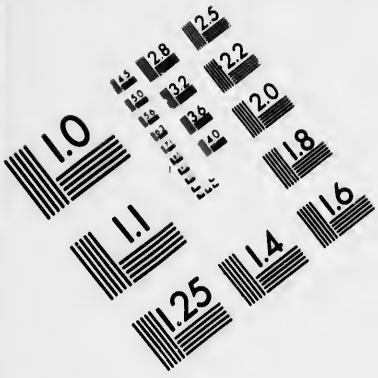

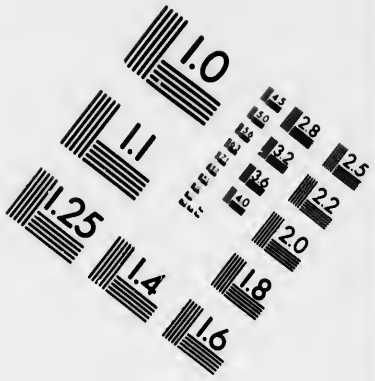

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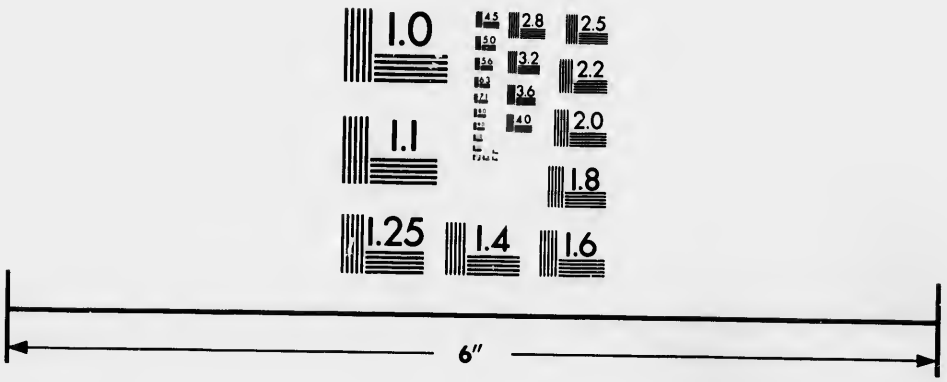

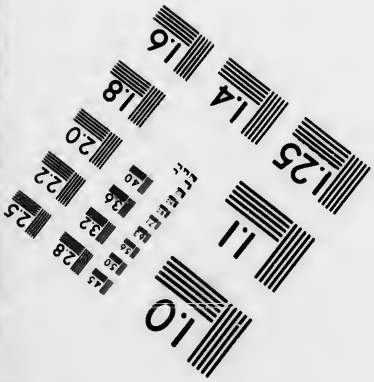

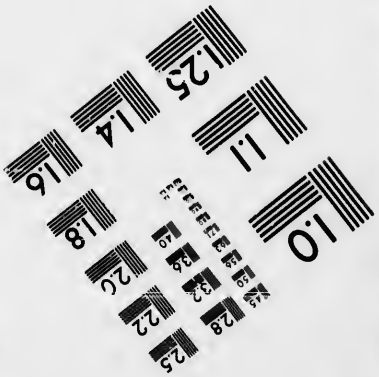

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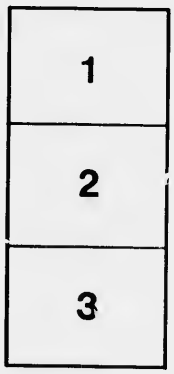

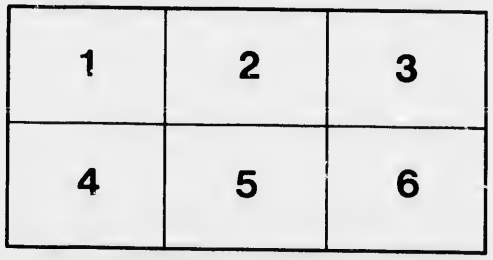

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1883.


NEW MAP OF
BRITISH COLUMBIA
—BY—
R. T. WILLIAMS, Publisher,
VICTORIA, 1882.
SCALE OF STATUTE MILES.
PACIFIC OCEAN
CASCADE RANGE
VANCOUVER ISLAND
RAILWAY
NOW UNDER CONTRACT
Longitude West 122 from Greenwich.

Longitude West 122 from Greenwich.
UPPER PORTION of BRITISH COLUMBIA.
BRITISH COLUMBIA
NORTH PACIFIC
BLUE MOUNTAINS
CARIBOO
Barkerville
Quesnel
Alexandria
Soda Creek
Lac La Hache
Dog Creek
Clinton
Lillooet
Ashcroft
Kamloops
Spence's Bridge
Lytton
Nicola Lake
Yale
Princeton
Okanagan Mission
Osoyoos Lake
Seymour
Mt. Arthur
Boat Encampment
Mt. Brown
Mt. Hooker
ROCKY MOUNTAINS
NORTH WEST TERRITORY
GOLD RANGE
SELKIRK RANGE
PURCELL RANGE
COLUMBIA RIVER
Kootenay
Mt. Head
Mt. Baker
Ft. Colville
Ft. Okanagan
Chelan Lake
Kaniksu Lake
KULISPELM LAKE
Flathead River
Old Kootenay Fort
Boundary Pass of South Kootenay
UNITED STATES
Longitude West from Washington.

PROVINCE OF

BRITISH COLUMBIA,

CANADA.

ITS CLIMATE AND RESOURCES;

WITH

INFORMATION FOR EMIGRANTS.

"Well, I may frankly tell you that I think British Columbia a glorious Province—a Province which Canada should be proud to possess, and whose association with the Dominion she ought to regard as the crowning triumph of Federation."—*Speech of Governor-General The Earl of Dufferin, 20th Sept., 1876.*

PUBLISHED UNDER THE DIRECTION OF THE MINISTER OF AGRICULTURE.

VICTORIA, B. C.:
PRINTED BY RICHARD WOLFENDEN, GOVERNMENT PRINTER.
1883.

The information in this pamphlet is compiled, as far as possible, from official and trustworthy sources,—the authorities generally being quoted.

Part I.—Climate and Resources.

Part II.—Information for Emigrants.

The Index is at the end.

DEPARTMENT OF AGRICULTURE,
VICTORIA, BRITISH COLUMBIA,
31ST MARCH, 1883.

BRITISH COLUMBIA.

—o—

ITS CLIMATE AND RESOURCES; WITH INFORMATION FOR EMIGRANTS.

—o—

INTRODUCTORY REMARKS.

The province of British Columbia (including Vancouver, Queen Charlotte and other islands along the coast) is that portion of Canada which looks out on the Pacific ocean. It is the only British territory on the western, or Pacific ocean, side of the North American continent. From its commanding geographical position, its fine climate, its harbours, the variety of its resources, its vast deposits of coal, iron and other minerals of economic value, the province may be regarded as, in many respects, a duplicate, in North-west America, of Great Britain and Ireland.

Vancouver Island was constituted a colony in 1849. The great mainland territory became a colony in 1858. The two colonies were united in 1866 under the name of British Columbia, and so continued until the 20th July, 1871, at which date the colony became one of the provinces of the Dominion of Canada.

COAST LINE.

The coast, on a straight line, is about 600 miles, but, following indentations, would measure many thousand miles. It extends from the 49th parallel of north latitude (U.S. boundary line) northward to the United States territory of Alaska in 54° 40′ north latitude. The greater portion of the coast has a broad mountainous border, cut by numerous inlets and arms of the sea, and fringed with islands along its whole length. Running parallel to the coast range of mountains is another range, partly submerged, which appears above the surface of the sea, in the large islands of Vancouver and Queen Charlotte, and is represented, in the south, by the Olympian mountains of Washington Territory (U.S.), and, northward, by the islands of the coast archipelago of Alaska (U.S.). In this outer half-submerged range which forms a noble barrier for the protection of the mainland shores of the province, are three remarkable sea gaps; namely, the Strait of Fuca, the wide opening between Vancouver and Queen Charlotte Islands, and Dixon's entrance farther north. The Strait of Fuca and Dixon's entrance are continued eastward, and represented in the inland interior, by depressions more or less marked in the structural character of the mainland, as is evidenced

by the course of the great drainage rivers. The Fraser reaches the sea opposite the end of the Strait of Fuca; the Skeena falls into the Pacific near the head of Dixon's entrance.

A persistent north-west and south-east sea valley, accessible from the ocean through these sea gaps, thus stretches along the whole seaboard, separating the island-fringed, deeply-indented coast of the mainland from the large outlying islands above mentioned

EARL OF DUFFERIN'S DESCRIPTION OF BRITISH COLUMBIA COAST LINE.

(See Speech at Victoria, 10th September, 1876.)

"Such a spectacle as its coast line presents is not to be paralleled by any country in the world. Day after day for a whole week, in a vessel of nearly 2000 tons, we threaded an interminable labyrinth of watery lanes and reaches that wound endlessly in and out of a network of islands, promontories, and peninsulas for thousands of miles, unruffled by the slightest swell from the adjoining ocean, and presenting at every turn an ever shifting combination of rock, verdure, forest, glacier, and snow-capped mountain of unrivalled grandeur and beauty. When it is remembered that this wonderful system of navigation, equally well adapted to the largest line of battle-ship and the frailest canoe, fringes the entire seaboard of your province and communicates at points sometimes more than a hundred miles from the coast, with a multitude of valleys stretching eastward into the interior,* while at the same time it is furnished with innumerable harbours on either hand, one is lost in admiration at the facilities for inter-communication which are thus provided for the future inhabitants of this wonderful region."

GENERAL PHYSICAL FEATURES OF THE PROVINCE.

The Rocky Mountains proper form the Eastern boundary of the Mainland of the Province, which thus lies between that range and the Pacific ocean. The country exhibits the diversified and bold physical features that characterize the whole Cordillera region of the West coast of North America, of which it is a part. This so-called Cordillera region, lying between the long chain of the Rocky Mountains and the Pacific ocean, and belonging partly to the United States and partly to Britain, runs north-westward and south-eastward with the general trend of the coast of the Pacific ocean, and is divided into two subordinate mountainous districts by an irregular belt of high plateau country running for a long distance in the same direction.

In the Province of British Columbia are included over 800 miles in length of this Cordillera region, with an average breadth of about

* His Excellency, it will be noticed, mentions these mainland coast valleys in relation to the facilities for inter-communication. The agricultural areas on the coast of the province will be described in the sequel.

400 miles. Proceeding westward from the Rocky Mountains, the physical structure and connections of the rocky formations of the country are as follow:—

The ranges of mountains in British Columbia that lie immediately west of the Rocky Mountains proper and fringe, for the most part, the eastern and north-eastern sides of the irregular interior plateau, are known in the province as the Purcell, Selkirk, Columbia, Cariboo, and Omineca Mountains. These may be taken collectively as the representatives of the Bitter Root ranges of the American Territory of Idaho to the southward.

The British Columbian interior plateau itself is a northerly continuation of the great basin of Utah and Nevada (U. S.) It is about 100 miles in average width, closed northward by an irregular mountainous country about latitude 55° 30′, and, to the south, by a second irregular transverse mountainous region near the 49th parallel.

The British Columbian coast range—the broad western buttress of the interior plateau—a chain which begins near the mouth of the Fraser river and runs northward along the whole coast—is a distinct mountain system, uplifted later than the Sierra Nevada of California, and not of the same materials as the Cascade mountains of Oregon.

The above-mentioned outlying range, half submerged in the ocean (partly visible in the islands of Vancouver and Queen Charlotte), may be included with the Coast range.

SOUTHERN AND NORTHERN BOUNDARIES.

The 49th parallel of north latitude (the United States boundary line) is the southern boundary of the province, with a deflection which leaves the whole of Vancouver Island within Canadian territory.

The 60th parallel of north latitude is the northern boundary of British Columbia. [*See Appendix A.*] The area of the province is about 350,000 square miles.

A country with a surface so extensive and diversified, necessarily presents varying conditions for settlement, and has varieties of climate corresponding to its topography.

GENERAL TOPOGRAPHICAL DIVISIONS.

Broadly viewed, there are two grand divisions of the country,—the humid forest region of the coast, and the dry grazing region of the interior of the mainland. Vegetation is luxuriant in the coast region; the soil of the arable area is moist and loamy. The interior is more open, with plains and valleys, climate dry, timber scarce and rather poor, soil fertile but light, herbage excellent. These different grand divisions of the country will be described as we proceed. At present a word or two on the climate will be in place.

Part I.—CLIMATE AND RESOURCES.

The people of Victoria (the capital) and its neighbourhood in the southern part of Vancouver Island, consider their local climate to be the best in the province, and certainly the winter there and generally upon the island is mild and open; but this preference is not shared by the people of the Lower Fraser district, or of the interior district of Yale, who consider that the climates of their respective localities have peculiar advantages as regards both health and enjoyableness. Large portions of the south-east of the province (on Mainland), particularly about the head-quarters of the Columbia, where at present there are few settlers, probably have as fine a climate as any other section. On one point all are agreed,—the general healthiness of the British Columbian climate everywhere.

GOVERNOR-GENERAL THE MARQUIS OF LORNE'S OPINION AS TO THE CLIMATE.

His Excellency the Marquis of Lorne, who visited the province with his wife, Her Royal Highness the Princess Louise, in 1882, and travelled in the interior as well as along the sea-coast, remaining until the 6th December, described the climate as follows, in a speech at Victoria:—

"No words can be too strong to express the charm of this delightful land, where the climate, softer and more constant than that of the south of England, ensures at all times of the year a full enjoyment of the wonderful loveliness of nature around you.

"Agreeable as I think the steady and dry cold of an eastern winter is, yet there are very many who would undoubtedly prefer the temperature enjoyed by those who live west of the mountains. Even where it is coldest, spring comes in February, and the country is so divided into districts of greater dryness or greater moisture, that a man may always choose whether to have a rainfall small or great." *(See Appendix B for His Excellency's Speech in full.)*

CLIMATE.

(WHY GOOD.)

"On the western side of the North American continent, the summer heats are modified by the boreal currents and melting snows of the watersheds, while the severity of winter is not increased by a sweeping arctic current such as washes the eastern shores.

"Arctic currents do sweep down, however, and in summer are felt far south, below the latitude of San Francisco, but, more diffused, they do not lower the temperature in a corresponding degree, and the coast, open to the warm rays of the western sun, and the moist

westerly winds, presents to equal latitudes on the eastern side very unequal isothermal conditions." *(Prize Essay on Vancouver Island, 1862, by Charles Forbes, M.D., M.R.C.S., Eng., Surgeon, Royal Navy.)*

CLIMATE.

(WHY GOOD.)

"The climate of British Columbia, west of the Cascades, including Vancouver Island and Queen Charlotte's Islands, is wonderfully like that of Great Britain, except that the summers are very much drier. A warm current of water flows *down* the west coast of America, just as the Gulf Stream flows *up* along the coasts of Great Britain, and in its passage warms up the coast from Alaska to the Columbia, and gives to the western slope of the Cascades those forests which are the wonder of the world. The vapour rising from the warm sea is blown inwards, and, becoming condensed by the cooler air of the land, falls in rain or fog upon the slopes and valleys and produces the moist climate of the winter and spring. During the summer months the temperature of the land and sea are slightly reversed, and the land, instead of condensing the vapour, dissipates it—at least, in the neighbourhood of Victoria.

The valley of the Fraser below the Cascades is included in this region, and has a climate much like that described above, except that I would expect a wetter summer than there is on the coast.

Twenty-five miles above Yale we pass the outer Cascade Range, and in doing so pass from almost constant rain to the opposite extreme. * * * * * * *

About the island of Formosa, on the eastern coast of China, a current analogous to the Gulf Stream is observed moving to the north-east. It passes Japan, and part of it enters Behring's Sea and warms the northern part of Alaska, while the other part is deflected farther to the east and passes down the west coast of America, carrying with it the heat necessary to produce the exceptionally warm climate of Vancouver and the west coast generally. It is this stream which gives the heat and moisture that are the cause of the magnificent forests found from Alaska southwards.

* * * * * * *

The climate of the coast is so much like that of England that there should be no better climate for natives of Great Britain; while that of the mainland above the Cascades ought to be exactly suited to Canadians, as the climate is nearly the same as we have in the east,* except that it is drier for the most part. I think that on the whole British Columbia has a very healthy climate, and one that would tend to long life." *(Professor John Macoun, Botanist, Geological Survey, Canada, Extd. Canadian Commons Committee.)*

*The winter in that part of the Province is much shorter than the winter of Eastern Canada.

CLIMATIC VARIETIES.

"As a general fact, it has been stated that the winter temperature on the Pacific coast, as compared with localities on the Atlantic coast, is equal to at least 10° of latitude in favour of the former. For example, Quebec which is in about the same latitude as the mouth of the Columbia, has a severe winter; while in the latter locality it is as mild as in the south of England. The southern portion of Vancouver Island may be spoken of in a similar manner, except that it has a greater summer heat with less humidity. In the vicinity of Victoria the greatest temperature in the shade in July and August appears to range from 80° to 90° Fahrenheit, while the thermometer in winter seldom goes as low as 22° below freezing, and some winters there is no skating at all except on "rollers." In a province as large as British Columbia, however, it is possible to get every kind of climate, the changes taking place imperceptibly. If we cross the gulf to New Westminster on Fraser river, the air is more moist and the temperature, though not so great, is more equal, but in winter the cold is slightly greater. The upper country is drier and hotter in summer, especially from Thompson river towards the southern frontier east of the Cascade range. Similar remarks may be made concerning the country northward towards Alexandria. In these regions the winter cold is comparatively sharp. In the northern portion of the province above Alexandria on the Fraser, in spite of the elevation, the summers are warm, and in winter the cold though considerable is not excessive. As a rule, the interior remote from the coast has none of the severity which would distinguish localities in the same latitude east. The coast climate may be said to extend above Yale; then come evidences of a drier climate, and at Lytton, 57 miles above Yale, there are evidences of a hot, dry summer. The greatest degree of winter cold seems to be reached in the mining districts about Cassiar. The above is a general view of the characteristics of the climate of the province as given by the best authorities. In the neighbourhood of Victoria, in the southern portion of Vancouver Island, strawberries, cherries, plums, apples, pears, and other fruits ripen freely, and the settled portions of Vancouver Island produce the ordinary cereals abundantly. Vegetables, in particular, grow luxuriantly and attain to gigantic proportions. The adjacent islands are noted for their fine mutton. The island climate is particularly adapted for raising a superior quality of hops. The valley of the Fraser presents the same general characteristics in point of climate and productions; but when the interior is reached (by the interior we mean the great central basin lying between the Cascade and Rocky ranges of mountains) there are found large areas clothed with vegetation which furnishes the best description of food for cattle. In this basin—where the summers are dry and warm—grapes, tomatoes, and melons, in addition to the more hardy vegetables and fruits, grow in abundance, and with railway communication completed to the coast, many of the articles

which it does not pay now to raise in the interior, will find a ready market. Surely such a climate must present great advantages to the intending settler, who is thus enabled to continue his labours all the year round with corresponding profit, without having to struggle with long and severe winters as in Manitoba, where the thermometer sinks to 45 degrees below zero and the winter lasts six months, during which cattle must be housed and fed." *(From "Colonist," Victoria newspaper, Jan. 18, 1883.)*

CLIMATIC VARIETIES.

"The varieties of climate may be named as follows: the *West Coast*, the *Western Interior*, the *Canadian*, and the *Arctic*. The first, with an equable climate and heavy rainfall, is characterized by a correspondent luxuriance of vegetation, and especially of forest growth. This region is that west of the Coast Range, and is well marked by the peculiarity of its plants. In a few spots only—and these depending on the dryness of several of the summer months owing to local circumstances—does a scanty representation of the drought-loving flora of the Californian coast occur. The second is that of the southern part of the interior plateau of the province, and presents as its most striking feature a tendency to resemble in its flora the interior basin of Utah and Nevada to the south and the drier plains east of the Rocky Mountains. It may be said to extend northward to about the 51st parallel, while isolated patches of a somewhat similar flora occur on warm hill-sides and the northern banks of rivers to beyond the Blackwater. In the northern part of the interior of the province, just such an assemblage of plants is found as may be seen in many parts of Eastern Canada, though mingled with unfamiliar stragglers. This flora appears to run completely across the continent north of the great plains, and characterizes a region with moderately heavy rainfall, summers not excessively warm, and cold winters. The arctic or alpine flora is that of the higher summits of the Coast, Selkirk, Rocky, and other mountain ranges, where snow lies late in the summer. Here plants lurk which deploy on the low grounds only on the shores of Hudson Bay, the Icy Sea, and Behring's Strait." *(George M. Dawson, associate R.S.M., F.G.S., of the Geological Survey of Canada.)*

CLIMATIC VARIETIES.

"*The fine climate should be known everywhere*—variable, but healthful and agreeable—nights cool, very suitable to the Englishman, and, indeed, to all races and temperaments—the altitude, irregularity of surface, serene air and absence of marshy plains, promise health and long life to the settler—no malaria or ague—good in cases of functional and nervous debility—makes people feel vigorous and wide awake—the climate of a large part of the East Cascade* region not

* This is the common name in the province for the country east of the "Coast Range."

unfavourable for chest affections. Over a great portion of the province the climate is that of England, with rather agreeable differences—no biting east winds, for instance. Over another portion, the climate resembles that of France. The larger lakes do not freeze over, nor do the large rivers ever close entirely up. Severe winters seem to come about once every eight or ten years, but what we call "severe winters" are less severe than the ordinary winters in Eastern Canada or the Northern States of the Union. Elevated districts, of course, have the climate that everywhere belongs to them, but even the roughest mountain climate in British Columbia is healthful.

West Cascade Region.

Near the sea—say, west of Cascade Range generally, and in Vancouver Island, seldom over 80° Fahrenheit in shade on the hottest day in summer, and rarely falling to 20° Fahrenheit in winter. Genial, though rather humid; humidity increases as you go north. Summer beautiful, with some rainy days; autumn, bright and fine; winter, frosty and rainy by turns; the spring very wet. Snow falls seldom to the depth of a foot—melts quickly. When the atmosphere is clear, heavy dews fall at nights, and fogs are common during October and November; summer mists rare, partial, and transitory; no tornadoes, such as sweep over Illinois and other Northern States of the Union, and occasionally visit New England. Brilliant weather in winter, sometimes for a month at a time. I include Vancouver Island above as part of the "West Cascade region," because the climate is similar. Of course, were the matter gone into exhaustively, the island climate would present insular peculiarities.

East Cascade Region.

Climate different from the climate west of Cascade Range. Heat and cold greater; almost continuously hot in summer, but not so as to destroy vegetation. Little rain; warm rains, perhaps April and May—again, but not always, in August and September. Winter changeable; November frosty; December, January, and February cold and wintry, but generally clear and sunny; little ice; snow say a foot deep on an average of years—melts quickly, winds melt it, and often leave ground bare for weeks. March and April variable; plains then begin to show grass. Hill-sides, in some places, show green grass in March. Irrigation generally required in this region.

The above description applies to an immense territory in the southern portion of the "East Cascade region." The description must be modified as regards certain districts. Approximation to the Rocky Range, or to the rugged Cariboo and other mountains, has its natural effect; trees abound, more rain falls, snow is deeper.* On

*Sometimes the winter is mild at Cariboo. A telegram to a Victoria newspaper, Jan. 17, 1882, says "weather still mild, with little snow."

the upper parts of the Fraser River, the winter is capricious; very severe cold for a few days, then fluctuating near freezing point; another interval of intense cold, and then perhaps spring comes all at once. In the south-eastern corner of the province, a re-modification takes place. The effect of approximation to the Rocky Range is there mitigated by the influence of approximation to the border of the Great American Desert which stretches south to Mexico. About the headwaters of the Columbia, the climate is delightful; extremes are rare; snow generally goes as it falls. The scenery is very grand, and it is therefore probable that, when made accessible, this region will be the resort of thousands of invalids. *(G. M. Sproat, formerly Agent-General for the Province in England.)*

CLIMATE.

(The Summer Frost Question.)

"I was in Victoria from the 12th to 28th December, 1872, and from the 2nd to 14th May, 1875. While I was in Victoria in 1872, a fall of snow and slight frost took place, and the papers came out next day with an account of the extraordinarily cold weather, and I was led to infer from that, that such weather was not common in winter. Jessamine, roses, and violets were in flower, and everything betokened a mild winter. The summer on the coast is everything that can be desired, being dry and pleasant.

In the arid region, the spring is about as early as on the coast; the winter is comparatively cold, with very little snow, and the summer is dry and hot. Summer frosts can do no harm in these regions.

From Clinton upwards, the winter is very cold, with a considerable snow-fall and frosts extending through the month of May, and possibly into June. I heard of no injury from frosts at Quesnelle or any point on the Fraser, but noticed frost on the grass on the 27th May, at or near Soda Creek. From this date until the 4th June, the weather kept cold, but there was no frost. On the 28th June at Macleod's Lake, lat. 55°, there was a severe frost, and many wild flowers were injured, but nothing was hurt in the garden. This frost extended to St. John's, east of the mountains, but no further.

One important point in connection with spring or summer frosts should be kept in mind; that swampy soil is more liable to injury from frost than dry soil, and a frost occurring in a swampy region is no proof that the surrounding country is liable to suffer from such frost. We all know that in the vicinity of swamps we have slight frosts in many parts of Ontario even as late as the beginning of June, and numbers of farmers can point out spots in their wheat fields injured by them.

I would expect spring frost in the upper region, but have no knowledge of the fact, other than what I before stated." *(Professor John Macoun, Botanist, Geological Survey, Canada—Evid. Canadian Commons Committee.)*

CLIMATE

(Vancouver Island and Coast.)

"Captain Vancouver gives a glowing description of the Island, which he discovered in 1790. "The serenity of the climate, the innumerable pleasing landscapes and the abundant fertility that unassisted nature puts forth, require only to be enriched, by the industry of man, with villages, mansions, cottages and other buildings to render it the most lovely country that can be imagined; while the labours of the inhabitants would be amply rewarded in the bounties which nature seems ready to bestow on civilization." Since these words were written, seventy or eighty years ago, many travellers have visited the Island, and colonists who may now be counted by thousands, have contributed to enrich the land by their industry, and have built not only villages, but towns also, as well as mansions, cottages and various other kinds of buildings that are necessary now, in order to meet the manifold demands of trade and agriculture. The interior of the Island has not been as yet, much explored. But neither settlers nor explorers, however rugged they may have found some parts of the country, have ever called in question the accuracy of Captain Vancouver's description. The Island is mountainous indeed; but if there be mountains which, by their great height and varied outline, only give beauty and grandeur to its scenery, there are also plains and valleys of remarkable fertility that present other and more pleasing kinds of beauty, and so vary the landscape as to justify the language which describes Vancouver Island as "the most lovely country that can be imagined."

Captain Vancouver appears to have been more struck by *the serenity of the climate* than by any other peculiarity of the Island which he discovered. In more northern latitudes than Canada, it is a stranger to the extreme cold of the Canadian winter, as well as to the excessive summer heat which is often found to be so oppressive in Canada. The idea too generally prevails that the climate of this north-western land, at least, equals in severity that of Canada. Statistics, however, which cannot be despised, show how erroneous this impression is, and prove beyond doubt, that while Canadians are suffering from their scorching summer heat, which even in the shade raises the thermometer (Fahr:) to 90° and 95°, sometimes to more than 100°, the inhabitants of Vancouver Island enjoy an agreeable temperature of 72°. This is eight or ten degrees below the greatest summer heat which prevails for a few days, in the south of England, comparison with which is not inappropriate, as the latitude of Victoria, the capital of the Island, is pretty much the same. There are fewer rainy days throughout the year than in the former country, and, if the spring be a little later, autumn is much longer, and winter is thus robbed of its length, whilst other causes tend to render it milder than that of the most southerly parts of South Britain." *(Rev. Æneas Dawson, 1881, "North-West Territories and British Columbia.")*

CLIMATE.

(Chiefly as to Vancouver Island and Coast.)

"The following meteorological observations will show the character of the seasons which have prevailed on the coast generally, for the last 15 years, and will further elucidate the subject by pointing out the causes of the difference observable between the littoral and inland insular climates.

The general character of the climate of Vancouver is a dry, warm summer—a bright and beautiful autumn—an open, wet, winter and spring. Severe and exceptional seasons occur at irregular intervals.

The winter of 1846 was remarkably severe, the cold setting in on the *5th of January*, and continuing with severity until the middle of March, during which time the Columbia River (Oregon) was frozen, the thermometer ranging 5° below zero.

1847—Very mild throughout.

1848—The cold weather began on the 17th December, the Columbia River (Oregon) froze over, but the ice broke up before New Year's Day, the river remaining open.

1849—The cold weather set in on the 27th November, when the moon was at full, clear days and sharp frosty nights continued till the 10th December, when the Columbia (Oregon) was covered with floating ice, and snow began to fall heavily. This continued till the 18th (7 inches of snow on the ground), when it became mild, with S. E. winds and rain, and open weather continued to end of month.

These remarks apply to the coast generally; the following have reference specially to Vancouver:—

The year 1850, as shown by a thermometric register kept at Fort Victoria, was fine throughout.

Abstract of Thermometrical Observations from a Register kept at Fort Victoria, Vancouver Island, for 1850, showing Maximum and Minimum Temperatures, &c., &c.

Date.	Thermometer. Highest. 8 A. M.	Highest. 2 P. M.	Highest. 8 P. M.	Lowest. 8 A. M.	Lowest. 2 P. M.	Lowest. 8 P. M.	Weather. No. of Days. Clear and Fine	Wind.	No. of Days. Overc'st. Cloudy.	Wind.	No. of Days. Rain.	Wind.	No. Days Snow.	Wind.
1850.														
January.	43°	47	40	22	31	21	8	N&N by E	....	.....	16	SW & W	7	N&NE
February	44	53	47	26	36	29	10	N & N E	6	N E	11	SW SE	..	
March...	49	60	51	27	33	28	6	N & W	8	SW SE	8	SE	9	N&SE
April....	54	69	49	39	39	35	24	NWtoSW	2	S E	4	SE	..	
May.....	65	79	57	45	46	39	15	NWtoNE	12	S to SW	..	SE	..	
June....	65	84	64	50	59	47	23	Light and Variable	7	NE SE	..	.....	..	
July	65	82	73	52	60	53	22	NW SW	9	S SW	..	.....	..	
August..	64	79	60	53	63	53	20	NW NE	5	Calm	..	.....	..	
Sept'r...	62	74	63	45	59	49	24	SSW NW	6	Calm	..	.....	..	
October.	55	70	52	33	48	38	20	N NE SW	10	C'ms, l'ts & SE w'ds	..	.....	..	
Novem'r.	52	53	51	32	38	32	13	C'ms, L't E winds	14	SW SW	3	SE	..	
Decemb'r	43	46	44	14½	24	16	10	C'ms, L't N winds	16	Calm	4	SW	1	SE
Total..	....	....	....	....	....	....	201	.....	96	.....	50	.....	17	.....

A glance at this abstract shows that there were in that year 201 fine days, 96 overcast and foggy, 50 rainy, and 17 days on which snow fell. The abstract is not critically correct, as regards doing justice to the fine weather, for under the two last heads are included all days on which rain or snow fell, although the amount might be trifling.

MAXIMUM TEMPERATURE OF AIR IN THE SHADE.

At 8 a.m., 65° Fah. on 20th June, 1850
2 p.m., 84° „ 26th June, „
2 p.m., 73° „ 28th July, „

MINIMUM TEMPERATURE OF AIR IN THE SHADE.

At 3 a.m., 14½° Fah., on 4th December, 1850
2 p.m., 24° „ 4th „ „
8 p.m., 16° „ 4th „ „

Snow began to fall on *the 5th January*. On the 24th there were 17 inches on the ground, which, however, was all gone by the 28th.

The maximum temperature for January was 47° Fah.

The minimum temperature, 21° Fah., on the 23rd.

February—Was open and mild, on the 12th, gooseberry buds were opening; some hail, showers and frost towards the end of the month. Maximum temperature 58°, minimum 26°, Fah.

March—Variable weather, slight snow storms in early part, but so partial that on the 2nd early plants were coming into leaf in sheltered spots, native hemp was three inches high, elder bush putting out leaves. On the 7th, the catkins of the palm willow in full bloom. On the 29th there was still snow on the ground, and buttercups in flower. Maximum temperature 60°, minimum 27° Fah.

April—High winds alternating with calms. Strawberries coming into bloom on 13th. Maximum temperature 69°, minimum 35 Fah.

May—Fifteen fine clear days, and 12 overcast. On the 1st, plains covered with verdure, the turn cup lily, heartsease, crowsfoot, jonquil, and many other flowers in full bloom, camass flowering, spring wheat and peas rising, early potatoes above ground. On the 4th, campaniola and lupin coming into flower, wild cherry and service berry coming into blossom, and wild vetch flowering in warm places. On the 6th, apple tree in blossom, strawberries forming. 7th, potatoes planted in March and April coming up. 12th, early beans in bloom. 18th, wild rose coming into bloom. 25th, strawberries ripening. 31st, wild gooseberries ditto. Maximum temperature 79°, minimum 39° Fah.

June—Twenty-three fine clear days, 7 overcast and foggy. On the 14th, queen of the meadow and golden rod in bloom. 17th, potatoes flowering. Maximum temperature 84°, minimum 47° Fah.

July—Twenty-two fine days, 9 overcast. Maximum temperature 82°, minimum 52° Fah. 11th, barberry and raspberries ripe. On the 17th, first double rose on Vancouver Island came into flower.

August—Twenty-six fine days, 5 overcast. Maximum temperature 79°, minimum 53° Fah. On 16th, distant thunder, high wind, N.E.

September—24 fine days, 6 overcast. Maximum temperature 74°, minimum 45 Fah. On the 7th, heavy dews.

October—20 fine days, 10 overcast. Maximum temperature, 70°, minimum 33° Fah.

November—13 fine days, 14 overcast, 3 rainy. On the 19th a heavy gale of wind, felt simultaneously along the whole coast. Maximum temperature 53°, minimum 32° Fah.

December—10 fine days, 16 overcast, 4 rainy, 1 snowy. Fraser river frozen on the 4th, ice quickly broke up. Maximum temperature 46°, minimum 14½° Fah.

The above gives the general character of the year 1850, and may be taken as a good type of a season, intermediate between the severity of 1846, and the mild, open winters, which prevailed until 1859-60, when the cold set in in November, and continued for some months with heavy falls of snow.

From March, 1860, the weather was mild throughout, and continued so through the winter and into the spring of 1861. The summer of this latter year was very hot and dry, the early autumn was very fine and clear, with occasional cold, south-easterly winds, heavy rains in November and early part of December.

Care must be taken, however, to bear in mind that in consequence of its insular position, washed by an ocean having a remarkably low temperature, the *littoral* climate of Vancouver differs materially from that of the inland plains and valleys.

The following Abstract is from observations taken on board of H.M.S. Topaze at Esquimalt, Vancouver Island, during the year 1860, and will serve to indicate nearly the ordinary conditions of the climate in Victoria and its environs :—

1860.	Mean Daily Heat.	Deg.
April	51.50	Fahrenheit.
May	55.25	,,
June	61.00	,,
July	60.50	,,
August	63.25	,,
September	57.25	,,
October	53.00	,,
November	50.50	,,
December	42.00	,,
1861.		
January	38.00	,,
February	44.50	,,
March	46.00	,,
Mean heat of the year	51.81	,,

In the quarter ending 30th June, 1860, the highest barometric range was in April, 30.53; the lowest, 29.25. In the same month, there were 17 fine days, 7 rainy, and 6 overcast, with variable and light winds from E. and S. Sea water 50° Fahrenheit, the hygrometric observations show an average difference of 3° 7-10 Fah. between the wet and dry bulbs. Average temperature 51½° Fah.

In *May*—The barometer had an average range of 30.04. There were 18 fine days, 9 rainy, and 4 overcast, with variable winds, chiefly from S. W. Sea water 51° Fah. The thermometer average 55¼°, with 4° 1-10 Fah. difference between wet and dry bulbs.

June—20 fine clear days, 6 rainy, and 4 overcast. Barometric range, average 30.02. Average of thermometer 61°, and difference of bulbs 4° 7-10. Sea water 55° Fah.

July—16 fine days, 6 foggy, 7 rainy. Average range of barometer 29.93, thermometer 60° 1-10 Fah., hygrometer, 3½° Fah. Sea water 58½° Fah. Prevailing winds S. and S.E. with calms.

August—24 fine days, 7 rainy. Average range of barometer 30.01, thermometer 63½ Fah., hygrometer 1°. Sea water 58½° Fah. Winds S.W., S. and S.S.E.

September—18 fine days, 7 rainy, 5 overcast. Average range of barometer 30.12, thermometer 57½° Fah., hygrometer 1°. Sea water 55° Fah. Prevailing winds S. and S.S.E.

October—13 fine days, 11 rainy, 7 overcast. Average range of barometer 30.01, thermometer 54° Fah., hygrometer 103-155. Sea water 50° Fah. Winds N.E., variable, calms.

November—10 fine days, 12 rainy, 8 overcast. Average range of barometer 30.18, thermometer 49½° Fah., hygrometer 1° 1-30 Fah. Sea water 47½° Fah. Prevailing winds N. and S.W. to E.S.E.

December—15 fine days, 9 rainy, 7 overcast. Average range of barometer 29.96, thermometer 42° Fah., hygrometer 1° 5-6 Fah. Sea water 45½° Fah. Winds N. and N.E., variable, frequent calms.

1861. *January*—10 fine days, 11 rainy, 10 overcast. Average range of barometer 30.01, thermometer 38 Fah., hygrometer 3 Fah. Sea water 43½° Fah. Winds variable, frequent calms.

