THE·YEAR·BOOK·OF BRITISH·COLUMBIA

COMPENDIUM
1897-1901.

B. C.

R. E. GOSNELL.

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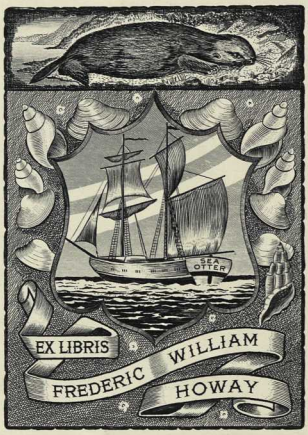

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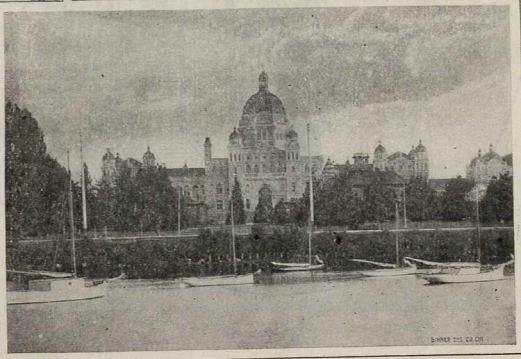
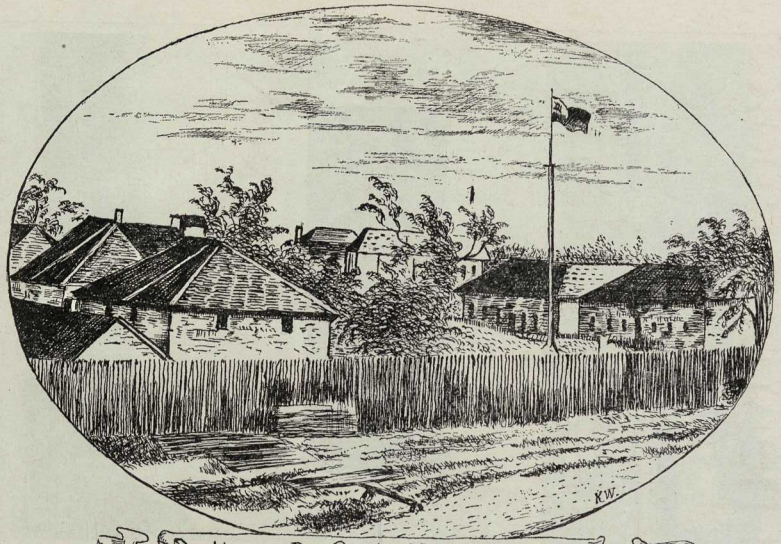


1. First Seat of Government of British Columbia, Fraser River, 1864.
2. Seat of Government, Victoria, Island, 1859.
United to British Columbia, 1866.
3. New Parliament Buildings, Victoria, 1897.



Hudson's Bay Co's Fort Victoria B.C.
1843—1864.

COMPILED FROM

The Year Book

—OF—

British Columbia

—AND—

Manual of Provincial Information,

to which is added a Chapter containing much special information respecting the

CANADIAN YUKON

and Northern Territory generally.

R. E. GOSNELL,

Librarian Legislative Assembly and Secretary Bureau Statistics.

VICTORIA, B. C.
1897.

HIS EXCELLENCY LORD ABERDEEN.

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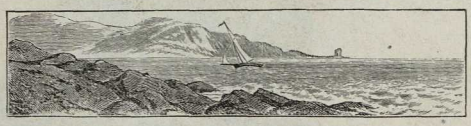
HON. T. R. M'INNES, LIEUTENANT-GOVERNOR.

INTRODUCTION.

WHAT follows has been extracted from the pages of the British Columbia Year Book, 1897, to form a digest of information regarding the Province useful for reference to those who desire it in a handier and cheaper form than that afforded by the larger volume of over 500 pages. As such it is intended to interest those outside rather than those within the Province and, therefore, contains only those portions of the original which are of present and practical import.

So much attention has of late been directed to the resources of British Columbia and the Yukon territory that the demand for reliable information in a condensed form is very great, and it is to supply a legitimate want that these pages are put into print again. The general favour with which the announcement of the Year Book has been received is sufficient warranty for the belief that the digest will recommend itself to the public and serve a useful purpose.

The aim of the Year Book has been to make a fair statement, and accurately outline the conditions, of the Province, neither concealing nor overstating facts and setting down naught in malice or conceit. There is every reason to believe that such a course will be widely appreciated. During the preparation of the work no private or sectional interest was considered or consulted and no statement contained was suggested or influenced by personal considerations. The author, however, is quite aware that any success the undertaking may achieve is due rather to the seasonableness of and demand for such a publication than to its intrinsic merits as a book.



NEW PARLIAMENT BUILDINGS, VICTORIA, 1897. Taken from new Post Office.

PHYSICAL CHARACTERISTICS.

THE Province of British Columbia may be described as a great quadrangle of territory, seven hundred miles long by four hundred miles wide, lying north of latitude 49° and west of the central core of the Rocky Mountains, extending along the Pacific Coast as far as latitude 55°, and including the islands adjacent. North of that degree of latitude it continues inland to latitude 60°, but is shut off from the coast by a narrow strip of Alaskan Territory, and is bounded on the east by longitude 120°.

The southern half of the Province lies between tolerably well defined boundaries. It forms a large and regular rhomboid of elevated land, which is supported on each side by ranges of mountains. Of these the eastern and western may be said to be double, and consist respectively of the Rockies and Selkirks* on the east, and of the Coast and Island Ranges on the west.

The easternmost range of the above enumerated is that of the Rocky Mountains. It is the northern extremity of the great range which forms so well known a feature of the North American Continent. Entering the Province at the 49th parallel of latitude, in constitutes the eastern boundary to latitude 54°, and continues to between 56° and 57°, where it loses its distinctive rampart-like character, and dies down into lower hills. It has been shown to consist of the upturned edges of the strata that underlie the great north-west plain, and its massive walls are formed chiefly of Devonian and carboniferous limestone. Their average height may be stated at about 8,000 feet. "Near the 49th parallel several summits occur with elevations exceeding 10,000 feet, but northwards few attain this elevation until the vicinity of the Bow River and Kicking Horse is reached. The range appears to culminate about the head waters of the Saskatchewan, Mount Murchison being credited with an altitude of 13,500 feet." There are twelve principal passes, at elevations ranging from 7,100 feet—the South Kootenay—to 2,000 feet—the Peace River Valley.

The Rocky Mountains.

Parallel to the Rocky Mountains proper, and frequently included under one name with them, though of distinct formation, run the Selkirks. This range, which has been shown by geologists to represent an earlier upheaval, and to

*NOTE.—The Selkirks are, properly speaking, only a subordinate portion of the more western of the two ranges, but since no term has been generally accepted for the entire range, and since the Canadian Pacific Railway has especially familiarized travellers with this name, it has been thought good to apply it to the whole range, of which it thus constitutes the best known part.

exhibit an entirely different series of rocks, is so broken and complex as to have received several names in different parts of its course, as though composed of distinctly separate mountain systems. Such, however, is not the case.

Entering from the south in a three-fold system divided by important valleys, they are called respectively the Purcell, the Selkirk, and the Gold Mountains. To the north of the great bend of the Columbia River, these give place to the term Cariboo Mountains. At about latitude 54° they die out, or are merged in the cross ranges which form the northern boundary of the interior plateau, and from whence spring the headwaters of the Peace River.

The Selkirks.

In average altitude these mountains are not greatly inferior to the Rockies, their loftier members rising from 8,000 to 9,000 feet above the sea. The contours are, generally speaking, more rounded and less precipitous than the latter, though in many places they are strikingly pointed with steep and continuous grades, down which snow-slides sweep with resistless force. Their sides, up to several thousand feet, are clothed in dense forests, affording an unlimited supply of good timber.

The average width of the Rocky Mountain Range is about sixty miles, diminishing to the north; that of the Selkirks is about eighty miles.

There is a valley of most remarkable length and regularity, extending from the southern boundary line along the western base of the Rocky Mountains as far as the northern limits of the Selkirks, a distance of over 700 miles, and dividing the two ranges.

To the west of these great ranges British Columbia extends in a wide plateau of table land, which has been originally elevated some 3,500 feet above sea-level. This plateau has been, however, so deeply intersected and eroded by lake and river systems that, in many places, it presents an aspect hardly differing from that of mountain regions. At others, however, it opens out into wide plains and rolling ground, with comparatively low eminences, affording fine areas of agricultural and grazing land. The entire district has been subject to vast overflows of lava, of the disintegrated remains of which the present soil is mainly composed. There is a general but very gradual slope of the land from the mountainous country on the southern boundary of the Province to the north, where as has been previously stated, it is hedged in by cross ranges attaining an elevation of from 6,000 feet to 8,000 feet. Notwithstanding this general slope, the principal flow of water finds its way southwards through deep fissures penetrating the mountain boundaries on the southern and western sides. This plateau forms the chief agricultural area of the Province. "The whole of British Columbia, south of 52° and east of the Coast Range, is a grazing country up to 3,500 feet, and a farming country up to 2,500 feet, where irrigation is possible."—(Macoun, Geol. Rep. 1877.)

Interior Plateau.

The interior plateau is terminated on the west by the Coast Range, a series of massive crystalline rocks of some 6,000 feet in average height. This range has a mean width of about 100 miles, descending to the shores of the Pacific, and is in turn flanked by the submerged Island Range, the tops of which form Vancouver and her adjacent islands, the Queen Charlotte Islands and those of the Alaskan Peninsula.

"The most remarkable feature of the coast are the fiords and passages, which while quite analagous to those of Scotland, Norway and Greenland, probably surpass those of any part of the world (unless it be the last named country) in dimensions and complexity. The great height of the rugged mountain walls

which border them also give them a grandeur quite their own."—*(Dawson, Geol. Sur., 1884)*

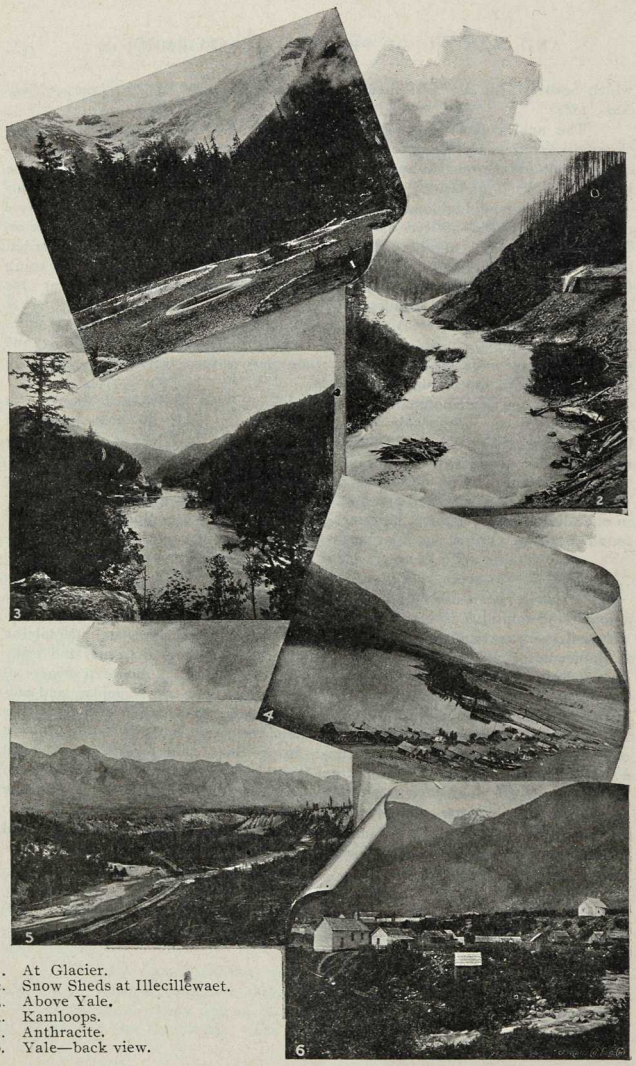
The unique position of British Columbia as a watershed on the Pacific Coast of America, will at once be recognized when it is seen that all the rivers of great importance on that coast, with the exception of one (the Colorado), arise from within its boundaries. The drainage from its extensive area of mountains and highlands is received into the numerous lakes, which have been noticed as forming so striking a feature of the interior. Thence the surplus is discharged into the few large rivers or their many tributaries, which finally reach the sea. These rivers are the Columbia on the south (debouching through American territory into the Pacific Ocean); the Fraser (750 miles long), the Skeena (300 miles), and the Stickine on the west; the Liard (over 300 miles in British Columbia) on the north, and the Peace River (over 300 miles in British Columbia) on the east. These rivers are of great size and volume, and the first four are sufficiently navigable to steamers to form waterways of no small value in the development of the country.

Rivers.

The submerged mountain range which lies to the west of the Mainland, is represented by an archipelago of islands, great and small, the most prominent being Vancouver and the Queen Charlotte Islands. Of the others it may be briefly stated that they produce in miniature all the physical features of the larger group.

The island may be described geologically as a group of upturned gneissic rocks, embracing certain tertiary areas and worn down by glacial action, so that in one place extensive gravel moraines, in another beds of boulder clay, are to be found, while in a third a regular series of late sandstones alternate with the barren cliffs of trap. Upon such unpromising surface generations of fir trees have flourished, and by their decay have gradually deposited a mould of increasing thickness sufficient to provide suitable ground for other forms of vegetation, until the country has become covered with a dense growth of timber varying according to its situation and adaptability to the wants of each particular kind. Thus, upon the ridges the pines and many species of undergrowth have held their own, best suited to a moderate degree of moisture and the rocky subsoil. Upon the boulder clay, alder, poplar, and willow have contended successfully against the larger trees and where the gravel has afforded insufficient moistures for the conifers, the hardy but more slow growing oaks, which had no chance for existence in the dense pine forests, have gained a foothold, and stud level plains clothed with native grass. Maples appear to have succeeded in some places the burnt out pines; indeed in time much the same sequence of soft and hard timber might be expected on this coast as is known to have occurred on that of the Atlantic, where firs, oaks and beeches have followed in successive order.—*(British Columbia. Its Present Resources and Future Possibilities. Official Pamphlet.)*

Vancouver and Other Islands.



1. At Glacier.
2. Snow Sheds at Illecillewaet.
3. Above Yale.
4. Kamloops.
5. Anthracite.
6. Yale—back view.

C.P.R. VIEWS.

POLITICAL DIVISIONS.

THE Kootenay District, which includes East and West Kootenay, comprises an area of 15,060,000 acres, and occupies a triangular space of the south-east corner of British Columbia. The apex of this district is at a point where 52° north latitude crosses the Rocky Mountains, and the base extends from 118° west latitude to 114 west° latitude. The triange is divided into two about equal parts, called East and West Kootenay, respectively, the Purcell Range of the Selkirks constituting the dividing line. The whole territory is drained by the Columbia, which forms what is known as "the great bend," passing north through East and south through West Kootenay.

There are three main valleys: one in East Kootenay, occupying or being the drainage basin of the Columbia River, going north; the other, the valley of the Kootenay River and the Kootenay Lakes, in West Kootenay; the third lying between the Selkirk and Gold Ranges, through which the Columbia River expanding into the Arrow Lakes, flows into the three valleys in question, constituting the main routes of communication northward and southward.

Kootenay

East Kootenay contains a large extent of agricultural land, but requiring irrigation as a rule. West Kootenay has but little arable land, the principal part of which lies at the southern boundary along the Kootenay River and is made up of a tract included in the Kootenay Reclamation Scheme described in the chapter on Agriculture.

It is unnecessary, however, to state that the name Kootenay in British Columbia has become almost synonymous with mineral wealth, its mountains being rich with gold, silver and copper, and disclosing so far indications of remarkable promise. In consequence of the development that has taken place a number of towns, several incorporated, have sprung up, and are enjoying a large measure of prosperity—Revelstoke, Nelson, Kaslo, Rossland, Trail, New Denver, Sandon, Slocan City, Three Forks, Fort Steele, etc., etc. Donald and Golden in East Kootenay, were brought into life by the C.P.R. With the prospective railway development at hand, there is no doubt that the population and wealth of this district will be surprisingly augmented from this time forward.

Yale occupies a large area to the west of Kootenay, extending to the 122nd degree of west longitude, and from about 49° to 52° north latitude. The whole occupies an area of about 15,850,000 square miles, and lies almost wholly within the dry belt of the Province, although from its extent it has a variety of soil and climate. It includes the rich valleys of the Okanagan, the Nicola, the Similkameen, the Kettle River country, and the valleys of the North and South Thompson in the vicinity of Kamloops. It possesses perhaps the largest area of purely agricultural and pastoral lands of any other district in the Province. The valleys of the Okanagan District raise excellent wheat, which is milled at two local grist mills.

Yale.

Yale contains large cattle ranges, and, in addition, gives excellent promise as a fruit-growing district, the range of products including tomatoes, water melons, grapes, peaches, almonds, etc., which are not raised to perfection anywhere in the Coast districts. Fruit-growing, however, is only in its incipiency. The C.P.R.

passes very nearly through the centre of the district, a little to the north, while the Shuswap and Okanagan branch from Sicamous to Vernon affords communication southward, which is continued to the Boundary Line by means of the Okanagan and other lakes, forming a system of water stretches, parallel to those referred to in the Kootenays.

Yale, in addition to its agricultural resources, is coming into prominence as a mineral district, the new Boundary country being in the southern part, besides which, in the locality of Nicola, in the Similkameen, at Cherry Creek, Hope, Kamloops, and other parts, there have been numerous locations and rich discoveries of ore.

Lillooet.

Lillooet contains 10,300,000 acres, lying west of the northern half of Yale District. The northern part of Lillooet forms a parallelogram, extending from 51° to 52° north latitude, and between 120°30′ and 125° west longitude. The southern part forms a smaller parallelogram between 121° and 124° west longitude, and extends from 50°25′ to 51° north latitude. It contains a large portion of the interior plateau previously referred to, and in a general way exhibits characteristics similar to those in Yale. It is largely a pastoral country, but in the southern portion of it fruit-growing is making good progress.

The district is bisected by the Fraser River, and the Cariboo waggon road passes through it northward from Ashcroft. The district is well adapted for dairying and cattle-raising. Irrigation is necessary in many places owing to the dryness of the climate, and is accompanied by success wherever it has been tried. Formerly, in the days of the Cariboo gold excitement, Lillooet supplied the miners with farm produce, and agriculturally was even more flourishing than at the present time. There is a number of placer deposits which have been developed to some extent, and it is in this district that the somewhat celebrated Golden Câche mine, a controlling interest in which was recently purchased for a very large sum, is located. It includes such districts as Bonaparte River Valley, Lac la Hâche, Anderson and Seaton Lakes. Clinton is the judicial centre.

Westminster District.

Westminster District lies to the west of the southern half of Yale, and, although by the Redistribution Bill of 1894 its area was very much diminished, it is territorially still an important district, containing about 4,500,000 acres and occupies an unique position in the Province, being bounded on the west by the Gulf of Georgia, on the north by Lillooet, on the east by Yale, and on the south by United States territory. Westminster district is largely made up of the valley of the Fraser River, which, according to Dr. Dawson, is the bed of an ancient arm of the sea, which extended as far inland as Hope, and is thus to a large extent made up of alluvial deposits of the Fraser River. What is known as the Fraser River Valley is very fertile, and, with the exception of its being subject to occasional overflow in places, is agriculturally one of the most desirable locations in the Province. The drawback of floods, however, is being overcome by a series of dyking schemes, and it is altogether probable that the Dominion Government will undertake a comprehensive scheme of protection by straightening the river bed and protecting its banks.

Politically, Westminster is divided into four Ridings: Richmond, Dewdney, Chilliwack, and Delta, the latter two being on the south side of the river, and the former on the north side of the river. It is largely made up of Municipalities,

which include Richmond, Delta, Surrey, Langley, Matsqui, Chilliwack, Kent, Dewdney, Mission, Maple Ridge, Coquitlam, Burnaby, North and South Vancouver. In this respect Westminster differs largely from the rest of the Province, inasmuch as it is the only district in which development on municipal lines has taken place to any extent. At the south-west corner are the cities of Vancouver, the terminus of the C.P.R., and Westminster, which is often referred to as the fresh water terminus, and is the centre of the salmon canning industry.

Cariboo.

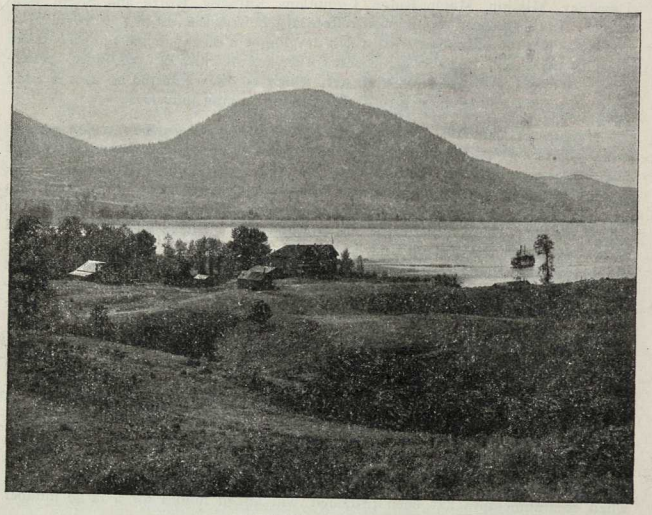
North of Yale and Lillooet lies the great district of Cariboo, which extends from 52° to 60° north latitude, the latter being the northern boundary line of the Province, and from the 120th to the 126th degree of west longitude, containing in the aggregate the vast area of about 96,350,000 acres. It is drained in the south by the Fraser River and its numerous tributaries, in the centre by the Parsnip and Peace Rivers and tributaries, and in the north by the Nelson and Liard and tributaries. It was in the district drained by the tributaries of the Fraser River, in the vicinity of Barkerville, that occurred the great gold excitement of British Columbia in early days. It is estimated that out of these rich creeks has been taken an amount equal to between $45,000,000 and $50,000,000 in gold.

The northern half of the district has been but very imperfectly explored, and the information regarding it is limited. The central portion was a rich fur preserve of the Hudson's Bay Company in early days, and in it are located Forts St. John, McLeod, Stuart, and St. James. The Omineca Gold Mining District lies in the western portion near the centre between the northerly and southern limits, and to the south-west lie the large pastoral and agricultural districts included in the Blackwater and Nechaco Valleys, in which are contained areas of grazing land and rich river bottoms, several million acres in extent, which, when communication has been provided, will afford homes for a large number of settlers.

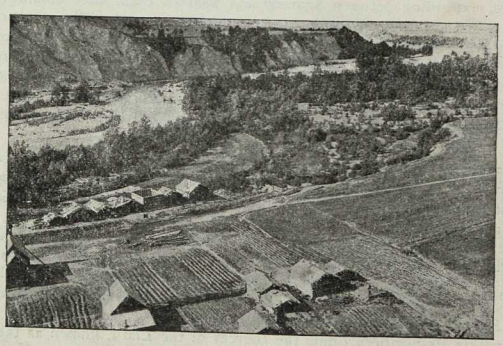
In the auriferous district already referred to, where the rich placer mines exist, large hydraulicing enterprises have been inaugurated, and some half dozen companies, expending between $250,000 and $600,000 each, have obtained extensive leases, and are operating on a very comprehensive scale. The result of these operations will, no doubt, bring back to Cariboo much of its old-time prosperity. Railways are projected into the mining districts from both sides, one from the main line of the C.P.R. at Ashcroft or Kamloops, and the other by way of Bute Inlet on the Mainland coast, either of which would materially advance the mining interests and open up a district which has long suffered from lack of communication.

Cassiar.

Cassiar lies west of Cariboo, occupying an area considerably larger than the latter, or about 105,150,000 acres, extending from the northern boundary of Comox at 51 north latitude to the northern boundary of the Province at 60 north latitude, and all the territory west of that meridian to the Pacific Ocean including Queen Charlotte Islands, except the territory of Alaska, which extends to a little south of 55 north latitude. This extensive tract of territory has for many years lain practically dormant, and very much of it is still unexplored. It is drained to the westward by two large parallel rivers, the Skeena and the Stikine, reference to which is made elsewhere. There are also within its northern limits the sources of the Liard, known as the Dease River and the head waters of the Yukon.

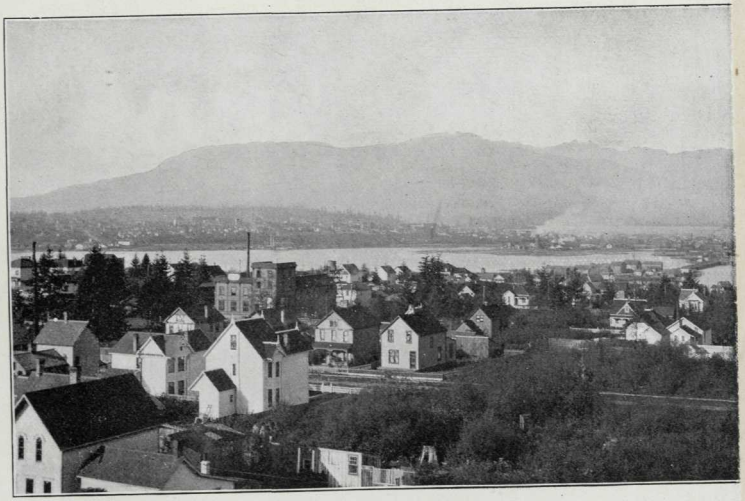


PENTICTON, VALE.

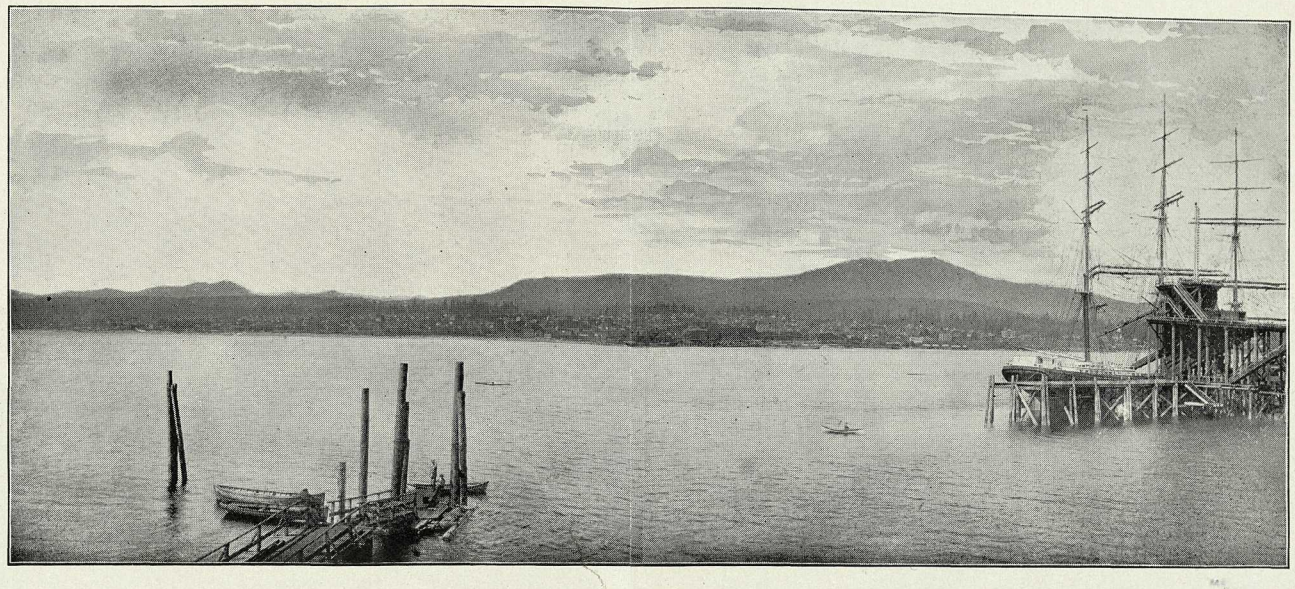


CAYOOSE CREEK VALLEY—ENTERING THE FRASER.

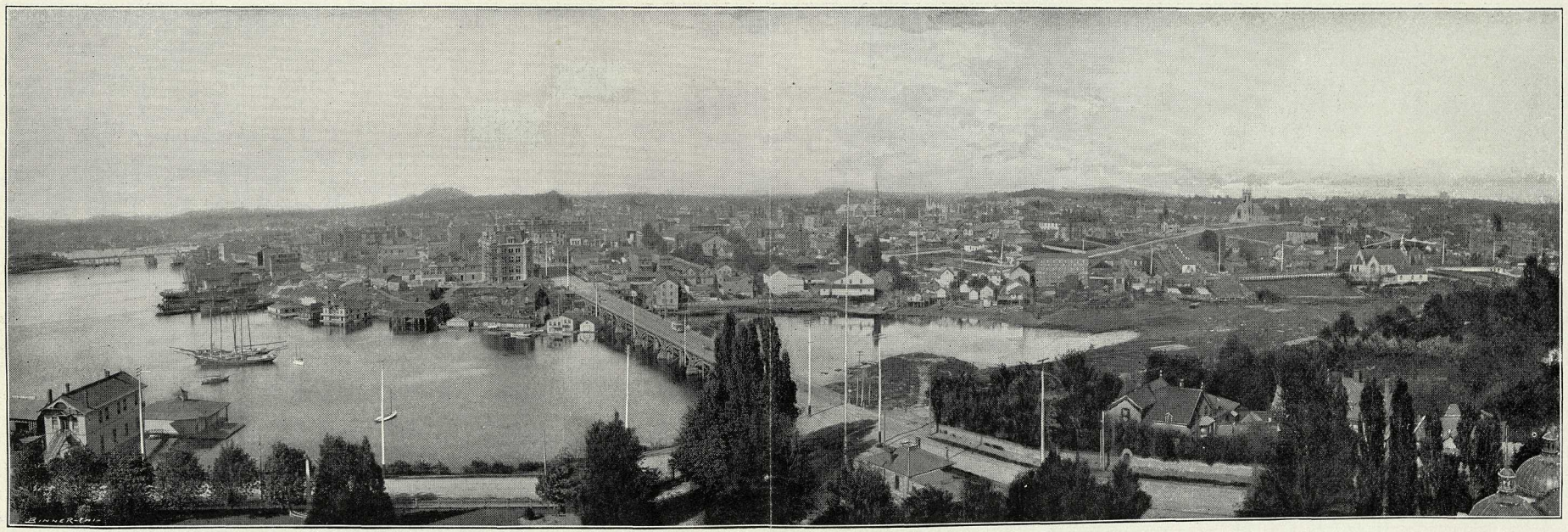
NEW WESTMINS



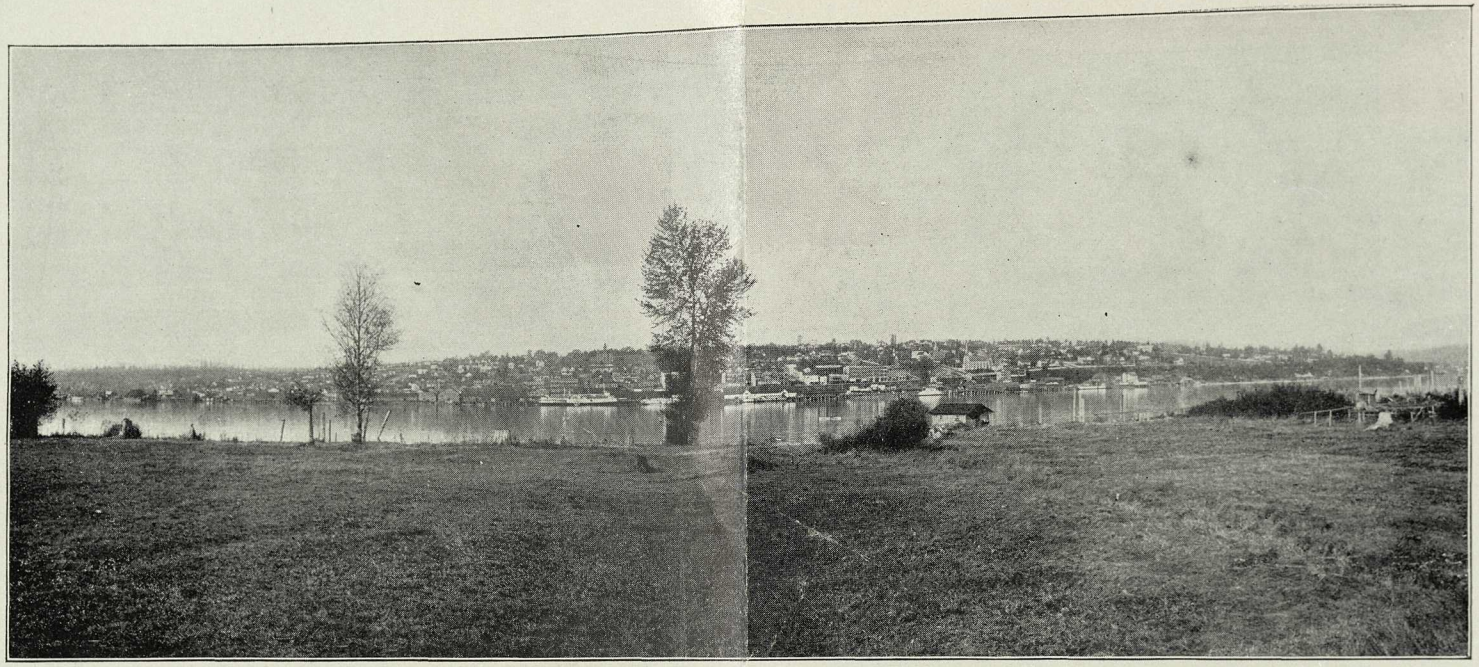
VANCOUVER CITY, (FROM



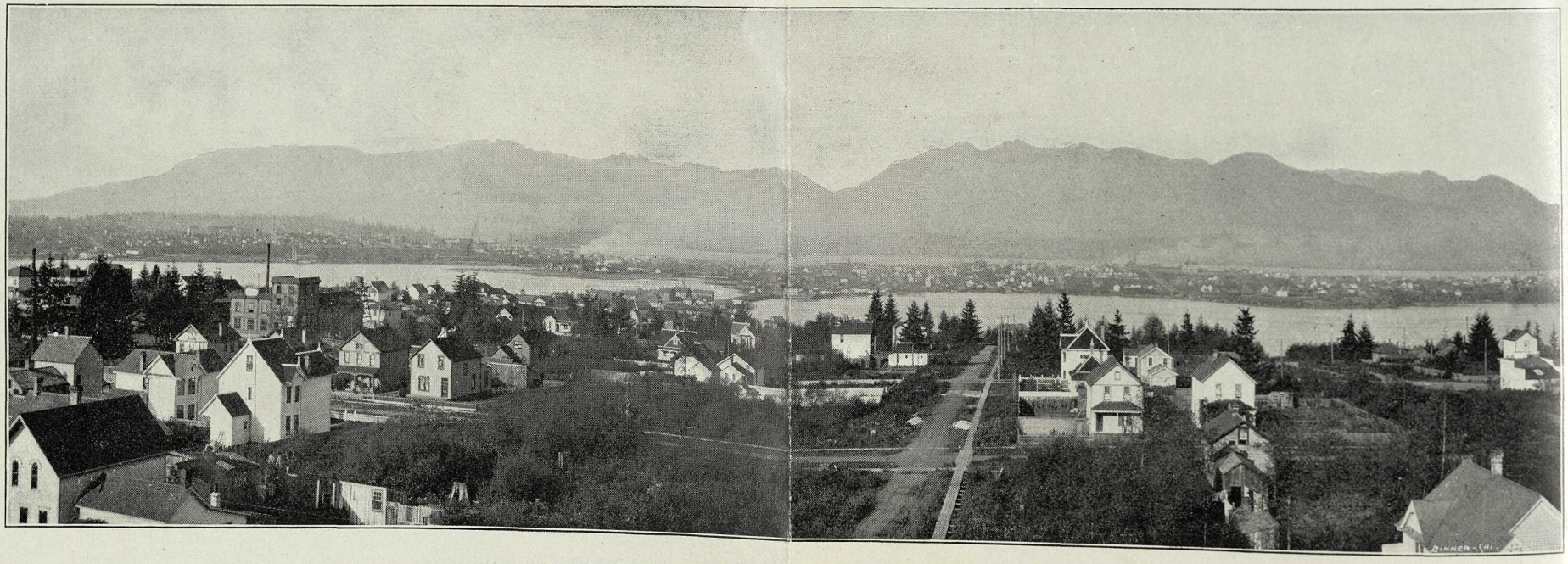
NANAIMO CITY.



VICTORIA CITY, 1897, (FROM DOME OF NEW PARLIAMENT BUILDINGS).



NEW WESTMINSTER CITY.



VANCOUVER CITY, (FROM MOUNT PLEASANT).

STER CITY.

MOUNT PLEASANT).

In former years Omineca and Cassiar, a brief history of which is given elsewhere, were from 1871 onward the scenes of mining excitement, to some extent similar to those of Cariboo in early days and the Klondyke of the present, only on a much smaller scale. The Omineca District occupies a central part of Cassiar, while the richer gold diggings in the vicinity of Dease Lake lie at the extreme north and are accessible by the Stikine River.

Recently much attention has been attracted both to Omineca and to Northern Cassiar, and a revival of interest in their mines is looked forward to with confidence. This interest has been intensified by the Yukon rush, and it is altogether probable that the whole northern interior of British Columbia, including Cariboo, will be thoroughly prospected and explored by miners, railway promoters, and others within the next few years, and it is possible that a very important industrial future is in store.

Agriculturally little can be said, or, in fact, little is known, but the general physical characteristics give but little promise on that score, although there are many valleys and low ranges of hills which will afford a very considerable area of pasturage, and it is also probable that vegetables and the hardier fruits and cereals may be grown in many places. In fact, Dr. Dawson's remarks as to the agricultural capabilities of the Yukon would apply to the Cassiar District, only more favourably.

