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VANCOUVER, B. C.

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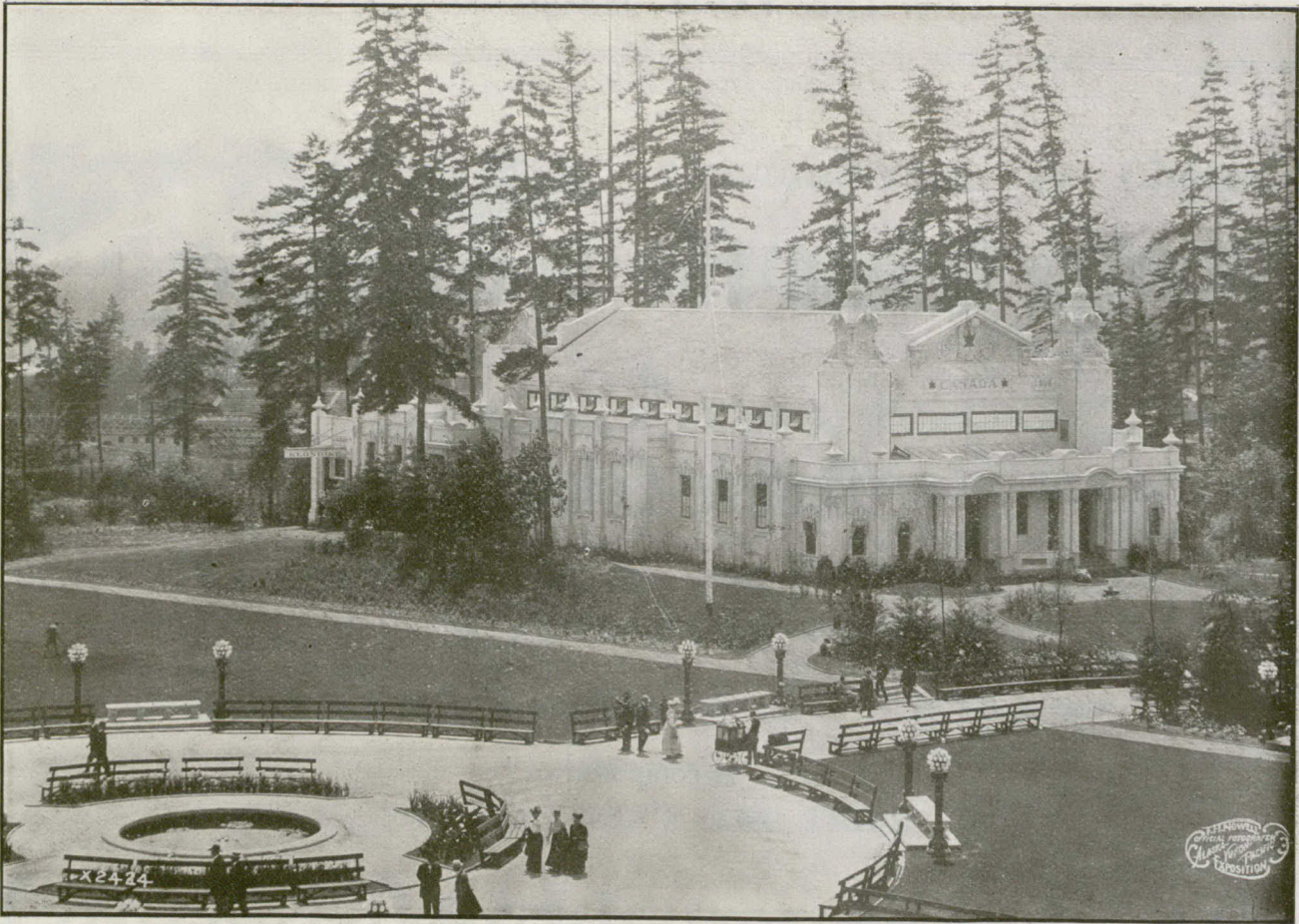


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MAIN ENTRANCE TO THE A.-P.-P. EXPOSITION, SEATTLE, 1909.

THE FRUIT MAGAZINE

VOL. 1.

OCTOBER, 1909.

NO. 1.

The Fruit Industry of British Columbia

(Copyrighted by Maxwell Smith, Feb. 10, 1908.)

FRUIT growing in British Columbia, like the climatic and soil conditions in its various districts, is so diversified in character and of such importance that it is hardly possible to do the industry anything like justice in the space at our command, and when the reader has perused this article to the end, he must bear in mind that there still remains much to be said on the subject. A historical sketch would be of interest to many, but the wants of intending settlers or investors may be better served by a general outline of the present conditions and prospects of the industry.

Although it is only sixteen years since the first full carload of fruit was shipped out of British Columbia, progress has been fairly rapid and people are now beginning to realize something of its possibilities as a fruit-growing province. In the season of 1904, the fruit crop of British Columbia was valued at \$600,000 and the area under cultivation estimated at 14,000 acres.

In 1905 the area under fruit had been increased to 20,000 acres, and the total revenue derived therefrom was nearly one million dollars. In the same year something like \$500,000 was expended in the purchase and improvement of fruit lands and the average price received for grade No. 1 apples from October 1, 1905, to March 31, 1906, was \$1.27 per 40-lb. box, f. o. b. shipping point. The early varieties started out at \$1 net, and during the latter part of February and March as high as \$2 per box was being paid for strictly No. 1 in carload lots. The average prices of other fruits for the season of 1905 were: Pears, \$1.38 per 40-lb. box; prunes and plums, 75 cents per 20-lb. box; peaches, \$1.15 per 20-lb. box; strawberries, \$2.50 per 24 basket crate; raspberries, \$2.19 per 24 basket crate; blackberries, \$2.40 per 24 basket crate; gooseberries, 5½ cents per lb.; crab apples, 2½ cents per lb.; tomatoes, 5½ cents per lb.; currants, 7 cents per lb.; cherries, 9 cents per lb.

Outside of the quantities consumed in our own cities the chief market for British Columbia fruit is the prairie provinces; a market which will always demand the best that the fruit-grower can produce and in ever-increasing quantities, so that British Columbia need have no fear, no matter how rapidly the industry develops, of an over-production of good, clean commercial varieties. The province is most favorably situated, in being contiguous to the great plains of the middle west, where fruit-growing on a commercial basis is not likely ever to

be a success. That territory is sure to increase rapidly in population and the consumption of fruit will be enormous. It is a curious fact that the average family on the prairies consumes more fruit than do those of British Columbia and it is quite natural, also, to expect that as the farmers of Alberta, Saskatch-

that British Columbia can do is to develop the fruit-growing industry and to send large quantities of first-class fruit properly grown, harvested, packed and shipped into the great grain country east of the Rocky Mountains. This will judiciously advertise the province and bring our own people here as soon as



A BEAUTY SPOT ON GELLATLY RANCH
OKANAGAN VALLEY, B. C.

ewan and Manitoba succeed, within a comparatively few years, in laying by sufficient to keep them in comfort for the rest of their lives, they should look to British Columbia, with its congenial climate, magnificent scenery and tremendous, unexplored and undeveloped natural resources, as a place in which to spend their declining years.

There is little need for this province to spend money in trying to induce immigrants from other countries to come here and settle. The best immigration work

they become tired of the more rigorous climate of the prairies.

The topography of the country from the standpoint of the fruit-grower may be better understood by a reference to the map which accompanies this article. The geological formations and climatic conditions render it necessary to divide the fruit-growing area of the province into nine general divisions.

No. 1 might be called the southwestern coast district, which includes the southern half of Vancouver Island, ad-

acent islands, and what is usually called the lower mainland. Here the production of small fruits may be said to be more successful, and consequently more profitable, than that of the tree fruits. Nevertheless, there are a number of very excellent varieties of apples, pears, plums, prunes and cherries which grow to perfection in this district, besides many different varieties of nuts, and, in especially favored spots, peaches, grapes, nectarines, apricots and other tender fruits.

In most parts of this district the mild character of the climate and the excessive moisture during the winter season are very favorable to the development of fungous diseases, and it is therefore necessary to practice persistent and sys-

these rivers that have to be encountered on the coast. The fruits grown are of the very highest quality and include all the varieties mentioned in connection with district No. 1. One of the largest vineyards in the province is located near the junction of the Fraser and Thompson Rivers.

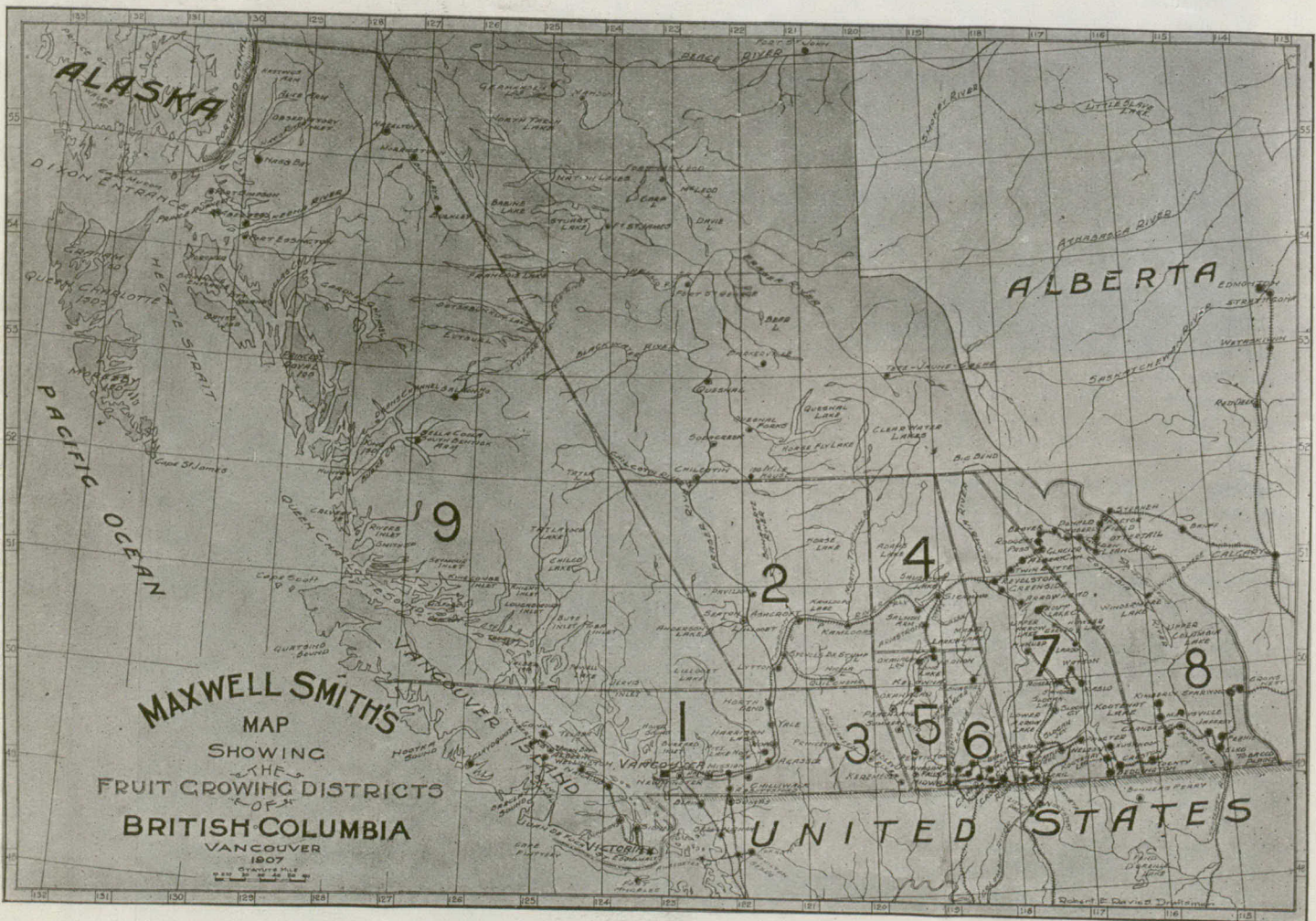
District No. 3 may be briefly described as the valleys of the Similkameen and its tributaries, portions of which are perhaps the most tropical of any part of British Columbia, and most favorable locations for the cultivation of grapes, peaches and other delicate fruits, wherever sufficient water for irrigation purposes is available.

No. 4 includes the districts surrounding Adams, Shuswap and Mabel Lakes and the valley of the Spallumcheen river.

fruits are successfully grown by the irrigation system. Improved modern methods are in general use by the fruit-growers in this district and the industry is perhaps more advanced than in any other part of British Columbia.