February—9 fine clear days, 7 rainy, 11 overcast, 1 snowy. Average range of barometer 29.94, thermometer 44½° Fah., hygrometer 3° Fah. Sea water 43½ Fah. Winds light, variable, frequent calms.

March—15 fine days, 4 rainy, 19 overcast, 3 snowy. Average range of barometer 25.02, thermometer 46° Fah., hygrometer 2½° Sea water 44½° Fah. Winds light, variable.

The importance of a knowledge of the remarkable differences observable in these registers, kept, one on shore, the other afloat, is obvious, both in a sanitary and agricultural point of view.

The absence of thunder storms is a remarkable fact. Distant thunder is heard at times, but very rarely does the electrical discharge take place over Vancouver. *(Charles Forbes, M.D., M.R.C.S., Eng., Surgeon Royal Navy, Prize Essay 1862.)*

THE FOLLOWING ABSTRACT OF OBSERVATIONS, KEPT AT THE METEOROLOGICAL STATION, ESQUIMALT, VANCOUVER ISLAND, DURING THE YEARS 1874, 1875 AND 1876 [illegible]

THE FOLLOWING ABSTRACT OF OBSERVATIONS, KEPT AT THE METEOROLOGICAL STATION, ESQUIMALT, VANCOUVER ISLAND, DURING THE YEARS 1874, 1875, AND 1876, WAS COMPILED EXPRESSLY FOR HIBBEN & CO.'S GUIDE TO BRITISH COLUMBIA (1877–78).

1874.

	January.	February	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.
Maximum of Barometer	30.67	30.30	30.09	30.17	30.16	30.06	30.26	30.25	30.37	30.37	30.39	30.32
Minimum of "	29.21	29.41	29.23	29.33	29.62	29.52	29.91	29.81	29.74	29.77	29. 3	29.47
Mean height "	29.66	29.80	29.69	29.74	29.80	29.82	29.98	29.98	29.96	30. 0	29.80	30. 2
Maximum of Thermometer	52. 0	71. 0	72. 0	85. 7	74. 0	78. 0	77. 6	75. 1	71. 9	65. 6	60. 0	64. 1
Minimum of "	22. 0	21. 9	28. 5	34. 5	41. 0	43. 0	48. 1	49. 1	44. 1	34. 0	28. 0	25. 9
Mean temperature by day	40. 4	56. 0	62. 6	71. 3	69. 9	72. 0	73. 2	67. 0	61. 8	50. 1	45. 7	45. 1
Mean temperature by night	33. 7	34. 0	33. 2	41. 7	48. 5	51. 0	52. 9	52. 6	48. 1	46. 8	35. 1	39. 0
Rain fall	3 in 80	2 in. 49	.84 in.	.52 in.	.29 in.	.39 in.	.....	.73 in.	.78 in.	.33 in.	5 in. 25	2 in. 32

1875.

Maximum of Barometer	30.34	30.21	30.32	30.31	30.23	30.343	30.272	30.227	30.391	30.323	30.284	30.424
Minimum of "	28.96	29.67	28.97	29.75	29.54	29.702	29.706	29.725	29.695	29.207	29.084	29.304
Mean height "	29.48	29.99	29.35	29.993	29.564	29.994	30.019	29.611	30.74	29.965	29.876	29.914
Maximum of Thermometer	47. 0	49. 0	48. 0	63. 9	58. 9	69. 9	76. 9	76. 9	69. 9	63. 9	54. 9	54. 9
Minimum of "	8. 0	24. 9	29. 9	25. 9	38. 1	42. 6	45. 4	46. 9	42. 9	41. 1	22. 1	29. 1
Mean temperature by day	32. 7	42. 7	43. 3	53. 2	55. 7	61. 9	74. 6	61. 1	61. 8	52. 7	43. 7	45. 7
Mean temperature by night	24. 3	33. 1	34. 6	39. 7	43. 9	48. 1	54. 5	47. 4	45. 9	46. 8	36. 1	38. 8
Mean velocity of wind per hour	9 miles	8 m. 3	12m. 7	10m. 8	11m. 3	10m. 2	7m. 4	5m. 3	8 m. 1	5 m. 5	10m. 1	11m. 3
Rain fall	1 in. 60	.70 in	4 in. 91	1 in. 11	2 in. 42	.73 in	.....	.49 in	.80 in	4 in. 48	6 in. 50	9 in. 48

1876.

Maximum of Barometer	30.512	30.469	30.338	30.505	30.301	30.313	30.290	30.320	30.185	30.349	30.371	30.665
Minimum of "	29.440	29.275	29.273	29.594	29.626	29.831	29.700	29.766	29.758	29.368	29.614	29.864
Mean height "	29.986	29.886	29.960	29.967	30.12	30.30	30. 0	30.25	29.967	29.900	30.077	29.893
Maximum of Thermometer	51. 5	53. 0	54. 9	60. 9	69. 9	83. 9	73. 9	71. 0	76. 9	61. 9	56. 0	53. 0
Minimum of "	18. 5	29. 1	22. 1	31. 1	38. 1	42. 1	48. 9	41. 6	43. 9	38. 1	30. 1	29. 1
Mean temperature by day	38. 5	44. 3	43. 3	52. 2	57. 3	63. 2	67. 2	60. 8	62. 1	54. 8	40. 9	46. 5
Mean temperature by night	30. 7	37. 5	36. 6	40. 9	48. 2	53. 4	59. 3	49. 5	47. 9	45. 9	39. 6	37. 7
Mean velocity of wind per hour	10m. 8	10m.	11m. 8	9m.	10m. 6	6m. 9	8m. 6	9m. 2	7m. 2	3m. 7	7m. 3	6m. 5
Rain fall	2 in. 32	5 in. 6	3 in. 4	.88 in	.76 in	.83 in	.34 in	.41 in	1 in. 15	2 in. 54	4 in. 27	1 in. 74

REMARKS.—The readings of Temperature for 1874 are given from the open air; from 1875, they are given from the Thermometer Screen.
Barometer readings are only reduced to 32° temperature until July, 1875, when they are reduced to sea level.

WM. H. BEVIS, *Observer.*

It is unnecessary to give any special description of the climate in the Cowichan, Nanaimo, and Comox districts on the eastern coast of Vancouver Island, as, with some local differences, it is generally similar to the climate near Victoria which the above statistics describe—the winter, perhaps, slightly longer. The west coast of Vancouver Island is very wet. On the eastern coast above mentioned, where thriving settlements are found, the winter weather, in ordinary seasons, is much the same as in the west of England: in the severer and exceptional seasons, it is like the winter weather of the Midland counties and east coast of Scotland. The spring is somewhat later and colder than in England; the summer drier, the sun more powerful, though the average mean temperature is about the same.

What strikes an Englishman most about the climate is its serenity, the absence of the biting east winds, and the less need than in England of an umbrella during the spring, summer, and the prolonged autumn. He notices, also, with surprise and pleasure, that rainy weather here does not tend to depress the spirits as it does in England. The invigorating quality of the climate remains throughout the year.

The cool nights in Vancouver Island, and in all parts of the Province, freshen the heat-worn denizens of Eastern Canada and the Atlantic States. Such visitors linger before leaving the province, and long to return.

Having quoted the opinions of authorities respecting the climate of the province in general, and particularly of the settled portions of Vancouver Island, it is now necessary to describe succinctly the climatic features of the great mainland territory. This may be done under the two heads of "Coast Climate" and "Interior Climate."

COAST CLIMATE.

There are two general remarks to be made about the coast climate of the province in general. It is influenced indirectly by the existence of a great body of warm sea water off the coast, with a mean temperature of 52.1° (early in August). The prevailing south-westerly winds, sweeping over the warm surface [illegible] raised to the temperature of the sea, and become saturated with moisture, abstracting from it, and rendering "latent," in conformity with well-known physical laws, a still greater quantity of heat. When, on reaching the mountainous coast, this moisture is condensed and discharged, the latent heat becomes again apparent, and greatly raises the temperature of the atmosphere in which the reaction occurs. Hence the coast climate of the whole north-west coast of North America is warm. For instance, the mean annual temperature of Sitka (57° 3′ N. Lat.) is in fact nearly the same as that of Montreal, 10 degrees of latitude further south.

The second remark is that the climate is wet as well as warm, owing to the effect of the height of the coasts. The heaviest rainfall occurs in exact correspondence with the height to which the moist

air is forced into the higher regions of the atmosphere, and cooled there by its expansion and loss of heat by radiation. The outlying islands have somewhat less rainfall than the mainland coast, because they are less elevated. In proportion to the elevation of the islands, and the degrees in which they shelter the mainland coast from the rain-bearing winds, the rainfall on the opposite mainland coast is more or less. The comparatively less rainfall of the coast of the south-western section of the mainland (New Westminster district) than farther north, is owing to the abstraction of part of the moisture of the rain-bearing winds by the effect of their striking the mountains on the west coast of Vancouver Island (where it is very wet), and to the lowness of the land about the mouth of the Fraser river. North along the coast of the mainland, which generally is mountainous, the case is different. There is a great rainfall—greater than on the west coasts of the British Isles—on that part of the coast of the mainland lying open to the westerly winds between Vancouver and Queen Charlotte Islands. This also is the case further north, because the coast about Port Simpson and the mouth of the Skeena is very imperfectly sheltered from the rain-bearing winds by the Queen Charlotte Islands and the islands of the coast archipelago—these, for the most part, being of moderate elevation, much lower than a considerable portion of Vancouver Island.

In short, the climate of the coast of the northern part of the province, while not subject to great extremes of temperature, is excessively humid, with much rain at all seasons of the year, and occasional heavy falls of snow in winter.

Mr. Dawson, F. G. S., and of the Canadian Geological Survey, makes the following observations on the climate inland along the Skeena (54° 15′ N. L.) in the northern part of the province:—

"Vegetation in the lower part of the Skeena, exposed to the climatic influences of the coast, is distinctly later than at Victoria, by probably at least ten days.

"The Skeena usually opens during the last week in April or first week of May. Ice begins to run in the river early in November, but the river does not generally freeze till the end of December. The river being very rapid, the occasion of its freezing is usually the occurrence of a thaw. This sets free great quantities of anchor ice, sometimes very suddenly, blocking the river and causing it to freeze over. In 1867 the river closed on the 13th of November, which was exceptionally early. The river is generally highest in July, deriving most of its water from the melting snow on the mountains. It is lowest immediately after the ice goes.

"With regard to the snowfall on the Skeena, Mr. H. J. Cambie during his survey here in 1877, gathered that from Port Essington to near the mouth of the Lakelse (54 miles), it is exceedingly heavy, reaching a depth of ten feet or more. From this place to Kitsalas cañon it reaches, at least occasionally, a depth of six feet; while about Kit-wun-ga sixteen miles below the Forks—it averages three feet. So far as information can be obtained from the Indians, it

appears to confirm these estimates. The depth on the benches about the Forks is not over one foot, but owing to local circumstances the snowfall is here considerably less than in any neighbouring locality, the average for this part of the Skeena valley being probably a little under two feet.

"Meteorological observations kept by myself while on the Skeena, from June 27th to 23rd, being taken *en route* from Port Essington to the Forks, are necessarily imperfect, and as we were engaged in travelling during the day it was impossible to ascertain the maximum temperature. The mean minimum temperature read on a good thermometer carefully placed, on nine nights, between Port Essington and Kitsalas Cañon, was 43.4° Fah., the actual lowest reading being 39°. The mean of seven nights from the cañon to the Forks, 43.6°, the actual lowest being 37.5°. The mean of observations taken about 6 a.m. and 6 p.m., every day on the first mentioned part of the river is 50.8°; on the upper part of the river, 52.8°. The mean of morning readings taken below Kitsalas Cañon is 45°; of evening readings, 56.4°. These, reduced for the hour and time of the year by Dove's table of corrections, derived from observations at Sitka, indicate actual mean temperature of 49.1° and 53.1° respectively. The mean doubtless lies between these figures, but their discord shows that we have already a considerably greater range and a climate more continental in character than that of Sitka. Morning observations above the cañon indicate a mean of 46.6°. Evening observations 58.9°, which, corrected in the same way, yield 50.58° and 55.6°, as approximations to the true mean temperature.

* * * * * *

"The vegetation in the vicinity of the "Forks" of the Skeena is still considerably in advance of that of many of the cultivated and thickly peopled portions of the Province of Quebec. From the character of the plants met with, the rainfall at the Forks would appear to be about equal to that of Quesnelle and quite ample for agriculture, though very much less than at the mouth of the river."

The above suffices to give a general notion of the climate of the northern portion of the sea coast of the province. There is an excessive rainfall, but this is not maintained, as one travels eastward, inland. The rainfall on that northern portion of the coast, considered in conjunction with the fact that the sky, throughout the year, is essentially cloudy, preventing rapid evaporation and keeping the dew point near the actual temperature of the air, accounts for the peculiar character of the vegetation there, and for the fact that ordinary cereals cannot be grown in the districts exposed to these conditions. At Port Simpson, and on the west coast of the Queen Charlotte Islands and elsewhere, many of the hills are but partially covered with forest, the remainder of the surface being occupied by sphagneous moss several feet in depth, and saturated with water even on steep slopes. This excessive humidity is of less consequence, as the agricultural areas are limited in that region. The low north-eastern part of the Queen Charlotte Islands, which is in great

measure sheltered from the rain-bearing winds, probably is the only extensive area of land which the climate would permit to be profitably cultivated on the northern part of the coast.

New Westminster District.

Returning southerly along the mainland coast, a similar excessive humidity prevails until it is lessened by the shelter afforded by Vancouver Island. It is still, however, considerable, owing to the mountainous character of the mainland shore. Dr. Charles Forbes, in his essay above mentioned, says:—

"The whole northern and western sea face of British Columbia as far south as Howe Sound, is a rugged mass of plutonic, trappean, and quartzose rocks, with associated semi-crystalline limestones. Cut up by numerous inlets and arms of the sea, it needs no protection against the winds and waves, but sends out its adamantine promontories to meet them."

Far different, however, as above said, is the coast line of the south-western section of the mainland, say from Howe Sound, or Burrard Inlet, southward. Stretching in a semi-circle, the convexity of which touches the foot-hills of the Cascade range above Chilliwhack on the Fraser, and reaching south, past Bellingham Bay into the United States, is a low, almost flat territory—a deposit of loose friable sandstones and alluvium—along which the Fraser, after boiling through a narrow gorge at Yale, cuts its way, leaving (particularly on its south side) a large area of very fertile land, known as the New Westminster District, which now is the most important agricultural settlement in the province. The climate of this district, though more humid than the sheltered east coast of Vancouver Island, has not the excessive humidity of the west coast of that island (outside Fuca Strait), and of the mainland coast in general, for the following reasons:—

(1.) The district is sheltered, considerably, from the moisture-bearing winds by Vancouver Island and the mountains south of the Strait of Fuca.

(2.) The surface is little above the sea level; there is no high coast line on which these winds strike and precipitate excessive moisture, as is the case on the mainland coast to the northward.

(3.) The hills on which they first strike after crossing the New Westminster district, are comparatively low, foot-hills of the Cascade range. These, consequently, as they only increase gradually in height towards the axis of that range, do not cause the sudden excessive precipitation in any part of the district that would result if the moisture-bearing winds struck an Alpine barrier.

ABSTRACT OF METEOROLOGICAL OBSERVATIONS, TAKEN AT THE ROYAL ENGINEER CAMP, NEW WESTMINSTER, DURING THE YEAR 1861, BY ORDER OF COL. R. C. MOODY, R. E., COMMANDING THE TROOPS.

Latitude, 49° 12′ 47″ North; Longitude, 122° 53′ 19″ West.

					INCHES.
The highest reading of the Barometer, corrected for temperature, at 9.30 a.m., on 4th February, was					30.565
The mean height	do.	do.	9.30 a.m.	4th Feb.	29.943
Do.	do.	do.	3.30 p.m.	,,	29.888
The lowest reading	do.	do.	9.30 a.m.	3rd Dec.	29.172

					DEGREES.
Maximum temperature of Air in shade, at	9.30 a.m.	on 9th July,	1861		74.3
Do. do.	do.	3.30 p.m.	,,		84.0
Mean do.	do.	9.30 a.m.	,,		48.8
Do. do.	do.	3.30 p.m.	,,		52.2
Minimum do.	do.	9.30 a.m.	on 21st January	..	20.0
Do. do.	do.	3.30 p.m.	on 23rd December		24.0
Do. do.	on the grass,		on 21st January	..	10.0
Greatest amount of humidity			,,	..	1.0
Mean do.		9.30 a.m.	,,	..	.7
Do. do.		3.30 p.m.	,,	..	.8
Least do.		3.30 p.m.	on 9th July	.....	.420

The cistern of the Barometer is about 54 feet above the level of the sea. All the Observations were made at 9.30 a.m. and 3.30 p.m. daily throughout the year.

There were several frosty nights in April, one on the 20th May, and they recommenced on the 20th October.

Thunder and lightning on the 27th May, and 5th, 21st, 22nd, and 29th August.

During the months of June, July, August, and September, the amount of Ozone was inconsiderable. On the 10th July the test paper gave no indication of its presence. The mean daily amount for the year would be indicated by 5 on the scale.

TABLE

Showing the depth of rain, the number of days on which it fell, the mean humidity, and mean temperature of the air, at 9.30 a.m., and 3.30 p.m., and the lowest temperature on the grass in each month.

	INCHES.	DAYS.	HUMIDITY.	9.30 A.M.	3.30 P.M.	MIN. ON GRASS
January	7.190	15	.904	33.2	35.4	10.0
February ...	5.485	18	.879	38.2	42.3	22.0
March.....	3.270	12	.788	42.6	47.5	25.0
April	5.265	16	.743	48.1	51.4	29.0
May	4.575	12	.713	53.6	57.7	31.0
June	4.770	15	.733	59.1	54.6	37.0
July	0.390	3	.674	64.8	68.9	40.0
August.....	3.180	8	.743	64.0	68.0	38.5
September..	1.075	6	.787	59.9	64.4	85.0
October	6.145	16	.915	43.8	50.9	25.0
November ..	11.620	23	.941	39.1	40.6	22.6
December ..	7.520	20	.910	34.2	35.2	11.0
Total....	60.485	164				

Rain fell on 12 days when the wind was S., 5 when S.W., 9 when W., 1 when N.W., 14 when N.E., 6 when E., 26 when S.E., and 32 when calm.

The greatest fall of rain in 24 hours measured 2.150 inches on the 4th Nov. The average fall for every day of the year was 0.166 inches. The average fall for each wet day was 0.369 inches.

A comparison of this abstract with that for the year 1860, shows that 6.055 inches more rain fell in 1861 than in 1860. Rain fell on 13 more days in 1861

than in 1860. The mean height of the Barometer was .070 less. The mean amount of humidity was .008 greater, The mean temperature of air in shade was 5.1 greater. The absolute limiting nights of frost were nearly at the same date in both years.

In the four winter months, from January to March, and October to December, 41.230 inches of rain fell in 1861, and 40.586 inches in 1860. In the remaining months 19.255 inches fell in 1861, and 13.834 in 1860. Of the entire quantity of rain 26 inches fell in January, November, and December, in each year.

The prevailing direction of the wind during rain in both years was E. and S.E.

June was the driest month, and August the warmest in 1860. July was both warmest and driest in 1861.

The Fraser River attained its highest level at New Westminster, for the year 1861, on the 8th June, and its lowest, being a difference of 9 feet 6 inches, on the 17th March; between the 10th of May and 10th of August, ships did not swing to the flood tide. These periods, and the difference of level, correspond very closely with the observations for 1859 and 1860.

There was floating ice in the Fraser opposite New Westminster, 7th January, 1861; it increased until 22nd January, and disappeared on the 2nd February. The navigation to the mouth of the river was not impeded. There was no ice in the Fraser, at New Westminster, in 1860.

The Observations were taken by 2nd Corporal P. J. LEECH, and Lance Corporal J. CONROY, R. E.

R. M. PARSONS, Captain R. E.

Captain Peele of New Westminster city, a careful observer, furnishes the following abstract of climatic observations, in an appendix to the British Columbia Directory 1882-3. *(R. T. Williams, Victoria, Publisher):—*

ABSTRACT OF OBSERVATIONS, DURING 6 YEARS, FROM 1874 TO 1879.

		Deg.
Mean temperature	Fahrenheit,	48.05
Highest	„	92.
Lowest	„	7.
Mean rain-fall, inches		58.95
„ height of Barometer, inches		29.993

The rain-fall in the above table may be made the subject of a few remarks, as the whole north west coast of North America is humid, for reasons already stated.

The average annual precipitation of moisture at the mouth of the Columbia River, Oregon (U. S.), is stated to be 87.66 ins. At Sitka, 11 degrees of latitude farther north, it is known to be only 5 inches less, and the Sitka average is probably about the same as the average on the west coast of Vancouver and Queen Charlotte Islands, and on that part of the coast of the Province lying open to the westerly winds between these islands. This amount of precipitation, though small in comparison with that of a few exceptional places on the earth's surface, is greater than that characterizing even the western coasts of British Islands, with the exception of a few peculiarly situated mountainous localities, where it is exceeded, and it is little less than the heaviest rain-fall on the Norwegian coast (90 inches).

In the district of New Westminster, however, owing to the facts above stated, the ordinary excessive humidity of the coast does not occur. *The district has less rain-fall than occurs in any extensive arable area on the whole mainland coast of the North Pacific, north of California.*

It has less rain-fall than occurs on the west coast of Vancouver Island, though, owing to its continental situation, and greater proximity to high land in the way of the moisture-bearing winds, it has a greater annual rain-fall than occurs off the sheltered east-coast of that island. Notwithstanding this, however, the general climatic conditions of the New Westminster district, much resembling those of the east side of Vancouver Island, in most respects, are probably somewhat more favourable to the growth and ripening of a larger variety of cereals, owing to the greater sum of heat at the proper season. The summer temperature, it will be observed, is higher than in Vancouver Island, and it is not affected by the cold and chilling winds that occasionally blow over the southern portion of the island from the snowy peaks of the Olympian range. The winter is a little less open, and slightly longer, than in the district near Victoria; it more resembles the winter farther north along the east coast of Vancouver Island. As upon the whole coast, there are occasionally severe winters, or what are called severe in this part of the world. Commonly, snow begins in January and goes in March, without falling or lying continuously.

The *British Columbian*, a New Westminster newspaper, 5th January, 1882, says:—

"Our readers in the east will be surprised to learn that there has "been no ice on the Fraser river this winter. At no time have we "had more than two inches of snow, and that remained only a day "or two. There is not a particle of frost in the ground and no snow "anywhere to be seen, except on the mountain ranges."

The climate of the New Westminster district is not liable to sudden changes. It is exceedingly healthy. Ague is unknown.

The following extracts are from the British Columbia Directory, 1882-83 (R. T. Williams, Victoria, Publisher), in which the reports are furnished by residents:—

"The climate is mild and highly salubrious, greatly resembling "that of the south of England and the north-west departments of "France. It is happily exempt from those violent extremes which "are so injurious to health in many localities.

"The climate is almost the same as that of England, singularly "invigorating. People who hardly ever knew a day's health in other "parts of Canada have come out here and been able to work with "the strongest. There is no doctor in this settlement; there was "one but he was starved out.

"Owing to the mildness of the winter months, the waterfowl "remain during that season in this neighbourhood, and thus the "shooting is continuous from September till following March."

CLIMATE OF THE INTERIOR.

For the purposes of a more particular description, the climate of the interior of the mainland of the Province (already mentioned by some of the authorities quoted) may be divided into three zones—the *Southern*, *Middle*, and *Northern*—though the boundaries of these cannot be very well defined owing to the effect of the irregularity of the surface. The occurrence of high ranges has, of course, its ordinary effect upon the climate of particular districts within these zones.

CLIMATE OF INTERIOR.

(SOUTHERN ZONE, SAY BETWEEN 49° AND 51° PARALLELS N. LAT.)

The traveller, journeying from the coast district inland, *via* Yale' by the Cariboo waggon road, notices, on passing through the mountains, indications of dryness, afforded by the change of the plants' The characteristic coast plants give place gradually, 30 or 40 miles above Yale, to those requiring less moisture. This is mainly caused by the effect, upon the atmosphere, of the massive range of mountains which follows, northward, the trend of the coast of the province. As has been already said, the air at the sea level is practically saturated with moisture. When the moisture is evaporated, or the air expanded in volume, a great quantity of heat is rendered "latent," becoming "sensible" again on condensation of the moisture or compression of the air. The pressure being less in the upper regions of the atmosphere than in the lower, the body of air rising from the sea level to the summit of the mountain range expands, and this, implying molecular work, results in an absorption of heat and consequent cooling. What has to be noticed in connection with the effect of the coast range upon the "interior" climate, is the fact that when the air descends again on the further side of the mountain range, its condensation leads to an increase of sensible heat, so that it becomes easy to understand how the lower country beyond may be flooded with warm air, though it has travelled over a region comparatively cold. The loss of heat by radiation and contact during the passage of the air across the mountainous region, is of course much greater in winter than in summer, and depends also on the speed of the air currents. The air also, in the interior, is drier, owing to the precipitation occurring at the mountain range. Accordingly we find, in the interior of the mainland of the province, a different climate from the coast climate. It varies with the irregular surface of the country, but may be described generally as a climate of extremes. The mean annual temperature of the Southern Zone differs little from that of the coast region, but a greater difference is observed between the mean summer and winter temperature, and a still greater contrast when the extremes of heat and cold are compared. The total precipitation of rain and melted snow in the low lying portions of the Southern Zone is extremely small—for instance, at Spence's Bridge on the Thompson river (760 feet above the sea, 50° 25′ N. L., 8.06°

W. L. Green.,) the rainfall, in 1875, was only 7.99 inches—total, including melted snow, 11.84 inches—(at Esquimalt, southern part of Vancouver Island, it was 35.87). This small precipitation gives rise to the open, or lightly timbered grass country, so favourable for stock raising.

The following comparative tables of the coast an interior (Southern Zone) climate, respectively, at Spence's Bridge (interior) and Esquimalt (V. I. coast) during the year 1875, illustrate the difference between them. The observations are extracted from the Canadian Government official weather reports :—

TEMPERATURES OF THE SEVERAL MONTHS AND OF THE YEAR 1875.

		Jan.	Feb.	ar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
MEAN.	Spence's Bridge	0.7	24.1	34.5	50.0	54.7	61.9	71.6	69.6	61.2	51.9	24.0	32.7	44.7
	Esquimalt	29.9	39.0	39.5	47.5	50.2	54.7	60.9	59.1	53.8	51.3	40.8	42.6	47.4
HIGHEST.	Spence's Bridge	32.0	52.0	54.0	82.0	76.0	88.0	98.0	94.0	84.0	73.0	62.0	62.0	
	Esquimalt	47.0	49.0	48.0	64.1	66.9	69.9	79.4	76.9	69.9	66.9	54.9	54.9	
LOWEST.	Spence's Bridge	-29.0	4.0	6.0	15.0	35.0	40.0	47.0	43.0	45.0	31.0	12.0	-12.0	
	Esquimalt	8.0	24.9	28.6	26.1	37.1	41.6	45.4	45.4	42.9	39.1	22.1	-22.1	

TEMPERATURES OF THE SEASONS, IN THE YEAR 1875.

		Winter.	Spring.	Summer.	Autumn.
MEAN.	Spence's Bridge	19.8	55.5	67.5	36.2
	Esquimalt	36.1	50.1	57.9	44.9

The following non-official observations made at Lillooet (50° 41′ N. L., 652 feet above the sea), are from a Prize Essay of the Rev. R. C. L. Brown, 1862 :—

			DEG.
January, average for	22 days		14
February,	,,	18 days	25
Do.	,,	10 days	4
March,	,,	31 days	37
April,	,,	30 days	54
May,	,,	31 days	78
June,	,,	30 days	81
July,	,,	12 days	97
August (missing)			
September,	,,	30 days	81
October,	,,	31 days	81
November,	,,	30 days	48
December,	,,	31 days	38

Speaking generally of the climate of the district of Yale, which, practically, is the principal part of the southern interior of the Mainland, Mr Sproat says:—

"The district has peculiar climatic advantages. The climate differs essentially from that upon the Lower Fraser and the coast, in being drier and, seasonally, more regular. A milder and shorter winter is enjoyed in Yale district, compared with the winters in the territorial divisions of the interior north of it. The summer heat is great, very great sometimes, but a light breeze generally refreshes the valleys, and no case of sun-stroke is known. The summer evenings and *nights are always cool.* The year may be divided into eight months of fine, enjoyable weather, and about four months of winter. The snow is dry and seldom deep, varying in different winters and localities from nine inches to two feet in the open, with only a slight covering on wind-swept slopes. Occasionally, in some localities, cattle and horses winter out, without much loss, but the careful farmer provides an ample supply of winter food for his stock. As might be expected in a mountainous region, there are, now and then, what are called cold "snaps," or intervals of very cold weather, during which, with a keen north wind, ears and noses may be frost-bitten. As compared with winters in Eastern Canada, perhaps it would be fair to say that the advantages of the Yale district winter are its shortness, and the smaller quantity of winter food required for stock. The slightness of many of the houses, little differing from those on the coast, is good proof that the winters in this district are not found by residents to be so severe as to require more than additional stove-warmth as a protection against the effects of the cold. The snow-fall at Osooyos, on the United States boundary, is generally very light, probably because the effect of the greater altitude there than in the northern part of the district, is mitigated by the warm winds which may reach that locality, owing to its approximation to the great American desert, so called, which stretches south to Mexico."

There is, of course, a very severe winter climate in this zone, among the high mountains that occur in its south-west corner, and also in the region of the Arrow Lakes—these elevated portions having subsidiary drier regions in their lee, that is, on their eastern flanks, for reasons above stated.

CLIMATE OF INTERIOR.

(Middle Zone, say, between 51° and 53° parallels N. Lat.)

The middle climatic zone, owing to the occurrence within it of the high mountains west of the Columbia and in the Big Bend area formed by that river, and, also, of the great mass of the Cariboo mountains, includes more of the Rocky Mountain climate than do the zones to the north or south of it. There are no trustworthy meteorological statistics as to this middle zone, but it is obvious that

as we go northward from the southern zone just described, the total rain-fall over much of the surface increases in amount, and, at the same time, the forest-covering becomes more dense. In the Gold range, immediately west of the Columbia, the winter climate is severe, with a heavy fall of snow. The same remark applies to the country within the middle zone, west of that range, which portion of the interior plateau is considerably higher than the Nicola-Thompson basin of the southern zone, as the following table shows:—

TABLE SHEWING THE APPROXIMATE ALTITUDES ABOVE THE SEA OF SOME PLACES IN BRITISH COLUMBIA.

STATION.	Approximate height in feet above Sea level.
SOUTHERN ZONE.	
Boston Bar settlement	472
Court House, at Lytton	780
Thompson River, at mouth of Nicola River	788
Ashcroft farm (Cornwall's)	1,508
MIDDLE ZONE.	
Bonaparte River, at mouth of Maiden Creek	1,905
Summit altitude of trail from Green Lake to Bridge Creek	3,660
Bridge Creek House (Capt. Parsons, R.E.)	3,086
Lake La Hache, " "	2,488
Deep Creek (south), at the crossing	2,255
Court House, Williams Lake	2,135
The Springs farm	1,850
Soda Creek crossing	1,600
Mud Lake	2,075
Fort Alexander, Fraser level	1,420
Summit altitude of trail from Mud Lake to Beaver Lake	3,300
Beaver Lake, Sellers' Hotel	2,110
The "Green Timber," south limit	2,880
Little Lake house	2,535
Summit of trail thence to Quesnelle forks	3,375
Quesnelle City	1,958
Mitchell's bridge, north branch of Quesnelle River	2,120
CARIBOO DISTRICT.	
Cariboo Lake	2,569
Snowshoe Creek, Leon's house	4,020
Snowshoe Peak	6,130
Snowshoe Mountain, Leon's house	5,844
Antler Creek settlement	4,010
Milk farm (Malony's)	4,490
Summit of trail over Mount Agnes to Lightning Creek	5,850
Marmot Peak	6,310
Marmot Lake	5,540
Richfield Court House	4,216
Van Winkle Court House	3,654
Cottonwood	2,530
Fraser River, at mouth of Quesnelle River	1,490
" at mouth of Swift River	1,530
" at Fort George	1,690

(Lieut. H. S. Palmer, R.E.)

Of the central portion of this middle climatic zone, Professor John Macoun, Botanist of the Canadian Pacific Railway Survey, says, after traversing it northerly:—

"The waggon road leaves this section at Clinton and passes over "a very elevated portion as far as Soda Creek on the Fraser. This

"is a very rough section, but still it is far from being barren; much "good land is scattered through it, but not continuously. It is rather "a risky business to winter stock on these hills, but still it is done. "The greater part of this tract is covered by forest, and hence has a "greater rain and snow fall than the lower country. The spring, "too, is much later, being nearly three weeks behind that of the "Nicola valley."

This is not, however, the character of the whole of the middle zone. It is not all elevated. About the meridian of 122° west, the land begins to descend to the valley of the Fraser, and the climate correspondingly improves with the diminution of altitude. The bunch-grass reappears in that valley and in the valleys, benches, and rolling hills along the western tributaries of the Fraser. A drier climate prevails, as might be expected, under the lee of the coast range, for the reasons already stated.

The climate of the mining regions of Cariboo, in the north-east of this middle climatic zone, is inclement, owing to their elevation. Trustworthy, continuous weather statistics are not available as to this district, but, from what we can gather, the summer appears to be very wet. The first heavy snows sometimes fall in October, succeeded by partial thaws. The winter and spring are characterized by snow storms and fine, clear intervals, until at length, towards the end of May, the regular thaw commences. The maximum depth of snow in the valleys, at a height of some 4,000 feet above the sea, is about 6 feet. The climate, though not comparatively attractive, is singularly healthy.

CLIMATE OF THE INTERIOR.

(Northern Zone, say between 53 and 60 Parallels N. Lat.)

With respect to the climate of the northern zone not much can be stated definitely, as the Canadian Government has no weather stations in that region. Entering from the coast by the river Skeena, the line of division between the coast and interior floras is, according to Mr. G. M. Dawson, F.G.S., &c., about Quatsalix, where the river crosses the axial range of the coast mountains. The wild crab-apple disappears; the damp-loving devil's club and skunk cabbage become scarce. The western scrub pine and aspen become abundant on the river flats. Mr. Dawson says:—

"Temperature observations kept while on Babine and Stuart lakes, "June 27th to July 8th, gave a mean minimum temperature of 40.2°, "the mean of the early morning and evening observations being "51.5°. The temperature is here subject to greater and more rapid "changes than in the Skeena valley, and on the night of June 29th "we experienced a frost, the thermometer registering 26° near the "northern end of Babine lake, and in the vicinity of the snow-clad "mountains already referred to."

The country between Stuart and McLeod lakes rises at the Pacific-Arctic watershed to a height of 2,820 feet.

Again, speaking of the country farther east, the same gentleman adds:—

"In regard to climate, the route from Fort McLeod to the middle "forks of Pine river, which is about 3,000 feet above the sea, 72 "miles distant, may be treated together as representing the Rocky "mountain zone, including the foot-hills of both slopes and the higher "plateau attaching to these on the north-eastward. From July 17th "to August 5th, the mean of the observed minima on this part of "the route is 39.7°. The mean of the early morning and evening "readings of the thermometer, 49.4°. This must be much below the "actual mean temperature, for the thermometer had seldom risen "much above its minimum when observed at 6 a.m. The heat was "sometimes great in the middle of the day, but as we were then "always travelling, could not be registered. Three frosts were ex- "perienced, on the nights of the 2nd, 3rd, and 4th August, the ther- "mometer reading 30.5°, 28° and 30.5° on these nights respectively. "Strong westerly winds, falling calm at sundown, with a clear sky, "were the conditions causing the frosts."

Mr. John McLeod, senior, an experienced Chief Factor of the Hudson Bay Company, who collected much information about the interior of British Columbia, states:—

"As to the climate of British Columbia, it is to be observed that "on the whole, it is moister and warmer than that on the eastern "side of the Rocky Mountains in the same latitudes, but local causes, "viz., the special physical features of the country, with its alternate "of rugged mountain range, and comparative level, vary it much. "In its southern half, the altitude of the cascade or coast range, "seems to wall off from the interior the vapours of ocean waters, "which waters never vary beyond 50° to 52° Fahr., the whole year "through, while on the northern half of it, or at least between lati- "tudes 53° and 56°, there is a freer play of ocean vapour, with its "ever-fertilizing influence over the whole breadth of the country to "the Rocky Mountains, and even beyond, through the Peace River "pass and other passages in the lowered range in those latitudes.

"*Between latitudes 53° and 56°, exclusive of mountain heights, it "may be called mildly Canadian, and with a greater force of vegetable "growth.*"

Mr. John McLeod adds, as to Dunvegan, which is in this zone, near the 56° parallel N.L., immediately east of the British Columbia boundary:—

"As to the period of cultivation (from April to October) it is a "fact worth noting that Dunvegan, Toronto, and Quebec do not vary "more than half a degree in mean temperature, and that as to "Halifax, the difference is only 1° 69′—not far from two degrees in "favour of Dunvegan. As to the winter cold of Dunvegan, its "steadiness and dryness are, for both man and beast, better than that "of any other place in the Dominion. I never saw any person from "that region but who was improved and strengthened in health and

"body, and I may say mind, by the life; a region of essentially strong "life.

"My old friend David Thompson, astronomer of the North-West "Company, kept a careful register of the climate at Dunvegan, as "follows:—

"THE THOMPSON REGISTER, DUNVEGAN, PEACE RIVER.

Latitude 56° 8′ N. Longitude 117° 13′ W.