Comox District may be described as a large rectangle, including the northern part of Vancouver Island and a portion of the opposite Mainland, being bounded on the north by the 51st degree of north latitude, and on the east by the 124th degree of west longtitude, and comprising about 9,759,009 acres. On the Mainland side it is deeply indented with inlets, of which Jervis, Toba, Bute, Knight and Kingcombe are the principal. These inlets are the outlets for a number of rivers which flow through canyons, and are fed by numerous glaciers. The country generally is very rugged, and the coast, on both sides of the straits, and the many islands, large and small, which intervene, are heavily timbered. Here are found the principal logging camps of the Province, and a very important supply of the best merchantable timber. Although sparsely populated as yet, perhaps no other area of British Columbia of similar size contains so much and varied natural wealth, represented in timber, minerals, fish and agricultural land, the last named, though considerable in the aggregate, being, comparatively speaking, the least important. Many of the islands contain good land, and in the vicinity of Comox there are some excellent stretches, while north from Seymour Narrows to the head of the island there are considerable areas, which, if drained and cultivated, would make valuable cattle ranges and meadows. Coal measures, which at Comox are extensively worked, extend almost to the end of the Island; good fishing is found everywhere, and several salmon canneries are in operation. On this coast are abundant fine building materials—stone and slate, while of minerals, iron, copper, gold and silver are largely represented. In the vicinity of Phillips Arm are promising mining camps; in fact, the whole district is richly endowed and is capable of prosperous development. The west coast has been but little prospected as yet; there is comparatively little known of its resources, but there are good fisheries all along it, and recently a number of mineral discoveries, principally of copper, have been made.

Comox

A Rich District.

The main physical features of Vancouver Island have already been referred to in the opening part of this chapter, and the part not heretofore described consists

of the large district of Cowichan-Alberni, lying south of Comox on the west side, extending south to Esquimalt District, and other political divisions lying eastward. The greater part of Alberni is rugged and mountainous, and has, as is, in fact, true of the whole interior of the Island of Vancouver, been only faintly explored. There are some grand scenic effects and beautiful inland lakes. Along Alberni Canal, however, is a large area of fertile land and a number of settlers. Here, too, there are many promising mineral indications, with a good deal of preliminary development. On Barclay Sound, and up the coast as far as Nootka, prospecting is active, and, particularly for copper, is regarded as one of the coming mining districts of the Province. Owing, however, to the heavy undergrowth, prospecting is difficult. Esquimalt district occupies the south-eastern corner of the Island in which Victoria City and Esquimalt are situated. North of Esquimalt is the Cowichan District, and north of that the Nanaimo District, which, politically, is a tri-partition, consisting of South Nanaimo, Nanaimo City and North Nanaimo (the latter including Wellington, Texada and contiguous islands), Victoria District, North and South, including Saanich and Salt Spring Island, and others of a group known as The Islands, lies east of Cowichan and Esquimalt Districts, on and in the Gulf of Georgia. All the south-eastern portion of Vancouver Island is, comparatively speaking, well settled, and contains a good deal of agricultural land and many well cultivated farms. This portion of the Island is well served with good roads, and has railway communication by the Esquimalt and Nanaimo and Victoria & Sidney Railways.

Vancouver Island.

Its Political Divisions.

The area of British Columbia has been variously set down from 380,000 square miles to 394,000 square miles. From careful surface measurements of the map, the following results approximately have been sbtained, according to the present main political divisions:—

Political Divisions.	Square Miles.	Square Acres.
Kootenay	23,500	15,060,000
Yale	24,300	15,750,000
Lillooet	16,100	10,300,000
Westminster	7,660	4,900,000
Cariboo	150,550	96,350,000
Cassiar	164,300	105,150,000
Comox (Mainland)	7,100	5,550,000
Vancouver Island	16,400	10,000,000
Total	409,910	262,160,000

The above figures are given approximately to approach round figures as nearly as possible, and include the territory claimed by Canada in connection with the Alaska Boundary dispute.

CITIES AND TOWNS.

ASHCROFT is a town on the Canadian Pacific Railway, 205 miles east of Vancouver in the Yale District. Its importance consists in its being the forwarding point to Cariboo, Clinton and Lillooet, *via* the Cariboo waggon road. The B.C. Express Company have their headquarters, and the "British Columbia Mining Journal," a very reliable and well written newspaper, is published there.

Ashcroft.

Barkerville is situated on Williams Creek, 285 miles from Ashcroft, at the terminus of the Cariboo waggon road, being reached by the Express Company's stages once a week. Barkerville was formerly an important mining town and is the centre of a mineral district which is again rapidly coming into prominence.

Barkerville.

Chilliwack is a thriving little town situated in the centre of the famous Fraser Valley, and on the banks of the Fraser River; is fifty miles east of New Westminster, and about thirty miles west of Hope. The Fraser Valley is about twenty-two miles long and eight miles wide. Chilliwack is distinctly a farming community, and all kinds of fruits, cereals and farm produce grow abundantly. It is also noted for stock raising. A great many of the best and most successful farmers and fruit-growers of British Columbia have large, well-cleared farms and comfortable houses here. Fish and game abound, and it is a desirable resort for summer tourists.

Chilliwack.

Our roads are in first-class shape, and are generally admitted by bicyclists to be the best in the Province

Chilliwack is a progressive, growing town, with a population of about 500 souls, and contains a number of enterprises.

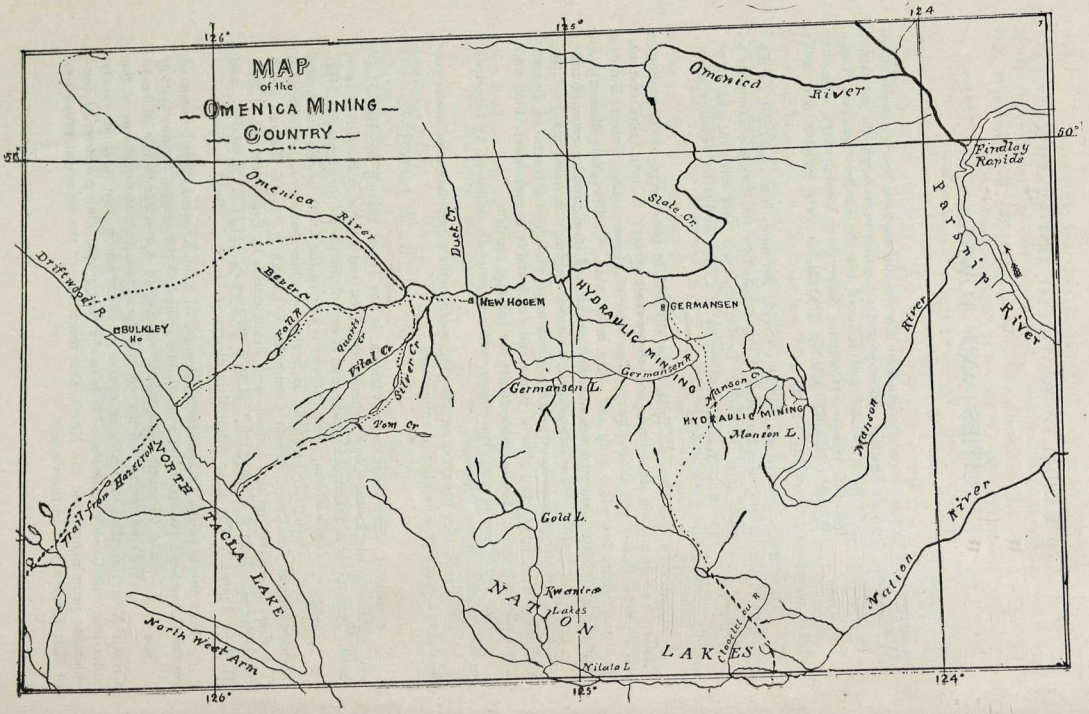
W. T. JACKMAN.

Esquimalt, three miles from Victoria, is the Naval Station for Her Majesty's ships on the Pacific Coast, where a dry dock and marine railway have been built. It is rather a quaint old village, and is one of the points for sightseers visiting Victoria. The harbour is one of the finest on the Coast, and is securely fortified. It is also the chief station of the Dominion Meteorological Service in British Columbia, in charge of Mr. E. Baynes-Reed. The ships at present on this station, with headquarters at Esquimalt, are H.M.S. "Imperieuse," H.M.S. "Amphion," H.M.S. "Phaeton," H.M.S. "Leander," and H.M.S. "Icarus." The Rear Admiral in charge is H. St. L. Bury Palliser.

Esquimalt.

Fort Steele is the present judicial centre of East Kootenay. It is situated on the Columbia Lake 180 miles from Golden, which is the nearest railway station and telegraph office. It is reached by a steamer from Golden to Windermere and thence by stage. It is on the direct line of the Crow's Nest Pass Railway, now in course of construction, and is about ninety miles from the Crow's Nest Pass. It is in the centre of a mining district of considerable prominence, and the North Star mine, one of the principal properties of East Kootenay, is in the vicinity.

Fort Steele.


MAP
of the
OMENICA MINING
COUNTRY
126°
125°
124
50°
Omenica River
Omenica River
Findlay Rapids
Parsnip River
Slate Cr
Duck Cr
Driftwood R
Beaver Cr
Fort R
Quartz Cr
Pilot Cr
Silver Cr
Tom Cr
BULKLEY
NEW HOCEM
HYDRAULIC MINING
GERMANSEN
Germansen R
Germansen L.
Manson Cr
HYDRAULIC MINING
Manson L.
Manson River
Manson River
Trail from Hazelton
NORTH TACLA LAKE
North West Arm
Gold L.
Kwanica Lakes
NATION LAKES
Nilula L
Nation River
Nation River
126°
125°
124°

Golden is situated in the valley of the Upper Columbia River at its junction with the Kicking Horse River. The town derives its importance from the fact that it is the headquarters of navigation on the Upper Columbia River, and also the supply point for the country extending along the Columbia and Kootenay Valleys.

A great deal of lumber is exported annually from Golden, Beaver, and Palliser, at each of which places sawmills are established.

Mining is assuming extensive proportions, and great activity is being displayed in the development of the ore deposits in the McMurdo District, Cariboo, Bugaboo Basins, and at Ottertail, in the Kicking Horse Canyon. A smelter has been built at Golden, but has not yet been operated. The Recorder's Office for the Golden Mining District is located in the town, and contains a magnificent collection of specimens of the mineral ores of the district.

Golden.

Agriculture is carried on along the Columbia Valley, the present grain production being about 1,000,000 pounds per annum. The breeding of horses and cattle raising are pursuits followed by a large number of settlers. The C.P.R. Company have decided on making Golden the divisional point between the Pacific and Western sections, and the railway workshops at Donald are to be removed to this point. The town has the privileges of a public park, a school, and a money order office. Fishing, shooting, and boating are available pastimes, the large sloughs on the Columbia River north of this town affording excellent facilities for canoeing and boating. The present population of Golden is 500.

A. E. HAGGEN.

Greenwood is one of the many prominent towns which have sprung up in the midst of newly discovered mining camps. About two years ago, when the hardy prospectors were discovering that to the east of Kootenay there was yet another El Dorado, Robert Wood, a pioneer of the Province and an enterprising business man, came into Boundary Creek from Vernon, and, after following the banks of the stream until he came to where it is joined by Twin Creek, he decided that here was the point to which the trade of the surrounding mining camps could be diverted. He secured the necessary land, surveyed the townsite, built roads to the mining camps, erected a hospital, graded streets and spent money in other directions. His work and the expenditure of his money proved not barren or unprofitable, for to-day Greenwood is a thriving town of 600 inhabitants.

Greenwood.

The Boundary Creek "Times" is published at Greenwood.

The success of the town is dependent upon the development of the rich and varied mineral resources of Central, Wellington, Skylark, Providence, Summit, Long Lake, Kimberley, Pass Creek, Deadwood, Copper, Smith's, and Graham Camps, which encircle the town, and none of which are at a greater distance than nine miles. All these camps are at a higher altitude than Greenwood, so that ores can be hauled down hill on an easy grade. An ample supply of water and water power for smelting or other purposes can be secured from Boundary Creek or any of its numerous tributaries. The route for the Columbia & Western Railway is through the Boundary Creek Valley, and the railway when constructed will therefore pass through the town.

Greenwood is at present reached by a daily stage from Marcus, a distance of sixty-five miles, or by a tri-weekly stage from Penticton, a distance of eighty-three miles. Both these lines carry mails.

Greenwood is pleasantly situated between the hills. It stands about 2,400 feet above the sea level, and in summer is climatically a delightful spot to live in, while the winters are not sufficiently severe to prevent mining operations being carried on at all seasons of the year.

D. ROSS.

Harrison Hot Springs.

Harrison Hot Springs, a health resort, is situated on Harrison Lake, five miles from Agassiz, on the main line of the C.P.R It obtains its name from the mineral springs existing there, to which a large number of persons go for treatment. The Harrison Hot Springs Hotel is located on the lake. The situation altogether is picturesque as well as healthful, and good fishing is available. A new mineral district is being opened up north of this lake.

Kamloops.

Kamloops is the oldest city of any commercial importance in the interior of the Province. It is charmingly located at the junction of the North and South Thompson Rivers, on the line of the Canadian Pacific Railway, in the District of Yale, 250 miles from the Pacific seaboard at Vancouver. More than eighty years ago the Hudson's Bay Company established a trading post here, and around this gradually clustered a population which carried on a very widespread commerce throughout the interior. Kamloops (which is the Indian word signifying "the meeting of the waters") was the outfitting place for the adventurous miner and trapper; and the splendid pasturage afforded by the table-lands and valleys for many miles around early attracted people to the business of cattle raising. Ranching, mining, trading and trapping were the industries which first gave Kamloops its start, and it is the progress being made in these industries, but chiefly in that of mining, which is now advancing the prosperity of Kamloops by leaps and bounds.

The completion through the mountains to Eastern Canada in 1886 of the Canadian Pacific Railway ushered in a new era in the progress of this thriving city, and its growth from that time continued steadily till last year, when it was immensely accelerated by the discoveries of rich deposits of gold-copper ores on Coal Hill, about four miles south of the city. These discoveries have attracted great attention to Kamloops, and hundreds of people, either with money to invest in mines or with the golden expectations of the prospector, have flocked in and overrun the adjacent country. The discoveries were made too late last season to permit as yet of any great development of the mining claims, but enough is already known to satisfy experienced mining men as to its future.

The cattle ranges adjacent and tributary to Kamloops are very extensive, and give pasturage from year to year to about 40,000 head of cattle. About 10,000 head are sent to market each year. Agriculture in the vicinity of the city is carried on by irrigation, and wherever water can be obtained fine crops of fruit, grain, hops, vegetables, etc., are raised, for which good prices are obtained.

Five years ago the City of Kamloops was incorporated. The city has put in a system of electric lighting and water works, assuring at all times a wholesome and copious supply of water for domestic purposes and an efficient protection from fire.

One of the most delightful features of this city is the fine climate with which it is blessed. Sunshine is the prevailing condition the year round; there is very little wet weather; the winters are mild and not of long duration and the spring, summer and fall seasons charming. The remarkable salubrity of the climate has made Kamloops a favourite health resort.

Climatic Advantages.

Kamloops is well supplied with stores of general merchandise, lumber mills, schools and churches of nearly all denominations; and very many of the citizens have supplied themselves with residences of comfortable and pretty design. At Kamloops the "Inland Sentinel" is published. [The Kamloops "Standard" has been established since the above was written.—ED.] The population of Kamloops is about 1,600. The city is the seat of Government for the great Yale District. The Court House and Jail are located here, as well as the Land and Registry Offices of both Dominion and Provincial Governments. There are steamboats plying on the waters of the North and South Thompson Rivers, and in these waters also is to be found as good trout fishing as is to be had in British Columbia. In season grouse, duck, chicken and deer are plentiful, so that the angler and hunter are here favoured with good sport in a good climate.

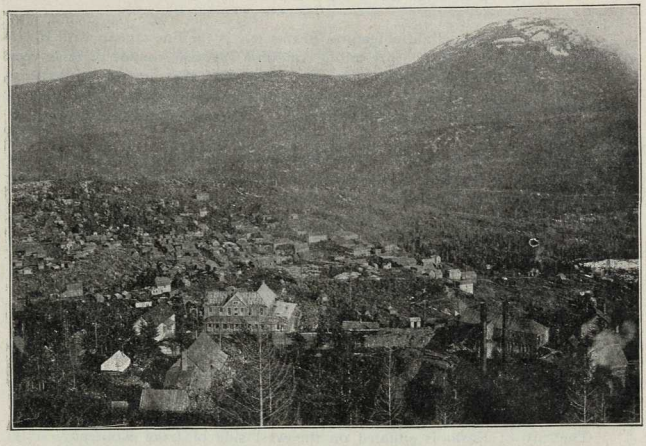
W. BAILLIE.

The city of Kaslo is situated on the west side of Lake Kootenay, sixty miles north from the International Boundary Line and seventy-eight miles south-east from Revelstoke on the main line of the C.P.R. Population, 2,000. It has splendid water supply by gravitation from Kaslo Creek and good fire protection. The waterworks cost $28,000. Kaslo is the central distributing point for the Slocan mines, seventy-five good shipping mines being tributary to it. These may be worked all the year round and at very little expense. The development work is increasing, although a mere beginning has been made. Splendidly equipped steamers run on the lake making connection with the through trains on the C.P.R., N.P.R. and Great Northern. The Kaslo & Slocan Railway (Robert Irving, General Traffic Manager) runs daily trains between Kaslo and Sandon, distance thirty-three miles, where connection is made with the C.P.R. system to Nakusp. The International Trading and Navigation Company's steamers "International" and "Alberta" run daily between Kaslo and Nelson and make connection at Five-Mile Point with the various transcontinental railways of the United States. The "Kokanee" steamer of the C.P.R. also makes daily trips to and from Nelson. Other steamers ply on the lake to Bonner's Ferry, Lardo, Argenta, and Duncan River districts, calling at way ports, such as Balfour, Ainsworth, Pilot Bay, etc.

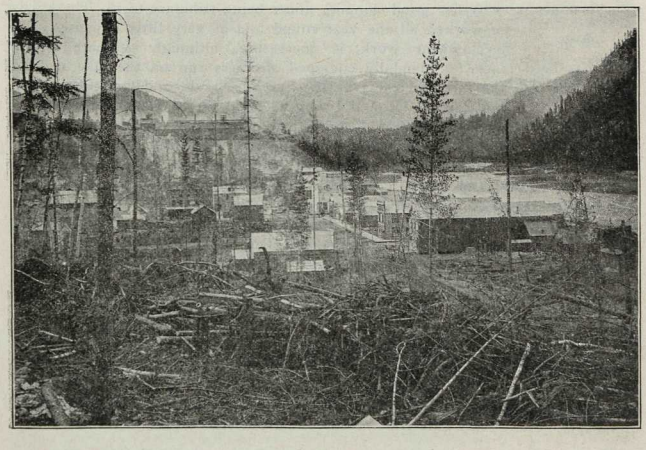
Kaslo.

Kaslo has a beautiful situation on a flat plateau on the lake front. There are numerous fine buildings (chiefly wooden frame), churches, school house, public offices, sawmill (capacity 40,000 feet per day), planing mill, sash and door factory, ore sampling works, brewery and bottling works, two banks, electric light works, and numerous stores for miners' supplies, etc. The city is progressive, 100 buildings having been erected during the spring and summer of 1897, and municipal improvements such as sewerage system, are in contemplation. Kaslo has two newspapers, one weekly (the B.C. "News") and one semi-weekly ("Kootenaian").

J. B. McKILLIGAN.



ROSSLAND.



TRAIL.

Ladner's Landing, a town on the south bank of the Fraser River four miles from its mouth, is the business centre of Delta Municipality, one of the best agricultural districts in the Province. There are also a number of salmon canneries in the vicinity, and steamers from Victoria and Vancouver to Westminster and up-river points call regularly.

Ladner's Landing.

Midway is a town near the International Boundary in Yale, twenty-eight miles distant from Osoyoos. At present the means of communication is limited. It is in the centre of a farming and mining district. It has a population under 1,000 and a newspaper, the "Midway Advance."

Midway.

Nakusp is a small town on Upper Arrow Lake, the terminus of the Nakusp & Slocan Railway, seventy-five miles distant from the main line of the C.P.R. at Revelstoke. It is the point of trans-shipment for goods going into the Slocan country, and for ore coming out *via* the C.P.R., which connects with the steamers on the Arrow Lakes and Columbia River. There is a sawmill located there.

Nakusp.

Nanaimo City is the direct outcome of the discovery of coal at that point in the year 1850. The Hudson's Bay Company erected a fort there in 1852, from which time it assumed an importance peculiarly its own as the centre and chief point of the coal mining industry of British Columbia. It was incorporated as a municipality in 1874, since which time it has gradually increased in size and population until at the last census the population was given at about 5,000. Mining operations there at the present time are carried on by the New Vancouver Coal Mining and Land Company, which employs a very large number of men. This Company is the successor to the Vancouver Coal Company, which purchased its property from the Hudson's Bay Company. Nanaimo is connected with Victoria, seventy-eight miles distant, by the Esquimalt & Nanaimo Railway and by steamers with Vancouver, thirty-five miles distant, communication being daily in both instances. It is connected by steamer with Comox and various points on the coast in the vicinity. It is favourably situated for the growing of fruit, and farming to some extent is carried on successfully in the vicinity. The harbour affords safe anchorage and is commodious. The principal shipping of the port is created by the export of coal by ships from San Francisco. The city possesses waterworks, electric light, telephone system, gas works, etc.

Nanaimo.

Nelson, which was incorporated during the present year, started into life about the year 1890, when the first rush of prospectors into the interior of West Kootenay took place as the result of the discovery and location of the now celebrated Hall mines. Since then it has gradually grown in size and importance until it is now regarded as one, if not the most important point in the whole of the Kootenay country. It is situated on what is known as the West Arm of Kootenay Lake, twenty-two miles from its mouth, at a point where the Kootenay River begins, and is the terminus of the Columbia & Kootenay Railway, twenty-eight miles from Robson, on the Columbia River. Connection is made at the latter place with the C.P.R. line of steamers. It is also the northern terminus of the Nelson & Fort Sheppard Railway from Waneta, on the International Boundary, seventy miles south, and from Spokane 200 miles. Nelson is the Government headquarters for the southern district of West Kootenay, where the offices of the Gold Commissioner and Government Agent and

Nelson.

other offices are located. It is also the port of entry for the Kootenay District, and headquarters for the C.P.R. officials. Communication is had by steamers with all points on Kootenay Lake and Kootenay River, including Ainsworth, Pilot Bay and Kaslo. It is on the proposed line of extension of the C.P.R. through the Crow's Nest Pass now under construction, and a branch of the C.P.R. is now being constructed from Slocan Crossing near Nelson to Slocan City, which will give Nelson direct communication with Slocan District. There are three newspapers, the "Miner," the "Tribune" and the "Economist"; two chartered banks, a sawmill, sash and door factory, foundry and machine shops, waterworks, electric light, telephone system, etc. The Hall Mines and smelter, which give employment to over 200 men, are located in the vicinity, as are also other mines both silver and gold, on Toad Mountain. Population, about 3,000.

New Denver.

New Denver is an important town on the east side of Slocan Lake at the mouth of Carpenter Creek. It is thirty-two miles from Spokane, nine miles from Sandon and about forty miles west of Kaslo, and the same distance north of Slocan City. Steamer accommodation is had daily to Roseberry, Silverton and Slocan City. There are several sawmills here and a number of mining properties in the vicinity. The New Denver "Ledge," a characteristic mining paper, is its journalistic exponent. The C.P.R. branch line from Nakusp passes close to the city.

New Westminster.

The particulars regarding the founding and early growth of the city of New Westminster have been given elsewhere and it will not be necessary to refer at length to its history and development. Its commanding situation on the north bank of the Fraser was the reason for its being selected as the Capital of the Colony of British Columbia. The city is sixteen miles from the Gulf of Georgia, seventy-five miles from Victoria and twelve miles in a direct line from Vancouver City on Burrard Inlet. By the census of 1891 it possessed a population of 7,000 inhabitants, and for practical purposes that may be taken as the population at the present time. In addition to the regular steamer communication from Victoria, Vancouver and river points, the city is connected with the main line of the C.P.R. by a branch from Westminster Junction and hourly communication by electric tram line from Vancouver, twelve miles distant, is had. The Royal City, as it is sometimes called, is the centre of the salmon canning industry of the Fraser River, on which there are located about forty-five salmon canneries. Sailing vessels from England and other parts of the world come up the Fraser as far as New Westminster to load lumber and salmon. The city has a large number of splendid business blocks of brick and stone, and here are located the Dominion Penitentiary, the Provincial Asylum for the Insane, and the Provincial Gaol. The city owns its electric light system and was the first in the Province to recognize the principle of municipal ownership in this. It also has a splendid system of waterworks. There are several large sawmills, iron foundries, carriage and furniture factories, a city market, which is very successfully carried on, cold storage, creameries and other industries. The Great Northern Railway, *via* Blaine, has its terminus on the opposite bank of the river. There is one daily newspaper the "Columbian," a number of churches, a Methodist College and good schools. New Westminster City is the centre and chief market town of New Westminster District, which in respect to farming development, is

Its Features.

foremost in the Province, and upon the agricultural wealth of the district and the salmon canneries of the Fraser River its future must largely depend.

Pilot Bay.

Pilot Bay is situated on the Kootenay Lake, eighteen miles from Kaslo and eight miles from Ainsworth on the opposite side. At this point the Kootenay Lake Reduction Company have erected their smelter, which, although for some time closed down, is again about to resume operations. It has daily communication with all points on the lake.

Port Moody.

Port Moody, at the head of Burrard Inlet, was the former terminus of the C.P.R, from which place the line was subsequently extended to Vancouver. At the time the C.P.R. was completed to that point there was considerable activity in real estate, and Port Moody promised to become what Vancouver is to-day, but the change of terminus suspended all building operations. With the growth of industries around the shores of Burrard Inlet it will undoubtedly yet assume a considerable degree of importance.

Port Simpson.

Port Simpson is a Hudson's Bay Company's post on the northwest coast of British Columbia near Alaska, 640 miles north of Victoria. A large village of Tsimpshean Indians is located here, and in connection with this there is a Methodist Mission and several industries. The harbour at Port Simpson is a good one, and for this reason it was at one time regarded as a possible terminus of the C.P.R. There is communication by steamer at regular intervals with Victoria.

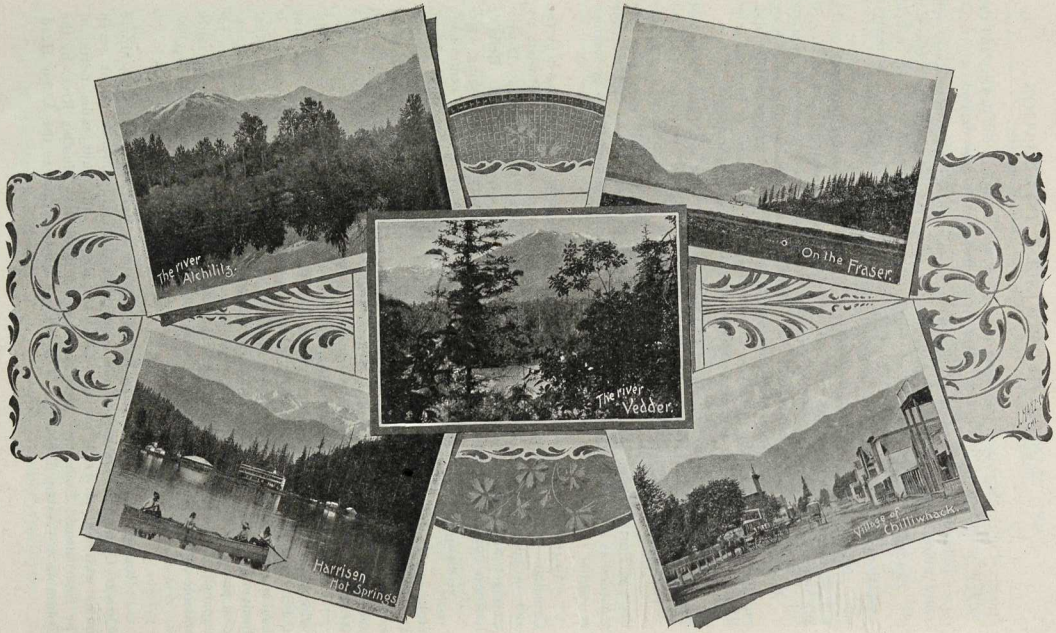
Revelstoke.

In the navigable waters of the Great Columbia River where crossed by the Canadian Pacific Railway's main line, Revelstoke is admirably situated as, and is fast becoming an *entrepot* of trade for the West Kootenay District amongst the principal towns of which it must be always numbered. Reliable business houses of national as well as Provincial reputation are establishing warehouses there, and the C.P.R. management are there centralizing the business of the Pacific Division as much as possible. Revelstoke is also surrounded by the mineral fields of Big Bend, Jordan Pass, Albert Canyon, Illecillewaet, Lardeau, and Trout Lake, and is for them the chief point of supply. As these camps (now coming rapidly into public favour) progress and are developed a local as well as district trade is secured to Revelstoke, and a steady growth is noticeable in this respect.

In consequence of the trade advantages of situation, the richness and development of its adjacent mineral fields, and the recent recognition of it by the C.P.R., the town is rapidly growing and its population steadily increasing. It has splendid hotel accommodation, banking, postal and daily mails, and other business facilities, churches, schools, newspapers, societies, and all the advantages of a place much larger. It occupies a splendid site (affording immense room for expansion), is surrounded by magnificent scenery, and has a very mild and fairly equable climate. All hardy plants, fruits and grasses grow well. Population, 1,000.

B. R. ATKINS.

Rossland (population 7,000), on the slope of a basin formed by Red, Monte Christo, Columbia, Lookout Lake, and Deer Park Mountains, about seven miles westward of Trail, on the Columbia River, and eight miles north of the International Boundary. Connection is had with the Columbia River by the Columbia & Western Railway to Trail, thence by steamships to the Arrow Head,



VIEWS IN FRASER VALLEY.

and rail to the main line of the C.P.R. at Revelstoke, and with the Spokane Falls & Northern Railway by the Columbia and Red Mountain to Northport.

It owes its importance to the immense deposits of iron and copper pyrritic ore, carrying gold, in the hills surrounding it. The permanence of these mineral lodes has been demonstrated by development work aggregating upwards of fourteen miles. During July, 1897, the quantity of ore shipped to smelters, chiefly that at Trail, averaged 1,400 tons a day, and with a reduction of $2 per ton in cost of freight and treatment, a carefully prepared estimate of the amount of ore that could be shipped with profit within a year is 4,000 tons per day, with the probability that the amount could be doubled in two years. The deepest workings are in the Le Roi mine, where 650 feet has been attained. A triple compartment shaft has been commenced, which, when completed, will be furnished with hoisting appliances capable of raising 2,000 tons per day. The business portion is closely built, chiefly in wood. A gravitation system supplies ample water for domestic and fire protection purposes, and an electric light system lighting. Work has commenced in the direction of utilizing the power derived from the falls of Kootenay River to operate an electric plant, from which power will be conveyed to operate and light the mines of the vicinity. In the first instance 3,000 horse power will be generated. A charter has also been granted for similar works to utilize the power derivable from the Pend O'Reille River for the same purpose. The city is provided with public schools, churches of the Roman Catholic, Episcopal, Presbyterian, Methodist, and Baptist denominations, three theatres, social clubs and reading rooms. The hotel accommodation is ample and of good quality. In sanitation the health of the city has been well maintained through a rigorous enforcement of suitable regulations, and the construction of a system of sewerage for the more thickly populated part was commenced in 1897. Tennis, baseball, football, and gun clubs have been organized, as well as two social clubs. Rossland was incorporated in April, 1897, and is governed by a Council consisting of a Mayor and six Aldermen. It is the seat of the Mining Recorder's Office for Trail Creek Mining Division, and has a Deputy Registrar of the Supreme and County Courts.

Rossland.

A Great Power System.

W. H. JONES.

Sandon is situated in about the centre of what is known as the wet ore belt of the Slocan District, the ore being mostly galena and carbonates. The first locations were the Payne Group, Slocan Star, Noble Five Group, and Washington, in 1891.

The townsite was located as a mineral claim in 1892 by J. M. Harris, but nothing was done toward laying out the town till January, 1896. About that time two railroads, the Kaslo & Slocan, from Kootenay Lake, and the C.P.R., from the Upper Arrow Lake, made Sandon their terminus, and the town began to grow rapidly. Now (May, 1897) it has a population of about 2,000, with water system, electric light, fire department, public school, theatre, Methodist and Presbyterian Churches, lodges of the different secret orders, and one newspaper, the "Paystreak."

Sandon.

Four concentrators are now in operation in the vicinity of Sandon, the Slocan Star, Noble Five, Washington, and Alamo. A number of mines are preparing to build concentrators, and others have ore that does not need concentrating, but is shipped direct from the mine. Cody, one mile east, and Three

Forks, four miles west of Sandon, have good mines, and are promising points. The wages of miners are $3.50 per day.

E. C. BISSELL.

Silverton.

Silverton is a mining camp on Slocan Lake at the mouth of Four Mile Creek, four miles below New Denver, nine miles from Rosebery, on the Nakusp & Slocan Railway. It is one of the numerous towns in the Slocan district which has sprung into life owing to the mining development there. The townsite was laid out during the present year and the population is rapidly on the increase. It has a weekly newspaper.

Steveston.

Steveston is a fishing village at the mouth of the South Arm of the Fraser River and is the chief town of Richmond Municipality. It is surrounded by numerous salmon canneries, to which it owes its existence. There is regular communication by steamers from Victoria, Vancouver, New Westminster and river points.

Three Forks.

Three Forks is a mining town on the Nakusp & Slocan Railway, thirty-three miles from Nakusp and four miles from Sandon. It has stage connections daily to Sandon and Cody. Alamo is one mile west of Three Forks, where a concentrator is located.

Trail.

Trail, situated on the Columbia River, six miles north of the International Boundary line, is the site of the smelter of the B.C. Smelting & Refining Company, with a capacity of 400 tons of ore per day. It is the terminus of the C.P.R. line of steamships plying between that point and Arrowhead, at the north of the Arrow Lakes, while a steamer makes regular trips to Northport, on the Spokane Falls & Northern Railway. Besides the business incidental to the demands of the large staff of men employed at the smelter and in the mining properties of the vicinity, an excellent supply trade is done with mining camps along the Columbia River. There are excellent hotels, and religious services are regularly held by Roman Catholic, Episcopal, Presbyterian, and Methodist denominations.

Union.

Union is the centre of a coal mining and farming district, which gives it considerable importance as the only town north of Nanaimo on the east coast of Vancouver Island. It is beautifully situated on the foothills of the Beaufort Mountains, sixty miles from Nanaimo. It is connected with Bain Sound by a line of railway thirteen miles in length, by which the coal, the mining of which is the principal industry, is taken to the sea for shipment. The coal mines here are operated by the Union Colliery Company, which produce from 700 to 1,000 tons per day of the best steam coal. In addition to shipments to the San Francisco market the coal is manufactured into coke, ovens for which have been recently erected, and on account of the demand of the smelting industry promises to grow to large proportions. Union is the market for the Comox farming district, which is one of the best on the Island. There is a considerable population and business is well represented. The "Comox Weekly News" is the only newspaper. The town is divided into two parts, The Camp and Cumberland, each having about the same population. Incorporation is about to take place, application for which has already been made. There is a good water supply and an incorporated company has been formed for the purpose of utilizing it to supply the town.

Vancouver is called the Terminal City because it is the land terminus of the Canadian Pacific Railway in British Columbia, and on account of that fact and its situation on Burrard Inlet, one of the finest natural harbours in the world, it has acquired the importance it has during the last decade, within which period it was created and has grown to its present proportions. Early in its existence it was swept by fire, but the loss it then sustained only tended as a further stimulus to the exertions of the citizens. Vancouver from its position has always been regarded as a city with a future. As the terminus of the C.P.R. with its multifarious connections, and as a natural seaport, it has every prospect of and is surrounded by the proper conditions for becoming one of the great shipping marts of the Pacific Coast. At present Burrard Inlet is the centre of the lumber trade of British Columbia, and the shipping port of the Australian and Oriental steamers running in connection with the C.P.R. The city itself was laid out on a comprehensive scale and made rapid growth. The authorities early applied themselves to the problems of water supply, sewerage, street paving, electric light and tramways, etc., and succeeded in completing satisfactory and substantial systems. Its paved streets and fine water supply are two things of which its citizens are especially proud. It possesses many churches, good schools, several social clubs, a fine theatre, fraternal and benevolent orders in abundance, athletic associations, etc. Industrially it has made good progress, although not perhaps on the scale at first anticipated. Its principal industries are lumbering, sugar refining, jute and cooperage works, iron works (including the C.P.R. shops), fruit preserving, furniture and candy factories. At English Bay, near the city limits, is good bathing, and with Stanley Park, a very large reserve, form the principal pleasure resorts. More recently a number of large wholesale firms have established themselves in Vancouver and are competing successfully for a share of the business of the Province. The population at the last general census was about 14,000.

Vancouver.

Social Features.

Vernon is the centre and chief supply point for the Okanagan District, which contains several large agricultural valleys of peculiar promise. It is the terminus of the Shuswap & Okanagan Railway, forty-six miles from Sicamous Junction, and has in addition to Government offices a branch of the Bank of Montreal, a newspaper, the "News and Okanagan Farm Live Stock and Mining Journal." There is daily communication *via* the C.P.R. and with the southern country as far as the boundary by means of steamers on Okanagan and Dog Lakes, and stages with various points of the district. Some attention has been recently directed to mineral deposits in the vicinity, and hopes are entertained of a considerable mining development. The city is beautifully situated and the climate is healthful and exhilarating.

Vernon.

