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THE OTTAWA NATURALIST.

VOL. XI.

OTTAWA, JULY, 1897.

NO. 4.

FRUIT GROWING IN CANADA,*

BY

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HORTICULTURIST.

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I wish to speak of the fruit and fruit districts of Canada as these cover the whole, or practically the whole, of Canadian horticulture. The term "horticulture" embraces not only the cultivation, but the amelioration of fruits, plants and vegetables, so that the field occupied by the subject under discussion is exceedingly wide. As originally used, the term horticulture, applied to the cultivation of fruits, flowers and vegetables within circumscribed enclosures, commonly called gardens. Thus we find that the English word garden is derived from the Anglo-Saxon *gyrden*, to gird or enclose. In like manner the derivation of orchard is found in *ortgeard*, an enclosure for fruit trees, and again *wyrt geard*, a garden for the cultivation of vegetables or herbs.

It is difficult to discuss the status of fruit growing in Canada to-day without glancing at the evolution of the art—as it was for centuries previous to the application and study of principles, which raised it to the dignity of a science—not only in Canada, but in the mother countries, for both are intimately connected. There has, and probably always will be, some controversy between botanical and horticultural historians regarding the relative antiquity of the two rural and venerable arts, agriculture and horticulture—one side claiming that since agricul-

*An address delivered before the Field-Naturalists' Club, March 11th, 1897.

ture, or the cultivation of cereals as it was undoubtedly restricted to in our early civilization, provides food in sufficient quantities and adapted to the use of man, that it should be considered the parent of horticulture ; while those on the other side, take the ground that historically, at least, agriculture appears in the natural course of events to have been evolved from the art of gardening, and claim that the latter, therefore, should enjoy the distinction of parentage.

EVOLUTION OF HORTICULTURE.

It would seem reasonable to suppose, however, that at first there was little differentiation. That those plants, cereal or fruit-bearing, which most readily yielded food and supplied the wants of man were used at first, and cultivated later—contemporaneously. We should remember, as DeCandolle points out, that “between the custom of gathering wild fruits, grain and roots, and that of the regular cultivation of the plants which produce them, there are several steps.” The history of the cultivation of those plants which have ministered to the wants of man as food producing agents is most interesting. This history is given by Alphonse de Candolle in his “Origin of Cultivated Plants.” To those interested in the evolution of agriculture, I would recommend this work as a reference book and one filled with a vast array of historical facts. If we cannot claim for horticulture, priority over agriculture with satisfactory assurance, we can at least claim that it is what we may term the fine art of common life, because it supplies luxuries—and luxuries within the reach of all. In this way it is eminently republican.

The causes which have in the past promoted on the one hand, or retarded on the other, the cultivation of a particular plant have been various. If easily grown and yielding a product which was, or soon became a necessity, its propagation and popularity was assured. “In the same way* the various causes which favour or

*De Candolle.

obstruct the beginnings of agriculture, explain why certain regions have been for thousands of years peopled by husbandmen, while others are still inhabited by nomadic tribes." Strenuous and persevering efforts, though probably not always well directed, were made in prehistoric times—as in our own age—to grow those plants which yielded in greatest abundance and with least outlay of labour (men like to live without working when they can) products that supplied pressing wants. In this way we find that maize, wheat, the sweet potato and tobacco were widely diffused before the historical period. The Chinese Emperor Chenming instituted a ceremony 2700 B.C. at which seed of five useful plants were sown each year, viz., rice, sweet potato, wheat and two kinds of millet. As those species which were cultivated easiest, outstripped their fellows in the race, so in regard to localities, those sections or regions, which offered least resistance to the rude efforts of the early cultivator became agricultural or horticultural centres, from which after the advent of civilization, seeds, plants and *culture* flowed out in diverging lines. With the history of the civilization of the old world is most intimately wrapped up the progress of horticultural development. This is absolutely true when applied to the colonization of the new world.

CLIMATE AS AFFECTING PLANT GROWTH.

Among the factors bearing upon the horticulture of any country it is readily seen that climate exercises the most potent influence in determining the range and character of the fruits it is possible to cultivate, and the fact that our fruit lists have greatly changed during the last half century is no doubt owing as much to modified climatic conditions, as to the difference in methods of propagation and due also possibly to the fact that among fruit growers there has been of late a keener discernment in regard to quality in fruits.