MONTH.	FAHR.	MONTH.	FAHR.
April	37.6	November	14.6
May	54	December	−4
June	64.5	January	+7
July	63	February	+2
August	60	March	22.5
September	55		
October	40	Mean of winter	8.42
Mean	54.87	Mean of the year	35.51
Mean of 3 summer months	62.50		

(Mr. M. McLeod; evid. House of Commons Committee, 1876.)

The following tables, showing the precipitation in British Columbia (so far as observed) and in the several provinces of the Dominion of Canada, are from official reports:—

(1) Quarterly average depth of rain and snow;
(2) Quarterly average number of days of rain and snow;
(3) Average depth of rain in inches;
(4) Average number of days of rain.

QUARTERLY AVERAGE DEPTH OF RAIN IN THE SEVERAL PROVINCES OF THE DOMINION OF CANADA, AND THE AVERAGE DEPTH OF SNOW IN EACH MONTH AND IN THE YEAR 1875.

	Quarterly depth of Rain in inches.				Depth of Snow in Inches.								
	Winter.	Spring.	Summer.	Autumn.	January.	February.	March.	April.	May.	October.	November	December	Year.
ONTARIO:													
W. & S. W. District.	2.26	6.66	8.59	7.27	19.6	9.6	20.5	2.6	0.7	2.6	7.3	10.9	82.8
N. & N. W. District.	1.18	6.27	8.39	6.18	42.7	19.8	20.0	3.2	3.7	4.8	12.4	22.8	129.4
Central District....	1.91	6.32	6.95	5.45	24.0	7.2	26.9	2.5	2.4	3.2	3.8	10.9	80.9
N. E. & E. District.	0.93	5.90	9.37	4.01	27.7	14.9	18.3	4.9	0.3	0.9	9 8	20.0	96.8
Ontario	1.57	6.29	8.32	5.73	28.5	12.9	23.7	3.3	1.8	2.9	8.3	16.1	97.5
Quebec	0.44	8.57	16.13	4.88	33.3	20.7	14.5	6.1	2.0	9.2	22.1	15.1	123.0
New Brunswick	3.77	8.43	11.00	9.33	40.6	16.4	22.6	9.3	2.5	8	19.9	15.3	126.6
Nova Scotia	2.88	6.60	10.86	10.27	39.8	25.3	14.2	8.2	8	8	11.3	5.8	104.6
Prince Edward Island	1.84	7.16	11.05	9.81	58.9	30.9	12.0	8.3	0.5	0.1	15.5	9.8	136.0
Manitoba	0.00	6.68	4.96	0.55	4.3	3.8	1.9	5.8	8	9.2	8.4	8.2	41.6
British Columbia	4.45	2.86	2.76	11.86	7.2	.	4.8	8	.	.	5.5	1.8	19.3
Newfoundland	1.32	8.00	13.12	6.85	52.9	26.8	17.8	9.9	8.7	0.1	17.2	13.4	146.8

QUARTERLY AVERAGE NUMBER OF DAYS OF RAIN IN THE SEVERAL PROVINCES OF THE DOMINION OF CANADA AND THE NUMBER OF DAYS OF SNOW IN EACH MONTH AND IN THE YEAR 1875.

	Quarterly number of Days Rain.				Number of Days of Snow.								
	Winter.	Spring.	Summer.	Autumn.	January.	February.	March.	April.	May.	October.	November	December	Year.
ONTARIO:													
W. and S. W. District....	8.7	24.2	27.9	23.9	10.9	6.9	10.1	4.0	1.3	2.0	5.3	7.8	48.3
N. and N. W. District....	4.9	24.8	31.8	25.1	21.0	13.8	11.6	5.5	2.9	4.8	10.1	12.0	81.7
Central District	9.7	26.4	25.4	20.6	14.5	7.0	8.8	4.4	2.3	2.7	4.8	7.2	51.7
N. E. and E. District.....	5.8	27.1	32.4	20.9	15.6	9.9	11.7	5.4	1.7	3.1	9.4	12.0	68.8
Ontario	7.3	25.6	29.4	22.6	15.5	9.4	10.6	4.8	2.1	3.1	7.4	9 7	62.6
Quebec.....	3.3	26.3	37.6	19.6	12.8	11.9	13.4	6.1	3.0	4.3	11.9	10.2	73.6
New Brunswick.....	7.6	25.4	35.5	18.6	12.1	10.0	8.7	4.9	1.7	1.3	9.6	8.8	57.1
Nova Scotia.....	11.0	23.5	31.1	26.2	12.7	10.3	10.2	3.6	1.0	1.0	7.6	7.3	53.7
Prince Edward Island.....	11.0	31.5	40.0	33.0	16.0	11.0	11.0	5.5	1.0	1.0	10.0	11.5	67.0
Manitoba.....	0.0	23.0	27.4	6.0	7.0	7.0	6.0	8.0	1.0	7.0	11.5	9.0	56.5
British Columbia.....	19.5	18.5	15.5	38.5	6.5	0.0	8.5	2.0	0.0	0.0	7.0	5.0	29.0
Newfoundland.....	4.7	3.0	35.5	25.0	17.2	13.0	11.5	7.3	3.0	1.0	9.5	17.0	79.5

AVERAGE DEPTH OF RAIN IN INCHES, IN THE SEVERAL PROVINCES IN THE DOMINION OF CANADA IN EACH MONTH, AND IN THE YEAR 1875.

	Months, 1875.												
	January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November	December.	Year.
ONTARIO:	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
W. and S. W. District..	0.06	0 73	1.47	1.48	3.51	1.67	3.30	3.12	2.17	2.03	1.42	2,92	24.78
N. and N. W. District..	0.00	0.39	0.79	1.29	3.43	1.55	1.48	2.80	4.11	4.23	0.90	1,05	22.02
Central District.....	0.02	0 89	1.09	1.18	2.51	2.63	2.40	1.71	2.84	2.37	1.05	2,03	20.63
N. E. and E. District...	0.00	0.30	0.63	1 08	3.57	1.25	2.38	3.13	3.86	2.33	0.92	0,76	20.21
Ontario.....	0,02	0.56	0.99	1.26	3.26	1.77	2.39	2.69	3.25	2.90	1.07	1,69	21.91
Quebec.....	0 00	0.20	0.24	1.33	4.35	2.89	4.39	4.88	6.86	3.67	0.34	0,87	30.02
New Brunswick.....	0,57	2.23	0.97	1.52	2.71	4.20	3.77	2.85	4.38	6.71	2.10	0,52	32.53
Nova Scotia.....	0.10	2.15	0.63	1.90	2.21	2.40	4.21	4.68	1.97	5.67	3.63	0,97	30.61
Prince Edward Island....	0,01	1.50	0.33	1.75	2.63	2.78	3.72	4.49	2.84	6.74	2.64	0,43	29.86
Manitoba.....	0,00	0,00	0,00	0.18	2.52	3.08	0.64	3.45	0.87	0.31	0.84	0,00	12.19
British Columbia.....	1.45	0.28	2.72	0.69	1.32	0.85	1.13	1.00	0.63	2.55	3.97	5,34	21.93
Newfoundland.....	0.02	0.73	0.57	2.07	2.76	3.17	3.50	3.91	5.71	4.57	1.34	0.94	29.29

AVERAGE NUMBER OF DAYS OF RAIN IN THE SEVERAL PROVINCES OF THE DOMINION OF CANADA IN EACH MONTH AND IN THE YEAR 1875.

	Months, 1875.												
	January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November	December	Year.
ONTARIO:													
W. and S. W. District..	0.9	3.1	4.7	5.9	10.6	7.7	7.6	10.9	9.4	9.8	5.2	8.9	84.7
N. and N. W. District..	0.1	1.9	2.9	5.9	10.4	8.5	8.2	10.5	13.1	14.5	4.2	6.4	86.6
Central District.....	1.2	4.0	4.5	7.0	10.8	8.0	6.8	9.6	9.0	9.6	4.6	6.4	82.1
N. E. and E. District...	0.1	2.7	3.0	6.4	12.6	8.1	8.4	11.1	12.9	12.1	4.9	3.9	86.2
Ontario	0.6	2.9	3.8	6.3	11.1	8.2	7.8	10.5	11.1	11.5	4.7	6.4	84.9
Quebec	0.0	2.0	1.3	5.3	12.1	8.9	12.5	12.1	13.0	12.1	2.1	5.4	86.8
New Brunswick	0.5	5.7	1.4	5.8	10.0	9.0	13.4	10.8	11.3	10.4	5.1	3.1	87.1
Nova Scotia	1.6	6.4	3.0	4.9	10.1	8.5	11.3	10.2	9.6	13.2	8.0	5.0	91.8
Prince Edward Island....	1.0	8.0	2.0	7.0	13.5	11.0	14.0	12.5	13.5	17.5	11.0	4.5	115.5
Manitoba.....	0.0	0.0	0.0	4.0	8.7	10.3	7.0	12.7	7.7	4.0	2.0	0.0	56.4
British Columbia.....	2.5	2.5	14.5	6.0	8.5	4.0	6.0	4.5	5.0	12.0	11.5	15.0	92.0
Newfoundland.....	0.2	2.8	1.7	6.3	10.0	8.2	12.5	12.5	10.5	13.7	6.0	5.3	89.7

The intimate relation of climate to agriculture points to the question of the soil as the next subject to be mentioned, and the first, in order, among the natural resources of the province.

COAST REGION.

A comparatively small proportion of the whole coast of the mainland of British Columbia is available for agriculture. In many parts either the absence of sufficient good soil, or the excess of rain and cloudy weather, would prevent the profitable cultivation of cereals.

On the northern part of the coast, the islands and mainland shore are almost everywhere covered with dense coniferous forest, with the exception of the mountain sides and summits which are too steep for vegetation to cling to. As seen from the water, the trees frequently appear somewhat scrubby and small, but on closer examination are found to be of considerable size. The covering of soil is almost everywhere scanty, a fact connected with the absence of extensive glacial deposits, which is referred to in the various reports of the Canadian Geological Survey staff. This is also found to be the case in the islands, which from their low and uniform outline might be supposed to have some agricultural value. Thus it is that even were the climate more favourable to agriculture, the area of land actually available for this purpose, on the northern part of the coast, would be small, with the exception perhaps of the low alluvial north-eastern portion of the Queen Charlotte Islands. It is supposed, but not proved by systematic observations, that that portion of the islands is somewhat sheltered from the rain-bearing winds.

The estuary of the Skeena, on the mainland opposite to the Queen Charlotte Islands, occupies a valley which resembles one of the inlets elsewhere penetrating the coast range, but has become filled with

debris brought down by the river, so that, where from the bold banks, one would be led to expect deep water, it is not found, The mountains are steep and generally have rounded outlines. For the most part, as above said, they all are densely wooded. In a few cases, wide areas of bushes and swampy meadows seem to occupy the higher slopes, but many large bare surfaces of solid rock are visible, from which snow-slides and land-slips have removed whatever covering of soil may have originally clung.

Mr. Dawson, F.G.S., of the Geological Survey of Canada, says:—

"The Skeena district can scarcely be regarded as of much value agriculturally. On the lower part of the river,—with the possible exception of a few islands,—there is absolutely no good land. At about twenty miles below the Forks, however, the higher terraces at the sides of the river, and a few hundred feet above its level, extend in some places several miles back from it, and show soil of fair quality composed of sandy loam with more or less vegetable matter. It is reported that the Skeena valley continues to present the same appearance further up, and it is certainly wide and low for some distance above the Forks, while a considerable width of land suited for agriculture is also found in the valley of the Kispyox to the northwestward. It is impossible to give an exact estimate of the area of arable land in this region, but it may be roughly stated at about 80,000 acres. There may also be some good land in the wide valley of the Lakelse and Kitsumgalum, but unless in the event of some local demand arising, it will probably be long before these regions are fully utilized."

Travelling eastward, inland, to the region about the Forks of the Skeena, the following remarks are made by Mr. Dawson:—

"The summer temperature is often high. According to Mr. Hankin, a trader who has resided many years at the Forks, snow generally first falls in October, but melts again, the winter snow not coming till about the middle of December. The winter is in general steadily cold, though there is almost always a thaw in February. The thermometer has been known to reach 48 degrees below zero of Fahrenheit, and to remain for days at a time below –30°.

"The winter is in fact about the same as that of Stuart Lake, but the spring is said to open much earlier. Grass begins to grow green and some trees to bud out about the first week in April. Some cultivation is carried on. Potatoes are occasionally nipped by frost in the spring, and on two occasions have been affected by summer frosts. They are generally harvested in the end of September, but are ripe before that time, and can be obtained large enough for use about the first of July. Indian corn does not ripen, and wheat, Mr. Hankin believes, would be an uncertain crop. The season of 1878 was exceptionally long, and two successive crops of oats ripened before the frost; the second being a 'volunteer crop.' In favourable seasons, squashes, cucumbers, and other tender vegetables come to perfection. A few cattle and horses have been wintered here, the former requiring to be fed for five months, the latter have been kept by clearing

away the snow to a certain depth in strips to allow them to scrape for grass.

"The climate is in general much like that of Quebec or Montreal, with the exception of the winter, which, according to the statements above given, though rather shorter, is more severe. I am induced to think that Mr. Hankin may be wrong in supposing that wheat would not succeed well about the Forks, but this must remain a matter for future experiment."

The Skeena has been used as a channel of communication between the coast and the richly auriferous Omineca district (the remoteness of which alone probably prevents its being one of our best mining districts), but the river is not well adapted as an artery of trade. A steamboat has ascended 62 miles above Port Essington. Above the Forks the river is scarcely deemed navigable even for canoes.

Leaving the northern part of the coast, and coming south along the mainland shore as far as opposite the north end of Vancouver Island, it may be said that there is little room for agricultural settlements owing to the smallness of the arable area, and the unfitness of the humid climate, in most part, for the growth and ripening of cereals. Potatoes, carrots, and turnips have been grown at Hudson Bay posts and by the Indians. The description by Lieut. Palmer, R.E., of the North Bentinck Arm and Bella Coola (or Nookhalk) river, gives a fair notion of the general characteristics of this portion of the coast :—

"Piles of mountains broken up towards the seaboard in singularly tumbled though rounded masses, but increasing in altitude and compactness as they approach the centre of the Cascade (coast) range, snowy peaks, pine-clad slopes, rugged cliffs and precipices, naked, shapeless masses of trappean and granite rocks projecting upwards to vast heights, gloomy valleys and picturesque water-falls. * * * The valley for 40 miles from its mouth is undoubtedly of estuary formation, low, and in many places swampy throughout ; and to the same process by which, for ages past, the land has been gradually forcing back the waters of the ocean—namely, the deposit of the vast quantities of alluvium and drift which have been brought down by the Nookhalk—is to be attributed the existence of the large, flat mud shoal which extends across the head of the arm. This shoal, composed of black, fetid mud, supports a rank vegetation of long swamp grass for about half its distance outwards ; it is bare at low water spring tides for about 700 yards from high water mark, terminating abruptly in a steep, shelving bank on which soundings increase rapidly to 40 and soon to 70 fathoms. * * * * * * The only available land in the neighbourhood is a sloping tract of about 1200 acres, covered with a profuse wild vegetation of clover, vetches or peavine, grass and berry bushes, timbered in places and generally dry, but breaking up towards the head of the arm into low swamps and ponds and damp grassy hillocks and ridges.

"On the north side of the river much of the land is heavily timbered within the line of high water mark with cedar, cottonwood, and some

species of fir, but is so singularly dotted with low marshes and damp, steaming ground, which encourages a dense growth of the *penax horrida*, as to be unadapted to white settlement."

The above truthful but unattractive description fortunately does not apply to the whole coast any more than a description of a part of the north-west of Scotland would apply to the counties of Devon and Essex.

A large arable area—more than a million acres—specially favoured as to both soil and climate, is found as we proceed southerly along the coasts. This has attracted many settlers, and offers room for more. It consists, principally, of the lands on the south and east coasts of Vancouver Island and on the delta and part of the valley of the Lower Fraser on the mainland—the latter known as the New Westminster district.

A short description, chiefly of the soil of these two highly favoured areas of the "Coast Region" will now be given, omitting details that will be more in place in "Part II." of this compendium. The present purpose is to exhibit the principal resources of the country, in, so to speak, its natural state.

VANCOUVER ISLAND.

(General Description.)

"Situated between the parallels of 48° 20′ and 51° N. Lat. in from 123° to 128° W. Long., Vancouver, from its insular position, enjoys a climate much less rigorous, and more equable, than the corresponding area, on the continent off the shores of which it lies.

"Of an elongated oblong form, it is essentially a mountain ridge, attaining, at Mount Arrowsmith, an elevation of 5,900 feet, composed of metamorphic and trappean rocks, fringed by a belt of carboniferous sandstones and other sedimentary deposits. Cut up by numerous arms and inlets of the sea, in no case does the water-shed suffice to give a navigable stream, though numerous fresh water lakes are found, embosomed amongst the spurs of the mountain ranges. In length, 300 miles, with an average breadth of 30 to 50, its outline is boldly picturesque, its shores are characterized by abrupt cliffs, rocky promontories, magnificent harbours, sheltered coves, and pebbly beaches.

"Its surface is beautifully diversified by mountain precipice, hill and dale, and undulating prairies, the tameness of which is broken, by numerous bosses of trappean rock, which raise their forms on either hand, and round which the gnarled oak spreads its leafy arms, affording a grateful shade in the summer sun.

"In such localities, the general feature of the landscape is very similar to many parts of Devonshire, more especially to that on the eastern escarpment of Dartmoor, and the resemblance is rendered the more striking by the numerous stone circles, which lie scattered around. The trappean rocks, which, in Vancouver, take the place of the granite of Devon, as giving feature to the scene, furrowed, grooved, and scratched by ice action, point to a period far back in

time, when a submerged land lay under a boreal ocean, and these stone circles point to a period in ethnological history, which has no longer a place in the memory of man." *(Charles Forbes, M. D., M. R.C.S., Eng., Prize Essay, 1862.)*

VANCOUVER ISLAND.

(General Description.)

"Area, 12,000 square miles; length, nearly 300 miles; average breadth, 30 to 50 miles. Surface very mountainous and woody—flattens at both ends, and for part of its eastern side—most mountainous region in the interior—highest mountains (6,000 feet) towards north of island—no 'back-bone range,' such as some describers say exists—width of arable valleys, from one to six miles—whole country full of lakes, streams, and waterfalls—(the water-power is generally some distance inland from the coast)—shores boldly picturesque—promontories, cliffs, harbours, coves, and beaches.

"*West coast*, cut up by arms and inlets, margined by rugged mountains, bearing fir, hemlock, and cedar,—here and there shore is skirted by lower wooded hills, among which, and along streams, small patches of open or wooded flat land are found.

"No inlets on *north and east* coasts—north end, low—shore line, near Johnstone's Straits, continuously elevated, mountainous. Farther down *east* coast, and also in *south-eastern* part of island, the coast is lower, and the proportion of flat or gently undulating land, good for farming, increases, some of which is open or thinly timbered.

"Prevailing timber—fir, near the coast—hemlock, inland—great cedars on the mountains—shrubs, berries, and flowers everywhere—grasses, sweet grass, reed meadow, bent spear—white clover, wild timothy, wild oats, broad-leaved rush, cowslip, &c." *(G. M. Sproat, ex-Agent-General for the Province.)*

VANCOUVER ISLAND.

(General Description.)

"The shore line, more particularly along the west coast, is broken by numerous arms or inlets of the sea, some of them running far into the interior of the island, which can be crossed at several points in a distance of land travel less than one-third its breadth.

"The interior of the island, within certain limits which will be presently defined, is rough and mountainous.

"Quatsino Sound, and a line drawn from its eastern extremity to Fort Rupert, would form the northern limit of the highest interior mountain ranges, while their southern limit may be defined by a line joining Cowichan harbour with Port San Juan.

"The surface of the Island, beyond the limits above described, although occasionally interrupted by mountains of considerable altitude, is of a low, rolling, or lumpy character. Between the foot of the mountain slopes and the southern and eastern coast lines, stretches a margin of comparatively flat land, varying from two to

ten miles in breadth, while the rivers are bordered in some instances, for considerable distances further inland, by narrow flats." *(Joseph Hunter, C.E., Canadian Pacific Railway Survey.)*

VANCOUVER ISLAND.

(Eastern Coast.)

"The country between Victoria and Comox is occupied by a series of rocks, which, in some places, present a rolling surface, with no elevations rising to a greater height than 800 or 1,000 feet, and in other places, is comparatively level. It possesses generally a good soil, and may hereafter be thickly settled. It is mostly covered with forest, but in some parts presents a prairie or park-like aspect, with grass-covered ground, studded with single trees or clumps of them, and offers great encouragement to agricultural industry.

"The hills that rise up on parts of the coast are generally craggy, but often present patches with a thin soil covered with fine short but thick grass, on which cattle and sheep thrive well. The temperature being cooler upon these hills, they afford excellent pasturage during summer." *(Mr. James Richardson, Canadian Geological Survey Staff.)*

VANCOUVER ISLAND.

(Localities of Existing Settlements.)

"The eastern coast of Vancouver Island presents varying features, forming a scene of surpassing beauty,—the shore in general low and undulating back to wooded hills of moderate height; promontories numerous and often rounded; islands of almost every size and shape; an ever-recurring succession of beautiful outlines and of rich colouring that varies with the season.

"The principal settlements are upon the south and east coasts, where the soil is exceedingly fertile, and the climate enjoyable and favourable to agriculture. They extend from the district of Sooke (in its southern part) along the eastern coast to the district of Comox, which is, at present, the most northerly settlement, though a few persons have settled here and there between Comox and the north of the island.

"On the west coast of the island, outside Fuca Straits, little arable land is found. There is a small area (where excellent crops have been grown) at the head of the Alberni Canal, and a much larger, but as yet, agriculturally untested area, in the neighbourhood of Quatsino Sound, at the north end of the island.

"I do not think there is much farming land in the interior of the island anywhere in mass, though detached pieces near lakes and in valleys would, no doubt, make a considerable rea, if all were put together. The mountains in the interior cross and re-cross, interlaced by valleys, generally wooded. Many of the larger lakes have steep sides; the streams are rapid, and often have rocky banks. Nearly all the smaller lakes and rivers, however, have a good deal of low

land near them, swampy or liable to overflow, but capable of being brought into cultivation. In hollows among the hills also are marshy tracts, easily drained, which, if there is a subsoil, will make farms.

"The islands between Vancouver Island and the mainland are rocky and wooded, without, as a rule, any large agricultural area, but the soil, especially of those lying along the Vancouver shore in the Strait of Georgia, is more abundant and richer than on the islands of the northern coast, being in fact the same as on the eastern coast of Vancouver Island. The important island of Salt Spring, for instance, is of the same geological formation as the Cowichan district off which it lies. The climate of these islands is very pleasant; the snow, of course, falls lightly and is transitory. The herbage cannot be excelled in quality, and is more abundant than one would be led to expect from the rocky character of most of the islands. Many of these islands that are suitable for settlement are partly occupied." *(G. M. Sproat, ex-Agent-General for the Province.)*

VANCOUVER ISLAND.

(Eastern Coast.)

The following extracts from official Reports of Canadian Government Engineers employed on the surveys for the Pacific Railway, give a good general notion of the character of the eastern coast:—

"The whole distance between Esquimalt and Seymour Narrows would be 160 miles; of this distance 25 miles, between Esquimalt and Cowichan, would be heavy rock excavations. From Cowichan to Nanaimo, 35 miles, the work would be somewhat lighter. The remaining 100 miles would be very favourable. * * * The whole line would be generally favourable, with works of a moderate character. * * * It is quite evident that a trunk line of railway will soon be required from Victoria and Esquimalt *via* Cowichan, Nanaimo, and Comox to Seymour Narrows, eventually, perhaps, as far north as Fort Rupert, near the northerly end of the island, with branches to Alberni on Barclay Sound, Nootka Sound, and other good harbours on the western coast." *(Mr. Fleming, C.M.G., Chief Engineer.)*

"The belt of flat land lying between the foot of the mountains and the Straits of Georgia, from Nanaimo northwards, ends here (at Seymour Narrows), and the mountain slopes come down to the water's edge, in a steep, irregular line, broken at intervals by rugged cliffs, projecting into deep water.

"This character of outline continues to the end of Discovery Passage; but after reaching Johnstone Strait, the slopes of the mountains rise, generally at an easier inclination, to a height of one to three thousand feet, and are covered to their summits with a dense growth of fir, spruce and cedar.

"On reaching Beaver Cove, on Broughton Strait, the mountain slopes on Vancouver Island begin to recede from the water, and there is an interval of table land containing extensive beds of coal,

some of which have been worked by the Hudson's Bay Company. This flat is, in some places, of considerable breadth, and extends as far as Fort Rupert, on Beaver harbour. Farther west, the mountain slopes touch the waters of the Goletas Channel throughout its entire length, but the range rises only to a height of from 500 to 1,400 feet.

"Near the 127th degree of west longitude the river Nimpkish enters Broughton Strait. This river receives the overflow of Lake Karmutsen and several other smaller lakes, lying in a valley of considerable breadth in which there is some good land.

"This would probably be a favourable route for a road or railway across Vancouver Island to Kyuquot Sound, on the west coast of the island." *(Mr. Marcus Smith, C.E., Chief Assistant Resident Engineer.)*

VANCOUVER ISLAND.

(Towards the North.)

The valley of the Salmon river, which drains the elevated district near Victoria peak, and flows northerly into Johnstone Strait, has been described by land surveyors who visited the district. One report estimates that about 25,000 acres, having the general characteristics of the eastern coast valleys, are available for settlement. A succeeding report is less favourable.

A similar difference is found in reports as to the agricultural value of the low land at the north end of the island. A surveyor in 1879 states:—

"Having examined the east coast to within a few miles of Cape Scott, I crossed from Fort Rupert to Rupert Arm at the head of Quatsino Sound, and thence, by the west arm, traversed the centre of the island to within a short distance of its northern end, while explorations were also made from Rupert Arm southward. The area thus examined contains very little agricultural land. Near the east coast, patches of good land are met with, but they are so far apart as to render them practically useless for agriculture. The interior country consists of low, rocky and gravelly hills, generally thickly wooded and interspersed with small swamps and lakes. Open tracts, which might be made available for pasture, are visible on the sides and summits of some of the hills."

The same district is described as follows, by private explorers, in search of minerals, in a letter to a Victoria newspaper in 1882:—

"Two of our party, after crossing Shushartie Saddle, a remarkable elevation of 1,900 feet, five or six miles distant, were astonished at beholding, spread out before them, a magnificent stretch of level, prairie land. They travelled on, some six or seven miles over this open country, to the most elevated point of it, which, by a barometrical reading, indicated 1,650 feet above sea level. By far the greatest portion of this extensive tract is only from 800 to 1,000 feet high. The whole open and slightly rolling district was estimated at about

fifteen miles from east to west, and nearly as far from north to south, being slightly oval in form. It is dotted over with clumps of alder, &c.; probably one fourth of it is so occupied. A good deal of the surface is covered with splendid grass, with here and there swamps and ponds, which can be easily drained. Small streams are numerous. Some of them running toward Queen Charlotte Sound, and others northerly in the direction of Quatsino Sound, on the west coast, were fully in view."

VANCOUVER ISLAND.

(Harbours.)

Many good harbours exist on the coast of Vancouver Island, also numerous creeks and inlets that give protection to small craft—none are ever closed by ice. The well-known harbour of Esquimalt, in the south of the island, is about three miles by two, with an average depth of 6 to 8 fathoms. It is a safe and excellent anchorage for ships of any size, and may be easily entered at any time. The holding ground is good—a tenacious blue clay. Numerous rocky promontories, with gently sloping sandy bays and outlying islands, diversify its shore line. It will doubtless continue to be the head-quarters of the Royal Naval Force in the Pacific. A large Graving Dock to accommodate ironclads is now being made in the harbour by the Government.

(Rivers.)

There are no rivers in Vancouver Island in the stricter sense of the word. The numerous streams that flow through the country are simply the short water-courses which discharge the overflow of lakes or the surface waters of the neighbouring ridges—torrents in winter, some of them diminishing greatly in summer.

(Lakes.)

"Stretching into the heart of the country, lying along the bases of the parallel ridges of trappean rock, are numerous lakes, in some cases forming a continuous chain. Others, solitary, lie embosomed among the mountains, and form a beautiful feature in the landscape. Among the rocky, pine-clad hills, they lie, clear and calm, fringed by the willow, the alder, and the trembling aspen, the tender green of the foliage brightly yet softly reflected in the sunshine from the watery mirror, while reaching across as if to grasp the light, the dark purple outline of the shadow of the frowning peak, envelopes the farther side in gloom." *(Forbes.)*

(Springs.)

As might be expected in a country having a clay subsoil, and covered with a material through which water readily percolates, springs are numerous and the water excellent.

There are localities, however, where clay forming the surface soil, the water lodges or runs off, and must be looked for at some little

distance, where the clay is overlaid by a porous material. In these places it is readily found; in other places the clay must be gone through before the water wells up.

Many springs are charged with sulphuretted hydrogen, and much resemble the Bath waters, being, however, far from unpleasant to the taste.

VANCOUVER ISLAND.

(South and East Coasts.)

How the Country Strikes a Stranger.

The following letter from an American visitor was published lately in a leading New York newspaper. It is interesting as the testimony of a stranger. What the writer says of the natural beauties of the district of Victoria applies generally to the districts of Sooke, Esquimalt, Cowichan, Nanaimo, Comox, and indeed the whole eastern coast.

It admits of no question, that in a year or two, when the North Pacific and Canadian Pacific transcontinental railways are finished, and the former connected, as it will soon be, with the California railways, thousands of wealthy men in the Atlantic States and in Eastern Canada and in California will come to British Columbia, every year, with their families, to breathe health and to enjoy soft sleep, in our serene yet invigorating climate. They cannot find such an atmosphere, such scenery on land or sea, or such fine yachting waters in any part of the world.*

Letter from a New-Yorker.

"If any citizen will bring his family here for one summer he will find the truth to be that Victoria combines in itself more and rare advantages as a summer resort than any of the eastern resorts with which he is probably familiar. *Victoria must become the great summer resort of the Pacific coast.* No seaside place further south has this cool, and even temperature of 70°, from which, during even the warmest part of the day, the thermometer seldom varies 10° either way between June and September. When driving (which one can do enjoyably at any hour), the temperature is just of that delightful coolness which renders a light overcoat agreeable. The nights are colder, the thermometer sinking to about 60°. And it is worthy of note that we are credibly informed there is not a mosquito on the island, certainly we have seen none.‡ The breezes from the ocean are the best possible tonic. The markets are excellent, a fit complement to this most hygienic atmosphere. The stock farms adjacent supply choice beef, mutton, &c., of that excellent quality which the Englishman will have. Indeed, it is comfortable to feel that one has a most satisfactory cuisine awaiting one's return from the various expeditions to which the myriad re-

*See description by the Earl of Dufferin, a veteran yachtsman, at page 4.

‡There are a few mosquitoes in some parts of the island, but they are unvigorous—less troublesome than the gnats in England.

sources of the island continually invite. The roads are macadamized and as smooth as those of Central Park. They wind along among the great rocks on the shores, and through the inland forests for miles. I do not know where we have not driven since we have been here. We have been driving all the time; and now that we are about to go, we hear about many highways and byways which we must leave without seeing. And then the drives are so different from what we have been accustomed to. They are crowded with surprises. The inlets of the straits intercept the roads everywhere, to tempt and bewilder. Yesterday we drove among the pine, fir, cedar, oak and all the hardier trees. To-day we threaded long vistas where it was difficult to believe that we were not in those weird Druid forests that haunt the gulf between Mobile and New Orleans. Our horses' feet sank soundless on the spines of the pines and firs, whose venerable beards swept our faces, or clung half fantastically about the manzanita, that Southern child, with its tropical magnolia leaf."

VANCOUVER ISLAND.

(Rocks.)

"The general lithological character of the whole island is as follows: Amongst the metamorphic and erupted rocks are—gneiss (gneisso granitic), killas, or clay slate, permeated by quartz veins, quartz and hornblende rocks, compact bituminous slates, serpentine, highly crystalline felspathic traps (bedded and jointed), semi-crystalline concretionary limestone. Amongst the sedimentary, are sandstones and stratified limestones crystallized by intruded igneous rocks, carboniferous sandstones, fine and coarse grits, conglomerates, and fossiliferous limestones, shales, &c., &c., associated with the seams of coal.

"As might be looked for in a country so marked by glacial phenomena, the whole surface of the land is strewn with erratic boulders. Great masses of many tons weight are to be found, of various igneous and crystalline, as well as of sedimentary rocks, sufficiently hard to bear transportation and attrition.

"Granites and granitoid rocks of various descriptions are to be met with, trappean rocks of every kind from whinstone through the whole series; mica schist with garnets, breccias and conglomerates.

"From these granitic boulders, and from the sandstones of the outlying islands, valuable building material is obtained. Some of the grey granite equalling in beauty, and closeness of crystalline texture, the best granites of Aberdeen or Dartmoor." *(Charles Forbes, M.D., M.R.C.S., Eng.: Prize Essay, 1862.)*

VANCOUVER ISLAND.

(Soil.)

"On Vancouver Island the cultivable land is chiefly that which is covered with drift deposits of clay and sand, and lies at no great elevation above the sea. A great part of it coincides in extent with the area occupied by the softer rocks of the cretaceous coal formation.

The surface soil is generally of a dark brown colour, and in some places graduates downward into the drift, while in others it is separated by a rather sharp line from it. It follows the undulations of the surface; and Mr. Richardson, of the Geological Survey, describes it as generally gravelly and light at the higher levels, and finer grained at the lower. It may not improbably be of marine origin, and formed during the emergence of the land." *(G. M. Dawson, Assoc. R.S.M.; F.G.S.; of the Canadian Geological Survey.)*

VANCOUVER ISLAND.

(Soil.)

"Deposits of stratified clay, sand, and gravel are very extensively spread over the rocks belonging to the coal series. So far as observed, these consist generally of a greyish brown clay mixed with sand, sometimes becoming gravelly, with well-rounded pebbles derived from the crystalline rocks. In some places the clay is free from sand, and in others sand prevails, and is usually marked by false bedding. The drift in general presents horizontal layers which, in a multitude of places, are worn into gentle inequalities. Throughout the country it is covered with an unconformable mantle of black soil—two feet six inches to four feet of an earth apparently containing a large proportion of vegetable matter. The soil is probably marine, as the lower layer, from six inches to a foot, holds sea shells sometimes crowded together in great quantities, which owing to the loss of the gelatine, crumbles on being handled." *(Mr. James Richardson, of the Canadian Geological Staff.)*

VANCOUVER ISLAND.

(Derivation and Distribution of Soils.)

"Four chief sources—disintegration of underlying rocks—deposit of the sands, gravels, and clays of the great Northern Drift—alluvial deposits—decay of vegetable matter on the surface.

"The nature of the underlying rocks has produced in various parts of the *south* of the island (which the immigrant first sees) *gravelly* soil, with a thin coating of vegetable mould.

"Further north, along the *eastern* shore, where the rocks alter in character, rich loams are found, due to the decomposition of the limestone rocks in their neighbourhood. Good specimens in Cowichan valley and at Comox. These soils are always ready for cultivation.

"The Northern Drift sands, gravels, and clays, are spread out over the whole undulating surface of the *east coast*. The sandy gravels form the soil generally, from which the forests spring, while the clay will be found chiefly in the open undulating grounds as a retentive subsoil with a thick top-soil of vegetable mould. This latter clay-vegetable soil is a most valuable soil—colour, rich brownish black. It fills up hollows and swampy bottoms, and forms the sides of gentle slopes. In some localities the clay forms the only soil.

"The above clay-vegetable soil is mixed with alluvium in some localities—namely, deltas of rivers, near inlets and in valleys.

"The alluvial deposits are not extensive, the streams being short water-courses. The brown earth, or "humus," resulting from the decay of vegetable matter, is abundant, and mixes with the other soils in various proportions in different localities.

Value of these Soils.

"The gravelly soil, found as above stated in various parts of the south of the island, is poor, from its inability to retain moisture. The rains are drained off into lagoons, and the sun dries up the surface. This soil produces large timber and coarse grass.

"Wheat could no doubt be cultivated upon nearly all the other soils with proper culture.

"The clay-vegetable soil, above mentioned, is very valuable, particularly where it has been mixed with alluvium. With subsoil drainage this soil would carry the heaviest possible crops of wheat and other cereals.

"The clay, when found by itself, would, like all heavy land, require special treatment.

"The sandy and gravelly loams are eligible for barley, oats, rye, buckwheat, beans, peas, root and leaf crops, &c., &c.

"The deep loamy soils everywhere are especially eligible for fruit culture. The alluvial deposits in the valleys are in many places very valuable. Mixed with the decayed, and the decaying, vegetable matter brought down by the numerous streams from watersheds, they form a rich black soil many feet thick.

"The brown earth, or "humus," forms soil of great value, according to the materials with which it mixes. Though light and porous, many soils, so formed in the valleys and plains of the eastern coast, are well constituted for absorbing and retaining moisture as well as heat. The brown earth appears to be rich, when resting, with a depth of 2 to 3 feet, on a gravelly, or even sandy, subsoil, if we may judge from the successive crops of potatoes which the Indians have raised from such soil.

"Hilly, partly wooded, grazing tracts are interspersed among the prairies and benches. Often, near arable farms, rocky hills rise 1000, 2000, and even 3000 feet—surface, craggy—patches of thin soil with grass. Sheep and cattle like these hills in summer." *(G. M. Sproat, ex-Agent-General for the Province.)*

VANCOUVER ISLAND.

(Soil; Residents' Statements.)

Saanich Peninsula.

Soil varies considerably. There is a certain proportion of rocky declivities, scarcely deserving the name of hills, which are of little use save for grazing purposes, but the soil in the extensive valleys

and prairies is, as a rule, of a rich black loam, varying in depth from 8 inches to 2 feet. Clay is found to a large extent throughout the peninsula. The soil near the coast is much composed of lime and all kinds of shell detritus, which is a valuable fertilizer for the garden and orchard.

