is now required to keep them in check, by the introduction of beneficial insects which prey on those injurious to fruit and fruit trees.

In California this question has received a great deal of attention, the State has voted at different times large sums of money for the purpose of finding and introducing the natural enemies of the various insects injurious to fruit and fruit trees, which have been brought to that State with, in some instances, very striking success.

A few years ago the cottony cushion scale, originally from Australia, increased so rapidly that it threatened to destroy the fruit industry of lower California, also attacking almost every variety of trees and plants. Professor Koebele was sent to Australia to find out how this pest was kept in subjection there, and found the Australian ladybird, *vedalia cardinalis*, wherever the cottony cushion scale

existed, feeding upon it and effectually keeping it in check. Professor Koebele brought back with him a good stock of this ladybird; they were propagated and disseminated throughout the infected districts, with the result that they increased very fast and in time almost exterminated the scale insects. Since then, whenever this insect makes its appearance colonies of ladybirds are sent to feed upon them. Later, almost similar results are being obtained with the black scale, *lecanium oleæ*, from the introduction of the black ladybird, *rhizobius ventralis*, and in many cases the dreaded San Jose scale is fed upon and kept in check by other ladybirds also introduced from Australia, which country seems to be the natural home of many injurious insects, and also, fortunately, of their natural enemies.

Coming to our own necessities, it is found that the ladybirds usually found in British Columbia, while feeding freely on the common green aphid, are not at all partial to that pest so often found in apple orchards, the woolly aphid, and if winged ladybirds are placed on trees infected with this pest they will fly away to more congenial food, but if we take the larvæ or grubs of these ladybirds and put them on infected trees they will probably feed on the woolly aphid, and so may the mature ladybirds which are hatched, and I hope that some of you who are troubled with woolly aphid will try this plan next summer.

I have the promise of a colony of another variety of ladybird from Mr. Alexander Craw, entomologist for the California State Board of Horticulture, which, he says, feeds voraciously on the woolly aphid. It is known as the *hippodamia convergens* or convergent ladybird, and I hope will prove valuable in British Columbia; in Oregon I heard of a beetle (the *podabrus comes*) belonging to the *lampyridæ* (fireflies), which ate up both woolly and green aphid in great numbers, and in the Willamette Valley greenfinches (introduced from England four years ago) are getting numerous and reported as feeding on the aphid.

Again, many fruit trees, especially pears, have suffered so much from overbearing, neglect, and fungus diseases, that it will take two or more seasons to get the trees into a healthy condition again, and they often require fertilizing as much as spraying. For this purpose nothing is better than wood ashes and soapsuds. And I frequently come across fruit trees of all kinds, so grown up with moss and lichen, with bark diseased and partially rotten, which are simply breeding places for insect pests and fungus diseases, a constant menace and source of danger to healthy orchards in their vicinity, and such trees should be destroyed by fire—root and branch.

The usual formula for Bordeaux mixture is four pounds each of lime and bluestone in fifty gallons of water, and directions for its

preparation are given in the rules of the Board of Horticulture and the report of this Association. The Bordeaux mixture should always be made fresh, as it deteriorates by keeping, but to facilitate matters where it is required on a large scale, a stock solution of bluestone may be made and kept ready for use. For instance, to make twenty gallons stock solution bluestone, have a barrel marked for twenty gallons, then suspend forty pounds bluestone in a basket or sack just below this mark and add water up to the mark. The bluestone dissolves much more readily if suspended than if simply put in the bottom of the barrel, in fact cold water may be used if the solution is allowed to stand for a day or so. When dissolved this will give you two pounds of bluestone in each gallon.

Mark a barrel in the same way at twenty gallons for your stock lime paste. Slack forty pounds of lime and run into the barrel and add water up to the twenty gallon mark. When stirred each gallon will contain two pounds of lime. Now, it is a very easy matter, when you know the capacity of your spraying tank or barrel, to measure off the quantities of lime and bluestone required and add the necessary water for diluting to the proper strength, being careful to stir the lime mixture before using.

Strain everything that goes into your spraying tank or barrel through burlap or wire sieve. Keep the barrels holding stock solutions well covered up.

THE COLLECTION OF INSECTS:

The Chairman stated that this was the nucleus of a collection being made by the Department, and that he would be pleased to receive donations from those who came across anything of interest that might be added.