In the early history of the province, when the forest *primaeval* covered our hills and valleys and shed abroad its bene-

ficient blessings in the form of *even* distribution of moisture and *even* radiation of heat, there is little reason to doubt that with this almost complete covering of verdure acting as a modifier of extremes in a measure—in the same manner as large bodies of water—there would prevail more equable climatic conditions and a more favourable era to the longevity of classes of trees and fruits more or less susceptible to climatic extremes. So climate may be considered the regulator and restrictor of varieties and in all horticultural operations whether our energies and faculties are applied to the production of, or the trial of a new fruit, it is of prime importance to know something of its probable inherent qualities, acquired from climatic situation, and perpetuated by heredity. Turning to another phase of the question, we should not forget that with perhaps slightly changed climatic conditions, brought about by the operations of the agriculturalist, come greatly altered soil conditions, the extent of whose influence upon plant growth we are apt to under estimate. Woody growth produced by virgin soils is very different in its capacity to withstand cold, to that produced by soils first depleted of their natural store of plant food by cultivation and then enriched by artificial fertilizers ; and so it happens that we find many of the fruits successfully cultivated by our forefathers, do not succeed in the same localities at the present time. It would be interesting in this connection, and in view of the fact that we are indebted to England for so many horticultural treasures, to trace the influence of the Roman, Saxon and Norman conquests upon English horticulture and the important mission filled by the Roman monks in the same connection, but I must without further preamble come nearer home and consider the condition and status of Canadian fruit growing.

SOURCES OF CANADIAN FRUITS.

Whence came our fruits ?

They came, undoubtedly, with our first colonists ; whether the peasant of Normandy, the Puritan, the Scotchman, the

Englishman or the Irishman. Unfortunately, the early history of fruit growing is in each of the provinces wrapped in more or less obscurity. It has been the fashion in the past, that while political and social events were recorded with precision and accuracy, the introduction of important agricultural and horticultural factors bearing upon the happiness and welfare of the human race have been entirely overlooked, unrecorded, and their influence thus under estimated. How much do we owe to the person who was instrumental in bringing from the orchards of Normandy the seed which produced our unrivalled Fameuse. Who can estimate the value of that apple in ministering to the wants of the poor, in supplying a luxury to the rich, and acting as a colonization agent for us in the mother countries. As with the origin of the Fameuse, so with many other fruits—we find ourselves without definite information regarding their early history. These fruits came as seeds with the early settlers,—who cleared the forest, who faced privation from lack of food, danger from the Indian who lived by the chase—but remained as useful fruit-bearing trees to lend a semblance or likeness of the home in the new land, to that across the seas.

Reproduction in early days—fortunately for the welfare and successful evolution of a race of hardy fruits—was by nature's method, through the seed. By means of this agency, assisted by another force operating silently but unceasingly—natural selection, or the survival of the fittest—many of our fruits have been produced. The Fameuse and St. Lawrence,—two grand Canadian apples,—the Newton Pippin and Baldwin are familiar samples. The following is the inscription upon a monument in Massachusetts—the only one of its kind as far as I am aware in the world—: **“This pillar, erected in 1895 by the Rumford Historical Association, incorporated April 28th, 1877, marks the estate where in 1793 Samuel Thompson, Esq., while locating the line of the*

*Address by C. C. James before Entomological Society of Ontario, Nov. 1896.

Middlesex canal, discovered the Pecker apple tree, later named the Baldwin."

The apple trees that were grown from seed planted by the early settlers and cultivated by the pioneers, in many instances proved long lived, some reaching the age of 200 years, or more. These trees attained great size and bore immense crops of what was termed natural fruit. Even now we find in the older portions of the province isolated individuals and remnants of these early plantings ; among them, fruits possibly not always of high flavour but frequently surpassing in keeping properties any of the propagated varieties now common to the district.

Mr. Hadwen, an eminent pomologist of Massachusetts, says : "The process of degeneration or decay of the apple seems to be less rapid than that of the pear. Out of 60 varieties mostly of American origin, grown fifty years ago, more than 40 are still cultivated and esteemed. There is little doubt that the now almost universal practice of propagating by grafting and budding has more directly affected the longevity of our large fruits than any other factor, though the change is less marked, as already stated, in the case of the apple than with the pear and peach." At the same time we have all had reason to notice how much disappointment frequently arises in our attempts to multiply the individuals of a seedling of special merit by the usual methods, grafting and budding. However healthy, vigorous and prolific the original tree may be there is no absolute assurance that when grafted either upon the root or top of another individual, it will maintain all its original and desirable characteristics. As some trees are sensitive in this direction, so again others are apparently entirely oblivious to congeniality of stock and root, sustaining their own strong individuality through life despite varying soil and climatic conditions. The Duchess of Oldenburg, a Russian apple, is an excellent example of this class, bearing freely and regularly wherever planted.

BOTANICAL POSITION.

A glance at the botanical position of some of our leading fruits—Canadian fruits, at least—may be of interest. We see at once that to the Rose family we are indebted for nearly all our tree fruits, as the apple, the pear, plum, cherry, the peach and its smooth-skinned sister, the apricot, in addition to the king of small fruits, the strawberry, and the members of the genus *Rubus*,—the brambles and raspberries.