No. 6 is usually called the Boundary or Kettle River country, and although the smallest of all the districts named, the quality of the land is excellent and the climatic conditions all that could be desired. Where a sufficient water supply is obtainable, there is no trouble in producing fruit of the highest quality.

No. 7 is West Kootenay, an enormous fruit-growing district, where only a little progress has been made on the southern portion, but sufficient to indicate the possibilities and the superior quality of



tematic spraying of the orchards, clean cultivation of the soil, and a thorough system of under-drainage in order to get the most profitable results.

District No. 2 includes the valleys of the Upper Fraser, as far north as the fifty-second parallel, the main Thompson, the North Thompson, the Nicola and Bonaparte rivers. Here there are practically none of the above-named difficulties to contend with, but the question of water to irrigate the lands is one requiring serious consideration, as without an abundant supply of water in the "dry belt" it is impossible to be sure of a crop every year. The prospective fruit-grower, however, does not have to contend with the heavy forests along

Here the natural rainfall is sufficient and splendid apples, pears, plums and cherries are successfully grown. The climatic conditions in this district resemble very much those of Southern Ontario, and a fruit-grower with fixed ideas from the latter province might be more successful in this district than he would on irrigated lands. The timber is, generally speaking, light and the land rich.

No. 5 is the great Okanagan valley, stretching from Larkin southward to the international boundary. The vicinity of Kelowna in this valley contains the largest area of fruit lands of any one place in the province. Peaches are now being shipped in large quantities from the Okanagan, and all other northern

the fruit which may be raised along those lakes and streams. The neighborhood of Nelson and Kaslo has accomplished wonders in the past few years, but the shores of the Arrow lakes are practically untouched by the hand of the fruit-grower, and the valley of the Columbia, from the Big Bend south to Arrowhead, affords opportunities little dreamed of by many of those in search of fruit lands. In the greater part of this district, irrigation is only necessary in the very dry seasons.

District No. 8 is the country known as East Kootenay and is separated from No. 7 by a range of mountains. It is traversed by the Upper Kootenay River from the fifty-first degree of north lati-

tude southward to the international boundary, and from Columbia and Windermere Lakes northward by the Upper Columbia River, to the Big Bend. In the southern portion of this district there are immense stretches of thinly-wooded lands suitable for fruit-growing purposes, and the valley of the Upper Columbia has many choice locations for the enterprising fruit-grower. The lack of transportation facilities is a great hindrance to the development of the fruit lands of the Upper Columbia.

District No. 9 comprises the vast coast region including the Queen Charlotte Islands, and the northern half of Vancouver Island, from Jervis Inlet to Portland Canal. There is little known of its capabilities as yet, but undoubtedly it has a few surprises in store for the future. Though in small quantities as yet, apples, peaches and grapes have been successfully grown on the Skeena River. The first apple trees were planted at Hazleton in the spring of 1901 and fruited in the fall of 1904.

For a considerable distance inland from the west coast, there are numerous valleys and plateaus, which are well adapted to growing many of the hardier varieties, though fewer in number than those suitable for the first-named district.

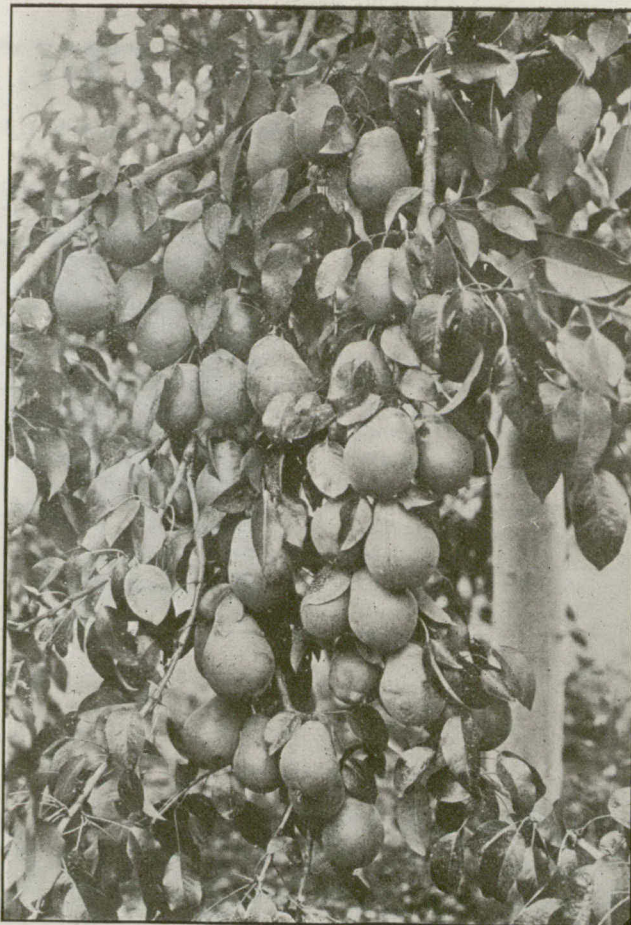
Notwithstanding the conditions and adaptabilities which may be in a general way characteristic of the large districts above mentioned, there are always peculiarities of soil and climate, soil moisture, atmospheric currents, etc., which must be taken into consideration, and intelligently utilized by the individual settler when choosing varieties to plant or deciding on methods of cultivation.

That the supply of water from mountain streams for irrigation purposes is limited, should always be borne in mind and in those portions of the province where irrigation is necessary, the prospective settler or investor should be exceedingly careful that a proper supply of water is obtainable, and that he secures a legal right to use it, when pur-

chasing fruit lands. There are many of the co-called dry districts where the soil moisture, with proper cultivation, is quite sufficient to produce a full crop in an ordinary year, but there comes periodically, the extraordinary year when, without an artificial supply of water at the critical time, the whole crop may be lost. In the arid districts, it should be seen to that the right to a sufficient supply of irrigation water is obtained, whether it is needed every year or not.

There are immense fertile tablelands along the Thompson, Columbia, Kootenay and Similkameen Rivers and the Kamloops, Okanagan, Upper and Lower Arrow and Kootenay Lakes, which can not be irrigated from the available mountain streams, but it may safely be predicted that some day in the not distant future, a genius will arise who will invent a comparatively cheap method of pumping the water from these large reservoirs up to the higher levels, and who then will venture to estimate the quantity of rare and luscious fruit which this province may be capable of producing, or the gratitude that future generations will lavish on the memory of the man who shall make the cultivation of these beautiful plateaus possible? Then will the glittering Okanagan Lake become a magnificent water highway, through the midst of densely populated stretches of orchard lands. On either shore will be one continuous line of superb villa homes, and all up and down those scenic galleries of luxurious gardens will dwell the kings and queens of husbandry in the happy performance of the first duties allotted to mankind.

By establishing high standards and the practice of high ideals, both in the quality of their products and business methods the fruit-growers of British Columbia should have a large share in building up the commercial character of the province which, like the golden beams of the summer twilight, shall shed its benign influence eastward over the great Dominion of Canada.



PEARS IN T. W. STIRLING'S ORCHARD,
KELOWNA, B. C.



APPLES GROWING NEAR NELSON, B. C.

NUT CULTURE

By Col. H. E. Dosch, Hillsdale, Ore.

“YOU can help your fellow men; you must help your fellow men.

It is a duty, nay, even a divine privilege to lighten the burden of our fellow laborers, by giving them the results of our best thoughts and experience.”

About ten years ago, I think, I had the pleasure to read a paper on nut culture at a horticultural meeting held at Westminster, B. C., and the Dominion government honored me by publishing it, together with several other papers I read at that meeting in pamphlet form for general distribution. Considerable interest was manifested at the time in nut culture, many questions were asked con-

cerning it and I also received a number of letters afterwards, where to procure nuts or trees, etc., and I just wonder about the result; how many trees were planted, if any, the progress made and results obtained, but I fear the enthusiasm cooled and the fire finally burned out for the want of some one to add a little fuel, occasionally to keep the flame alive.

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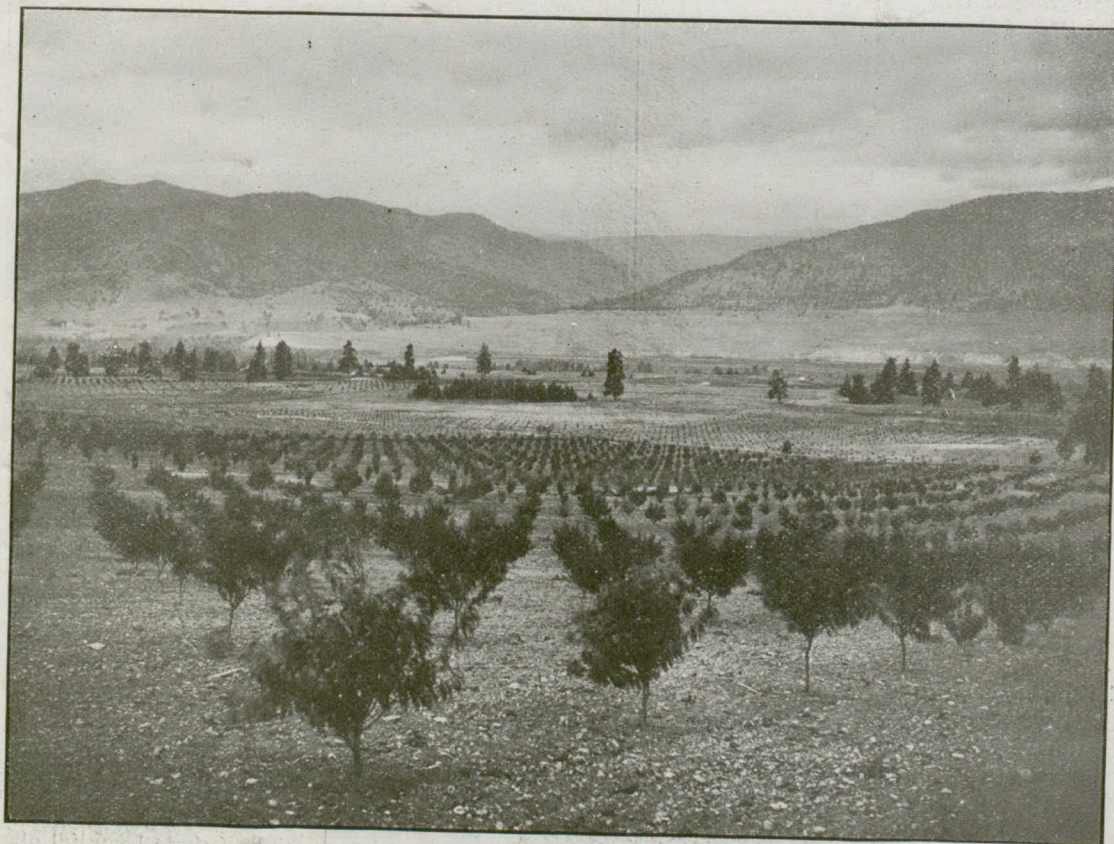
It is over twenty years since I first experimented with nut culture, especially English, or more properly speaking, French nut culture, and by persistent effort in keeping this matter before the horticulturists am more than gratified to know that this important industry is at

last receiving the attention it deserves and a few who have taken my advice in the beginning, and planted on a commercial basis, are now reaping the benefit, as their products command the highest price in the market, which I will explain later.

True, we have as yet but one grove which has attained to 100 acres, but there are many smaller groves from 5 to 20 acres. All of those which are planted on proper soils and of varieties adapted to our climate have proven revenue producers; even the trees on my own soil which is absolutely unfitted for walnut culture, being a heavy clay soil, underlaid with six feet of hardpan, have

nut culture, all the walnut trees planted since, in Oregon, Washington, British Columbia and even Montana, Wyoming, Idaho and Utah, many of which are now in full bearing, were planted at my earnest solicitation, hence I am doubly gratified to know that my advice has proven so satisfactory to the planters, and that walnut culture has attained the dignity of a horticultural pursuit, alongside of the apple, pear, prune, cherry and peach.

It is not pleasant to repeat myself, but in a paper like this, which in a measure is to be a guide to many persons, who desire to plant nut trees and have no experience, it is absolutely necessary to repeat the fundamental principles and



HON. RICHARD McBRIDE'S ORCHARD, PENTICTON, B. C.

produced some very fine nuts, some of which I brought with me and you can judge for yourself. These nuts are from first generation grafted trees of Mayette, Franquette, Parisienne, Chaberte and Proeparthurien varieties, which I intend to hand to our Honorable Secretary for distribution as he is better informed to whom to give them for experimental purposes. The Oregon Nursery Co. of Salem were kind enough to give me a few of their Franquettes, which came from the famous Vrooman grafted walnut grove of California, also for distribution and experimental purposes. As I stated in the beginning, it is now over 20 years since I first experimented in

modus operandi in nut culture so that they can start right, and if the instructions herein given are religiously followed, they will be sure to reap a good harvest.