The agricultural products of the district are second to none raised in Vancouver. Crops as a rule are certain and large, the insects which are so greatly dreaded in Europe and the United States are not to be found, and with ordinary foresight the farmer can be certain of a plentiful return.

CROPS.—The following is approximately the average of cereals for this district, as closely as possible to be obtained :—

		Average per acre.
Wheat		25 bush.
Oats		50 „
Barley	Chevalier	40 „
	Rough	50 „
Peas		40 „

Buckwheat, rye, &c., are raised in smaller quantities. Hops thrive well, and are cultivated for consumption, chiefly in the Victoria breweries, a small proportion being exported.

FRUIT TREES.—All descriptions of fruit come to perfection. There is no reason why the canning of apples, pears, peaches, plums, nectarines, apricots, &c., should not in course of time become one of the most remunerative of the local industries.

AGRICULTURAL SOCIETY.—The farmers of Saanich established some 13 years ago an agricultural society, which now possesses four acres of land and the largest building on the island used for such purposes. Here takes place the annual show, in which there is an amicable competition in local produce, stock, manufactures, &c., attracting visitors from all adjacent parts.

The Provincial Exhibitions of the Dominion have already bestowed well-deserved honours upon Saanich produce. Higher still, however, has the district aspired, and with success, the recent Universal Exhibition of Paris having awarded a gold medal diploma to a farmer of Saanich for the best sample of wheat. This proves beyond a doubt what are the agricultural capabilities of the peninsula.

STOCK.—Animals of all kinds are raised with facility, the usually mild winters being well adapted for avoiding the loss incident to a rougher climate. Cows, sheep, and pigs thrive. A large pork-packing business has lately been established in this district, which bids fair to become a lucrative investment to the proprietors, as well as beneficial to the district at large.

VEGETABLES.—All products of the garden can be raised in profusion. The temperature and soil suit many vegetables and fruits of a warmer clime. Water-melons, musk-melons, corn of several descriptions, tomatoes, &c., ripen without much care.

Esquimalt District.

"The soil of Metchosin is for the most part of loam (in some cases mixed with red clay), with a clay subsoil, and is very productive. As much as 45 bushels of wheat, or 60 bushels of oats, have been raised to the acre. The strength of the soil in this locality may be judged from the fact, that in some parts of it good crops have been successfully grown for the last 18 years without the aid of manure. The average yield of wheat is from 20 to 25 bushels per acre. Apples, pears, plums, strawberries, and in fact all kinds of fruits, cereals and vegetables suited to temperate climes, thrive well. There are ranges of rocky hills in this district which support a considerable number of cattle and sheep.

Cowichan District, including Salt Spring and other Islands in the Gulf of Georgia.

The picturesque and fertile Cowichan valley is about fifteen miles wide, narrowing inland rapidly in a westerly direction to the width of about six miles. Bounded by high ranges of mountains composed of calcareous sandstones, these ranges form barriers to the valley, north and south. To the disintegration and decomposition of these rocks, all highly charged with the carbonate of lime, is due the distinctive character of the soils throughout the Cowichan valley. In their nature they are essentially calcareous, for while the other principles occur in different degrees, in this locality, carbonate of lime almost invariably predominates. And of this soil there is usually a good depth of from two to three feet, resting on a sufficiently retentive subsoil of blue clay or gravel.

The earths, chiefly light, very porous, and composed of due proportions of clay, sand, carbonate of lime, and humus, are well constituted for absorbing and retaining moisture, and the general colour from brown to black, with the entire absence of chalky or white earths, likewise indicates a favourable soil for receiving and retaining heat. Much of the soil along the river bottom is a clay loam of a brown colour, and is an excellent soil for wheat, beans, turnips, and red clover. The alluvial deposit of the valley is, however, far from being all of a clayey nature; in many parts, chiefly on the southern side, the mould rests upon a gravelly and even a sandy deposit, forming a rich soil. The soils upon Salt Spring and the other outlying islands are of the same character and equally productive. The herbage and pasturage are excellent. Cowichan mutton is famed. Wheat, barley, oats, rye, buckwheat, beans, peas, the root and leaf crops, potatoes, turnips, carrots, and the usual garden vegetables are all yielded abundantly, and are of a quality, perhaps, unsurpassed in any country

The loamy soils, everywhere possessing a depth of two to three feet, and containing a large proportion of the calcareous principle, are especially eligible for fruit culture.

The river lands bear varieties of the plum and the pear, and the oak plains around the Somenos and Quamichan lakes, with an arena-

ceous clay subsoil so dry that it can be worked immediately after a rain of several hours, are exceedingly well adapted for garden or orchard purposes. Apples, pears, plums, cherries, and, indeed, all the hardy garden fruits, together with the grape and peach (particularly on the islands), thrive remarkably well.

The strawberry grows wild on the prairie lands, nearly of the same size as the garden fruit.

The species and varieties of plants growing in this rich and fertile district are exceedingly numerous. Growing on the meadow lands are the following :—

White pea (five to six seeded), wild bean, ground nut, a species of white clover, reed meadow grass, bent spear grass, wild oat, wild timothy, sweet grass, cowslip, crowsfoot, winter cress, partridge berry, wild sunflower, marigold, wild lettuce, nettles, wild angelica, wild lily, brown leaved rush.

The fern attains the enormous height of from six to eight feet, and the grasses have all a most vigorous growth.

The chief economical woods are the oak and pine, and the following list comprises a general summary of the trees and shrubs met with :—

Oak, red or swamp maple, elder, trailing arbutus, crab apple, hazel, red elder, willow, balsam, poplar, various species of pine, balsam fir, cedar, barberry, wild red cherry, wild blackberry, yellow plum, choke cherry, black and red raspberry, white raspberry, prickly purple raspberry, prickly gooseberry, swamp gooseberry, several kinds of currants, bear berries, red elder, mooseberry, snowberry, blueberry, bilberry, cranberry, whortleberry, red and white mulberry.

Cowichan district, comprising hill and dale, woodland and prairie, in charming alternation, with three considerable streams and a number of lakes, and including the attractive islands, is the largest agricultural settlement on Vancouver Island. It has the oldest agricultural society on the island.

Nanaimo District.

This great coal-yielding district contains only a limited area of agricultural land, but the products of the soil are as abundant as in other parts of the fertile east coast.

There are many good farms on the island of Gabriola, the soil closely resembling that of the main island.

District of Comox.

The vegetable soil is of a very productive character, and whether in the forest, the field, or the garden, aided by the favourable climate, yields good returns. This soil in Comox is spread over a considerable district of prairie country (commonly called "openings"), extending from the coast up the different branches of the Courtenay river for 7 or 8 miles. A considerable portion of the surface of the district is naturally free from timber, with the exception of single trees and clumps, chiefly of oaks and strips of alder in the bottoms. The

scenery is picturesque and park-like. Another area of excellent soil is heavily wooded with spruce, cedar, &c. The open country in its natural state is mostly covered with a growth of ferns. The general agricultural character of Comox being similar to that of Cowichan, already described, it is unnecessary to repeat details. Denman and Hornby islands have the Comox soil. The large island of Texada (famous for its iron) has not much agricultural value.

Mr. J. Richardson, of the Canadian Geological Survey, obtained the following statement of the average yield of the best land in Comox district, when cleared and thoroughly under cultivation:—

Wheat	from 30 to	45	bushels	per acre.
Barley	„ 40 to	45	„	„
Oats	„ 50 to	60	„	„
Peas	„ 40 to	45	„	„
Potatoes	„ 150 to	200	„	„
Turnips	„ 20 to	25	tons	„

In quoting the above statement, Mr. Dawson, F.G.S., also of the Geological Survey staff, remarks:—

"Crops like these appear so remarkable to those engaged in farming in the east, that the accuracy of the returns has often been questioned, but they have been repeatedly confirmed, not only in British Columbia, but in parts of Washington Territory and in Oregon. These results are, however, only obtained from land in first-rate order; and the soil may of course be impoverished to any extent by bad farming, and has already in many instances been much run down in this way."

The same gentleman adds—

"All fruits suited to temperate climates thrive admirably on the east coast of Vancouver Island, and some of them attain a size and perfection seldom found elsewhere, and show a strong tendency to develop new varieties. The number of cattle raised on Vancouver Island must, under present conditions, be limited, as the flat and open country can be turned to more profitable use otherwise. Small herds, however, do well the year round, with little attention, in the more thinly wooded portions of the hilly country, where they find many edible plants, and browse also on the nutritious lichens which hang from the branches.

"A great part of the low land, which will eventually be brought under cultivation, is now covered with gigantic forests, and at the present rates of labour it is scarcely attempted to render it available, notwithstanding the high price of farm produce."

VANCOUVER ISLAND.

(Winter Care of Stock.)

Some shelter, protection from excessive rain, and a dry bed are what cattle need in winter in Vancouver Island. The undergrowth in the neighbouring forest sometimes enables cattle to find food for

themselves; still it is best to have a moderate supply of hay and straw for winter food. A dry bed is important. With so much wood at hand, rough sheds can easily be built. The roof may be "shakes" (splitwood). Ferns cut in early summer and stored, or branches of firs, make beds. If the site is exposed, and the locality is one affording a sale for fire-wood, piles of fire-wood will afford protecting walls. Milk cows and calves, or sick cattle, may need closer sheds. When all is said upon this subject, cattle require very much less attention in winter in Vancouver Island than in England and Scotland. A little care will make them even improve between December and April.

These remarks on winter food, or care of stock, apply to the whole Coast Region of the province.

VANCOUVER ISLAND.

(Prices of Farming Lands.)

With respect to the prices of farming lands in Vancouver Island, other than vacant Crown lands, these, of course, depend much upon the locality, the nature of the farm, and the amount of improvements effected. Near Victoria, prices may be said to range from $50 to $120 per acre for cleared and fenced land for agricultural purposes.

Cowichan and Comox.—The price of unimproved timbered land, in private hands, is from $2.50 to $15 per acre. Improved farms in these districts may be said to range from $12 to $50 or $60 an acre.

The tendency of prices is upwards. The progress of Victoria of course means the increase of the value of land within easy reach of the capital. Cowichan is centrally situated upon the east coast. Comox is farther away, but the vast coal deposits of that district cannot much longer remain unworked, and there will then be a large local market.

The question may be asked, why, with such advantages of soil, climate, scenery &c., is there not a country population of twenty or thirty thousand in Vancouver Island? Partly, no doubt, because the province has been isolated, and also because its varied resources have drawn men into other occupations. The following, perhaps, in some degree accounts for the matter:—

Cost of Labour on Farms—with a few words on that subject.

"All labour is dear in British Columbia.

"An ordinary unskilled labourer, such as one would employ to dig or cut fire-wood, receives 1.50 dollar (6*s.* English) a day; if he can lay claim to skill enough to qualify him to attend to a garden or an orchard, he readily commands 2 dollars (8*s.* English), or 2.50 dollars (10*s.* English) a day.

"Farm servants, engaged by the month, are paid at wages from 20 to 40 dollars (4*l.* to 8*l.* English) per month, with board and lodging, according to the kind of work required of them, and the respon-

sibility of their positions. A few Indians are employed in the seaboard districts, at 15 to 20 dollars (3*l.* to 4*l.* English) per month, with board and lodging, by farmers who understand their character. In the interior, Indians are largely employed as herders and for general farm work. In Vancouver Island and the New Westminster district, it may be said that a dollar (4*s.* English) a day, with board and lodging, is the pay of the farm labourer. Higher wages are paid in the interior.

"However strong and active a man may be, he cannot expect the highest wage until he knows his work and the ways of the country. At the above high wages, farmers, of course, employ as little labour as possible; indeed, the item of *labour is the great leak* in the farming business in British Columbia, as it is in most young countries.

"The farmer in British Columbia gets as high prices for much of his produce as the English farmer gets. The British Columbian farmer pays no rent, but his labour bill may be set off, to some extent, against the rent of the English farmer.

"If the British Columbian farmer can, himself and by his family, do a large share of the farm work, he must make money quickly. That is the point." *(G. M. Sproat, ex-Agent-General for the Province.)*

MAINLAND.

(New Westminster District.)

On the continental shore, opposite the south-eastern portion of Vancouver Island, and almost connected with it by numerous islands and islets, is an extensive low, rolling country, which stretches from the foot-hills or spurs of the British Columbian coast range (immediately north of the Lower Fraser) southerly beyond Puget Sound, and is bounded on the east by the Cascade range of mountains, rising at one part of their course into the giant peak of Mount Baker. This area (see map) is portion of a wide trough lying (partly sea-covered) between the Cascade mountains and the Olympian range (which latter is represented, northerly, as already said, by the islands of Vancouver and Queen Charlotte). The British-American boundary line—the 49th parallel—cuts this continental shore area in its upper part, leaving, on the British side, a rich, low-lying region, between the boundary line and the above mentioned foot-hills of the coast range. Topographically, this region is the valley of the Lower Fraser. It has a long 40-mile neck from the gorge at Yale (through which the river boils), and quickly opens out afterwards, for 75 miles, into a fine valley, with an average width of ten to fifteen miles. The legal name for the broader part of the valley is the "New Westminster District." The river Fraser, which is wholly within British territory, has a general southerly course from Yale until it reaches the broader part of the valley, when a sharp, westward turn takes it along the base of the above foot-hills. The principal portion of the valley is thus between the south side of the river and the boundary line.

(South side of River.)

The boundary line, about twenty-four miles from the sea, strikes an abruptly rising spur of the Cascade mountains. This runs northeast, but does not greatly contract the valley until it approaches the river at Cheam, about 75 miles from its mouth, where, as above said, the neck ends. The surface of the whole valley is low, little above the sea level, except for a few gravelly ridges, and a river-bordering range of rocky hills, most observable about Matsqui and Sumass—say 55 miles from the mouth of the Fraser. A shallow sheet of water, eight or ten miles long, and four miles broad, in its widest part, known as Sumass Lake, lies in the middle of the area between these river-bordering hills and the Cascade spur.

(North Side of River.)

On the north side of the Fraser, the foot-hills of the coast range, as above said, approach the bank, leaving comparatively small arable areas, but on coming within about 40 miles from its mouth, they retire gradually in a north-westerly direction to Pitt river and the head of Burrard Inlet. The area on the north side of the Fraser, to which the convergence of Pitt river and Burrard Inlet gives a peninsular character, has an average elevation of about 175 feet, and a rolling surface, sloping gently seaward.

The watershed on this northern side of the Lower Fraser, between the streams falling into Howe Sound and those taking a more circuitous course by Lillooet and Harrison Lakes to the Fraser, is some distance back among the mountains. It is at Green Lakes, on the crown of a range 2,100 feet high, a few miles from the valley of the east branch of the river Skwawmish (Howe Sound), not far from the forks.

The Canadian Pacific railway, which is now being made, runs through the Lower Fraser valley, on the north side, or right bank, of the river.

Derivation of Soil.

A series of tertiary rocks occupies the greater part of the wide trough above mentioned. These rocks underlie the valley of the Lower Fraser and the flat land about its estuary, and are continuous south of the boundary line, through the Bellingham Bay and Puget Sound region. The New Westminster district probably rests over nearly its whole extent on soft tertiary formations. Along its seaward margin, the soil is composed of very modern delta deposit, which also is the case generally in the Sumass district above mentioned, about the mouth of Pitt River, and elsewhere.

These deposits are from the Fraser river and its tributaries. The Fraser has a course of 700 or 800 miles. It is the only river in British Columbia that has strength to cross the whole breadth of dry country between the Rocky and Coast ranges, and reach the sea. It is fed in its course by numerous tributaries, but is navigable only for considerable stretches, owing to rapids. Yale is the head of the first stretch of stern-wheel steamboat navigation from the sea.

At that place—the neck of the Lower Fraser valley—115 miles from its mouth, the pent, clay-coloured river bursts through a mountain pass, and flows onwards with fine bends and reaches, at first with a rapid current, but afterwards deep and tranquil. The tide head is nearly 60 miles from its mouth. The average width of the Fraser, during the last 100 miles of its course, is about half-a-mile.

FRASER RIVER.

(A Seaman's Account of it.)

"Fraser river, in point of magnitude and present commercial importance, is second only to the Columbia, on the north-west coast of America. In its entire freedom from risk of life and shipwreck, it possesses infinite advantages over any other river on the coast, and the cause of this immunity from the dangers and inconveniences to which all great rivers emptying themselves on an exposed coast are subject, is sufficiently obvious. A sheltered strait, scarcely 15 miles across, receives its waters; and the neighbouring island of Vancouver serves as a natural breakwater, preventing the possibility of any sea arising which would prove dangerous to vessels, even of the smallest class. * * * * * * *

"New Westminster stands on the north or right bank of the Fraser, just above the junction of the north fork, and 15 miles in a general north-easterly direction from the entrance proper. It occupies a commanding and well-chosen position, being within an easy distance of the entrance and having great facilities for wharfage along its water frontage, a good depth of water and excellent anchorage. * * * * When the facilities for entering the river, and its capabilities are better known, it will no doubt rise more rapidly into importance." *(Admiral Sir George Henry Richards, R.N., C.B., formerly Hydrographer at the Admiralty.)*

FRASER RIVER.

(How it looks to a Botanist on a Steamboat.)

"Our approach to the mouth of the Fraser was indicated before we reached the light-ship by the muddy appearance of the water, while extensive mud-banks and low marshy grounds gave evidence of the immense quantities of detritus brought down by the river. As we passed up, marsh gave place to meadow, and soon, the meadow to a thick jungle of willow and other bushes, which gradually merged into forest that would vie with a tropical one in luxuriance. * * I found a number of species of plants round New Westminster not seen on Vancouver Island. * * * At Harrison river, the vegetation was further advanced (15th May) than at Victoria. The whitethorn was in flower, and the shoots on the trees had made more growth. * * * Many beautiful flowers and herbaceous plants were in profusion. * * * The western hemlock, the large-leaved maple, the western dogwood (with white flowers 3

inches broad), the red alder and balsam poplar (in the lower reaches), and a most lovely birch, grew of great dimensions among the more common and still larger Douglas fir, Menzies fir, and giant cedar."—*(Professor John Macoun, Botanist, Geological Survey of Canada.)*

NEW WESTMINSTER DISTRICT.

(A General Description Ten Years ago.)

"The New Westminster district probably contains as much fine arable land as Vancouver Island. It is the only large mass of choice agricultural land anywhere on the mainland of the north Pacific slope lying actually upon the ocean with a shipping port in its midst. A navigable river cuts it through, which is sheltered at its mouth. The river is full of salmon and other good fish, and the district abounds with game. The climate, though somewhat humid, has neither the wetness of Western Oregon, nor the withering dryness of some of the larger Californian valleys. There is no ague.

"Similar land to that of the New Westminster district is found immediately south of it, across the national boundary line, but, being formed by smaller rivers, it does not lie in such a mass. The land is lower, and comprises more tide-lands cut up by sloughs.

"I do not remember in Oregon or California any such land, so placed, as the New Westminster district. Portions of the Willamette valley, in Oregon, have as fine soil, and the Willamette valley is far larger, but it is very wet; the climate is aguish, and the nature of the approach from the sea to Portland is not good.

"There are drawbacks everywhere, but the drawbacks in this district are not greater than have been overcome by settlers in places that do not present such general attractions of fertile soil, situation, climate, &c. Some part of the district is covered with very large timber; other parts require draining and dyking; the mosquitoes are vigorous for a time in summer. But go where a settler will he has to balance conditions." *(G. M. Sproat, ex-Agent-General for the Province.)*

Since the above was written, the extraordinary fertility of the soil has been more widely proved by practical farmers, and the population has increased so as to make the New Westminster district, though still in its infancy, one of the most important agricultural districts in the province.

At the Agricultural Exhibitions, the district competes strongly with the Vancouver Island exhibits, and takes an equal share of the prizes.

The alluvial area is the largest formed by any river in the north-west of America. The Columbia (Oregon)—the only other river of the first rank—wastes its detritus in the ocean, not having the outlying insular barriers which have had the effect of making the Lower Fraser valley an agricultural region. The valley, also, is rich, for the river, with its thousand feeders, has laid a vast drainage area under tribute, to cover and commingle the loose friable sandstones of

its ancient estuary with alluvium. Like the east coast region of Vancouver Island, the New Westminster district has the advantage of easy water communication between its farms and markets.

Weather observations, taken by the Royal Engineers, in 1861, at New Westminster city, have been given under the head of "Climate," at page 22. The following is an abstract of more recent observations, extending over a period of six years :—

METEOROLOGICAL OBSERVATIONS, FROM JANUARY, 1874, TO DECEMBER, 1880, NEW WESTMINSTER. LAT. 49° 12′ 47″ N. LONG. 122° 53′ 19″ W.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Mean temperature	34.3	37.3	39.7	47.9	54.2	58.0	63.3	60.2	56.5	48.1	39.9	35.8
Date....	1878	1877	1878	1880	1878	1880	1875	1877	1877	1874	1878	1880
Highest maximum	57.0	57.0	65.0	81.0	82.0	90.0	92.0	84.0	81.5	75.0	59.0	56.0
Date....	1875	1875	1874	1875	1879	1875	1879	1876	1880	1874	1878	1874
Lowest minimum	−7.0	16.0	18.0	20.0	34.5	38.0	45.5	44.0	39.5	26.0	14.0	8.5
Mean rain and snow fall in inches	8.16	7.19	6.27	2.92	3.49	2.32	1.78	1.96	3.44	5.70	6.95	9.48
Mean no. days rain or snow fell	14	11	10	12	14	11	8	8	9	12	15	15
Date	1874	1879	1875	1876	1875	1876	1879	1875	1878	1875	1874	1875
Greatest day's fall	1.54	2.80	2.15	1.42	1.05	0.94	1.55	0.99	1.25	3.18	2.57	2.39
Mean number days snow fell	8	4	6	1	0	0	0	0	0	0	3	3
Mean snow in inches	17.8	9.0	14.1	0.8	....	....	....	....	....	....	5.7	3.8
Date....	1876	1879	1875	1875	....	....	....	....	....	...	1875	1875
Greatest day's fall	10.0	9.0	3.5	1.5	....	....	....	....	....	....	11.5	6.0

Mean yearly temp.	47° 9′	Mean rain fall in inches	59.66	Mean days snow fell	25
Highest maximum	92° 0′	Greatest yearly fall	69.15	Mean snow fall in inches	51.2
Lowest maximum	−7° 0′	Least yearly fall	49.43	Greatest yearly fall	101.3
Mean days rain fell	151	Greatest day's fall	2.80	Least yearly fall	1.7
				Greatest day's fall	11.5

(Capt. A. Peele, Canada Meteorological Service and U. S. Signal Service.)

The above table is given as a collection of trustworthy official statistics, but it must be remarked that the city of New Westminster, where the only Government Meteorological station exists within the district, is, from local causes, somewhat wetter than many other parts of the district. The mean rainfall in the valley, probably, is considerably less than the rainfall at New Westminster city. Capt. Peele, in a note to the above table, states :—

"On the flats at the mouth of the Fraser, the rainfall in proportion to that of New Westminster city is as 4 to 7. The rainfall in all the other settlements up the river diminishes as you ascend, until Hope is reached, where it is believed to be about the same as at New Westminster."

Some parts of the New Westminster district are wooded, but there are large areas of open land in different places, caused, perhaps,

partly, by the repeated action of fires, and the occurrence of floods. One of the largest of these open or lightly timbered areas is contained within the municipalities lying along the sea shore. From the deck of a steamboat entering the river, a truer view of the general character of the land in these municipalities can be got than of the riverine municipalities higher up. Owing to the loose friable materials of the soil in many parts, the river has a tendency to cut away the banks and change its principal channel, chiefly at bends upriver, where its current is powerful. For this reason, in many places, the settlers have not built their houses near the banks, and the traveller by steamboat, in consequence, cannot form a notion of the farming settlements that lie back.

The following statements, most of which have been furnished lately by residents, probably will suffice to give a fair general account of the natural soil resources of this important district. The seashore municipalities, as the first seen, on approaching from seaward, may be first mentioned:—

Seashore Municipalities.

Speaking of one, the writer says,—

"The municipality has a breadth at its broadest part of from seven to eight miles, and an extreme length of about eleven miles. Towards the upper or eastern end a good deal of timber is met with—alder, cedar, and pine—and along the north side the heavy growth of Douglas fir comes in some places to the very brink of the river; but as you get nearer to salt water the timber becomes gradually scarcer, and you see broad stretches of rich alluvial soil, with a sub-stratum of clay, dotted here and there with farm houses and outbuildings. The growth of the settlement has been somewhat retarded by the fact that much of the land was bought for speculative purposes. A large area, especially towards the upper or eastern end of the settlement, and in the centre of Lulu Island, is still in a wild or uncultivated state. On both banks of the river for some distance above the head of Sea Island, and along both shores of the two channels which sweep around that island to the Gulf of Georgia, there are almost continuous chains of cultivated farms. On some of these, thousands of dollars have been expended in building, dyking, fencing, &c., while others have only recently been brought under cultivation. The land which is best situated—viz., that which has a frontage on the river—is held at $25 an acre and upwards; but that which lies back from the river, being less accessible, is to be bought at a lower figure. The soil is of superior quality. All the cereals can be successfully grown, but oats and barley are the principal crops. Wheat has not been extensively cultivated, but as much as 62 bushels of fall wheat have been harvested from a measured acre. The hay crop is generally heavy, three and a half tons to the acre being not uncommon. From one farm the following yield has been produced:—Oats, 75 bushels per acre; wheat, 50 bushels per acre; hay, 3½ tons per acre; all of which and other crops have found ready sale at the following prices

per ton:—Hay, $12 to $16; wheat, $40; barley, $30; potatoes, $30; white carrots, $10; red carrots, $15; mangolds, $8.

"Excellent beef is also raised, and as a butter and cheese producing district the settlement is noted. But it is, perhaps, to the cultivation of root crops that these delta lands are specially adapted. Even with comparatively careless cultivation enormous yields are realized, and an accurate statement of what the land will do in this respect would sound like romance. Lying above the ordinary tide level these delta lands are not subject to overflow, save occasionally at high spring tides and during the winter. This overflow rarely exceeds a few inches in depth, and its extreme duration is an hour or two at a time. It follows, of course, that comparatively small and cheaply constructed dykes afford the farmer ample security. Indeed the cost of thoroughly dyking a farm on these lands would be much less than the cost of clearing a farm in the 'bush.'

"The municipality has all the ordinary municipal machinery in full working order. Taxation is light and the revenue, about $2,000 per annum, is expended on local improvements." * * *

Of another municipality, it is said,—

"The settlement comprises about 40,000 acres of rich delta land of deep black earth with a clay bottom, yielding surprising crops of timothy hay, oats, barley, wheat and fruit; also dairy produce in abundance. From harvested crops at several well-known farms, the yield per acre is about as follows:—Wheat, 40 bushels; oats, 60 to 65; barley, 40; timothy hay, $2\frac{1}{2}$ to $3\frac{1}{2}$ tons; turnips, 40 to 50 tons.*

"In addition to what the cultivated fields of the delta produce, there is an immense growth of wild grasses, such as red top, bunch grass, clover, &c., affording ample feed for cattle, and only on occasional winters do stock require extra feeding. But little timber is found in this section, and as far as the eye can see there is nothing to interrupt the sight except an occasional cluster of fir, willow, alder and crab-apple, presenting to the vision the same general aspect as the whole Lower Fraser country—viz., one vast field of fine prairie land. The farms in this neighbourhood have principally been settled on during the last decade, consequently, in addition to the general routine of farm work, the industrious settler of this district finds ample labour in erecting houses and barns, draining the land, and ploughing the virgin soil. The lands require draining, and in some places the erecting of dykes from 2 to 3 feet in height. In so doing the farmer not only drains his land, but can also do with less height of fence, as the earth thus thrown up from the ditches, with the addition of one or two rails on top, serve the double purpose of fence and drain. Overflows from the Fraser are unknown, excepting to a very small degree, and then only taking trifling effect on farms in

*An instance is known of a yield of 3 tons per acre of timothy in the 12th crop, and of 80 bushels of wheat per acre.

the immediate neighbourhood of the banks of the river, and in many instances the overflow adds to the yield of hay and other produce rather than otherwise." * * * * *

Of a third municipality, the following account is given:—

"The surface of the land, as of the surrounding bush country, is rolling, which allows drainage as easily and inexpensively as such work can be done anywhere. A rich tract of prairie land, high and dry and not subject to overflow, was bought up many years ago, and is held at the present time principally by non-residents. The timber land in this settlement is, however, of a very superior quality, and is owned and settled on. The clearing not being of a hard character the settlers have made good progress, and in almost every quarter section may be found a number of acres cleared and improvements of all kinds well under way. The soil of this section is adapted for the production of all kinds of grain and root crops, notably potatoes. One farmer raised off a few acres the enormous quantity of 60 tons, being a yield of about 10 tons to the acre. Up to the present time the settlers have confined themselves principally to root crops.

"The land, though timbered, is easily cleared, being light cottonwood and alder, with here and there a bunch of willow bushes. The alder and cottonwood are nearly all dead, which makes the clearing of the land light work compared with the clearing up of the green timber. The stumps come out easily, and when the clearing is done the field is smooth and clean enough to run a reaper over. The soil is clayey loam, and produces wheat of a very fine quality; also, oats and barley. Vegetables and root crops of all kinds do well and are easily cultivated. There are also prairie or grass lands, which furnish the settlers in this section with pasture for their stock in the summer. The grass when cut makes very good winter feed for cattle. Being able to cut what wild hay they need enables settlers to cultivate the land they clear up, which is a very great advantage in commencing a new farm in a timber country.

"The agricultural land here is subject to tidal overflow. It is easily dyked, however, and when reclaimed is without exception the most productive and rich land in the country. There are about ten thousand acres in this section, which varies from two to two and a half miles in width. The land, however, is not of very uniform quality. Along the banks of the river it is excellent, easily drained, and, having a fall of about two feet, allowing ample chance to thoroughly drain the soil, but in towards the centre where there is no natural drainage, the land is peat, and, in many places, cranberry bog. This can be subdued and made available for agriculture by a thorough sytem of drainage; but at the present time, and while there is much uncultivated land of a better quality, it will not pay to spend time and capital in reclaiming these bogs. The soil along the bay and banks of the rivers is of the most productive character, as high as 100 bushels of oats having been harvested off a single acre of dyked land. Vegetables of all kinds do well and grow to an enormous size,

and as there are no summer freshets, and the highest overflow from extreme high tides in winter not exceeding 18 inches, it will be readily understood that the reclaiming of these lands is but light work."

NEW WESTMINSTER DISTRICT.

Freshets and Tidal Overflows.

The mention of "dyking" in the above accounts requires a few words here as to floods.

The Fraser river and tributaries of it overflow a portion of the lands in this district for a short time in early summer, when the volume of water in the rivers is increased by the drainage which follows the melting of snow throughout the country. This rising of the water is called a "freshet." The whole Pacific slope—California, Oregon, Washington Territory, and British Columbia—owing to the physical structure of this part of the continent, is more or less liable to severe floods over low lying districts near rivers.

The rivers generally rise quickly.

The sea also comes a few inches in depth over a portion of the land near the mouth of the Fraser at very high tides or in stormy weather in winter. This happens perhaps two or three times in winter, for a few hours at each time. In other parts, the tide occasionally backs up the water of streams, raising them a foot or eighteen inches. These tidal overflows are one thing; the "summer freshets" another. The latter take effect more up the river, and will be mentioned farther on. At present, it may be said that it is believed and partly proved, that, by a system of dyking, which, if carried out on a general plan, need not be very costly, a great stretch of the extremely fertile land in the seashore municipalities can be permanently reclaimed. The above accounts show that a good deal already has been done by individual effort. The cost of dyking varies with local conditions, ranging, perhaps, from $1 to $1.50 per rod.

Seashore Municipalities; Stockraising.

Whether for crops or stock, the lands in these seashore municipalities are very valuable. In their natural state, they yield very fine hay and grass. Owing to their extent, they probably are the most available stockraising district of the coast region.

The abundance of cattle in the interior of the province has hitherto somewhat discouraged competition in the New Westminster district, but now that the price of all kinds of stock on the Pacific coast is increasing, coast district farmers, both in Vancouver Island and the mainland, are giving more attention to stock-raising. This probably will be found to give good returns. To show the change of prices, it may be mentioned that, five years ago, in Oregon, there was no very ready sale for average beef cattle at $14 a head. The same kind of beasts now command from $42 to $50 per head delivered anywhere within 200 miles of Portland. The consequence is that

many young beasts are stall fed—beginning in the winter after they are two years old—with hay, pumpkins, beet root, and a little grain. An Oregon newspaper says :—

"Over in Washington Territory, on the rich, alluvial flats south of Seattle, they are pursuing this avocation with the greatest success. Those lands will produce nearly three tons of hay to the acre, or if planted in sugar beets will yield about 210 bushels to the acre. These beets, if chopped with hay and steamed in a wooden vat, which any farmer can make in two hours, and use fir bark for fuel, will yield enormous profits on the carcass of the beef. With cattle worth $10 per head, as was the case ten years ago, it did not pay to feed them. At present prices, it is the best use to which land can be put."

The alluvial flats near Seattle are small compared with the at least equally rich alluvial Lower Fraser country. The price of beef in British Columbia has risen, and is likely to be higher, owing to the general progress of the province, the substitution of white for Chinese labour on the railway works, and the reversal of the beef trade between Washington Territory and British Columbia. Beef is now sent from Victoria to Puget Sound. British Columbia beef, like British Columbia coal, is superior to the beef of the adjacent countries. So is the mutton. As soon as there is railway communication with California, Vancouver Island mutton, particularly, will be printed in California bills of fare.

Hops.

"There is not a country on the face of the earth better adapted for hop culture than British Columbia. Fine hops have been produced in the Victoria District, Vancouver Island. We have climate and soil capable of producing an average crop of 2,500 lbs. to the acre. Hops this year are worth about $1 a lb., but this is altogether exceptional. Thirty cents may be a fair average. This would give an annual crop worth $750 to the acre. A snug little hop farm of 20 acres would thus produce $15,000 a year. The figures may at first sight appear excessive, but careful examination will show them to be moderate. In this climate no renewal of seedlings would be necessary, as there is no such thing as throwing up the roots by frost. We know of no industry offering a surer or larger reward than hop culture in the valley of the Lower Fraser." (*"British Columbian," New Westminster newspaper, 2nd December, 1882.)*

NEW WESTMINSTER DISTRICT.

(Riverine Municipalities and Lands.)

The soil in the whole Lower Fraser valley being similar, much of what has been said as to the seaward municipalities will apply to those up river. The latter, generally, are more wooded, except in the low Sumass lake district. That district is admirably adapted

for dairy purposes. For 20 miles beyond it, up to the neck of the valley at Cheam, a very important progressive farming community (reminding one of an old settled country) extends, in which the average yield of the crops is as follows:—

Wheat, 25 bushels per acre, 60 lbs. to the bushel; oats, 40 bushels per acre, 34 lbs. to the bushel; barley, 40 bushels per acre, 48 lbs. to the bushel; peas, 25 bushels per acre, 60 lbs. to the bushel; potatoes, 150 bushels per acre, 60 lbs. to the bushel; hay, two tons to the acre; corn of all sorts grows and ripens well, so do squashes, pumpkins, melons, cucumbers, and tomatoes. All fruit seems to flourish, and where grapes have been tried they have turned out a great success. Roots of all kinds are remarkably fine. One of the settlers carried off 12 prizes at the agricultural show at Victoria in 1882.

Midway on the south side of the Fraser, between that thriving upper section and the seaward municipalities, is a municipality with a frontage of ten miles on the river, where some of the most industrious settlers in the district have made comfortable homes. It is heavily timbered—much of the timber destroyed by fires—with several large prairies of black loam with clay subsoil. A resident last year gave the following account of this settlement:—

"Riding along the road one can have little notion of what is going on in the bush beyond. But suppose, for example, he turns aside, he will pass a series of bush farms, which show what intelligence and patient industry can accomplish in reclaiming bush land. Most of the occupants of these farms came here with little or no capital five or six years ago. Single handed they have now 15, 20, and 30 acres under crop this season—have comfortable homes—have oxen, cows, hogs, fowls, and are free of debt.

"Bush land here, when farmed with intelligence, will produce crops as good in all respects as the prairie land. The two most advanced and successful bush farmers in the district, have some 87 and 45 acres of cleared bush land respectively, upon which grain of the finest quality and other crops are abundantly raised. The soil and climate of this district are especially adapted to the cultivation of hay, roots, and the common kinds of fruit, as apples, pears, plums, cherries, currants, &c. Moreover, the grasshoppers, potatoe bugs, army worms, which are so destructive to crops in many places, and so disheartening to the farmer, are so far unknown here. To the inexperienced, timber land may appear somewhat formidable. But to men with wise heads, strong hands, brave hearts, suitable appliances, and who have had some experience in clearing timber land elsewhere, the bush is not repulsive."

Size of Turnips in the last mentioned Municipality.

"A late number of the "Scottish American" gives an account of two wonderful turnips raised in Banffshire, Scotland, and exhibited in Banff, weighing respectively 11½ and 15 lbs.

"These Banff monsters would be considered very ordinary bulbs

here. We know Banffshire men farming on the Lower Fraser who this year can show two or three tons, not one turnip in which will fall below the Banff "giants;" and they can show individual turnips weighing 36 lbs., notwithstanding that their turnips range smaller than usual this year. Occasional turnips weighing as high as 52 lbs. have been raised here, and cauliflowers sometimes reach 37 lbs., and cabbages have been known to run as high as 60 lbs." *(New Westminster newspaper, "British Columbian," 1882.)*

North Side of River—Arable Land.