Victoria is the Capital and oldest city of British Columbia, and its history, from the outset up to within ten years ago, is practically the history of the Province. Its nucleus was the old Hudson's Bay Company's fort erected in 1843. It was laid out for a city in 1851, and was incorporated as such in 1862. The fact to which, however, it owed its greatest stimulus was the gold rush in 1858, when it suddenly grew into a city of tents with between 20,000 and 30,000 inhabitants. It, however, suffered many reverses subsequent to that, and there were times when a cannon could have been fired up or down its streets with impunity, except, perhaps, for the danger which might have been

Victoria.

incurred by the rival editors, who in such serene days used often to sit on the sidewalks and read their proofs and exchanges. Between the years of 1881 and 1891 population increased very rapidly and at the latter date the official census gave it a population of 16,800, although a much larger population was claimed for it. The attractions of Victoria are its picturesque situation, its climate, and its residential conditions, and in the latter respect it has a future peculiarly its own. Its numerous homelike residences and the great profusion of flowers by which they are in summer surrounded have always been a matter of comment among visitors and added to these are many pleasure resorts easy of access, with good suburban roads in every direction. It has, of course, electric tram lines, waterworks, electric lighting, etc., etc., and is well supplied with churches and all the social adjuncts of a modern city. Its shipping trade is a large one, one of the largest in tonnage in the Dominion, and its wholesale trade is extensive. Its industries, of which there are a number, including flour, feed and rice mills, iron foundries and machine shops, furniture and biscuit factories, chemical and metallurgical works, fruit preserving, pickling and spice factories, boot and shoe and trunk making, soap factories, powder works, etc., are as a rule on a solid and paying basis. Victoria being the Capital has the new Parliament Buildings described elsewhere. It is a port of call for the China and Australasian steamships and has direct communication with San Francisco, Sound ports and all Coast points as far as Alaska.

Industries.

Wellington, which was incorporated last year, is about six miles north of Nanaimo, with a population of about 2,000. It is the northern terminus of the Esquimalt & Nanaimo Railway and is in the vicinity of coal mines to which it owes its existence principally. The coal from the mines is conveyed to Departure Bay, three miles, by means of a narrow gauge railway, where it is shipped to market.

Wellington.

Facsimile of $20 gold piece coined in the British Columbia Mint.
(By kind permission of Hon. J. S. Helmcken).

CLIMATE.

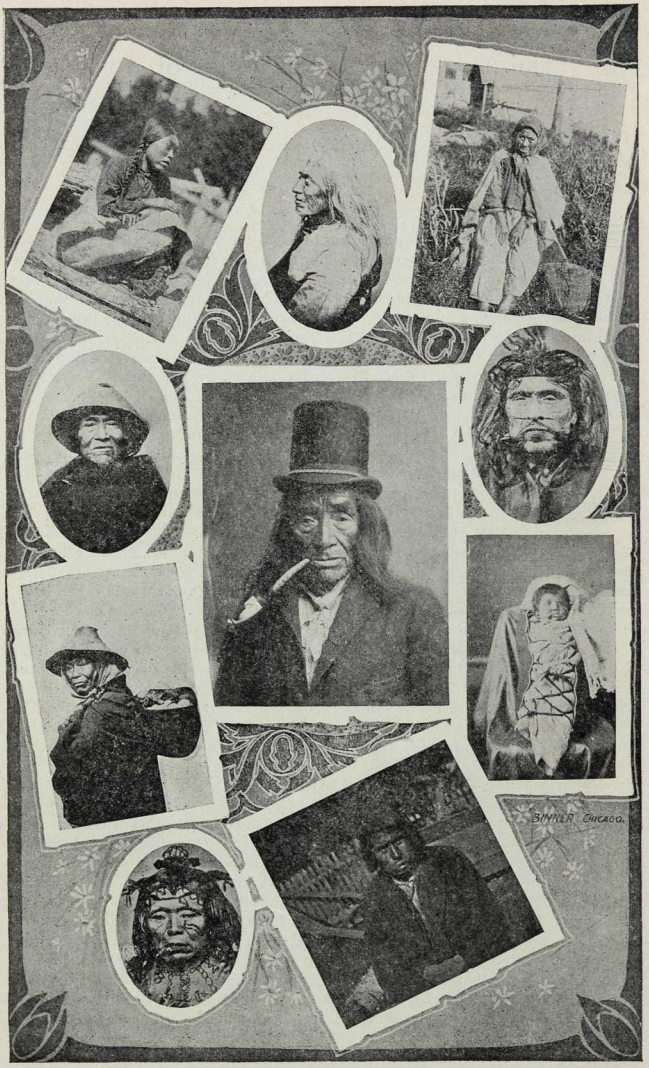
NOTWITHSTANDING that much has been written about the climate of British Columbia, many misconceptions appear to prevail on the subject outside of the Province. In some quarters, through confusion with the north-west interior of the Dominion, an impression has been formed that at least to the east of the Coast Range fearful extremes of cold are to be endured by the inhabitants, while in others, through a misapprehension of the report of travellers, it has been imagined that the climate of the coast resembles that of the shores of the Mediterranean. In order to acquire a reasonable idea of the true state of the case, let anyone first examine upon a map of Europe that portion of land which lies between the same parallels of latitude, and extends over the same area from the Atlantic coast east, and then consider how far conditions which are known to exist there will be modified by local differences on the Pacific. It will be seen that between latitudes 49°-59° must be included Great Britain, the north-east corner of France, Belgium, Holland, North Germany, Prussia, Denmark, the south of Sweden, the Baltic Provinces, and the coast of Russia to the Gulf of Finland. This tract of country in area and latitude approximately represents British Columbia, and may be considered as a whole to present almost the same climatic conditions. The differences to be allowed for are as follows: First, the Japan current, the north equatorial current of the Pacific, does not flow so closely to the American coast as the Gulf stream does to the shores of Northern Europe, but admits of a return Arctic current from the north. This Arctic current which renders the waters of British Columbia extremely cold, causes a condensation of the moisture borne by the prevailing westerly winds eastwards, and produces a humidity most beneficial to the vegetation of the Province. The winds are arrested, in a measure, by the Coast Range, creating a dry belt to the east of these mountains, but the higher currents of air discharge their moisture against the Selkirks, causing the more copious snowfall which distinguishes that range from its neighbour, the Rockies.

Continental Climates.

Thus a series of alternate moist and dry belts are formed throughout the Province, which have no parallel on the coast of Europe, where the more broken coast line and absence of lofty mountain ranges, together with the practical non-existence of an Arctic current, tend to distribute the rainfall over the whole area. It will be easily seen how these belts will be broken and modified in places by the varied elevation of the mountains and the presence of passes such as the Fraser cañon.

Alternate Belts.

Again, the decrease in elevation of the Rocky and Selkirk Ranges as they approach to the north, admits a free passage for the winds of the Arctic regions to sweep down over the northern portion of the Province, bringing with them a corresponding reduction in temperature in winter or increase in the summer, when the long Arctic day admits an accumulation of dry hot air over these regions. Since there is open sea to the north of the European continent these conditions exist there only in a modified form, although the Baltic Provinces, Poland, and Prussia experience very similar effects from the north-east winds.



SOME INDIAN TYPES.

1. An Oweekayno girl. 2. An old Indian. 3. Haida Mary.
4. A Siwash. 5. CHIEF OF THE KOOTENAIS. 6. Medicine Man.
7. Kloochman. 8. Indian Baby.
9. Medicine Woman. 10. Indian guide at Yale.

And lastly, the elevation of the interior plateau is, of course, greatly superior to that of Northern Europe, making an average difference in barometric pressure of some two inches.

The general result of the above differences between the two regions is to accentuate the rainfall on the shores of the Pacific Coast and the extremes of temperature in the interior. Where the latter extends in areas of high elevation, these extremes of temperatures will necessarily be more felt, while in the valleys and cañons open to the coast and well protected from the north, a more mild and equable climate will result. At the same time, there is a greater symmetry in the main features of land and water the straight coast line and parallel mountain ranges, so the great ocean winds are probably less interfered with by local conditions, and there is a greater regularity of the seasons.

Geographical Conditions.

So far as the coast is concerned an increase in rain-fall and general humidity must be expected to the north, where the Arctic current is colder, the Japan current sweeps nearer to the shore and condensation consequently is greater; the east coast of Vancouver will be less humid than the west, from arrest of moisture by the mountains and forests of the island interior, and the shores of the mainland opposite will be more liable to rain and fog from the low temperature of the waters of the Gulf, which are mainly derived from the cold northern backwash, and from the propinquity of heavily timbered mountainous tracts.

It may be said then, that the climate of British Columbia, as a whole, presents all the features which are to be met with in European countries lying within the temperate zone, the cradle of the greatest nations of the world, and is, therefore, a climate well adapted to the development of the human race under the most favourable conditions.

The various local differences alluded to in general terms above, in relation to those causes which produce them, may now be more particularly described.

In the valley of the Columbia and throughout the Kootenay Districts which correspond, as has been seen, with the mountain belt of the Selkirks, the high average altitude renders the air rarified and bracing, the precipitation of moisture being greater on the eastern flank of the Rockies, but falling far below that of the coast. Regular meteorological returns have not hitherto been made from stations in this section of the country, but from observations taken by Lieut.-Col. Baker during some years' residence at Cranbrook, in the Upper Columbia Valley, the following data may be depended upon as fairly accurate:

Kootenay.

The rainfall averages from eighteen to twenty inches per annum, the lesser amount being experienced in East Kootenay, and the snow attains to a depth of from one to three feet, making a total precipitation of about twenty to twenty-four inches of moisture, according to locality.

The winters extend from December to March, snow not falling, to lie, earlier than the last week in December as a rule. Navigation on the Upper Columbia closes about the beginning of November; on the Arrow Lakes and Lower Columbia not till the end of that month; it opens again about the middle of March. The Kootenay Lake does not freeze over. During the winter the thermometer falls at times considerably below zero, and in summer rises as high as eighty or ninety degrees in the shade, the nights being always comparatively cool. The extreme cold is not severely felt and is of short duration, nor is the summer

heat exhausting as in the interior of the continent. Vegetation is rarely affected by drought, and although summer frosts occasionally cause damage in swampy localities, their effects are modified by drainage and cultivation.

Farther west, throughout the region of the Interior Plateau, a drier climate prevails, culminating in the bunch grass country immediately east of the Coast Range. Here luxuriant vegetation is entirely confined to the borders of the lakes and water courses, while the higher benches and round topped hills present the characteristic semi-barren appearance of this class of pasture land. The rain and snow-fall is very moderate, total precipitation averaging from seven to twelve inches according to locality. The winter is confined to eight or ten weeks' frost, when the thermometer falls to zero, and in severe seasons considerably below. The average is not extreme nor are the cold spells protracted. The summers, like those of Kootenay, are warm during the day with cool evenings. As the mean elevation is some 1,500 feet, the air of the Interior Plateau is clear and bracing.

A Dry Belt.

South of the Shuswap Lake, a climate is experienced typical of the milder and more moist conditions which prevail in the wide depressions once formed by glacial lakes, and which may be said to present a mean between the dryness of the true bunch grass country and the humidity of the coast. The timber is here plentiful but scattered, vegetation is varied and luxuriant, the rainfall sufficient to obviate the need of irrigation; the winter and summer not appreciably differing from that of Central Europe.

In the narrow valleys which traverse the Coast Range a climate is found which once more calls for special remark as presenting features of some interest and peculiar to these situations. At Spence's Bridge, on the Fraser, a characteristic point, a meteorological station has been established for some years and accurate data of this class of climate obtained. Sheltered as these cañons are from the cold northern winds, they admit the warm breezes of the coast and upon their sides the sun's rays are concentrated with almost tropical intensity. A temperature much warmer than would be expected is the result.

Canons of the Coast Range.

No sooner is the Coast Range crossed than an entirely new order of things becomes manifest, indicating a great change in climatic conditions. Vegetation is extraordinarily luxuriant, forests are everywhere, the undergrowth impenetrably dense. The reason of this is at once apparent when it is seen that the rain-fall attains to some seventy inches, increasing as you proceed north and come more within the immediate influence of the Japan current, to over a hundred inches. The winters are shorter and much less severe, nor are the summers so hot as those of the Interior; yet, owing to the increased amount of moisture in suspension, extremes, such as they are, make themselves more felt by the inhabitants. Still no on can call the climate of the coast of British Columbia an unhealthy or uncomfortable one. Equable, sunny and with a singular absence of storm or tempests, the vicissitudes of life, so far as they depend upon climate, are perhaps less accentuated here than in most parts of the globe.

West Coast and Islands.

As was previously stated above in the general account of the climate, the driest point on the coast is seen to be the south-eastern extremity of Vancouver Island, which includes Victoria, and is represented by the observations taken at Esquimalt. To speak more generally of the climate in this section, the nights, even in

the height of summer, are invariably cool, more so than is ordinarily experienced in England during spells of warm summer weather. The harvest time is rarely unsettled so that until recently, many years had elapsed since damage was incurred in reaping the crops. Winters occur every now and then during which, from the absence of northerly winds, no perceptible degree of frost is experienced, and geraniums and other delicate plants can be grown in the open air. Such severe weather as is met with comes usually in short spells during the months of January and February.

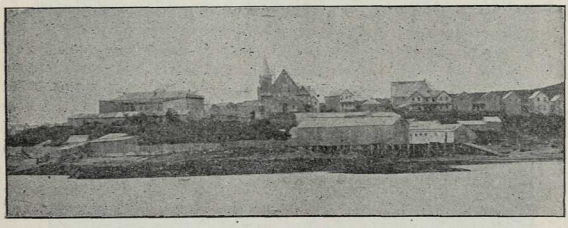
Local fogs prevail over the water during the early spring and late autumn, chiefly in November, when they are sometimes a serious hindrance to navigation. The tides of the coast, between Vancouver Island and the Mainland, as they flow through narrow channels at the northern and southern extremities of the Island (Seymour Narrows and San Juan de Fuca Straits) are very eccentric, and cannot be reduced to a fixed table. For similar reasons the currents and tide-rips which prevail among the islands of the coast are somewhat perplexing and require local study. Wind storms are rare and the shipping suffers little damage on that account.

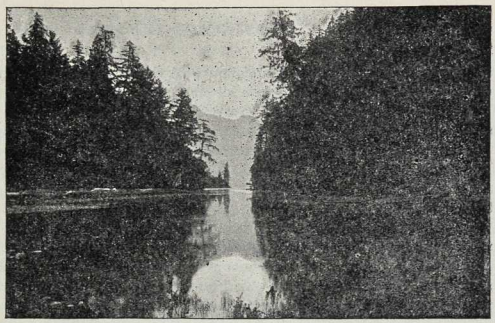
Fogs and Tides.

In this portion of the Province the higher latitude is responsible for a correspondingly severe climate. In Cariboo and through the Chilcotin country the winters are, for instance, somewhat longer and colder than those experienced in the Okanagan and Columbia Valleys. At Barkerville, in the first named district, the mean January temperature has averaged, for the last four years, 19°, that of April 34°, of July 54°, and October 40°. This, considering the altitude and situation which corresponds with that of Central Russia, is not extraordinarily severe, indeed is very moderate as compared with the interior of the Continent of America far to the south.

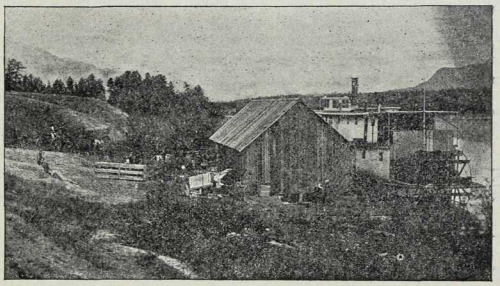
Northern Interior.

NOTE.—The foregoing has been taken from the very excellent description of British Columbia climate contained in the official handbook entitled "British Columbia, Its present Resources and Future Possibilities."

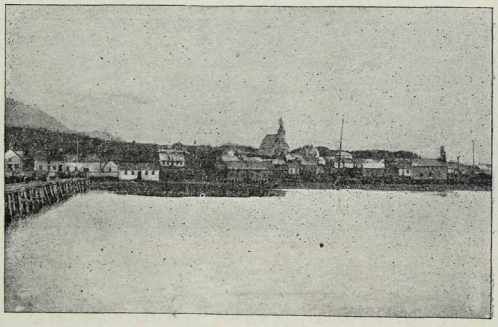




FREDERICK ARM.



"SAM'S LANDING" AND STAGE—KOOTENAY.



FORT SIMPSON.

COMPARATIVE TABLE OF TEMPERATURE.

Showing mean highest, mean lowest, monthly mean, and average for twelve months, 1896, at:—

		Esquimalt.	Kuper Island.	French Creek.	Port Simpson.	Abbottsford.	Agassiz.	Spence's Bridge.	Mission Valley.	Fort Steele.	Barkerville.
		°	°	°	°	°	°	°	°	°	°
January	Mean highest	42.9	43.1	40.4	34.5	40.5	37.0	29.8	30.0	30.4	19.4
	Mean lowest	33.82	33 3	30.1	22.4	27.7	27.9	16.8	14.1	12.4	5.8
	Monthly mean	38.2	36.60	35.24	28 57	34.13	32.45	23.27	22.08	21.41	12.63
	Average	38.2	36.6	35.2	28.6	34.1	32.4	23.3	22.1	21.4	12.6
February	Mean highest	46.8	46.4	45.2	42.0	47.1	47.2	40.7	40.1	40.4	31.0
	Mean lowest	37.07	34.8	32.0	28 8	32.9	35.9	25.5	19.9	21.0	19.6
	Monthly mean	41.4	39.05	38.87	35.39	40.0	41.57	36.09	30.6	30.70	25.28
	Average	41.5	39.1	38.9	35.4	40.0	41.6	36.1	30.0	30.7	25.3
March	Mean highest	48.0	47.7	46.5	42.7	49.1	50.6	49.3	46.9	43.0	30.0
	Mean lowest	34.06	31.1	29.3	27.3	30.2	33.4	25.9	18.1	20.1	12.1
	Monthly mean	40.5	38.22	37.93	38.85	39.66	40.19	37.76	32.46	31.54	21.03
	Average	40.6	38.2	37.9	35.8	39.7	40.2	37.6	32.5	31.5	21.0
April	Mean highest	53.1	53.6	52.2	48.0	54,1	55.6	60.1	56.7	54.2	40.8
	Mean lowest	38.67	39.9	35.1	31.1	35.2	36.9	34.62	28.3	30.1	25.2
	Monthly mean	45.2	47.7	43.61	40.43	44 61	44.72	47.35	42.50	42.13	33.02
	Average	45.3	47.7	43.6	40.4	44.6	44.7	47.4	42.5	42.1	33.0
May	Mean highest	58.5	60.3	58.9	54.6	61.4	62.2	69.4	63.4	62.6	50.4
	Mean lowest	43.11	40.7	39.6	36.3	42.0	43.5	41.4	35.7	37.6	32.7
	Monthly mean	49 7	50.86	49.27	48.27	51.68	50.63	55.39	49.53	50.09	41.53
	Average	49.7	50.9	49.3	48.3	51.7	50.6	55.4	49.5	50.1	41.5
June	Mean highest	65.0	68.5	66.0	57.0	69.4	71.7	80.1	76.2	78.1	61.5
	Mean lowest	48.1	46.3	45.2	42.4	48.7	46.2	49.0	40.0	40.6	37.9
	Monthly mean	55.51	57.57	55.62	51.90	59.03	56.05	64 57	58.19	59.36	49.72
	Average	55.5	57.0	55.6	51.9	59.0	56.0	64.6	58.2	59.4	49.7
July	Mean highest	70.8	75.5	75.7	63.4	8c.2	82.2	89.3	83.4	85.8	73.9
	Mean lowest	51.0	51.8	51.4	47.7	52.9	51.4	58.1	46.6	48.7	44.6
	Monthly mean	60.34	64 35	63.56	58.07	60.58	65.77	73.72	65.04	67.28	59.25
	Average	60.3	64.4	63.6	58.1	66.6	65.8	73.7	65.0	67.3	69.3
August	Mean highest	68.0	74.0	74.3	64.8	74.1	82.3	87.9	79.4	81.2	72.8
	Mean lowest	50.9	51.8	50.4	47.2	52.3	50.3	56.8	45.0	44.7	41.4
	Monthly mean	58.20	61.24	62.31	57.83	63.20	62.09	72.36	62.20	62.95	57.11
	Average	58.2	61.2	62.3	57.8	63.2	62.1	72.4	62.2	62.9	57.1
September	Mean highest	60.6	65.1	65.0	60.8	67.3	71.3	73 0	61.8	67.6	62.9
	Mean lowest	44.5	44.9	43.1	43.2	45.1	41.7	48.8	34.1	36.2	32.8
	Monthly mean	51.44	52.78	54.04	53.48	56.19	53.99	60.90	50.98	51.90	47.76
	Average	51.4	52.8	54.0	53.5	56.2	54.0	60.9	51 0	51.9	47.9
October	Mean highest	55.8	50.8	55.8	54.4	59.2	65.3	64.4	54.6	50.2	47.1
	Mean lowest	42.4	40.0	38.3	40.2	40.2	40.4	41.2	30.5	27.1	31.8
	Monthly mean	48.11	46.82	47.08	47.89	49.67	51.92	52.80	42.54	43.16	38.47
	Average	48.1	46.8	47.1	47.9	49.7	51.9	52.8	42.5	43.2	39.5
November	Mean highest	40.5	39.3	38.5	35 1	37.1	34.5	26.6	27.7	20.9	13.2
	Mean lowest	33.1	29.2	20.8	20.1	24.1	24.7	10.6	13.7	6.4	2.8
	Monthly mean	36.77	31.13	32.62	28.18	30.60	29.06	18.62	20.70	16.65	5.20
	Average	36.8	31.1	32.6	28.2	30.6	29.1	18.6	20.7	16.7	5.2
December	Mean highest	46.8	40.2	40.8	48.1	44.9	45.6	42.6	32.0	35.8	32.7
	Mean lowest	38.5	37.1	36.7	33.0	33.7	34.4	28.0	24.6	24.1	19.4
	Monthly Mean	42.83	41.25	40.76	39.94	39.29	39.98	35.34	28.64	29.95	26.03
	Average	42.8	41.3	40.8	39.9	39.3	40.0	35.3	28.6	29.9	26.0
Annual mean		47.37	41.25	46.74	43.82	47.89	47.37	48.16	28.64	29.95	34.84
Average mean		47.4	47.3	46.7	43.8	47.9	47.4	48.2	42.1	43.1	34.8

AVERAGE MONTHLY AND ANNUAL RAINFALL AND SNOWFALL

In inches at ten principal stations in British Columbia, derived from a group of years:

		Esquimalt	Kuper Island.	French Creek.	Port Simpson.	Abbottsford.	Agassiz.	Spence's Bridge.	Mission Valley. 1896	Fort Steele.	Barkerville.
January	Rainfall	4.21	8.55	4.50	8.11	5.13	5.22	0.72	0.38	0.66	0.34
	Snowfall	12.9	31.4	16.0	15.3	7.8	20.7	4.8	9.2	9.7	26.2
February	Rainfall	2.87	4.50	2.19	7.27	3.76	5.42	0.20	0.00	0.05	0.17
	Snowfall	10.7	2.0	9.6	15.5	9.4	12.6	6.5	13.0	5.4	24.3
March	Rainfall	2.72	2.28	3.24	5.86	5.22	5.16	0.39	0.01	0.63	0.08
	Snowfall	1.1	6.0	0.7	6.3	2.1	3.1	0.6	1.0	3.0	18.1
April	Rainfall	2.98	1.68	1.15	5.8	5.31	5.45	0.50	0.50	0.94	0.51
	Snowfall	0.1	.....	0.2	5.7	0.1	0.4	.....	.....	2.1	16.3
May	Rainfall	1.84	1.64	2.60	4.57	4.38	4.85	1.10	1.52	1.64	2.22
	Snowfall	.....	.....	.....	0.1	.....	.....	.....	.....	.....	2.3
June	Rainfall	1.19	0.88	1.37	4.56	3.96	3.97	0.74	0.93	1.32	3.13
	Snowfall	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.3
July	Rainfall	0.35	0.27	0.80	5.20	1.29	1.35	0.36	0.22	1.02	2.76
	Snowfall	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
August	Rainfall	0.52	0.17	0.44	7.79	1.33	1.62	0.40	0.51	1.05	3.02
	Snowfall	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
September	Rainfall	2.50	1.23	2.76	10.02	5.12	5.25	0.88	0.15	1.92	3.18
	Snowfall	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.3
October	Rainfall	3.03	2.56	2.46	12.71	5.50	6.56	0.63	0.65	0.62	1.45
	Snowfall	0.6	.....	.....	.....	.....	.....	.....	.....	0.4	9.7
November	Rainfall	6.95	6.06	4.62	13.61	7.81	8.24	0.51	0.37	0.96	1.01
	Snowfall	3.2	9.7	6.6	1.7	2.8	4.5	8.3	11.5	12.2	25.9
December	Rainfall	8.20	8.41	5.20	10.90	7.51	8.67	0.44	0.28	0.59	0.07
	Snowfall	2.4	3.0	3.8	15.4	6.4	7.6	8.6	25.0	7.2	36.8
Year	Rainfall	37.47	38.23	31.46	96.28	56.32	61.96	6.87	5.52	11.30	17.94
	Snowfall	31.0	52.1	36.9	60.00	28.6	48.9	28.8	59.7	40.00	161.2

COMPARATIVE TABLE OF THE AVERAGE RAINFALL

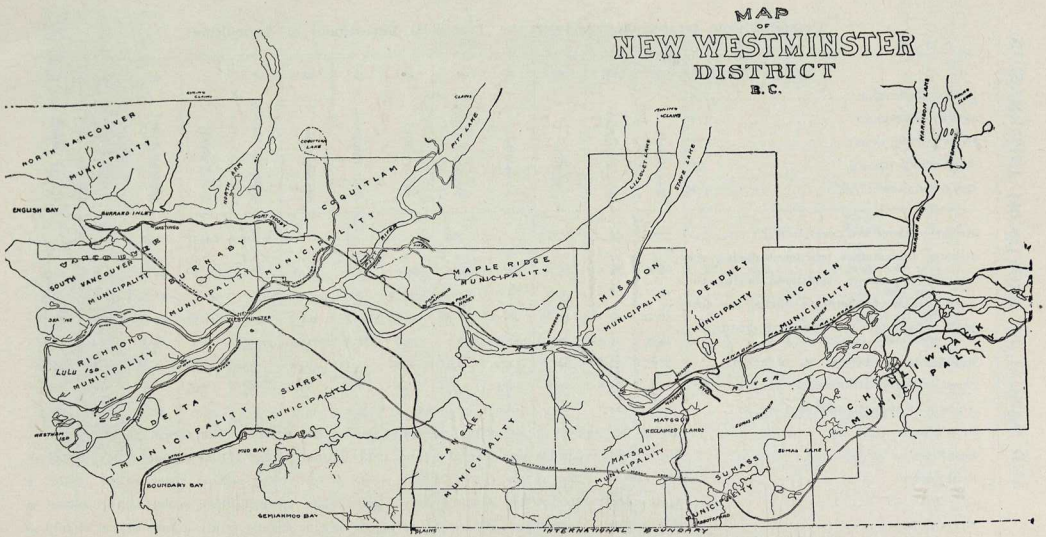
In inches at ten principal stations in British Columbia in the months April to September, derived from a group of years:

	Esquimalt.	Kuper Island.	French Creek.	Port Simpson.	Abbottsford.	Agassiz.	Spence's Bridge.	Mission Valley.	Fort Steele.	Barkerville.
April	2.98	1.68	1.15	5.68	5.31	5.45	0.50	0.48	0.94	0.51
May	1.94	1.64	2.60	4.57	4.38	4.85	1.10	1.57	1.64	2.12
June	1.19	0.88	1.37	4.56	3.96	3.97	0.74	0.89	1.32	3.13
July	0.36	0.27	0.80	5.20	1.29	1.55	0.36	0.38	1.02	2.76
August	0.52	0.17	0.44	7.79	1.33	1.62	0.40	0.48	1.05	3.02
September	2.50	1.23	2.76	10.03	5.12	5.25	0.88	1.51	1.95	3.18

Meteorological Register for the year 1896, at Thirteen Stations in British Columbia.

Compiled from returns published by the Provincial Department of Agriculture.

	D Esquimalt.	D French Creek.	B Agassiz.	B Abbotsford.	A Spence's Bridge.	A Barkerville.	C Port Simpson.	B Hazelmere.	A Mission Valley.	A Fort Steele.	A Salmon Arm.	C Rivers Inlet.	E Kuper Island.
UPPER MAINLAND.....A LOWER MAINLAND.....B NORTH-WEST COAST.....C VANCOUVER ISLAND.....D GULF ISLANDS.....E													
Elevation above Sea Level, in feet.....	28	.....	52	.....	760	.....	26	.....	1,200	2,433	1,152	25	.....
Highest temperature registered during the year 1896.....	86.4°	88.0°	95.0°	93.0°	104.0°	84.0°	82.0°	89.0°	98.0°	100.1°	94.3°	90 0°	88.5°
Lowest temperature registered during the year 1896.....	16 7	8 0	9 0	3.0	—13.0	—30.0	3.0	—3.0	—17.0	—36.1	—21.5	12.7	10.5
Annual mean temperature during the year 1896.....	47.73	47.18	47.81	48.31	48.69	35.61	44.26	48.02	43.40	41.52	43.06	45.11	47.89
Mean daily range of temperature during the year 1896.....	13.5	17.1	20.1	18.3	23.2	19.6	15.5	21.4	25.7	26.3	23.5	13.2	16.6
Rainfall during the year 1896, in inches.....	38 77	33.71	64.70	54 12	2.44	8.01	71.14	46 06	5.52	10.18	7.87	95.55	45.12
Number of days of Rainfall.....	159	136	128	154	33	41	164	132	65	72	41	165	149
Amount of Snowfall, in inches.....	41.9	43.1	35.5	20.9	30 9	120.	70.0	19.9	59.7	34.0	87.5	101.4	77.3
First Frost.....	Oct. 5	Oct. 24	Sept. 7	Oct, 26	Oct. 22	Sept. 8	Sept. 25	Oct. 27	Sept 8	Sept. 14	Sept. 23	Oct. 25	Nov. 4
Last Frost.....	April 17	May 15	April 16	April 18	April 18	June 4	May 15	June 2	June 13	June 11	June 6	May 8	May 15
First Snow.....	Nov. 4	Nov. 10	Nov 11	Nov. 14	Nov. 9	Sept. 2	Nov. 30	Nov. 11	Nov. 11	Nov. 7	Nov. 11	Nov. 9	Nov. 4
Last Snow.....	April 7	April 28	Mar. 28	Mar. 28	Mar. 7	May 1	April 28	Mar. 27	April 14	Feb. 29	Mar. 4	April 29	Mar. 30
Warmest Day.....	July 21	July 14	June 26	June 26	July 15	June 20	July 22	June 26	July 6	July 6	June 28	June 26	July 14
Mean Temperature.....	70°10′	73°50′	73°50′	76°50′	85°25′	67°00′	71°67′	68°00′	76°50′	77°10′	77°15′	72°50′	72°70′


MAP
OF
NEW WESTMINSTER
DISTRICT
B.C.
NORTH VANCOUVER
MUNICIPALITY
ENGLISH BAY
BURRARD INLET
VANCOUVER
SOUTH VANCOUVER
MUNICIPALITY
BURNABY
MUNICIPALITY
COQUITLAM
MUNICIPALITY
PITT LAKE
MAPLE RIDGE
MUNICIPALITY
MISSION
MUNICIPALITY
DEWDNEY
MUNICIPALITY
NICOMEN
MUNICIPALITY
CHILLIWHACK
MUNICIPALITY
LULU ISL.
RICHMOND
MUNICIPALITY
DELTA
MUNICIPALITY
SURREY
MUNICIPALITY
LANGLEY
MUNICIPALITY
MATSQUI
MUNICIPALITY
SUMAS
MUNICIPALITY
ELMAS LAKE
PITT BAY
BOUNDARY BAY
SEMIAHMOO BAY
INTERNATIONAL BOUNDARY

A COAST TRIP.

IF a business man, worried by the ceaseless demands on his attention, and mentally and physically exhausted by close application to office work; if a student whose cheek has paled under the light of the midnight oil; if a man of leisure whose routine of social responsibilities and pleasurable pursuits has produced *ennui*; if a lover of sport and travel, keen for adventure, and his spirit restless for fresh trophies and a new arena; if a pupil in nature's school, eager to witness the operation of her laws in other and wider forms; if an artist, in whose soul burns the desire for subjects of sublime beauty and massive grandeur; if a collector of rare and interesting objects; if he belong to the *literati* and is thirsting for fresh fields and unhackneyed topics; if plunged in statescraft and wearied for the nonce by the ceaseless jar of opposing parties; if a professional man with brain and nerves tired and overworked; if no matter who—and can afford two or three weeks holidays, let us invite him to a pleasure excursion, the attractiveness of which among the many opportunities advertised for the summer season, is unequalled for novelty, healthfulness, interest and picturesque outlook—the trip *par excellence* of the American continent.

A Grand Holiday Trip.

Come for a two weeks' voyage along the west coast of British Columbia to Alaska. Free from the cares and conventionalities of every day life, and breathing the very air of heaven itself, you burst, like the Ancient Mariner, into an unknown sea filled with untold beauties, and sail over a bosom of waters unruffled as glass; among myriads of islands; through deep, rugged, rock-walled channels; past ancient Indian villages, mediæval glaciers, dark, solemn, pine-clothed shores, snow-capped peaks, dashing cataracts, yawning mountain gorges, spouting monsters and sea whelps—away to the north a thousand miles almost, to mix with the icebergs that once floated under the sovereignty of the Czar of all the Russias, but now drop peacefully from ancient glaciers over which the American eagle holds watchful guard—a continuous panorama in which the purest, the rarest, the wildest, the most beautiful, and the grandest forms of nature are revealed.

All this may be enjoyed under auspices of ease and comfort equal to that of your own home. The passage from Victoria to Vancouver affords only an inkling of the scenic effects that will be obtained for the next fourteen days. Leaving the inner harbour the boat swings out into the Straits of Fuca, and you get the first swell of the ocean, fifty miles to the westward. To the right is passed the historic island of San Juan. To the left Vancouver Island is in view. The Strait of Georgia is crossed at its greatest width. After San Juan is a succession of beautiful low lying and timbered islands. Midway is Active Pass, always a point of great interest and beauty, and which is now a popular summer resort. Having passed Point Roberts, the mouth of the Fraser River, Point Grey and through the Narrows into Burrard Inlet, Vancouver City is reached in about six hours' easy sailing. Right under the bold, high bluff of Brockton Point promontory are the remains of the

From Victoria to Vancouver.

old Beaver, the first steamer on the Pacific Ocean, which went to pieces on the rocks, and for some time before its final plunge lay the prey of teredo and relic hunters.

From Vancouver the steamer takes a straight cut of thirty miles across the Strait of Georgia, passing Nanaimo and Wellington, where the coal mines of Vancouver Island are located. From here for the whole length of Vancouver Island the steamer hugs its shore, and here, too, begins that maze of islands which continues in more or less bewildering profusion as far north as you go, gradually increasing in size and in character from low lying and heavily timbered to high, bold and rocky. The Strait of Georgia continues about seventy-five miles. The Mainland shore to the right is indented with numerous inlets or arms of the sea—Howe Sound, Jervis Inlet, Toba Inlet, Bute Inlet, and so on, up which, were there time to go, wonderful beauties would be disclosed. There are Indian reservations and logging camps and settlers found all along. Up Jervis Inlet is a quarry of excellent slate. Texada, thirty miles long, low and timbered, with a bold, rocky shore, and traversed by a ridge of rugged trap mountains, is on the Mainland side. It contains important gold, iron, marble, lime and other mineral deposits. To the left are Hornby and Denman, picturesque islands. Over these are seen the mountain ridges of Vancouver Island, the peaks of which here are the highest of the range. Point Holmes on the left, a bold promontory, is passed. From here to Comox the coast is low and heavily timbered inland, and here lies one of the most important coal measures of Vancouver Island, included in the E. & N. Railway belt. Opposite, in the direction of Desolation Sound, are numerous islands—Hernando, Cortez, Mary, and so on—upon some of which are settlers and logging camps. Over in the distance, on the Mainland, rise up the Cascade Mountains, range after range.

Up the Gulf of Georgia.

Now you creep closer to the Vancouver shore, and presently enter the celebrated Seymour Narrows, once in which, by reason of the high bluff shores, you are shut out from the view on either side. The Narrows proper are about 800 yards wide and about a mile and a half long, though Discovery Pass, to which it is the entrance, is about twenty-three miles long. At flood the tide runs from six to twelve knots an hour, and at ebb from six to eight, the flood and ebb running equal intervals of about six hours each, with about ten minutes still water. Valdez Island, lying at the entrance to Bute Inlet and forming the right shore of this channel, is a finely timbered island, with a number of logging camps on it, and some well-to-do ranchers on the benches back from the shore. The Euclataw, or Back Narrows, of almost equal note among navigators, on the other side of the island, are also very rapid, and dangerous as well. It was at this point where it was once proposed to bring the line of the C. P. R. through the Yellow Head Pass down Bute Inlet, and connecting with a line of railway to Victoria by bridging Seymour Narrows, the present proposed route of the British Pacific.

Seymour Narrows.

Just before entering the Narrows is a village of Euclataw Indians, once regarded as the worst of all the British Columbia tribes, and said to have been cannibalistic. Passing the mouth of Campbell River, you look up the fine Menzies Valley, and over westward on Vancouver Island are towering snow-clad peaks extending for miles. Sailing by Menzies Bay, you enter the Narrows, already described, which, after an exciting run, widen out into Johnston Straits.

Along here, on the Vancouver shore, are some beautiful beaches and snug coves and bays, and on the other side a group of small rocky islands—Helmcken, Hardwick, etc.—on the timbered benches of which is to be found the finest Douglas fir in the Province. The famous Bickley Bay logging camp is located on the back channel on Hardwick Island.

After having rounded Chatham Point the steamer gets in closer and closer to Vancouver Island, and the shores become more and more precipitous. Along Johnston Straits westward you steam past the mouth of Salmon River, where there are rapids and overfalls, with heavy sea. The straits widen out to about three miles, and now you are directly between the shores of Vancouver and the Mainland, the only place where they directly approach each other.

In Johnston's Straits.