Essentials.

In nut culture of all kinds but more especially walnuts, three things are most essential, and it is difficult to say which is most important, but they are soil, generation and variety. Nut trees of all kinds do well on most soils, even rocky ground, except heavy, stiff clay soils, but do best in fairly rich soil as they are gross feeders, but there must be no "hardpan." The sub-soil must be loose and open so the taproot can grow down

underlaid with hardpan; this applies particularly to the walnut.

Generation.

Walnut trees should be "second generation," either grafted or grown from

as large and fine nuts on my trees grown from first generation nuts as those from grafted trees, but also found that both kinds have some extra large nuts and some smaller, which leads me again to

be careful to secure the proper variety and generation of nuts, which heretofore has been very difficult to obtain; even the nuts I imported from France proved very unsatisfactory as to size and quality. However, there are many honorable dealers from whom first generation nuts as well as trees grown from first generation nuts, can be procured.

How to Sprout Nuts.

There are, no doubt, many planters who prefer to plant the nuts where the tree is to grow, than the expensive grafted trees, and for their especial benefit, I repeat the "modus Operandi."

The nuts for this purpose must be secured in the fall, and must be of first generation, either from the original trees or grafted trees, and known to be true as to that point, else you will be disappointed when the trees come into bearing. Fill a box six inches with light soil and sand mixed, then put in the nuts, point end up, about one inch apart, cover three or four inches deep, and place boxes out of reach of rats, squirrels or gophers, keeping the soil moist. On examination in the early part of April, you will find all sound nuts have sprouted or ready to sprout, that is, they throw up two sprouts from the pointed end of the nut. One of these sprouts turns down over the nut and forms the taproot and the other continues upwards and forms the tree. Now remove them carefully, as these sprouts are very brittle and easily broken, which would make the plant worthless. Plant them



GIANT TIMBER AT CAMERON LAKE, B. C.

as far as it desires, for so soon as it strikes hardpan the tree stops growing and of course, lessens the nut crop, as nut trees make few lateral roots. In fact it is suicidal to plant nut trees on very heavy, stiff, clayey soils or on soil first generation nuts, but as generations are not generally understood and the reason I emphasize the fact of securing nuts of first generation, I will explain, so that no possible mistake can be made.

First generation nuts are produced on original trees, or on trees grafted from the original trees. These nuts when planted produce "second generation" trees and the nuts from these second generation trees are a little larger than the original or first generation, which is due to the peculiar soil and climate conditions of the Pacific Northwest, so well adapted to nut culture. Trees grown from second generation nuts retrograde very rapidly, producing nuts not half so large as even first generation, and finally run out all together. Hence we must plant nuts from the original trees if we desire the best results, and nothing but the best should or can be satisfactory.

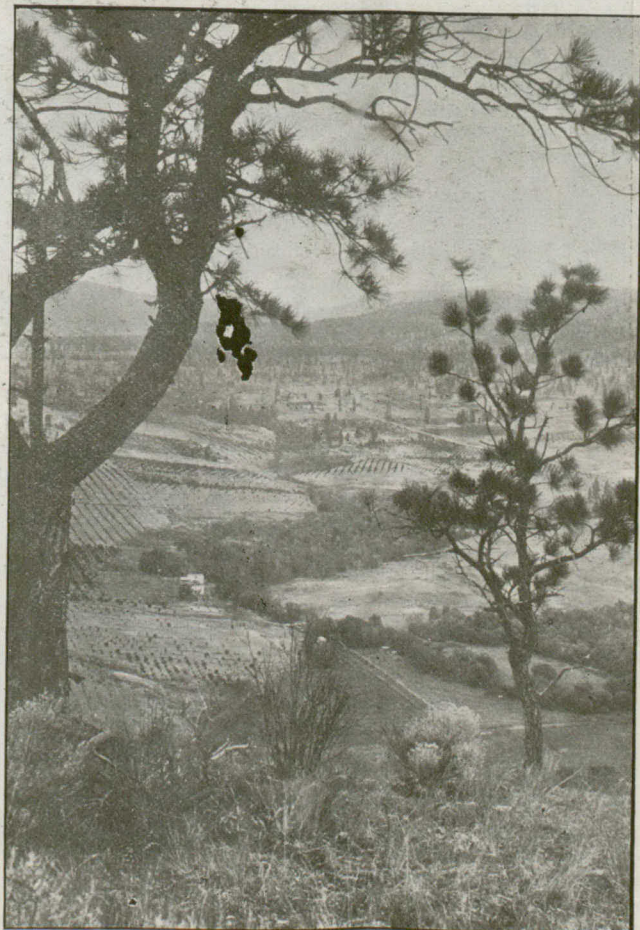
Varieties.

Varieties which I have found best adapted for the Pacific Northwest by extensive experiments are Franquette and Mayette, as best adapted to our soils, climate and market, with a few Chaberte for confectioners' use, giving preference in the order named, as I think the Franquette is somewhat hardier, regular bloomer and a little more prolific, while the Mayette or Grenoble, under which name this nut is known to the trade is finer in quality, not quite so hardy nor so prolific, but the nuts generally bring a little higher price, which in a measure makes up the difference.

Trees or Nuts for Planting.

For a number of years past, there has been considerable controversy about trees grown from seed of first generation bearing smaller nuts than grafted trees. I have not found it so, for I have just

study that point and have reached the conclusion that the difference in size is due to perfect pollination of the larger nuts and imperfect pollination of the smaller nuts. I fear that this controversy was started by interested parties to discourage the planting of nuts and encourage the planting of grafted trees, which generally sell at one dollar and fifty cents per tree. Of course one must



PRAIRIE VALLEY NEAR SUMMERLAND, B. C.

where you wish the trees to grow, fifty feet apart (by far the best way), or in nursery rows about five inches deep and transplant the following spring. The young trees should be allowed to grow straight up, cutting away in the fall all side branches until the tree has reached a height of six feet, when it should be allowed to branch out, but under no circumstances should the main stem be cut off at any time.

Walnut trees usually grow into bearing in five or six years, at twelve years are in full bearing. It is not a slow grower as is commonly supposed. Three to four feet is not an uncommon growth in a season in good soil; besides it is a healthy tree, having, comparatively speaking, few pests to molest it, and once established lives to a good old age

treatment, while improving the color, proves decidedly injurious to the flavor of the nuts and lessens the keeping qualities. At the California experiment station, experiments with bleaching solutions have been carried on and it is recorded very satisfactory results have been obtained with a mixture of salsoda, chloride of lime and water. However, it must be borne in mind that the bleaching of nuts is entirely unnecessary and adds absolutely nothing to its food value; this process is simply carried on to improve the appearance of the nut, and will probably be carried on so long as people buy by the eye and I say to you: "Don't do it unless the customer to whom you sell the nuts demands it and prefers spoiled to clean, healthy, wholesome and toothsome nuts."

ties and similar in quality to the nuts he imports from Europe for his trade (Franquette, Mayette, Parisienne and Chaberte), in fact, they are better flavored and more nutty than the Southern California product, hence, as I said before, we are not in the same class. What is said here of the Oregon walnuts is equally true to all French walnuts grown in the Pacific Northwest.

Business Proposition.

The importations into the United States have steadily increased in the last few years. The government year book of 1906 gives the following table:

Article imported.	Quantity.	Value.
Almonds ..	15,209,326 lbs.	\$1,825,475
Walnuts ..	20,917,028 lbs.	2,193,653
Other nuts, including many Chestnuts ..		2,055,557



CHERRY BLOSSOMS IN MR. PRIDHAM'S ORCHARD, KELOWNA, B. C.

and proves profitable from generation to generation with ordinary good care. The ground between the trees, until they come in full bearing can be utilized for berries, potatoes and vegetables, but no grain or grass should be grown.

Harvesting.

At harvest time the nuts fall to the ground as soon as the bull bursts, which it does when the nuts are ripe, and can be picked up easily and must be promptly, as squirrels are very fond of them; the few remaining ones may be beaten down with a pole or fishing rod. They should then be cured either in the sun or subjected to a gentle heat in an evaporator to prevent mildew or becoming rancid. Sulphuring is practiced to some extent to supply the demand for bleached nuts, a most pernicious method. This

Superiority of Northern Grown Nuts.

In the beginning of this paper I promised to explain why northern walnuts commanded a higher figure in the eastern markets than the California product, and will in a measure allay the apprehension expressed in some quarters, that we cannot compete with California in this particular industry, and prove that we are not in the same class. The output of Mr. Prince's walnut grove of 100 acres was sold to a New York grocer who makes a specialty of supplying the retail grocers throughout the United States who handle only the finest and costliest brands. This grocer states that the Southern California walnuts do not come up to the requirements of his trade, but that he believes the Oregon nut will, as they are of the same varie-

Of which a good share comes to Oregon, Washington, Idaho and British Columbia. We of the Pacific Northwest should be exporters instead of importers. We have the soil and the climate. Hence by earnest advice, plant a few walnut trees, if you do not wish to plant a grove, and your children's children will bless you and thank you for your forethought. As a business proposition I know of no better in agricultural or horticultural pursuits and once established, a well cared for grove is the best heritage a parent can leave to his family, as they become valuable and more productive with age, always bearing in mind soil, generation and variety. To illustrate: A friend called upon me some nine years ago and said he had two acres he wanted to plant in fruit trees and I

advised him to plant Franquette and Mayette walnuts, which he did, as his soil was well adapted to nut culture. These trees are now eight years old from the nut and yielded this fall two tons of very fine nuts, which he sold at eighteen cents a pound or three hundred and sixty dollars per acre; these trees will increase in productiveness from year to year and eventually make their owner independent. To further illustrate: One tree near Albany, Ore., sixteen years old produced thirty dollars' worth of fine nuts this fall. Another Franquette tree, now nineteen years old, near Brownsville, Ore., produced nearly eight bushels of nuts which were sold for forty dollars, and many others just as productive. These are samples of what walnut trees will do on good and proper soil.

Although this paper was to be on nut culture in general, I have devoted most of the space to the French walnut because it is a larger business proposition for the Pacific Northwest than all others combined, but for the benefit of those who desire to branch out, I will give varieties and my experience with them.

Chestnuts.

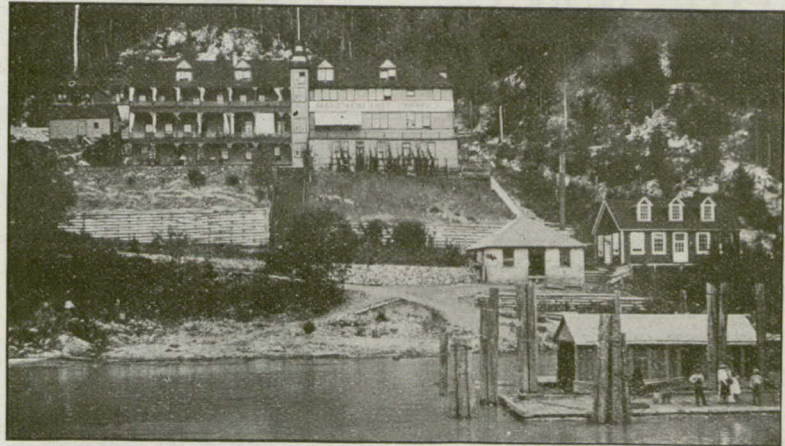
My experience in chestnuts has not proven so satisfactory as hoped for as most varieties are too tender, do not bloom uniformly, or in other words the staminate or male blossom comes from two to four weeks before the pistillate or female blossoms appear, hence, no, or at least imperfect pollination; this is especially true to the finer French varieties as the Lyon, Merle and Nouzillard; while the Grosse Precose and Combale produce some very fine nuts for home use but not of sufficient quantity for commercial purposes. Those best adapted for the Pacific Northwest are Numbo, Paragon, Italian and Spanish. The trees require the same soil and treatment as walnuts; are healthy and rapid growers and from an aesthetic standpoint, a most handsome ornamental tree.

Almonds.

You will have noted from the tabulated



A MOUNTAIN LAKE ON THE WAY FROM PENTICTON TO KEREMEOS, B. C.