On the north side of the Fraser, the area of arable land is, as already said, less extensive than on the south side, but is equally fertile, producing wheat, oats, and abundant root crops. Dairying is a favourite industry. Some of the farms on this side of the river are the finest in the district. There is a good deal of unoccupied land, which no doubt will soon be taken up, as the Canadian Pacific railway runs either through, or close to, the farming land on that side of the river. The price of occupied farms has already risen in consequence of this nearness to the railway.

Fruit.

Professor Macoun, botanist, of the Canadian Pacific Survey staff, in his evidence before the House of Commons Committee, Ottawa, said:—

"I can see no reason why grapes could not be produced in abundance on any part of Vancouver, if the summer temperature is high enough. After the railway is built, Vancouver will send immense quantities of fruit into the interior, as it can be raised to any extent and of every kind. I recommended the people to plant their apple trees among the rocks where the oak grows instead of on the wet ground. The trees would live longer and probably produce better fruit."

What this gentleman said of Vancouver Island can be said of the New Westminster district. Fruit can be raised to any extent, and of every kind, in localities suitably chosen. Not much attention has been paid to orchards, but excellent fruit has been grown for many years at New Westminster city, Langley, and elsewhere.

Mr. H. D. Elliott, of the Smithsonian Institute, in a letter to the New York "Nation" said lately:—

"The apples and pears of Oregon and Washington Territory and lower British Columbia,* are simply in their excellence and fine

*Mr. Elliott probably speaks of the only portion of the province known to him. The interior of British Columbia produces very fine fruit, but "orcharding" has not been much attended to yet. Orchards at Boston Bar, Lytton, and Lillooet, have succeeded well. The Lieutenant-Governor has very fine fruit in his garden at Acherott (1,500 feet above sea level). At Cherry creek, south side of Kamloops Lake, there is a fine orchard; also at Tranquille, north side of the lake—the same at the Mission, Okanagan, &c. Fruit growing, as soon as there is an external market, will be one of the principal industries of the country.

flavour as good as our own. The prunes, apricots and nectarines are superior to ours and equal to the best Canadian orchards. With regard to cherries and all the small fruits, I may say, without reservation, that their quality is fully equal to our own in excellence."

Summer "Freshets."

As in similar low-lying districts everywhere, it has been said above, that summer floods or "freshets" occur in the New Westminster district. There was a high "freshet" in 1876, and another—the highest known—in 1882, which latter caused considerable loss to farmers in parts of the district, chiefly up river. Floods prevailed during that season in many parts of the North American continent. Such a freshet as that of the Fraser in 1882, not having occurred in the memory of the Indians, may not take place again for several generations. The high water mark then reached probably may be taken as the extreme range of danger from flooding. From the lie of the basin in the Sumass Lake region, that area is more or less liable to flooding, in ordinary seasons. This basin contains over 30,000 acres, of which about 11,000 are covered by the lake. The short Sumass river, a tributary of the Fraser, is the only outlet. Many low-lying portions of the banks of the Fraser and some of its tributaries, also are occasionally liable to overflow. When the water subsides, the growth on the Sumass prairies is astonishing, reminding one of the luxuriance of the tropics without its peculiar vegetation.

Dyking.

It is not yet known to what extent the lands at present liable to overflow can be protected against the "freshets."

Mr. Dewdney, C.E., the present Lieutenant-Governor of the North West Territories, examined, in 1876, the Sumass basin, and reported on the feasibility of dyking and draining the low lands there. From such observations as he was able to make, he considered that the object could be effected by three levees which probably could be constructed at a cost not considerable when compared with the additional value which the reclamation would confer on the lands.

The following are extracts from Mr. Dewdney's report :—

"In the first place, I examined the banks of the Fraser river and the nature of the subsoil. This was easily accomplished on account of the numerous sloughs that permeate the district, and from the settlers in different localities having sunk wells. I sunk holes which indicated soft foundations, and invariably found clay from eighteen inches to two feet from the surface.

"I found both the banks of Fraser river, and of the sloughs along which I would propose to build levees, most favourable, as far as foundation and material for construction is concerned. The subsoil of the whole valley, as far as I could gather, was also good, there being a substratum of stiff clay underlying the top vegetable mould, and I could find no foundation for the report that Fraser river water

seeped through an underlying stratum of loose material and so found its way to the prairie.

"There are low spots of ground, that, after the river subsides, hold water for a considerable time, even until dried by evaporation; in fact I found several myself, and as these were many feet above the level of Fraser river, it demonstrates that the bottom of these depressions must be of good water-holding properties.

"Settlers would crowd into this district if the land was reclaimed, and where one home now stands, covering, in some instances, 1,200 acres, there would probably be a dozen, making it one of the most valuable and thriving in the Province."

A private bill was passed through the local legislature in 1878, providing for a grant of the government land inside of the proposed line of levees. The promoters, a Californian firm, began work at Matsqui under the bill. Failing to procure the capital they had counted on, they transferred the Matsqui portion of the scheme to a local gentleman, by whom the works were completed in 1881. They successfully resisted the freshet (not an exceptionally high one) of that year. In 1882 the water rose suddenly, and, as above said, to a very high point, exposing some previously unsuspected weak points in the levee, and the water again overflowed the Matsqui prairie. Arrangements are now being made for the repair of the damage done and the protection of these weak points.

The total area within the Matsqui dyke is about 10,000 acres, some of it clear grass land ready for the plough, some light brush, but no timber on any part except some cottonwood on ridges.

Mosquitoes.

The mosquitoes are troublesome for a short time in summer in many parts of the valley.

Such, shortly stated, are the characteristics of the second great arable area of the *coast region* of the province—the New Westminster district. The object in the foregoing, it may be repeated, has been to state, succinctly, the natural resources, rather than to describe localities. The facts speak for themselves, and it may only be added here that, as in Vancouver Island and in all other parts of the province, the advantages of churches and schools, good roads, and the prevalence of law and order, leave nothing to be desired.

Enough has been said, without as yet having left the coast region, to show that, along the *east coast* of Vancouver Island and in the *Lower Fraser valley*, there is a large aggregate area of very fertile land, with every advantage of situation and climate. It may be doubted if there is an equal area in Eastern Canada or in Britain so fitted by nature to produce such varieties and qualities of root crops, cereals and fruit.

MAINLAND INTERIOR, OR EAST CASCADE REGION.

Having described the soils and arable areas of the "Coast Region," a short similar account of the interior of the mainland will now be in place. The general physical features of the "interior plateau," locally called the "East Cascade region," have been mentioned at page 5, and its climate described at pages 25 to 30. Several erroneous notions seem to prevail abroad respecting this great region. What has to be noticed, in the first place, is that the nature of the climate, already generally described, is such as to permit agriculture at a greater elevation than is possible on the Atlantic seaboard or the north-west of Europe. Over very considerable areas, far exceeding in the aggregate the arable areas of the coast region, the interior is a farming country up to 2,500, or even 3,000 feet, so far as the soil is concerned, and the soil has been proved to be as fertile as the best on the coast. As regards pasture, the interior, as a whole, is, in the opinion of experienced stock-raisers, not only the most remarkable grass region on the Pacific slope, but, probably, is unequalled on the continent. Even the alpine pasturage is, in the summer months, very nutritive. The grass fed beef and mutton are of the finest quality. Horses and all animals not only thrive, but have a peculiar vigour. These unquestionable facts have to be kept in mind in forming a general opinion as to the country,—a country so extensive and diversified that any attempt to sum up its capabilities would, in the present condition of our knowledge of it, be almost an offence against common sense.

MAINLAND INTERIOR.

Derivation of Soils.

"The soils of the interior may be broadly arranged in two classes. 1. Soils chiefly composed of unmodified drift, representing the boulder clay of some other regions. 2. Soils composed of modified or redistributed drift, modern alluvium, &c. The first class, though spoken of, technically, as "boulder clay," has not here the stiff clayey character very generally found in that formation elsewhere, but is composed, as a rule, of a yellowish-grey mixture of clay and sand, rather hard in consistency, through which stones of all sizes are irregularly scattered. When exposed at the surface to the weather, it becomes softened and broken down, and superficially mingled with vegetable matter. Though its materials are in great part derived from the immediately underlying rocks, it contains much foreign matter, by which any deficiencies of its composition arising from the character of the local formation, are corrected. Judging from the forest and sward which this soil bears when otherwise favourably situated, it must be fertile. * * * The soils of the second class are much more varied in character. They are chiefly the products of the disintegration and rearrangement of the boulder clay, though mingled also with detritus derived from the waste of the local rocks

since the glacial period, or carried down by rivers when flowing at a higher level. They form the benches or terraces which are displayed on so large a scale, also the irregular slopes of some of the valleys of the southern interior, and the modern river flats. Their texture varies from that of fine, almost clayey, material, to coarse, sandy and gravelly beds; but, in general, they preserve a mean character in regard to size of particles, and are extremely fertile. To this class the soil of the flat country in the lower Nechaco basin belongs. The area has, no doubt, at a former period been the bed of a great lake, with the sediments of which it is now covered to a varying depth, but in some places probably exceeding 200 feet. The beds are, usually, pale in colour, calcareous, and found, when examined microscopically, to be composed of very fine angular silicious matter mixed with calcareous and argillaceous particles, resembling in appearance, and probably in mode of origin, the *loess* of the Rhine and the subsoil of the Red River valley in Manitoba. These deposits, which form an extremely fertile soil, I have called the *white silts*.

"*The extraordinary crops which, when favourably situated, the soils of the interior everywhere produce*, bear witness to their uniform fertility, which is largely owing to the quantity of modern igneous rocks which have been incorporated with them." *(G. M. Dawson, Assoc. R.S.M., F.G.S., Canadian Geological Survey.)*

A rough notion, such only as space permits, of the general aspect and the agricultural and pastoral features of the great interior territory, over a large area of which these soils are spread, may be given in a few pages.

General Aspect.

"Rugged *Alpine masses*, wooded on their slopes and holding lakes, swamps, and moist meadows in their embrace—arid mountain ranges and ridges crossing and recrossing—rolling wooded hills and grassy hillocks—the varied summit lines and slopes presenting picturesque combinations whithersoever the eye turns—*table lands*, generally of high elevation, often of great extent, with and without forest—long river channels or valleys—wide, trough-like valleys—deep, narrow, wooded valleys—short valleys (often called 'prairies')—a land also of *lakes*—innumerable narrow, elongated lakes of all sizes, from the bright pond to the lake 100 miles long, often linked by streams—some lakes steep-sided right round their margins, others wall-edged, but oftener with gently shelving rims backed by open grassy hills. *Rivers*—smaller than the drainers of such mountain regions might be supposed to be (the light soil absorbs them)—generally deep-grooved and rapid—often flanked with terraces of various heights (the high banks here and there worn into fantastic clay pinnacles)—threading the whole country, bursting through rocky walls—seeking lake after lake—turning and twisting to find a way to the ocean, but for the most part unable to do so, nearly all being finally swallowed up by the Fraser and Columbia rivers. *Climate*—already described. *Trees*—an immense area in the southern part—the cele-

brated bunch-grass region; say, south of 52°—is generally unwooded, or only with belts, clumps, and dots of cone-bearing trees without underbrush, except high up the mountains, and on the water shed between the rivers Fraser and Thompson. The trees thicken into forests as the Rocky Mountains or their flanking ridges are approached, and again towards the northern and north-western portions of the interior; but in the thickly wooded country northward, are many fine valleys, with grassy slopes and large hay swamps. Towards the region of the great lakes, above 54°, the country again becomes, in many parts, thinly wooded—wide stretches of level or gently undulating land fringing the lakes, valleys, and slopes, covered with peavine and wild hay—no snow-capped summits visible—scenery not unlike the Scotch Highlands." *(G. M. Sproat, ex-Agent-General for the Province.)*

MAINLAND INTERIOR.

A Botanist's Account of it.

"It may be interesting to state that the whole of British Columbia, south of latitude 52° and east of the Cascades, is really a grazing country up to an altitude of 3,500 feet, and a farming country up to 2,500 feet, where water can be conveyed for irrigating purposes. This embraces the Okanagan, Nicola, and South Thompson regions. The same character of country extends north-westwardly through the Chilcotin plains west of the Fraser, across the Blackwater river, and forms the extensive grassy plains bordering on the upper tributaries of the Nechaco (54°).

"As we pass to the north and west, the country becomes more moist, and the arid 'benches' of the Thompson change on the Chilcotin to fine grassy slopes, well suited for pasture, while on the Nechaco and its tributaries the same species of grass form extensive meadows, with an average growth of three feet." *(Professor Macoun, botanist, Geological Survey of Canada.)*

Kootenay.

Mr. Macoun, not having visited Kootenay, in the south-east angle of the province, omits it in the above description. In the valley of the Kootenay river, and in the valley at the headwaters of the main branch of the Columbia river, there are innumerable hill sides and prairies covered with excellent pasture. There is also much fertile soil. A portion of this tract is liable occasionally to overflow by freshets, but probably can be reclaimed at a moderate cost.

The Roman Catholic bishop of Oregon considers that "the country about the sources of the Columbia river is of great prospective "importance. It is divided into forest and prairie in proportions "favourable for settlement; mining resources undoubted; birch, "pine, cedar, and cypress prevail; climate delightful; snow goes "generally as it falls; a most desirable country, needing people only "and road communications. Stock-owners now drive cattle to "winter in the neighbourhood of Columbia river lakes."

The proposed passage of the railway through the territory to the immediate northward, and the development of the mineral wealth of Kootenay, will stimulate the work of reclamation and enable this valuable and attractive area to be more largely utilized.

MAINLAND INTERIOR.

Agricultural Latitudes and Altitudes.

It is worthy of remark that there is little difference between the height to which crops may be grown and ripened in the southern and the northern parts of the interior; and, so far as the soils are concerned, their fertile qualities, subject of course to local modifications, do not appear to vary much through nearly *five degrees of latitude*.

Major-General R. C. Moody, R.E., formerly commanding the troops in British Columbia, in a memorandum addressed to the Canadian Railway Department in 1878, says, in recommending the interior of the province for settlement:—

"It will demand not a little faith by those living in the same parallels of latitude in Europe to believe, that wheat will ripen anywhere at all, at altitudes from 2,500 to 3,000 feet, and other grain at even more. * * * Nevertheless such is the fact. In other countries besides British Columbia, it has been found, at first, difficult indeed to reconcile such facts with previous experiences elsewhere."

MAINLAND INTERIOR.

Agriculture.

(Upward Limit.)

The 3,000 foot contour line may be taken as indicating the extreme upward limit of agriculture in the interior.

In the southern portion of it, nearly all the main river valleys and many of those of the smaller streams are much below this level, and contain thriving settlements. Going northerly, the general surface of the watershed between the Fraser and Thompson rivers rises high, but has been proved to be capable of successful agriculture in many parts. It declines rapidly into the valley of the Fraser, where the climate closely resembles that of the southern interior, but westward, beyond the Fraser valley and the valleys of its tributaries, the surface again rises into the rolling pastoral uplands of the Chilcotin region, which, mostly, are too high for agriculture.

Farther north, the country, below the contour line of 3,000 feet, opens out, as above said, north-westward, towards the region of the great lakes, till wide shallow valleys, lying about 2,000 feet above the sea, are formed, including the whole basin of the "white silts" above mentioned—a basin capable of successful agriculture.

North-north-easterly from the Nechaco and Chilaco white silt basin, is the Pacific-Arctic watershed, characterized by great undu-

lating terrace flats, somewhat under 3,000 feet, but the soil is scanty and of a sandy and gravelly character. About McLeod's lake (55°), the interior plateau joins the foot-hills of the Rocky Mountain range (crossed by Pine Pass, 2,850 feet), which here falls gradually, both on the west and east, to hills and plateaux, without any well marked line.

East of the Rocky range at this part, but within the province, in its north-east angle, there is a valuable agricultural region—the general surface about 2,000 feet above the sea—the climate good—soil of a rich, silty character. This region lies between the meridian of 122° and the provincial boundary of 120°, and generally north and east of the middle forks of Pine river (55° 36'), chiefly along the Peace river itself, east of Hudson's Hope, also the Lower Pine river and the southern tributaries of the Peace river, known as the Mud and D'Echafaud rivers. The characteristics are those of the Peace river country in general, with a more undulating surface. The valleys are wide depressions with gentle slopes, and the plateau usually a widely extended terrace level.

In mentioning above the three thousand foot line as broadly limiting the possible upward extension of agriculture in the mainland interior, it is not intended to affirm that wheat can be ripened, except in rare instances, at this elevation, for in all probability the profitable growth of oats and barley will not exceed it, and in some districts fall considerably below it. The height at which immunity from summer frosts is obtained, varies considerably in different localities, and often seems to depend on local circumstances difficult to define. Valleys shut in, and forming a small area of low ground among high mountains, are less favourably situated than land at the same height where forming a broader expanse.

This question of summer frost has been mentioned already under the head of climate, at page 11. A little additional information on the subject may be in place here, chiefly as to the country north from 51°.

MAINLAND INTERIOR.

Middle and Northern Parts.

Summer Frosts.

"Between Cache Creek and Clinton (about 51°), on the waggon road, are several farms at a great elevation, the highest being, by barometer, 2,800 feet. I am assured that wheat will ripen here, but is not generally grown, barley being a surer crop and selling better. This is probably about the limit for the growth of grain in this region, though Mr. Sproat states that one may see 'fine grass and good grain growing (of course with some risk) on Pavilion mountain, 4,000 feet above the sea level; excellent grain growing and harvested, also cabbages, carrots, turnips and potatoes elsewhere at 2,700 feet; vegetables of all kinds and grain luxuriantly at 2,000 feet.' On Riske's creek, north of the mouth of the Chilcotin (52°), at an

approximate elevation of 2,400 feet, fine wheat, and grain of all sorts are grown without injury from frost.

"At Quesnelle (53°—2,000 feet), grain crops are sown from April 20th to the 1st May; potatoes planted somewhat later. The grain is harvested about the middle of August. Wheat, barley and oats are cultivated, and all succeed well, though the two last are the most profitable, as they can be sold in Cariboo without milling. Night frosts happen here occasionally in June, but are not usually severe enough to do damage to potatoes, though sometimes checking them a little. On one occasion, potatoes are known to have been so completely frozen down as to prove a failure. The Hudson Bay Company formerly cultivated a farm at Alexandria (52° 33′), between Quesnelle and Soda Creek, on which, on certain portions of the land, 40 bushels of wheat to the acre, by careful measurement, were grown.

"At Fort George (near latitude 54°), the season of growth for crops does not differ materially from that of Quesnelle, and grain of all kinds may be ripened. The elevation here is 1,880 feet. Winter is said to set in about the 1st of November, though steady cold weather may not continue from that date. In December and January, there is often a few days' thaw. In March, the snow thaws in the sun every day, the thermometer falling below the freezing point at night. In April, the snow disappears, and by about the 20th of the month the ground is fit to work. At Fraser Lake (above 54°—2,225 feet), potatoes and other root crops are grown near the Hudson Bay establishment, and barley and wheat were formerly cultivated, though it is now found cheaper to import flour. The Indians have little garden patches with potatoes, turnips, etc. At Stuart Lake (above 54°—2,200 feet), near Fort St. James, garden vegetables and root crops succeed admirably, and potatoes and barley are grown in considerable quantity. I do not know whether wheat has been tried, but with proper care, it would, no doubt, succeed in most seasons, if not invariably.

"In all these places the complaint of summer frosts is made. These usually happen in June, and may occur on one night only, or on two or three nights, and are often severe enough to touch potatoe-tops, and occasionally to harm the plants considerably. It is said, however, that these frosts have only occurred of late years, and that formerly they were unknown. It hardly seems probable that any great change in climate is taking place, and it is quite possible that the necessity for farming having to a great extent been done away with, sufficient care has not been given to cultivation, or to the renewal of the seed, which is apt gradually to deteriorate and lose the vigour necessary for successful growth in northern latitudes. Nor are the most judicious localities always chosen for the more delicate crops, the lowest ground, or that nearest the fort being often selected, while higher slopes may be less exposed to frosts. It is not probable that wheat will grow over the whole area of the white silt deposits of this region; but I think barley would flourish over nearly the entire area, while wheat may be successfully raised in chosen

spots.* The quality of the grain seen at Fort Fraser was excellent.

"Bordering on François Lake (about 54°) are considerable stretches of country not raised so much as 300 feet above it, and therefore considerably below the 3,000 foot contour. The soil is very fertile, and the vegetation much resembles that of the *white silt* basin.

"It is much to be desired that regular meteorological observations could be made at some place such as Fort Fraser, or Fort St. James, which would fairly represent the climate of the northern low country, and remove the feeling of uncertainty with regard to its capabilities, which to some extent must obtain with our present knowledge. My impression is that a great part of it is suited to the culture of the hardy cereals and root crops, at least; and Professor Macoun, in his report in connection with Mr. Selwyn's expedition of 1875, speaks highly of it." *(G. M. Dawson, Assoc. R.S.M.; F.G.S., Geological Survey of Canada.)*

MAINLAND INTERIOR.

(Northern Low Country.)

"So far from presenting anywise an ungenial climate, Stuart Lake (above 54° N.L.) is an extremely pleasant place of residence—at least so I have always regarded it. The various wild fruits flourish and ripen; and even the crop of the service-berry, which when in flower is extremely susceptible to frost, is rarely blighted. Potatoes do not always succeed, it is true; but the failure may, I think, be ascribed usually to errors in the selection of the spots cultivated. Some attention to this point is necessary, in order to avoid the occasional night frosts to which the hollows are subject, but from which the slopes towards the lake are usually free. No better evidence that the climate is, on the whole, a genial one, need be adduced than this—that the tender little humming-bird is common during summer at Stuart lake as well as in the less elevated and hotter parts of British Columbia." *(Mr. A. C. Anderson, formerly Chief Trader, Hudson Bay Company.)*

MAINLAND INTERIOR.

(Distribution of Agricultural Areas.)

A just opinion of the agricultural capabilities of the mainland of the province cannot be formed, without considering the above remarkable facts as to agricultural latitudes and altitudes. The northern low country (from 54° northerly), including the white silt basin and the region of the great lakes, is by some considered to be the prettiest part of the whole country. A considerable part of it is extremely fertile, and much of it well grassed, but the growing grass

* The flat and uniformly fertile Lower Nechaco basin here mentioned, is described by Mr. Dawson, elsewhere, as the "greatest connected region susceptible of cultivation in the province—a region remote from high, snow-clad ranges."

does not retain its nutritive qualities in winter like the bunch-grass of the arid districts [illegible]ward. The British Columbia Peace river region (about latitude 56°, and east of 122°) already referred to, is of very considerable extent, and has excellent soil and climate.

In mentioning the above facts, it is not desired to convey the idea that the country generally can ever be an extensive agricultural region. The possibly agricultural area is small compared with the general surface. It is satisfactory that, in a country essentially, so far as we know, a mining and grazing [illegible]ntry, there are distributed over its surface, through five or six degrees of latitude, conveniently placed, fertile agricultural areas that will spring into thriving settlements, as soon as the success of mining and stock-raising creates a local, or district, demand for produce.

MAINLAND INTERIOR.

(Proved Fertility.)

Ample evidence exists as to the fertility of the soil, wherever agriculture has been carried on. The largest agricultural settlements are, at present, in the southern interior, most of the arable farms there being subsidiary to stock-raising, though there are many fine purely arable farms. The alkaline patches found here and there, yield to treatment. Irrigation is generally, but not without local exceptions, required in that region. Most of the farms are upon those tracts of the bottoms and slopes of the numerous wide trough-like valleys, to which water for irrigation can be easily brought. Wheat, barley, oats, peas and all kinds of vegetables, also large and small fruits, are produced as sure crops over an extensive surface. The general average yield of wheat in the existing farming settlements probably exceeds 25 bushels per acre. It is higher in particular districts; and instances (of particular not average yields) are well authenticated of a yield of 45 to 60 bushels of wheat, 60 to 80 bushels of oats, 65 bushels of peas, and 35 tons of turnips, per acre, on well cultivated farms. Tomatoes, cucumbers and melons do well in the open air in many parts of this region. Fruit has been mentioned at page 62.

MAINLAND INTERIOR.

(Southern Portion—Irrigation.)

The need of using water for irrigation, and the difficulty of getting an ample supply, cheaply, are obstacles to the extension of agriculture over a large part of the southern interior. The soil, as above shown, yields large crops when irrigated. Arid and dusty land from which no one would expect a crop, prove to be very fertile. Irrigation hitherto has cost very much less than clearing land in Eastern Canada, and it has advantages of its own. The irrigating farmer has neither to clear nor to drain. His land, generally, is free from weeds and insects, and does not wear out, if irrigation is carefully conducted. Another advantage is uniform quality of crop—the farmer being

independent of seasons. Thriving settlements, accordingly, have been formed in the interior by men of moderate means, who have brought water from sources of supply easily reached. Comfortable homesteads, in long succession, and fine fields in crop, please the traveller's eye. But the day of cheap irrigation, without systematic effort, has passed. The most available sources of water supply, on higher levels, have been secured by settlers. The channels of the rivers and streams are, for the most part, deeply sunk, and the fertile terrace-land in the valleys lies at varying elevations. Water will be dearer, but considerable areas of great fertility—some of them near the railway line—doubtless will be utilized, as soon as the investment of capital promises to be remunerative, in longer water ditches, or in artesian wells. The latter, perhaps, might not be very costly. The country, though not freshened by a sufficient rainfall, is stored with water, and water-bearing strata may be found at no great depth. Cheap water would make much of the interior region in general, as valuable and attractive as it now is in part. Cheap water has a close relation, also, indirectly, to the extension of the stock-raising business, as well as to the extension of agriculture.

MAINLAND INTERIOR.

(Grass and Stock-Raising.)

The interior, as already said, is, naturally, a fine stock-raising region—one of the best anywhere. There is wealth of summer pasture even into arctic elevations. The climate affords the main climatic condition for stock-raising—cold and rain do not co-exist. Contagious disease is unknown. There is no class of Indian, or white, cattle or horse thieves.

"Cattle and horses winter out from the 49th parallel to Fort Fraser, in lat. 54°, a stretch of 450 miles. The capabilities of British Columbia as a stock-raising country are so well known that little need be said on this point. The 'bunch-grass' country, pre-eminently, is that east of the Fraser in the southern part of the province, where the rain and snowfall are light, and the hills bare and grassed almost to their summits. But even northward, in the thickly wooded country, there are many fine valleys with grassy northern slopes and extensive hay swamps, which, in the aggregate, must form a very great area, capable of supporting stock. Though, as above stated, cattle can winter out without attention, and in many cases appear fat and in good condition in the spring, a severe season occasionally happens, in which, if no provision is made, they may suffer much privation, and a considerable mortality may occur. It is thus always better to have a small quantity of hay in readiness, and with this precaution cattle-raising may be made a certain business. Sheep succeed admirably.

"These remarks refer to the *present* condition of British Columbia. I feel convinced that, by the agency of man, great changes will be produced, as has happened in other countries. The reckless destruc-

tion of the forest areas of the southern portion of the interior, by fire or otherwise, would, no doubt, cause a gradual desiccation of the soil and climate. To the north, however, great regions of plateaux are covered with scrub pine and other trees, small in size and unfit for most economic purposes. The destruction of this useless forest by fire, is followed by the growth of grass, with groves of aspen poplars, and the drying up of the peaty swamps of the little hollows. Such areas will eventually add largely to the available grazing grounds, and even where situated at a very considerable altitude will serve for summer pasture. Irregular plateau and mountain country, at yet greater elevations, is still of some value. The vigorous growth of timber ceases at between 4,000 and 5,000 feet over most of the province; above this limit, park-like open country is found. Considerable regions of this nature occur even among the Bald mountains of Cariboo, on the snowy volcanic ranges, south of the sources of the Blackwater and Salmon rivers, and elsewhere." *(G. M. Dawson, Asso. R.S.M., F.G.S., of the Geological Survey of Canada.)*

MAINLAND INTERIOR.

(Grasses and Stock-Raising.)

"The common grass of the southern interior, found up to about 53°, is the well known bunch-grass, which formerly covered nearly the whole surface up to about 2,000 feet above the sea. This grass, which possibly is the most valuable pasture grass in the world, has the peculiarity that it never ceases to grow. Though the exterior may appear dry and withered, the heart is green even in the depth of winter. There is good sward, intermixed with compositæ and other plants, higher up the hills than the bunch-grass, so that the region is practically a summer grazing region up to 3,500 feet. Some excellent natural hay meadows are found on lake margins or by the sides of streams. The bunch-grass has been greatly eaten off in most places near the waggon roads and around farm houses. In many parts it has suffered from over grazing. When eaten closely and not allowed to seed the grass of course does not grow again. The sage takes its place, and fortunately the cattle will eat sage in winter. It is stimulating food, but less nutritive than the bunch-grass.

"This part of the country, though fairly supplied with wood, is not a wooded region, nor are there many different trees. The valleys are in general narrow, with here and there low flats. Back from the rivers are the benches or terraces, and numerous hills of all sizes rising above the extensive slopes. Scattered over these here and there, loving apparently the gravelly opens, and so far apart as in no way to interfere with free travel in all directions, is the peculiar tree of the district, commonly called red pine *(Pinus Ponderosa)*—a tree well known to botanists, and which it is needless here to describe. This tree is found as far north as the upper ford of the Bonaparte, but its nearest approach to the coast range, westward, is the head of Anderson lake. Requiring an arid climate, it does not

grow upon the coast, where the Douglas fir luxuriates in the moister climate, or farther north than 51° 30′. In the southern interior, above 3,000 feet, the Douglas fir and western scrub pine take its place.

"The area of land fit for cultivation is not extensive, though larger perhaps than is generally supposed. Many of the most suitable locations have, of course, long been occupied. The stock-raiser chooses a good place for a homestead and for a little cultivation, with, if possible, natural hay meadows, or a piece of a range for winter pasture, or access to such a range on unoccupied lands. The homestead formed, the cattle and horses, branded with distinctive marks, are turned out to roam over the extensive mountains and valleys on the public domain. In winter the cattle require sheltered spots with little snow on them, and some provision of food in case the winter should be severe. Horses can live on the higher lands in winter, as they paw through the snow to get at the grass. In some localities and winters the cattle live out without great loss. The bunch-grass pasture varies much in quality in different parts, and the pasturing of stock on originally fine pasture seems to be more destructive in some places than in others, perhaps owing to the different character of the soil and the greater or less hold which the grass has in it.

"What mainly governs the stock-farmer's business as at present carried on, and what will do so until a continuance of high prices for cattle shall enable him to cultivate largely for the production of winter food, is the extent of natural winter ranges owned by him or within his reach on the public domain. The aspect and lie of the land, its openness to winds which sweep the snow from the surface, and its nearness to night shelter when the winds are too keen, have all to be considered. If not accustomed to visit the farm winter corral, the cattle themselves generally find the best places in a rough sort of way, preferring of course places to which the older cattle have been accustomed. The natural winter ranges in the district are not so extensive as to justify any very large sudden addition to the stock now in the country. There is still abundance of summer pasture, but cultivation of winter food will become inevitably necessary. *This is where the question of a larger supply of water for irrigation touches the stock-raising business in the southern interior, and is the main condition of its extension.*

"The bunch-grass dies out on the Blackwater—45 miles from Quesnelle (53°)—where it is intermixed on the slopes with wild vetch and blue lupin (locally called peavine). Thence northward, the rainfall increases, causing a change of the grasses.

"Red-top and blue-joint grasses, in some places over four feet high, and peavine on the slopes of the hills having a southern aspect, are the characteristic pasture and hay grasses of the fertile Nechaco and Chilaco districts. These genera constitute the grasses of the Peace river region, both within and beyond the province. The western scrub pine is the characteristic tree of the barren, sandy

or gravelly portions of northern British Columbia, and the aspen poplars indicate fertile land.

"These mixed grasses of the northern part of the country, probably, are as nutritive as the bunch grass of the arid southern part, and afford equally fine summer pasture. The difference is that they die when the frost comes, while, as above said, the bunch-grass is succulent during winter. But the northern hay and pasture grasses grow high, and perhaps could be cut and cured for winter without the necessity of driving the stock elsewhere. This has not been tried." *(G. M. Sproat, ex-Agent-General for the Province.)*

MAINLAND INTERIOR.

(Stock-Raising.)

(Its Comparative Relations.)

Upon the North American continent generally, the tendency of wheat is towards cheapness, and of cattle and other animals towards dearness. Not long ago, men thought that the cattle of the western plains, as in South America, would be valued soon, only for their hides and tallow. The increase of population, the meat requirements of the great cities, the opening of a beef export trade to Europe (already 3,000 tons a week), have reversed that notion, and raised a doubt if the surplus cattle supply of North America can meet the extra local demand. An Eastern American newspaper said lately:

"The lapse of a very few years will show that the western plains cannot be depended on to make meat cheap for ever. Cattle ranges are no longer illimitable. The day when an indefinite increase in the size and number of herds was possible is already passed. Stockmen will have to begin very soon filling up little chinks of territory instead of sweeping at will over whole counties and states. The limit of the ability of the country to support beeves has not been reached, but new and more careful methods of ranching must be gradually introduced. These will certainly not be less expensive than the methods now in vogue, so that the average annual price of fat cattle must tend upward, but as the cattle ranges diminish large grain ranches will be used for rearing cattle, and more profitably too."

These facts, when appreciated practically in British Columbia, will tend to change the character of stock-raising in the province, as elsewhere. Other results also will follow. Capital will attack the irrigation questions, and the winter food questions, and will solve them. The time for utilizing the rich hay and pasture grasses of the low northern country will appear less remote.

A further important consideration will not be overlooked by these who may be comparing the province, as a stock-raising region, with other regions. The cattle business on the American plains is exposed constantly to a great danger—contagious disease. Once introduced at any point, it could not be stamped out, as the cattle range more

or less together in immense areas. British Columbia is a very healthy country for stock, and the physical structure is favourable to sanitary cattle regulations.

Horses and Sheep.

Cattle in British Columbia, as elsewhere on the continent, are saleable at high prices, and stock farmers are doing well. The breeding of horses and mules, probably, would be as profitable as cattle breeding. The demand for British Columbia horses that already exists in the country east of the Rocky Mountains will continue, and will increase when the railway opens communication. The climate and grasses of the province give a peculiar vigour to horses. Sheep also thrive everywhere, and, in some places, can winter out where cattle cannot, but there are as yet few large flocks of sheep, more attention having been given hitherto to cattle breeding.

MAINLAND INTERIOR.

(A Distinguished Visitor's Opinion.)

"Of course you have nothing like the amount of available agricultural land that the central provinces possess. Yet it seems to me you have enough for all the men who are likely to come to you for the next few years as farmers or owners of small ranches. The climate of the interior for at least 100 miles north of the boundary line is a far shorter winter than that of Alberta or Athabaska. Losses of crops from early frosts, or of cattle from severe weather, are unknown to the settlers of your upper valleys. In these—and I wish there were more of these valleys—all garden produce and small fruits can be cultivated with the greatest success. For men possessing from £200 to £600 a year, I can conceive no more attractive occupation than the care of cattle or cereal farms within your borders." *(Governor-General the Marquis of Lorne, speech at Victoria.)*

MINING RESOURCES.

British Columbia emphatically is a mineral country. Her real wealth is in her gold, silver, coal, iron, copper, and other minerals.

The following are extracts from official statements by officers of the Canadian Pacific Railway Surveys, which were carried on, during nine years, in different parts of the country:—

"The data collected establish the existence of great mineral wealth "in British Columbia, and the opinion is expressed by the geological "officers of the Government that the resources of that Province will

"rather surpass than fall short of the estimates given." *(1877 Report of Mr. Sandford Fleming, C.M.G., Chief Engineer, employed by the Canadian Government.)*

"Gold has been found in paying quantities at Okanagan, on the "American boundary; at Shuswap Lake; at Cariboo; on the "Omineca; on the Stickeen; and latterly at Cassiar; and an ex- "amination of the map will show that all this gold is produced "from mountains lying between the Rockies and the Cascades. "Copper, iron, and silver have been found at various points in the "Cascades, and coal is abundant on Vancouver and Queen Charlotte "Islands. I just mention these and ask: Are these all or are they "merely indications of what is to come? *After having travelled over "1,000 miles through British Columbia, I can say with safety that "there will yet be taken out of her mines wealth enough to build the "Pacific Railway.* Consider that gold has been found in paying "quantities, at various points, along a north-west line for more than "ten degrees of latitude, before you decide that the foregoing state- "ment is that of an enthusiast." *(Professor John Macoun, Botanist, Canadian Pacific Railway Surveys: Evid. House of Commons.)*

"It is my opinion that, when the country is opened up and the "cost of labour and supplies lessened, it will be found capable of "rapid development, and may soon take a first place as the mining "province of the Dominion, and, ultimately, as second to no other "country in North America." *(G. M. Dawson, Assoc. Royal School of Mines, F.G.S., of the Geological Survey of Canada.)*

The above opinions are based upon the discoveries made by miners, upon partial workings, and upon explorations by the Canadian Geological staff.

Gold and coal, as having hitherto been most mined, may be first mentioned.

Gold.

Few, perhaps, have realized that the industry and skill of a section of the small population of the province, working chiefly on their own earnings, and under many disadvantages, have produced, up to this time, nearly fifty millions of dollars by scratching the gold areas. No other country can show such a result in relation to the number of its population engaged in gold mining. About 2,000 miners in British Columbia, mostly working as above said, on their own earnings, without the aid of capital, produce, now, a hundredth part of the present annual gold yield of the world, or about a thirtieth of the world s gold yield, forty years ago. The quantity of gold extracted per man, which probably is the true test of the value of a gold region, has reached the following figures, notwithstanding the undeveloped state of the mines:—

TABLE SHOWING THE AVERAGE EARNINGS PER MAN, PER YEAR, FROM 1858 TO 1882.