A long discussion took place upon the advisability and propriety of sending delegates or representatives to attend the meeting of the Northwestern Fruit Growers' Convention at Portland on the 6th of February. It was decided that as the British Columbia Fruit Growers' Association is not a branch of the Northwestern Association, it could not properly send a delegate there with credentials, and as for any benefits derivable, they would no doubt be gleaned from the printed reports of the Convention. The Association could not be considered entitled to pay the expenses of a delegate.

Several members, however, expressed it as their intention to be present at that Convention, and the Chairman read a letter from the Secretary of the Northwestern Association of Oregon, inviting any member of the British Columbia Association to attend and take part in the proceedings. This was received and filed.

Mr. Palmer moved, seconded by Mr. Henry :

"That the thanks of the Convention be tendered to those who had

so kindly added to the general interest of the meeting by sending samples, flowers, etc., among whom were : Messrs. C. Stickney, T. G. Earle, R. Morrison, N. Butchart, J. McCutcheon, J. Ogle, S. M. Okell, W. H. Collinson, Department of Agriculture, E. A. Wells, T. C. Higginson, A. S. Veddar, W. Branchflower, Wm. Fisher, James Tod, P. T. Johnson, and Mrs. G. A. McTavish.

Auditors report was then read when it was received and adopted.

FRUIT GROWERS' ASSOCIATION.

IN ACCOUNT WITH

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

CR. 1893.

Nov. 30.	By Balance forward	\$ 154 86
"	" Government grant	1,000 00
"	" Membership fees	44 00
		----- \$1,198 86

DR.

To Printing, advt., etc	\$ 417 00
" Paid Stenographer	25 00
" Expressages	3 60
" Exhibition Expenses	73 00
" For cuts	8 00
" Expenses Spokane Convention	21 50
" Canadian Horticulturist	18 40
" Postages, cards, etc	32 00
" Secretary's salary	360 00
Balance	240 36
	----- \$1,198 86

(Signed)

J. R. ANDERSON, Vice-President.
A. H. B. MACGOWAN, Secretary.

Victoria, British Columbia, January 29, 1895.

Examined and found correct,

C. E. RENOUF,

G. W. HENRY,

Auditors.

DIRECTORS' MEETING.

Mr. Cunningham moved, seconded by Mr. Renouf :

"That the next Directors' Meeting of the Association be held at Mission City on the first Tuesday in May, and if possible, to change the same so as to fall in with Mr. Fletcher's visit from Ottawa." Carried unanimously.

Mr. Cunningham here drew attention to a vote of censure passed upon him at the last annual meeting, and considered it was very severe. He had, unfortunately, been detained on the Fraser River while attending to the business of the Board of Horticulture, and was not able to be present to take up the question of "Dairying as an adjunct of Fruit Growing." While detained in the fog, he had contracted a severe cold, ending in an attack of "la grippe" which confined him to bed for three months, and was at the point of dissolution a number of times. He had crawled out of bed to write the letter which is printed on page 76 of the Annual Report, but first mentioned, in its proper light by the Secretary on page 44 of the Report. That letter was never intended for publication, and to say the least of it, it was unkind to insert a private letter in the *News-Advertiser*, as was done, without my consent. An unfair interpretation had been taken from that letter by many, especially with regard to my position with respect to the importance of dairying. Dairying and fruit growing should go together, but I never said that too much attention was devoted to fruit. You all know my stand on this question. As to the reflection upon the climate of British Columbia, for which Mr. Hutcherson so sharply takes me to task, we all know that the country north of the 49th parallel, and for some distance to the southward, too, is subject to vicissitudes and sudden changes which may destroy crops. Some of my very critics expressed themselves even more strongly than I did at the same meeting—the seconder of the vote of censure himself lost a thousand pear trees from the effect of a sudden frost. I advised fruit growers to go into dairying so that if overtaken by severe frost, or damage, or destruction of their fruit prospects, they would not be thrown back without resource, as I say in my letter.