HALCYON HOT SPRINGS, ARROW LAKE, B. C.

statement above, that a large quantity of almonds are imported into the States, notwithstanding that California alone produced in 1905, 4,200,000 pounds. Southern Oregon also produced a large crop, but I have been unable to secure correct figures. I have experimented with these soft shell varieties, such as Princess, Nonpareil, I. X. L., and others, but find the same trouble as with the finer French varieties of chestnuts. While they bloom profusely, there is no pollination, but there is one variety perfectly adapted to our climate—the Grosse Tendre or improved Lanquedoc—a strong, hardy tree, profuse bloomer and abundant bearer every year; the nuts are extremely large, the shell sufficiently soft to be readily crushed by the hand and of excellent flavor. I have two very choice trees, and brought with me some coins which I also will give to our secretary for distribution, as like the chestnuts, they are propagated by grafting only, as seedlings are very different as to the fruit.

Filbert.

This variety of nuts is especially adapted to our soil and climate, as they are first cousins, so to speak, to the hazelnut which grows wild and so abundant

all over the Pacific Northwest. The best varieties are the Barcelona, similar to the old English cobnut, only larger and finer flavor; the red and white Aveline and Du Challu, rapid growers and prolific bearers; filberts are propagated by layering, that is, branches are bent down and pinned to the ground, at intervals covered with dirt where they root, after which they are cut and planted.

Pecans.

This beautiful and toothsome nut has not received the attention it deserves. With me, the trees have grown nicely but have not yet fruited, which I attributed to the inadaptability of my soil and location; pecans delight in moist soils, preferably bottom lands which are subject to overflows, but a question whether the large fine varieties of the south will fruit perfectly with us, but I have no doubt that the ordinary pecan as raised in Illinois and Missouri, will do well in the Pacific Northwest for which purpose any good sized pecan purchased at the store can be used; they are certainly worthy of a trial.

Butternuts, Black Walnuts and Hickory Nuts.

These nuts grow very nicely with us and bear some fruit, but have not much commercial value.

In conclusion allow me to again caution you in your selection of either trees or nuts, don't take a dealer's assertion for granted, unless you know him to be perfectly honest and reliable. Be sure you are right in your selection and then go ahead, and if you have secured the correct variety and generation and selected the proper soil for planting, you will never regret it.

Notwithstanding that I have repeatedly stated and published, that I have neither trees nor nuts for sale, I still continue to receive many letters asking me to quote prices. My experiments in nut culture are and have been partly for my own pleasure and partly for the benefit of those who are interested or desire to plant and own a good nut growth.

THE WEST

An Ontario Farmer's Impressions of British Columbia.

One of the returned holiday makers, who had resumed his place at the table, told of a trip across the boundless prairie. They were talking about the illimitable stretches on which thousands were yet to find homes and independence. One member of the company, a son of Erin, said: "Gintleman, yez 'think this is a big country. Just wait 'till yez get to British Columbia. Shure, 'that's the biggest country in the 'wurruld. Av British Columbia was all 'spreadout flat loike Manitoby and 'Saskatchewan and Alberty, it wud fill 'the whole av the Pacific Ocean. Why, 'to make room for British Columbia it 'had to be rowled up, and crumpled up, 'and humped up into great big moun- 'tains rachin' to the sky. An' the 'mountains had to be made on a moir- 'ty big scale to make room for the gold, 'and the silver, and the lead, and the 'copper and the coal that they're fair- 'ly bustin' wid. An' the rivers, wait 'till yez see the rivers! They have to 'be big to make room for the millions 'av salmon that are crowdin' in eager 'to settle in the interior ov the coun- 'try.

"I suppose you men from Ontario 'think yez know something about trees? 'Wait till yez see the trees. It's a nice 'marnin's walk around some av them. 'An' they have to climb the trees wid 'ladders to cut them down. An' the 'fish! Gintlemen, Oi'm a bit av a west- 'erner myself, and I can tell a good



GRAND TRUNK RY. BUILDING, A-Y-P. EXPOSITION.

"yarn, but on me honor, Oi couldn't 'lie about the fish no matter how hard 'Oi tried.

"Yes, things are built on a mighty 'ginerous scale in British Columbia, and 'the size av the apples and the pears 'and plums and cherries, sure yez cud 'niver belave it till yez tried to ate 'wan before breakfast and, be dad! 'there's no fear av bitin' a worm in two 'while your at it. Yes I'm going back."

oo

BIRDS

Friends of the Fruit-Grower and the Farmer.

As objects of human care and interest birds occupy a place filled by no other living being, and the various

movements to protect and foster them would be fully justified were there no returns other than esthetic. Only the thoughtless and the ignorant still hold that the graceful forms and beautiful plumage of these masterpieces of nature serves their highest purpose when worn on a hat for a brief season, to be cast aside and forgotten, the plumage dimmed and faded, the beautiful songs quenched forever.

While by no means insensible to the higher value of birds, the farmer who is asked to aid in measures for their protection is entitled to inquire as to the practical purpose they subservise, and how far they may be expected to return his outlay of time, trouble and expense.

Since most birds eat insects and since it is their insect-eating habits that chiefly invite inquiry, for so active and persistent are birds in the pursuit of important enemies.

When birds are permitted to labor undisturbed they thoroughly police both earth and air. The thrushes, sparrows, larks and wrens search the surface of the earth for insects and the larvae, or hunt among the leaves and peer under logs and refuse for them. Thus each family plays its part in the never-ending warfare, and the number of insects annually consumed by the combined hosts is simply incalculable. It is well that this is so, for so vast is the number of insects and so great is the quantity of vegetation required for their subsistence that the existence of every green thing would be threatened were it not for the birds and other agents specially designed to keep them in check.

While birds are not numerous in the sense that insects are, they exist in fair numbers everywhere—or would were it not for the interference of man—and so rapid is the digestion of birds and so perfect their assimilation powers that, to satisfy the appetite of even a small bird, great numbers of insects are needed. Much of this food is hidden and must be searched for; much of it is active and must be vigorously pursued. Hence only by the expenditure of much time and labor do birds procure their daily food. With birds the struggle for existence is peculiarly a struggle for subsistence; shelter is obtained with comparative ease, and if



VANCOUVER WORLD'S HEADQUARTERS, A-Y-P. EXPOSITION.

climatic conditions are not to their liking they migrate to other regions.

When by reason of favorable conditions insects have multiplied and become unusually abundant, birds eat more than at ordinary times; hence the importance of their service during insect invasions.

From the standpoint of the farmer and the orchardist perhaps no birds more useful than the swallows exist.

They have been described as the light cavalry of the avian army.

Specially adapted for flight and unexcelled in aerial evolutions, they have few rivals in the art of capturing insects in mid-air. They eat nothing of value to man except a few predaceous wasps and bugs, and in return for their services in destroying vast numbers of noxious insects ask only for harborage and protection.

It is to the fact that they capture their prey on the wing that their peculiar value is due. Orioles do royal service in catching weevils, and blackbirds, wrens, flycatchers and others contribute to the good work, but when swallows are migrating they find the weevils flying in the open and wage active war against them. As many as 47 adult weevils have been found in the stomach of a single cliff swallow.

THE FRUIT MAGAZINE

The only magazine in Canada devoted exclusively to the interests of fruit growers, fruit dealers and fruit consumers.

SUBSCRIPTION PRICE \$1.00 A YEAR.

If you like our style, *send your dollar now* and get this magazine to the end of 1910. Clear photographs of fruit and orchard scenes for illustrations gratefully received.

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All correspondence should be addressed to
The Fruit Magazine Publishing Co., Ltd.
Vancouver, B. C.

MAXWELL SMITH - - Editor

EDITORIAL ANNOUNCEMENT.

THE fruit industry in the Dominion of Canada has now reached such proportions as to justify the launching of a thoroughly up-to-date non-partisan monthly publication devoted entirely to the interests of those directly and indirectly connected with the business.

Such is the aim of the promoters of The Fruit Magazine, of which this is the initial number, and which we trust will be accepted by the public as a fair indication of what may be expected of us in the future. By doing our part well, we hope to merit the hearty co-operation and support of an ever expanding circle of readers and advertisers, which should insure a career of usefulness that will bring credit to ourselves and lasting benefits to the public at large.

As fruit growers, fruit dealers and fruit consumers comprise the most highly intelligent, peaceable, temperate and important classes of our citizens we may safely assume that they are interested in all important subjects affecting the highest national development of the great Dominion of Canada, the fraternal unity of the British Empire and the peace of the world.

8 8

WHILE we claim that every protection and courtesy becoming our claims to a high standard of civilization should be extended to all foreign races sojourning within our borders, we are irrevocably opposed to the deliberate importation of the Oriental or other colored races for any purpose whatsoever.

Speaking from a Canadian, and particularly a British Columbia, point of view, we contend that the full privileges of Canadian citizenship, which carry with them the franchise, should not be granted to any but those of the white races. This country has been pioneered, opened up and developed to the status of a nation by the whites and we are under no obligation, nor would it seem expedient, to extend the franchise to any race of people who will not become readily absorbed and assimilated by

those already owning and governing the country. Moreover, the opportunity is afforded the humblest laborer of becoming the owner of sufficient land from which to earn a comfortable living and the same opportunity awaits the most obscure clerk of becoming a partner in any of the large commercial concerns of the country. Therefore it would seem to be unwise to systematically import or encourage any class of labor which does not have in it the elements of good citizenship, and for this reason we contend that the best interests of the country, its future peace and wellbeing, depend on the care with which we select the immigrants who come here ostensibly for the purpose of supplying a want in the labor market, because, although these people (speaking of the white races only) may not have very exalted ambitions on arrival, their very environment will kindle within them, that spark of independence and progress which is a latent element in nearly all of our kith and kin and it should not be long ere they look forward to having a home of their own and taking an active part in the government of the country.

We do not believe in importing a class of laborers which we covertly regard as belonging to an inferior race and which we would not rejoice to see advancing and improving themselves. We should assume an attitude towards our laboring classes that will blot out the last traces of that tendency of one class to hold another in bondage or slavery.

All labor is honorable and, with our boasted civilization, can only be dignified by providing the possibility of advancement and rising in the scale of human progress.

So far as fruit growing, and agriculture in general is concerned, its future success depends upon intensive scientific cultivation of the soil and the rendering of the relations of employers and employees pleasurable, and throwing the responsibility of the success and progress of the individual upon his own mental capacity and the skill of his own hands.

We hold that all government regulations, whither Provincial or Dominion relating to the legality of certain fruit packages, standards of grades, the destruction of fruit pests and diseases, etc., should apply with equal force to domestic as to import or export trade.

8 8

WARNING.

ON page five of this issue we reproduce an article on "The Fruit Industry of British Columbia." Portions of this article have been used in several bulletins issued by the Dominion and British Columbia governments and also in advertising matter of numerous land companies and real estate agents. But in some instances the authority has not been quoted, and in others certain paragraphs have been so abridged as not to convey all of the information intended by the author. This is a copyrighted article, including the map, and no person has any right to use any portion of it without the consent of the author,

which he is perfectly willing to grant for legitimate purposes in the dissemination of authentic information on the subject.

8 8

VANCOUVER AND THE RAILWAYS

FRUIT growers, both east and west, view with approval the present and prospective railway construction in Western Canada. All these railways and many steamship lines will have terminals in the rapidly rising seaport city of Vancouver, and the game now being played between the Vancouver City Council and some of these railway companies over the disposition of the bed of False Creek is interesting. But if, in these negotiations, Vancouver fails to safeguard her right to some day cut a ship canal from the present head of False Creek across the narrow neck of land to Burrard Inlet, she will make a mistake which her citizens will regret for all time to come. It would pay the city to expropriate, now, all of the land and buildings situated between Campbell and Raymur avenues and the annual rentals would pay fair interest on the investment.

8 8

THE SPOKANE SHOW.

THE second National Apple Show to be held in Spokane, Wash., Nov. 15 to 20, promises to excel the first which was such an unqualified success. British Columbia fruit growers did well there last year and they should aim to do better this year. There could be no better opportunity to advertise by actual demonstration the fruit growing capabilities of this or any other part of Canada with sufficient courage to put up a first class exhibit. Spokane treated the Canadian exhibitors fairly a year ago, try her again.

8 8

OVER-PRODUCTION.

THE question of over-production is one which is not infrequently referred to, by the active and prospective fruit grower of Canada. The experience of most fruit growing countries naturally suggests this subject to the minds of those looking to the future of this great industry.

In nearly all horticultural countries there has been an over production of certain classes of fruit, but a careful analysis of the situation will reveal the fact that there has never been an over production of certain standard commercial varieties. The market has always demanded and absorbed the high class article, especially when put up in an attractive form. It is true that in the older districts where so many varieties of inferior quality were originally planted and the cultivation and care of the orchards carried on in an indifferent manner, much inferior stock has been offered, at any old price, which has the effect of demoralizing prices and minimizing demand and consumption. But the fruit grower in the newer districts has the advantage of knowing something

of the mistakes of the older districts and realizes that in the great inland prairie provinces we have one of the best home markets in the world. Let the fruit growers of Canada confine their planting chiefly to a few well known commercial varieties of apples which have been proven to be a success in this country, bearing in mind that the market of today demands an apple with color, flavor and keeping qualities, practice clean cultivation, systematic spraying, the use of the most approved up-to-date packages, and grade and pack the fruit with the utmost care no matter what market it is going to.