This approximation continues ten or twelve miles, both shores being thickly wooded. On the Mainland side are Blinkinsop Bay and Port Neville. The former is a good harbour, with rocky, picturesque shore. The latter is an inlet seven miles long, up which first-class building granite is found. On the Vancouver shore, which presents a bold, rocky front, is the mouth of Adams River, just opposite which commences Cracroft Island, running twenty miles parallel with our course. At the south-east end of it is Port Hartney, a fine harbour.

Myriads of islands, large and small, are to be seen all along the Mainland side as far as Cape Caution, locally known as the Broughton Archipelago. The next point of interest on your left is Beaver Cove, which, in addition to being a good harbour, has an excellent milling site. A marble quarry has been located here. Back of Beaver Cove, extending to the great Nimkish Lake, is an extensive valley. Nimkish River, which is the outlet of the lake into Broughton Sound, Nimkish Lake and Kammutseena River, which empties into it, all afford the finest trout fishing in the Province. This district is a veritable sportsman's paradise, now much frequented for big game—elk, deer, panther, etc.—while the scenery is simply enchanting. From this point the centre of the Island is easily accessible.

Five miles above Beaver Cove we arrive at our first stopping place, Alert Bay, on Cormorant Island, just opposite the mouth of Nimkish River. It is very prettily situated, and is a favourite calling place both up and down. Here are an

Alert Bay.

Indian village with a population of 150 or so, whites included, a salmon cannery, a sawmill and two stores, an English Church Mission and an Industrial School. Here the salmon canners have turned their attention to canning clams, which abound in the neighbourhood.

The first thing which strikes the tourist's eye on rounding into Alert Bay is the Indian burial ground, on the south point on the right hand entering the bay. It is fantastically decorated with streamers and flags of different colors, and a variety of grave fences and epitaphs. The next thing which particularly attracts a stranger is a fine totem pole, about thirty feet high, beautifully painted and carved, which guards the entrance to the present chief's house.

Cormorant Island possesses coal formations. Near it are several rocky islets, upon which discoveries of silver and copper have been made. Farther up is passed Haddington Island, all one quarry of the finest building stone, out of which the stone for the new Parliament Buildings was taken; and still farther on is Malcolm Island, agriculturally the best piece of land on the coast. At this point in our trip we are beginning to lose the companionship of the Douglas fir,

which has been abundantly with us from the outset, finding instead forests of hem lock, spruce, red cedar, cypress, birch, and alder, which prevail more or less for the rest of our journey. Opposite Malcolm Island is Port McNeill, boasting a commodious harbour. The country all along here comprises coal measures, which extend for twenty-five miles through to the west coast. Three miles beyond Broughton Straits we enter Queen Charlotte Sound, where the ocean swell is already noticeable, and skirting the north-east coast of Vancouver Island, we put in at the historic Fort Rupert, twenty-one miles beyond Alert Bay.

Fort Rupert

It consists of the old Hudson's Bay fort, and a large Indian village, situated on a long open beach of shingle and shells, which gives it a white, snowy look. There are no wharf accommodations, and consequently it is only in cases of absolute necessity that steamers call here, in which case communication has to be made with the shore by boat or canoe. On two occasions this huge village has been shelled and laid in ashes by gunboats sent to demand the surrender of murderers among them.

Twenty miles beyond Fort Rupert we enter the Galiano Channel and pass Galiano Island, and into Queen Charlotte Sound; thence through Christie Passage, where for the first time we receive the full sweep of the Pacific Ocean, and sniff the salt sea breeze. In the next two hours the steamer has to buffet the long rolling sea from Queen Charlotte Sound, and, heading north-westerly in the direction of Cape Caution, we encounter a low-lying, rocky shore, where are dangerous sunken reefs. Cape Caution is appropriately named, as in its vicinity are innumerable rocks and shoals, requiring great caution on the part of the navigator. This brings us to the entrance to Fitzhugh Sound, and on the right is Rivers Inlet.

The Scenery on the Way.

During the time since starting up the Straits of Georgia we have not omitted to note the scenery, which, though not on so magnificent a scale as that yet to come, has been nevertheless peculiarly charming. It has been one long series of subjects for the artist, in which rare and elusive effects have entered—marine sketches, land and water combinations, here depressed and there bold and broken shores, backed by recurring benches densely timbered, and away over all, far off and high up, have risen majestically the tops of the Coast Range of mountains ridging the entire length of Vancouver Island on one side, and the might, peaks of the Cascades of the Mainland on the other, giving, on the whole sweep of vision, that indefinable charm which "magnificent distance" alone can lend. Leaving out the few tide rips, which you experience with delight, you have been gliding, not propelled, over water as smooth as glass, and at times your impressions have been dreamlike—now weird and solemn, and again exhilarating. Sea fowl innumerable—gulls, ducks, geese, and others—have kept you company, and occasionally, sometimes frequently, the attention of the party has been diverted to a spouting whale, or a swarm of porpoise, and even land animals, which are to be seen once in a while from the deck. To Rivers Inlet, our next objective point, we will have covered some 350 or 400 miles, and our promises so far have been more than fulfilled.

Now we have entered a distinctly new phase of our trip. We are going north, with the ocean and scattered islands on the left of us, and the Mainland on the right. Leaving Cape Caution and passing Smith's Inlet, a few miles on we enter Fitzhugh Sound, and steam up Rivers Inlet. This was named Rivers

Canal by the great Vancouver. Our friends will have recognized in the names of the islands passed some time ago—Hernando, Cortez, Texada, Valdez, and so on—historic memories of early Spanish explorers and navigators, who held the coast for a time conjointly with the British, but, as usual, the christening, which remained with British ascendancy, was done by Vancouver over a hundred years ago.

Rivers Inlet.

Rivers Inlet runs up about thirty miles. At the entrance and for several miles up, the sides of the Inlet, which is only one to one and a half miles in width, are steep and covered with dense forests of spruce and cedar. At the head of the Inlet the sides mount up abruptly for about 2,000 feet, and are almost bare of verdure through the action of landslides and avalanches. In this Inlet are seven canneries, a sawmill and a station, formerly used as a salmon saltery. One peculiarity of the salmon run here is that it never, or very rarely, fails. Rivers Inlet is a strikingly pretty place. We travel from here up Fitzhugh Sound, on the right shore of which is to be seen Namu Harbour, where Messrs. Drany & Shotbolt have a cannery, and enter Bentinck Arm, at the head of which are situated the Bella Coola Indians. There is an Indian village here. John Clayton, a trader, and family reside here and keep a store. He has, as well, a large stock ranch. There is a large extent of agricultural country here, where a prosperous colony of Norwegians have settled. The Bella Coola Valley affords the easiest and best route into the Chilcotin country. From here you pass into Lama Passage, where the Bella Bella Indians reside. They have a large, beautiful village, with several stores and a resident missionary. This was the old Fort McLaughlin of Hudson's Bay Company days. Leaving Bella Bella, we sail into Millbank Sound, and enter Graham Reach, passing along the inside of Princess Royal Island, which has high, bluff, rocky shores, and thence through various passages we reach the mouth of the great Gardner Inlet.

Gardner Inlet.

The sail up this discloses the most wonderful scenery on the route. The shores are thousands of feet high and almost perpendicular, lending a grandeur and impressiveness to the scene almost indescribable, while magnificent waterfalls and glaciers are to be seen. Perhaps there is not on the whole western coast of America scenery which quite equals it in its way. Captain Vancouver, who explored this channel over a hundred years ago, described its beauties most graphically. At its head is situated the Kitlupe tribe of Indians, after whom the Inlet is sometimes called. Almost parallel with Gardner Canal is Douglas Channel, the extension of which is known as Kitimat Arm. At the head of this arm there is considerable good land and a pass into the interior. Kitimat Arm is similar in the massiveness and beauty of its scenery to Kitlupe Inlet, but differs in the character of detail. The shores, which are wooded with hemlock, spruce and cedar, are not so abrupt, but are bounded with lofty ranges of mountains running parallel to each other.

A Beautiful Landscape.

Going out of Gardner Canal we enter Grenville Channel, which is ninety miles long, passing along Pitt Island. Here the scenery is extremely picturesque, with adjacent bare walls of rock and high distant peaks. At Lowe Inlet, off the channel, is an Indian station and a cannery. The general effect of so many mountains rising one above the other, renders Grenville Passage one of the most beautiful landscapes on the coast, and is equalled only by Klemtoo Passage.

It was omitted to state that on Gribbell Island, at the mouth of Gardner Inlet, is a very fine hot spring. Through Grenville Channel, on Pitt Island, China Hat is passed. This is an Indian village, with the usual missionary and trader.

Lowe Inlet is the residence during the fishing season of the Kitkahtla Indians, whose chief is the far-famed Sheiks. Chief Sheiks has a monopoly of the fishing here, and with a seine net in the bay, often hauls in from 2,000 to 3,000 salmon a day, for which he gets the highest market price. We have already passed Hartley Bay, where there is a sawmill and an Indian village. And now we are at the mouth of the Skeena River, and take Telegraph Passage, passing the well known Standard cannery.

The Skeena River, the mouth of which we have entered, is the largest river on the British Columbia coast except the Fraser, and takes its rise several hundreds of miles in New Caledonia, near Babine Lake. It is the route into the gold country of Omineca. The scenery up to Hazleton and beyond is not unlike that of the Fraser, and in some places quite equals it. Its rugged canyons and fierce rapids require skilful navigation. It is to the Forks of the Skeena where one of the alternative surveys for the C.P.R. was run, and here in 1866 the Western Union Telegraph Company reached with a line which was to connect overland, by crossing Behring Straits, with a Siberian line, when the news of the Atlantic cable being laid was received, and the scheme was abandoned. We, however, only explore the mouth of the wonderful river as far as Port Essington. In it are located a number of salmon canneries and three sawmills, the timber used being red cedar, cypress, hemlock and spruce. There is an Indian village here and a church. The view from any point here is very fine, and there is a great deal to interest tourists. The shores are heavily wooded, with mountainous back-ground, and potatoes and berries of all kinds are very plentiful.

The Skeena.

Leaving the Skeena, we pass out into Chatham Straits, and, rounding the Tsimpsean Peninsula, soon arrive at one of the most noted places on the coast, Metlakahtla, a very prettily situated Indian village about twelve miles from the Skeena.

This at one time used to be a veritable beehive, under the management of Rev. Mr. Duncan, a missionary sent out in the early days by the Church Missionary Society of London, England. He had a sawmill, a woollen mill, a cannery, a brickyard, a boys' home, a girls' home, an industrial school, and many other means of keeping the Indians employed. Later on the Home Society sent out Bishop Ridley (the Bishop of Caledonia), to take charge and look after the Society's interests. This caused a strife between two factions, which arose, some siding with Duncan and others with the Bishop, which ended in Duncan leaving with his adherents for a new settlement some thirty miles above Fort Simpson, called New Metlakahtla. The boys' and girls' homes are still running, and the industrial school is doing good work.

Metlakahtla.

Their houses, until lately, were all built in one style, a lofty two-story building, which, if divided up, would contain about eight or ten rooms, and each one has a nice little garden patch laid out in fruit trees and vegetables, which have been much neglected of late, but, nevertheless, gooseberries, raspberries, currants and strawberries thrive here wonderfully. The Church of England, built by Mr. Duncan, is a beautiful piece of work, and is the largest and most

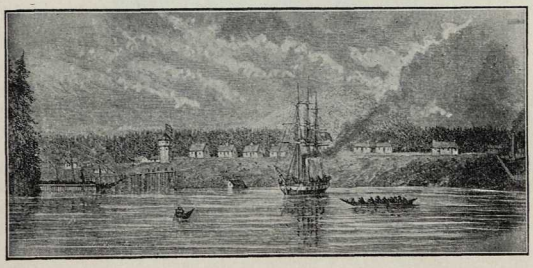
Anglican in appearance in the Province. The Indians are very musical, and have a brass band, and in almost every other house is an organ. The church organist is an Indian. Metlakahtla is situated on the great Tsimpsean Peninsula, inhabited by the once mighty Tsimpsean nation of Indians, of whom those at Metlakahtla and Fort Simpson are notable examples.

A few miles farther north, the chief of the Hudson's Bay Company's trading posts, is a populous Indian village, situated on an excellent harbour, which was once also an aspirant as a terminus of the C.P.R. by way of the Forks of the Skeena. Even here there was an incipient boom in town lots, looking in the direction of another railway. The Hudson's Bay Company have a large store here, where anything can be procured, from a needle to the latest pattern Winchester rifle. There is also a wharf, about a quarter of a mile long, and a warehouse at the extremity. The harbour here affords excellent anchorage at any depth up to thirty fathoms, with good mud and sand bottom. The rise and fall of the tide is from eighteen to twenty feet, and on this account considerable of the shore is dry at low-water tide. The Metlakahtla Indians are first cousins to the Fort Simpsons, with whom they intermarry. The latter, however, are Methodists. They have a church, two school houses, a fire hall, two stories with a tower, a two-story drill hall, a sash and door factory, a shingle mill, worked by water power, a turning mill, worked by water power, a boys' home, a girls' home, also an excellent mission house, and a hospital. They have also an excellent brass band.

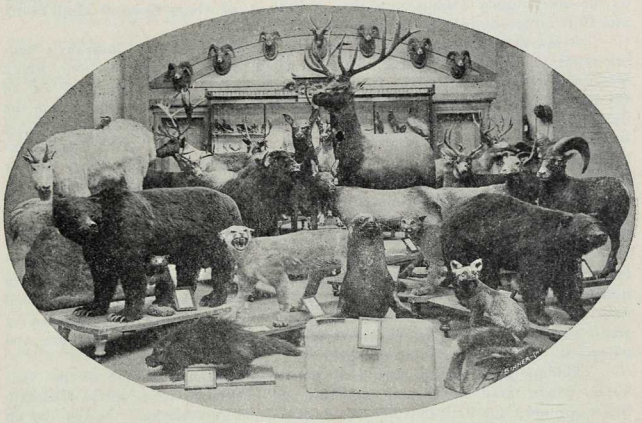
Fort Simpson.

Bidding good-bye to Fort Simpson, we sail past the mouth of the Naas River, where there are several canneries and imposing views, across Chatham Strait, around Cape Fox, into Dixon's entrance and into Alaska. On the way up we sail by Tongas Islands, the home of the Tongas Indians. In Tongas is where Mr. Duncan has established his celebrated mission, New Metlakahtla. On the way up we visit Sitka and Juneau, and circle around among numerous channels, and enter several noted glacier bays. This is the land of the midnight sun, and a great attraction to American tourists. However, for diversity of scenery, for beauty, and for interest, apart from icebergs and glaciers, it contains nothing which will outrival, or, some might even say, compare with the route just passed over, wholly in British Columbia waters and in Canadian territory. Here ends the journey and the homeward trip is made.

Into Alaska.



NANAIMO IN 1860.



B.C. MAMMALS IN PROVINCIAL MUSEUM.

HUNTING BIG HORN ON ASHNOLA MOUNTAINS.

MAMMALS OF BRITISH COLUMBIA.

From a sportsman's point of view this Province is decidedly an interesting field as well as a very rich and wide one possessing as it does many varieties of game and presenting by reason of its extent and rugged exterior those physical obstacles to success which are the real stimuli to the true sportsman. Notwithstanding the somewhat stringent game laws which have existed there has been an indiscriminate and wasteful destruction of, especially, big game. Owing to wide extent of practically unorganized territory with sparse population and the number of Indians, who slaughter for the heads and hides, the law is difficult of enforcement.

Destruction of Big Game.

One element of protection exists in the fact that the rugged and mountainous interior affords a retreat for game which only the most adventurous sportsman can hope at times to reach. Mining development will tend to dispersion, but it may be safely premised that it will be many, many years to come before prospector and miner, to whom no spot on earth may be said to be sacred or inaccessible, will have dislodged it.

BIRDS OF BRITISH COLUMBIA.

Biologically, of course, the animals of British Columbia differ from the same varieties in other parts of the world in the measure that local conditions have affected their development, and the differentiation in many instances is marked. Speaking generally, it may be said that things are on a larger scale on the western than on the eastern slope of North America—higher mountains, larger trees, bigger animals. Compared with similar latitudes, the environments, perhaps, are more favourable to growth.

Local Characteristics.

With reference particularly to birds, though it may be questioned to what extent plumage is affected by local conditions, the distinction is noted that the forms are larger and darker than in the east. The humidity of climate and the density of forest no doubt account for the fact. One special feature may be noted, and the circumstances referred to are quite consistent, and that is the absence of singing birds. There are comparatively few native songsters. An effort is being made to introduce foreign varieties, and as the country is opened up and cultivated conditions will become more favourable. Few forms of bird life are to be met with in the deep woods, these being mainly found in the open stretches on the Coast and throughout the Interior.

As might be anticipated from the irregular and deeply indented sea-coast and the extent of streams and lakes throughout the Province, there are numerous water-fowls. There are no native pheasants, but the one variety introduced from China *(Phasianus torquatus)* has thriven and is quite abundant in the southern end of Vancouver Island. They have, however, many enemies besides man, the worst of which is the owl. During the latter part of 1896 and early in the present year owls were unusually abundant, having probably been driven from the north by the early severe cold.

Pheasants.

FOREST WEALTH.

NATURALLY in the consideration of the economic products of British Columbia comes the timber wealth. Apart from minerals it represents the most important and most readily available results. British Columbia may now be said to possess the greatest compact area of merchantable timber on the North American Continent, and if it had not been for the great forest fires that have raged in the interior in the years gone by, during which a very large portion of the surface has been denuded of its forest, the available supply would have been much greater than it is. This was an exigency, which, in the unsettled state of the country, could hardly have been provided against, if at all. However, as the coast possesses the major portion of the choice timber and that which is most accessible, the ravages of fire have not had, by reason of the dense growth and the humidity of the climate, any appreciable effect on that source of supply.

As far north as Alaska the coast is heavily timbered, the forest line following the indents and river valleys and fringing the mountain sides. Logging operations so far have extended to Knight's Inlet, a point of the coast of the mainland opposite the north end of Vancouver Island. Here the Douglas fir, the most important and widely dispersed of the valuable trees, disappears altogether, and the cypress, or yellow cedar, takes its place. North of this, cedar, hemlock and spruce are the principal timber trees. It will be of interest to know that Douglas fir (*Pseudo-tsuga Douglassi*) was named after David Douglas, a noted botanist who explored New Caledonia in the early twenties of this century. It is a very widely distributed tree, being found from the coast to the summit of the Rocky Mountains and as far east as Calgary and as far north as Fort McLeod. On the coast it attains immense proportions, is very high and clear of imperfections, sometimes towering three hundred feet in the air and having a base circumference of from thirty to fifty feet. The best averages, however, are one hundred and fifty feet clear of limbs and five to six feet in diameter. This is the staple timber of commerce, often classed by the trade as Oregon pine. It has about the same specific gravity as oak, with great strength, and has a wide range of usefulness, being especially adapted for construction work. It is scientifically described as standing midway between the spruce and the balsam, and in the opinion of Prof. Macoun, the Dominion naturalist, is a valuable pulp-making tree.

Douglas Fir.

Perhaps the next two most important representatives of our forest wealth

are the red cedar *(Thuya gigantea)* and the yellow cedar *(Thuya excelsa)*. The former is found all over the Province, but reaches its greatest development on the coast, where it out-girths all others. In addition to its commercial value for shingles and finishing purposes, it is the friend of the settler, inasmuch as out of its straight-grained logs he can build his house, make his furniture and fence his farm, and that with the use of the most primitive of tools only—an axe, a saw, and a froe. It is especially valuable, however, for interior finishing, being rich in colouring and taking on a beautiful polish. For this purpose it is finding an extended market in the east of Canada, and no doubt its merits will soon find appreciation far beyond these limits. Important as the red cedar is, the yellow cedar, though much more limited in area and quantity, is still more important, and I was going to say useful. It is very strong, comparing with the Douglas fir in this respect, is wonderfully durable, finishes to perfection, and grows to great dimensions. Lying farther north, it will not be probably as soon in demand as the more ubiquitous red variety, but is already occupying attention. During the past year an extensive timber limit was disposed of in England, and a company has undertaken its manufacture. The cypress, which is found in great quantities in the interior of Vancouver Island, and on Mount Benson, near Nanaimo, comes within 1,200 feet of the sea. Towards the end of the island on Queen Charlotte Islands, and on the north coast of the Mainland, it is found lower down and is very plentiful.

Red and Yellow Cedar.

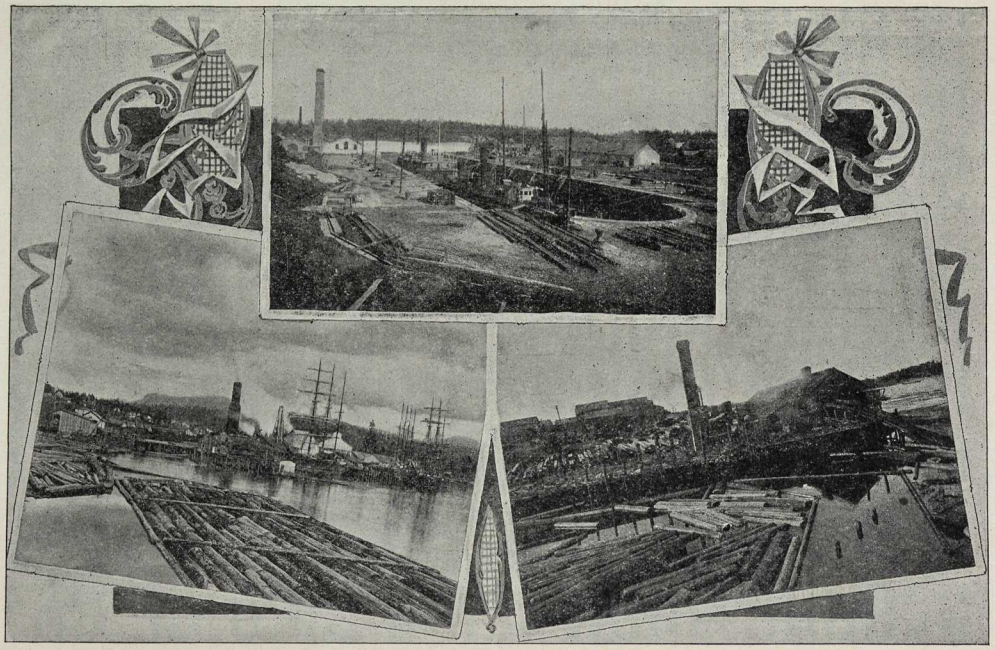
It is out of the cedar that the Hydah Indians build their celebrated war canoes, some of which have an eight-foot beam, are sixty feet long and can stem the heaviest seas of the coast waters.

Coming next in usefulness—and, economically considered, this may be taken exception to, as there are many who will class it as the most useful of all our timbers—is the white spruce *(Picea Sitchensis)*. Its habitat is principally low, swampy and delta lands, usually interspersing the forest of fir and other trees, but in no place is it found in very large or compact bodies. From its comparative scarcity and the many uses to which it may be put, it is commercially more valuable than the Douglas fir, to which it is first cousin. It attains a circumference almost equal to the latter, but does not grow so tall or so clear of branches. It is utilized largely for making doors, finishing, salmon boxes, barrels, fruit cases, and many other similar purposes, being, as it is, the best adapted for these uses of all the native timbers. It is *par excellence*, too, the wood for pulp manufacture, which some day or other will be one of the most important industries of the Province, and concerning which more may be said at a later date. It increases in quantity as you go northward.

Hemlock *(Tsuga mertensiana)* is a common timber, and up the coast is found in considerable quantities. It is a useful tree, and answers about the same purposes as the Douglas fir. For that reason it will not be in general demand until the latter has become to some extent exhausted. White Pine *(P. monticola)* for cabinet purposes and general utility is very valuable, but is limited in quantity. Balsam *(A. grandis)* is widely distributed, being found principally in river valleys, but is commercially of little value, except for pulp. With the exception of the yew (*Taxus brevifolia*) and tamarack, of which there are several varieties, principally (*L. occidentalis*), the foregoing are the representatives of the family of coniferous trees.

Other Timbers.

Of deciduous trees, the large leaf maple *(Acer Macrophyllum)*, vine maple



BRUNETTE SAW MILL, NEW WESTMINSTER. ESQUIMALT DRY DOCK. SAYWARD MILLS, VICTORIA.

(Acer circinatum), alder *(Alnus rubra)*, crab apple *(Pirus rivularis)*, oak *(Quercus Garryana)*, two varieties of poplar or cottonwood *(Populus balsamifera)* and *(trichocarpa)*, aspen poplar *(Populus tremuloides)*, arbutus *(Arbutus Menziesii)*, birch *(Betula occidentalis)*, willow and juniper are the principal. The maple, alder and arbutus make first-class cabinet woods, though they are not abundant enough to be extensively used for this purpose. They also make popular finishing woods. Poplar, or, as it is more commonly called, cottonwood, has been principally used in the past for the manufacture of "Excelsior," but its greatest use will be in paper-making. The aspen poplar is common in Vancouver Island and the northern interior of the Province. It is also a good paper-maker. The oak is mainly confined to the southern end of Vancouver Island. It is a stunted, gnarled species, of little use, but very picturesque. Crab apple is plentiful in swampy places around ponds, beaver meadows and along river banks. The hard woods are usually found in bottom lands, and indicate fruitfulness of the soil. There is no part of British Columbia where the timber supply is not sufficient for local demands.

The principal timber limits and the great bulk of the timber are located on: Vancouver Island, running up the valleys of the Cowichan, Chemainus, Nanaimo, Englishman's, Little Qualicum, Big Qualicum, Comox, Oyster, Campbell, Salmon, Adams, and Nimkish Rivers, and French and Black Creeks, and along other streams and tributaries of the foregoing rivers, and in the Alberni Valley; in Westminster District—along the Fraser and Pitt Rivers, on Burrard Inlet, in South Vancouver, and on Howe Sound; the principal inlets of the coast as far as Knight's Inlet; and on the islands in the Gulf of Georgia—notably Cracow, Valdez and Harwick. North of Knight's Inlet, as already stated, comes the cypress and considerable spruce that will yet be largely utilized in commerce.

One feature of the forests of the Coast is their density. As high as 500,000 feet of lumber have been taken from a single acre, which seems almost incredible to a lumberman of the east, where 20,000 is considered not a bad average.

There are over eighty sawmills in the Province, big and small, with a daily capacity of about 2,000,000 feet, mainly on the coast, but this limit has never been reached, the annual cut running between 50,000,000 and 100,000,000 feet. Various estimates have been made of the amount of timber in sight. These range between forty billion and one hundred billion feet, a guess that is only practicable as showing the possible limits of supply as extremely wide. The acreage of timber under lease is about 1,175 square miles, and the total area of forest and woodland is put down by the Dominion statistician as 285,554 square miles, but this must not be taken as all of commercial value, as much of this is covered with small trees, suitable only for a local supply of fuel and lumber.

Timber Limits.

For some time the lumber industry of the Province has suffered a severe depression, but at the present time the indications are favourable to a revival.

The future of the lumber industry is very great for British Columbia, and when foreign demand fully revives, and the Nicaraguan Canal has been completed, it cannot fail to receive an immense impetus. As it stands at present the Province will be the last resort of the lumberman on this continent, and those who own timber limits will reap rich harvests. Perhaps not the least remunerative will be the by-products, and particularly that of pulp.

The following list of trees belonging to the Province has been taken from the Report of the British Columbia Board of Trade, Victoria. The distribution

and economic use and value of the principal of these have been referred to in the foregoing:—

BOTANICAL NAME.	ENGLISH NAME.	BOTANICAL NAME.	ENGLISH NAME.
Abies amabilis.....	White fir	Pinus monticola....	White mount'n pine
" grandis.....	Western White Fir	" Murrayana...	Black pine
" subalpina....	Mountain balsam	" ponderosa ...	Yellow pine
Acer macrophyllum	Large-leaved maple	Pirus riularis.....	Western crab-apple
" circinatum...	Vine Maple	Populus balsamifera	Balsam poplar
Alnus rubra.....	Red alder	" monilifera..	Cottonwood
Arbutus Menziesii..	Arbutus	" tremuloides	Aspen
Betula occidentalis.	Western birch	" trichocarpa	Cottonwood
" papyrifeoa ..	Canoe birch	Prunus marginata..	Cherry
Cornus Nuttallii ..	Western dogwood	" mollis	"
JuniperusVirginiana	Red cedar	PseudotsugaDougl'si	Douglas fir
Larix Americana...	American larch	Quercus Garryana..	Western white oak
" Lyalli.....	Mountain larch	Salix lancifolia.....	Lance-leaved willow
" occidentalis .	Western larch	" lasiandra.....	Willow
Picea alba.....	White spruce	Taxus brevifolia....	Western yew
" Engelmanii..	West'n black spruce	Thuya gigantea....	Giant cedar
" nigra.....	Black spruce	" excelsa.....	Yellow cypress or cedar
" Sitchensis...	West'n white spruce		
Pinus albicaulis....	White-bark pine	Tsuga Mertensia...	Western hemlock
" contorta.....	Scrub pine	" Pattoniana..	Alpine hemlock

Economically, the value of the forests of British Columbia could be greatly enhanced by diversification. There is such a wide area unsuitable for any other growth than trees and grass that there is almost illimitable opportunity for the seeding and planting of trees on the summit of hills and the sides of hills and mountains, introducing nearly all the deciduous trees of the temperate zone. The climate is favourable to tree growth, and the experience of the Dominion Experimental Farm goes to show that the range of successfully acclimatized trees and shrubs is very wide indeed. When we consider the statement of Mr. E. D. N. Southworth, Chief of the Forestry Department in Ontario, that the annual growth in that Province—theoretically, of course—is fifty times the annual consumption, we can at least imperfectly imagine the tremendous future possibilities of a coast line so extended and deeply indented, to say nothing of the vast interior. Mr. Southworth's estimate, which, as already stated, is a theoretical one, or, rather, is based upon mathematical conditions of growth, is endorsed by Sir Henry Joly, of Quebec, a reputable authority on the subject.

Tree Growth.

Of course, practically, the increment of forest growth is subject to conditions of check, which are obvious, and materially modify actual results. Industrial conditions have so altered of late, and are so rapidly changing, that this possible annual growth is of the greatest importance. The increasing demand for wooden ware, manufactured from various products of wood, and the variety of uses to which wood is being put, places a premium on every stick to be grown for all time to come. The value of the younger trees in the manufacture of pulp out of which so many things are made, gives a value to our forests they never before

possessed. It will be possible hereafter to regard forestry as a branch of agriculture, and to speak of the wood crop, to reap which it will not be necessary to wait a lifetime.

The subject of forestry, as an economic science, is one to which very little attention has been paid in this Province, and there is little to be said so far as a special knowledge of the conditions that exist, or of the possibility of development is concerned, except in so far as the experience of other countries may apply. It is one that will yet demand the most serious consideration on the part of the authorities. Not only is the conservation of the forests a matter of very great importance, because the timber is an asset of great value peculiarly subject to depreciation and waste, but of perhaps even greater importance is the utilization of the timber supply economically and advantageously in an industrial way. There is annually a very large waste going on by forest fires, in clearing land and in other ways, and in view of the many uses to which wood and products of wood are now being put, it is a matter of some concern to determine if methods could not be adopted both to minimize waste and turn it to useful account. The manufacture of wood pulp, of indurated ware, of cabinet woods, of turpentine, of varnish, of tannin, of cordwood, of second rate structural material, of charcoal and of other by-products, which enter into modern industrial requirements, are all matters worthy of attention. It is not improbable that a careful study of the economics of forestry would develop a system in connection with tree growth and forest clearing that would ultimately equalize supply and demand and render the absolute destruction of wood as at present unnecessary. It is difficult to realize the value of forests until they are gone, and until some cheap structural material shall have been obtained to wholly take the place of wood and fulfill all its uses which does not appear likely to be obtainable, the demand must continue to increase, and British Columbia is of all countries naturally most favourably situated to supply it. As a speculation nothing in the way of national enterprise can equal the desirability of husbanding the natural resource of timber, because it must inevitably grow into inestimable value. If in Canada, with a population of 5,000,000, the present annual cut of timber is a subject for anxiety as to the future, what consideration will attach to it when the population has grown to 25,000,000?

Economic Considerations.

A careful estimate of the aggregate cost of the mills in operation places the amount at $1,500,000. This does not include all the capital invested necessary to carry on the industry, which would increase the amount to $2,000,000. The investment in timber limits is additional to this. Sawmills in British Columbia cost on an average $700 per 1,000 feet of daily capacity, ten hours' running. Of the eighty-five mills constructed not all are in operation, and the greater number are of limited capacity.

Although the conditions are hardly ripe for it yet, one of the most promising industries in store for British Columbia is that of the manufacture of wood pulp, and when we consider the opinion of Prof. Macoun that Douglas fir, as well as spruce, is a good pulp tree, the possibilities of the industry, in a Province where Douglas fir is the dominant and most widely distributed conifer, are obvious. A paper mill was started and ran for some time at Alberni, but under conditions not favourable to success, and although it met with failure reorganization on a better

and successful business basis, is confidently anticipated. Incidentally, it may be pointed out that the exports of pulp wood of Canada since 1890 have been:—

YEAR.	AMOUNT.	YEAR.	AMOUNT.
1891	$188,998	1894	$392,262
1892	219,458	1895	468,359
1893	386,092	1896	627,865

The pulp industry is rapidly increasing in Canada and a great many mills are engaged in it. The export of pulp during the past six years has been:—

YEAR.	AMOUNT.	YEAR.	AMOUNT.
1890	$168,180	1894	$547,217
1891	280,619	1895	590,874
1892	355,303	1896	675,777
1893	455,893		

The British demand for wood pulp is largely on the increase. The imports for 1895, for example, were of the value of £1,574,400(297,098 tons), an increase of £150,000 over 1894.

The United Kingdom imported in 1895 unprinted paper to the value of £2,046,106, and straw boards, mill boards and wood pulp boards to the value of £548,254. The exports of paper from the United States were of the value of about £500,000 sterling. At present Great Britain looks chiefly to Germany, Holland, Sweden and Belgium for her imported unprinted paper.

DOMINION TIMBER REGULATIONS.

ALL licenses to cut timber are disposed of by public competition. Parties tendering are to state sum per square mile which they will pay over and above ground rent and royalty, and cheque to accompany tender. The highest bonus will be accepted. The length of any berth is not to exceed three times the breadth thereof.

The licensee to pay a ground rent of five ($5.00) dollars per square mile. except for lands situated west of Eagle Pass, British Columbia, in which case it will be five (5c.) cents an acre. Within one month after obtaining a timber berth the licensee is to pay a year's rental in advance, and if not then paid, the said rental shall bear interest at six (6) per cent. per annum until paid. The licensee is to pay a royalty of five (5) per cent. on sales, or on the value of lumber in the log. If on the latter, it will be calculated on the average price of lumber for the three months

Timber Licenses.

previous to payment of dues. Timber from the berth must be manufactured at the sawmill of the licensee. The royalty on lumber, etc., made from burnt timber is two and one-half (2½) per cent.

On the first day of May of each year licensee shall send a sworn detailed statement to proper officer, appointed for that purpose, of the number of pieces of timber, lumber, etc., and the correct measurement of same, according to Scribner's Log Rule, cut in the previous twelve months. All shortages, or discrepancies, between amount of the sales and the said statement are to be accounted for to the Minister of the Interior, and the licensee shall pay five (5) per cent. on the value of the deficiency, said value to be based on average price of lumber for the previous six months. Licensees are to furnish each year a ground sketch of exact locality of berth, and within one year from date of such notification from Interior Department, to have and keep in operation a sawmill capable of cutting one thousand (1,000) feet, board measure, in twenty-four (24) hours, for every two and one-half (2½) square miles of area licensed, or shall establish such other manufactory of wood goods acceptable to the Minister of the Interior. The licensee cannot assign or transfer his berth without the consent of the Interior Department.

The licensee has no claim to renewal of license except by an Order-in-Council.

In unsurveyed land the party to whom a license is promised shall, before the issue of license, and before any timber is cut, make a survey by a duly qualified Dominion Land Surveyor, and he shall be liable for dues on any timber cut subsequent to ten (10) days from the date of the award of berth to him.

Dues not paid at maturity to bear interest at six (6) per cent., and cut timber on berth may be seized and sold to satisfy same.

All cut timber is liable for Crown dues wherever found or in whatever condition.

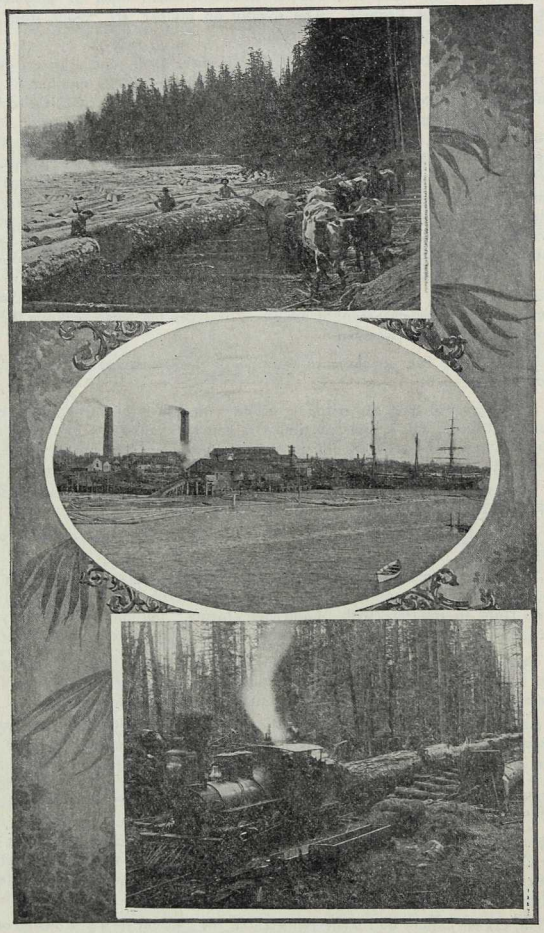
The licensee has no right to cut timber of less diameter than ten (10) inches, except for roads and to facilitate taking out merchantable timber, and shall have no right to interfere with "Land Settlements," but may within sixty (60) days after notice of such, remove all timber over ten (10) inches in diameter.

This license shall not prevent individual homestead settlers holding free permits from cutting and removing building timber, fence rails, firewood, as such permit may set forth (and the Government may grant such permits).