I described our climate, Mr. Chairman, ladies, and gentlemen. I used these words, which, perhaps, I ought not to have, and certainly would not have employed had I been writing for the press, as I sometimes do, and over my signature. But in writing a friendly letter to the Secretary it is a different matter, and think maybe the words "treacherous," and "uncertain," were too strong, but I certainly also think that vote of censure is not deserved, especially in view of the fact that Mr. Hutcherson himself writes (reads from another part of Report), "the successes have been sometimes overbalanced by failures," which, I think, is much more censurable than the remarks I made while on my sickbed, and I have good reason to complain of the severity of the censure passed upon me, or of any censure at all. I can appeal to you, Mr. Chairman, if I have not been faithful to the interests of the Province generally, and to the welfare of the British Columbia Horticultural Association. If I have committed a fault, it is rather of the head than of the heart. I have been an ardent fruit

grower, as many of you know, and while I may have had successes, it must be credited to the peculiarly favorable conditions of the soil and climate and other conditions which we enjoy in British Columbia, and it is hard on me to be thus stigmatized all over the world by having this sown broadcast in every city and town of the Dominion as well as the United States, especially when you consider the circumstances under which I wrote that letter—hardly knowing what I did write. I myself, moreover, take particular pains in sending out our Reports to numerous friends and correspondents, and it places me in a very unenviable position. I do feel hard over it.

Mr. Hutcherson—This hardly calls for any apology from me—Mr. Cunningham himself here acknowledges that he did, perhaps, use too strong language. If he still thinks his remarks applicable to the climate, I hold that the vote of censure ought to stand, but if he withdraws his words, of course I will make the apology.

Mr. Cunningham—I did not speak particularly of the climate of British Columbia, but of the conditions prevailing west of the Cascades, but your censure makes me reflect upon the climate of the Province. Your own remarks as to your failures are more directly referring to the local conditions.

Mr. Ohlson said he had never lost a pear tree through frost, as, if the land was properly drained, the growth would not start so early.

Mr. Hutcherson—The pears I lost were Bartlett's, and anyone who knows that pear, knows it will start with little or no warmth in winter. I do not know that our land is much warmer than Mr. Ohlson's, but I have seen the buds burst in the middle of January. Mr. Ohlson knows that 10 degrees of frost in that condition is worse than zero when buds are dormant.

Mr. Ohlson—There was something wrong with your land that your trees started growing then, and your trees did not make a healthy growth.

Mr. Hutcherson—Mr. Ohlson is guessing. Anyone who knows about the growth of trees on the Fraser knows there is nothing sickly about them.

Mr. Ohlson—They must have been making growth of some kind or they would not have been injured.

Mr. Hutcherson—They would not have been killed by the frost in this Province if the trees had been properly grown.

The Chairman stated that he was very sorry that there had been any misunderstanding about this matter brought up last by Mr. Cunningham. I am sure he did not intentionally make any remarks reflecting injuriously upon the interests of either this Association or the Province in general.

Mr. Macgowan also stated that he had not considered that the correspondence containing the alleged injurious reflection of so private a nature, but as it contained many references to matters of a very interesting kind, and much valuable information, he had not thought it any harm to allow the reporters to have it along with the other papers. He regretted exceedingly that it had gone into the papers, particularly as it had been intended by the writer as a private letter.

Mr. Kipp was convinced that there was a misunderstanding between these two very earnest and important workers in the Association, and would be pleased to see the censure rescinded and that by-gones be by-gones. If in order, therefore, he would move that the vote of censure be rescinded.

Mr. Earle seconded the motion.

Mr. Hutcherson quickly moved in amendment that the vote of censure referred to remain standing unless Mr. Cunningham withdrew his remarks in that letter.

Mr. Renouf pointed out that this could not be rescinded, and moved that Mr. Cunningham's explanation, as given, be accepted and spread on the minutes.

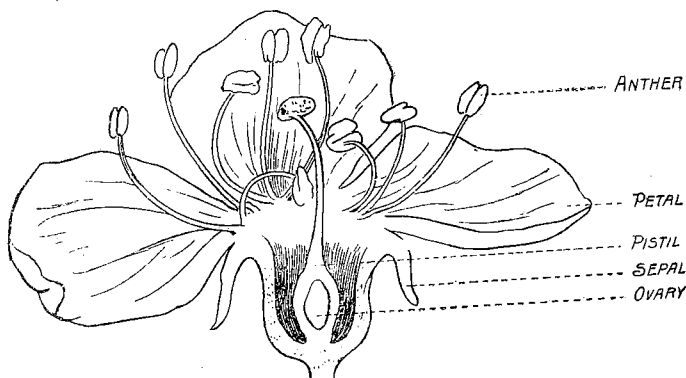
This motion was seconded by Mr. G. W. Henry, and carried unanimously.