The idea in some quarters that only apples for export should be handled with

take a train of 40 cars passing every 15 minutes, 24 hours in the day, and 365 days in the year to carry out the wheat."

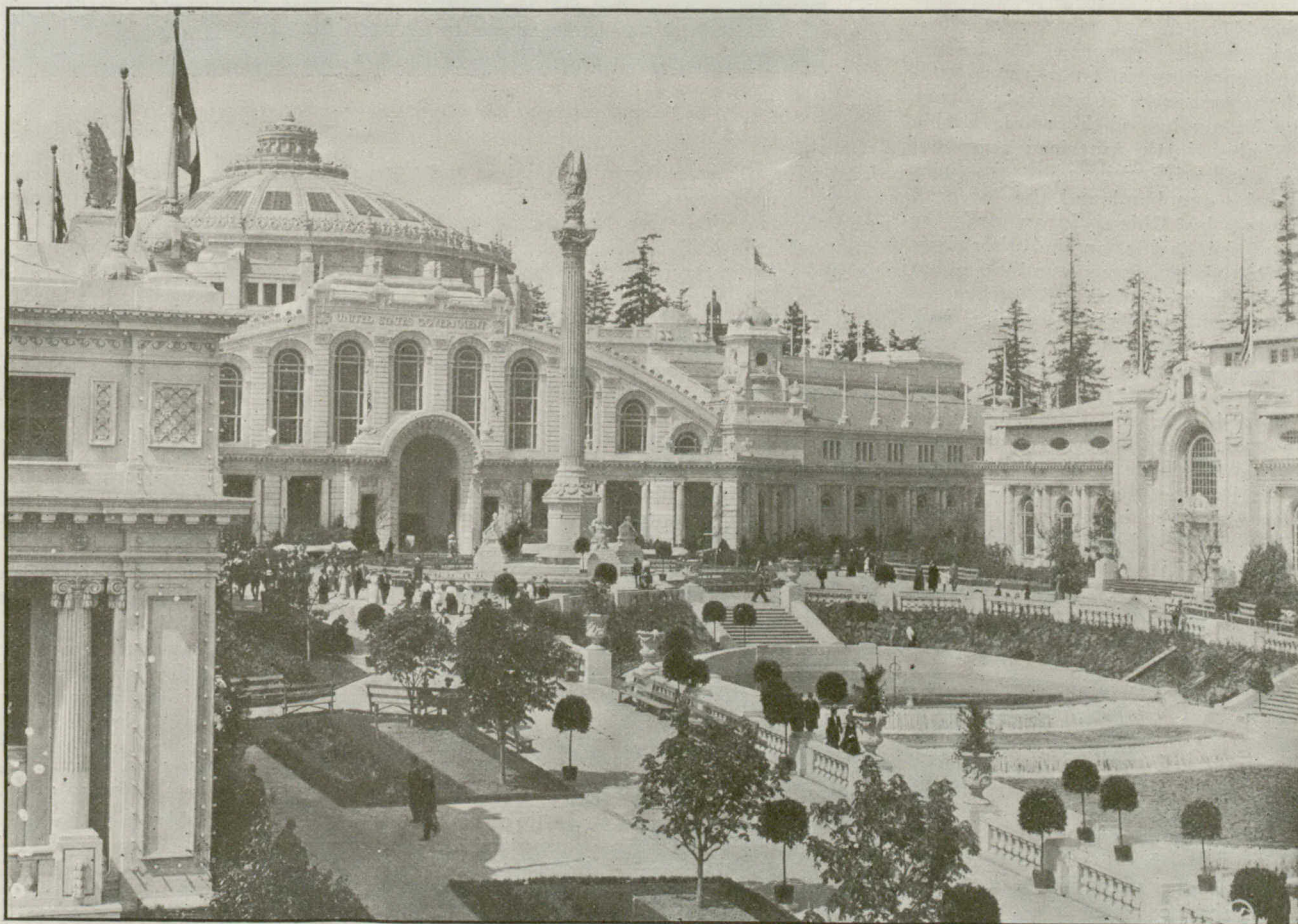
Even this calculation only includes the beginning of our prairie development and why worry about over production of good clean commercial fruit.

Some one has said that "agriculture is the basic science upon which rests the whole superstructure of every great nation and fruit growing is the poetry of agriculture."

The greatest danger that threatens Canada today is the tendency to build up large cities at the expense of the country. It is time that agriculture was given a more prominent place in the curriculum of the public schools, that the

TRANSPORTATION.

AFTER the fruit grower has developed a first class modern orchard, employed skilled packers to put up his goods and delivered the packages at the point of shipment, it remains for the transportation companies to land them at their destination within a reasonable time and in cars suitable for the purpose. By reports from the railway and express companies we understand that this part of the business has been fairly satisfactory this season, but we shall be glad to hear from the growers and dealers all over the Dominion on the subject and to learn their views, with any suggestions for practical improvement along the lines of transpor-



VIEW IN FRONT OF THE UNITED STATES GOVERNMENT BUILDING A-Y-P. EXPOSITION.

special care and put up in attractive modern packages is wrong. It is equally important to have the fruit grown in this country and appearing on our own markets first class in every particular. That which is not good enough for the British and foreign consumer is not good enough for the Canadian people.

As soon as Canada can supply a reasonable share of the fruit consumed in the four western provinces of the Dominion, the markets of New Zealand, Australia, Japan and China will be calling for more; but it must be the best.

The Rev. Dr. Grant, formerly of Vancouver, after careful calculation made the statement from a public platform that "if but one-sixth of the arable lands between the Great Lakes and the Rocky Mountains were in cultivation it would

sure foundations of our country's greatness may be strengthened and the moral and physical well-being of our people enhanced. "Back to the land," should be the watchword of the future.

There is more profit for the investment and more real pleasure in caring for bleating flocks, lowing herds and prancing steeds than in most of the precarious pursuits of commercial life, and the man who causes the rose to bloom in place of the thistle, and converts a desert sage brush waste into fields of waving yellow grain, or who causes a fruit tree to yield its increase where the primeval forest formerly held sway, has done more to fulfill the destiny for which he was created and has lived nearer to Nature's God than in filling most places in the artificial spheres of city life.

tation facilities. The conditions of the fruit trade in our prairie provinces as affecting producers in Eastern and Western Canada will receive some attention in the November number of The Fruit Magazine.

8 8

TORONTO EXHIBITION.

SEVEN hundred and thirty-two thousand, five hundred and twenty people visited our National Exhibition in Toronto this year, an increase of 100,000 over last, which goes to prove that the best annual agriculture show in America is becoming better known and more popular every year. In the November number of The Fruit Magazine we shall give a fuller account of this exhibition and several half-tone illustrations.

THE A. Y. P. EXPOSITION

HUMAN skill and energy have never yet designed and executed anything that could not be improved upon. But in the general plan and minute working out of the multiplicity of detail connected with the Alaska-Yukon-Pacific exposition, the management have been wonderfully successful. The natural beauty of the Washington state university campus, where the exposition is located and the commendable enterprise of Seattle's public men made a strong combination to begin with, and the splendid response made by the neighboring states and the Dominion of Canada gave every assurance that success would be written in large letters across the whole enterprise. As intended, the exposition is truly representative of the resources of not only Alaska and the Yukon but of the whole Pacific slope of the North American continent with a decorative fringe of the near east on the one hand and the far east, represented by China, Japan and the islands of the Pacific, on the other. Far-seeing British statesmen admit that western Canada is destined to become the centre of the British Empire, and, moreover, the world's commerce may some day show its greatest activity on the broad bosom of the Pacific Ocean. The Grand Trunk and Canadian Pacific railways, the Vancouver Tourist Association and the Vancouver Daily World have done much to make the beauty and splendid natural resources of this northern country better known. Through the efforts of Dr. Elliott Rowe, secretary of the V. T. A., a beautiful arch representing the city of Vancouver was erected on one of the principal streets of Seattle, and accepted by the officials of the latter city as an offering of fraternal goodwill, which has been the means of directing thousands of tourists to the city of the "Lion's Gateway," on Burrard Inlet. One prominent citizen of Seattle remarked to the writer that they were much pleased with the interest taken in their show by Vancouver. The only thing they had to complain of in that connection was the fact that many of the tourists came to Seattle to see the show and then went to Vancouver to spend their money. Vancouver, British Columbia, and the whole Dominion have certainly gained much through the enterprise of the Tourist Association and the World newspaper. It was refreshing to hear that Earl Grey, Governor-General of Canada and an imperialist of the broadest and best type, on entering the Canadian government building wanted to know why there were not more Canadian ensigns displayed. Subsequent visitors to that part of the exposition would note that the defect was promptly remedied. Earl Grey is a more enthusiastic Canadian than many prominent natives. The interior of the Canadian building is a dream of excellence as representing the natural wealth of the country. The representations of prairie, dairy and other farms are good.



MASONIC AND EASTERN STAR REST ROOM, A.-Y.-P. E.

The mineral, grain, granite, mining and many other resources are splendidly displayed, while the live beavers at work are emblematical of the peace and industry of the youngest of the world's nations.

But before a national display is made at the next world's fair it might be well to have a real live modern fruit man added to the staff of the exhibition commissioners.

The fresh and bottled fruit display are very creditable, but to hang up a painting which looks like a thickly planted grove of tall mountain ash trees, loaded with apples, and call it an orchard is carrying the joke on the novice a bit too far. Right under the painting is a large signboard bearing the following information:

"This picture represents an apple orchard such as can be seen in many provinces of Canada."

Now, if that were really true it would be a grievous blunder to tell it. But we are glad to know that the whole thing, picture and signboard together, is a huge mistake and that prospective immigrants will not take the matter seriously. The fruit grower who contemplates locating either in eastern or western Canada will find much more progressive scenes and operations in the orchards of the country than are represented in that picture. Fortunately in these days apple orchards such as that "picture represents" are not very numerous.

Prof. H. E. Van Deman, probably the foremost pomologist on the American continent today, has written a special article for The Fruit Magazine, giving his impression of the fruit exhibits at the A.-Y.-P. E., which should be of great interest and value to our readers. Prof. Van Deman says:

The fruit show at the Alaska-Yukon-Pacific Exposition has been a success from the start. Having had the duty of making all the examinations for awards in the horticultural department, I have had an opportunity to see all that has been shown, from the different sections

represented here. Very little has been shown from the regions outside of Washington, Oregon, California, Idaho and Utah. British Columbia has had a continuous exhibit of apples, which has indeed been very creditable, but I have not made any official examination of them, because the commissioner from that country decided from the beginning not to ask for anything in the way of awards, but I may say that the fruit which has been shown in the Canadian Building has been similar to that from the state of Washington. Alaska showed some very creditable strawberries and cranberries.

Hawaii has kept an almost continuous exhibit of pineapples and entirely of the variety called Smooth Cayenne, which is the leading one grown in that country. It is quite large and of excellent quality and the canned product is unequalled by any that I have tested. There have been some other tropical fruits on exhibit from Hawaii, among which is the Mango. This is a most delicious fruit of oblong shape and with a smooth exterior, beautifully colored in yellow and red. The Avocado is another fruit that attracted considerable attention, considering the small number of specimens that were sent. This is sometimes called "Alligator Pear," but it is neither alligator nor pear and this ridiculous name should be entirely dropped, although it is quite common in the trade. The fruit is pear-shaped and varies in color from green to yellow and purplish red. There is a large seed in the centre and between this and the skin is a most delicious flesh which is similar in consistency to soft cheese and of a yellowish color. It has no very pronounced flavor but is rich and oily and when eaten with a little salt or French dressing as a salad, is considered by those who have tried it, one of the most delicious of all fruit delicacies.

The strawberry exhibits have been very good, beginning with the opening day of the exposition and continuing for over two months in abundant

supply, and then almost none for about a month; but strawberries are beginning to appear again on the tables and will doubtless continue until the end of the fair, but of course not very abundantly. While the Clark and Marshall have been the leading varieties shown, there have been a great many others that are well worthy of mention, but there is one in particular which I think deserves notice. This is the "Godell" which originated in the outskirts of the city of Seattle by Mr. S. Godell. He has been working for years crossing the various fruits of the strawberry, and has introduced varieties and even species from other countries in order to secure such crosses as he desired, and I am glad to say that he has been very successful. The one which he has named and is about to have introduced to the public, is very robust in plant and the fruit is large, of brilliant red color and exceedingly high in quality. I visited his premises where it has been grown so far and was much pleased with the variety in all respects.