Conditions of License.

Licensee may take from every tree cut down all the timber fit for use and manufacture the same, and is to prevent unnecessary destruction of timber from men or fires; to make stated returns of all lumber and its value, sold in any shape; to pay five (5) per cent. on returns of sales, or on amount of lumber in log, unless from burnt timber, which will be two and one-half (2½) per cent. (all in addition to ground rent): to keep correct books, subject to inspection of collector of dues; and to the right of the Crown to deal in minerals, etc., in timber berth, and to make roads for transportation of such, paying licensee for all timber thus used; and to forfeiture for infraction of any one of these conditions.

The license cannot be transferred without the consent of the Minister of the Interior.



LOGGING AND LUMBER INDUSTRY, BRITISH COLUMBIA.

Permits to cut timber, subject to dues hereafter specified, are granted by public competition, except to actual settlers, who can cut timber for their own use without competition.

Cordwood	25c. per cord
Cordwood of dry or fallen timber, over 7 inches diameter, cut by settlers for their own use	10c. per cord
Fence posts, 7 ft. long and 5 in. at small end	1c. each
Fence posts, 8 ft. long and from 5 in. to 9 in. diameter	2c. each
Fence rails (poplar) and 5 in. at butt end	$2.00 per 1,000
Rails of any other woods, 3 in. at butt end	½c. each
Building logs of poplar, 12 in. at butt end	½c. per lin. ft.
Building logs of any other wood, 12 in. at butt end	1c. per lin. ft.
Building logs of oak, elm, ash, maple, 12 in. at butt end	1½c. per lin. ft.
Shingles	40c. per 1,000
Telegraph poles, per ft. over 22 ft.	1c. per ft.
Telegraph poles, 22 ft. long	5c. each
Railway ties, 8 ft. long	3c. each
Square timber and saw logs of poplar	$2.00 per M. ft. B. M.
Square timber and saw logs of pine, cedar, spruce, tamarac and other woods	$2.50 per M. ft. B. M.
Square timber and saw logs of oak, elm, ash, maple	$3.00 per M. ft. B. M.
Pickets	$3.50 per M.
Piles	1½c. per lin. ft.
Shingle bolts	50c. per M.

All other products ten (10) per cent. ad valorem.

Dues on burnt timber are five (5) per cent. on sales and fifty (50) cents per M. in lieu of rent.

A fee of twenty-five (25) cents is charged for each permit.

The Minister of Interior will instruct issuers of permits as to quantity of grant and dues to be deposited.

Additional dues may be levied for surveying, etc.

The pains and penalties of the Dominion Land Act apply to a breach of foregoing rules.

Trees are to be cut without waste, and the refuse piled together.

Timber permits on school lands may be granted, provided they do not impair the value of the land. Persons exempted from dues are, miners, prospectors, travellers, scientists or explorers.

Homesteaders may obtain permit to cut 1,800 lineal feet building timber not over 12 in. at the butt end, 400 roof poles, 2,000 poplar fence rails, 30 cords dry wood, burnt or fallen timber for fuel or fencing up to 7 in. diameter inclusive.

Homesteaders in possession of farms having timber or wood lots will not get free permit.

An order-in-council was passed 3rd of January, 1896, stating that the dues on timber sold in the Province of British Columbia and exported to Manitoba and the North-West Territories will be 5% royalty on the sales and that the dues on lumber otherwise exported from the Province will be at the same rate less a rebate of 40 cents per M.

CROWN LANDS.

THE Crown Lands are surveyed into quadrilateral townships, containing thirty-six sections of one mile square in each, by lines running north and south, crossed by others running east and west. These sections being in turn divided into quarter-sections of 160 acres each.

Unoccupied and unreserved Crown Lands are open to pre-emption for agricultural purposes only throughout the entire Province. Any person being the head of a family, a widow or single man over the age of 18 years, and a British subject (or, if an alien, upon making a declaration of intention to become a British subject), may become a pre-emptor. Any incorporated company may become a pre-emptor by special permission of the Lieutenant-Governor in Council. To the northward and eastward of the Cascade or Coast Range of mountains the size of a pre-emption claim may be 320 acres; in the remainder of the Province it is limited to 160 acres. The procedure to be followed in the acquiring of a pre-emption record is set forth at length in the "Land Act," and is made as simple as possible. The pre-emptor is entitled to a Crown Grant to his land upon paying $1 per acre therefor and obtaining a certificate of improvement, the requirements for this purpose being: 1st, a continuous *bona fide* personal residence of the pre-emptor, or of his family, on the land recorded by him for the full period of two years after the record; 2nd, permanent improvements on the land to the value of $2.50 per acre; 3rd, if the record be of unsurveyed land, a survey in accordance with the Act; and 4th, if the pre-emptor be an alien, his becoming a naturalized British subject.

Pre-emption.

Crown Lands for the purpose of sale and purchase are divided into three classes, and may be purchased in tracts not exceeding 640 acres upon compliance with the Act, under the following classification and prices: 1st class, agricultural and natural meadow lands, $5 per acre; 2nd class, lands cultivable with the aid of irrigation, $2.50 per acre; 3rd class, mountainous and rocky lands, $1 per acre.

Purchase.

Timber lands are not open to purchase. Grants of land purchased must provide that in the event of any of the lands being divided into town lots, one-fourth of all the blocks of land shall be re-conveyed to the Crown. A purchaser in order to become entitled to purchase a second tract must improve the lands already purchased by him to the extent of $5.00 per acre if first, $2.50 per acre if second, and $1.00 per acre if third-class land.

Timber Lands.

Leases of lands not exceeding 160 acres in extent may be obtained of meadow lands by holders of adjacent land for a period not exceeding five years at a rental of 10 cents per acre, and of lands for the opening or working of quarries, or as sites for fishing stations, for a term of twenty-one years at a rental to be fixed by the Government. Lands held by the Crown within a city may be leased for any term not exceeding ten years: and agricultural lands which have been surveyed into lots of twenty acres or less may be leased to British subjects upon building conditions, and upon a stipulation that the lessee shall, at the end of the term, if he has complied with the lease, receive a Crown Grant of his leasehold lot.

Leases.

Crown Lands.

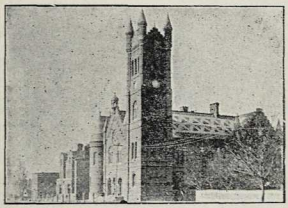
The right to cut timber on Crown Lands may be obtained in several methods, the simplest of which is the taking out of an annual license, upon payment of $10, entitling the holder to cut timber as a hand logger upon Crown Lands, not being timber limits, without any reservation as to area. The timber cut under such license is subject to royalties to the Crown.

A special license may be obtained, valid for one year, for $50, entitling the holder to cut timber upon a specified tract, not exceeding 1,000 acres, subject to the payment of royalties to the Crown.

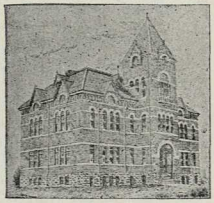
Timber leases are to be put up for public competition for periods not exceeding twenty-one years, and may be granted to the tenderer who offers the highest cash bonus, in addition to an annual rental of 15 cents per acre and the payment of royalties. A rebate of 5 cents per acre on the rent may be obtained by erecting a saw mill appurtenant to the leasehold.

The royalties payable to the Crown amount to 50 cents per 1,000 feet board measure on all timber; 50 cents per cord on railway ties and mining props; 50 cents on every 200 running feet of piles, and 25 cents on every cord of wood.

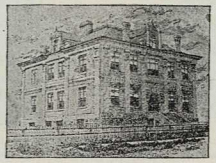
There is reserved to the Crown a royalty of 5 cents per ton on all merchantable coal obtained from lands held under Crown Grants. This reservation of royalty does not apply to land held under earlier grants in which the coal was not either reserved to the Crown or made subject to a royalty.



ST. ANDREW'S CHURCH, VICTORIA.



HIGH SCHOOL, VANCOUVER.



CENTRAL SCHOOL, VANCOUVER.

THE LUMBER CUT.

STATISTICS of the timber and lumber industry are not available prior to the year 1888, when the reports of the Inspector of Forestry began to be published. Since that time a very complete annual statement has been included in the report of the Chief Commissioner of Lands and Works. However, a careful estimate of the cut of timber in the Province, since the commencement of the industry, made from available data in various years gives the following result: To 1871, 250,000,000 feet; from 1871 to 1888, 595,000,000 feet; from 1888 to 1896 inclusive, 654,986,465 feet, or in the aggregate, 1,500,000,000 feet. Taking into consideration annual growth, and assuming that effective measures for a reasonable protection of the forests from the ravages of fire could be maintained, the timber supply, at the present rate of consumption, would remain perpetual, so that the conservation of forests becomes one of the most important subjects that can engage the attention of the legislators; but forest fires, the clearing of land, and the reckless deforesting for lumbering purposes, are having appreciable effects in reducing the supply. The following is a statistical statement of the lumbering industry since 1888:—

Year.	No. Mills.	Daily Capacity, Feet.	Acreage under Lease.	Lumber Cut, Feet.
1888.....	25	769,000	135,063	31,868,884
1889.....	30	1,089,000	179,224	43,852,138
1890.....	41	1,343,000	225,526	78,177,055
1891.....	57	1,786,000	273,428	88,108,335
1892.....	57	1,752,000	376,122	64,186,820
1893.....	60	1,785,000	496,956	60,587,360
1894.....	66	1,786,000	524,573	64,498,227
1895.....	77	1,815,000	495,346	112,884,640
1896.....	85	1,903,000	496,746	112,947,106

The value of the exports of lumber since Confederation is shown in the table of exports given elsewhere.

Facsimile of $10 gold pieces coined in the old B.C. Mint, New Westminster.
(By kind permission of Hon. J. S. Helmcken).

EXPORT OF LUMBER, 1896.

DESTINATION.	SHIPPED FROM VANCOUVER.			SHIPPED FROM MOODYVILLE.			SHIPPED FROM NEW WESTMINSTER.			SHIPPED FROM VANCOUVER ISLAND.		
	Cargo, ft.	No. Vessels.	Value.	Cargo, ft.	No. Vessels.	Value.	Cargo, ft.	No. Vessels.	Value.	Cargo. ft.	No. Vessels.	Value.
Germany	776,772	1	$13,181									
South America	6,103,327	5	49,901	887,330		$14,574				1,125,776	4	$ 3,200
Great Britain	6,094,145	6	74,070									
South Africa	3,831,830	3	28,217									
Australia:												
Adelaide	1,310,386	1	10,567	1,120,000	1	10,000				865,954	1	6,842
Freemantle	2,347,747	2	16,174	987,802	1	*				692,307	1	5,999
Geraldton										849,269	1	7,092
Melbourne	714,283	1	5,537				1,260,547	2	*	841,546	1	7,337
Port Pirie				767,566	1	*						
Sydney	469,972	1	4,254	2,888,815	3	23,739				2,775,505	2	11,732
France	1,019,000	1	16,263									
Gibraltar	1.797,000	2	19,316									
Valparaiso, f. o	2,875,719	3	26,964	1,496,988	2	6,965				753,086	1	6,068
California	1,461,012	4	11,604									
Kobe, Japan	1,056,074	2	7,118				*	1	*			
China				7,894,209	10	71,838	972,050	1	$ 7,687	5,188,818	7	53,521
	29,857,267	32	$283,166	16,038,930	20	127,116	2,232,587	4	$ 7,687	13,092,261	18	$101,791
Exports for first 6 mos. '97	22,334,369	20	.....	9,090,052	6	.....	1,018,000	2	.....	9,202,417	8	.....

*Particulars not received.

THE FISHERIES.

THE British Columbia Coast of the Pacific Ocean extending from the 49th parallel to Alaska is extensive and deeply indented. Vancouver Island and Queen Charlotte Islands, standing out seaward, are separated from the Mainland by numerous channels and thousands of islands grouped in minor archipelagos. Stretching inland are many long inlets, the whole configuration being irregular, but exceedingly picturesque, and rich in food fishes. From the time the Strait of Juan de Fuca is entered until the farthest point north is reached, with the exception of Queen Charlotte Sound, where the ocean swell is felt, and a few tide rips, it is one continuous, glassy reach of water, which offers no obstacles to navigation, and renders coasting delightfully easy and pleasant. The conditions on the whole are most favourable to conducting the fishing industry.

It is for the purpose of portraying the wealth of these waters, which, with the one notable exception of salmon canning, have been but faintly exploited, that this chapter is penned. From time prehistoric the Indians of the coast in their primitive way pursued the almost sole means of livelihood, fishing, and with a temperate clime and an abundant supply of this food at all seasons, existence was, except in so far as tribal warfare endangered it, in no sense precarious.

Says Mr. Ashdown Green, a local authority in piscatorial science, "Unlike the Indians of the plains, whose lives depended on their exertions and who had to roam over a vast extent of country to obtain meat enough to put up for winter use, the fish-eating Indians could count securely upon their winter supplies coming to their very doors." Those on the Mainland coast had immense supplies of salmonidæ in their seasons, which for winter use they dried, smoked or otherwise preserved in unlimited quantities. Those on the western coast depended upon the halibut and cod, which, too, were without limit as to numbers and within easy reach. These were cut into strips and dried, and were edible to even more cultivated palates than those of the natives.

To take the fishes first in the order of their importance, we have the salmon, of which there are several varieties, enumerated as follows: Quinnat, Chinook or Tyee salmon *(Oncorhynchus tschawytscha)*; silver salmon, or cohoe *(O. Kisutch)*; sockeyes, or blue back salmon (*O. Nerka*); dog salmon (*O. Keta*); humpback (*O. Gorbusca*); cut-throat trout (*Salmo mykiss*); steelhead (*S. Gairdneri*); Dolly Varden trout *(Salvelinus malma)*. All of these are abundant. The quinnat, the first

salmon to appear, is the largest, varying from ten to seventy-five pounds in weight. It is the most important of the salmonidæ family, and for table purposes is the most highly prized. For canning purposes the sockeye is preferred, being more uniform in size and colour, running in immense shoals, which the spring salmon does not, and higher in colour. On the Columbia River the former is the most generally used for canning. In British Columbia the bulk of the fish used for canning is the sockeye, and it is during its run, usually in prodigious numbers at the height, that the pack is made up. As many as 2,000 boats are seen at the mouth of the Fraser at one time, and in big runs they will average from 100 to 500 fish each in a night. It is scarcely possible to estimate the number of these fish that go up the river. The cohoes are a less prized variety, but running later are utilized very often to make up a pack, if the run of sockeyes should not be sufficient. Mr. Green says that when caught in salt water the cohoe is infinitely superior to the sockeye as a table fish, though not so rich in flavour as the tyee salmon. The spring salmon is plentiful on the coast from November to April, the sockeyes make their appearance in July and run in July and August, and the cohoes in September. The dog salmon and humpback are not commercial varieties and are never used except by the Indians.

Concerning the Salmon.

The run of salmon first begins in the northern waters, the fish entering the various inlets and rivers a little later in the season until the Fraser is reached. Canneries are situated on the Naas and Skeena Rivers, Gardner's Canal, Rivers and Knight's Inlet, Alert Bay, and other points on the coast, but the principal business is carried on in the Fraser, where some forty-two canneries are in operation, there being sixty-two in all, with others in course of construction. The industry began in 1876 with a pack of about 10,000 cases (forty-eight pounds to a case) and has steadily increased until in 1897 it has, it is estimated, reached over 1,000,000 cases, valued at $4,000,000. The principal market for the output is in England, though it finds its way to many other markets of the world. The commercial varieties of the salmon as a rule do not rise to the fly and therefore are not fished for sport, except that in certain times of the year they are trolled for in the bays near the cities of the coast. This fact gave rise to the fiction that for a time gained credence that the British Commissioners appointed in connection with the determination of the North-West Boundary between Canada and the United States gave up the States of Washington and Oregon as not worth contending for because the salmon in the Columbia River could not be tempted by the wiles of the sportsman. It was a piece ot pleasant and effective sarcasm directed against the supineness of the British authorities in the matter, but nevertheless a fiction.

Salmon Canning.

The trout which abound in nearly all the rivers and inland lakes of British Columbia, and the salt water as well, though differing locally as to size, colour and flavour, are said to be identical in species. These make up to the sportsman for the obstinacy of the salmon and attain in places to a size of thirty and forty pounds. They are not to be mistaken, however, for the "speckled trout," the charr, of which there are two varieties, but much less frequent and more limited in their habitat.

I HAVE dealt with the salmon, at present the most important economic food fish of the coast, somewhat in detail. The next in order is the halibut (*Hippoglossus vulgaris*), likely to become a rival of the salmon in commerce. It is the largest and most useful of a large family known as the Pleuronectidæ. It is in great abundance all along the coast of British Columbia, its principal habitat being around and to the north of Queen Charlotte Islands, where it attains to a size of over two hundred pounds and a length of five or six feet, and is caught in great quantities by deep-sea fishing. Not until recently has the halibut assumed any importance commercially, except for local consumption; but efforts have been made with some success to supply the Eastern markets. A small steamer in good weather will take in a cargo of 20,000 to 60,000 pounds in a couple of days, and make the trip in ten days. Duration of the trips and success of the catch depend upon the weather. A supply of ice is taken with the steamer, and when she arrives back the fish are immediately packed in boxes with snow or broken ice, and shipped by a fast train to New York. This enterprise, so far, has been carried on with varying fortunes. Freight rates are necessarily high, and the market fluctuates with the supply from the Atlantic coast with which it comes in competition. Profits are uncertain under such conditions, and so far the trade has not achieved a permanency, although it has assumed considerable proportions at intervals. Without doubt there is the basis for a trade of almost unlimited proportions, as the fish is highly prized as a table food, and the consumption in the United States alone is sufficient to warrant great expectations. Undoubtedly it could be cured so as to form an important staple along with dried cod and mackerel. So far sufficient capital has not been brought into requisition to place the export trade on a firm footing. For rapid transit to and from the fishing grounds two or more fast steamers are necessary, ample facilities of cold storage at both ends and along the line, independent agencies, and an adequate and regular supply. Commission dealers in New York and elsewhere charge ten and twelve per cent. commission for handling the fish, and the necessity of disposing of consignments on the spot causes frequent sacrifices; but with cold storage this would be avoided, and agencies independent of the eastern combine could handle the goods more advantageously.

Halibut Fisheries.

There is, too, the competition of the American fishermen on the coast who fish in Canadian waters, and ship from American ports, which give them a decided advantage over Canadian fishermen. This is a matter upon which representations have been made to the Dominion Government, and it is hoped that measures will be taken to enforce international law in regard to the three-mile limit. There are no absolutely reliable statistics as to the catch of halibut, but it is stated that the export in 1895 by Canadian fishermen was 2,000,000 lbs., and an equal amount by Americans, or 4,000,000 lbs. in all. This, as a result of the trade in its incipiency, is most promising.

Conditions of Trade.

Belonging to the same family are a number of flounders, some of them very abundant and good food fishes. The market is local.

Referring to deep-sea fishing, the skil (*Anoplopoma fimbria*) is perhaps one of the most delicious of table fish. It is found in great abundance off the coast of Queen Charlotte Islands, but is too delicate of fibre to stand shipment. This

is often referred to as "black cod" commercially, and somewhat resembles the mackerel. I will quote what Mr. Ashdown Green, President of the Victoria Natural History Society, in a paper read in 1891, says regarding it. Speaking of their habitat on the west coast of Queen Charlotte Islands, where there were until recently several stations established for the purpose of curing them, he remarks: "The mode generally adopted was that of pickling, the fish being too fat to dry and salt, and turning rancid when kept a short time. I am sorry to learn that as a commercial venture this fishery has been abandoned; the labour and expense involved being disproportionate to the returns when compared with other fisheries. Opinion varies regarding the quality of the fish on the table. Those brought to Victoria are dry and very inferior. I have never had an opportunity of tasting one from Queen Charlotte Islands, but I can well believe that they are excellent. As I remarked before, there is no comparison between fish of all kinds in Queen Charlotte Sound and those taken near Victoria. The skil undoubtedly ranks very high in quality when taken fresh and eaten, or after being properly cured; but ordinary methods of curing fail in preserving it for use and shipment. There is, it might be remarked, a wide field on this coast for the study of the methods of preservation of these and many other fish for market; one difficulty to be overcome is the superabundance of oil as compared with eastern fish. Some experiments tried last year at Port Essington in a small way by bottling and canning, after special preparation, were said to have achieved excellent results. Whether an industry on these lines could be made to pay or find a market remains to be determined."

Black Cod, or "Skil."

Another fish belonging to the salmonidae group, oolachan *(Thaleichthys pacificus)*, spelled in a variety of ways and also locally known as the "candle fish," should be of considerable economic value. It runs in enormous quantities up the rivers and inlets of the coast, coming into the Naas about the middle or latter part of March, and reaching the Fraser about the middle of April, deteriorating somewhat in quality as it comes southward. This is a delicious pan fish and is greatly in favour in its season. It, however, like the skil, is too tender for carriage, and has, therefore, only a local market. It is about nine inches in length, and so plentiful at times when running as to be scooped up in bucketfuls. A good many are put up in pickle in small kits and cured like bloaters, but not much progress has been made in these directions, remarks applying similar to those in regard to the skil.

The Oolachan.

The Indians catch them in immense quantities and extract the "oolachan grease," which they use much as we do butter. Oolachan oil, properly refined, might become of commercial value, there being practically no limit to their numbers. Experiments have been made with oolachan by bottling and canning, it is said, with success. The oolachans, besides the Indians, have numerous enemies. The seal, sturgeon, salmon, and porpoise follow them in their run, and even bears and pigs gorge themselves on them when the opportunity offers. If they could be preserved as indicated for export so as to retain their flavour and body, they would undoubtedly demand a sale co-extensive with sardines.

The anchovy *(Stalephorus ringens)* is also abundant, of large size and excellent quality. At times they are seen in the harbour of Victoria in phenomenal numbers. Nothing had been done so far in utilizing this most valuable fish.

There are two varieties of smelts common in the markets (the *Osmerus thaleichthys* and the *Hypomesus pretiosus)*, and are in brisk local demand.

There are no true soles in our waters, what is sold as such being the *(Pleuronectes vetulus)*, a species of flounder. They are, however, a choice table article. It is a small fish seldom exceeding a pound in weight.

The herring *(Clupea mirabilis)*, which Mr. Ashdown Green regards as equal in flavour to the English herring, though not so large in size, are also very abundant, and are consumed locally both fresh and as bloaters. A factory was established at Burrard Inlet some time ago to cure them and also for the extraction of oil, and the manufacture of fish guano, but was burnt down and not re-built, and nothing has since been undertaken in the same direction.

The capelin *(Mallotus villosus)* is common in Alaskan waters, so Mr. Green says, but only an occasional visitor to the British Columbia coast. It is sometimes exposed for sale.

Although plentiful in northern waters, the Gadidæ, of which there are several species, is not common farther south. Mr. Green says the common cod, *(Gadus Macrocephalus)*, appears in several of our harbours to spawn, but is not more than sufficient for local demand. Its principal habitat is on banks of the northwest coast.

There are two other species of fish sold locally as cod, one the *Ophiodon elongatus* or "cultus cod," and the red rock cod *(Sebastodes pinniger)*. The former is one of the best food fishes of the Pacific Coast waters and is in season almost the whole year round, generally hiding in eel grass or kelp. It takes a spoon or other bait freely. The Indians secure this fish by sinking a wooden bait shaped like a shuttlecock at the end of their spear and releasing it at the bottom. The fish follows the shuttlecock to the surface and is speared. It spawns about the end of February, and ranges in weight from two to forty pounds. Another of the same family *Hexagrammus decagrammus*, the kelp trout of the market, seems to be in considerable demand, to judge by the quantity exposed for sale, but Mr. Green regards it as worthless. It is sometimes dried and smoked.

Cod Fishing.

The *A. pinniger* belongs to the bass family (*Scorpaenidae*) of which there are several varieties,—*Sebastodes ruberrimus*, the red bass, *A. pinniger* and *S. Melanops*, or black bass. "As food fishes they are unsurpassed by any in our waters," says Mr. Green, "though rather expensive fish to buy, considering the amount of head and offal you have to pay for." These fishes are oviparous.

Another important fish, though not utilized to any large extent, is the sturgeon, the roe of which when salted forms caviar, and the bladders are manufactured into isinglass. The Pacific Coast sturgeon (*Acipenser transmontanus*) enters the Fraser about the end of April, following up the oolachans and spawn, although little or nothing is known about the period. They are taken by spearing or by night-lights, baited with salmon, and very often they are caught in the nets of the salmon fishers. They grow to enormous sizes, some of them weighing from 700 to 900 pounds, and it is said that the largest caught weighed over 1,000 pounds, although it is not authenticated. There is a small local demand for this fish, and a company was organized at New Westminster for the purpose of catching and exporting, which it did in a limited way, but as to the commercial results, little is known. Sturgeon have also been found in interior lakes. The most abundant skate is *raja Cooperii*. As a food fish it is not much in demand, probably on account of its repulsive appearance. It grows to a large size and sometimes is over six feet in length.

The Sturgeon.

FROM an economic point of view, the dog fish, of which two varieties exist, namely *Squalus acanthias,* the spike dog fish, and *Geleorhinus galeus,* the tope shark, though not a food fish, is one of the most valuable. They are found in abundance all up the coast to Alaska, and several factories have been established for the reduction of oil from these fish, in which they are very rich. The liver contains a very superior oil, which for lubricating and machine purposes is of the very highest quality. A large amount of oil is also taken from the bodies which are steamed in large retorts. This oil is of inferior quality and not used for machines, but undoubtedly, if subjected to a proper refining process, would become a useful and cheap product. Both the liver oil and the body oil are largely used in the Province, and were formerly quite profitable as an industry, but latterly competition with Eastern oils has very materially reduced the profits.

Uses of the Dog Fish.

In addition to the dog-fish there are several other oil-bearing fishes, the principal of which is the *Hydralagus collioei,* or "rat-fish." It is found in great abundance in places, and the oil procured from its liver is used for the very finest work in watches, gun locks, sewing machines, etc. It is a very prolific oil-bearer, and should prove to be valuable as an industry.

The *Cetorhinus maximus,* or basking shark, is also plentiful in Queen Charlotte Sound during the summer months. It attains to a great size, is perfectly harmless, and so tame that while basking it may be touched by the hand. In England, 150 gallons of oil is the average yield of the liver, which alone is treated.

The foregoing are the principal of the economic food and other fishes of the British Columbia coast, although the complete list, taking the representatives of the various families and their varieties, is a very long one.

In addition to these, whelks, cockles, clams and crabs are to be found in large quantities, both in winter and summer months, and are largely used locally and by Indian fishermen as bait. Dealing with the question of bait, Mr. Ashdown Green says:—

"The favourite bait with our fishermen is the octopus, common enough on our shores, but difficult to collect in sufficient quantities to fill the demand. Herrings at times may be taken by the ton, and when salted are the cheapest bait that can be procured. In fact, there is little else to be obtained in the winter; in the summer there is no difficulty in obtaining all that is wanted. Smelt, atherine, anchovy, and the different species of *ditrema* can then be taken in numbers. The sand launce *(ammodytes personatus)* is very plentiful, and if a dainty bait. and one highly prized by the Dutch fishermen, be wished for, there is the river lamprey *(lampetratridenata).* These little fish ascend the river in thousands, and I do not know of a more curious sight than is to be seen in any of the cañons of a large stream during their migration upwards. Some few attach themselves to the sides of steamers and save themselves an immensity of trouble by doing so, having their passage free and meals also. But the bulk of them toil upwards, resting sometimes in the swifter parts of the river by holding on to a stone. Should the water become too rapid to stem by swimming, the lamprey holds on to the rocks at about the water-line, and during the momentary period when it is left dry manages to advance an inch or so by a succession of jumps, holding on whenever the water rises and there is no danger from the current."

Fish Bait.

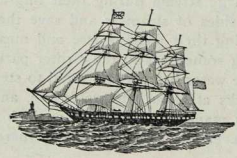
So far the fishes of British Columbia have been treated from an economic point of view, but from a sportsman's standpoint the field is not a less interesting one. The whole interior of the Province, Island and Mainland, possesses a wonderful system of water communication, lakes and rivers. These as well as the lesser streams are abundantly stocked with fish, principally salmon or trout, the several varieties of which have already been enumerated. There are also white fish in the northern waters. While the best known and favourite resorts are on Vancouver Island, there is no locality where a fisherman may not prosecute with zest this time-honoured sport; and even on the sea coast during the salmon run with trolling line he will meet with gratifying success. The waters of Kootenay and Southern Yale are already becoming locally noted as fishing resorts, and when lines of communication are opened up, the rivers and lakes of the whole interior will attract numerous sportsmen, affording as they do fish of uncommon size and number. The scenery, too, everywhere is on a grand and picturesque scale, and all natural conditions are healthful and invigorating.

Fishing for Sport.

HATCHERY—DISTRIBUTION OF FRY.

A HATCHERY was established in British Columbia and put into operation in 1885. Additional accommodation for hatching purposes is promised. Recently shipments of lobsters and oysters were made from the Atlantic and planted in British Columbia waters. The result of these shipments is yet unknown, and is looked forward to with interest, as, if the conditions are favourable, the extent of sea coast would materially augment the fishery wealth of the Province. The following is the record of the hatchery up to the present year:—

YEAR.	NO.	YEAR.	NO.	YEAR.	NO.
1885	1,800,000	1889	4,419,000	1893	5,764,000
1886	2,625,000	1890	6,640,000	1894	7,800,000
1887	4,414,000	1891	3,603,800	1895	6,390,000
1888	5,807,000	1892	6,000,000	1896	10,383,000
					65,655,800



VALUE OF BRITISH COLUMBIA FISHERIES' PRODUCTS.

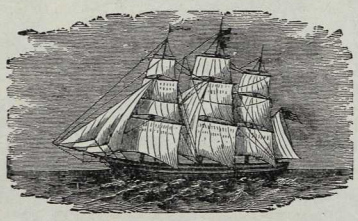
KINDS.	1895.	1896.	Total Values from 1876 to 1896 inclusive.
Salmon, in cans	$2,884,710 10	$2,985,304 00	$28,873,083 90
" fresh and smoked	186,579 20	127,094 00	2,915,131 60
" salted	31,480 00	24,130 00	699,326 00
Herring, all kinds	10,238 00	12,835 00	212,554 00
Trout	5,635 00	6,450 00	70,623 00
Sturgeon	18,750 00	19,025 00	240,650 30
Halibut	126,835 00	227,655 00	799,762 00
Oolachans	30,625 00	29,550 00	192,301 00
Oysters	8,000 00		61,750 00
Clams	9,080 00	34,630 00	85,349 00
Crabs and Prawns	23,600 00		199,920 00
Smelts	2,900 00	2,750 00	35,115 00
Skil	850 00	.....	35,642 00
Tooshqua	.....	.....	72,157 00
Cod	14,100 00	15,060 00	103,991 00
Fur Seal Skins	713,590 00	*556,970 00	7,300,299 00
Sea Otter Skins	2,000 00	*1,500 00	92,175 00
Assorted, or mixed fish	22,395 00	21,270 00	298,604 50
Fish Oils	54,000 00	.....	1,164,718 00
" products	5,987 50	834 00	298,921 50
" for home consumption	250,000 00	250,000 00	2,160,612 50
Total	$4,401,354 80	$4,314,857 00	$45,912,686 30

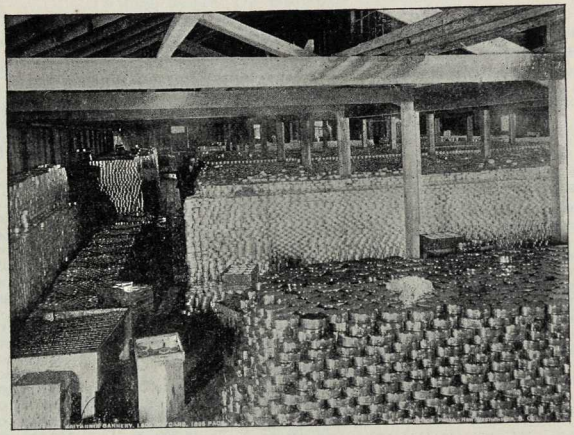
*Estimated.

†Nova Scotia	$144,430,942 00
†New Brunswick	68,959,855 00
†Prince Edward Island	24,270,580 00
†Quebec	44,557,212 00
†Ontario	$26,192,442 00
†Manitoba and N.W. Territories	5,750,000 00

†Values for 1896, estimated on basis of preceding years.

‡From 1896.





INTERIOR OF A SALMON CANNERY.

7,500 OOLACHANS IN A NET.

SCHEDULE OF CANNERIES, 1896.

Name of Cannery.	Owners or Agents.
SKEENA RIVER.	
Carlisle	Carlisle Packing Co., Munn, Holland & Co.
Standard	Victoria Canning Co. Ld.
Inverness	Turner, Beeton & Co.
Balmoral	Turner, Beeton & Co.
Windsor	B.C. Canning Co., Ltd.
North Pacific	A.B.C. Co.
British American	H. Bell-Irving & Co.
Skeena Cann'ry	Cunningham & Son
Royal Canadian	Royal Can. Packing Co.
NAAS RIVER.	
Naas Harbour	Federation Brand Canning Co.
Mill Bay	
RIVERS' INLET.	
Brunswick	Brunswick Canning Co.
Good Hope	H. Bell-Irving & Co.
Victoria	British Columbia Canning Co., Ltd.
Rivers Inlet	
Warnock	Victoria Can. Co., Ltd.
Lowe Inlet Cannery	Cunningham & Rhude.
Alert Bay Cannery	S. A. Spenser.
Namu Harbour Cannery	R. Dranie.
Clayoquot Cannery	Clayoquot Fishing & Trading Co.
Nootka Cann'ry	West Coast Packing Co.
FRASER RIVER.	
Ewens	A. Ewen & Co.
Westham Isl'nd	McDonald Bros.
Westminster	Sam Tung.
Pacific Coast	N. H. Bain.
Federation	Walter Morris.
Malcomb & Windsor	Malcomb & Windsor.
Star	Costello & McMoren.
Fishermen's	S. Hinchcliffe.
John A. Hume	J. A. Hume & Co.
Sea Island	Munn & Co.
Imperial	Short & Squire.
Canadian Pacific	Canadian Pacific Can. Co.
Delta	Victoria Canning Co., Ltd.
Harlock	
Holly	
Wellington	
Terra Nova	Rowen Bros.
Atlas	Hobson & Co.
Richmond	J. H. Todd & Son.
Beaver	
Provincial	Provincial Canning Co.
Anglo Americ'n	E. Penzer.
Brunswick	Brunswick Canning Co.
Boutillier	Boutillier & Co.
Phœnix	H. Bell-Irving & Co.
Britannia	
Wadhams	
Canoe Pass	
British American	
B.C. Cannery	P. Birrell.
Industrial	H. Youdal.
Alliance	R. Colquhoun.
Dinsmore I'd	Goodmurphy & Co.
McPherson's	McPherson, Hickey & Co.
Fraser River	M. Costello.

THE ANNUAL PACK (since the beginning of the industry).

YEAR.	CASES.	YEAR.	CASES.
1876	9,847	1887	204,083
1877	67,387	1888	181,040
1878	113,601	1889	414,294
1879	61,093	1890	409,464
1880	61,849	1891	314,893
1881	117,276	1892	228,470
1882	225,061	1893	590,229
1883	196,292	1894	494,371
1884	141,242	1895	566,395
1885	108,517	1896	601,570
1886	161,264	1897	1,024,371

THE SALMON PACK, 1897.

THE British Columbia salmon pack for 1897 was greatly larger than that of other years; the output of the Fraser River being larger than the output of the whole Province in any preceding year as shown by the comparative figures for the past six seasons. The low prices in England were not warranted by the demand, but were due to the unfortunate pushing of sales. However, it is anticipated that these prices have created a taste for the fish in new quarters that may prove beneficial and give a larger market. The slaughter prices of this year have resulted in the canners' combine recently announced, by which it is agreed that the prices of Fraser River fish will be fixed at 15s. 6d. for 200-case lots of talls, and for flats 16 shillings, and a reduction on 5,000-case lots. Rivers Inlet fish will be sold at one shilling below this, and Skeena and Naas sixpence below. It is also decided to reduce the pack this year on the Fraser 25 per cent. of the 1897 pack, and the Northern packs 25 per cent. of the average year's pack. The Canadian market has turned out more satisfactory than last year, and buying for the Eastern provinces is more free.—*Colonist.*

	CASES.
WESTMINSTER CITY.	
Cleeve Canning & Cold Storage Co.	19,400
Ontario Packing Co. (Brennan's)	9,093
Boutillier & Co.	11,000
Sinclair & Co.	12,400
Western Fisheries Co.	11,456
Westminster Packing Co. (Sam Tung	18,840
NORTH ARM.	
Provincial Canning Co.	11,000
Alliance Packing Co.	12,000
Terra Nova Cannery	21,828
McPherson & Hickey	20,000
Sea Island (Munn & Co.)	32,125
Dinsmore Island Packing Co.	12,970
Richmond (Todd & Son)	17,192
Welch & Co.	14,900
SOUTH ARM AND CANOE PASS.	
Westham Island Packing Co.	15,000
Anglo-American Packing Co.	17,500
Currie & McWilliams	21,062
Gulf of Georgia	50,707
Star (Costello)	22,000
Lighthouse (formerly Federation)	23,000
London (Formerly Lulu Island)	20,000
Hume & Co. (English)	15,127
Pacific Coast Packing Co. (Bain)	25,400
Colonial Canning Co	15,031
Beaver (Todd & Sons)	21,888
Canadian Pacific (Hennessy)	29,537
Fraser River Industrial Society	11,200
Ewen & Co	38,927
Deas Island Cannery	27,149
Fishermen's (Hinchcliff)	20,018
Victoria Packing Co.	
Harlock	55,514
Delta	
Wellington	
Anglo-British Can. Packing Co.:	
British Columbia	
Phœnix	
Britannia	155,712
Canoe Pass	
Wadhams'	
British-American	
Brunswick Canning Co. (Canoe Pass)	52,803
Brunswick Canning Company, (Steveston)	
Fraser River	15,000
Total, Fraser River	876,879

SKEENA RIVER.