Pyrus malus, L. with *P. prunifolia*, L. both European, are the parents of the cultivated forms of the apples of to-day. By comparing a ruddy specimen of the Emperor Alexander with a small specimen of the Siberian crab, we may obtain an idea of the improvement which has taken place in apples since the inhabitants of the Lake Dwellings of Switzerland cultivated pomaceous fruits. The native crab of America, *Pyrus coronaria*, L. is beautiful in blossom, hardy in tree, but thus far incorrigibly astringent in fruit. However, over 80 per cent of our apples are of American origin that is to say the seed which produced them was planted in American soil. Nature has not dealt generously with us in matter of peaches, cherries and pears, all indigenous to Europe, not found wild in America; but man has by seedling production developed varieties well adapted to the vicissitudes of our varying climate.

NATIVE FRUITS.

Remarkable progress has been made during the last half century in the development of native fruits. By looking at the evolution of the American grape, a prominent example is afforded. It is but a little over 60 years since Catawba, the first selection from the wild *Vitis Labrusca* L. of the south was made. But it is since the advent of the Concord, "the grape for the million," about 40 years ago, that varieties have multiplied with such astonishing rapidity, till at the present time they are numbered by the hundreds. Another example may be cited in the native plums

of America, *P. Americana*, Marshall *P. Chicasa*, Michx with sub-species. Thirty years ago, the progeny of *P. domestica* L. (the gage and egg type) of Europe were entirely relied upon. Now we have fully 300 varieties, pure or cross-bred, developed from selected varieties of our native species. These are destined in the future, by reason of hardiness and vigour, to supply the wants of settlers in the interior of our great country and in parts little more than explored at the present time. Within a century there have come to Canadian fruit growers, native plums, grapes, gooseberries, raspberries, cranberries, mulberries, pecans and chestnuts—and I had almost forgotten persimmons, a favourite with our coloured brethren in the south. These latter we do not expect to be widely planted in our day.

FRUITS STRUCTURALLY CONSIDERED.

The structural part of fruits is extremely interesting, as recording the remarkable modifications brought about by cultivation, as well as affording a glimpse of the analogy existing between the various organs and parts of the plants.

In horticulture we deal with those fruits called by the botanist, fleshy or indehiscent fruits. There is a disagreement between botanists and fruit consumers in regard to the use of the term "fruit." It is a disagreement between science and sentiment. Speaking botanically and technically, the seed is the fruit. Poetically and practically, the fruit is that which we eat. However, those plants yielding fleshy fruits are those which concern the horticulturist. This fleshiness is brought about by an abnormal development of the parenchyma. The ovary results from the transformation of a leaf, made up of the epidermal coverings, the endocarp and pericarp, enclosing the mesocarp. These parts may be traced in the structure of *pomes*, or *berries*, as styled by some botanists, as well as in the stone fruits, or drupes. Examining an apple we find that it results

from the ripening of an inferior and compound ovary, with five carpels, originally free. It is wrapped like the fruit of the rose by an expansion of the floral receptacle. This covering becomes fleshy and succulent like the ovary with which it is joined, of which the endocarp alone lining the hollows of the five cells is thin and cartilagenous. The endocarp, as Figuier points out, forms that part which sticks out between the teeth, when we eat an apple. In the case of the orange we have a curious modification. The external yellow skin represents the epicarp; the white spongy matter, the mesocarp; the thin membrane lining the quarters, the endocarp, while the edible part exists as an accessory to the pericarp. Turning to the drupes, the peach, cherry and plum result from the ripening of a superior ovary. We find first, in the waxy skin of the plum, the epicarp; in the pulpy succulent flesh, the mesocarp, and in the woody kernels, the endocarp. A knowledge of the nature of each fruit, the conditions surrounding the development of its acids and aromatic flavours is essential to their proper and satisfactory preservation. This touches the broader and commercial economics of the industry.

FRUIT DISTRICTS OF CANADA.—MARITIME PROVINCES.

Prince Edward Island.—We find on the Island still a few of the old French orchards of apples and cherries. Rural husbandry has, however, been of a specialized kind, and up to a few years ago little was done outside of potato growing and horse raising. A deep interest in dairying and fruit growing has recently been awakened. The advantages of the Island from the standpoint of the fruit producer are many and weighty. Among these are natural underdrainage in many parts, an equable climate and proximity to the European market. Cherries have been cultivated with success since the advent of the first settlers. They belong to the Kentish type and ripen a month later than do the same varieties grown in Eastern Ontario.

Cranberry culture is being extended in the inland marsh lands. The fruit is shipped to England. There is undoubtedly a future for cherry, apple, plum, pear and small fruit growing on the Island; a few large orchards are already established and are bearing satisfactorily. The fruit keeps particularly well.