The cherry show has been one of the main features of the exposition. The Northwest is a "cherry heaven" and it has been wonderful to see what has been shown from the states of Washington and Oregon in particular. California began with cherries the first week of the fair and that state made a very creditable exhibit, but when this fruit began to ripen in Oregon and Washington, the show was simply won-

derful. Asotin County, which is in the southeastern corner of the state of Washington made the best exhibit of any section. There were many boxes of cherries shown from that county that measured one and a quarter inches in diameter. Some of the cherries from other parts of Washington and also from Oregon were as large but they were not shown in such large quantities. The Bing, Lambert and Napoleon (which is commonly called Royal Anne on the Pacific coast), were the leading varieties. These are all of the sweet type, but the sour cherries also do very well and are generally used for making pies and cooked in other ways. Cherries were shipped from the exposition as far east as New York and Boston with good success, having arrived there in perfect condition. One of the remarkable things about the cherry show was its duration which was from the opening day, June 1st, until the middle of September.

The bush fruits were shown in great quantities, especially raspberries, blackberries and currants. About all the leading varieties were represented and there has not been a day since the raspberries were first shown, about the middle of June, until the present time, when there have not been a number of varieties on exhibit. The blackberries are likely to be seen until the close of the exposition, for the variety called Evergreen usually bears until frost. The Loganberry has attracted a great deal

of attention, especially by visitors from the eastern states. It is a cross between the raspberry and blackberry and is a large red berry of excellent flavor, especially when cooked. It began to ripen about the middle of the raspberry season and lasted for about two months.

The apple exhibits have been the main feature of the exposition fruit show. There have been apples from all of the states mentioned and from British Columbia, on exhibit beginning with the opening day, and there is an abundant supply to continue until the close, the middle of October.

The principal exhibits have been from the Yakima and Wenatchee valleys but many other sections have also been well represented. Oregon has not been behind and has made a very fine exhibit from the Hood River and Rogue River sections. It has been a marvel to the eastern visitors to see the beautiful specimens of Spitzenberg, Yellow Newton, Wine Sap, Staymann, and, in fact, all of the leading varieties that are grown in this western country. The apples of the present season began to come in about the first of July and since that time they have increased in quantity and beauty until the show of this year's crop is simply magnificent. Among the other excellent varieties of the summer apples that have been shown the Jeffries takes the lead. This is an apple of the highest excellence being juicy and of a most delicious sub-acid



FORESTRY BUILDING, A.-Y.-P. EXPOSITION.

flavor. Its size is medium and its color is yellowish with beautiful red stripes. It should be in every orchard and if one can have only two or three trees in a back yard, one of them should be of this variety.

The pears, peaches and plums have also been abundantly in evidence. The severe cold of last winter destroyed a large part of the buds that should have produced peaches this year, but in a few sections the crop has been fair. California has shown many excellent peaches and the same is true of the states of Utah, Idaho, Oregon and Washington. It seems strange, but it is nevertheless a fact, that the Okanagan country, which is in Washington, next to British Columbia has a better peach crop than the regions further south. There has been more and larger peaches from Astoin county than any other section, because the fruit has been fairly abundant and those who have been making the fruit show have not failed to send an abundant supply to the exposition. Many specimens from there have weighed a pound each and one turned the scales at 20 ounces. Plums and prunes of many varieties have been shown. From several sections there have been specimens so large that four weighed a pound. This might almost seem incredible but it is nevertheless true.

One of the most remarkable things about the fruits of the Pacific Coast is the fact that there are no worms in any of the peaches, plums, apricots or cherries and one can eat them with perfect confidence and no fear whatever of finding anything of the kind. This is not only very desirable to those who consume the fruits at home but it is a great advantage when it comes to marketing the fruit, because there is no loss whatever from this cause and there can be no complaints from either the dealer or consumer. There are troubles enough with wormy apples and pears and the growers have to fight the codling moth about the same as in the eastern states, but the bright color of the apples and pears is greatly in their favor.

On the whole, the fruit show at this exposition has been a constant delight to both exhibitors and visitors.



SPOKANE BUILDING, A.-Y.-P. EXPOSITION.

APPLE TREE PRUNING

By T. W. Stirling, Kelowna, B. C.

ANY fruit grower on being pointed out an apple tree can say at once whether it is well shaped or badly shaped. The general characteristics of such trees as would be called well shaped by an experienced fruit grower are found to be somewhat as follows:

The main branches spring from the trunk at a good broad angle. They do not spring opposite to each other but are distributed up and down the trunk. They are evenly placed around the tree and do not interfere with each other. There is a definite centre stem from which they spring and which extends above the main side branches.

Such a tree is of the strongest possible frame. It will carry its proper load of fruit without propping. There is no fear of it being split down to the ground and ruined by an over weight of fruit or by wet snow or any other cause. The greatest damage that will be likely to happen to it will be the breaking of a bough, an injury which can easily be repaired and the loss replaced within a short time. If any main branch is over laden and breaks off, the injury to the trunk will be comparatively light; there will be splitting. Always

fresh shoots can be grown from the centre to replace broken branches. After all the main stem of the tree is the tree; keep that intact and the tree is still there to grow any branches from that are required.

To illustrate the advantages of this form it is only necessary to think of another form which is very common. That is the tree where the centre has been cut out and never replaced, where the branches all spring from about the same point as the fingers grow from the palm of the hand. Such a tree, when the day of trial comes, either from an overload of fruit or from a fall of wet snow, yes, and sometimes by reason of its own weight, will get tired and lie down, splitting right to the ground so that there is nothing left from which a new tree can be grown.

Now, shaping a tree is not the whole art of pruning, and by shaping a tree is meant that treatment of the tree in its earlier years which definitely determines its general form; a tree may be well shaped in this sense yet at the same time woefully in need of cutting and clearing out, but this latter branch of the pruner's art cannot be dealt with adequately in a paper, and it is the first only which is the subject of this present effort.

The object of this paper then is to outline a method, and to state a few short rules, which if followed will ensure every tree growing up in a correct form.

The rules are three in number, viz.:

- (1) Keep the leader.
- (2) Have but one leader.
- (3) Make the leader lead.

The explanation of these and method of carrying them out in practice is as follows:

The tree is planted as a yearling whip and cut back to about three feet, or a little less, from the ground with the object of forcing buds into decided growth so that there may be something to work on the next spring. The first real step towards shaping the tree is taken the



ALASKA BUILDING, A.-Y.-P. EXPOSITION.

spring after planting, preferably when the buds are just beginning to show green. It will be found then, if the tree has established itself, that some of the buds near the top, very generally three, have made a strong upstanding growth, coming out from the stem at a very acute angle, lower down more shoots will have not made such a strong growth. It is from these latter that the first tier of branches may be chosen.

Leaders—Of the one, two or three strong upright shoots near the top, select the best and most upright as the leader and sacrifice the remainder. If they are retained with the idea that they will become satisfactory side branches, amenable to discipline, it will be found to be a mistake. They will not do so, but will for years be a source of bother, competing annually with the leader for supremacy. Cut them out, leaving but the one leader.

Side Shoots—From the other shoots lower down select, if possible, three side branches. These must be evenly distributed around the tree in a horizontal direction. In a perpendicular direction they must be well separated, the angle they make with the trunk should be large, nearly a right angle. If there are not three shoots that satisfy these conditions then leave only two or one that does; better one right than three wrong; plenty more shoots will grow during the current year to fill any vacancies.

(N. B.—Certain varieties of trees, for instance the Northern Spy, have shoots

which almost invariably spring from the stem at an acute angle. In such cases it cannot be expected that shoots will be found to satisfy the third condition mentioned above. It is as well then to use a spreader to cause the shoot to grow in the desired direction).

Back Cutting—Having selected the shoots which are to remain, and removed the others, cutting them off close up to the stem, it is necessary to cut them back. It will be observed that the buds on the upper end of a wood shoot are better developed than those near to the base. The object in view is to give the leader the start and to have it keep ahead of the rest, therefore do not cut it back too much. Cut it amongst those buds towards the upper end, perhaps one-third of its length down from the tip.

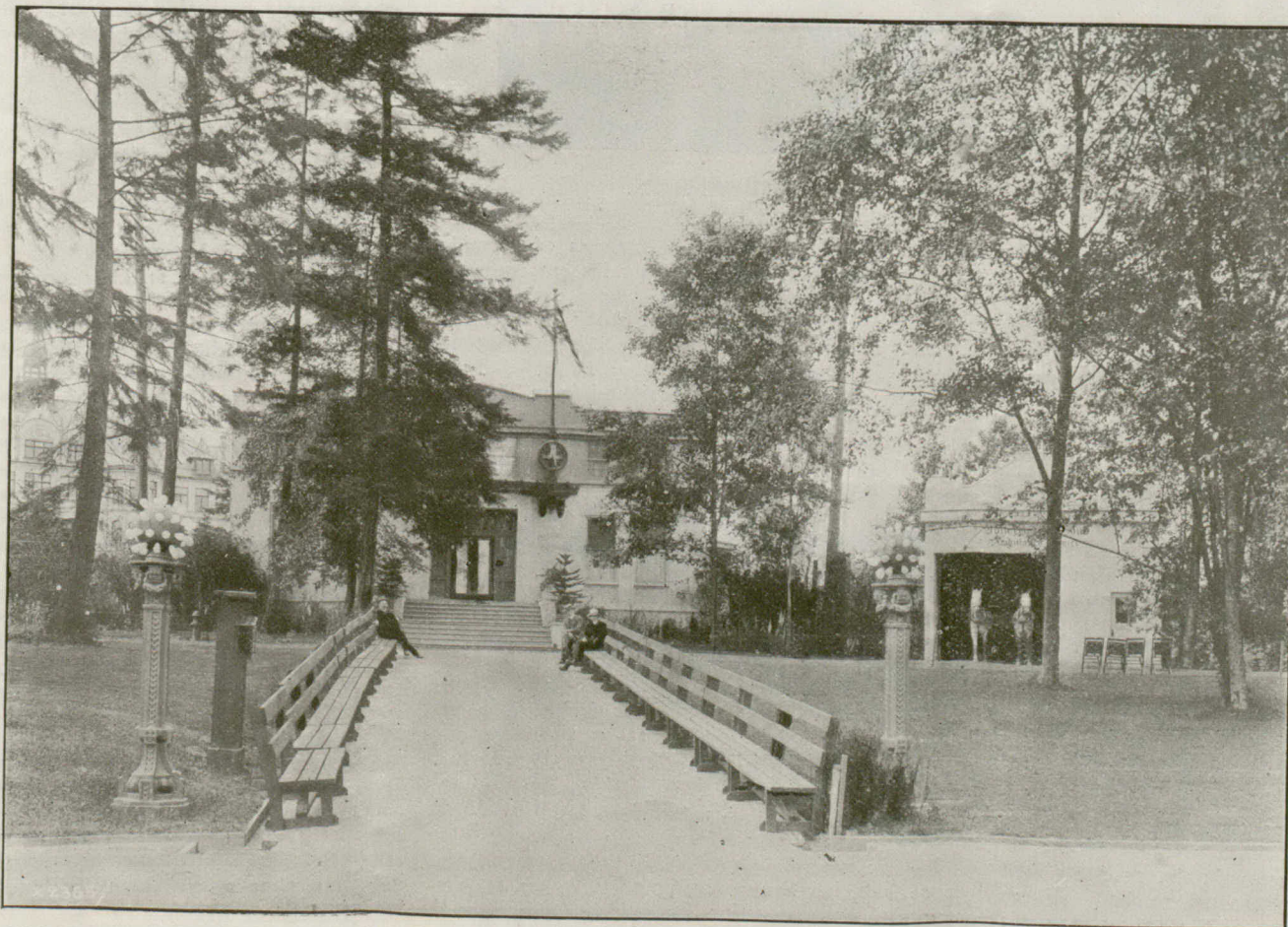
In regard to the side branches. Perhaps amongst those retained one or two are weak, and one or two are strong; these latter, perhaps, nearly as strong as the leader. It is they which require to be watched or they will start racing for supremacy with the leader. Put them in their right place right away. Cut them back to within three buds or so of the stem. The buds here will be very much backward and by the time they have been forced into growth the leader will have shoots several inches in length and there is no fear that the side branches will catch up.

Next Year—The following spring the process will be much the same. The

leader will be treated practically as was the whole tree the year before. The lower tier of branches of last year will probably have made two or more shoots. Almost invariably one will be enough to leave, and that should be cut back among the well developed buds towards the extremity or about one-third in from the tip. The next year will be time enough for these side branches to have side shoots.