	1896.	1897.
Anglo B.C. Packing Co..	22,919	16,200
Balmoral Canning Co...	10,444	6,700
B.C. Canning Co.....	10,521	4,500
Carlisle Packing Co	13,650	6,400
Inverness Packing Co...	11,118	8,814
Royal Can. Packing Co.	10,699	5,700
Skeena Packing Co.....	10,512	8,000
Victoria Canning Co...	10,277	4,600
Total, Skeena....	100,140	60.900

RIVERS INLET.

	1896.	1897.
Anglo B.C. Packing Co..	30,407	8,000
Good Hope Cannery:		
B.C. Canning Co....	39,229	9,000
Victoria and Rivers Inlet:		
Brunswick Can. Co.	17,519	6,000
Victoria Canning Co	20,313	7,500
Wharnock Cannery:		
Wadhams.....	.....	6,500
Vancouver Packing Co. (new).....	.....	3,300
Total, Rivers Inlet	107,468	40,300

NAAS RIVER.

	1896.	1867.
Federation Brand Salmon Canning Co.	14,649	20,000

LOWE INLET.

Lowe Inlet Packing Co..	10,395	8,200

NAMU HARBOUR.

R. Draney	3,987	4,357

ALERT BAY.

Alert Bay Canning Co...	2,840	8,835

WEST COAST.

Clayoquot Fish & Trading Co.....	4,995	5,000
West Coast Packing Co.	112	
Total, West Coast	5,107	5,000

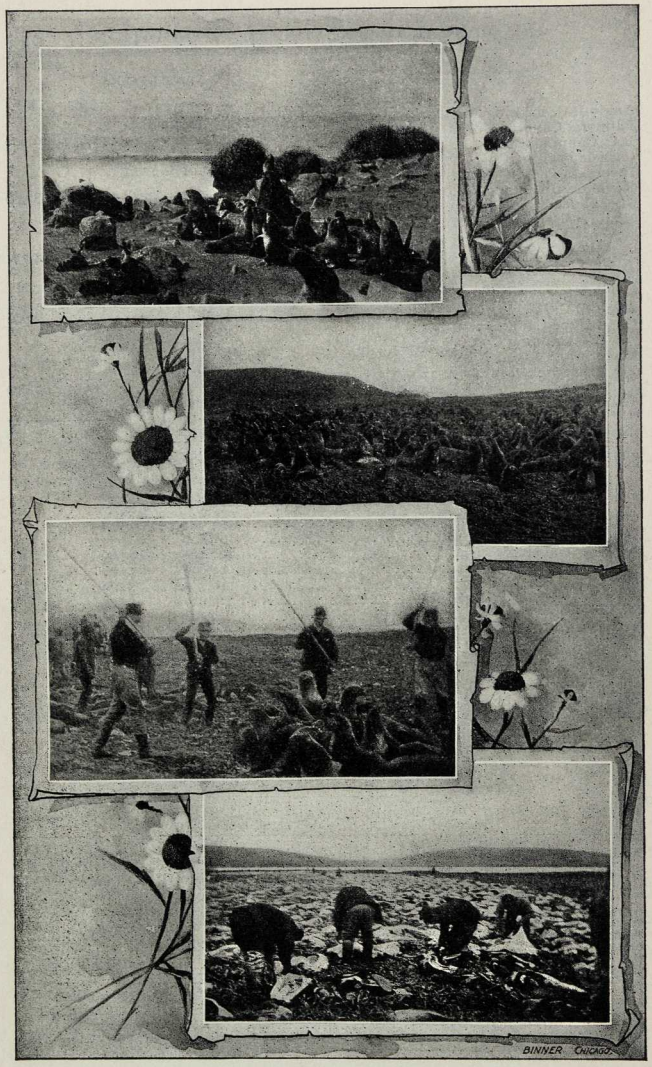
SUMMARY.

	1896.	1897.
Fraser River.....	356,984	876,776
Skeena River.....	100,140	60,900
Rivers Inlet.....	107,468	40,300
Naas River.....	14,649	20,000
Lowe Inlet.....	10,395	8,200
Namu Harbour.....	3,987	4,357
Alert Bay.....	2.840	8,835
West Coast.....	5,107	5,000
Total pack.....	601,570	1,024,371

Number of men employed and capital invested in Fishing Plant and Fur Sealing Industry of British Columbia and Dominion of Canada for the year 1865:—

	BRITISH COLUMBIA.				CANADA.	
	FISHERIES.		SEALING.			
	No.	Value.	No.	Value.	No.	Value.
No. of Fishermen in vessels.....	365	.....	1,642	.....	9,804	.....
" " " boats	.....	.....	12,478	.....	61,530	.....
" vessels	119	$217,410 00	61	$389,200 00	1,221	$2,318,290 00
" boats.....	2,600	106,050 00	217	21,700 00	34,268	1,014,057 00
" canoes	.....	.....	421	10,525 00	.....	.....
Salmon canneries.....	49	980,000 00	.....	.....	.....	.....
Oil factories	12	9,000 00	.....	.....	.....	.....
Cold storage and freezers	4	35,000 00	.....	.....	.....	.....
Salteries	.....	4,000 00	.....	.....	.....	.....
Gill nets and seines.....	.....	296,700 00	.....	.....	.....	1,713,190 00
Other material.....	.....	15,850 000	.....	.....	.....	4,208,311 00
	.....	$1,664,010 00	.....	$421,425 00	.....	$9,253,848 00

Total invested in B.C.....$2,085,435 00.



A CHAPTE IN SEALING LIFE.

SEALING OPERATIONS.

THE industry of sealing has had many vicissitudes largely arising out of the international issues involved. For some years it was very lucrative, but latterly owing to the low prices of seal skins, and the complications and losses arising out of the Behring Sea question the industry has suffered severely. It is confined, so far as the Province is concerned, principally to Victoria. The importance of the industry may be judged by the following particulars: There are sixty-five schooners of a net tonnage of 4,292 registered, valued at $614,500. Eight hundred and seven whites and nine hundred and three Indians are employed. The annual cost of outfitting is about $135,000, and some $350,000 is paid in wages. The value of the skins has averaged $750,000 per annum for the past three years, of which $500,000 is the product of Behring Sea.

A CHAPTER IN SEALING LIFE.

The plate on page 76 entitled, "A Chapter in Sealing Life," is more complete and suggestive than anything that could be written about it. The views are from photographs taken by Mr. Maynard on Pribyloff Islands, the breeding grounds in Behring Sea of the seals. The first shows a herd of seals near the beach disporting themselves on the sand; in the second they are being driven in great numbers to the slaughter grounds; in the third the young seals are being clubbed to death; in the fourth view the seals are being skinned, and the skins are spread out in great numbers. This industry is carried on by the Alaska Commercial Company as an exclusive monopoly.

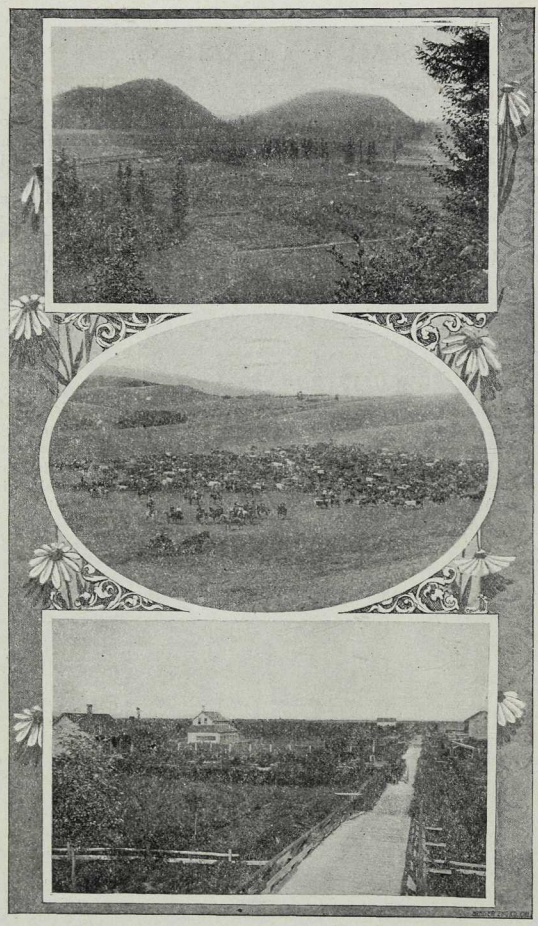
SEALING OPERATIONS IN BRITISH COLUMBIA SINCE 1890.

		1890.	1891.	1892.	1893.	1894.	1895.
1	Number Vessels	29	51	66	55	59	64
2	Tonnage	2,042	3,378	4,456	3,743	3,866	4,096
3	Value	$247,250	$418,606	$513,000	$384,200	386,600	$479,360
4	Number Whites	.....	716	961	847	888	705
5	" Indians	678	336	571	432	578	854
6	" Canoes	250	.....	250	204	259	421
7	" Boats	107	385	281	256	266	210
8	Value Boats	$10,825	$57,900	$28,100	$30,700	$33,075	$31,525
9	Catch	54,853	52,995	46 432	68,231	94,474	70,739
10	Value	$510,511	$794,925	$602,706	$843,984	$844,740	$707,390

SEALING CATCH.

THE CATCH FOR THE PAST EIGHT YEARS HAS BEEN:

1889	35,310	1894	97,474
1890	43,325	1895	74,124
1891	52,265	1896	55,677
1892	49,743	1897	30,410
1893	70,592		



AGRICULTURAL AND PASTORAL SCENES, BRITISH COLUMBIA.

AGRICULTURE.

IT is impossible, within the limitations of a work, which aims to describe the Province as a whole, to make detailed reference to the localities in which agriculture is carried on, giving local adaptabilities, special products, areas of arable land, crop yields, and the thousand and one particulars which go to make up the complete information desired by intending settlers. Those who are anxious to obtain all these accurately and authentically set forth are recommended to consult the report of the Department of Agriculture, Victoria, B.C. in which an admirable compilation of all available data is contained.

In a general way the agricultural districts may be referred to as the Fraser Valley, Westminster District, in which there are about 350,000 acres of arable land 150,000 acres being alluvial deposit; the southwestern portion of Vancouver Island, which is comparatively well settled and contains some excellent land; and the Okanagan District, in which there are numerous fertile valleys, comprising in all about 500,000 acres suitable for general agricultural purposes. In the latter, in addition to the areas referred to there are still larger areas of pastoral land suitable, and used, for grazing only. The three foregoing districts have been referred to first, because they are distinctly agricultural and are the localities in which the principal farming settlements are to be found. There are, however, extensive tracts of open country in the North and South Thompson River Valleys, in the Nicola Valleys, in the Similkameen, in Lillooet, Cariboo, and East Kootenay, in which, though principally pastoral and requiring irrigation for crops, are to be found at intervals good farms, or, as they are usually designated, "ranches," and these detached areas constitute in the aggregate many thousands of acres, which either do produce, or are capable of producing, any crops within the possibilities of the temperate zone—cereals, fruits and vegetables. And, added to these, the capabilities of which, with intelligent and intensive methods of farming, are very great, are still more extensive, though remoter, tracts to be found in the Columbia Valley, East Kootenay; in the Canoe River Valley opening the way to the northern interior from Kootenay; in the Chilcotin country, including the Nechaco and Blackwater Valleys; on the northern end of Vancouver Island and on the islands and coast of the Mainland, which with increased facilities of communication and the demand created by the almost certain immense development about to take place and the consequent rapid augmentation of population, will provide homes for thousands of settlers. As yet these lands are mainly in the hands of the Government, and until communication is afforded and development takes place they are not recommended for settlement, because, without facilities for reaching a market, farming life in isolated communities presents many obvious obstacles to success. Although suitable land in the already settled districts has been all taken up and is in the hands of private parties, farms partially improved, or in favourable localities, may be obtained from $10 to $50 an acre, according to situation and

Agricultural Districts.

Outlying Areas.

character of land, improvement, etc., and it may be remarked here that a small farm of from forty to one hundred acres in extent is sufficient in British Columbia for the average farmer. A good many farms in good localities may now be obtained, and the average price for 100 to 160 acres, with from ten to twenty-five acres cleared, and buildings is from $15 to $20 an acre on easy terms. However, it is difficult to give exact prices, which, as has already been stated, range all the way from $10 to $50 per acre. Farms with excellent possibilities may be obtained for the latter figure. In most cases, however, a settler who has improved farming in view, may count on having a good deal of extra fencing, clearing, underdraining and building to do after he has acquired any land, in order to obtain the best results. Many of the farms have young orchards, but here, too, improvements of varieties and further planting will be desirable. Plenty of good water and good timber are almost always available.

Improved Farms.

It is difficult to give a fairly honest and average description of the conditions of agriculture in British Columbia. In the first place, farming is in a somewhat primitive condition as yet, and to understand why it is so, one must really know the history of the Province and have lived in it. Farming like mining, has suffered from lack of communication and very little incentive to progress can exist without an easy market. In the majority of instances it was not farmers who took up, and settled in the land; hence farming was not undertaken systematically; and, besides, the difficulties of clearing land are great compared with most places. Numbers of persons who came to the Coast without a very definite purpose in view—to take chances in mining, speculation or anything else that might happen to turn up in the absence of any other occupation to employ their energies, took up land, and, figuratively speaking, sat down on it waiting for prospective development to make it valuable. It is easy to imagine how, under such circumstances, a general condition of farming on tentative principles came about. A few applied themselves intelligently and industriously to the task, and demonstrated locally the wider possibilities; but the rule was otherwise. On the better lands in favourable localities, by the growing of hay, fruits, etc., many were enabled, owing to local demand, to live comfortably and even grow prosperous without too great exertion. With the coming of railways, however, and the competition of outside produce, conditions have altered, and that, with the introduction of insect pests, and the depressed times, has, to use a favourite Western expression, made farming on former lines a more "difficult proposition." As a result, many have become dissatisfied, especially as mining offers peculiar temptations, or have encumbered themselves with liabilities, and are willing to sell out at prices which a few years ago would have been rejected with scorn. At least, many are willing to part with a portion of their usually too large estates. In other words, farming is finding its level in British Columbia as elsewhere as a business, which requires the same careful attention and intelligent application as other businesses. As a further and necessary explanation, it may be added that throughout the interior the settlers, as a rule, engaged in cattle raising as the easiest and readiest means of utilizing their land. There has always existed a good market in the Coast cities for beef; and cattle can be driven long distances to a market or point for shipment. The life, too, of a cattle rancher is not without its attractions and is rarely arduous. It being necessary under such circumstances to have plenty of pasturage, farms were, as a consequence, taken up on a large scale, and generally

Farming Described.

Changed Conditions.

with a view to utilizing the ranges on the side hills, covered with bunch-grass.

Large Holdings.

The favourite location was a river bottom or valley, which once secured, commanded the hillsides and commons, and these even if not leased or purchased, were often deliberately fenced in and occupied. In this way, the pastoral and agricultural lands have been secured in large allotments and the settlers are far apart, unfortunately surrounding the question of further settlement with peculiar difficulties. In the Okanagan Valleys, however, many of the landholders are cutting up their holdings, seeing the inutility under changed conditions of endeavouring to retain unproductive property and the wisdom of parting with portions to others who will improve them and add value to what remains in their own hands. There is generally a growing inclination in a similar direction, among landholders in British Columbia, but a great deal still requires to be done before the possibilities of settlement are achieved.

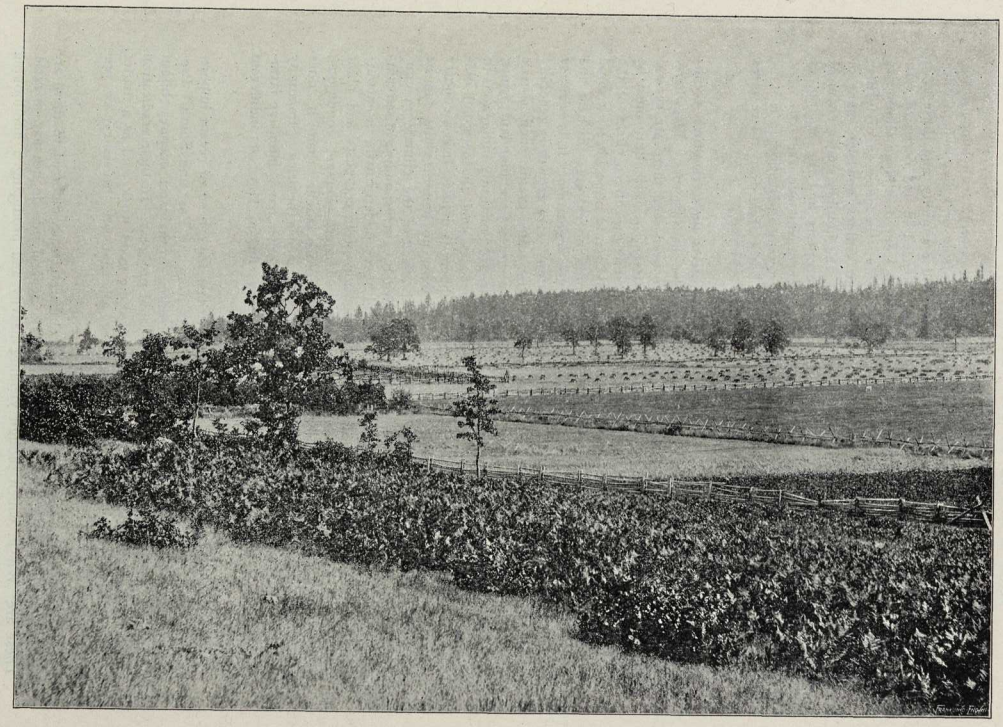
Climate is, of course, a factor which always affects the agricultural conditions of any country—is, in fact, in itself one of the main factors. Elsewhere, this subject has been dealt with fully. As will have been seen there are several distinct climatic zones in the Province, and the treatment of agriculture must be divided on corresponding lines. On the coast, where the direct effect of the

Climatic Zones.

ocean is felt there are: A decidedly humid atmosphere, a good deal of rain during the winter months, no extremes of heat and cold, a long growing season, cool nights, and profuse vegetation. It is scarcely necessary to explain the general effect of such conditions—tree growth is generally greatly stimulated; roots and vegetables flourish; the softer grains, such as oats and barley, yield largely and grow to great perfection; grasses are abundant; fruits, such as pears, cherries and plums and all small fruits, are practically indigenous to the soil and yield enormously; flowers, especially roses, and all the good old-fashioned varieties, are profuse bloomers; and shrubbery is dense. It is a country of great growth, and where fertile soil deposits exist no better results can be obtained anywhere. Unfortunately, the beneficial effect of the climate in contributing such favourable conditions is accompanied by corresponding disadvantages in the creation of dense forests and thick and heavy undergrowth, in encouraging the growth of weeds, and in the propagation of insect pests and plant diseases once they have found a foothold. Under average conditions, to clear a farm for cultivation requires much more labour than it does keep it in a clean and healthy condition. Eternal vigilance is the price of immunity from weeds, second growth and insect pests. On the other hand, intensive farming gives wonderful results. It is no country for a lazy or indifferent farmer.

Adverting to insect pests and plant diseases, these have been of recent importation, coming with nursery and fruit shipments from the East and South. Previous to that the farmers enjoyed peculiar freedom from insect enemies, blight or disease. Once here, however, they made rapid progress. In their eradication and prevention the Board of Horticulture has done good work, and as a matter of fact, industry and proper treatment are all that are necessary as preventatives.

Owing to the character of the Coast climate already referred to there are other crops, which do not do so well, and as a general rule do not pay to raise. These are: Wheat, which though yielding heavily and producing a fine-looking



FARMING LAND, VICTORIA, B.C.

kernel is too soft for milling purposes, and in limited quantities is mainly valuable for feeding chickens; fruit and vegetables requiring plenty of heat and sunshine to mature them—grapes, peaches, nectarines, almonds, tomatoes, water melons, and the like. These all do well some seasons, but except in favoured localities, are not generally well suited and do not ripen properly. Apples, which are perhaps indigenous to more rigorous climates, do fairly well, and generally speaking succeed on the Coast, but their success is subject to exceptions which materially modify the experience of growers in Ontario. In colour and size apples of all varieties excel in British Columbia, but in quality they do not equal the most successful varieties of that Province. Of such varieties those that succeed are limited. In fact, the apples that have been developed on the eastern side of America as distinctively American, do not as a rule succeed best on this Coast. Experience has shown that Old Country and Continental varieties, some of them hundreds of years old, are better adapted to this climate. Most of these where tried are succeeding admirably; and this fact is in accordance with well established laws of development. It may be stated as axiomatic that, while the general principles underlying the science of horticulture obtain, the experience of fruit-growers in Ontario in matters of detail does not apply in British Columbia, and many of their methods and theories in practice demand revision. It may also be added that in this Province trees bear quickly and wood rapidly, and in this exists the greatest drawback. Young orchards, if not carefully watched, over-fruit and exhaust themselves before maturity is reached.

The Coast Considered.

Eastern vs. Local Experience.

In the interior of the Province, which is characterized as the Dry Belt, conditions are somewhat reversed. The Pacific Ocean still exercises its beneficent influences, but the atmosphere is stripped of its excessive moisture by the intervening mountains. In summer there is greater heat, more sunshine, and in winter greater degree of cold, with much drier and clearer atmosphere. Given good soil and facilities for irrigation, where necessary, and the conditions for production are perfect, and, within the capabilities of the temperate zone, there are no limits to what may be grown. In this zone are found all that the Coast produces and those other crops referred to for which the environments seaward are not favourable. It must be understood, however, that local modifications are important factors, and conditions are not by any means uniform. Irrigation, for instance, is not everywhere required; local winds in exposed localities have sometimes a disastrous effect; and in winter in places the sudden barometrical dips render orcharding precarious. Exceptions to any general statement of conditions are numerous, and an adequate knowledge of individual localities is only obtained by experience. Stating what may be regarded as applicable in the average: Wheat ripens and mills well. In many places peaches, grapes, water melons and tomatoes mature fully and are prolific in yield and excellent in quality. Apples, if we except such localities as have been referred to, do remarkably well with careful treatment. It would be difficult to find more beautiful or better specimens in any country than those exhibited at fall fairs from the interior districts. They are so good, indeed, as to give a probably exaggerated impression of the extent and character of fruit-growing generally in the Province. All other fruits, subject to similar exceptions, do equally well in the interior. These remarks are based on preliminary experience only, because, so far, fruit-growing, as well as general farming, is only in its initial stage. This is largely true of the whole of the Province. Many orchards

Conditions Not Uniform.

have been planted out and are bearing, some of them quite old; but the care, or rather lack of care, exercised in their cultivation, and the promiscuous character of the fruit trees, purchased, without knowledge of local requirements, from unscrupulous agents of foreign nursery stock, afford but little indication of what would have been possible under ordinary skillful management. Strangers to this Province, who have for a long time heard of its fruit-growing capabilities, would undoubtedly be surprised that more has not been accomplished under conditions so favourable; but the truth is that the industry began wrong, and has practically to be re-created in order to obtain desired results. The selection of proper varieties in due proportion, the preparation of the soil, the husbanding of the trees afterwards, the picking, and, what is equally important, the marketing of the fruit, are all features of the industry requiring attention and each is essential to ultimate success.

Farming in Its Infancy.

Hop and flax growing are referred to elsewhere. Tobacco does well. It has been tried in the Okanagan district with good success and an official report on the quality of the leaf grown speaks highly of it. Sugar beet, from experiments made, would undoubtedly succeed. The yield of all roots is exceptionally large, and some specimens tested for saccharine qualities were favourably reported upon. Apiculture has only been tried in a limited way, but with sufficient success to demonstrate that as the cultivated area extends, bee-keeping is well within the limits of practical and profitable husbandry.

Special Products.

There is a diversity of soils in the Province, as there is of climate, and any, even a limited area of land, is apt to exhibit many variations. This is, indeed, so true, that it is difficult to describe with any degree of accuracy what are predominate soils and what are not; sub-soils vary quite as much as surface soils. This diversity is, of course, due to the action of water and glaciers, and a series of physical disturbances the conspicuous evidences of the force of which we see in the entire Cordilleran region, and the explanation is found in the study of its geology. The most prevalent and what may be regarded as the characteristic soil, is a brownish sandy and gravelly loam with gravelly sub-soil. This frequently gives place to clay loam, clay, coarse gravel and granitic wash. The sub-soils seem to have no definite relation to the top-soil, ranging from sand and gravel to heavy clay and not infrequently an agglomerate, often very hard. The brown soil is largely characteristic of heavily timbered and up lands. The river bottoms and valleys are usually made up of alluvial deposits, known as "black muck," very fertile when drained. The land skirting the foot-hills and mountains is principally granitic wash. Of the forest land the best is what is known as "alder bottom," upon which alder, maple, willow and some cedar grow. The heavily forested land is not the richest soil, as in the case of Eastern Provinces, where heavy timber is indicative of fertility. The conifers return little in the way of leaf mould to the soil, and the thin layer of vegetable deposit is usually burned off in clearing. Such land is deficient in humus, but when brought into cultivation and fertilized grows surprisingly good crops of vegetables and fruit. The atmosphere, which is a humid one, contributes greatly to plant growth and grasses and, especially leguminous plants, which assimilate nitrogen by bacterial processes from the air, do remarkably well. Clovers, which grow luxuriantly, play a most economic part in such land. Experiments have shown that hill and mountain sides are capable of cultivation to an extent that will ultimately greatly increase the area of arable lands

Soils and Sub-Soils.

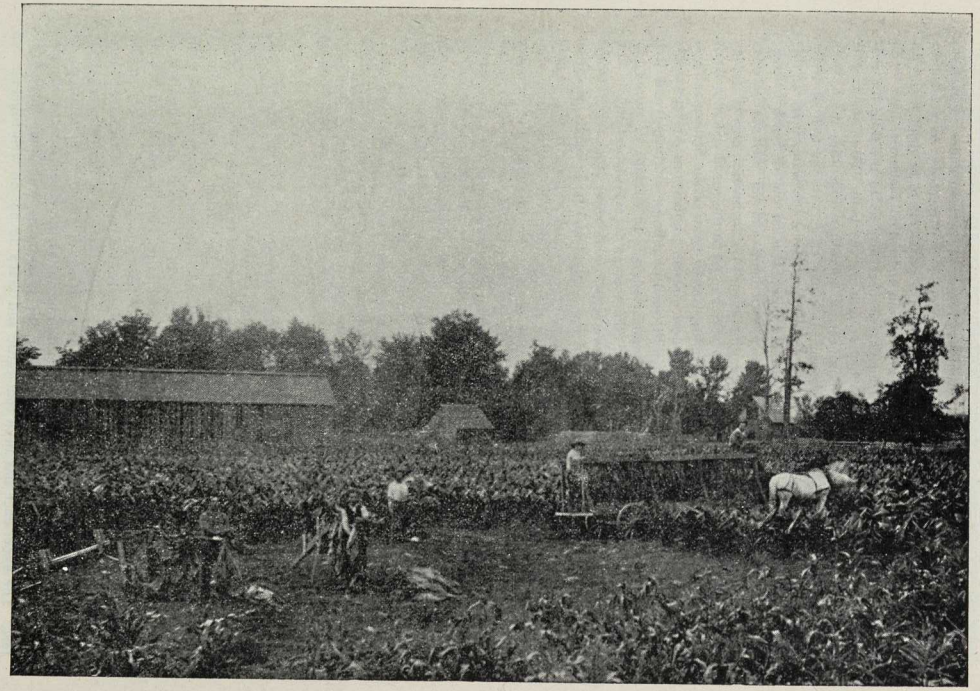
Underdraining is one of the essentials of most of the land under cultivation, and the best results need not be anticipated where it is neglected. As previously pointed out, irrigation in the interior is one of the problems to be dealt with. In many places the facilities are excellent, and, in individual instances, have been successful, though particularly for fruit care is necessary as to the time for irrigation and the quantity of water to be brought on the land. For considerable areas, however, there are not only engineering but other difficulties in the way of inaugurating a comprehensive system. In some cases the question of water rights is involved; in others the height of the land above the water level or distance from a source of supply places the accomplishment out of reach of individual enterprise, while the large allotments of lands and the distance between settlers render co-operative efforts unavailing even if the inclination existed, which in too many cases is absent. The remedy seems to be in the sub-division of lands into smaller holdings, and the union of effort on the basis of the betterment system. Large ranches under present conditions are necessary for stock-raising, but with small holdings, cultivated and irrigated, so as to render winter-feeding with ensilage or stored hay practicable, and, if necessary, ranging in common, an increased beef supply and generally better results would follow. More settlers with fewer stock, each, would be infinitely better for the Province than few settlers and large bands of cattle, as at present. Closely associated with the subject of cattle raising is that of cold storage. It is stated on good authority that there is sufficient beef in prime condition standing on the ranges in November of each year to supply the Province until the following June, by which time the pastures would have time to renew themselves. With no market except the regular consumption of the cities, cattle have either to be held over and fed at a large expense, or allowed to winter on the ranges, subject to much loss and depreciation. With public cold storage at one or two points on the railway, to which cattle could be driven and slaughtered, there would be a tremendous saving to the farmer as well as to the Province. Farmers by such a system could also draw on warehouse receipts and realize on a portion of their stock early in the season. The economy of such a system is too obvious to require further comment. It is one, too, that is bound to force an appreciation of its merits on the attention of those whose interests are involved.

Draining and Irrigation.

Smaller Holdings Desirable.

The raising of horses in the interior has been carried on to an extreme, and of the large bands many have become wild and constitute one of the greatest nuisances there are in the way of animal pests. Horses of that class, owing to their rapid multiplication on the ranges, are a drug on the market. Reports from all quarters state that the supply exceeds the demand. Recently, however, since the Klondyke excitement began, a new demand has been created, and hundreds of animals have been shipped north for the purpose of packing in goods and miners' outfits. First-class stock, however, has never been too plentiful. Sheep-raising has had some attention, but so far has not proved remunerative. There are several reasons for this. In the absence of woollen mills there is a limited market for wool. In the interior the raising of sheep is discouraged by ranchers engaged in cattle-raising, as the sheep destroy the pasturage by too close cropping and injure the grass roots with their sharp trotters. The experience has been that cattle and sheep do not do well together and

Horses and Sheep.



COLLINS & HOLMAN'S TOBACCO RANCH, OKANAGAN MISSION.

for this reason a statutory limitation has been placed on sheep-ranging. In addition, the coyotes are destructive, killing large numbers annually. On the Lower Mainland the conditions are not favourable, the lower meadows tending to foot-rot, and the heavy rains in winter months being detrimental. On the Islands, there exists probably the best opportunity for success, but so far sheep-farming has not been carried on extensively, and will not until they are more largely cleared and settled. Wherever wolves exist they will work havoc with the sheep. On Vancouver Island, in the Cowichan District, the industry has been carried on to a larger degree than elsewhere, but there panthers are numerous, and although harmless in respect to the settlers themselves, are very destructive to sheep and pigs. Generally speaking, the natural conditions throughout the Province are rather favourable than otherwise to sheep-raising, but its success depends upon improved methods and better breeds. With respect to sheep-farming on the Island of Vancouver and adjacent islands, a very great improvement has been effected in the breeds, largely owing to the efforts of the Flock Masters' Association by the importation of thoroughbred rams. One discouraging feature, so far as this industry is concerned, has been the low price of Washington and Oregon mutton, which forms the chief source of supply, though this has been perhaps less harmful than the panthers.

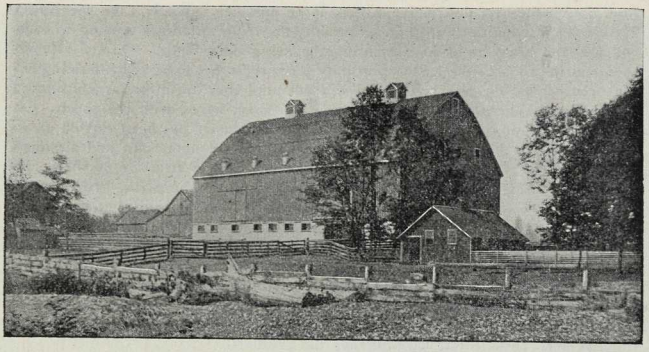
Improved Breeds.

Poultry and pigs, in small farming, are probably the most promising of live stock, but notwithstanding the general demand for dressed poultry, eggs, pork, bacon and hams and the high average price, these have not been raised largely or with any degree of system. The situation affords a curious anomaly, inasmuch as while there has been more than sufficient fresh pork to supply the market there have not been enough hogs raised to make a packing establishment pay. A noticeable improvement has been observed of late, and the prospects are quite in favour of a much greater share of attention being paid to this class of farming and its ultimate success.

Cattle raising naturally should occupy a greater relative importance than it does in the scale of agricultural productions, but it, too, has languished. Reference has already been made to the condition in the Upper Country, where the industry is controlled by the larger cattle companies and stock ranchers, who are able to supply the markets regularly and in large quantities, to the disadvantage of the smaller men, who by the inexorable laws of commerce are at their mercy. In the Lower Country, the supply being too limited for marketing in sufficient quantities at all seasons, the dealers buy almost wholly from wholesale sources, a condition that obtains as a law in commerce; hence the farmers, though near to the centres of demand, have difficulty in disposing of their animals. This was true for a long time in regard to butter, eggs, fruit and vegetables until local produce became sufficient to form a regular supply for dealers; but that condition of affairs is rapidly disappearing, and imported produce is becoming relatively less, except for products out of season or those not raised in the Province. A similar result will follow in regard to the meat supply. The establishment of a local farmers' market is contributing to that end; and not the least important factor is the demand created by mining activity.

Cattle Raising.

Dairying, which is an important adjunct of cattle raising, until recently was in a very unsatisfactory condition, and relatively but little "ranch" butter found



BARN—A. C. WELLS & SON, CHILLIWACK, B.C.

the market, and much of it was of indifferent character. A great improvement has taken place within the last two or three years. The revival of the industry in the East, and the efforts of several Departments of Agriculture, Dominion and Provincial, have acted as a strong stimulus to the farmers, and the creamery question has been taken up with great zeal and energy, and as a result about half a dozen creameries are in operation and the local output has been greatly increased. British Columbia possesses every element to constitute a great dairying Province, the products of which should include cheese and condensed milk. There are extensive areas of pasture lands in the interior, while increased cultivation in the Lower Country will give the necessary feeding ground. With a plentiful supply of good water and luxuriant and nutritious grasses there is every required facility added. It may be remarked in passing that the bunchgrass ranges of the interior have been overpastured by stock, and are being exhausted in many places. A knowledge of the nature of bunchgrass will readily suggest the reason for this, and unless steps are taken to allow the ranges to renew themselves the result will be a serious one.

Dairying.

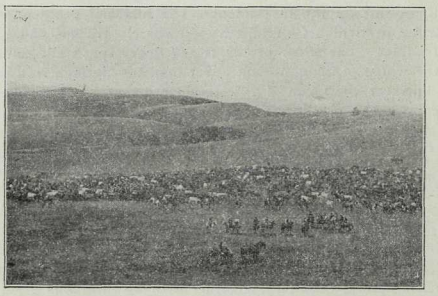
The incidental obstacles and drawbacks of insect pests and plant diseases have been referred to. There are also noxious weeds in plenty and of animal pests there are in the outlying districts wolves, panthers, coyotes, and wild horses. Blue jays and robins are complained of by orchardists, and owls sometimes infest the poultry yard. In the interior irrigation is a problem; and on the Lower Mainland dyking and draining are important considerations. The difficulty and expense of clearing land have not been overlooked. Indeed, the more heavily timbered lands cannot be economically dealt with for farming purposes, until mechanical means can be devised to reduce the labour involved and cheapen the cost. The expense, which varies from $150 to $300 an acre, is a burden on the land, which under the most extensive farming, cannot return interest on the investment. The financial problem is one which affects the farmer in British Columbia as elsewhere. He has had, and still has his share of troubles. The wider problems and depressing trade influences which extend over the whole of the continent affect him, too, though in a lesser degree. Leaving out, however, the financial aspect, which is certainly improving generally, the local circumstances affecting his welfare will be and are being overcome by patient, persistent and intelligent effort, without which no avenue of industry can be smoothed, and, comparing all his prospective advantages with his present disadvantages, the outlook is more promising in agriculture here than in perhaps any other Province of the Dominion. The very physical obstacles to be overcome, considered in connection with the comparatively limited area of farming lands, will *when* overcome constitute a positive advantage to the tiller of the soil. A rapidly growing population and the enormous expansion of industry bound to ensue as a consequence of the development of immense natural resources, together with a contiguous great future market in the northwestern and northern territories of Canada and a remarkable vantage ground on the sea-board, will yet create a demand, local, interprovincial and foreign, that will tax the agriculturist to his utmost to supply. Having contrasted all his advantages fairly with his disadvantages, it is not an over-sanguine view, taking into account his remarkable situation and the balance in his favour, conditional upon the application of scientific, practical and business methods, to predict for the farmer of this Province a great and prosperous future.

Farmers' Drawbacks.

Compensating Advantages.

Readers may perhaps be inclined to regard some of the incidental criticisms in the foregoing as too severe and as a reflection on the methods of the farming community as a whole; but those who understand the situation from local experience and observation will, it is confidently assumed, generally subscribe to this chapter, and farmers themselves will appreciate honest criticism and a candid statement of facts rather than flattering encomiums that are rarely sincere. Much that has been stated is intended to apply to a past rather than a present condition of affairs. The Province is entering on a new agricultural era, and a large number of farmers are making earnest and diligent efforts, under many difficulties, to re-create the industry on a sound, economic and healthy basis. Progress so far is not measured by many or conspicuous mile-posts, but looking back over ten years a decided advance has been made, and in ten years hence the change will have been marvellous. The time may reasonably be anticipated when the adjacent forests will be cleared away, the valleys fertile with waving grain, the hill-sides vine-clad, and the landscape dotted with farm houses nestling among orchards and clusters of home-born trees and shrubbery, with long vistas of hedge lines and roadways to guide the eye—a pleasing picture to which the mountain background of native grandeur and the reflection of summer skies will impart a rare charm of scenic beauty and an air of pastoral and picturesque repose.