Nova Scotia.—The Dominion owes very much to this province for the good pioneer work done in advertising the fruit-growing capabilities of Canada in the European markets. The best advertisement that could be given by any country was afforded by the magnificent display of fruit made by the Province of Nova Scotia through its Fruit Growers' Association at the Indian and Colonial Exhibition in London in 1886.

As early as the middle of last century, the Acadian French, who then peopled Kings and Annapolis counties, cultivated apples and pears with great success. When these lands fell into the hands of the Connecticut and English immigrants in 1760, old pear and apple trees were found in many places, some of the latter existing at the present day. It must not be supposed that the apple growing of Nova Scotia is restricted to the Annapolis Valley. The fertile valleys of the Cornwallis and Gaspereaux rivers are equally well adapted and equally productive. The protection afforded by low parallel lines of hills, known as the North and South Mountain ranges, sheds a beneficent influence much appreciated by the fruit growers of these regions. The numerous bays and inlets assist in equalizing temperatures and exercise a marked influence upon the longevity—which is proverbial—of the apple trees in this region.

The soil consists of sand, sandy loam and clay, overlying a sandstone formation. The enormous rise and fall of the tides, from time immemorial have worn away soil and rocks and produce those rich and extensive deposits constituting the present marsh and dyked lands. These marsh lands serve the purpose

purpose of supplying an abundant annual supply of herbage, in addition to yielding an inexhaustible store of cheap natural fertilizer used by fruit growers with great advantage upon the upland orchard areas. The more favourable portions of the province produce apples of the finest quality, plums, pears and small fruits in fair quantity and of good quality. The early ripening varieties of peaches may, and are being cultivated with success in the open. This branch of the industry is developing rapidly. Another branch of the industry unknown to commerce ten years ago, is now rapidly assuming important proportions. I refer to cranberry culture. In 1890 some 400 barrels were harvested. Last year the output reached 2,000 barrels. The total orchard area of the province is estimated at 75,000 acres. The marketable crop of apples amounted last year to over 500,000 barrels, nearly all exported to Britain. The cultivated orchard area was increased this year by 5,000 acres. The names of Col. John Burbidge,—introducer of the well known Nonpariel Russet,—Dr. Samuel Willoughby, Ezekiel Calkin, Dr. Inglis—first Bishop of Nova Scotia, who brought to the Valley Yellow Bellefleur, where it was named Bishop's Pippin, in consequence,—Hon. Charles Ramage Prescott—who imported Ribston Pippin and the famous *Gravenstein*, which he fruited in 1838,—Dr. C. C. Hamilton—the founder and first President of the Provincial Society—are all names that should be handed down to history, and are those whose good deeds will live after them, for is it not true that he who originates or introduces a new and valuable fruit suited to general cultivation, is as much a benefactor to mankind as he who discovers a new principle in science, which increases the comfort and happiness of the race?

The fruit growers of the province are intelligent and energetic. The establishment of a School of Horticulture at Wolfville, the only one of its kind in America, is but an evidence of the progressive spirit of the people. There is still a large amount of unoccupied fruit land in the province.

New Brunswick.—The climate of this province favours a mixed husbandry. Wild raspberries, strawberries, blueberries and cranberries grow in profusion and have to some extent hindered their cultivation. Apples may be grown successfully for home use in nearly all parts. Large commercial orchards are in bearing and others are being planted in the valley of the St. John River. The fruit harvest is later than in Nova Scotia. New Brunswickers are, therefore, enabled to place their berries upon the Boston market at a time when competition from other quarters is light in these classes of fruits. Bright minds are at work in the province. What to grow and how to grow it are questions receiving earnest attention.

Quebec.—The climatic conditions in Eastern Quebec approach quite closely those obtaining in many parts of New Brunswick. We find the principal fruit areas lying along the south side of that great artery of commerce, the St. Lawrence River. Here and there, not on the low clay flats, but on the higher middle elevations with gravelly subsoil affording natural drainage, we find orchards made up of the La Belle, Fameuse, Pomme Grise and St. Laurent—truly Canadian and truly delicious apples. It seems to be a principle in plant growth, especially in apple development, that the farther north a given variety may be grown to successful fruitage, the finer in quality will be the product. So it is with our Canadian Spys, Fameuse, Gravenstein and King—and what of our North-west and No. 1, hard wheat?

In L'Islet county, about 70 miles north-east of the city of Quebec, plum growing has become a specialized industry, during its gradual evolution covering a period of 100 or more years. The Reine Claude de Montmorency is delicious and peculiar to the region. The Damson plum trees grow in stocky form and produce all out of proportion to their size. The Kentish cherry has through heredity developed hardy forms well adapted to its new home and ripens its fruit a month later than the same variety grown at Ottawa.