Third Spring—The next year will be a repetition of the first and second except that there will be an additional tier of branches to prune. The treatment of this lower tier, this year, will be somewhat similar in principle to that of the leader the first year. The cutting of the preceding year will probably have resulted in two or three strong shoots growing from the end and one or two weaker shoots growing further in on it. Of the strong shoots at the end but one should be left and that cut back as before about one-third; of the others one or two may be left as there is room or not.

After this, if all has gone right, as it will have done with a normal well-growing tree handled as suggested, the tree may be considered to be formed and it is usually unnecessary to continue cutting back the leading shoots. The leader will be firmly established and the tree will tend to keep the form in which it has been trained. Subsequent shaping will simply consist of thinning out superfluous shoots and branches, keep-



EMERGENCY HOSPITAL, A-Y-P. EXPOSITION.

ing a just balance between all side boughs.

The idea to keep in view is to give the leader the preference when cutting out; that is, if a shoot from the centre is crowding a shoot from a side bough it is the latter that must give way.

Should the shaping have been neglected in the earlier years, or should an injury have happened to the leading shoot it is often found that one of the side branches has come ahead of the leader and is competing with the leader for supremacy. There are three things that may be done, and one of them must be done, if a well shaped tree is to result.

(1) The side branch may be cut off.

(2) The tree may be cut off immediately above the side branch and thus the latter becomes the leader.

(Where the side branch has grown practically as large as the rest of the tree above it, one of these two things must be done).

(3) Check the side branch back hard by cutting it off immediately above one

sary to have clear and definite ideas on the subject.

With a clear mental picture of what is needed in regards to shaping a tree the pruning of young trees is a rapid and sure operation. The tree is pruned and shaped mentally as the operator walks towards it. A few deft cuts with a sharp pair of shears and it is done.

The Life-Story of the Puss-Moth

By John J. Ward in the Strand Magazine.

THE two main factors in the struggle for existence are, necessarily, to eat and to avoid being eaten. The Puss Moth, in the course of its evolution, has had to resort to some most extraordinary devices to escape the latter contingency. Its colors, its habits, and its anatomy, throughout all its stages, clearly indicate that it has had to fight per-

parts also turn black. Therefore the black larvae feeding on them are not conspicuous.

Later on, when they begin to develop to a conspicuous size, they moult their skins and change color, gradually becoming green assimilating then with the leaves of the food plants; their upper surface, however, retains a brown hue speckled with grey.

At this stage, when about a month old, a curious change takes place. The caterpillar again moults its skin, and it appears in still more brilliant greens, while its dorsal parts have developed more grey color, giving its body a shaded effect. Also two white wavy bands run from its face to the hump at the back of its head, and from there down the sides of its body to its forked tail. What strikes the observer most, however, is its face, for there has developed here a most remarkable mask of a rose-red color, shaded with greyish-blue, and bearing what look like two staring black eyes.

The change after moulting the skin is so extraordinary that one can scarcely believe it is the same caterpillar. Now, in the place of the two ear-like organs which were so conspicuous when the caterpillar emerged from the egg, have developed the eye-spots that give to the caterpillar such a striking and terrifying aspect.

When the caterpillar again moults its skin and reaches its full growth (generally during August or September) its extraordinary mask is still more conspicuous, and its colors are brighter than ever; indeed, the full-grown caterpillar, when seen isolated from its surroundings, presents a most startling appearance, both in color and form.

Such, then are the various changes which the caterpillar undergoes during the six weeks of its life, and one naturally asks the meaning of these curious metamorphoses and the object of this extraordinary mask. I use the word "mask" advisedly, since it is not the caterpillar's real face that is exposed to view. Its flat head is withdrawn into the first ring of the body, and it is this ring, so curiously colored and bearing conspicuous spots appropriately placed for eyes, that produces the startling caricature of a face. It remains, then, to ascertain what is the object of this singular pretence.

I have mentioned that, when isolated from its surroundings, the caterpillar is



SWEDISH BUILDING, A.-Y.-P. EXPOSITION.

of its own side shoots. The stronger it is the lower down must it be cut.

This latter will be best where such cutting is likely to be efficacious in putting the side branch in its place; it will, however, in any case, have to be watched the next season.

Always the side branches must be headed in in this way if they show signs of coming ahead of the leader until they are finally induced to take a subordinate position.

It will likely now be found that there are too many branches and that they are crowding each other; no matter, it gives a choice and if any have to be sacrificed their existence will not have been wasted, they will have assisted to thicken and strengthen the main stem.

It is not claimed that there is anything new in this paper, it is simply an attempt to state in clear and concise language a definite system which at any rate has the merit of producing surely, and without waste of time, energy in plant growth, the results aimed at. The attempt seems to be justified because this part of the orchardist's art has not often been stated either clearly, concisely or completely and it is very neces-

sistently against the attacks of formidable foes, and that only by extreme defensive methods has it been saved from extermination. The history of this insect is, indeed, a most wonderful chapter in insect evolution.

This moth may be found from May to July. It deposits its eggs on the leaves of poplar and willow trees, and after about nine days the little caterpillar emerges, often taking eight or ten hours to bite its way through the strong egg-shell. When the head, which is the largest part of its anatomy, is through, the rest emerges quickly. It is of a velvety-black color, and on its head are two curious, ear-like structures which disappear as it gets older; while at its tail-end it possesses a forked appendage from which, when it is irritated, issue two delicate pink threads, the function of which will be considered later.

The young larvae make no attempt to hide themselves, but feed boldly on the surface of the leaf. And now we observe what is probably the first selective device for their protection—viz., their black color, for the little holes in willow and poplar leaves have a resemblance to black spots and markings, while bruised



AUDITORIUM, A.-Y.-P. EXPOSITION.

a very striking animal; however, when feeding amongst the leaves and branches, in spite of its bold coloring, it is not at all conspicuous. When so situated, its broken masses of green and brown, and their soft shadings, harmonize so closely with the moving leaves and brown branches that it becomes very difficult to detect it by ordinary methods of observation; hence its apparently conspicuous coloring serves in reality to make it inconspicuous, and so protects it from the eyes of its enemies.

It sometimes happens, though, that the caterpillar is discovered by an enemy and it is then that the object of its strange disguise becomes apparent. At the slightest touch, when feeding on the tree, the larva instantly turns its repulsive mask towards the source of irritation, and, so to speak, glares wildly at the enemy, the ring of the body bearing the eye-spots being distended to its fullest extent. At a touch from the opposite side round goes the "face" in that direction, bearing the same terrifying aspect, which, by its fixed glare, seems to plainly imply some considerable danger to the enemy if it is further interfered with.

How effective this quick movement of the head and the sudden presentation of a facial monstrosity are as a protective device may be readily appreciated by the effect it has upon a human being who touches one of these larva for the first time; rarely will he touch it again without an assurance that no harm will come from the venture. Let us imagine, then, that some bird or small animal meets one of these caterpillars resting or feeding amongst the branches, and, on account of its coloring, is doubtful whether it would make a toothsome morsel. It approaches carefully, and probably gives the suspicious object a preliminary prod, just as man himself would do. Then the caterpillar suddenly faces round with that apparently outraged stare, as if to say, "Who dares?" and the terrified foe takes to flight.

When a healthy larva is feeding, a sudden touch may often produce a further surprise for the enemy. At the moment the terrifying mask is presented to view the forked tail is raised, and from its two prongs the pink threads previously referred to are suddenly pro-

truded to a great length, and lashed like whips over the caterpillar's head and back.

Now it happens that the worst foes with which the larva of the Puss Moth has to contend are ichneumon flies—parasite flies which boldly attack the caterpillar and deposit their eggs upon it, usually behind its head. From the eggs of the ichneumon little grubs emerge, which are parasitic upon the caterpillar, sucking its juices from the moment they break through the egg-shell, and adhering firmly afterwards. The caterpillar feeds ravenously, but the appetites of its visitors increase also. Eventually the caterpillar attains its full growth and spins its cocoon, yet it is never destined to become a moth, for the ichneumon grubs then completely devour the soft parts of their host, and attain their full growth, making their own cocoons within that formed by the caterpillar, thus utilizing the caterpillar's home as their own.

The ichneumon fly is, therefore, a formidable enemy that has to be dealt with promptly when it appears. Whether the caterpillar's remarkable simulation of a face has any influence on the ichneumon fly is a doubtful point; probably that feature is only of service in scaring larger foes, including man. Its tail-whips, however, have probably been developed purely as a means of reaching the back of its head, where the ichneumon fly usually makes its attack; for these or-

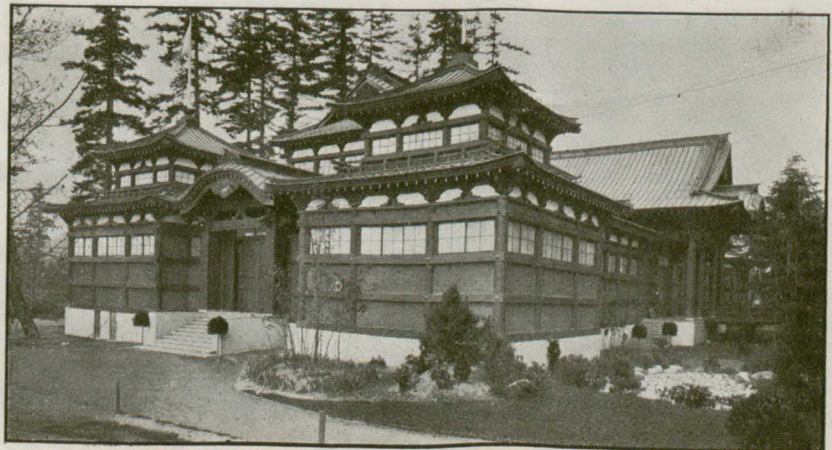
gans are really the caterpillar's last pair of clasper legs modified and evolved into tube-like structures and endowed with delicate muscles, which allow of the sudden protrusion and contraction of the pink threads. It is curious, too, that these whips should be of a color similar to that of its mask, a fact which seems to imply that the color may have some influence on the particular enemies which the insect has to combat. In this connection, too, we have to remember that colors and forms which we may regard as merely curious or quaint may affect other animals in a very different way, and have a significance which they have not for man. Especially is this true of insects, the structure of whose eyes is so very unlike our own. We should never overlook the fact that peculiarities in an organism that appear to us useless, and sometimes absurd, may be of great practical value to the creature possessing them.

So far as is known, the tail-whips are perfectly harmless to the ichneumon, and only serve to drive it away, just as a cow removes flies from its back by the switch of its tail. Nevertheless, the parasitic ichneumon takes considerable risk in making its attack upon the caterpillar.

In the lower part of the red mask is a transverse slit, connected with a gland in which a strong solution of formic acid is stored. Professor Poulton, who has made many interesting experiments with this species of caterpillar, states that this solution, in a mature larva, contains a proportion of acid "as high as 40 per cent.," which is a much greater percentage than that found in the stings of nettles, wasps, hornets, bees, etc.

This irritant fluid the larva is able to eject as a fine spray when it directs its "face" towards an enemy. I would suggest that the mask may be a means of holding the attention of the enemy in the right direction to receive this shower of acid. Of the effect of this liquid, we have professor Poulton's statement that he has "seen a marmo and a lizard effected by it," and has himself "twice experienced sharp pain as the result of receiving a very small quantity in the eye."

It follows, therefore, that the ichneumon fly has also a formidable foe



JAPANESE BUILDING, A.-Y.-P. EXPOSITION.

to contend with while carrying out the natural functions of its species; indeed, it is a life and death struggle between the caterpillar and the fly, for Professor Poulton's experiments revealed the fact that the ichneumon collapsed immediately when a little of the acid was placed upon them, "and either died or took many hours to recover."

Such, then, is a page in the incessant warfare between living creatures that may be enacted unseen beneath the green leaves of a poplar or willow tree; a warfare which has been going on throughout the history of this quaint caterpillar, and has brought such an influence to bear upon it during its struggle for existence as to produce those extraordinary modifications in its anatomy which we have noticed, such as its color simulation of its surroundings, its startling mask, its tail-whips, and its poison-secreting gland.

The ichneumon fly is the natural foe of the caterpillar, and only those caterpillars have survived that have inherited features that would best serve as weapons of defence against the attacks of this wily enemy. On the other side, the ichneumon has concurrently developed quickness of movement to avoid the acid shower and a daring in attack, together with such structural details as sharp claws for holding on and an ovipositor highly adapted for securely placing and fixing its eggs upon the caterpillar.