(Extracted from Report of the Provincial Minister of Mines, 1882.)

Year.	Average Yearly Earnings per Man.
1858 (6 months)	$ 173
1859	403
1860	506
1861	634
1862	517
1863	482
1864	849
1865	813
1866	893
1867	814
1868	992
1869	749
1870	569
1871	734
1872	671
1873	567
1874	643
1875	1,222
1876	783
1877	820
1878	677
1879	607
1880	518
1881	551
1882	548

It is not proposed to enumerate here the localities in which paying gold mines exist. They extend, as above stated, through ten degrees of latitude. There is scarcely a stream of any importance in the province in which the "colour" of gold cannot be found. It has been explained, at page 5, that British Columbia is but a part of the great Cordillera region of western North America, that stretches far to the south of the province. A very competent observer, who has explored many parts of the province, speaks thus in an official report as to

THE GOLD-BEARING ROCKS.

"In British Columbia, a belt of rocks, probably corresponding to the gold rocks of California, has already been proved to be richly auriferous, and it may reasonably be expected that the discovery and working of rich metalliferous deposits of other kinds will follow. Promising indications of many are already known. With a general similarity of topographical features in the disturbed belt of the west

coast, a great uniformity in the lithological character of the rocks is found to follow, so that while a comparatively short distance from south-west to north-east may show considerable lithological change, great distances may be traversed from south-east to north-west and little difference noted. In British Columbia, so far as geological explorations have yet gone, they have tended to show a general resemblance of the rocks to those of the typical sections of California and the Western States, and though metalliferous veins, individually, are very inconstant as compared with rock formations, belts characterized by metalliferous deposits, and dependent on the continuance of some set of beds, are apt to be very much more constant. * *

"The general distribution of alluvial gold over the Province may indicate that several different rock formations produce it in greater or less quantity, though it is only where 'coarse' or 'heavy' gold occurs that the original auriferous veins must be supposed to exist in the immediate vicinity of the deposit. Colours, as the finer particles of gold are called, travel far along the beds of the rapid rivers of this country before they are reduced by attrition to invisible shreds; and the northern and other systems of distribution of drift material have, no doubt, also assisted in spreading the fine gold. The gold formation proper, however, of the country, consists of a series of talcose and chloritic, blackish or greenish-grey slates or schists, which occasionally become micaceous, and generally show evidence of greater metamorphism than the gold-bearing slates of California. Their precise geological horizon is not yet determined, no geological survey to that end having been made; but I am inclined to believe that they will be found to occupy a position intermediate between the Lower Cache Creek group of Mr. Selwyn's first provisional classification of the rocks of British Columbia, and the base of the overlying cretaceous or cretaceo-jurassic rocks, called in my Report for 1875 the Porphyrite series. If this be so, they are probably the *geological equivalents of some of the richest auriferous rocks of California*. By the denudation of the auriferous veins traversing these rocks, the gold has been concentrated in the placer deposits.

"The greatest areas of these rocks appear in connection with the disturbed region lying west of the Rocky Mountain Range, known in various parts of its length as the Purcell, Selkirk, Columbia, Cariboo, and Omineca ranges. Other considerable belts of auriferous rocks, probably belonging to the same age, however, occur beyond this region, as in the vicinity of Anderson river and Boston bar, on the Fraser, and at Leech river, Vancouver Island."* *(G. M. Dawson, Assoc. Royal School of Mines, F.G.S., of the Geological Survey of Canada.)*

*Gold has been found in other parts of Vancouver Island, and also in Queen Charlotte Island.

GOLD MINING.

(Some Causes of Slow Progress.)

It may be asked, why gold mining in a country that probably is destined to be the greatest mineral country in North America, has not more quickly progressed? The isolation of the province, and want of information, abroad, respecting its resources, may be first mentioned. Secondly, the seaboard of the country was first settled, and the best known gold-bearing districts being in the interior, they were more or less difficult to reach and expensive to supply. This was one of the main causes of the persistency of the province in the discussions with Canada respecting the railway; nor will the trunk railway greatly help some of the productive distant mining regions. Again, a considerable portion of the country, particularly the gold range toward the north, is forest-clad and encumbered with glacial drift or detrital matter, which, though often tending to produce a more fertile soil, conceals the greater part of the surface of the rocky substratum. In many parts the indications are hidden to which the "prospector" trusts in more southern latitudes, as on the bare slopes of California. These disadvantages do not seem to lessen the faith or energy of the mining population or the untiring "prospectors," to whom so much is due.

GOLD MINING.

Present Position.

The demand in the province, lately, for labour in other industries that afford a longer season than gold mining, has temporarily attracted miners to them. It would be too much to say that the "shallow diggings" in British Columbia are worked out, as those of California and Australia have long been, but it is true that in several important gold fields, *the more easily worked places* have been reduced to the condition of yielding what is here considered low pay in ordinary placer mining. This is a very different thing from the exhaustion of the gold fields. It is simply saying that in those particular places in British Columbia, a stage has been reached which was reached long ago in California and Australia.

In most gold-bearing countries, the placer mines* have eventually led to the mining and treatment of the gold-bearing quartz from which the alluvial gold has been derived.

Very little attention has, as yet, been paid in British Columbia to quartz mining, the "placer diggings" having chiefly absorbed the mining energy of the country. Hydraulic mining has been under-

* "Placer" ground is ground of alluvial or diluvial origin, containing gold, &c., obtained by washing such gold with water. Hydraulic mining is the outgrowth of the several modes of placer mining ("pan," "cradle," "long-tom," "sluice-box," "booming,") the gold being extracted by means of water, under great pressure, discharged through pipes.

taken with successful results in several places, and might be extensively and profitably prosecuted, with the aid of capital. Vein mining, once initiated, will rapidly develope, and give to the gold-mining occupation a permanent character, which it does not now possess, besides affording employment during both summer and winter. In many cases the machinery and appointments of the mines are very creditable, considering that almost the whole expense of the mining enterprises is borne by the miners themselves, without the aid of foreign capital, and with labour and materials of all kinds at high rates, owing to the comparative inaccessibility of the most productive known mining regions. But it is altogether beyond the power of a small mining population to do justice to the extensive and rich gold mining areas of the province. Capital is required, and capital, invested with judgment in legitimate gold mining, would give a certain recompense, if the enterprise were carried out with intelligence and integrity, upon a well-matured and settled plan in each case.

At this stage of the world's history, homilies are not wanted upon the risks of gold-mining in this quarter of the globe, or, indeed, elsewhere. In British Columbia the work often, is hard, and the season is short in the northern parts of the province. But one thing may be said, namely, that a gold-miner has a steady market for his produce; he has never to wait for a market for his gold, nor is it much affected by competition or over-production.

The point for the settler to note is, that it is an *immense advantage to a settler to be in a mineral country*, because the mines give, or will give, work to those able to undertake it, and will create local markets, which otherwise might not exist for generations.

The interests of all classes are common. Whatever adds to the number of consumers specially benefits the farming settler, and all who are engaged in industries or in trade. A reasonably good mining camp will people a district, and create a town.

COAL.

Coal appears to be nearly as widely spread in British Columbia as gold. The nature of the deposits and their localities can be stated in a few words. Those not acquainted with the Pacific coast, perhaps, may need to be reminded that the coal-bearing formations of North America are pretty exactly divided into two classes by the 97th meridian. The coal-bearing formation, properly so called, which yields the coals of Nova Scotia and the States of the Union east of the Mississippi, ceases to be productive to the westward of eastern Nebraska—the shales and sandstones associated with the coals of the east being there gradually replaced by limestones which underlie the great plains. The coals and lignites of the west are found at various horizons in the *secondary* and *tertiary* rocks, which, in the eastern regions, are developed on a comparatively small scale, and are not coal-producing. In British Columbia, the formations, known to

produce fuel of economic value, are classed by Mr. Dawson, F.G.S., in three divisions, as follows :—

(1.) Tertiary rocks, with bituminous coal and lignites (chiefly occurring on the mainland).

(2.) Cretaceous rocks of Vancouver Island, &c., with bituminous coal.

(3.) Lower cretaceous, or cretaceo-jurassic, rocks of Queen Charlotte Island, &c., holding anthracite.

COAL.

(Reciprocity Treaty.)

"In the most influential circles in the States, an effort is being made to get a reciprocity treaty, and I predict that before 3 years, there will be reciprocity in coal between the United States and Canada. I need not tell you what that will do for British Columbia." *(Sir C. Tupper, K.C.M.G., Minister of Railways and Canals, Canada; speech at Victoria, Sept. 1881.)*

Class I.

Mainland.

(Coal.)

It is an error to suppose that coal of good quality is found only in Vancouver Island. Coal formations, of tertiary age, are known to cover great tracts of the mainland of British Columbia.

So far as can be judged from outcrops, some of the coals—good fuels, resembling true bituminous coals—which are found widely distributed on the mainland, are as good as the coals that are now worked for market in the American territory to the southward. The tertiary coal measures (see page 52) extend north and south of the 49th parallel—the boundary line—and underlie nearly 1,000 square miles of the low country about the estuary of the Fraser. The length of the coal-bearing tertiary strata, in the so-called Nicola section of the southern interior of the province, exceeds 100 miles, and the width is nearly 40 miles. Lignites of various qualities occur in the middle zone of the interior, and specimens of an excellent fuel, closely resembling coal of the carboniferous system, have been found near the Forks of Skeena (about 54°30′), and the Forks of Pine river (about 55°30′), and in other northern parts of the province.

There is an immense region in the south-east of the province, through which the railway will pass, that has not been examined for coal.

Class I.

Mainland.

(Coal.)

(Why not Worked.)

Coal of the above class has been worked, as above said, in American territory south of the province, for the San Francisco market, in places where it occurs in thick, accessible beds. It has not been worked, or even bored for, on the mainland of British Columbia (the northern portion of the same coal field), because the adverse tariff would shut it from that market. The high class and location of some of the mainland coals, nevertheless, may yet make them important, if the beds prove to be thick, particularly as these tertiary measures, often, are not much "disturbed," and are therefore easily worked. The best specimens (very superior coal of the class), are from the New Westminster and Nicola districts (both adjacent to the railway), but the thickness of the seams has not been ascertained.

Class II.

Vancouver Island.

(Coal.)

It has now been well ascertained that the rocks of the extensive coal areas on the east coast of Vancouver Island are of cretaceous, not tertiary, age. They extend from the vicinity of Cape Mudge to within 15 miles of Victoria, a length of about 130 miles. Rocks of the coal series also exist on the north-east and north-west coasts at the north end of the island, and there may be similar coal areas in the interior. Tertiary rocks, holding lignite, occur at Sooke and various places on the south-west coast.

The country has not been sufficiently examined to enable it to be definitely said whether coal-bearing rocks of the age of those on Vancouver Island exist on the mainland of the province. They have not been found in the American territory, anywhere.

Vancouver Island Coal.

(Its Value.)

In quality, the Vancouver Island bituminous coals are found to be superior, for all practical purposes, to any coals on the Pacific coast. Nature has given this advantage, exclusively, to Canada on the Pacific seaboard. These coals are in large demand in the San Francisco market, notwithstanding a high adverse tariff. They rank there with the West Hartley coals. On an average, nearly two-thirds of the sea-borne Pacific coast coal, received annually at San Francisco, are from Vancouver Island.

A San Francisco newspaper says—

"British Columbia has been supplying this market with coal for about a quarter of a century. The oldest coal mines are at Nanaimo. For a dozen years or more, Departure Bay, in British Columbia, has been gaining prominence as a source of coal. The Wellington mine there has been a good property from its start. Other deposits in the same vicinity have since been developed, and still others are in course of development." *("Commercial Herald," March, 1883.)*

The only fully developed coal mines in the province are the above-mentioned, in the neighbourhood of the thriving town of Nanaimo, on the eastern coast of Vancouver Island. The collieries there already give steady employment to over 800 persons; and the day is fast approaching when the commanding position of the province on the Pacific coast, and the immense value and importance of its coal measures, will be fully recognized.

The following table shows the output of each year, from 1874 to 1882 (inclusive):—

Year.	No. of Tons.
1874	81,000
1875	110,000
1876	139,000
1877	154,000
1878	171,000
1879	241,000
1880	268,000
1881	228,000
1882	282,000

In 1881, 228,357 tons of coal were raised at the Nanaimo and Wellington collieries, which, with 10,476 tons on hand at the commencement of the year, formed a total of 238,883 tons available for export and sale.

Shipments, amounting to 189,323 tons, were made to San Francisco and other ports in California; Portland, Oregon; Seattle, W.T.; Ounalaska and Wrangel, Alaska territory; Mexican ports; China; the Hawaiian Islands, and to mail steamships and calling vessels, for fuel.

In the Province, 40,191 tons were disposed of, for manufacturing, gas, household and other purposes, and for local tug-boats and steam-vessels, leaving 9,368 tons on hand at the collieries on 31st December, 1881.

In 1882, as above shown, the yield rose to 282,000 tons.

The northern, or Comox, portion of the connected coal area on the east coast of Vancouver Island, probably has a greater extent of productive measures, and may eventually become more important than the Nanaimo area, of which the present production is stated above. Mr. Richardson, of the Canadian Geological staff, estimates the extent of country underlaid there by the productive coal measures at 300 square miles, without taking into consideration what may lie beyond the shore. A number of seams are known, and some have

been partly opened. In a sample from the Union mine, Comox, the percentage of ash is only 2.83.

It may be noticed here, that the productive coal rocks of Vancouver Island generally, so far as examined, though preserving throughout their carboniferous character, probably vary considerably in the number of seams contained, and even more widely in the thickness of individual seams, contrasting in this variability with the great comparative regularity of the rocks of the paleozoic carboniferous formation elsewhere.

In the working of these beds, therefore, the next most important exploration, after the mere definition of the coal basins, will be the proving of the seams, from point to point, by boring operations. To this end, the diamond drill has already been used to good purpose.

Class III.

Anthracite.

Anthracite in six foot and three foot seams, respectively, comparing favourably in composition, as shown by analyses, with that from Pennsylvania, has been found in Queen Charlotte Island.

The irregularity of the deposits in the localities where the seams have been observed, has, so far, discouraged their working, with the small amount of capital available in the province, but, from the outcrops discovered in partial explorations, and the description of well marked coal seams by the Indians, as also from the observations of an officer of the Canadian Geological Survey during a short visit to the islands, enough is known to indicate the general permanence and continuity of the coal beds, however variable they may be in detail, from a place called Cowgitz, at least 20 miles in a south-easterly direction. If the coal formation extends, as is believed, below the level land between Cowgitz and Massett, from which latter place samples of anthracite coal have been brought, the total length of the anthracite coal area, in the Queen Charlotte Islands, would be little short of 100 miles.

Fragments of true anthracite have been found in rocks in Cowichan bay, east coast of Vancouver Island, and also in several inland localities of the island.

COAL.

Its National Value.

These widely spread valuable coal deposits on Vancouver Island and the mainland entitle the province to be called the "Britain of the North Pacific."

(Opinion of one of Her Majesty's Ministers.)

"The position of the various stores of coal on the Pacific is of extreme importance as an index to the future distribution of power in that part of the world." *(The Right Hon. Sir Charles Dilke, Bart. See his book "Greater Britain.")*

MINERALS.

(Iron, Silver, Copper, Mercury, and other Ores.)

Little work, but such as may be classed as preliminary exploration, has been carried out on the deposits of metalliferous ores. Various circumstances have prevented the testing, on a large scale, of the localities known to be promising. If one or two properly conducted and paying mines could be seen in operation, the growth of this branch of mining industry would be rapid.

Iron.

The Earl of Dufferin said, in a speech at Victoria :—

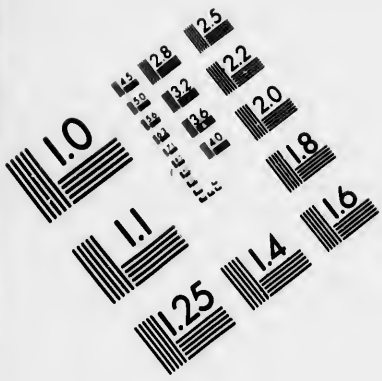
"When it is further remembered that inexhaustible supplies of "iron ore are found in juxtaposition with your coal, no one can "blame you for regarding the beautiful land in which you live as "having been especially favoured by Providence in the distribution "of its natural gifts."

Iron has been found in many localities, both in the interior and on the coast of the mainland, and in Vancouver Island, but little attention has been paid to the deposits, under the impression that the high price of labour, and the adverse American tariff, would at present prevent their remunerative working. The most important known deposits are those of Texada Island—a long wooded island in the Strait of Georgia, between Vancouver Island and the mainland. Here there is a mountainous mass of iron, traceable for miles—well situated for mining, smelting and shipment. Ore—a coarsely granular magnetite, containing a great percentage of iron, with only .003 per cent. of phosphorus. A portion of this iron field has lately been bought by an American company which owns a bog iron area near Port Townsend, Puget Sound. At first they mixed the two ores, and produced pig iron for the San Francisco market. Laterly the Texada ore has been used by itself. The high American duty on pig iron prevents its manufacture in British Columbia. British Columbian iron ore can be made into pig iron on American territory for American markets, as the duty on the ore is low.

Silver.

The best known argentiferous locality is that about six miles from Hope, on the Fraser river. The lodes probably traverse an outlyer of the lower cretaceous formation, which caps the Cascade crystalline rocks of the region. They occur at an elevation of 5,000 feet.

Specimens assayed have given high yields of silver. Lead, copper, antimony, iron, arsenic and sulphur are also present. The ore has been sold at a high price in the rough state, as extracted from the mine and carried to the river by the present rude appliances. Certain difficulties with regard to the ownership of the property have, so far, prevented the successful working of this deposit.



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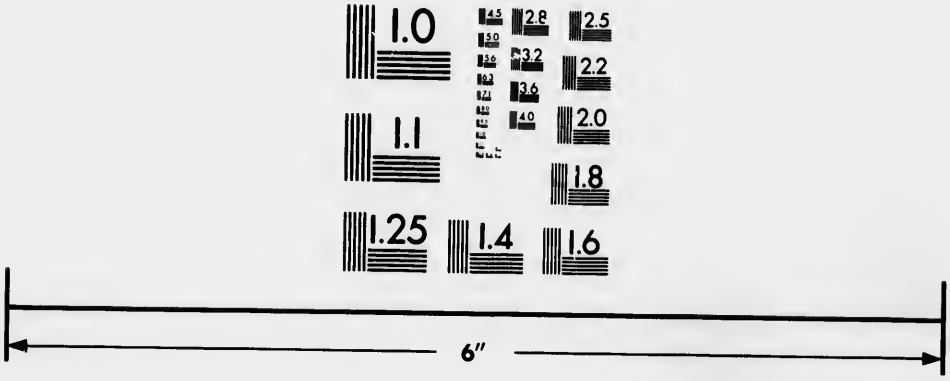

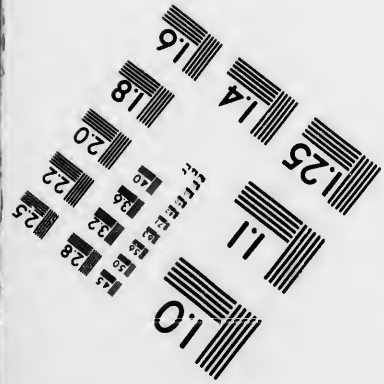

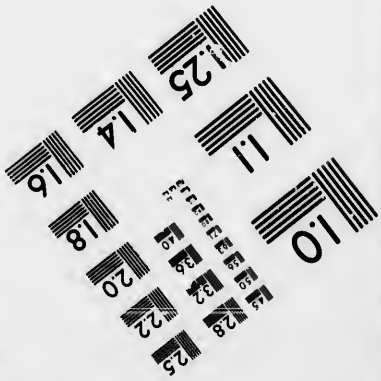

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Other lodes, which are supposed to be either the continuations of the above, or others running parallel to them, have been discovered near the water level of the Fraser river, apparently in a granitic matrix. Silver also has been found near Yale on the Fraser.

In the interior, Cherry Creek, a tributary of the river Shuswap or Spallumcheen, between Okanagan and Arrow lakes, is noted as a locality from which specimens of remarkably rich silver ore have been brought.

Native silver, or silver amalgam, has been found at Omineca, in the northern interior. Argentiferous galena ores occur in many parts of the province, chiefly in Omineca and Kootenay. Some of these are said to be very promising.

Copper.

Masses of native copper have been found from time to time in various parts of the province, but have never been observed in their matrix. Small veins have been observed in volcanic rocks of tertiary and cretaceous ages, in the gold rocks, the crystalline rocks of the coast range, &c. Very fine specimens of purple copper ore, associated with quartz, mica, and molybdenite, are brought from the neighbourhood of Howe Sound, also from Knight's Inlet, and specimens of copper pyrites have been brought from several localities on the Homatheo.

Mercury.

Small quantities of cinnabar have been obtained in gold washing on the Fraser river, near Boston Bar, and globules of mercury are seen in some decomposed parts of the Hope silver ores. A small specimen of rich cinnabar ore was found on the Homatheo. Whether mercury occurs in deposits comparable with those of California, which are found in rocks of similar age to some of those occurring in British Columbia, remains to be proven.

Lead.

Galena has been found in many parts of the province, and appears in connection with gold, both in the lodes and superficial gravels of the Cariboo district. Lead ores, as such, will probably not pay to work in the interior, even if found in large quantity, till cheaper means of transport are introduced.

Platinum.

This metal has been found in small quantity in several localities in association with alluvial gold.

Nickel-bearing sand has been found among the heavy materials separated from the fine gold of the Fraser.

It is unnecessary to enumerate discoveries further, or to pursue the subject in detail. The opinion of competent observers has been already quoted, to the effect that British Columbia, probably, is *second to no country on the continent as regards mineral resources.*

FISHERIES.

The fisheries of Canada on the Pacific may prove even more valuable than her Atlantic fisheries. If the estimate by the Canadian Inspector of Fisheries, as to the consumption of fish by Indians, is correct, the annual fish product of British Columbia already exceeds that of any province in the Dominion. The fisheries of British Columbia are as yet almost untouched industrially, except the salmon fishery, which has rapidly become an important industry. Its chief seat at present is on the Lower Fraser, in the rich agricultural district of New Westminster, through which the railway passes. Salmon fishing is carried on, also, on the rivers Skeena and Nass, and at various places on the coasts. Nearly all the salmon are canned and exported to England; a few are salted and smoked.

In 1876, there were only three "canneries," which produced 8,247 cases (each 48 1 lb. tins). In 1882, 250,000 cases were shipped, valued at $1,247,000. Several new canneries have been started lately. The salmon fisheries now employ about 3,000 men during the season.

A marked difference between the Canadian Atlantic, and Canadian Pacific, fisheries, is, that, in the Pacific (or British Columbian) waters, the salmon are more numerous. A hundred fathom drift net on Fraser river has taken 853 salmon in ten hours. There are more *species* of salmon, also, in British Columbian waters. Of six species, more or less abundant, four are excellent for the table, and of these four, three are in such numbers as to be commercially important. (It is said that a seventh species exists—a fine salmon which is not known to ascend rivers.)

Again, the range of the North Pacific salmon is wider than that of the Western Atlantic salmon. Some of them range from California to Northern China. Salmon of the same species differ markedly in quality in the different rivers of the North West, but it cannot be said that the salmon of any one of the large rivers, taken altogether, are specially superior. The average quality is about the same.

The general fisheries have been comparatively neglected, as capital has been chiefly drawn to the salmon fishing. Herrings and oolachans have been salted, smoked, and pressed for oil. A factory is in operation to make guano-scrap from herrings. As a sea product, the fur-seal hunting comes next in value to the salmon yield, being not far short of $200,000 a year. This valuable animal is not found on the Atlantic coast. Oil is another important sea product. Increasing quantities of oil, from the dogfish, seal, and porpoise, and, as above said, from the herring and oolachan, appear annually in the returns.

A fish of the same family as the common herring, and closely resembling it in appearance, is very abundant. It approaches the shore in vast shoals from February to July. Many species of cod, allied to the real cod, are found, and it is probable that the latter exists on the off-shore banks, but in the absence of any large present

demand on the coast for cod, few care to go to the expense of seeking for cod banks. A good kind, the colour of which is affected by living among weedy rocks, locally known as the "redfish," is very common. Cod banks, yielding fish considered to be the same as the Eastern cod, are regularly fished by Americans off the coast of Alaska, and the same fish, probably, is in British Columbian waters. Halibut are abundant, of fine quality, and large size. They are found in the inner waters, on the banks off the west coast of Vancouver Island, and on many banks farther to the north. Sturgeon, up to 1,000 lbs. in weight, are numerous in the Fraser and some of the larger rivers. The oolachan ("candlefish," "oilfish," or "greasefish,") is a valuable, delicate fish, about 8 inches long, which comes to the shore in spring. It enters Fraser river in May in great numbers. Farther north, it is fatter. The surf smelt is almost as numerous as the oolachan, and about the same size—an excellent table fish. The very common smaller smelt is prized at table, but the flesh is softer than that of the surf smelt and oolachan. Many other kinds of good table fish are brought to market which need not be here enumerated. Fine trout abound in the lakes and streams. The greatly esteemed whitefish is common in the lakes in the middle and northern interior of the province. Native oysters exist, but the lobster has not been found. The eastern oyster and lobster should be introduced. The food of the lobster is much that of the crabs, which are so numerous on the coasts of the province, and it would be of great value commercially. The eastern oyster should thrive where the native one grows. Those familiar with the coast mention many likely places for oyster beds, —in the New Westminster district, on the Vancouver coasts, and in Masset Sound and Virago Sound, north coast of Queen Charlotte Islands. The demand for oysters and lobsters east of the Rocky Mountains, and for the European market will be so great, that these fisheries might quickly rival that of the salmon in value.

It is abundantly evident that there is a *great source of wealth in the fisheries of the province.* The central regions of Canada will be largely supplied with sea fish from British Columbia as soon as railway communication is opened.

FOREST TREES.

There is no want of trees anywhere in British Columbia for the use of the settler, the miner, and for local purposes generally, though the arid southern interior might be better supplied on its low grounds. The economic value of the forest trees is, as yet, imperfectly known. The conifers cover a vast extent of the province. The spruces may be first mentioned. One, in particular, is a very valuable tree, furnishing a wood that will, probably, always be the chief

export, over sea, and, also, eastward, to Central Canada by the railway. This is the

Douglas Spruce (otherwise called "Douglas Fir," "Douglas Pine," and, commercially, "Oregon Pine"). A tree that is so well known does not require any special description. It is straight, though coarse-grained, exceedingly tough, rigid, and bears great transverse strain. For lumber of all sizes, and planks, it is in great demand. Few woods equal it for frames, bridges, ties, and strong work generally, and for shipbuilding. Its length, straightness, and strength especially fit it for masts and spars. Masts specially ordered have been shipped, 130 feet long and 42 inches in diameter, octagonally hewn. For butter and other boxes that require to be sweet and odourless, it is very useful. There is a large export of the Douglas spruce to Australia, South America, China, &c. Woodmen distinguish this species into two kinds—red and yellow—but these are not separated in manufacture or in scientific nomenclature. The one has a red, hard, knotty heart; the other is less hard, and with a feeble tinge of yellow—the latter supposed to be somewhat less lasting, though both are very durable. The Douglas spruce grows best near the coast, close to the waters of the bays and inlets. There it frequently exceeds eight feet in diameter, at a considerable height, and reaches 200 to 250 feet in length, forming prodigious, dark forests. Abounds on mainland coast, as far north as about the north end of Vancouver Island; also in Vancouver Island, but not on Queen Charlotte Island. In the arid southern interior of the province, grows on the higher uplands, and here and there, in groves, on low lands, where the temperature, rainfall, &c., are suitable. Occurs abundantly on the Columbia, and is scattered irregularly in northern portions of the interior.

The *Western Hemlock* occurs everywhere in the vicinity of coast, and up the Fraser and other rivers to the limit of abundant rainfall; reappears on the Selkirk and Gold ranges; on coast (particularly Queen Charlotte Islands), reaches 200 feet in height. Yields a good wood; bark has been used in tanning. Is like the eastern hemlock, but larger.

Englemann's Spruce (very like "white spruce"), probably will be of much economic value,—tall, straight, often over three feet in diameter—wood good and durable. Is in the eastern part of province, and interior plateau (except dry southern portion), what the Douglas spruce is on coast. Forms dense forests in the mountains; believed to be the tree of the dense groves in upper Alpine valleys of Rocky Mountains near 19th parallel. Also borders nearly all the streams and swamps in northern interior, between about 2,500 and 3,500 feet in elevation.

Menzies' Spruce chiefly clings to coast—perhaps may exist in humid regions of Gold and Selkirk ranges—a very large tree; wood white and free—useful for general purposes, but not considered equal to Douglas spruce.

The Great Silver Fir, so far as known, is specially a coast tree, but may reappear in south-east of the province. It grows to a great size, but the wood of the coast growth is said to be soft and liable to decay rapidly.

Balsam Spruce appears to take the place of the last-named in the region east of coast range, except in dry southern interior. Abounds on Gold and Selkirk ranges and east of McLeod's lake. Occurs in scattered groves in northern portion of interior plateau. Often exceeds two feet in diameter; has been used for mining and ordinary local purposes.

Williamson's Alpine Hemlock and scattered trees of the *Abies Amabilis* need not be mentioned, as probably they are too scarce and grow too high up to be of use.

Among the pines may be mentioned the familiar tree of the central dry region of the mainland (where the Douglas spruce seldom occurs on the low lands.) This is known locally as "red pine," "yellow pine," or "pitch pine," and is generally considered to be a variety of the heavy yellow pine *(Pinus Ponderosa)* of California and Oregon. It grows in open groves in the valleys, almost to the exclusion of other trees, and on the slopes up to about 3,000 feet, where it is replaced by the Douglas spruce and Western Scrub pine. A very handsome tree; half the shaft branchless; bark reddish brown; seldom exceeds four feet in diameter. Is sawn into lumber, and used for building and general purposes, locally. The lumber looks well, but is not equal to Douglas spruce lumber, being more brittle and less durable when exposed to the weather.

The *White Pine* ("Mountain Pine"), though loving elevations, and occurring, so far as known, rather in groves than forests, probably will become an article of export. The wood resembles that of the eastern white pine, and may be used for the same purposes. It is found in the Columbia region—the best trees being high up—also on the Gold range and about Shuswap and Adams lakes, and scattered in all portions of the southern portion of the Coast range where there is sufficient rainfall; also in the interior of Vancouver Island, but not, so far as known, in Queen Charlotte Island. On the coast, the white pine reaches 60 to 80 feet, and a diameter of 2 to 3 feet. It is said to be larger on the Columbia.

The *Black Pine* ("Bull" or "Western Scrub" Pine) occurs everywhere in the Province, at varying heights, according to the local climate, but covers great areas in the northern part of the interior. There are a "coast" variety and an "interior" variety. The interior variety, which often forms dense groves, reaches 60 or even 100 feet in height, but seldom exceeds a diameter of two feet. The wood is white and fairly durable. The coast variety is much less valuable.

The *White-barked Pine*, so far as observed, grows in inaccessible situations, and is small.

The *Western Cedar* ("Giant Cedar," or "Red Cedar,") is a valuable forest tree. The wood is of a pale yellowish or reddish colour, and very durable; splits easily into plank; has been used chiefly for shingles and rails. Abounds in the Columbia river region; on slopes of Selkirk and Gold ranges; at north-eastern part of Shuswap lake, and portion of North Thompson valley; unknown in dry interior plateau; reappears abundantly along the coast and lower parts of rivers of Coast range. Occurs sparingly in northern interior. On coast, is often found 100 to 150 feet high and 15 feet thick, but the largest trees are generally hollow.

Yellow Cypress (commonly known as "Yellow Cedar"). A strong, free, fine-grained wood; pale golden yellow tint; slight resinous smell; very durable; has been used in boat-building and for ornamental purposes; often exceeds 6 feet in diameter. Occurs chiefly on coast. Generally a few hundred feet above sea level on southern part of coast; farther north, descends. Occurs on mainland coast, also in interior of Vancouver Island, and abounds on west coast of Queen Charlotte Islands. A tree likely to be valuable.

Western Larch (sometimes called "Tamarac") occurs in Rocky Mountains and valleys of Selkirk and Gold ranges where there is sufficient rainfall. Stretches westward nearly to head of Okanagan lake. Not found on coast. A large tree, yielding a strong, coarse, durable wood, probably good for ties, in absence of Douglas spruce. There is another species of larch, in the south-east of the province, of which little is known.

The *Maple*, a valuable hardwood, sometimes well adapted for cabinet-making, is said to exist in the Columbia region. Found on Vancouver and adjacent islands, also sparingly on mainland coast up to 55°, and on Queen Charlotte Islands. Occasionally attains a diameter of 4 feet. The *Vine Maple*, seldom over a foot thick, yielding a very tough, strong, white wood, suitable for helves, seems to be strictly confined to coast, and does not go far north. The *Yew* is found in Vancouver Island and on opposite mainland shores. It goes up the Fraser above Yale. Few, if any, in Queen Charlotte Islands. Very tough, hard wood, of a beautiful rose colour. *Crab Apple* occurs along all the coasts as a small tree or shrub. Wood very hard, but liable to check; takes a good polish and withstands great wear in mill machinery. *Alder* is found two feet thick on the Lower Fraser, and occurs as a small tree along the whole coasts. A good furniture wood; easily worked and takes a good polish. There are two birches—the *Western Birch* and the *Paper* or *Canoe Birch*, but their range and value are not much known. Both occur in a number of localities. The "Western Birch" is a small tree, found in the Columbia region, and belongs generally to the dry interior flora. The "Canoe Birch" is found sparingly in Vancouver Island and on the Lower Fraser, but is common, and larger, on the Upper Fraser, and in the Peace River district. The only *Oak* in the province, so far as known (except a few trees above Yale), is on Vancouver

Island—chiefly the south-eastern portion of it—and sparingly at places along the east coast; a few at north end. Reaches a diameter of 3 feet, and a height of about 70 feet, and yields a hard wood, but not very tough, which has been used for building purposes and in making kegs. Many of the trees are scrubby. The *Dogwood*, on the mainland coast opposite Vancouver Island and on Vancouver Island, reaches the dimensions of a small tree. The wood is close-grained and hard. Another close-grained wood, heavy and resembling box, is furnished by the handsome evergreen *Arbutus*, which reaches 50 feet in height and about 20 inches in diameter, but occurs often as a shrub. It is found on Vancouver Island and neighbouring islands, never far from the sea. Not found north of Seymour Narrows.

The *Aspen Poplar* abounds over the whole interior, and reaches a thickness of two feet. In the dry southern interior, occurs along borders of streams and on the higher plateaux. In the north, grows everywhere, preferring the most fertile soil.

There are, it is considered, three other varieties of poplars in the province, all of which are commonly included under the name of "Cottonwood." They attain sometimes a diameter of 4 to 5 feet. The coast "Cottonwood" may not extend above Yale on the Fraser. It is the same wood that has been largely used in Puget Sound to make staves for sugar barrels required in San Francisco. The other kinds occur in the valleys throughout the interior of the Province.

The *Mountain Ash*, as a small tree or bush, has been noticed in the interior; and the *Juniper*, or "Red Cedar," commonly known as "Pencil Cedar," has been observed on the east coast of Vancouver Island, and, in a tree form, with a diameter of about a foot, along the shores of Kamloops, François and other lakes in the interior.

It is unnecessary to mention miscellaneous trees, shrubs, and plants.

The above will suffice to give some notion of the great supplies of timber within the province, and of the suitable distribution of serviceable kinds, for *export, either over sea, or by railway to the eastward of the Rocky Mountains.*

SUMMARY OF THE FOREGOING.

The statements in the foregoing pages, collected from the reports of men of position and experience—old residents, meteorological observers, botanists, geologists, officers of H.M. Navy and Hudson's Bay Company, and others, give a general account of the climate and natural resources of the province. The information has been arranged as follows:— (For detailed Index, see end of the book.)

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*At pages 12 and 6, it is interesting to notice the agreeing descriptions of the climate, by Captain George Vancouver, in 1790, and His Excellency the Marquis of Lorne, in 1882.

†At page 75, it is stated that the "bunch-grass dies out on the Blackwater, 45 miles from Quesnelle (53°)." Mr. James Orr, a member of the Provincial Assembly, who has personal knowledge of the whole surface of the mainland interior, has observed this grass, which is characteristic of the dry interior region, growing, not very sparingly, in parts of the Nechaco "white silt" region, not far south of 54°. This is an important fact, as indicating the nature of the climate in that fertile northerly district. Bunch-grass grows, also, sparingly in the lee of the Coast Range in the Kispyox valley, about 55°30'.

A consideration of the facts above presented, suffices to show that the country, naturally, is highly favoured in many respects. British Columbia, it is manifest, is not a country with "one string to its bow." The climate is very attractive. The province is not agricultural and grazing only, but has mines, fisheries, and forests, probably more valuable than has been realized. Its fine harbours are open throughout the year. The geographical situation of British Columbia, moreover, is favourable to commerce. The "Alta California" newspaper says—"That these new settlements are yet to become com-" petitors for the trade of the east, if not the commercial supremacy " of the Pacific, it were useless to deny."

PART II.

INFORMATION FOR EMIGRANTS.

PART II.

BRITISH COLUMBIA COMPARED WITH OTHER PACIFIC COAST COUNTRIES.

The progress of the north-west is one of the most remarkable events on the North American continent within the last decade. It is an index of the future.

British Columbia (British), Washington, Oregon, and California (American) are the four principal countries on the Pacific Ocean side of the continent. These are fine countries, but each has its advantages and disadvantages. British Columbia, upon the whole, is the best of these countries to settle in, for the following substantial reasons.