Coming up the St. Lawrence we might profitably look through the old gardens in the suburbs of Quebec. We might not find apples of gold, and melting pears such as are described in poetic sentence by the author of *Le chican d'Or*, but we shall find that even on the heavy clay loams of this region, apples and plums are produced of good quality and in fair quantity. The Island of Montreal is undoubtedly the cradle of the fruit industry of the province. The ground, now covered by many of those majestic architectural structures so beautifully situated around the base of old Mount Royal, was once occupied by monuments in the form of fruitful apple and pear trees reared by the efforts of man and nature, not so imposing in appearance, though hardly less beautiful, but perhaps more useful in effect and beneficial in influence than piles of granite, sandstone, or marble. On the Island of Montreal we find a truly intensive style of fruit growing; apples and pears are staples. Strawberries, gooseberries and other small fruits are extensively cultivated. Convenient market facilities, both at home and abroad, assist the fruit grower. About the foot-hills of those curious out-croppings of the Vermont mountains that we find in the Richlieu Valley and in the Eastern Townships—localities peopled by U. E. Loyalists—fruit growing is a leading branch of rural labour. The number of varieties peculiar to a locality is an indication in fruit growing of the relative antiquity of the industry. Here we find our native Canada Baldwin and our Winter St. Lawrence. Beloeil, Rougemont and Abbotsford, are well known to Quebec fruit growers as the homes of progressive horticulturalists, and the name of the late Charles Gibb of Abbotsford is well known throughout the continent as a fruit-grower and a philanthropist. The fruit area along the New York boundary line is rapidly extending, Apples, plums, pears and grapes here reward the efforts of the fruit grower with abundant crops. The scene in Montreal along the docks last autumn when apples by the thousands of barrels were going out by steamer was indicative of the extent of the industry.

Ontario.—A hasty description of fruit growing in this province would easily occupy the whole time at my disposal this evening. We shall first look at some of the older fruit growing sections. Along the banks of the Detroit river in the extreme south-west are gigantic pear trees. These are from seed planted probably by French missionaries. One of the oldest is said to date from 1705. Legend also states that a colonist brought from his European home three pear seeds in his vest pocket and planted them near Amherstburg. These grew, bore fruit, the seed of which produced the picturesque old trees marking the landscape of this region at the present day. The trees are productive, but the fruit is not valuable. The planting of apple orchards began in this region about the year 1784. Since that time grape growing has assumed enormous proportions. The entire peninsula between Lake St. Claire and Lake Erie, composed of the counties of Essex, Kent and Pelee Island, are especially favoured climatically, for the production of grapes and peaches. The manufacture of wine is a business of growing importance. On Pelee Island there are 350 acres of vineyards. This Island has probably the highest mean temperature of any point in Canada. North of Pelee Island is a peach section—rapidly becoming recognized as one of the best in Canada. The industry is not more than 20 years old, yet in 1894 a single station, Leamington, shipped 35,000 baskets of peaches. Last year that number was probably doubled. It is estimated that nearly half a million peach trees were planted last spring in this section; this year the area planted will nearly equal that of 1896. Land values are increasing in this section.

Along the south side of the Georgian Bay, in the valley of the Beaver River, we find one of the finest plum growing sections of Canada. Disease of the trees is practically unknown. In 1894 a carload of plums was shipped every day for three

weeks from Thornbury. Mr. C. C. James, Deputy of Agriculture of the Province, says: "There are those who would rather possess a plum orchard in Beaver Valley than an orange grove in California." The apple region of Lake Huron is well known to buyers who cater to the demands of the European markets. The handsome appearance and fine qualities of the fruit are duly recognized. This region produces from 300,000 to 500,000 barrels of apples per annum. The staple varieties of this region are Spy, Baldwin and Greening.

Travelling eastward along the north shore of Lake Erie, we come to another famous fruit growing region—the Niagara Peninsula. This is one of the oldest fruit growing sections of the country. Here, between 1780-90, the U. E. Loyalists received grants of land from King George, and sowed seeds of apples brought from their homes in the United States. Here, we are told, that John Smith, in the early part of this century, offered to sell his claim to 200 acres of land for a cow, but found no buyer. This land is now valued at \$300 to \$500 per acre. The improvement of native fruits by grafting and by the introduction of foreign varieties began about 1830. Since then the development has been amazingly rapid. Electric cars run every hour past the doors of the fruit growers between Hamilton and Grimsby; telephones connect their homes and bring daily market reports. During the shipping season, a fruit train leaving Niagara Falls daily and running to Hamilton, carries away such peaches, plums, cherries, grapes, pears and berries as are not shipped by boat from Hamilton or St. Catharines. A single firm paid \$3,000 for fruit baskets in 1894, these cost from \$3 to \$4 per hundred. Wine making is also an important industry. The old town of Niagara-on-the-Lake is the shipping point for a splendid peach section. In 1894 300,000 baskets, mainly peaches, were sent out from this port. It is worthy of mention that figs and black Hamburg grapes, both grown and ripened in the open

air, were shown in Philadelphia in 1876 and in Chicago 1893 by Henry Pafford, Esq., for many years mayor of the town of Niagara.