Looking Forward.



ROUNDING UP OF CATTLE.

DREDGING ENTERPRISES.

ANNUALLY, at uncertain periods, ranging from the beginning of April to the end of August, the Fraser River is in freshet. The date on which the maximum height is reached is as uncertain as is the height itself. Thus, in 1876 there occurred the highest freshet then on record, reaching its maximum height about the beginning of July. In 1882 this record was surpassed by thirteen inches at Mission, and the height was considered phenomenal. In 1894, to the astonishment of all, a freshet occurred on the 6th of June, which exceeded that of 1882 by some two and a half feet at Mission, while in 1896 one almost equalling that of 1882 reached its greatest height on the 16th of July.

The rising of this river is due to the large quantities of snow that fall on the various mountain ranges of British Columbia during winter, melting as the warmer weather of spring and summer sets in. The river in this condition while flowing through the narrow valleys and canyons of the mountains, though rising often as much as sixty and eighty feet above its normal height, causes little or no agricultural damage till as it enters the wider valley of the Lower Fraser, in the district of Westminster, at a much lower level here, the result is very different. In this district are found large and detached areas of low, flat land, which, in this condition of the Fraser, become flooded, and, though the soil deposited by these freshets enriches the land flooded, the immediate effect is to destroy all agricultural efforts of the year.

The Fraser in Flood.

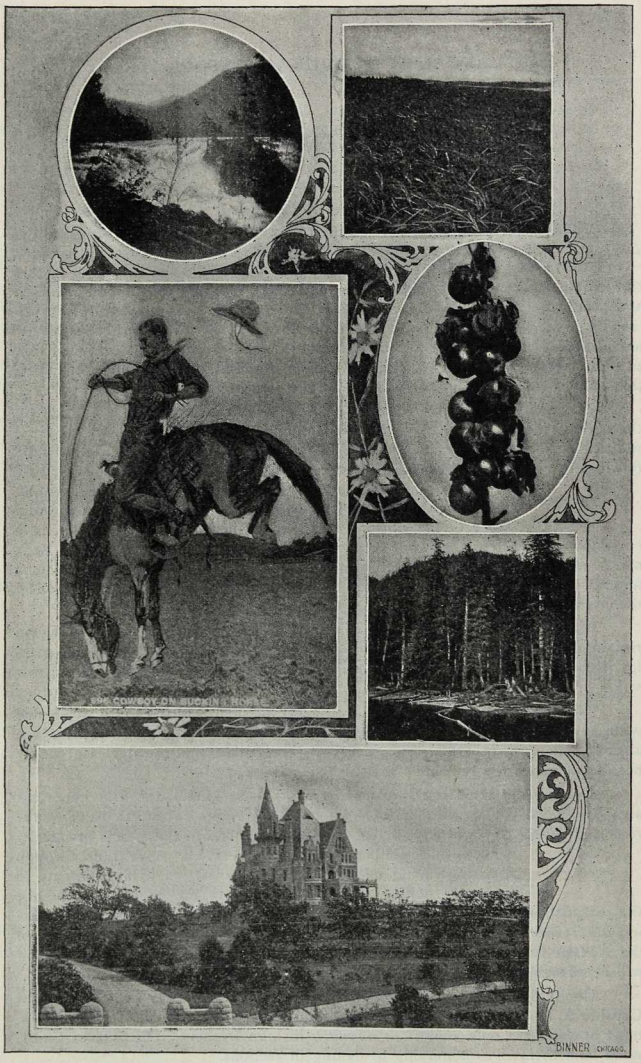
Many areas subject to the flooding are, for the present, at least, not worth reclaiming owing to the high cost of the work, compared to their value, such, for instance, as some of the numerous islands of the river and of a few narrow strips on its banks.

There are, however, several large areas of land which can be reclaimed with advantage for a comparatively small sum per acre. Some of these are already reclaimed, others are in process of reclamation, and the day is probably not distant when the remainder will be taken in hand.

Leaving out the large Indian reserve of Maria Island, the first important area of flooded land is the flats of Agassiz. They lie on the north bank of the river and consist of about 5,500 acres. The northern half of the area is practically dyked by the embankment of the C.P.R., which runs through Agassiz, leaving necessary only the insertion of a flood-gate in a stream running through the bank to the Fraser to complete the reclamation. Previous to 1894 there had been a gate in this stream, but during the freshet of that year it had washed out. The reclamation of the balance of the Agassiz flats is not at present under consideration, but when taken in hand will be effected by a dyke of small average sectional area.

At Agassiz.

Continuing down stream on the south bank of the river are the flats of Chilliwack, consisting of about 22,000 acres. Excepting certain low stretches, most of these are only subject to overflow in high freshets. The flats of Chilliwack lend themselves admirably to dyking in sections.



View in East Kootenay.
A Bucking Broncho.
Dunsmuir Castle.

Queen Charlotte Island Prairie.
A Bunch of Apples.
Cypress Forest.

A small portion of Chilliwack is in process of reclamation by private enterprise, but no scheme is as yet in contemplation for the balance. Nor can one be very successfully devised till the question of controlling the channel of the Fraser has been settled. This the Dominion Government has in contemplation. A party of engineers is engaged in making the necessary preliminary examinations.

Chilliwack.

The lower flats of the Chilliwack Municipality, known as Lower Sumas, have had under consideration for some time past a dyking scheme in conjunction with Upper Sumas, a tract of low land separated from the former by a lake of the same name, which in its normal condition is a shallow stretch of water of about 9,000 acres in extent, fed chiefly by the Vedder and Upper Sumas Rivers, and discharging into the Fraser by a channel supposed to be a continuation of the Sumas, and known also by that name. The two Sumases contain about 20,000 acres of flooded land, and from time to time various schemes have been devised for their reclamation. Latterly the question has been left in the hands of commissioners appointed under the Act by the settlers, and through their instrumentality a very complete study of the question has been made, resulting in the opinion that the most effective and apparently only practical way of accomplishing the task would be to run a dyke from the east side of Mt. Chilliwack—a hill standing on the banks of the Fraser—up the western side of the Atchelitz—a small stream running across the flats—to a point on high ground; also a dyke from the west end of the same hill along the Fraser to Miller's Hill, on the banks of the Fraser; and a dyke from the west end of that hill to Mt. Sumas, a mountain of considerable size, which is at the river end of a chain of hills separating the Sumas flats from the Matsqui. This would necessitate a large gate being built in the River Sumas, and, inasmuch as it would be impossible to handle by pumping the accumulation of water in the lake supplied by the Vedder and Sumas Rivers combined, it was proposed to divert the waters of the former at a point where this river emerges from the mountains into the channel of the Luk-a-kuk, which originally had probably been one of the many channels through which the Vedder at some past period flowed. It was assumed that a large portion of the remaining waters entering the lake and spreading over its area would evaporate, and it was intended to pump the balance. This, so far as the reclamation of the Sumas lands was concerned, would have worked admirably, but the turning of the Vedder into the Luk-a-kuk is a serious problem affecting other interests, and when these, as well as the high cost of the undertaking, were considered, as compared with the value of the land reclaimed, it became for the present impracticable.

Sumas Valley.

A Serious Problem.

Lying on the north side of the river is the large island of Nicomen, containing about 5,600 acres. This island is separated from the Mainland by a channel of the Fraser known as Nicomen Slough. It, too, at present remains unreclaimed, owing to the cost of reclamation being high compared with the value of the land.

Following after Nicomen, on the same side of the river, are the flats of Dewdney. These containing about 5,300 acres, are, like Agassiz, divided into two districts by the embankment of the C.P.R. That north of the line, which includes Hatzic Prairie, was reclaimed in the year 1893 by using the C.P.R. embankment as a dyke and inserting a flood-gate where it crosses Hatzic Slough.

It was intended to utilize Hatzic Lake as an evaporating reservoir, and pump the balance during high water. In 1894 the flood-gate gave way, and the damage has not yet been repaired. The southern portion is not yet reclaimed and has no scheme in contemplation.

Matsqui Flats.

The flats of Matsqui, consisting of about 10,000 acres, lie a little further down stream on the opposite or south side of the river, and are protected by a dyke running from Mt. Sumas to Mt. Lehman, on the Fraser. This dyke was built as far back as 1880; it proved effective during the year 1882, but has been unsatisfactory since. In each of the two main sloughs no fewer than four different sets of gates have been built. Three of these have been destroyed in succession. The fourth, which is designed on a novel plan compared to any hitherto made in the Province, has not yet been sufficiently tested to prove its efficiency.

The next large area of flooded land is the flats on the east and west of the River Pitt, a large tributary of the Fraser entering it from the north. Progressing up the Pitt are the dyked meadows of Maple Ridge; they lie on the east of the river and contain about 8,600 acres. The embankment was ineffective in 1894 and is now being raised and strengthened.

To the north of Maple Ridge and separated from it by the Lillooet lie two areas of meadows dyked under commissioners. These small tracts consist of 2,500 acres and are separated by the North Lillooet. Their embankments suffered very seriously during the freshet of 1894 and have since been completely repaired.

Coquitlam.

On the west of the Pitt are the two areas of Coquitlam separated from each other by De Boville Slough and containing 3,600 acres, and north of these is the little area known as the Wilson, consisting of only 400 acres and protected by an embankment put up by private enterprise. Unfortunately during the freshet of last year the gates of the Wilson, through some unforeseen cause gave way, and have not, up to the present, been replaced.

The dykes of the meadows average ten feet in height, and have been erected by means of dredgers with material taken from inner ditches, which latter are now used for drainage purposes. Ample protection has been made for the discharge of this water by means of flood-gates, and each section has been provided with a pumping station which acts during high water when the gates are closed.

The cost of the erection of the protection works executed by commissioners has been met by loans raised under Government guarantee, and the land is subject to a small annual assessment to cover interest and sinking fund. These loans are about to be bought in by the Government, when the burden on the land will be still further reduced.

Other Lands

Apart from the flats subject to overflow by freshets, a large quantity of the delta is subject to tidal inundation. Reclamation works on this have been going on since the year 1890 and most of it is now protected. Here the risks are small compared to the freshet dykes, and the difficulty of maintenance is easily overcome. All these lands are admirably suited to agricultural purposes, and in spite of the assessment for dykes and the necessity of drainage, are with greater ease and less cost made productive than the bush covered high lands.

MUNICIPAL ENTERPRISE.

THE dyking which has been undertaken in the Province, outside the schemes under the auspices of the Government, has been done by several of the municipalities in New Westminster District. The principal of these are in Delta, Richmond, and Surrey.

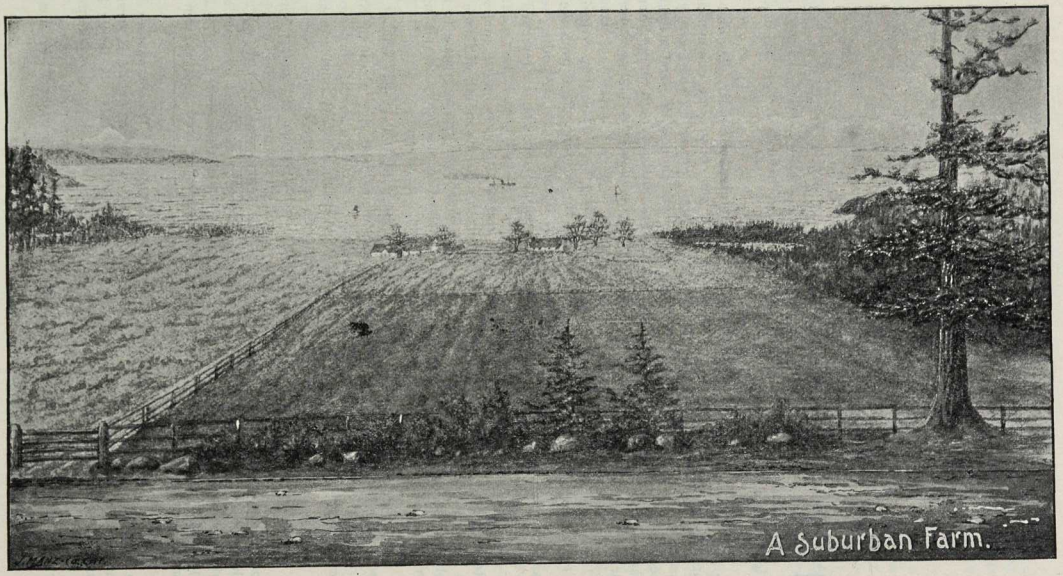
The Delta lands are affected by the tidal waters of Boundary Bay and those of the Fraser River. Several years ago a dyke was constructed commencing at the south-easterly corner near the Semiahmoo trail, extending southward to the mouth of Big Slough. Here a dam was built with sluice-gates, and a dyke, six feet high, rounded off at the top, with twenty-six foot base, built along Boundary Bay westward for four and one-half miles to the highlands near Point Roberts by means of a dredge. A lateral drain was made, extending due eastward from Lot 177 to the south-east corner of Lot 34, on Boundary Bay. The total cost of this section of dyke, which protects the adjoining land from the tidal waters of Boundary Bay, was about $30,000. Another section has been more recently built, extending from the high lands above Crescent Island to the Fraser River, following the south bank of the Fraser past Ladner's Landing to a point on Canoe Pass, where a small section of private dyke intervenes, after which the municipal system is continued from near the mouth of Canoe Pass to English Bluff. The cost of this section will amount in the aggregate to probably $60,000 when finished, the two sections referred to practically completing the protection of Delta Municipality from tidal and high waters.

Delta System.

Lulu Island is almost completely surrounded by dykes, partly hand built and partly the work of dredgers. The latter begins near the mouth of Nelson Slough, on the North Arm of the Fraser River, extending to the corner of the Government reserve, in the vicinity of New Westminster City, and crosses the Island at that point with an open cut to the opposite corner, and from there is continued down to the corner of Lot 27, opposite Tilbury Island, a distance in all of seventeen miles, which, including a dam and a drainage ditch, cost in the neighbourhood of $52,500. The other portions of Lulu Island, as well as Sea Island, were dyked by hand work, done principally by Chinamen. Westham Island, which is included in the Delta Municipality, and is one of the most fertile spots in the New Westminster District, is also entirely surrounded by hand dykes.

Richmond Municipality.

In Surrey Municipality there is what is known as the Serpentine Flats on Mud Bay, which are drained by the Nicomekl and Serpentine Rivers, the watershed of which includes an area of over 10,000 acres of very fertile land. Surrey Municipality undertook to protect this by building a dam across the mouth of the Nicomekl at the point where the Semiahmoo waggon road crosses. This, however, proved ineffectual, being carried away by the high water. Two methods



GLENGARRY FARM, METCHOSIN. (The property of Dr. John Duncan, Victoria.)

of reclamation are presented by the special conditions of this locality. One is the erection of a dam with flood-gates at the mouth of the Nicomekl River, and the diversion of the Serpentine into the Nicomekl at a point where they converge, or by straightening, by means of dredging, the Nicomekl River and deepening it for some distance towards the source, and constructing a dam at the mouth of the Serpentine River provided with flood-gates. The latter method would make the Nicomekl navigable for small boats as far as Clover Valley, and possibly farther, whereby scows could be towed up the river and be loaded with produce on the banks. The excavations from the bed of the river, being thrown up on both sides, would be sufficient to afford protection of the land from the tidal waters.

Surrey Municipality.

The other small portion of land subject to reclamation, not already referred to, is that of Langley Prairie, where, by dyking in a small way, an area of 2,000 acres will be protected thoroughly against the waters of the Fraser River.

KOOTENAY RECLAMATION SCHEME.

THE lands held by the Alberta & British Columbia Exploration Co., Ltd., of London, England, of which Mr. George Alexander, of Calgary, Alta., is manager in British Columbia, for the purpose of reclamation, are known on the official map as lands B, West Kootenay, and comprise that portion of the valley of the lower Kootenay River lying between the International Boundary at Rykert on the south and the lower or southern end of Kootenay Lake on the north, a distance in a direct line of some eighteen miles, or twenty-eight miles by river, with a varying width of from three to five miles.

Unfortunately for the purposes of cultivation, the banks of the river are not of sufficient height to always retain the volume of flood water during the spring freshets: as a result, during the period of extreme flood in May and June, reached every six or eight years, the river overflows its banks, or in ordinary years backing up in the sloughs with the same result—of converting the entire valley into a temporary lake.

Causes of Flooding.

This large tract contains an area of some 45,000 square acres of land, unsurpassed in richness and fertility by any land in the Province. And in addition to its being the only available land for agricultural purposes in West Kootenay, is directly tributary to the now established mining centres of Rossland, Nelson, Pilot Bay, Ainsworth, Kaslo and Sandon, with their constantly increasing demand for the natural productions of this district.

This area of 45,000 acres is sub-divided by natural topographical features into five sections, varying in extent from 8,000 to 10,000 acres each.

The work of reclamation by the Alberta & British Columbia Exploration Company has been in progress since the summer of '92, and the first section of 8,000 acres is now practically reclaimed, divided into eighty-acre blocks, and ready for settlement. The agricultural and pastoral lands form fully eighty-five per cent. of the entire area, and consist of open meadow, which will be thoroughly drained

SEEDING, OKANAGAN.

by a complete system of arterial and lateral drains, with well constructed roads, giving access to any portion of the property. There is at present water communication by daily steamers plying on the river between Bonner's Ferry in Idaho and a connection with the Great Northern Railway in United States territory and the lake ports on Kootenay Lake, with the prospect in the immediate future of the construction of the C.P.R. through the Crow's Nest Pass, giving direct railway connection east and west from the centre of this property; so that the facilities for access and egress are all that could be desired.

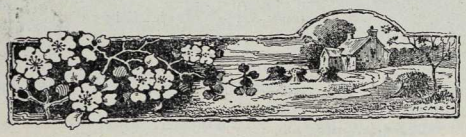
The climate is most favourable to settlement and is not subject to the extremes of heat and cold experienced in the prairie provinces. Navigation remains open for eight months in the year, or from April to November inclusive. The summers are most pleasant, and with sufficient rainfall to dispense with irrigation. The winters are clear and comparatively mild, the thermometer rarely marking below zero at any time, and the snowfall moderate, averaging only from two to three feet. Situated at an altitude of 1,750 feet above the sea, the air is refreshing in the summer and bracing and exhilarating in the winter months.

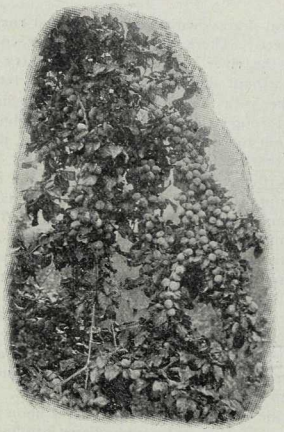
The Climate.

With the advent of the Crow's Nest Pass Railway, coal will be plentiful and cheap, and in the meantime, and, if necessary, for many years to come the side-hills furnish the best of fir and other timber suitable for firewood.

The Company has established a "Home Farm" of some 1,380 acres upon the property reclaimed, upon which a most comfortable and commodious farmhouse has been built, with large barns, cattle sheds and outhouses. The farm is well-stocked with draught horses and dairy and beef cattle, and all the necessary and improved agricultural implements for successful farming. And the result of the first year's trial, although in a great degree experimental as to what fruits, vegetables, etc., were best adapted to the district, has been most gratifying and satisfactory, establishing beyond any doubt the exceptional fertility and productiveness of the soil.

It is the intention of the Company to continue their system of reclamation to the remaining sections ahead of any future demand such as will naturally arise for these lands, and in the meantime place upon the market the property already reclaimed on the easiest possible terms for intending purchasers, and also showing in a tangible form by the work done on their farm, the possibilities and special adaptability of the land for mixed or general farming.





A BRANCH OF PLUMS.

A BRANCH OF CHERRIES.

HOPS, FLAX, Etc.

THE growing of hops in British Columbia, especially in the coast districts, has passed the experimental stage. Indeed, so far as that is concerned, it has never been in the experimental stage. The experience in Washington and Oregon, which, in most respects, are similar to British Columbia and possess to a large degree identical conditions, has shown that the country as a whole is essentially well adapted for this industry. In the States in question hop growing was carried on extensively, for some years very profitably, but latterly the low prices ruling in England, which is the market for the greater part of the Pacific Coast product, have materially interfered with its success. The introduction, too, of insect pests and diseases has had its effect. Hops grow in British Columbia on almost any character of land. The luxuriance of the plant as an ornament proves its general adaptability, and in good, well cultivated and well drained land it invariably grows well and yields largely. The industry several years ago received considerable impetus, and was engaged in by a number of persons in various sections of the coast districts, notably Saanich on Vancouver Island, Chilliwack, Agassiz and Squamish, and other points on the Mainland. The experience of the last few years, however, has somewhat dampened the ardour of those who engaged in it, and many have retired from the business. This was due largely to artificial rather than natural causes, including the low prices referred to. It may not be amiss to state that the hop industry is one in which expert knowledge and experience are required, not only in the preparation of the soil and cultivation of the plants, but in the varieties grown and in the process of curing and marketing. Hops would no doubt prove a remunerative crop if exploited by men with a practical knowledge of their cultivation and the full requirements of the market. In the Agricultural Report of 1897 it is pointed out that it is essential to know the varieties most used by English manufacturers; and the suggestion is a valuable one.

Hop Growing.

With regard to flax growing, this has been recommended by several persons, notably Mr. H. T. Thrift, of Surrey, who has been engaged in a series of experiments with a view to testing the adaptability of the soil and climate for the production of flax, both as an article of feed for cattle and for industrial purposes. Mr. Thrift says that flax has been grown in Westminster District for several years with most gratifying results, the quality of the fibre being equal to the best produced elsewhere. Samples have been exhibited at various local exhibitions. There are thousands of acres of land in the district, suitable for its production. The industry, however, has heretofore been confined to a series of experiments. The fibre produced is long, fine and peculiarly silken, and yielding from two to three tons per acre. The price usually paid in Eastern Canada is $12 to $14 per ton, including the seed.

Flax Growing.

Mr. Thrift regards the conditions of development in this Province as peculiarly favourable to this industry on account of the demand, which is rapidly on the increase, for products such as ropes, twine, fishing gear, grain and ore sacks, etc., and which is likely to reach very large proportions, especially on account of the growth of the fishing and mining industries. In addition to local requirements, on account of the facilities possessed for shipping the prepared fibre to Europe, to the linen manufacturing centres of Great Britain and the Continent, the cultivation of flax for that purpose ought to prove a profitable branch of

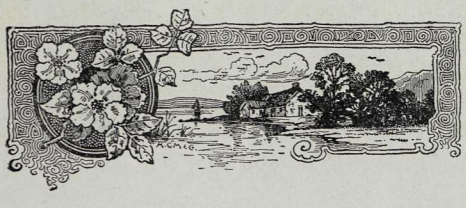
HOP FARM, VANCOUVER ISLAND.

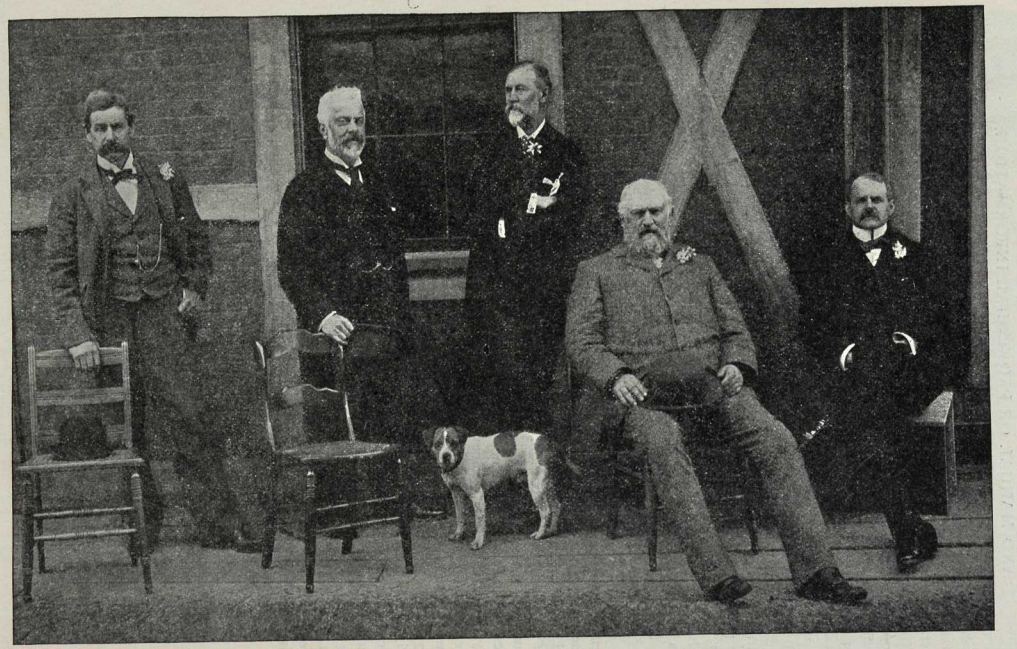
BRITISH COLUMBIA FRUIT ON EXHIBITION.

husbandry. The value of flax compared with other crops, as an economic product he considers as consisting in the amount of labour involved in its production, and is one in which settlers with large families might profitably engage by utilizing their own help to assist in its cultivation, harvesting and the after-processes necessary for its preparation for the market. Mr. Thrift points out many other advantages in connection with the carrying on of this industry, which constitute it, in his opinion, as peculiarly applicable to the dominant conditions obtaining on this Coast, included in which is the manufacture of linseed oil and oil cake. Its cultivation on a large scale would naturally lead to the construction of flax mills, thus adding an additional industry to the list of manufactures in the Province. Through his representations, largely, the Department of Agriculture has distributed seed among a number of farmers in various districts for the purpose of experiment.

Forestry.

Reference has been made to forestry, which, in a comprehensive sense, is included in the field of agriculture. The opinion was expressed that forestry in this Province, owing to the natural conditions of growth, could be greatly diversified by the introduction of economic woods and fruit and nut growing trees. The experience of the Dominion Experimental Farm at Agassiz has shown that this is quite possible. From the reports of that institution it is seen that English, American and Japanese walnuts; American, Spanish and Japanese chestnuts, hickory, butternut, ash, elm, maple, and, in fact, all eastern timber and nut trees, do very well if planted where they can be given a little attention. Mr. Sharp says that a large number of the most valuable forest and nut trees have been planted and are growing on the mountain sides where they received no attention whatever, and many of them are making very fair progress. He points out, however, that they are planted in open spots here and there among the fir, maple and birch, where exists as well a luxuriant annual growth of ferns. Under such circumstances it will be a few years before they become very conspicuous, but at present they are well-established and doing fairly well on land that could scarcely be used for any other purpose. The conditions, for obvious reasons, were not made too favourable, as in that case the results would not be fairly indicative of what the country generally is capable. The success of these experiments goes to show that rocky places, hill and mountain sides which constitute at present very large waste space, the usefulness of which mainly consists in scenic effects, could be utilized for the propagation of large and economic forests.





Hon. G. B. Martin, Chief Commissioner Lands and Works. Hon. J. H. Turner, Premier and Minister of Finance. Col. the Hon. Jas. Baker, Provincial Secretary. Hon. C. E. Pooley, President Council. Hon. D. M. Eberts, Attorney-General.

MEMBERS OF THE PROVINCIAL EXECUTIVE.

LAWS AFFECTING AGRICULTURE.

THAT the Government and Legislature of British Columbia have not failed to carefully guard and assist the interests of agriculture, is evident from the fact that there are on the Statute Books of British Columbia forty-two Acts, including amending Acts, dealing with subjects either directly or indirectly connected with farming. These have been passed from time to time, as the development of the agricultural industry has seemed to warrant, and the conditions affecting the agriculturist demanded attention.

First in the order naturally comes the "Department of Agriculture Act," containing provisions for the regulation of the Department of Agriculture, and for defining the powers and duties of the Minister and other officers of the Department. Principal among its provisions is one for the appointment of a statistician for the collecting, abstracting and tabulating of statistics and information of public interest, a general report to be presented to the House at the end of each year. In this connection it may be stated that all persons engaged in agricultural pursuits of any kind are required to furnish replies to official enquiries and to give such statistics and information as are in their power in regard to the industry under their particular control. Provision is also made for the interchange between the Federal and Provincial authorities of statistics and information bearing on the subject of agriculture.

Agricultural Department.

There are several statutes making provision for organization and establishment of agricultural and horticultural and other societies, having for their object the mutual benefit and co-operation of agricultural communities. Associations and societies in respect to the following classes of subjects may be formed, namely: (a) Agricultural and horticultural; (b) benevolent and friendly; (c) co-operative; (d) industrial and provident; and (e) investment and loan. Only the first and third of these associations directly refer to agriculture as an industry, the others being of a general character. In respect to the incorporation of agricultural and horticultural societies, under Chapter 12, Consolidated Statutes, any number of persons may unite themselves into a society for the protection of agricultural, horticultural or fruit-growing industries. The provisions are of such a character as not to be briefly summarized here, but indicate the procedure for the formation of such societies, as to their officers, regulations, property, liabilities and general powers. Part II. of this Act relates to the Horticultural Society and Fruit Growers' Association of British Columbia, which was organized in 1890, and which has been in existence ever since. It has particularly for its object the advancement of the fruit-growing industry. The Act respecting the co-operative associations, passed in 1896, although it does not specifically refer to agriculture, was really intended to afford a cheap and easy method of forming co-operative societies for the purpose of carrying on any branch of agriculture, or business connected with agriculture. Its provisions are largely

Agricultural Associations.

technical, simply dealing with the methods of procedure and functions of societies formed under its authority.

One of the most important Acts passed by the Legislative Assembly affecting the interests of the farmer was the "Farmers' Institutes and Co-operation Act," enacted in 1897. This was a decided step in advance, and brought our legislation in line with that existing in Ontario, Manitoba and other provinces, and while it contained many of the provisions common to the Acts of Ontario and Manitoba, the measure went still further in the line of progress, and in several respects may be said to be an improvement on its prototypes. Farmers' Institutes, under this Act, may be organized by a petition to the Minister of Agriculture, signed by fifteen persons resident in the district in which it is proposed to organize, and have for their objects the encouragement and improvement of agriculture, horticulture, arboriculture, manufactures, the useful arts, and displays of agricultural products; holding meetings for discussion and hearing lectures; for importing and distributing seeds, plants and animals; for offering prizes for essays and scientific enquiry; for dissemination of information regarding bee-keeping; and for carrying on, by co-operation, any industry relating to agriculture. The annual fee to members is 50 cents, which is supplemented by the government by an amount based on membership, the grant being made conditional upon all the provisions of the Act being complied with. Provision is also made for the organization of divisional institutes, and of a Central Farmers' Institute for the whole of the province, and also for the amalgamation with the Central Farmers' Institute of the Fruit Growers' Association or any other existing agricultural association. Authority is taken under the Act by the Lieutenant-Governor-in-Council to frame rules and regulations defining in greater detail the work of the Institutes and the system under which they may operate. The officers are a Superintendent, who is appointed and paid by the Provincial Government, and Secretary-Treasurers of the local Institutes, who are paid $25 a year by the Government. It is the duty of the Secretary-Treasurer of each district to prepare a full report of each year's work and forward it to the Provincial Government.

Farmers' Institutes.

Under this Act, too, the principle of co-operation is recognized. Upon application to the Minister, ten or more residents and bona fide farmers may engage in and carry on, on a co-operative basis, any of the following, viz.: (a) A Farmers' Exchange, for buying and selling farm produce; (b) a cheese factory; (c) a creamery; (d) a fruit-canning, preserving or evaporating factory; (e) a mutual credit association, for the purpose of receiving deposits and loaning money to its members; (f) or in any other enterprise that may be approved by the Lieutenant-Governor-in-Council as coming among the objects and within the meaning of the Act, and such applicants are constituted provisional directors under the Act for managing the affairs of the Association until the first annual election of officers, and possess all the powers of an incorporated company under the "Companies Act," Part I., the "Companies Act, 1862," (Imperial), to hold property, to sue and be sued, make by-laws, and do all things necessary and purtenant to the carrying on of any business for the mutual benefit and profit of the members subscribing and holding stock: Provided, among other things: (a) That a notice of incorporation containing the names of such applicants be published in the British Columbia Gazette, for which a fee of $10 shall be charged; (b) that no subscriber may hold or hereafter acquire more than one-tenth of the stock allotted by the Association; (c) that 25 per cent. of the capital stock be subscribed at the time of making application.

Co-operation.

One more important feature of legislation is the Act providing for the creation of a Board of Horticulture, which has very comprehensive powers with respect to

the inspection of orchards, imported nursery stock and fruits. The Board is composed of three members—one representing the Island of Vancouver, one the Lower Mainland, one the Interior or Upper Country, with the Secretary, who is also the Deputy Minister of Agriculture, and the Minister of Agriculture, acting ex-officio. This Board, which is purely of an official character and under the direct control of the government, has been in existence since 1894, and has not only a strongly preventive influence in the matter of the spread of pestilential forms of disease and pests, but has exerted an educational influence which is very manifest to-day; and in connection with the Farmers' Institutes has done very effective work in the Province.

Board of Horticulture.

Another important Act, known as the "Agricultural Credit Societies Act," was passed in 1898, whereby a certain number of farmers, by joining together and pooling their credit, may obtain advances from the Government, with the object of loaning to other members for various purposes of improvement. So far no societies have been formed under the act, and the rules and regulations authorized thereunder have never been drafted.

Provision is made by the "Dairymen's Association Act" for the formation: (a) Of a Provincial Dairymen's Association, for the general advancement of dairying throughout the Province; (b) the local Dairymen's Associations, known as Cheese and Butter Associations, for the purpose of carrying on the manufacture of cheese and butter; and (c) the establishment of creameries on the co-operative system, which, when so established, may, on compliance with the Act, obtain Government aid by way of loans to the extent of one-half the cost of creamery buildings, plants and fixtures, such loans to bear interest at the rate of 5 per cent., and be repayable in eight instalments, the first of such instalments to become due at the expiration of three years from the date of the loan, and the other seven instalments annually thereafter. The Provincial Dairymen's Association is at present doing good work in the importation of thoroughbred stock from the East. By the co-operation of the Government, the purchase price of the stock is guaranteed, and the cattle sold locally to purchasers.

Respecting Dairying.

By the "Milk Fraud Act" of 1895, provision is made for the "prevention of" adulterated milk, and the furnishing of adulterated milk to dairies and creameries.

The "Animals Act" contains provisions restricting the running at large of certain animals, to prevent injury by dogs, and for the arrest and sale of animals unlawfully at large. It is also enacted that in any action brought to recover damages for injury done by animals of a domestic nature, it shall not be necessary to prove that the owner of the animal knew or had means of knowing that the animal causing the injury was vicious or mischievous, or accustomed to do acts causing injury.

There are a series of Acts dealing with cattle in various ways. The "Cattle Farming Act" makes provision whereby the owners of cattle may entrust them to a farmer for the purpose of securing their care and increase. Under a registered agreement the registered cattle are protected from all claims against and liabilities of the farmer to whom they are intrusted. The "Cattle Lien Act" confers upon agisters of cattle and animals and keepers of livery stables a lien upon cattle and effects left with them, for the value and price of any food, care, attendance, etc. The "Cattle Act" contains elaborate provisions for the protection and marking of cattle, under which registries are established and a mode provided for the registration of brands and marks upon cattle. Penalties are provided for the contravention of the Act; also provision for the mode of transfer of brands and marks, for the inspection of hides, and for a record of cattle and sheep from east of the Cascades into other portions of the province, so as to guard against stealing. Under the "Breeding Stock Act," the

Animals and Cattle Acts.

"Cattle Ranges Act," and the "Island Pasturage Act" provision is made for the protection and preservation of cattle ranges, and for their being rendered available on an equitable basis for the use of provincial settlers.

Under another series of Acts for the regulation of various matters: (a) There is the "Contagious Diseases Act," which provides for the appointment of inspectors for the inspection of cattle and for quarantine, and, whenever necessary, the destruction of cattle infected with disease. The provisions of the Act are especially directed towards the prevention and the eradication of tuberculosis and pleuro-pneumonia, and against the transmission of disease by milk; (b) the "Line Fences and Watercourses Act," which provides for the appointment of fence-viewers, the construction and maintenance of boundary fences and ditches, and the settlement of disputes between owners in regard to such matters; (c) the "Fence Act," in which is contained a definition of a lawful fence, and the trespass of cattle in case of land protected and unprotected by lawful fences; (d) the "Bush Fire Act," establishing fire districts and the regulation of fires in fire districts, by which, except under certain conditions, it shall not be lawful for any person to set fires between the first day of May and the first day of October, and also the equipment of locomotive engines with the most improved and effectual means to prevent the escape of fire from furnaces, ash-heaps and smoke-stacks; (e) an Act for the better regulation of traffic on highways, providing for the passing of vehicles to the left, preservation of roadways west of the Cascade range, by wide tires for loads over 2,000 pounds, and the prevention of certain unlawful practices which impede traffic or render it dangerous; (f) the "Thistle Prevention Act" and the "Noxious Weeds Prevention Act," the objects of which are sufficiently indicated by their titles; and (g) "An Act for the Extermination of Wild Horses," by which it is made lawful for any person to kill unbranded stallions running at large upon the public lands, provided that such person has first obtained a license for killing, and has made unsuccessful efforts and reasonable endeavors to capture such stallion, and reports the facts of killing to the nearest Government Agent.

Preventive Legislation.

The Acts relating to settlement and the taking up of land are dealt with under the general title of land laws. These include the "Homestead Act," "Land Registry and Amendments," the "Land Clauses Consolidation Act," and the amended "Land Act," and the "Water Clauses Consolidation Act" as amended in 1899 and 1900. The "Land Clauses Consolidation Act" contains complete procedure relative to the acquisition of lands required for undertakings or works of a public nature, and in this respect is allied with the "Water Clauses Consolidation Act," which makes provision for the acquirement and regulation of water rights for a number of purposes, including ordinary domestic and agricultural purposes. The provisions of these Acts are too elaborate to be even briefly summarized here.

Land Acts.