Mr. Booth, M.P.P., remarked that it was hardly necessary to even have any explanation in regard to this matter, as it would be read and re-read, and it would help matters much more to ignore it entirely, but for the fact that it is a little hard upon Mr. Cunningham's feelings to have this standing against him. I have heard his explanation, and, according to my own experience, there is a good deal of treachery in the climate. I have known thousands of trees killed by the frost, not because it is severely cold, but because we have spells of warm weather in the winter followed by sharp frost. I need only remind you of the winter two years ago, when the weather in January was almost too warm to work afield. The result was the starting of the sap flowing, a severe frost came on chilling the trees, and they died out. But it is not well to advertise these drawbacks, although they are likely to occur at any time—warm weather in January and severe cold in February. There is certainly a good deal of uncertainty about it after all.

Mr. Kipp knew of trees eight inches in diameter killed—split open. That was in '75. He would fall in with the idea of accepting the explanation, and thought it a satisfactory one.

The matter was here dropped.

The following paper was presented by Mr. Hadwen, of Duncans:



(Section of a cherry or plum flower)

A SHORT TALK ON FERTILIZATION.

BY G. W. HADWEN.

If we take up a flower of a cherry or plum and examine it carefully we find at the end of the stem five small greenish leaves or sepals. These sepals are united at their base forming a sort of cup or calyx. The lining of this calyx is called the receptacle and in many cases on maturity forms the valuable portions or what will be called the fruit.

Above these sepals are another five small leaves (white) called petals, individually, and collectively, the corolla.

These form the attractive portions of the flower, and are in most plants scented, highly colored or sweet, presumably to attract insects which assist the work of fertilization. At the base of these petals are attached filaments, terminating in small knobs, called anthers. With a lens these anthers will be seen covered with small grains called pollen.

In the centre of the flower is found another filament. the pistil, which is, in reality, a tube leading down to an enlargement in the lower portion of the calyx, cup, or receptacle.

This enlargement, called the carpel, contains the future seed of the plant, and on cutting it open will be found two ovules, though, as a rule, but one ripens.

With the actions of wind, water, or insects grains of pollen become detached from the anthers and fall on the end, or stigma, of the pistil, which is sticky. These grains consist of a liquid enclosed in two coats. The inner of these coverings pierces the outer and forming

a long tube gradually works its way down the pistil tube reaches the seed, the liquid then empties itself and fertilization is complete. The fertilized flowers remain on the tree while the others fall off, and a certain portion of the former, according to the nature of the plant, begin to swell.

Thus, in the case of the cherry or plum it is the surrounding or casing of the seed which increase in size and forms the soft inner pulp covered again by a skin. A fruit of this kind is called a drupe.

A raspberry or a blackberry is on the same principle, but in an aggregated form; a number of small cherries, so to speak.

The apple and pear are formed practically by an enlargement of the calyx. The remains of the calyx and sometimes traces of the stamens are to be found in the eye of the fruit. The five cells of the pistil can easily be traced forming the core, while the seeds are the real fruit from a scientific point of view.

In the same manner the currant, gooseberry, or grape are all real berries, the remains of the calyx being easily seen at the top of the true fruit.

In the same manner may be classed pumpkins and gourds.

The strawberry presents all its seeds above the commercially called fruit, which is merely the enlarged receptacle.

So far I have only described the complete flowers which have all the essential organs on the same flower, and the process is simple.

Many flowers are not complete, some have only stamens and are called male flowers, some only pistils and called female flowers. These may occur on the same plant as, for instance, in corn, the staminate flower being the handsome plume while the pistils form the well known tassle.

The difference is noticeable in the cucumber, the female flower having a longer stalk but no anthers.

In other plants one individually will bear all female flowers and requires the proximity of a male plant to accomplish fertilization.

For this reason it is necessary to mix the varieties of strawberries as some varieties do not have enough male flowers to get a good crop, or vice versa.

But even in complete flowers nature often seems to dislike self-fertilization, and frequently the stamens are withered away by the time the pistil is ready and which has to depend, of course, on some other flower.

This has been noticeable in the case of orchards where there are large blocks of one variety, only the outer trees have borne fruit

well, while the centre never had a good crop. Grafting another variety on to the branches has been found to improve the crop.

Cases of isolated cherry trees and others not bearing are to be found in this Province, and a simple examination of their blossoms will enable the owner, in many cases, to apply a remedy.

Bees should be kept in every orchard as they assist largely in cross fertilization.

It was decided that this year the supplement on Pest Remedies, etc., be published in separate volumes. Anyone desiring to receive this useful work will be supplied on application to the Secretary.

Mr. Henry moved a vote of thanks to the Chairman for his able and kind services during the session, which was seconded by Mr. Cunningham and carried amid applause.