Crossing Lake Ontario to Toronto and travelling eastward, we pass through a favoured pear growing region, but one producing also fine apples and plums. The Peninsula of Prince Edward county is deservedly famous for the apples it produces. Northern Spy, King and Fameuse are staples and grow to great perfection. The growing of garden varieties of pease for seed and canning purposes is a specialized industry in this county and one which yields an estimated annual revenue of about \$200,000 to the farmers of the county. From Kingston to Montreal along the river is also a region producing fine apples, plums and berries. Mr. C. C. James, Deputy Minister of Agriculture for Ontario, gives the following estimated statistics regarding fruits and fruit areas in the province in 1895. Area in orchard, garden and vineyard, 320,122 acres ; number of apple trees of bearing age, 5,913,906 ; young trees not bearing, 3,548,053 ; yield of apples in 1896 estimated to be 55,895,755, or about 20 million barrels. Fairly complete statistics covering the fruit resources of the province may be found in Bulletin No. 92, Department of Agriculture, Toronto. I have given more space—and for obvious reasons—to Ontario than to the provinces eastward. The fruit possibilities of the province are great and are being rapidly developed by progressive and intelligent orchardists.

Manitoba and the North-West Territories.—As far as the tree fruits are concerned, those which can be grown successfully in these regions without extraordinary care have yet to be produced. A few apples and crabs have reached fruiting age in Southern Manitoba. The seeds of these should be carefully planted in the hope of securing therefrom hardier forms. Berries of all kinds may be grown by the exercise of judgment, skill and perseverance. Some of the native fruits are

being cultivated and appreciated, among these are gooseberries, currants and juneberries. Wheat is king here—long may he reign—surrounded by lesser lights in the factors that compose a successful and profitable mixed husbandry.

British Columbia.—I approach a description of the fruit resources of this province with a diffidence born of lack of personal knowledge, increased by a feeling of the extraordinary possibilities of its deltas, its coast line, its valleys, its benches, its irrigated lands. Great climatic variation means a corresponding widening of the possibilities of fruit culture, and there is here undoubtedly a more extended range of thermometric variation and atmospheric moisture, than is found in any other province of the Dominion. That fruit of fine quality can be grown and is being increasingly cultivated is evidenced by the magnificent plums, pears and apples shown by the Superintendent, Mr. Thos. A. Sharpe, of the British Columbia Experimental Farm at the leading exhibitions of Ontario last autumn. That apples of surpassing size and of great beauty are grown is attested by the fact that British Columbia won and held the distinction for some time at the World's Fair of having the largest apple on exhibition, and may I venture to add that she can also claim the proud distinction of numbering among her landed proprietors the Earl of Aberdeen His Excellency the Governor General of Canada, and the largest orchardist in the Dominion. The value of His Excellency's extensive orchard situated at Vernon in the Okanagan district, to the province from the standpoint of a stupendous object lesson, comprising as it does some 200 acres of fruits, together with its colonizing influence, may not be over estimated. Pears, plums and apples are grown with great success in the Okanagan valley. Speaking of the best fruit lands of the province, a pioneer fruit grower, Mr. E. Hutcherson, of Ladners, says: "Some of the best fruit lands are to be found along the mountains and foothills on either side of the numerous valleys of the province."

This is particularly true of the region along the Fraser River between Chilliwack and Hope. Briefly, the region along the Fraser River from Agassiz to the coast is one abundantly supplied with water and now producing large quantities of plums, pears, apples and berries. Some of the interior valleys are eminently adapted to the requirements of the tenderest tree fruits. Peaches are being successfully cultivated here and there, on the bench lands.

The climate of parts of the Okanagan Valley is described by those who have studied it carefully as approaching perfection. At Vernon fruit growers, stimulated by the example of His Excellency, are planting fruit trees extensively. With irrigation the upper plateaux and interior regions are proving wonderfully fertile and productive, and with this life-sustaining agent the possibilities of fruit growing in the province would appear to widen as we advance. The increased interest in mining will in time react favourably upon the fruit interests of the province. With favourable freight rates, should not the fruit growers of British Columbia supply the homes of the rancher and farmer throughout the vast area between the Rocky Mountains in the West, and the Red River in the East, with this flower of commodities? And is he not in a position, at the Western Gateway, if supplied with proper shipping facilities, to give of his plenty to his cousins in Australia during their season of scarcity.