The demand for labour is great, and wages high. Taking the whole year round, or taking a series of years, the climate is more healthy and enjoyable. The wheat, barley, and hops of British Columbia beat those of California, and her root crops beat those of Oregon. Her grass-fed beef and mutton are the best on the continent. British Columbia has more coal and better coal, finer harbours, superior fish, sounder trees. Her mineral lands, containing precious metals, are very extensive. The public domain is sold cheaply; the taxation is immensely less; titles are securer; the Government maintains free unsectarian public schools; the laws are better carried out; the people have as much political freedom as any people can desire.

The prosperity of the country is due to two main causes. (1.) The steady growth of legitimate industries and trade. (2.) The construction of the western section of the Canadian Pacific railway, which is now being carried on vigorously, from the seaboard of the province, *eastward* to connect it with the Canadian system of railways. The annual expenditure on public works in British Columbia is about three millions of dollars.

WHO SHOULD COME.

General advice can be given only as to the *classes* of emigrants. The application of this advice to special cases must be the business of each individual himself. The same qualities are necessary to success here, as elsewhere. Any other notion will lead to disappointment.

We cannot at present encourage the emigration of more than a few *professional men*, such as lawyers, doctors, surveyors, and civil engineers, unless they have money beyond the expected earnings of their profession, and are prepared to take their chances after arrival. Clerks, shopmen, or those having no particular trade or calling, and men not accustomed to work with their hands, if without means of their own, would probably meet with disappointment, and, perhaps, hardship. Tutors, governesses, housekeepers, needlewomen, and women generally above the grade of domestic servants, should not go alone to the province at present, and they should not go at all, unless to join friends or relatives able to maintain them for some time after arrival.

A good woman servant might soon make money. For men there is an open field with no favour. For women an open field full of favours. Unfortunately it has been found that some of those women who have reached the province have been fickle. Many of them have been disinclined to go to country work, and some have "tip-tilted" their noses at everything. Surely, however, the right class can be found, when wages are so good.

Men who hang about the Government offices in search of "appointments" are nuisances in all colonies. This class is not wanted.

The urgent requirements of the province at the present time are *men and money*,—the labourer, the mechanic, the real farmer, dairyman, fruit-grower or stock-raiser, and the large and small capitalist. Every man who is able and willing to work with his hands can find *employment at good wages*, especially those who are fitted for railway work. There is scarcely an industry in the province that is not, at present, hampered by the scarcity of labour. Railways, public works, mines, mills, logging-camps, fisheries, and farms—all require more labour.

Any *smart, active, capable man*, with only a little money, but accustomed to work with his hands, is sure to succeed in making a comfortable home in British Columbia. Wages are very high; land, food, and house materials are still, relatively, cheap. If such a settler has a strong heart himself, and is blessed with a common-sense wife used to country work, he may confidently look forward to becoming even rich. He need not long remain in the condition of a labourer. This certainty of rising in the social scale must stimulate the emigrant. Many new avenues to success will be opened when the railway is finished, and men should be here to discover these for themselves.

To farmers' sons, or persons with moderate means, qualified for the life of a settler in a new country, who cannot see openings in older countries—who cannot *go up*, because the passages are blocked—who cannot *go down* because their habits and pride forbid, the varied resources of the country would seem to promise success, if they avoid whiskey, and are industrious and patient.

Farmers themselves, with limited capital, who are uneasy about their own future, and that of their children, and are prepared to

emigrate, should consider the advantages which British Columbia affords, irrespectively of the climate, which must be attractive to all. They should have at least sufficient capital to be independent for 12 months. It is often best for the father to go out and pave the way for the little folks.

Farmers, or other persons, with larger means, will also find either tillage-farming, or cattle or sheep-farming in British Columbia an agreeable and profitable occupation. The country does not yet feed itself. Why should a farmer in the old country continue to pay rent, and remain under the control of a landlord as a leaseholder or yearly tenant, when, with one year's rental, he can purchase a partially prepared farm with buildings on it, in the thoroughly British province of British Columbia?*

But for the scarcity of domestic servants, British Columbia can be recommended as a charming place of residence for *families with fixed incomes*. They would find, with much less difficulty than amidst the crowded population of older countries, suitable and pleasant homes, with every facility for educating and starting their children in life. Persons living on the interest of their money can get from 6 to 9 per cent. on good security.

The monied man, who looks to the actual growth of industries in the province and the new permanent markets and industries which the transcontinental railway will create, and who considers the varied natural resources of the country, *cannot fail to find investments that will promise good returns on capital.*

The jaded man of business, or invalid, will find that a visit to the province will brace him up.

The tourist who can command sufficient means and leisure, may well exchange for a time, the beaten tracks of European travel for a tour of exploration and adventure, where the world assumes a new and to some minds not unattractive phase. To the observant traveller nothing can be more instructive than to witness the beginnings of a noble country—the Pacific Ocean stronghold of the Empire. In the magnificent scenery of British Columbia the lover of nature will see much to remind him of Switzerland and the Rhine. The naturalist and botanist will find specimens not known in Europe. The geologist will witness a panorama to which the old world presents no parallel. The sportsman will find abundance of adventure, and game of all kinds. In the principal towns, travellers can have as good a dinner as in Paris.

We invite emigrants from all nations.

Aliens may hold and transmit land as fully as British subjects,—may be naturalized after one year's residence. Alien women are naturalized by marriage.

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*"It is needless to say that wherever we went we found the same kindness, the same loyalty, the same honest pride in their country and its institutions, which characterize the English race throughout the world."—(*Earl Dufferin, speech at Victoria,* 1876.)

HOW TO REACH BRITISH COLUMBIA.

Passengers from Europe may go round Cape Horn by sailing vessel, or by steamer viâ Panama to San Francisco, and thence to British Columbia; but the ordinary route, at present, is as follows:

(1.) By steamer across the Atlantic to Canada (Quebec in summer; Halifax, Nova Scotia, or Portland, Maine, U.S., in winter).

(2.) Thence by rail across the continent to San Francisco, California.

(3.) San Francisco to Victoria, British Columbia, by steamer.*

The Atlantic passage takes from 8 to 12 days; the railway trip across the continent in an emigrant train, from 12 to 15 days; and the steamer from San Francisco to Victoria 3 to 4 days. A first class passenger can go through to British Columbia from England in three weeks.

It is best to take "*Through Tickets*" *to Victoria*, or as far as possible. Passengers should avoid all dealers in tickets, called "scalpers," who offer tickets at prices lower than schedule rates. Purchase tickets only from regularly authorized ticket agents.

Third class passengers should provide at least part of the necessary food for themselves for the railway trip across America, as provisions at the way-side stations are expensive, and the "through" ticket price *does not include provisions*, except in the steamers. Emigrant's meals are 50 to 75 cents each.

Surplus money should be sent through the Post Office, or a Bank, to avoid risk from loss, or theft, on the way.

It is the practice in North America, on the part of interested or dishonest persons, to fill the ears of passing emigrants with stories about the places they are going to. No attention should be given to these men.

While passing through Eastern Canada, emigrants for British Columbia will apply, in case of need, to the local immigration officers of the Dominion of Canada, who will give honest advice and information. Ask them as to the best money to have in pocket on way across the continent.

NOTE THE FOLLOWING.

When through tickets cannot be purchased at or near your starting point, tickets should be purchased to Chicago or St. Louis, or to Missouri River points, and from there through to destination.

*The agents for the San Francisco and Victoria steamers are Goodall, Perkins & Co., San Francisco, California. Passenger and freight traffic having lately increased, it may be useful for a party of emigrants, while on the way, to join in a telegram, or see that a telegram is sent, to that firm, to say they are coming, so that accommodation may be provided, if the regular steamers are crowded.

Emigrants to British Columbia territory go by emigrant trains from the Missouri River to the Pacific coast. The cars composing these trains are fitted with berths similar to first-class sleepers, having upper and lower berths, the only material difference being that the berths in the latter are not upholstered. No extra charge is made for berths in these sleepers, but passengers furnish their own blankets and such other bedding as they may require. The comforts of such accommodations can be appreciated by those who have undertaken long journeys in an ordinary emigrant coach.

Cars cannot be chartered for the transportation of passengers. Every passenger must hold a ticket at rates quoted, without reference to number travelling in the party, but the *exclusive use* of a first-class coach is given to an organized party holding 30 first-class full tickets of same form, purchased at the same time and place, and the exclusive use of an emigrant sleeper will be given to a party holding 36 full tickets.

No stop over is allowed on emigrant tickets. Children under five years of age will be carried free; over five and under 12 years, half fare; over 12, full fare.

BAGGAGE.—On each full ticket to British Columbia, 100 pounds of baggage will be checked free from the Missouri River to the Pacific coast, and 50 pounds on each half ticket. From San Francisco to Victoria, 150 pounds will be allowed on each full ticket, and 75 pounds on each half ticket. All baggage from Eastern points must be re-checked at Missouri River. The charges for excess baggage from Eastern points to the Pacific coast, as a general rule, will be about 10 to 15 per cent. of the price of an unlimited first-class ticket to same point. No liability assumed for loss of baggage over $100.

FREIGHT.—Household goods in lots less than car-loads must be securely boxed or barrelled. Trunks containing personal effects will not be taken unless strapped with iron, or boxed, and then only when forming part of a lot of household goods.

RATE—On household goods from Missouri River to San Francisco is $370 per car, or $4.50 per 100 pounds.

Mail steamers leave San Francisco, California, for Victoria on the 10th, 20th, and 30th of each month. Lately, extra steamers have been occasionally employed, but, as far as possible, it is desirable that travellers should try to arrange to reach San Francisco for the above departures, in order to save the tedium and expense of waiting in that city.

On reaching Victoria, John Jessop, Esq., Immigration Agent of the Provincial Government, will give advice and information to immigrants. Communications from abroad on immigration matters may be addressed to that gentleman.

COST OF PASSAGE.

(Subject to change.)

The current advertised passage and railway rates are as follows:

Across the Atlantic.

Cabin ..... $50, $70, and $80 (£10, £14, and £16.)
Intermediate $40 (£8)
Steerage ..... $21 to $28 (£4 4*s.* to £5 12*s.*)

Railway across Continent to San Francisco.

Emigrant "through tickets" to Victoria, British Columbia, from Eastern Canadian (Atlantic) seaports, from $80 to $90 (£16 to £18 English), not including provisions on the railway.

The Government will endeavour to obtain a reduction of the current rates for parties, above a certain number, proceeding to British Columbia. If this can be arranged, the particulars will be stated in a succeeding edition of part of this hand-book, and duly advertised.*

Probably, towards the close of 1883, the *Northern Pacific* railway will be open for traffic across the continent. The present terminus of this railway, in North West America, is at Tacoma, Puget Sound. Fast steamboats are now being built to run between Tacoma and Victoria, and it is intended to have daily boats, if sufficient inducements offer. By this proposed route, passengers, after leaving the transcontinental train, will reach Victoria in eight hours' passage on inland waters. The sea passage of three or four days from San Francisco, California, to Victoria, will be saved.

The Northern Pacific route, if the rates are satisfactory, thus will offer advantages to emigrants for British Columbia, until the *Canadian Pacific* railway is finished. It will be desirable to take "through tickets" by any route.

WAGES.

Among the public works now being carried on within the province, the Canadian Pacific railway, as the largest, may be first mentioned.

Canadian Pacific Railway.

The portion of the Canadian Pacific railway, now under construction in British Columbia, is upon the mainland, in the valleys of the rivers Thompson and Fraser. It will connect the western end of Kamloops lake, at Savona's ferry, with Port Moody, the Pacific terminus on Burrard Inlet, British Columbia. This link is divided into five sections, all held by Mr. A. Onderdonk and associates, who have taken the contracts from the Canadian Government. They have sublet certain portions of the work.

* A party of workmen for the Canadian Pacific Railway, in British Columbia, lately, by special arrangement, came "*through*" from Quebec to Yale (on the mainland of British Columbia) for $65.

The total mileage embraced in the contracts amounts to 212.5, and the estimated cost is $9,328,000; adding $250,000 for the bridge spanning the Fraser at Siska Flat, makes the total estimated cost for the finished road, from the sea to Savona's, $9,578,000, exclusive of the rails and fastenings, which are furnished by the Dominion Government for th four upper sections.

At this time the track is laid 23 miles east of, and 7 miles west of Emory (5 miles below Yale), making 30 miles in all. By the end of the coming year it is expected that uninterrupted communication will exist by rail between Port Moody, on the British Columbia seaboard, and Lytton, a distance of 143 miles.

The general offices, the accident hospital, and the construction and repair shops of the contractors are at Yale. In the vicinity of Yale the company have also thoroughly complete works for the manufacture of acids and nitro-glycerine.

At Emory are situated the storage warehouses for materials and supplies. There are three sawmills belonging to the company engaged exclusively in sawing bridge and construction timbers. Two steamboats also are employed by the contractors as tenders along their works.

All able-bodied workers can find employment, at present, by applying on the works.

The following advertisement was lately issued by the railway contractors :—

OFFICE OF THE CONTRACTORS

CANADIAN PACIFIC RAILWAY.

YALE, March 1st, 1883.

NEW SCHEDULE OF WAGES FOR WHITE LABOUR

On the Canadian Pacific Railway in British Columbia.

Overseers	$125 per month.	
Rock Foremen	3 00 to $4 00	per day.
Earth Foremen	2 50 to 3 00	,,
Bridge Foremen	3 50 to 4 00	,,
Bridge Carpenters (1st class)	3 50	,,
Do. (2nd class)	3 00	,,
Masons	2 50 to 3 50	,,
Stonecutters	3 00 to 3 50	,,
Blacksmiths (1st class)	3 50	,,
Do. (2nd class)	3 00	,,
Drillers	2 00 to 2 25	,,
Labourers	1 75 to 2 00	,,
Hewers	3 50	,,
Choppers	2 00 to 2 50	,,

All outside labour 10 hours per day.
All carpenters to furnish their own chest tools.
All employés find themselves bed, board and lodging.

Boarding houses will be convenient along the line.

Board, $4 per week.

It will not be compulsory for employés to board in the Company's houses.

Wages will be paid monthly, on the 10th of each month.

A. ONDERDONK, General Manager.

Also, the following from a sub-contractor :—

"Wanted, several hundred men—Carpenters, Helpers, Hewers, "Axemen, Teamsters, and Labourers on the construction of the "Canadian Pacific Railway in British Columbia.

"We have paid for the last year, and are now offering, the follow- "ing wages, and cannot get men enough in this province :—

"Carpenters, $3.50 per day ; Hewers, $4 per day ; Helpers, $2.50 "to $3 per day ; Pile Drivers, $3.50 per day ; Raftsmen, $4 per "day ; Axemen, $3 to $3.25 per day ; Bridge Foremen, $4 to $5 per "day. Board $4 50 per week. Good boarding-houses convenient "to work. Teamsters get $60 to $75 per month, and board. All "men are paid monthly, on the 15th of each month.

"It will be at least three years before the railway work now under "contract in British Columbia will be completed, and long before "the expiration of that period other adjoining sections of the road "will be commenced, which will ensure plenty of railroad work for "many years to come."—*(Extract handbill of a sub contractor on Canadian Pacific Railway, March, 1883.)*

ADDITIONAL RAILWAY WORK.

The above 212 miles of railway, now in course of construction, and to be finished by July, 1885, are only a portion of the railway works to be undertaken in British Columbia. They merely comprise the link to connect the seaboard with Kamloops Lake. Beyond Kamloops Lake, the Canadian Pacific Railway Company will soon be at work under their agreement with the Government of Canada, to connect that point with the main line of railway now being made from the east. This will involve the construction of several hundred miles of additional railway within the province, at a rate of progress that will depend much on the supply of suitable labour.

The long-deferred portion of the railway along the eastern coast of Vancouver Island has to be constructed, and the work probably will be begun at an early date.

NAVAL DRY DOCK.

A large graving dock, on which about £50,000 have already been expended, is now being made at Esquimalt, Vancouver Island, the harbour at which emigrants arrive. It is 400 feet long by 90 feet broad. Nearly the whole of the eastern wing wall is complete. The brickwork of both pier heads has been carried up to a level of about 8 feet above the inverts and are ready to receive the stone and concrete. Very little brickwork has been done on the inner invert.

There are about 30,000 or 40,000 cubic yards of soft materials still to be excavated in the body of the dock.

OTHER LABOUR-EMPLOYING INDUSTRIES.

In addition to the demand for labour on farms and in the collieries and fisheries, which exceeds the supply, there has been of late years a considerable extension of manufacturing industries of various kinds in the province, affording more or less employment to workmen. Though not on a large scale, comparatively, these industries are firmly established, and are doing a satisfactory business in relation to the requirements of the population. There are flour mills, biscuit factories, foundries, iron and brass works, boiler and machine shops, boat-builders, sawmills, sash and door, furniture, piano, boot and shoe, glove, bookbinding, soap, match, cigar, candy, brush, brick and drain-pipe factories, with breweries and other industries.

The following are about the average wages at present, as they have appeared in official reports, or have been furnished on inquiries made lately :—

WAGES.

Collieries—Carpenters and Blacksmiths ...	$3 00 to $3 75 per day.
Labourers	2 00 to 2 50 ,,
Miners' earnings (contract work)	3 00 to 4 00 ,,
Fisheries—Fishermen	50 to $60 per month.
Other industries :—	
Stonecutters, stonemasons, and bricklayers.	4 00 to $5 00 per day.
Their labourers	2 00 to 2 50 ,,
Plasterers	4 00 to 4 50 ,,
Carpenters and joiners	3 00 to 4 00 ,,
Ship carpenters and caulkers	4 00 to 4 50 ,,
Cabinetmakers and upholsterers	3 00 ,,
Painters	3 50 to 4 00 ,,
Shoemakers	2 00 to 3 00 ,,
Tailors	2 50 to 3 00 ,,
Tailoresses	1 00 to 1 50 ,,
Bakers	65 00 per month, with board and lodging.
Butchers (cutters)	75 to $100 per month.
Slaughterers	75 ,,
Cigarmakers	2 50 to $4 00 per day,
Boys, as strippers, &c., from	2 to $5 per week.
Printers	45 cents a 1000 ems.
Waggonmakers	3 50 to $4 00 per day.
Tinsmiths, plumbers and gasfitters	3 50 to $4 00 ,,
Machinists, moulders, pattern and boiler-makers, and blacksmiths	4 00 to $4 50 ,,
Longshoremen	50 cents an hour.
Wood-turners	3 a day.
Labourers of all sorts, from	2 50 a day.

Labour on Farms.

This has been stated at page 50.

Women Servants.

Scarce; wages high; $10 to $12 (40s. to 48s. English) per month for nurse girls; $20 (£4 English) a month, with board for general house servants, having some knowledge of cooking and being able to wash. A considerable number of well-principled, competent women servants can be employed in respectable families—those accustomed to country work are most wanted,—many men of good character and means are pining for wives in the country districts.

Chinawomen do not take servants' places. Chinamen are employed as cooks at $20 to $25 (£4 to £5 English) a month with board. They cut firewood, light fires, clean boots, &c., but a good deal of the household work, nevertheless, falls on members of the family.

MONEY (COIN) IN BRITISH COLUMBIA.

British money is not much used in the province. Business is done and accounts kept in dollars and cents (100 cents to a dollar). The coins generally in circulation are Canadian and American.

Gold.	Silver.
20 dollar gold piece.	1 dollar piece.
10 " "	$\frac{1}{2}$ "
5 " "	$\frac{1}{4}$ "
$2\frac{1}{2}$ " "	10 cent piece (called a "short bit").

MONEY (PAPER) IN BRITISH COLUMBIA.

The Dominion of Canada paper money, also the paper money of the Bank of British North America and the Bank of British Columbia, pass freely in the province in notes of from $1 to $100. These are payable in gold. United Statos paper money is not used in the province.

How to send Money to British Columbia.

The emigrant is not recommended to take British coin to British Columbia. In Great Britain, he should pay that portion of his money not wanted on the passage to the Post Office, and get a money order for it payable in Victoria, or he may pay his money either to the Bank of British Columbia, London (the bankers for the Government of British Columbia), or to the Bank of British North America, London, and get from the bank, in exchange for his money, an order payable on demand from its branch bank in Victoria, British Columbia, for the equivalent of his money in dollars and cents.

The emigrant, on paying his money to the Bank, must sign his name on a separate piece of paper, and ask the Bank to send the signature to their Branch Bank in Victoria, so that the person who

applies for the money in Victoria may be known to be the proper person. If this is neglected, the emigrant may not be able to get his money in Victoria readily.

The above banks have agents in England, Scotland, and Ireland. The Bank of British North America has its own branches in the Dominion of Canada, New York, and San Francisco. The Bank of Montreal is the agent of the Bank of British Columbia throughout Canada and New York. The Bank of British Columbia has a branch in San Francisco.

PURCHASING POWER OF WAGES.

Board and Lodging.

The Government will endeavour to make special arrangements for immigrants; at present ordinary advertised rates in Victoria in good second-class hotels (meat at every meal), are as follows:—

Board and lodging, $5 to $6.50 (20s. to 26s. English) per week.
Do. do. $1 (4s. English) per day.
Single meals, 25 cents (1s. English).
Beds, 50 cents and 25 cents (2s. and 1s. English).

At New Westminster, near the mouth of the Fraser, the rates are about the same. At Nanaimo, the "Coal" town on the east side of Vancouver Island, the rate, in the workmen's boarding houses, is $22.50 per month. Board and lodging are higher in the mainland interior, but along the railway works, the contractors' advertisement (see page 106) states that board is $4 a week. There are several private boarding houses at Yale and at other places along the works suitable for single men, which furnish board and lodging at about the same rate.

Family Market Report of Prices.

Victoria, March 31, 1883.

Butter.—Choice Island, 50 cents ℔ lb; Island roll, 62½ cents; New Grass California, 75 cents ℔ roll.

Cheese.—Canadian, 30 cents ℔ lb; California, 25 cents; Eastern Cream, 30 cents; British Columbia, 25 cents; Stilton, 37½ cents.

Eggs.—Fresh Island, 33 cents ℔ dozen; Puget Sound, 25 cents.

Cornmeal.—50 cents ℔ sack of 10 lb.

Oatmeal.—62½ cents ℔ sack of 10 lb.

Flour.—Extra, $7.50 ℔ bbl.; $2 ℔ sack; Super, $5.75 ℔ bbl.

Wheat.—2½ @ 2¾ cents ℔ lb.

Beans.—Lima, 8 cents ℔ lb.; small White and Bayou, 6 cents.

Split Peas.—12½ cents ℔ lb.

Vegetables.—Potatoes, 1½ cent ℔ lb; Shallots, 5 cents; Onions, 3 cents; Celery, 37½ cents ℔ dozen; Carrots, 1½ cents ℔ lb; Cauliflower, $1.50 ℔ dozen; Asparagus, 20 cents ℔ lb; Turnips, 25 cents ℔ dozen bunches; Green Peas, 12½ cents ℔ [illegible] Cabbage, 4 cents ℔ lb; Chili Pepper, 25 cents ℔ lb; Vegeta[illegible] Marrows, 75 cents ℔ dozen.

HAMS.—Home cured, 30 cents ℔ lb; Chicago, 30 cents; Oregon, 25 cents.

BACON.—Breakfast, 22½ cents ℔ lb; Oregon, 24 cents.

LARD.—25 cents ℔ lb.

FISH.—Cod, 6 cents ℔ lb; salmon, 7 cents; Halibut, 6 cents; Yarmouth Blonters, 25 cents ℔ dozen; Salmon Bellies, 3 for 50 cts.; Herrings, 3 cents ℔ lb; Flounders, 6 cents; Smoked Oolachan and Salmon, 12½ cents; Smelt, 6 cents; Sturgeon, 6 cents; Whiting, 6 cents; Shrimps, 25 cents; Salt Oolachans, 6 cents; Crabs, 50 to 75 cents ℔ dozen; Smoked Herrings, 12½ cents ℔ lb; Salmon Trout, 8 cents; Boneless Cod, 16 cents; Soles, 6 cents.

CANNED SALMON.—1 lb ℔ tins, ℔ dozen, $2.

FRUIT.—Lemons, 50 to 75 cents ℔ dozen; Oranges, 25 to 62½ cts; Limes, 37½ cents; Apples, 5 cents ℔ lb; Cranberries, 75 cts. ℔ gal.; Quinces, 8 cents ℔ lb; Bananas, 50 cents ℔ dozen; Cocoa Nuts, 12½ cents each; Pine Apples, 75 cents @ $1 each.

CANDIED FRUITS.—Lemon, 50 cents ℔ lb; Mixed, 50 cents.

CURRANTS.—Zante Currants, 15 @ 16 cents ℔ lb.

RAISINS.—English Layers, 33⅓ cents ℔ lb; California, 25 cents; Sultana, Valencia, and Eleme, 25 cents.

FIGS.—New, 50 cents ℔ lb.

MIXED SPICES.—25 cents ℔ tin.

STARCH.—$1 ℔ box.

TEA AND COFFEE.—Coffee, ground, 50 cents ℔ lb; Green, 28 cts.; Tea, from 37½ cents to $1.25 ℔ lb.

SUGARS.—Crushed or Cube, 6 lb for $1; Granulated or No. 1, 7 lbs for $1; D or No. 2, 8 lb for $1.

NUTS.—English Walnuts, 20 cents ℔ lb; Cocoa Nuts, 12½ cts. ea.; Almonds, Paper Shell, 37½ cents; Jordan, 75 cents; Brazil, 37½ cts.; Chestnuts, 37½ cents ℔ lb.

ROLLED SPICE BEEF.—12½ cents ℔ lb; Ox Tongues, 75 cents ea.; Smoked Tongues, $1 each.

BEEF.—Choice cuts, 12½ cents ℔ lb; other cuts, 7 cts. to 10 cents; Soup meat, 5 to 7 cts.

MUTTON.—Choice joints, 12½ cents ℔ lb; Stewing meat, 6 to 8 cts.

PORK.—12½ cts ℔ lb.

VEAL.—12½ cents ℔ lb.

LAMB.—$1.50 ℔ quarter.

SAUSAGES.—1½ lb for 25 cents.

SUET.—12½ cents ℔ lb.

SUCKING PIGS.—$2.50 to $3 each.

DUCKS.—Tame, 75 cents to $1 each; Mallard, 62½ cents ℔ pair; Teal, 37½ cts ℔ pair.

CHICKENS.—62½ to 75 cents each; Spring Chickens, $5 ℔ dozen.

TURKEYS.—25 cents ℔ lb.

GEESE.—Tame, 25 cents ℔ lb.

COAL OIL.—$2 ℔ tin; $3.75 ℔ case.

OYSTERS.—75 cents ℔ quart; Canned, 37½ cents ℔ case.

HAY.—$1.37½ ℔ cwt.

OATS.—2¼ cents ℔ lb.
MIDDLINGS.—2 to 2¼ cents ℔ lb.
BRAN.—1½ cent ℔ lb.

The above are the common retail prices at Victoria. At New Westminster they are about the same. These two places and Nanaimo being the chief ports of entry, all articles of foreign production necessarily tend to become dearer in proportion to the distance of places from them, but, in the interior, meat is generally cheaper than on the seaboard.

HOUSING.

Material for brick and stone houses plentiful. Bricks, at Victoria, cost $8 to $10 (32*s.* to 40*s.* English) per thousand at the kiln.

LUMBER.

Rough lumber has been sold at the mills at about $10 a thousand for many years, but the price for local supplies has risen lately.

The present prices, at Victoria, are as follows:—

Rough lumber	$14 00	Per thousand feet (each 12 inches square and 1 in. thick).
Dressed tongued and grooved	25 00	
Dressed on both sides	27 50	
Cedar lumber	17 50	
Cedar, dressed	50 00	
Shingles, per thousand in number	3 50	

At New Westminster, the present prices are less than the above.

The cost of a house depends, of course, on size, material, and finishing. Three-roomed substantial cottage, say $500 (£100 English). Rents of cottages and small houses vary from $5 (£1 English) to $25 (£5 English) per month, but the demand, generally, at present, exceeds the supply. Opportunities are frequently available to workmen for purchasing a building lot and erecting a cottage, to be paid for by easy instalments. In the country, rents are lower (but few houses to be let). For temporary accommodation, men often put up one-roomed houses. Country settlers, not near sawmills, can get logs, but there are accessible sawmills in most of the settled districts.

FUEL.

No difficulty about fuel. Wood is the common fuel, and farmers generally have a plentiful supply on their land. The price in the seaboard towns, and, also at Yale, ranges from $3½ to $5 (14*s.* to 20*s.* English) per "cord" of fir firewood delivered. A cord is 8 feet long, 4 feet high, and 4 feet broad. The wood must be cut, after delivery, into suitable lengths for household use. This will cost about $1½ (6*s.* English) per cord, but many householders themselves cut it.

In the mainland interior, wood fuel, if purchased, is dearer, but the railway will tend to equalize prices in portions of the country.

Coal is used, of course, at Nanaimo, and to some extent, increasingly, in households, in the cities of Victoria and New Westminster. It costs $7½ to $8 (30*s.* to 32*s.* English) per ton.

WORDS OF ADVICE AFTER ARRIVAL.

Emigrants are recommended not to linger about the towns at which they may arrive, but to proceed, with as little delay as possible, either to their friends, if they have any in the province, or to the localities where they are likely to meet with employment.

The immigration agent, at port of arrival, will furnish information as to lands open for settlement in the respective districts, farms for sale, demand for labour, rates of wages, routes of travel, distances, expense of conveyance, &c.

The emigrant should be careful of *his cash capital, and not put it into investments hastily. There are Canadian Government Savings Banks in the province.*

A large, free way of life prevails in all the countries of the "Pacific Slope," or North-West America, owing to their climate, circumstances and history. Men produce much; they consume much, and they spend much. No coin of less than 10 cents is current. This free way is attractive, but the young immigrant, in particular, will do well to bear in mind, that *thrift*, here, as elsewhere, is at the root of success.

PUBLIC SCHOOLS.

The Public Schools are in the hands of the people—free to all, without distinction of race or creed—strictly non-sectarian—highest morality inculcated—no religious dogmas or creeds taught—uniform text-books—Public School Fund voted every year by the Provincial Assembly—a Superintendent of Education, who visits and inspects—School Districts where there are 15 pupils between 5 and 15 years—the people choose every year from among themselves three School Trustees to manage schools—Trustees get money from "Public School Fund," on application endorsed by Superintendent of Education—Teachers, three grades, paid from $50 to $100 (£10 to £20 English) a month—appointed or removed by Trustees—must have certificates of qualification from the Department of Education.

The settler will well know how to estimate the capabilities of this school system. The St. John's (New Brunswick) "Telegraph" newspaper says: "Let us take care that the young sister province on the Pacific do not lead New Brunswick in education."

There are very good church schools and private schools, for both sexes, in several of the larger towns. An education befitting the children of gentlemen can be obtained for both boys and girls at Victoria, New Westminster, Nanaimo, Nicola, &c., on reasonable terms.

CHURCHES.

Churches are numerous in the province, there being two Catholic dioceses, with over 30 clergymen, and three Episcopal (or Anglican) dioceses, with about 25 clergymen, distributed at different places. The Methodist Church of Canada is represented by 14 clergymen, and the Presbyterian Church by five, in various districts. The Reformed Episcopal and Baptist Churches, also, have been recently organized for work in the province. There are three branches of the Upper Canada auxiliary of the British and Foreign Bible Society.

ADMINISTRATION OF JUSTICE

Has, always, been wholesome. Life, limb, and property are secured by just laws, *well carried out*. The large influx lately of railway workmen of all nationalities has merely necessitated the employment of a few additional constables. The San Francisco (California) "Bulletin," says:—"It is well that our citizens should note that "our neighbours in British Columbia do not deal so leniently with "those who take life as we do on this side of the border line."

The following extract is to the point:—

"His Lordship wished to impress on the prisoner, and those who "came from the adjoining republic to obtain employment on the "public works of this province, that they would not be allowed the "impunity they had where they came from; the law would be faith-"fully administered if it was necessary to send 500 to the peniten-"tiary."—*(Extract from Address of a Judge of the Supreme Court, New Westminster Assizes.)*

LOCAL SELF-GOVERNMENT.

The people of a rural locality with over 30 male residents may be formed into a "Municipality," and may elect from among themselves Councillors and a Warden to manage all local affairs.

PROVINCIAL SELF-GOVERNMENT.

The old system of Government has been quite done away with. There is now one Legislative Chamber only—elected for four years by the voters—three, or not more than five, of its members form the "responsible advisers" or "Ministry" of the Lieutenant-Governor—hold office while they have the confidence of a majority of the chamber—Municipal Councils are stepping-stones to Legislative Assembly—no social obstacles whatsoever in any man's way—nobody asks where a settler comes from, or whose son he is. The Qualification of Voters' Bill invites every British subject, after a year's residence, to take an active part in the work of self-government.

The political constitution of the province, as part of the great Dominion of Canada, possesses the stability of the British system of

government, combined with the freedom, elasticity, and progressive energy of republican institutions.

The people may amend or alter the political constitution of the province in any way not inconsistent with the general constitution of the Dominion of Canada.

NEWSPAPERS.

Numerous and well conducted receive constantly news by telegraph—the wants and opinions of settlers in remote districts are made known through the press to their fellow settlers and to the Government.

The foregoing information as to the demand for labour, wages, board and lodging, market prices, &c., will be useful to the labourer and mechanic.

The immediately preceding information as to schools, churches, law courts, and government, interests all classes, including, particularly, the farming emigrant. For the further information of the latter, a few words now will be in place.

THE FARMING EMIGRANT.

The agricultural and pastoral areas of the *whole* country have been briefly described in Part I. The Nechaco "White Silt" District (see pages 66, 67, 75, 76, Part I), and the Peace River District (see page 69, Part I), are, by some, considered to be the most extensive farming and grazing districts in British Columbia, but communications have not been opened to them yet. Their agricultural progress depends on communications, and the growth of mining industry in the north. As grazing areas, they, probably, will be utilized sooner than is generally supposed. At present, the intending settler will consider the advantages offered, respectively, by the following regions—namely, the inner side of Vancouver Island, the New Westminster District, and that portion of the Mainland Interior which is already supplied with communications—all of which have been generally described. Until lately, Victoria and Cariboo were the principal markets for surplus stock, or for produce not wanted in the farmer's own district. There now is, additionally, a more distributed demand, owing to the effect of the actual railway construction, and the progress of the country in general. The existence of Victoria, the occasional presence of large ships of H. M. Navy, the growth of the Nanaimo collieries, the certainty of new coal mines being opened in the Comox district, and at north end, or north-west corner, of the Island, together with the probability that large railway works will be soon begun along the *east coast of Vancouver Island*, have to be taken into account by those who, for other than market reasons, may prefer that region. The *New Westminster district*, also, has a seaboard, and it is traversed by a large navigable river.

The railway is now being made through it, and it is said that construction trains, this year, will run inland far beyond the borders of the district. The thriving city of New Westminster is on the banks of the river. The district is the seat of the mainland terminus of the railway, also of the salmon fishery and canning industry, as well as of the two great export sawmills, at which numerous vessels load. It is a fine timber region, and may become a coal exporting district (see page 83, Part I). Silver lodes also exist on the Lower Fraser (see page 87, Part I). The *mainland interior*, in its southern part, is traversed by the railway, of which 212 miles from the seaboard are actually under contract, and several hundred miles, additionally, will soon be under contract. It is especially a stock-raising country, but with much fertile soil, requiring, however, generally (though with local exceptions) to be irrigated for crops. Even without the railway works, the cattle supply of the interior would be insufficient. The great *north road* stretches from the railway line to the mining heart of the interior. It has fine grazing areas near it, and runs through good cereal and dairy lands in different localities, which hitherto have had Cariboo district for a market. In the southern portion of the interior, there is good coal (see page 83, Part I). Iron, also, has been found close to the coal.

Mixed farming, whether for cereals or stock, can be carried on in all the above districts. Cattle, horses, and sheep thrive in all of them. Fruit grows as well in the interior as on the seaboard. The New Westminster district appears to be specially suitable for dairies, but dairies have succeeded well in Vancouver Island, in Nicola, and along the Cariboo north road. It is difficult to say where the best district is for any kind of farming. In choosing a location, or a particular kind of farming, the settler of the present day should have regard to the effect of the making of the Canadian Pacific railway through the province, both in the markets its construction opens locally, and those which it will open permanently, east of the Rocky mountains, for various farm products—say, cattle, sheep, horses, mules, cheese, butter, fruit, &c. He will do well, also, not to forget that he is in a mineral country, with varied resources. Nothing gives farming such a lift as a mining camp within reach of the farmers. The settler, generally, in looking to the future, should consider, therefore, where it is reasonably probable that gold, coal, or silver mining land may be discovered, or where any other industry, such as cattle or sheep farming, or fishing or sawmilling, is likely to concentrate population.

For some time to come, the supply of cattle, mutton-sheep, pigs, and the ordinary cereal crops, probably, will not be in excess of the provincial demand. For the east, *horses* are already in demand. *Wool*, by and by, will be required for Canadian manufacturers, and probably also *mohair*, from the Angora goat. The plush manufacturers in Connecticut have lately had to import mohair from Liverpool. The Angora goat thrives well in the province. Wild hemp and flax exist, but perhaps, with wages so high, *flax* could not, at present, be

profitably grown, except as a small farmer's crop. The same may be said of *tobacco*, which grows well. *Beets* may, at present, pay best as cattle food (see page 60, Part I.), but beet sugar should be produced. The primary essentials for this manufacture are cheap land and fuel, and pure water—three things which British Columbia possesses. The sugar of a civilized country, it is said, costs nearly as much as its wheat, and certainly beet sugar is almost a necessity in British Columbia, where the cost of carriage to many parts of the country must always add so much to the price of imported sugar. We have to import most of our sugar from Eastern Canada, at present.