Should the caterpillar successfully reach maturity, it then prepares for the next stage of its existence. Here, it takes obviously point to much persecution in the past history of its species. The larva selects a suitable crevice in the bark of a tree, into which it withdraws itself. It then proceeds to spin some glutinous threads over its body, attaching them to the bark on either side, afterwards gradually filling up the interstices. While doing this it bites small portions from the bark and weaves them into the substance of the cocoon. When complete and dry the caterpillar is entirely obscured from view, and as the cocoon dries it becomes identical in color with the bark, looking simply like a rugged portion of it; also, it is then as hard as horn. In this position the developing insect spends the winter.

This mimicry of the bark, combined with so much strength, distinctly indicates that the caterpillar has found it necessary to hide itself from the eyes of the enemies, and even then to put on armour. But, notwithstanding all this self-protective care, cocoons may frequently be found torn open and empty, for hungry tits know well how to seek out such choice morsels as the cocoons contain.

The chrysalis is produced when the caterpillar moults its last skin within the cocoon. The thinnest portion of the cocoon is that part where the future moth will emerge the following summer.

In the ordinary way the moth makes its appearance from quite a small round hole near the top of the cocoon, the chrysalis being provided with a kind of

cutting tool for breaking a way through the weak part. When the cocoon is broken the moth emerges from the chrysalis and secretes a fluid, which moistens and softens the ruptured part of the cocoon, and by this means it is enabled to make its way out on to the bark, where its wings develop. Shortly afterwards the moth appears.

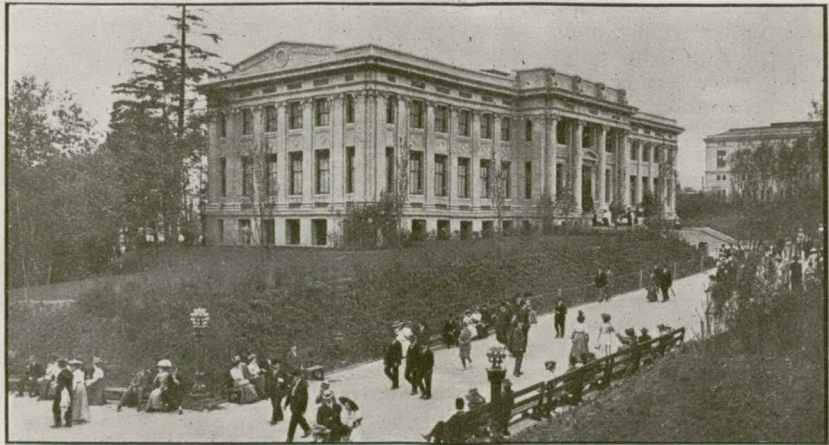
Its hairy body and legs, and the peculiar softness of its greyish-white wings streaked with black, give it a handsome appearance as it rests upon the bark until nightfall, when it will take to its wings and find a mate.

The meaning of the wavy markings upon its wings is a problem that remains to be solved. These, doubtless, have some significance amidst its surroundings, and although the moth is conspicuous to us as it appears upon the bark, it may not be so to the enemies that attack it at this stage of its development. On the other hand, it may be more conspicuous to them than it is to us, and its bold display may be a warning to birds and other insectivorous

turn of mind. With the optimistic outlook which a comprehensive grasp of these possibilities produces in the mind of the prospective fruit grower, the beginner may be disposed to overlook some of the dangers which more extensive observation and experience would teach him to guard against.

Not the least of these dangers is the tendency of many new arrivals, particularly those from the prairie country, to get too much land and plant too large an orchard.

It has been demonstrated beyond the shadow of a doubt that, in proportion to the amount of capital invested and the necessary operating expenses, much larger profits are obtained by the ten-acre fruit grower than by those cultivating from fifty to one hundred acres. We are safe in concluding, therefore, that the success of the fruit growers of this province, as well as other lines of business dependent for revenue therefrom, will be established permanently through the adoption of the policy of numerous small holdings operated inde-



FINE ARTS BUILDING, A-Y-P. EXPOSITION.

foes that it is unpleasant to the taste; for there are many British moths of a white and greyish color streaked with black and brown that rest with exposed wings upon the dark-colored bark of trees.

The moth is found in most parts of the British Isles, and this feature shows how far the extraordinary developments in its caterpillar stage have proved successful; for it does not follow that a highly-evolved insect is necessarily successful in the struggle for existence. Such developments only show how keen has been its struggle, and to what devices it has been driven to hold a place for itself—sometimes a place that it may be hourly losing.

♂ ♂

BE MODEST.

The possibilities of the fruit industry in British Columbia is a subject which has been much discussed of late and one which is constantly presenting new fields for the scribe with a horticultural

pendently, with the owners in each district co-operating together in the marketing of their products and for the purchase of the necessary supplies such as packages, spraying materials, fertilizers, implements, etc.

♂ ♂

DWARF VS. STANDARD TREES.

What is the comparative value of dwarf apple and pear trees and standard trees of the same varieties, for commercial planting?—D. P. S., Covington, Ky.

Unless land were very scarce we should prefer standard trees, except perhaps some varieties of pears which are said to do better as dwarfs than as standards. Dwarf trees are generally recommended for small gardens and for sections where San Jose scale is very plentiful, making it necessary to spray persistently. Of course the smaller trees can be sprayed more easily and more effectively than the large trees. Otherwise we can see no advantage in planting them.—The Fruit Grower,

SOMETIME

Sometime when all life's lessons have been learned,
 And sun and stars forevermore have set,
 The things which our weak judgments here have spurned,
 The things o'er which we grieved with lashes wet
 Will flash before us out of life's dark night,
 As stars shine most in deeper tints of blue;
 And we shall see how all God's plans are right,
 And how what seemed reproof was love most true.

And we shall see how, while we frown and sigh,
 God's plans go on as best for you and me;
 How, when we called, He heeded not our cry,
 Because His wisdom to the end could see.
 And, e'en as prudent parents disallow
 Too much of sweet to craving babyhood,
 So God, perhaps, is keeping from us now
 Life's sweetest things, because it seemeth good.

But not today. Then be content, poor heart;
 God's plans like lilies pure and white unfold;
 We must not tear the close-shut leaves apart,
 Time will reveal the calyxes of gold.
 And if, through patient toil, we reach the land
 Where tired feet, with sandals loosed may rest.
 When we shall clearly know and understand,
 I think that we shall say, "God knew the best."

—MAY RILEY SMITH.

And if, sometimes, commingled with life's wine,
 We find the wormwood, and rebel and shrink
 Be sure a wiser hand than yours or mine
 Pours out the potion for our lips to drink;
 And if some friend we love is lying low,
 Where human kisses cannot touch his face,
 Oh, do not blame the loving Father so,
 But wear your sorrow with obedient grace.

And you shall shortly know that lengthened breath
 Is not the sweetest gift God sends His friend
 And that, sometimes, the sable pall of death
 Conceals the fairest bloom His love can send.
 If we could push ajar the gates of life,
 And stand within and all God's workings see,
 We could interpret all this doubt and strife
 And for each mystery could find a key.

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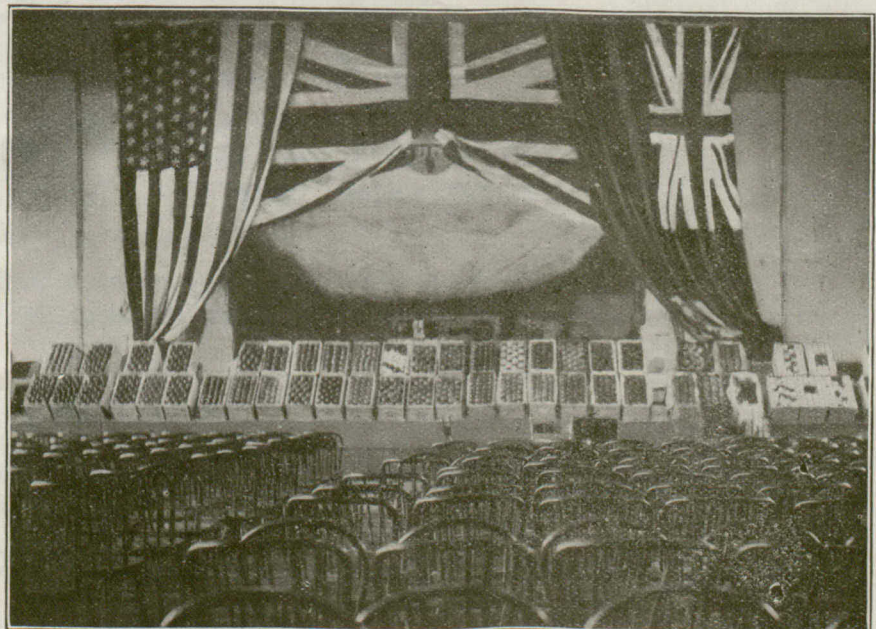
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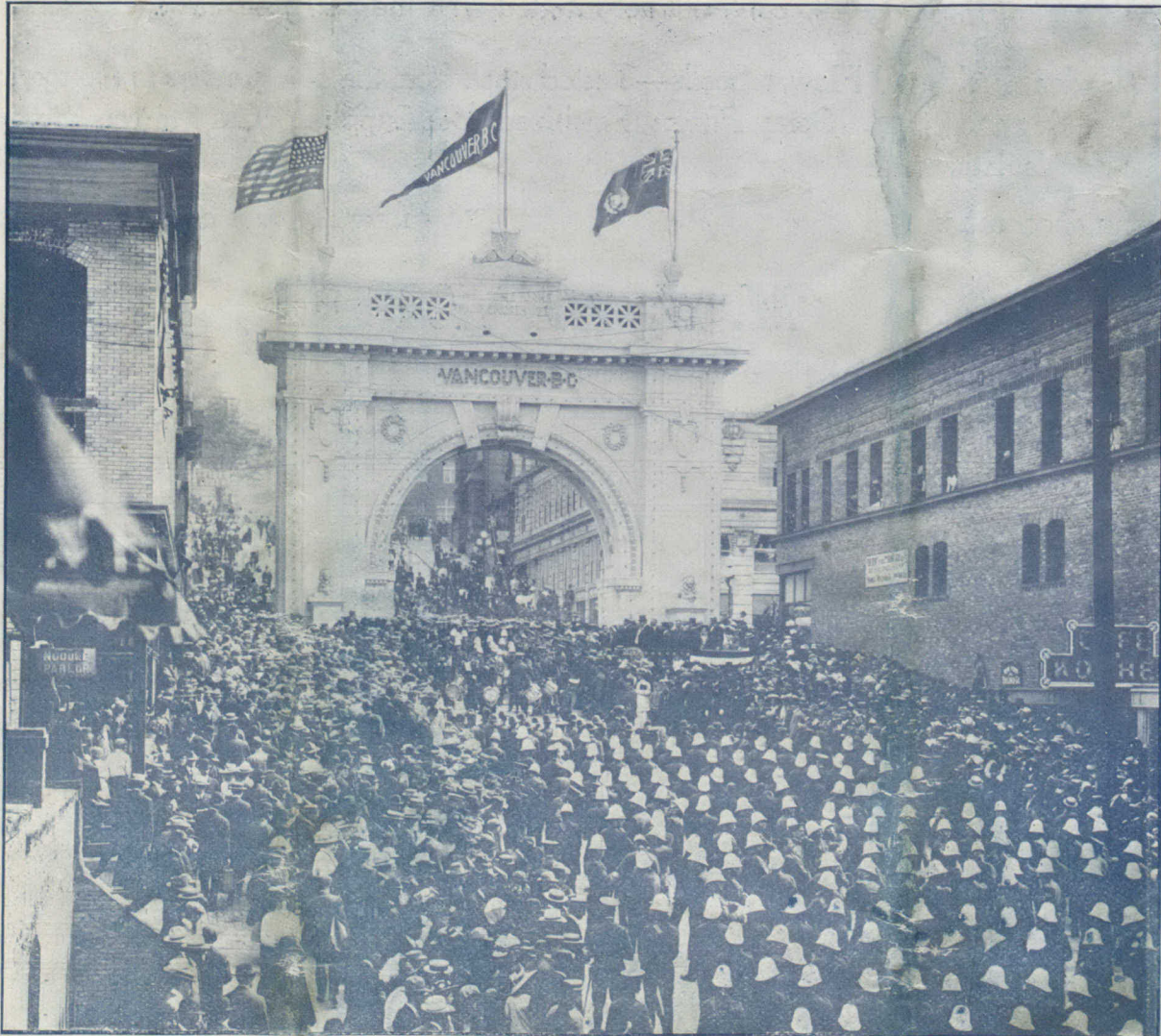
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