Did time admit, I would like to speak of the canning industry of Canada, the evaporating industry, and the great nursery interests of the Dominion. It might interest you to know that a single canning establishment in Prince Edward county made a shipment last year of canned fruit and vegetables put up in one factory, consisting of a complete train of cars, which steamed away to supply settlers in the Western prairie provinces with the good things of life, concentrated and properly conserved.

Most powerful among the factors which have assisted the development of fruit growing in Canada, are those organizations known as Association's of Fruit Growers. Nova Scotia, New Brunswick, Quebec, Ontario, British Columbia, and, lately, Prince Edward Island, have each a provincial organization composed of the best men. It is to the credit of the several provincial governments that the good work of these societies is in the main wisely assisted. In the volumes of the reports of these societies are chronicled the histories of provincial fruit development. The progress of less than 2 century has been marvellous. The trend of the age in fruit growing as in other industries is towards specialism. The fruit grower is yielding to the impulse. We are now growing fruits especially for canning, for home use, for keeping, and for carrying. We are finding the areas best adapted to the production of particular varieties and profiting by this experience. Lastly, we are uniting science with practice in studying principles and in applying methods which will produce better fruit than heretofore at less cost, thus ministering to the wants of the poor, as well as to the rich, and by so doing adding the wealth to of our land and increasing the sum total of human happiness.

The President (Mr. Shutt) in conveying the thanks of the Club to the lecturer, said that the intensely interesting and instructive lecture that they had, had, the pleasure of listening to was one that might well serve as a type of those most useful addresses which treat of the practical or economical, as well as the more strictly scientific aspect, of the subject. There was probably no one in Canada, he said, who by reason of his official position and the wide experience which it afforded, was so able as Mr. Craig to impart reliable information regarding fruit culture in the various parts of the Dominion.

They were especially honoured, the President remarked, by

the presence of His Excellency the Governor General, who, he need not remind the audience, was Patron of the Field-Naturalists' Club. This was the third lecture of the present course that His Excellency had attended, and the Club was particularly gratified by the interest that he was showing in the work of the society. His Excellency had not only a general interest in all the important industries of Canada, but a particular one in fruit culture and its possibilities in the Dominion. It was well known that His Excellency was an extensive fruit grower in British Columbia, and he (the President) felt sure that those assembled would be very much pleased if His Excellency would address them on the subject that they had had brought before them this evening.

The Governor General, then, rising amid applause, spoke as follows :

It is not surprising that the lecture of this evening has been followed with much attention, for the subject treated is one of much importance, and has been dealt with in a practical and interesting manner. I was struck by the following among other points alluded to, namely, where Mr. Craig spoke of successful fruit culture in Canada, and of the export of Canadian fruits to Europe furnishing an excellent emigration agency. There can be no doubt at all—and it is well to keep it in view—that a supply of first-class fruit, such as Canada is well capable of producing, for the markets, for instance, of Great Britain, will always be particularly valuable as representing the resources and capabilities of the soil of this land. Even apart from the business aspect of the matter, fruit culture has an attraction of its own. It is a branch of botanical science ; and it occupies and requires attention and care of one kind and another throughout the year. I speak to some extent from personal experience, as I may claim to be a Canadian fruit grower (applause), though other duties and avocations render it necessary that I should carry on the work to a large extent by deputy. However, I have at least sufficient practical experience in the matter to make me

aware how easy it is to allow a fruit farm *not* to pay ; in other words, to realize, and it may be to impress upon others who intend to follow the pursuit, the necessity of unremitting care and vigilance in the selection of trees, in the planting, in subsequent attention in the matter of spraying, so as to destroy the voracious pests which are ever ready to appreciate good fruit ; and furthermore, the equally all-important matter of skilful and judicious packing, in order to secure success, which however may surely be obtained in due time by perseverance and skill.

I think we may feel that Mr. Craig, although he dealt with various classes of fruit culture, and various districts in the Dominion, displayed a judicious impartiality. That is a quality which of course always appeals to a Governor General. Mr. Craig did perhaps indicate a leaning, if anything, towards the Spy and the Baldwin ; but I am sure he would not go so far as a worthy fruit grower who at an Association meeting remarked that if he had a hundred trees to plant, he would select Baldwins for ninety-nine of the lot. "May I ask," said another member, "what variety the gentleman would select for the hundredth tree?" "A Baldwin, sir."

His Excellency concluded by saying some kind things in reference to the work of the Experimental Farm officers and by expressing appreciation of the service rendered to the public by the Ottawa Field-Naturalists' Club in providing the valuable series of lectures of which the one we have had the pleasure of hearing to-night was a typical example. He wished the Club continued success in the future.