Fruits of all kinds should receive early attention. The province is a fruit country (see page 62, Part I.) *Bee keeping* is another country industry that should not be neglected. In all probability, superior *wine grapes* can be grown successfully, if of the proper variety. Good grapes grow in the open air, both in parts of Vancouver Island and in the Mainland Interior. Botanists and men from wine-producing countries have expressed an opinion that many districts—Lillooet, for instance—are specially adapted for the growth and ripening of the best wine grapes, and that the province has a great future as a wine-producing country. A 40 acre tract planted with vines of the proper variety (which should be ascertained by previous experiment) may, by and by, be worth more than a large cereal farm. *Hops* have been mentioned at page 60, Part I.

This north-west province essentially differs from the great plain region, east of the mountains, in its *varied* capabilities. *There will be a long list of things required eastward, which British Columbia, naturally, is best fitted to produce.*

Small capitalists are recommended not to buy land before they have become acquainted with its character, and the kind of labour required in a new country; and further, if possible, to purchase or rent a farm with some improvements on it, rather than to go upon untouched land. This last advice more particularly refers to emigrants from Europe, whose previous training necessarily has not so well adapted them to the settlement of wild lands as persons brought up in America. Partially cleared farms, with buildings erected on them, may be bought in some districts of British Columbia, on easy terms of payments, owing to the disposition pioneers have to sell old settlements and take up more extensive new ones.

It is sometimes better for an intending farmer of moderate means to place his money, on first arrival, in the Government Savings Bank (which allows interest), to take lodgings, and to work for wages for some time, in order to gain a knowledge of colonial life and modes of management.

Popular Names for Lands—A Word to Intending Settlers.

Most countries have peculiar names of their own for agricultural lands, and the immigrant, on arriving in British Columbia, will hear men talk of "prairies," beaver-dam lands," "bottom lands," "tide

lands," and "flats." A few words to explain these terms may assist him in selecting a proper location. The term "prairie," on the Pacific slope, does not mean the treeless sea of grass which is called by that name in the centre of America, east from the Rocky range. The Pacific slope prairies may be classed, broadly, as "wet" and "dry" prairies.

"Wet prairies" are level spaces at the meeting (forks) of rivers. They are often overflowed in early summer by river "freshets." This kind of prairie is also found at the mouths of tidal rivers, where the land is overflowed in winter by high tides raised by wind. These prairies are generally free of timber, except perhaps some alder shrubs, and produce a coarse grass called "swamp hay." These prairies need dyking and draining in some parts. The soil generally is very rich, and they are considered desirable locations. In British Columbia they are free from malaria and ague.

The choice pieces of land scattered through forests, and known as "alder land" (or easily drained swamp), seem to be, in fact "wet prairies," on which the alder bushes have grown to be trees. Another kind of "wet prairie" is "beaver-dam land," that is, flat land made marshy by beavers having dammed small streams which run through it. This is very good land generally. Small marshes are also common at the head-waters of streams—grassy spots among the rough mountains, which are very pleasant to the traveller and to his horse. We may also class as "wet prairies" the open marshes ("tide lands" or "flats") where the sea coast is low and shelves back. These appear to be portions of the raised coast line. The sand drift encroaches on the wet ground, and the plants of the two localities grow almost together. It is sometimes difficult to get fresh water for cattle on these "tide lands."

"Dry prairies" are open spaces generally near rivers. Some have very rich soil, but they are not generally so rich as the wet prairies. They have fine grass, beautiful flowers, and often a dense crop of ferns not liked by farmers. The pine forest bounds them abruptly like a regiment of trees called to a halt. The dry prairies are seldom extensive in the Coast region.

"Bottom lands" are flat lands in river valleys, or, adjoining rivers, dry enough to be classed as "dry prairie" land. They generally bear such trees as the maple, ash, crab apple, with a stray fir. These trees are easily cleared, and as the alluvial soil of the bottom lands is often highly productive, these lands are desirable places to settle upon.

The term "dry prairie," or simply "prairie," seems to be popularly applied in the East Cascade region (comparatively an unwooded region) to any open flat tract, not distinctively a valley, and not large enough to be called a plain or plateau.

The term "bench" is applied to the raised level spaces, or terraces, in some of the river valleys in the interior. These terraces run at intervals along both sides of the rivers for miles in length; and they recede where the mountains retire, for distances back varying from

a few acres to a few miles in breadth. They are objects of curiosity and speculation, and, from the regularity and evenness of their structure, add much to the beauty of the rude scenes in which they occur. They generally appear on both sides of the river, and in some places are multiplied into several successive level plateaux, rising one above the other as they recede from the bank.

LAND.

Large tracts of land, consisting of a belt of 20 miles on each side of the railway, have been assigned by the Provincial Legislature to the Government of Canada to aid it in making the Canadian Pacific railway. These lands belong to the Dominion Government and are under its management. All the other unoccupied lands belong to the province, and are under the management of the Chief Commissioner of Lands and Works, Victoria, who has official assistants in the districts.

Owing to various circumstances, partly connected with proposals to change the route of a portion of the railway within the province, the Dominion Government has not made definite arrangements for managing its lands in British Columbia. It is now believed that this will be done immediately. In a further edition of part of this hand-book, which will be published during the present season, the lands under the control of the respective Governments may be generally described.

The following information refers to the lands of the Provincial Government. It is believed that the Dominion land policy within the province will be of an equally liberal character:—

PROVINCIAL GOVERNMENT LANDS.

Crown lands in British Columbia are classified as either surveyed or unsurveyed lands, and may be acquired either by record and pre-emption, or by purchase.

Pre-emptions.

The following persons may record or pre-empt Crown lands, viz.: Any person being the head of a family, a widow, or a single man over 18 years of age, being a British subject, may record surveyed or unsurveyed Crown lands which are unoccupied, or unreserved, and unrecorded.

Aliens may also record such surveyed or unsurveyed lands, on making a declaration of intention to become a British subject.

The quantity of land which may be recorded or pre-empted is not to exceed 320 acres northward and eastward of the Cascade Mountains, or 160 acres in the rest of the province.

No person can hold more than one pre-emption claim at a time. Prior record or pre-emption of one claim, and all rights under it, are forfeited by subsequent record or pre-emption of another claim.

Land recorded or pre-empted cannot be transferred or conveyed till after a Crown grant has been issued.

Such land, until the Crown grant is issued, is held by occupation. Such occupation must be a bonâ fide personal residence of the settler or homestead settler, or his family or agent. Indians or Chinese cannot be agents.

Continuous absence for a longer period than two months consecutively, of the settler or homestead settler, and his agent or family, is deemed cessation of occupation.

Land is considered abandoned if unoccupied for more than four months in the aggregate in one year, or for more than two months consecutively.

If so abandoned, the land becomes waste land of the Crown, without any cancellation of the record.

The fee on recording is two dollars.

The settler must enter into occupation of the land within thirty days after recording, and must continue to occupy it.

The settler may either have the land surveyed at his own instance (subject to rectification of boundaries), or wait till the Chief Commissioner does so.

After survey has been made, upon proof, by declaration in writing of himself and two other persons, of occupation for two years from date of pre-emption, and of having made permanent improvements on the land to the value of two dollars and fifty cents per acre, the settler, on producing the pre-emption certificate, obtains a certificate of improvement.

After obtaining the certificate of improvement and paying for the land, the settler is entitled to a Crown grant in fee simple.

Payment for Land and Crown Grant.

The price of Crown lands recorded or pre-empted, is *one dollar* per acre, which must be paid in *four equal instalments*, as follows:—First instalment, one year from date of record or pre-emption, and each other instalment yearly thereafter, until the full amount is paid. But the last instalment is not payable till after the survey.

The Crown grant excludes gold and silver ore and coa'

No Crown grant can be issued to an alien who may have recorded or pre-empted by virtue of his declaring his intention to become a British subject, unless he has become naturalized.

The heirs or devisees of the homestead settler are, if resident in the province, entitled to the Crown grant, on his decease.

If they are absent from the province at the time of his death, the Chief Commissioner may dispose of the pre-emption, and make such provision for the person entitled thereto, as he may deem just.

Pre-emptions for Partnership Purposes

Partners, not exceeding four, may pre-empt, as a firm, 160 acres, west of the Cascades, to each partner, and 320 acres, east of the Cascades, to each partner.

Each partner must represent his interest in the firm by actual residence on the land, of himself or agent. But each partner, or his agent, need not reside on his particular pre-emption.

The partners, or their agents, may reside together on one homestead, if the homestead be situated on any part of the partnership pre-emption.

For obtaining a certificate of improvement, it is sufficient to show that improvements have been made on some portion of the claim, amounting, in the aggregate, to two dollars and fifty cents per acre on the whole land.

Military and Naval Settlers.

Military and Naval settlers may acquire free grants of land, by virtue of the "Military and Naval Settlers' Act, 1863."

Free Grants for Immigration.

The Lieutenant-Governor in Council may, subject to such provisions and restrictions as he may deem advisable, make special free, or partially free, grants of unoccupied or unappropriated lands, for the encouragement of immigration, or other purposes of public advantage.

For Drainage and Dyking.

The Lieutenant-Governor in Council may sell any vacant lands, or make free grants thereof, to any person or company, for the purpose of dyking, draining, or irrigating the same, subject to such regulations as they may think fit.

Sale of Surveyed Lands.

Surveyed lands, which are not the sites of towns or the suburbs thereof, and not Indian settlements, may be purchased at the rate of one dollar per acre after such lands shall have been offered for sale, at the upset price of one dollar per acre, by public auction, of which sale due and sufficient notice shall be given. Surveyed lands purchased under the provisions of this section must be paid for in full at the time of the purchase thereof.

Sale of Unsurveyed Lands.

The applicant to purchase unsurveyed Crown lands must give two months' notice of his intended application in the Government Gazette,

and in any newspaper circulating in the district where the land is situate.

He must also have the land surveyed at his own expense, by a surveyor approved of and acting under the instructions of the Chief Commissioner.

The price is *one dollar* per acre, to be paid in full at time of purchase.

The quantity of land must be not less than 160 acres.

Water Rights.

Landholders may divert, for agricultural or other purposes, the required quantity of unrecorded and unappropriated water from the natural channel of any stream, lake, &c., adjacent to or passing through their land, upon obtaining the written authority of the Commissioner.

Homestead Act.

Most important Act. The farm and buildings, when registered, cannot be taken for debt incurred after the registration; it is free from seizure up to a value not greater than 2,500 dollars (£500 English); goods and chattels are also free up to 500 dollars (£100 English); cattle "farmed on shares" are also protected by an Exemption Act.

Titles.

The "Daily News," an Oregon newspaper, said lately:—"Emi-"grants that come here are extremely wary in looking after the "titles of the property they desire to purchase. This vigilance and "caution are probably owing more or less to the fact that the Ter-"ritorial laws yet obtain on our borders."

In British Columbia no difficulty of this kind exists. Titles are secure.

PRICES OF FARMING IMPLEMENTS, &c., IN VICTORIA.

Thrashing Machines	$450 00 to	$850 00
Reapers	150	
Mowers	100	
Self-Binders	330	
Ploughs	20 00 to	40 00
Harrows	20 00 to	35 00
Waggons, complete, with box and seat	130 00	
Do. with brake	140 00	
Do. running gear only	100 00 to	110 00

WHOLESALE PRICES CURRENT.

Farm Produce (Victoria).

	March 26, 1883.
Wheat, ℔ cwt. (100 lbs.)	$2 00 @ $2 25
Oats, do.	2 00 @ 2 12½
Barley, rough, ℔ cwt	2 00
Peas, do.	2 00
Hay, do.	1 25
Timothy Seed, do.	14 00 @ 16 00
Potatoes, do.	1 00
Butter, ℔ lb	28 @ 30
Cheese, Maple Ridge, ℔ lb.	18
Eggs, fresh Island, ℔ dozen	25
Eggs, Oregon, do.	25
Beef, dressed, ℔ cwt.	8 50
Beef, on foot, do. gross	4 00
Sheep, on foot, do.	5 50
Mutton, dressed, ℔ cwt	12 50
Lambs, each	3 00 @ 4 00
Pigs, dressed, ℔ cwt	9 00 @ 10 00
Pigs, on foot, do.	6 50 @ 7 50
Veal, on foot, do.	5 00
Hides, green, do.	7 00 @ 8 50
Hides, dry, do.	13 00 @ 17 00
Chickens, ℔ dozen	4 50 @ 5 00
Fowls, do.	6 00 @ 6 50
Ducks, do.	5 00 @ 6 00
Turkeys, dressed, ℔ lb.	25
Turkeys, live, do.	17
Geese, each	1 50 @ 2 00

MISCELLANEOUS INFORMATION.

Clothing.

It is unnecessary to bring much clothing to the province, as extra luggage is troublesome and expensive on the railway, and prices of clothing (which largely comes from Eastern Canada, free of duty,) is only about 10 to 12 per cent. more than in England or Canada.

Furniture, Bedding, and Upholstery

Need not be brought. Furniture and bedding are made in the province at prices which prevent importations, say:—

Chairs, from 75 cents to $1 25 each, &c.
Bedsteads, $3, $4, $6, $8, &c.
Tables, $1.50 up.
Extra dinner tables, from $12 up.

Mattresses, from $1.50 up to $30, according to quality.

Carpets, tapestry, from 80 cents to $1 per yard; Brussels, from $1 to $1.75 per yard.

Bedroom sets, complete, $25, $35, &c.

Postal Matters.—Mails.

British Columbia is part of Canada, and Canadian postal regulations apply to the province. There are mails to the principal settlements.

For Eastern Provinces of Canada, United States, Great Britain, and Europe, mails leave Victoria three times a week *via* Puget Sound, and by the steamer for San Francisco, California, on the 10th, 20th, and 30th of each month, Letter rate, ½ oz., 5 cents to Europe.

Telegraphic Communication.

The province has telegraphic communication with the world.

Money Table.

Table for converting British Money into British Columbia Money, and British Columbia Money into British Money.

British Money.			Equivalent in British Columbian Money.		British Columbian Money.		British Money.		
£	s.	d.	$	cts.	$	cts.	£	s.	d.
		1		2		1			½
		2		4		2			1
		3		6		3			1½
		4		8		5			2½
		5		10		10			5
		6		12		15			7½
		7		14		20			10
		8		16		25		1	0½
		10		20		50		2	1
		11		22	1	00		4	1
	1	0		24	2	00		8	3
	1	3		30	3	00		12	5
	1	6		36	4	00		16	5
	1	9		43	5	00	1	0	6½
	2	0		49	6	00	1	4	8
	2	6		61	10	00	2	1	1
	5	0	1	22	20	00	4	2	2½
	10	0	2	43	25	00	5	2	9
1	0	0	4	87	50	00	10	5	6¾
5	0	0	24	33	100	00	20	10	11½
10	0	0	48	67	500	00	102	14	9½
25	0	0	121	67	1,000	00	205	9	7
100	0	0	486	67	5,000	00	1,027	7	11¼
1000	0	0	4,866	67	10,000	00	2,054	15	10½

CENSUS, &c.

	Population (including Indians).	Sq. Miles.	Acres.
Vancouver Island	17,292	16,000	10,240,000
New Westminster District	15,417	178,910	114,502,400
Yale District	9,200	47,985	30,710,400
Cariboo	7,550	98,410	62,900,400
Total population of Brit. Columbia	49,459		

(From Statistics of J. W. McKay, Census Commissioner, 1881.)

ORIGINS OF THE PEOPLE, ACCORDING TO CENSUS OF 1881.

Africa, 274; Chinese, 4,350; English, 7,297; French, 916; Germans, 858; Indians, 25,661; Irish, 3,172; Italian, 143; Scandinavians, 236; Scotch, 3,892; Spanish, 144; Welsh, 299. There are under the head of "Various other Origins," 342; and under the head of "Not given," 1,682.

BIRTHPLACES OF THE PEOPLE.

England, 3,294; Ireland, 1,285; Scotland, 1,204; Prince Edward Island, 23; Nova Scotia, 379; New Brunswick, 374; Quebec, 396; Ontario, 1,572; Manitoba, 24; British Columbia, 32,175; other British possessions, 211. Total from the British Isles, 5,783. Total from other parts of Canada, 2,768.

GAME, &c.

The country is a good game country. Fish have been mentioned at page 89, Part I. As regards birds, there are grouse of various kinds—"Ruffed Grouse," "Blue or Dusky Grouse," "Sharp tailed Grouse" or "Prairie Chicken," and the "Canada Grouse"—the two latter not found in the Coast region. The Ptarmigan frequents elevated districts on the mainland, and also in Vancouver Island. Quails have been introduced into Vancouver Island. Wild geese and many kinds of Ducks, also Snipe and Pigeons are plentiful. Hares abound, periodically, east of the Coast Range. Plumage birds are very beautiful. Song birds not remarkable.

Blacktailed Deer numerous everywhere; also Elk (Wapiti) in particular places. The Mountain Sheep, or Big Horn, the Mountain Goat, and the Cariboo (a kind of reindeer) are hunted. A few Moose have been seen in the Northern Interior.

Beasts of the chase are common, (none dangerous except the Grizzly Bear, which few ever see.) Bears, Brown, Black, and Grizzly; Beaver; Badgers; Foxes (Silver, Cross, and Red); Fishers; Fur

Seals; Martens; Minks; Lynxes (Grey and Spotted); Musquash; Otters (Sea and Land); Panthers; Raccoons; Wolves, Black and Gray of the large kind; Wolves of the smaller kind, known as the "Coyote."

The Furs and Skins of these animals form an important branch of trade in the province—the exports amounting to several hundred thousand dollars annually—but, being in few hands and carried on chiefly through the Indians, it does not specially interest the intending settler.

No dangerous snakes, except a few rattlesnakes in the Southern interior—timid reptiles.

Hospitals, &c.

In Victoria there are three hospitals, the Royal Hospital, the French Hospital, and the St. Joseph's Hospital, also an Orphans' Home, and several Benevolent Societies. Nanaimo, New Westminster, Yale, Cariboo, each has its hospital.

Last Christmas Exhibits in Victoria.

One shop—23 beef cattle, 150 sheep, 35 hogs, 19 sucking-pigs, 33 lambs, 550 turkeys, geese, and chickens, 1 bear, weighing 400 lbs., 1 Angora goat. Net value, $3,800.

Another shop—22 beef cattle, 110 sheep, 33 hogs, 15 sucking-pigs, 12 lambs, 410 turkeys and geese, 50 chickens, 2 goats, and 1 bear. Net value, $3,625.

Equally good displays in other shops.

The Roast Beef of British Columbia.

An American Opinion.

"One thing is unquestionably true. British Columbia beef has no "superior in quality. It is also cheap—cheaper than an inferior "article in Washington, Oregon, or California."—*"Post-Intelligencer" newspaper, Puget Sound.*

Climate.

(There and here—the difference.)

"On the 19th March, at Toronto, and, indeed, throughout Canada, four feet of snow fell. The weather was intensely cold, roads were everywhere blocked, and business was suspended. On the same date, in this city, tender flowers bloomed in all the gardens; fruit trees sent forth buds and blossoms, and song-birds carolled among the branches; the air was as soft and mild as in summer, and out-of-door work continued without interruption. The Canadian passengers who arrived yesterday noted the contrast as one favourable to Victoria. Really it is time British Columbians began to tell the snowed-up people of Manitoba and Eastern Canada what a glorious province this is." *(Colonist newspaper, Victoria, 1883.)*

Shipbuilding.

The Douglas spruce timber is known to be a first-class timber for shipbuilding, as well as for masts and spars, but, owing to the high cost of labour, few large vessels have been built in the province. Many steamboats, for towing and for river navigation, as well as numerous schooners and small craft, have been built. A sea-going barque of 450 tons register was launched at Nanaimo in 1882. The material and facilities for shipbuilding are excellent; so that this important industry may assume large dimensions.

Indians.

The Indians are law-abiding. They are largely employed in the salmon fisheries and in seal hunting, &c. As common labourers they are useful, and are not without capabilities as artisans; some take to farming and have cattle, others carry on mining with "rockers" on the Thompson and Fraser Rivers; altogether, the Indians contribute very largely to the trade of the province. They are the best working Indians on the continent.

CITIES.

Victoria.

How it strikes a Stranger.

"Victoria has the purest summer climate of all places I have ever visited. For a summer resort for people who like rowing, fishing, yachting, and riding under sunny skies, and in an atmosphere like that of early October in New England, the place has no equal. Some time, when population and wealth accumulate on the Pacific coast, it will be much frequented by people from the parched heat-tortured valleys of California. The population of Victoria is about 7,000.

"It is picturesquely situated on a lovely harbour. Its citizens are extremely well cultivated, thoroughly English in their habits, and of unbounded hospitality to well-accredited strangers. There are some beautiful private residences and streets, fine stores, a public library, Masonic temple, Odd Fellows hall, well appointed hospitals, a large seminary, six churches, five public schools, solid stone public buildings, such as post office, custom house, warehouses, large machine shops, foundry, two banks, a stone dry dock in process of construction, also houses of Parliament. All the streets are lighted with gas; fine water works; a fire department, with two steam-engines; the streets and roads are macadamized for 22 miles around the city, and kept in superb order." *(Letter in New York Tribune.)*

Nanaimo.

Nanaimo is pleasantly situated on the east coast of Vancouver Island, on a safe and commodious harbour. There are Catholic, Episcopal, Methodist, and Presbyterian churches, and excellent

schools for both boys and girls, also an Hospital, Literary Institute, Masonic Hall, Fire Company's building. The thriving village of Wellington, in the neighbourhood is, also, supplied with church and school, and shows pleasant private residences and miners' houses. Neither Nanaimo nor Wellington presents the dried-up, blackened appearance which colliery towns so often present in England. Both have postal and telegraphic communication.

New Westminster.

Of New Westminster, the chief city on the mainland, an Oregon newspaper, the "West Shore," says:

"A more beautiful, convenient, and commanding situation for a large city could not well be desired. Occupying a gentle acclivity, having a southerly aspect, it commands a really magnificent view. The noble Fraser rolls seaward, in sullen silence, at its feet. To the south-west lies an archipelago of beautiful islands of amazing fertility, while far away to the south, rise the snow-capped peaks of the Olympian range, glittering in the sun. Looking northward and eastward, the hoary heads of the Cascade range stand out against the blue sky, like giant sentinels."

New Westminster has a population of about 3,000, and is rapidly increasing in size and importance. It is the central market of a flourishing agricultural district, the seat of a large salmon canning industry, and there also, are in, or near, the city, saw-mills, planing-mills, foundries, breweries, waggon factories, biscuit-factories, tanneries, ship-yards, &c., with important public buildings—the Provincial Lunatic Asylum, the Dominion Penitentiary, District Court House, Catholic, Episcopal, Presbyterian, and Methodist Churches, the Public Schools, and the Catholic, Episcopal, and Methodist Schools for boys and girls, Dominion Government Offices (for the Post Office, Savings Bank, Telegraph service), &c. Many handsome residences ornament the outskirts of the town, and command beautiful views up and down the river. There is frequent steamboat communication with Victoria, San Francisco, and Nanaimo. Many stern-wheel and fishery steamboats are employed on the river. The Canadian Pacific railway will be connected with the city by a short line of a few miles. The climate is very healthy and pleasant.

Smaller Towns.

There are many small towns or villages in the province, such as Granville, Moodyville, Centreville, Hope, Yale, Lytton, Lillooet, Cache Creek, Clinton, Kamloops, Soda Creek, Quesnel, Stanley, Richfield, Barkerville, Forks of Quesnel, &c. All of these have postal, telegraphic, and road communications.

EXPORTS AND IMPORTS.

The Exports and Imports of British Columbia deserve particular attention.

EXPORTS, 1882.

Countries.	Minerals, chiefly Gold and Coal.		Sea products, chiefly Salmon and Oils.		Timber, chiefly Douglas Spruce.		Animals and their produce, chiefly Furs and Skins.		Agricultural Products.		Manufactures.		Miscellaneous Articles.		Total.		Grand Total.
	Produce.	Not Produce.	Produce.	Not Produce.	Produce.	Not Produce.	Produce.	Not Produce.	Produce.	Not Produce.	Produce.	Not Produce.	Produce.	Not Produce.	Produce.	Not Produce.	
	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$
Great Britain	.....	....	915,140	.....	.....	....	188,690	....	....	5,429	....	4,000	.....	750	1,103,740	10,179	1,113,919
United States	1,362,510	14	67,818	4,720	11,146	....	111,889	....	946	219	241	8,041	2,250	3,867	1,556,800	16,861	1,573,661
Mexico	13,860	....	.....	.....	.....	....	.....	....	....	.....	....	.....	.....	.....	13,860	.....	13,860
Peru	.....	....	.....	.....	28,192	....	.....	....	....	.....	....	65	.....	1,213	28,192	1,278	29,470
Chili	.....	....	1,500	.....	58,334	....	.....	81	....	.....	....	121	.....	.....	59,834	202	60,036
Africa	.....	....	.....	.....	9,387	....	.....	110	....	.....	....	.....	.....	.....	9,387	110	9,497
Australia	.....	....	28,102	2,160	178,745	....	.....	.....	....	.....	....	315	.....	80	206,847	2,555	209,402
China	19,845	....	183	.....	72,332	....	40	....	....	.....	....	343	.....	.....	92,400	343	92,743
Japan	.....	....	.....	.....	4,735	....	.....	....	....	.....	....	.....	.....	.....	4,735	.....	4,735
Sandwich Islands	40,857	....	1,467	.....	.....	....	.....	....	....	.....	....	16	.....	.....	42,324	16	42,340
Totals	1,437,072	14	1,014,210	6,880	362,871	....	300,529	191	946	5,648	241	12,901	2,250	5,910	3,118,119	31,544	3,149,663
Coin and Bullion to Great Britain, $531; to the United States, $4,000																	4,531
Total Exports																	3,154,194

The amount of the above Exports is remarkable, considering the smallness of the population.

The per head value of Exports from British Columbia is more than three times the highest per head value of exports from the other Provinces of Canada. It exceeds that of any of the adjacent American territories.

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Exports compared with those of other Provinces.

A comparison shows remarkable facts. Per head, Exports—Ontario, $10.85; Quebec, $19.25; Nova Scotia, $18.01; New Brunswick, $17.90; Manitoba, $10.25; Prince Edward Island, $18.31; *British Columbia, $55.12.*

Imports and Customs Duties collected, 1882.

(Britain and Foreign Countries.)

Countries.	Dutiable Goods.	Free Goods.	Total.	Duty Collected.
Great Britain	$ 642,779	$116,824	$ 759,603	$210,923 81
United States	1,544,887	302,052	1,846,939	376,042 26
France	7,754	.....	7,754	4,416 41
Germany	1,340	.....	1,340	470 95
Belgium	38	.....	38	10 90
China	220,227	19,943	240,170	78,433 65
Japan	62	.....	62	14 35
Spanish West Indies	4,697	.....	4,697	2,068 26
Spain	300	.....	300	75 00
Chili	1,945	.....	1,945	394 78
Australia	990	.....	990	208 40
Sandwich Islands	4,697	.....	4,697	950 17
Central America	8,919	.....	8,919	4,964 74
Switzerland	368	.....	368	92 00
Navigators Islands	181	.....	181	35 50
Spanish Possessions in Pacific Ocean	.....	3,821	3,821	0 00
Turkey in Asia	136	.....	136	34 00
Mexico	135	.....	135	72 00
Total	$2,439,455	$442,640	$2,882,095	$679,207 18

Imports, 1882.

(From the Eastern Provinces of Canada, into the Canadian Province of British Columbia.)

Total.....$559,732.

What these Facts show.

The above interesting facts, in the infancy of the province, must show, either the great natural resources of the country, or the energy of its small population. More correctly, it may be said that they show both these things. *British Columbia, naturally, is the richest province of Canada.* The region west of the Rocky Mountains is a country of strong life.

INTER-PROVINCIAL TRADE.

The amount of imports from Eastern Canada—above stated as $559,732, in 1882—is the most noteworthy fact in our trade relations lately. Canadian goods come to British Columbia (which is a Canadian province) in bond through the United States, and are shipped from San Francisco to Victoria. Notwithstanding this round-about transport, the imports into the province from Eastern Canada, already, are equal in value to those from Great Britain (excluding railway requirements).

The following shows the growth of these imports from Eastern Canada :—

July, 1871, to June 30,	1872	$22,214	52
Do. 1872, do.	1873	75,604	08
Do. 1873, do.	1874	66,104	17
Do. 1874, do.	1875	117,054	16
Do. 1875, do.	1876	129,735	13
Do. 1876, do.	1877	160,814	00
Do. 1877, to Dec. 31,	1877	57,162	00
Year do.	1878	169,753	00
Do. do.	1879	184,564	00
Do. do.	1880	258,207	00
Do. do.	1881	422,367	00
Do. do.	1882	559,732	00

Cordage, axes, agricultural implements, sewing machines, nails, iron safes, boots and shoes, straw wrapping paper, rye whisky, refined sugars, manufactured tobacco, and ready-made clothing are, now, almost exclusively received from the Eastern Provinces. The importation of other goods, such as cottons, tweeds, flannels, blankets, &c., &c., is yearly increasing.

The increase of the external trade of the Province has been accompanied (see page 107) by the starting and growth of several important provincial manufactures.

The foregoing facts respecting the exports and imports, the trade and duty-paying power of British Columbia, are, as above said, very remarkable, when the isolation of the province and the smallness of its population are considered. They deserve attention, as, probably, no other people, anywhere, can show a similar record. They are an index of the future.

Lord Dufferin's Opinion on this point.

"Canada would indeed be dead to the most self-evident considerations of self-interest, and to the first instincts of national pride, if she did not regard with satisfaction her connection with a province so richly endowed by nature, inhabited by a community so replete with British loyalty and pluck, while it afforded her the means of extending her confines and the outlets of her commerce to the wide Pacific and the countries beyond."—*(Governor-General the Earl of Dufferin, speech 20th September, 1876.)*

MINING LAWS.

Free Miners.

A "Free Miner" must be over 16 years of age. His certificate may be for one year ($5), or three years ($15), and is not transferable. He may enter and mine Crown lands or, on making compensation, lands occupied for other than mining purposes. To recover wages must have Free Miner's Certificate.

Record, &c., of claims.

Claims must be recorded ($2.50), and re-recorded annually ($2.50). Transfers must be in writing and registered. Free miners may hold any number of claims by purchase, but only two by pre-emption, except in certain cases. Claims may be officially laid over, and leave of absence granted in certain cases, but the rule is that every full claim must be worked either by owner or agent. A Free Miner can, by record, get a fair share of water necessary to work claim.

Nature and size of Claims.

Claims, as far as possible, rectangular and must be staked. Sizes are, "bar diggings" 100 feet wide at high-water mark, and thence extending into the river to its lowest water level. "Dry diggings" 100 feet square. "Creek claims" 100 feet long, measured in the direction of the general course of the stream, and shall extend in width from base to base of the hill or bench on each side, but when the hills or benches are less than 100 feet apart the claim shall be 100 feet square. "Bench claims" 100 feet square. "Mineral claims," that is, claims containing, or supposed to contain, minerals (other than coal) in lodes or veins, 1500 feet long by 600 feet wide.

Discoverers' Claims.

To one discoverer	300	feet in length.
To a party of two discoverers	600	do.
To a party of three discoverers	800	do.
To a party of four discoverers	1000	do.

And to each member of a party beyond four in number, a claim of the ordinary size only.

The above increase of size applies to dry, bar, bench, creek, or hill diggings, not to quartz claims or minerals in lodes or veins.

A new stratum of auriferous earth or gravel situated in a locality where the claims are abandoned, shall, for the above purpose, be deemed a new mine, although the same locality shall have been previously worked at a different level; and dry diggings discovered in the vicinity of bar diggings shall be deemed a new mine, and vice versa. A discoverer's claim shall be reckoned as one ordinary claim.

Creek discovery claims shall extend 1000 feet on each side of the centre of the creek or as far as the summit.

☞ *Further details as to the Mining Laws of the Province are held over for a second edition of part of this hand-book at an early date, as the Legislature, which is now in session, has under consideration important proposals to amend the laws relating to the discovery, opening and working of minerals (other than coal) in lodes or veins, and also of coal.*

ERRATUM.

Page 47, line 16, for "wide," read "long."

APPENDIX A.

The eastern boundary of the province leaves the Rocky mountains at the intersection of 55° latitude and 120° longitude, and runs north along the latter.

The line between the province and the United States territory of Alaska, which was bought by the United States from Russia in 1867, has not been accurately determined on the ground. It is described, so far as applies, in the following extract from the convention of 1825, between Russia and Great Britain:—

"Commencing from the southernmost point of the island called the Prince of Wales Island, which point lies in the parallel of 54° 40′ North Latitude, and between the 131st and 133rd degrees of West Longitude (meridian of Greenwich), the said line shall ascend to the north, along the channel called the Portland channel, as far as the point of the continent, where it strikes the 56th degree of North Latitude. From this last-mentioned point, the line of demarcation shall follow the summit of the mountains situated parallel to the coast, as far as the point of intersection of the 141st degree of West Longitude (of the same meridian), and, finally, from the said point of intersection of the said meridian, in its prolongation, as far as the Frozen Ocean.

"With reference to the line of demarcation laid down in the preceding articles, it is understood: 1st. That the island called the Prince of Wales Island shall belong wholly to Russia. 2nd. That whenever the summit of the mountains which extend in a direction parallel to the coast from the 55th degree of North Latitude to the point of intersection of the 141st degree of West Longitude shall prove to be at the distance of more than ten marine leagues from the ocean, the limit between the British possessions and the line of coast which is to belong to Russia, as above mentioned, shall be formed by a line parallel to the winding of the coast, and which shall never exceed the distance of ten marine leagues therefrom."

APPENDIX B.

EXTRACTS—NOT MADE IN THE BODY OF THE BOOK—FROM A SPEECH, AT VICTORIA, OF HIS EXCELLENCY GOVERNOR-GENERAL THE MARQUIS OF LORNE.

"The reception the Princess and I have met with in Victoria and throughout British Columbia, will long live in our memory as one of the brightest episodes of a time which has been made delightful to us by the heartfelt loyalty of the people of our Canadian provinces. Nowhere has the contentment insured by British institutions been more strongly expressed than on these beautiful shores of the Pacific. I am rejoiced to observe signs that the days are now passed when we had to look upon this community as one too remote and too sundered from the rest to share to the full the rapid increase in prosperity which has been remarkable since the union. . . . .

"I have everywhere seen signs that a stable, and therefore satisfactory, immigration has set in. Victoria has made of late a decided start. I visited, with much pleasure, many of the factories which witness to this. . . . .

"There is no doubt that any Canadian who visits this Island and the Mainland shores, and sees the happiness of the people, the forest-laden coast, the tranquil gulfs, and glorious mountains, can but congratulate himself that his country possesses scenes of such perfect beauty. . . . . .

"There is no reason to doubt that the population attracted to you as soon as you have the line through the mountains will be the population which we most desire to have, a people like that of the old Imperial Islands, drawn from the strongest races of northern Europe, one that with English, American, Irish, German, French, and Scandinavian blood shall be a worthy son of the Old Mother of Nations. . . . . .

"Where there is open land the wheat crops rival the best grown elsewhere, while there is nowhere any dearth of ample provision of fuel and lumber for the winter. As you get your colonization roads pushed through, and the lines along the Fraser built, you will have a large available acreage, for there are quiet straths and valleys hidden away among the rich forests which would provide comfortable farms. As in the North-West last year, so this year I have taken down the evidence of settlers, and this has been wonderfully favourable. . . . . .

"Besides the climate, which is so greatly in your favour, you have another great advantage in tractability and good conduct of your Indian population. I believe I have seen the Indians of almost every tribe throughout the Dominion, and nowhere can you find any who are so trustworthy in regard to conduct, so willing to assist the white settlers by their labour, so independent and so anxious to learn the secret of the white man's power. . . .

"Throughout the interior it will probably pay well in the future to have flocks of sheep; the demand for wool and woollen goods will be always very large among the people now crowding into those regions which our official world calls the North-West, but which is the north-east and east to you. There is no reason why British Columbia should not be for this portion of our territory what California is to the States in the supply afforded of fruits. The perfection attained by small fruits is unrivalled, and it is only with the peninsula of Ontario that you would have to compete for the supplies of grapes, peaches, pears, apples, cherries, plums, apricots, and currants. Every stick in the most wonderful forests which so amply and generously clothed the Sierras, from the Cascade range to the distant Rocky mountains, will be of value as communication opens up. . . . . .

"The business which has assumed such large proportions along the Pacific shore, of the canning of salmon, great as it is, is as yet almost in its infancy, for there is many a river swarming with fish from the time of the first run of the salmon in the spring to the last run of other varieties in the autumn, on which many a cannery is sure to be established. Last, but certainly not least, in the list of your resources, comes your mineral, and, chiefly, your coal treasure. The coal from the Nanaimo mines now leads the market at San Francisco. No where else in these countries is such coal to be found, and it is now being worked with an energy which bids fair to make Nanaimo one of the chief mining stations on the continent. It is of incalculable importance not only to this Province of the Dominion, but also to the interests of the Empire, that our fleets and mercantile marine, as well as the continental markets, should be supplied from this source. Where you have so good a list of resources it may be almost superfluous to add another; but I would strongly advise you to cultivate the attractions held out to the travelling public by the magnificence of your scenery. Let this country become what Switzerland is for Europe in the matter of good roads to places which may be famed for their beauty, and let good and clean hotels attract the tourist to visit your grand valleys and marvellous mountain ranges. . . . . .

"I have always been a firm friend of British Columbia, and I hope before I leave the country to see still greater progress made towards meeting your wishes."

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APPENDIX.

NOTE.—Mr. R. T. Williams, Victoria, B.C., has published a Directory of the Province, which gives information as to localities.

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