PREVENTION OF CRUELTY TO BIRDS, ANIMALS
AND FISH.

At a meeting of the Hintonburg branch of the S.P.C. held in the Town Hall there on the 23rd of June, several members of the Field Naturalists' Club gave short addresses, bearing especially on the prevention of cruelty to birds, animals and fish. Prof. Prince dwelt especially on the preservation of fish and the necessity of protecting them when spawning. Mr. W. T. Macoun spoke of the necessity of training the boys from childhood to not injure the birds and instanced the large number of birds nesting at the Experimental Farm, where they were partly protected and afforded places for nesting. Mr. A. G. Kingston spoke of the intense interest in the study of our birds and how much of the delight was lost unless we know them whenever seen or heard. Mr. J. Ballantyne's remarks were principally about animals, and he gave some interesting facts regarding the habits of some of them, and dwelt on the necessity of their being protected. Dr. J. Fletcher showed that many birds which were generally considered very destructive, really did more good to man than harm. He condemned the caging of wild birds, saying that in nearly every instance they died. Mr. W. A. D. Lees touched on the legal aspect of the question showing how the law if exercised could convict all who shot or trapped birds or took their eggs. He also spoke of the delight of watching and listening to the birds in their haunts.

W. T. M.

BIRD NOTES FOR JUNE.

No new arrivals were recorded during the month except the Pine Warbler. Since the first notes were published in the April number, records have been taken of 116 species of birds. A few notes have been received this month, principally on the

nesting of birds. We are indebted to Mr. White for the following :

Wilson's Warbler.—Still here on the 5th.

Pine Warbler.—Seen at Rockliffe on the 6th.

Mourning Warbler.—Seen building nest on the 6th.

Loon.—A nest of this bird was found on the 21st at Lake of Islands, Gatineau, containing two eggs; the nest was principally remarkable for its absence. The eggs were within six inches of the water, on the bare ground. The old birds were quite tame.

Phoebe.—A nest of the phoebe was found on the 21st containing five eggs. It was built on the end of a log projecting over a cliff near Lake of Islands.

House Wren.—Young birds were flying on the 22nd.

At the Experimental Farm there have been about twenty species of birds breeding during the summer. The increase in the number of cat-birds building on the farm was noticeable this year. The shrubs are now so large that they have a better opportunity of hiding their nests. Another nest of the brown thrush with four eggs, was found on the 18th by Mr. Macoun, in a large pile of brush, about eight feet from the ground. This was about one month later than the first nest discovered.

W. T. MACOUN.

Associate Editor, Ornithology.

EXCURSION TO THE PICKANOCK.

The Field Naturalists' Club have had many profitable and enjoyable excursions to several points along the Gatineau, but on the 20th of June old fields were left behind, as, by a special train, a party consisting of 47 adults and five children travelled up the river for about sixty miles to near the junction of the Gatineau and Pickanock and the village of Gracefield. The train, which left Ottawa about 9.30 a.m., made very fair time

and the run was made in a little more than two hours. About half a mile south of Gracefield the train stopped, a walk of another half mile through woods and meadows brought the excursionists to a pine grove, where lunch was dispatched with much relish. In the afternoon all formed one party and walked to the Gatineau river, then down that river to where the Pickanock empties into it, and up the Pickanock for a half mile or more ; when under the shadow of the trees by the river's bank a short rest was taken, and addresses given by Mr. W. B. Sinclair, Vice-Principal, Normal School ; Dr. A. Lehmann ; Mr. Whitley, of London, Eng., and Mr. W. T. Macoun. After ascending a neighboring hill, where a magnificent view was obtained of the surrounding country, Gracefield was reached, and leaving there shortly before six p.m., the train arrived in Ottawa at 8.35. Everyone seemed pleased with the day's outing.

While the district visited abounds in beautiful scenery, it did not at that season offer a good field for the botanist or ornithologist. Very few birds were seen and no plants of especial interest noted. The wooded land was stony and the growth not very luxuriant. An interesting object on the hillsides was the moose-wood (*Dirca palustris*), large clumps of this shrub being very prominent there.

W. T. M.

EXCURSION.—As very many of the members of the Club are this month out of town and satisfactory arrangements cannot be made with the railways or steamboats for a small party, the Excursion Committee has decided to postpone for the present the "Outing" announced in the last issue.

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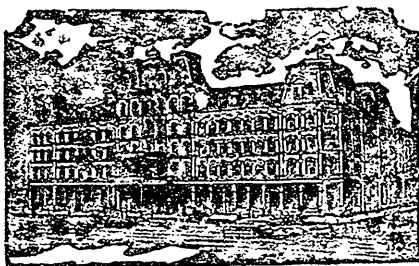
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