In view of the fact that there exist throughout the province large tracts of land which could be rendered available for cultivation by dyking and drainage, careful and extended provision is made for such work in the "Drainage, Dyking and Irrigation Act" for the appointment of commissioners to undertake and carry out such works. By the "Dyking Debenture Loan Act" of 1897, the Government of British Columbia is given authority to authorize the redemption of certain debentures for the construction of dyking works, and to authorize expenditure of additional moneys in strengthening, extending and repairing certain dykes. By a further Act in 1898, the powers of the Government in respect to dyking matters were still further extended, whereby they assumed a liability exceeding $500,000 in respect to the dyking works in Maple Ridge, Sumas, Coquitlam, Pitt Meadows and Matsqui, and of borrowing a further

Dyking and Drainage.

sum of $225,000 with respect to further dyking works in Chilliwack, Agassiz, Hatzic, Surrey, and New Westminster District generally. These works have been of an important character, and have made fit for cultivation various tracts of land, aggregating about 100,000 acres, otherwise subject to overflow. It is probable that the question will have still further attention during the coming session of the Legislature.

Assistance to Farmers.

Just recently the Government has announced its decision to assist farmers in the clearing of land, by making arrangements for cheaper explosives. It has also announced that it would undertake an experiment, in a small way, to demonstrate the economy to be achieved by the adoption of improved modern methods, by machinery and otherwise. During the recent session of the Legislature an Act was passed providing for the carrying out of a system of small holdings, by which it is hoped that the comparatively small area of farming lands may be more fully occupied and improved, and the farming population correspondingly increased.

CROWN LANDS AND TIMBER.

CROWN lands in British Columbia are classified as either surveyed or unsurveyed lands, and may be acquired by entry at the Government Lands Office, by pre-emption or purchase.

The following persons may pre-empt Crown lands: 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 (that is, unreserved for Indians or others, or unrecorded in the name of any other applicant).

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

The quantity of land that may be recorded or pre-empted is not to exceed 320 acres northward and eastward of the Cascade or Coast 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 Crown grant is issued, is held by occupation. Such occupation must be a bona fide personal residence of the settler or his family.

The settler must enter into occupation of the land within 30 days after recording it, and must continue to occupy it.

Continuous absence for a longer period than two months consecutively of the settler or family is deemed cessation of occupation; but leave of absence may be granted, not exceeding six months in any one year, inclusive of two months' absence.

Land is considered abandoned if unoccupied for more than two months consecutively.

If so abandoned, the land becomes waste land of the Crown.

TERMS OF PAYMENT.

The fee on recording is two dollars (8s.).

The settler shall have the land surveyed at his own instance (subject to the rectification of the boundaries) within five years from date of record.

After survey has been made, upon proof, in declaration in writing of himself and two other persons, of occupation for two years from date of pre-emption, and of having made permanent improvement 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. He pays five dollars therefor.

The price of Crown lands, pre-empted, is one dollar (4s.) per acre, which must be paid in four equal instalments, as follows:

First instalment two years from date of record or pre-emption, and yearly thereafter, but the last instalment is not payable until after the survey, if the land is unsurveyed.

Two, three or four settlers may enter partnership with pre-emptions of 160 acres each, and reside on one homestead. Improvements amounting to $2.50 an acre, made on some portion thereof, will secure Crown grant for the whole.

The Crown grant reserves to the Crown a royalty of 50 cents per M. on timber. Coal and petroleum do not pass under grants of land acquired by pre-emption or purchase, but may be acquired upon compliance with the conditions of the "Coal Mines Act."

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

The heirs or devisees of the settler are entitled to the Crown grant on his decease, upon fulfilment of the conditions of the "Land Act."

Crown lands may be purchased to the extent of 640 acres. Minimum price of first-class land, $5 per acre; second-class, $2.50 per acre; third-class, $1 per acre. No settlement duties are required on such land unless a second purchase is contemplated. In such a case, the first purchase must be improved to the extent of $5 per acre for first-class, $2.50 for second-class, and $1 for third-class.

LEASES.

Leases of Crown lands in lots not exceeding 20 acres may be obtained; and if requisite improvements and payments are made, at the expiration of the lease Crown grants are issued.

Leases are also granted for hay lands for terms not exceeding ten years; and for any purpose whatsoever, except cutting hay, for a term not exceeding twenty-one years.

TIMBER.

Twenty-one years' timber leases are now subject to public competition, and the highest cash bonus is accepted, subject to the 50 cents per M. royalty above mentioned, and an annual rental, in advance, of 15 cents per acre. The holder must put up a sawmill appurtenant to the leasehold, capable of cutting not less than 1,000 feet of lumber per day of 12 hours for every 400 acres of land in such lease; and such mill shall be kept running for at least six months in every year.

HOMESTEAD ACT.

The farm and buildings, when registered, cannot be taken for debt incurred after the registration; and it is free from seizure up to a value not greater than

$2,500 (£500 English); goods and chattels are also free up to $500 (£100 English); cattle "farmed on shares" are also protected by an "Exemption Act."

DOMINION GOVERNMENT LANDS.

All the lands in British Columbia within 20 miles on each side of the Canadian Pacific Railway main line are the property of Canada, with all the timber and minerals they contain (except the precious metals). This tract of land, with its timber, hay, water-powers, coal and stone, is now administered by the Department of the Interior of Canada, practically according to the same laws and regulations as are the public lands in Manitoba and the Northwest Territories, except that the homesteads must not only be resided upon and cultivated for not less than six months in each of the three years after entry, but they must also be paid for at the rate of $1 per acre. Dominion lands in the province may also be acquired by purchase, free from settlement conditions. Agencies for the disposal of these lands have been established at Kamloops, in the mountains, and New Westminster, on the coast. The minerals in this tract, other than coal and stone, are administered by the province of British Columbia.

AGRICULTURAL ASSOCIATIONS OF BRITISH COLUMBIA, 1899.

Names of Associations.	Number of Members	Treasurer's Name	P. O. Address	Cash Receipts
Comox Agricul. & Indus	51	J. A. Halliday....	Sandwick	$ 891 55
Cowichan	66	H. de M. Mellin..	Somenos	1,044 50
Delta	64	A. De Taylor.....	Delta	399 80
Inland	43	John Burr.....	Ashcroft	967 75
Islands	75	J. A. Broadwell..	Salt Spring Isl'd.	291 50
Kamloops	148	J. T. Robinson...	Kamloops	3,212 50
Kent	50	G. W. Beebe.....	Agassiz	100 00
Langley	68	W. J. McIntosh..	Langley	364 05
Mission City	46	J. A. Catherwood.	Mission City....	220 50
Nanaimo A. & H.....	43	R. Malpas.....	Nanaimo	63 10
Okanagan-Spallumcheen.	232	C. B. L. Lefroy..	Vernon	1,502 85
Richmond Agric. & Ind.	62	A. B. Dixon.....	Terra Nova.....	880 35
Royal Agricul. & Ind....	..	W. H. Keary.....	Westminster ...	....
Saanich, N. & S.....	71	F. Turgoose.....	Turgoose, B. C..	668 15
Salmon Arm	36	L. M. McGuire...	Salmon Arm....	125 40
Surrey.....	35	J. C. Murphy.....	Surrey	440 00
Victoria*.....	..	Beaumont Boggs.	Victoria	....

*The Agricultural Society of Victoria has not held any exhibition for several years, but will do so this year.

COMPARATIVE STATEMENT OF AGRICULTURAL IMPORTS INTO BRITISH COLUMBIA.

	30th June, 1897.	30th June, 1898.	30th June, 1899.	30th June, 1900.
Live Stock	$ 161,742	$ 219,207	$ 181,843	$ 171,113
Meats, etc.	274,304	518,709	442,847	494,942
Breadstuffs and products of.....	210,091	311,859	252,652	196,580
Fruits and Vegetables	184,093	234,615	187,780	385,313
Trees and Shrubs	1,726	369	886	1,724
Oils	9,780	6,956	9,267	33,342
Dairy Products	114,115	130,577	133,799	157,372
Miscellaneous	160,084	176,126	188,133	55,374
Totals	$1,115,935	$1,598,418	$1,397,207	$1,495,760

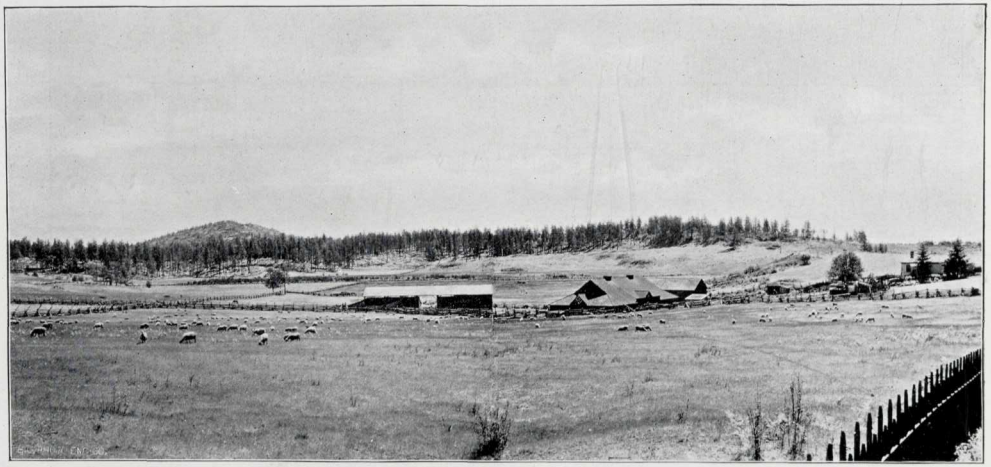
UNOCCUPIED AREAS.

IN the immense district lying between the Cascade Range and the Rockies, to the north of the Fraser, to which the name of New Caledonia has been given, immense opportunities exist for profitable settlement, there being large areas of good agricultural land, as well as immense reaches of grazing country. The district would supply a growing home market among the miners of the district, which district is rapidly opening up, as well as having open to it, so soon as a railway is built, the larger markets of the world. In 1891 an exploratory survey of the entire district was made, the work being divided into two sections and conducted respectively by Mr. A. L. Poudrier and Mr. N. B. Gauvreau. Mr. Poudrier in his report deals with the country tributary to the Kitlo River (whose valley he describes as almost valueless); the Kemano River, along which several small agricultural valleys occur; the Kitamaat Arm of the river; the Skeena, the main branch of that northern waterway, and the Naas. Describing the country generally, Mr. Poudrier says: "There are a large number of pieces of good land, heavily timbered, along the coast, which could be utilized for agricultural purposes. The valley of the Skeena, the benches above Quatsalix near Hazelton, the valley of the Kispyox, the upper branches without counting the valley of the Watsonkwa, and the part included in Mr. Gauvreau's field of exploration, after very careful computation, would give 300,000 acres of farming land, more or less wooded. The Naas River, its banks, its islands, the valleys of its higher branches, including the valleys of the Tsi-ax to the Skeena, of the Shigaltin to Kitwanga, and the prolongation of the valley from the Tsi-ax, would give an approximate area of 700,000 acres of farming land. Of this, three-fourths is wooded and the rest is either cleared or covered only with light thickets. Of the higher land, exposed to the summer frost, and where wheat could not be grown, and of high pasture land, there are several scattered areas. Around Kit-wan-coole, the higher benches on the Upper Skeena and Naas, the high plateau lying between the different branches of the Naas, and between its watershed and the Stickine, can all be utilized as grazing land and classified as such. One and a half million acres would be about a correct estimate of the grazing land available. All the area west of the Cascade Range is damp and rainy. Near the sea the snowfall is not great, but at some points up the river it is more than six feet. After crossing the mountain the climate gets much drier, but in no part of the country explored by me would irrigation be necessary, unless it would be in some of the valleys at the head of the Skoot. The climate of winter about Hazelton and at the corresponding point on the Naas is very cold, but the cold is not so prolonged as it is east of the Rockies; there are always one or more thaws during the season. Observation of the gardening done by the Indians shows that, although their lands are very poorly cultivated, they yield well, while the season is about the same as in the west of the province of Quebec. In no part has the timber been found in very large quantity as would in

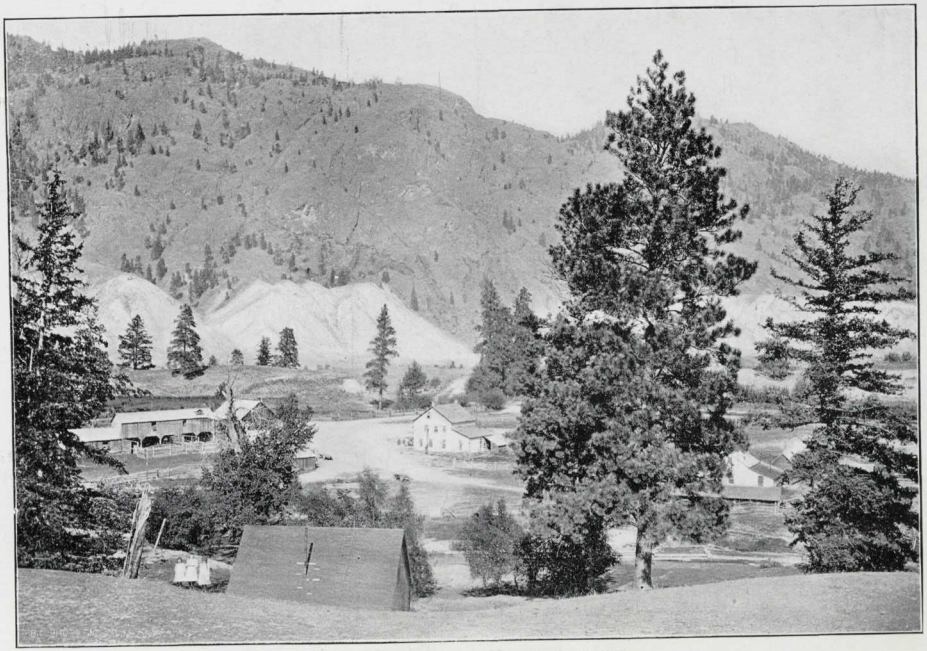
An Immense Pastoral Area.

An Approximate Estimate.

General Conditions.



R. P. RITHET'S FARM, SAANICH ROAD.



HEWITT BOSTOCK'S RANCH—DUCKS.

the future warrant the hope of exportation, except perhaps the giant cedar and the spruce; but everywhere it is sufficient for every local use when once the country is settled. No doubt the balsam, poplar, the aspen, the cottonwood and the birch will some day be of value for the manufacture of wood pulp."

Mr. Gauvreau's explorations during the same year covered the Endako River, the Watsonkwah (or Bulkley), the Susquwah valley and Babine trail, Babine Lake, Frying Pan Pass, North Tatlah Lake, Driftwood and Middle Rivers, Tremblay Lake, Thatcher River, Stewart Lake, the country from Stewart to McLeod, Crooked River, Giscome Portage and Fort George, Pack River, Parsnip River, Nation and Finlay Rivers, Manson Creek and the Omineca. Taking these districts in detail, the available land is referred to as follows: At the mouth of the Endako there is a tract of about 1,000 acres of rich arable land; the general width of the valley is about four miles, the land being fairly open and the side hills offering good grazing land; the sub-soil is composed of boulders and gravel, capped with vegetable mould on the side-hills, and drift and black loam in the valley. Midway between the river mouth and Burns Lake, 30 miles distant, are some fine hay meadows, while at the lake are some 1,200 acres of good bottom land. Decker Lake and Fraser Lake offer fine facilities for cattle-raising, the grass being very rich in the open land. In the Bulkley Valley the soil is rich, and the area of available land large and conveniently located. The valley is wide and open, well watered by several mountain streams, and well adapted for stock-raising or dairy farming down to the 66-Mile Station. The general length from the summit between the watershed of the Endako to the Skeena is 110 miles; the valley is wide all the way, as much as 12 miles in places. A very large proportion is open prairie, with luxuriant grass, and where there is timber it will be easy to clear. The soil is good, and vegetables of all sorts and all cereals except wheat could be grown. As grazing land, the district's areas cannot be surpassed, and where the timber has been burnt the numerous varieties of grasses growing show that areas of pasture could be largely increased. The distance of 55 miles from Hazelton to Babine, up the Susquwah and Babine trail, offers little or no farming land, although good-sized stretches could be used for grazing. Where the timber has been burnt the grass is abundant, a species of wild timothy growing very thickly. In the vicinity of Babine Lake there are numerous tracts of good grazing land, in extent varying from 500 to 1,500 acres; while from the end of Tremblay Lake valley southward for over 20 miles there are extensive timber flats with good land. The soil is generally light loam, with a sandy sub-soil. The timber around the lake includes spruce and Douglas fir, birch, cedar, alder, cottonwood and pine, while in the open parts vetches, pea-vines and red-top form a very good pasture. On both sides of Driftwood river there are flats from half a mile to one mile in width of good alluvial soil, suitable for good pasture. Beyond these the country is gravelly and mixed with swamp. Along Middle River, with a total length of 16 miles, the soil is in some parts of good loam, but generally sandy and gravelly. Along the river are good hay meadows, which the Indians have utilized for years. Tremblay Lake, of which Middle River is the principal feeder, offers very rich open land, with good pastures. The soil is clay loam, covered with vegetable matter, while there are bluffs of poplar, small birch and willow; from Tremblay to the small lake above, the country is open and grassy; above that lake the land is thickly timbered with Douglas fir, balsam, spruce, cottonwood and poplar. The country between Thatcher River (by which Tremblay Lake empties into Stewart) is cut up by bluffs and short chains of hills. Between the river and the northwest arm of Stewart Lake are several small valleys, thickly timbered and of good soil. Stewart Lake valley contains con-

Gauvreau's Explorations.

Bulkley Valley.

Various Areas.

siderable areas of land suitable for the cultivation of hardy cereals, oats, barley, etc., and also all ordinary vegetables. There are also numerous stretches of excellent grazing country. From Stewart's Lake to McLeod's Lake little farming land occurs, although clearing and draining may yet improve the country to such a point that good pasturage could be utilized and hardy grains grown. Along the Crooked River are numerous hay meadows, while beyond the valley the country is undulating and timbered. Toward Giscome Portage the country is more congenial—it boasts more frequent open stretches, the soil is richer and the vegetation more luxuriant. From Giscome Portage to Port George the country is covered with poplar and birch, and has many reaches of open and partly open grassy flats. On the east many well-timbered benches are found, and very good soil fit for farming. On the Pack River, upon which McLeod's Lake empties into the Parsnip, the country to the southwest is not attractive, although there is a fine meadow near the lake where the natives have cut hay for years. The banks of the Parsnip are low and well wooded, and although there are numerous hay meadows along its course, the land cannot generally be looked upon as fit for agriculture until the heavy timber is cleared and the soil drained. The district tributary to the Nation River, the Findlay, Manson Creek and Omineca cannot be said to be adapted for agricultural purposes on the whole, although hardy plants can be grown there. Mining is the industry of the district, and no doubt when mining operations shall have gained larger proportions, extensive tracts will be utilized for the growing of hardy grains and vegetables, and cattle-raising will become an important industry.

Omineca

More detailed information in connection with the agricultural resources of the Bulkley Valley is contained in a report by Mr. A. L. Poudrier in January, 1893, descriptive of the explorations he conducted during the summer previous. On this survey the district was entered from Hazelton by wagon road built to Mauricetown, a distance of 30 miles. Of the country between Hazelton and the Bulkley Valley proper, it is stated in Mr. Poudrier's report that the soil is generally good, of rich sandy loam with clay sub-soil; four or five townships could be laid out in this section, containing quite 90 per cent. of good agricultural land. This character of country continues for 10 miles out of Hazelton, from which point to Mauricetown the available good land would average 50 to 70 per cent. The most casual cultivation by the Indians shows the land to be fruitful in furnishing all ordinary vegetables, while the grazing districts permit horses and cattle to run out the year round. In describing the Bulkley Valley, Mr. Poudrier writes as follows: "About one-fourth of the whole valley, which averages from five to ten miles in width, consists of prairie and open lands. These openings have been formed only of late years by many fires, fine prairies standing where were thickets only a few years ago. This fact is mentioned as indicating the extreme facility of clearing, which can be done completely by fire. The open country is very rich in grasses of different species; as much as three tons of hay can be cut to the acre, and in some places as many as four. More than half the country surveyed and a continuation of the valley beyond the limits of the survey is covered with small aspen, poplar, balsam poplar, birch and service-berry. Black pine predominates on the hills, and in the hollows and along the waterways alders and willows are abundant. The soil also of the valley is very rich. On the level land, which covers the greater part, the soil is composed of from two to five feet of alluvial, underlaid with clay sub-soil; on the hills the depth of detritus is not so great, and the lower strata is either sand or gravel, but at any rate it is rich enough to form a luxuriant pasture ground. The climate is not at all trying. Spring begins in April, and by the end of that month the snow is gone. The summer is rather dry and hot. But the proximity of the mountains often brings light summer frosts. Hardy cereals thrive, and vegetables return abundant crops. According to the flora of the

Bulkley Valley Described.

Bulkley valley

General Capabilities.

country, the climate of the valley should be equal, if not superior, to that of the neighborhood of Quebec. It may be a little colder in winter, but the snow is never so deep, and almost every winter the warm winds of the Pacific reach the locality, and sometimes melt the snow altogether. The ground of the southern aspect is well adapted to the growth of wheat of the hardier varieties. Game, timber, good water, coal and minerals are lavishly supplied throughout the district."

A very extensive report of the explorations conducted by him on the northwest coast of the province was made by the late George D. Corrigan, P. L. S., in 1895. Dealt with in this are the valleys of Wakeman Sound, Kingcome River, Atah Valley, Thompson Sound, Quatsino River, Village Bay River, Mereworth Sound, the Cape Caution country, Branham Island, Shelter Bay, Bradley Lagoon, the valley at the head of Lowe Inlet, Banks, Gotion, Porcher, Henry, Stephens, William and Arthur Islands, the valley of the Kitamaat, Kildala Valley, Gardiner Canal and Swindle Island. In the Wakeman Sound district there are from 1,000 to 1,500 acres of first-class land accessible, and so situate as to receive a large amount of sunshine. The valley of the Kingcome River is described as containing the length of 10,000 acres of excellent land, suitable for the growing of hops, hay, oats or roots; there is plenty of timber for building and some for exporting; Kingcome river itself contains an abundance of cod, halibut and salmon. In the Atah Valley, the close proximity of which to Kingcome Valley would make it a good location for a few settlers, there are about 1,000 acres of first-class land, while the islands in the vicinity of Thompson Sound would serve acceptably as the home of a fishing people. The Cape Caution country contains from 40 to 50 square miles of nearly level and partly open country, upon which cattle or sheep might be made to feed. Sheep-raising would also be profitable, it is thought, on Branham Island; while the vicinity of Bradley Lagoon would hold a scattered population, fishing rather than agricultural. On Banks Island there are reported to be from 20 to 25 square miles of soil, which, if cleared and drained, would grow any fruit-crop. Many of the meadows are good, and the whole country would furnish good grazing for stock or sheep, if the climate is not too wet for them. All along the streams there is stunted timber, and, roughly estimated, there are about 200 square miles of territory that could be utilized for light agriculture, while the larger meadows would make rich farming lands. "Taken as a whole," says Mr. Corrigan's report, "this would be an excellent location for a fishing community, who would keep a considerable number of cattle and grow plenty of produce for all requirements. It is also well situated for fishing, being very close to the halibut and salmon grounds." Several of the islands in Canoe Passage contain good land and are practically level, while the territory on the west side of Canoe Passage has an abundant overgrowth of grass. There are about 6,000 acres here, which, with drainage, could be made very productive. All along the mainland shore the territory should afford good location for small holdings. There would be about 25 square miles of this low country. In the valley of the Kitamaat from 75 to 100 square miles of first-class settlement country is reported. It was estimated from what was seen by the party that there would be scarcely one claim of 160 acres so difficult to clear or till, but that in the first season a settler could get under cultivation a sufficient part to supply his own needs. Cultivated fruits and vegetables flourish and give good returns. The climatic conditions are favorable, and fish and game abound. On Swindle Island there are about 2,000 acres of excellent land, a little wet, but easily drained. In the conclusion of Mr. Corrigan's report it is noted that the valleys examined and mentioned as being good and containing productive soil, were considered so for an agricultural community, but the islands and those portions of the mainland on its extreme western borders were considered more suitable for fishing communities.

The North-west Coast.

Sheep-Raising.

Facilities of Settlement.

Beginning at the head of Bute Inlet, Mr. H. P. Bell, C. E., who made a survey in 1895, describes the land in the valley of the Homathco River as good, but expensive to clear, and the climate as probably unexcelled for the production of cereals, fruits and roots. The eastern flank of the Coast Range he pronounces to be pastoral land of exceptional excellence, the winter feed giving it a highly favorable character. This feed can be cut on the extensive natural meadows. Some of the land in this section only requires irrigation to make it admirable for farming purposes, and there are streams at hand to supply the water. Mr. Bell thinks that it is only the lack of means of communication which keeps this section from being immediately occupied by settlers. He estimates that there are about 80,000 acres of good farming land around Tatla Lake, including the Homathco Valley. In this the pastoral area is not taken into account. East of the section just described, Mr. Bell reports a large tract containing many natural meadows, the higher lands being all that can be desired for sheep-raising. North of this, and extending all the way to the northern border of the Central Mainland, Mr. Bell reports "a good pastoral country, with areas capable of cultivation." These observations cover the whole country between the Coast Range and the Fraser. East of the Fraser, he says, "there are many creeks and river bottoms which contain good pasture available for dairy purposes, and also for the cutting of hay," and he states facts which show that hardy grains and vegetables can be successfully grown. In this part of the district mining will be the chief industry.

The Homathco Valley.

In the valley of the Klena-Klene River and in the vicinity of Port Neville considerable exploratory survey work was done in 1894 by Mr. A. F. Cotton, P. L. S., who found on his arrival at Knight's Inlet on the 6th June that oats and potatoes were already up and the season much further advanced than even in the Fraser Valley. The valley at the head of the inlet is a rich grass flat, cut up by the sloughs running from the inlet, perfectly level but subject to overflow. The soil is a rich alluvial deposit, resembling that of the Delta of the Fraser. At the head of the inlet about 900 acres of second-class and 2,888 acres of third-class land has been found by Mr. Cotton to be available for settlement. At Port Neville the inlet extends inland about nine miles and varies in width from one-half to one and one-quarter miles. At the mouth there is 1,000 acres of good clay loam, lightly timbered with hemlock, spruce and cedar; near the head on the west side there is also good land. Port Neville is called at by regular steamers from Vancouver, and the tributary country is much patronized by sportsmen, deer, geese and ducks abounding.

The South-west Coast.

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In the Upper Squamish Valley, situate to the north of Howe Sound, there is, according to the report of Mr. W. S. Jemmett, P. L. S., about 2,900 acres fit for settlement. The soil is a light sandy loam and alluvial deposit, pretty well covered with various kinds of bushes and other shrubs.

THE NECHACO VALLEY.

THIS portion of the Cariboo district, which appears to offer exceptional attraction to settlers, as soon as communication by rail is afforded, was surveyed in 1894 by Messrs. A. L. Poudrier, John Strathern and E. B. Thomson. The latter gentleman commenced his survey work at the intersection of the Stony Creek meridian with the 54th parallel of north latitude, making this point the northwest corner of Township 1 east, Range 1 north, and running all that portion

of the township south of the Nechaco River from west to east. In describing the land he has grouped several sections together, carefully noting any prominent features in any particular section. In sections 1, 2 and 3 is found a considerable quantity of pine, spruce and poplar suitable for building purposes, while the northern portions of these sections are cut into by the Nechaco River, along which there are good hay meadows of small extent. Along Stony Creek through the northern part of Sections 5 and 6 there is also a considerable portion of good hay land. All portions of Sections 7, 8 and 9 south of the Nechaco are covered with hay meadows, while Section 10 is altogether taken up with scrub, about 200 acres in extent. In Sections 13 to 18 poplar and scrub occur, with scattering bunches of spruce and many small patches of open territory intermixed. On Section 16 there is a small 20-acre lake, surrounded by hay meadows and willows; through Sections 16, 17 and 18 is found a large creek, flowing from the northwest, in the valley of which is good hay land, and on the banks stretches of open prairie. There is also a large amount of open prairie land, with good hay areas, along the bottoms in Sections 19 to 24, inclusive. Section 24 has about 200 acres of open prairie in it, the balance being burned land and scrub. Sections 25 to 30 include burned land, with patches of hay meadow and scrub, a large prairie area and a considerable amount of poplar timber. Section 31 consists of spruce and poplar and burned land. The northerly portions of Sections 33, 34, 35 and 36 are on the divide, and timbered generally with pine and spruce; the balance of these sections is on the flat, and good land, mostly burned. In Township 2 east, Range 1 north, the surveyed portion of the land is of good quality, while that portion yet to be surveyed is a vast level plain, with many large tracts of prairies scattered through it. In closing his report, Mr. Strathern says: "All the land surveyed by me this season is of a superior quality, composed as it is of clay loam and white silts, and there is not a half section in the entire season's work which would not make a good farm, with the exception of Section 36 and the north half of Sections 32, 33, 34 and 35, which are on the divide between the waters flowing into the Nechaco and Stewart Rivers. The land is entirely free from rolling stone or rock, and is lightly timbered and easily cleared."

Mr. Thomson's Report.

Mr. Thomson, in his report of the survey of the Nechaco district, describes Township 1 west, Range 1 north, as available for agriculture and stock-raising, the soil for the greater part being loam, with a sub-soil of silts. The district is comparatively lightly timbered, with small poplar, spruce and pine. Sections 29 to 33 are spoken of as virtually useless for agricultural purposes, the soil being chiefly sandy, but capable of being utilized during the summer months in stock-raising, the supply of grass being very plentiful. The northern portion of Township 1 west, Range 1 south, composed of sections 25 to 30, is found to be good land, thickly timbered with a small growth of poplar. The Indians in all parts of the districts raise potatoes of good quality, turnips, cabbage and onions, while oats, wherever tried, appear to thrive and yield heavily. The lakes abound in fish, while during the months of August and September the Nechaco swarms with salmon. Trout and sturgeon are also numerous, and a small fish known as the whitefish. Bear are plentiful and rabbits numerous. The climate is spoken of as delightful, with no great extremes. During the winter the snowfall is light, and although sometimes the glass drops very low, the weather is not severe. The Indians never think of feeding their cattle until about Christmas, and as early as March they can be, as a general rule, turned out again. The country, as a whole, much resembles the Carrot River section of the Northwest Territories, the settlement of which has been attended with singular success.

Mr. Poudrier's work in connection with the survey of Nechaco Valley was outlining the section south of the parallel, the three townships outlined being found to

contain a large amount of good agricultural land, with indications that the townships adjacent to them would also make good farms. In his report Mr. Poudrier makes the following observations: "The Nechaco River takes its source near the foothills of the Coast Range, south of the 53rd degree of north latitude, and near the head of the Salmon River, which falls into Dean's Channel; it turns northeasterly for a long distance, receiving many large feeders, until it falls into a large trough or depression near Fraser Lake. This depression follows the 54th degree of latitude in its general direction, and it has an average width of from 10 to 40 miles. At the point where the Nechaco reaches this wide valley, its volume is greatly increased by the Nantley River, which drains Fraser Lake, Lac des Francais, and the valley of the Endako, and it takes its course, widening through the valley but keeping a general course, parallel to the 54th parallel of north latitude, until it reaches the Fraser River. This large extent of land is drained by the Lower Nechaco from Fraser Lake to the Fraser River, and has a length of about 75 miles in a direct distance, and a width of from 10 to 40 miles. During the exploration of 1889 in that portion of the country, the amount of land fit for cultivation in the whole valley of the Nechaco and its tributaries was estimated at 1,000 square miles. A closer examination, made under better circumstances, proves that more than that amount of good land is to be found on the Lower Nechaco alone. The upper part of the trough occupied by Fraser Lake, Lac des Francais, and the Nadina River, extends as far as the foothills of the Coast Range, a distance in a direct line of about 85 miles, also parallel to the 54th degree of latitude. That portion of the valley is not so level as the part along the Nechaco, several small groups of low mountains occurring on both shores of the lakes, but, nevertheless, a very extensive tract of land will yet prove of great value for farming and grazing purposes. This, the only road to reach Alaska from the interior, was found and utilized by the constructors of the old telegraph line, and will no doubt some day be the route followed when the time comes for the building of a railroad to Alaska. The immense advantages offered by this valley are many; hills are unknown, the soil is rich and in great part open. The general altitude is much lower than all the surrounding country. The climate is milder, and the principal crops can be grown without trouble. Wheat, barley, oats and all kinds of vegetables are known to give good returns as far north as Telegraph Creek, which is in the same valley; but stock-raising will in the near future prove to be the most paying industry. Apart from its agricultural value, it must be remembered that this route passes close to the Omineca and Cassiar mines, and traverses the country between the Stickine and Naas rivers, where silver ores of all kinds are found. The land in the region surveyed is not generally open. It is covered with a light growth of small balsam poplars and Canadian balsam. On the low hills the soil is generally much lighter, and jack pines predominate. Near the streams some very large Canadian poplars are found; they are utilized by the Indians to make canoes. In some low places small black spruce are found, but never in large quantities. A few very low hills occur at different places, where spruce of a size fit to be used for economic purposes are found. Alders and willows of different species are common. The service-berry bush is also abundant, and its fruit is preserved and dried in large quantities by the natives. Although the ground is generally covered with thickets of small trees, patches of prairie of large extent often occur. These are always level and covered with the greatest varieties of nutritious grasses. These prairies appear to be nearly all caused by fires. They are more abundant near the trails and rivers, where no doubt fires were started by Indians or white men camping. On the north of the Nechaco very large tracts of land have been burned, and are now fast

Poudrier's Report.

The Aggregate Area.

Interior Railway Route.

Easily Cleared.

becoming rich meadows; only a few stumps and the remains of burned logs can be found. The whole country could be cleared most effectually and cheaply by that means. The soil almost everywhere is of the richest quality. It is composed of fine white silt, with clay sub-soil; in some parts the silt attains a thickness of over 40 feet. Not only is the grass very luxuriant on the prairies, but even in the wooded portion pea-vines and vetches of different species grow to such a height that it renders travelling very difficult. It has long been the opinion of miners who have seen that country that summer frosts would be too severe for the cultivation of the soil. A very careful examination of the flora, and additional information received from the Hudson's Bay Company's employees and others, enable me to form a different opinion. Barley, oats and all kinds of small vegetables have been grown successfully at Fort Fraser, and further north and in a higher altitude. At Fort St. James cultivation is also

Remarks on the Flora.

very successfully carried on. The Indians grow potatoes, turnips and cabbages, and although their mode of culture is most primitive, they always have a good yield. A great portion of the provinces of Quebec and New Brunswick were so subject to summer frosts when they were first settled—so much so that no crops could be raised for many years, until the clearing had reached a very large area. Should some parts of the Nechaco Valley be so exposed, no doubt the clearing or burning would have the same beneficial effect. I have seen in many places heads of wheat, probably brought amongst other grain by pack-trains, thoroughly ripe; and timothy and clover are also found in many places along the trails. I have no doubt that an early wheat, like Ladoga or Red Fife, could be successfully grown, at least over the largest part of the valley." * * * * * * "The rain is not abundant in summer, but quite sufficient to enable farming to be done without irrigation. The cold is said to be very severe in winter, but the atmosphere is always clear and calm. The summer is very hot, and with the long days in that latitude, there is all the chance possible for vegetation. In certain portions of the surveyed ground the timber is too small for construction, but a good supply of fair timber can always be had cheaply from along the river or from the shores of the lakes. Three lakes of some importance are found in the surveyed parts—Noolkie, Tachic and Tsinkut. Stony Creek, a fine stream, falling into the Nechaco, drains the two first. Many smaller lakes and ponds occur, and they are generally surrounded by rich, wet meadows; it is near these that the horses and cattle belonging to the Indians pass

Fish and Game.

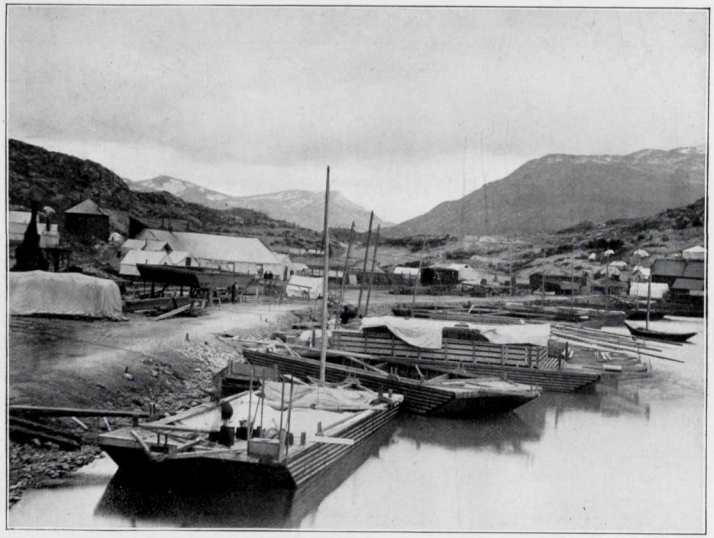
their winter; they are left to themselves, and are generally in first-class condition in the spring. The streams and lakes are well stocked with fish. The salmon ascends the Nechaco, and is the principal food of the Indians; sturgeon is often seen; trout and two or three varieties of whitefish are very plentiful, and of first-class quality. Big game is scarce; deer are seldom seen; the caribou do not come down the valley; bears are also scarce. Of small game there is any quantity—rabbits, grouse, ducks and geese can be had without any trouble. The different townships surveyed are so much of the same character that it is useless to take them one by one. The same growth of small trees prevails everywhere, with newly-burned spaces becoming prairies, and rich spots of luxurious grass. Several small streams cross the townships surveyed, all falling into the different lakes. There is a fall on Stony Creek which offers one of the finest water-powers; two or three smaller streams south of Noolkie Lake, and the creek draining Tsinkut Lake, also have the same advantages. The country between Quesnel and Nechaco, though offering many spots of rich land as fit for cultivation, is far from being so advantageous as the big valley; not only is the soil not so good, but the climate is much more severe, owing no doubt to the difference in altitude from the level of Lac des Francais."

NORTHERN BRITISH COLUMBIA.

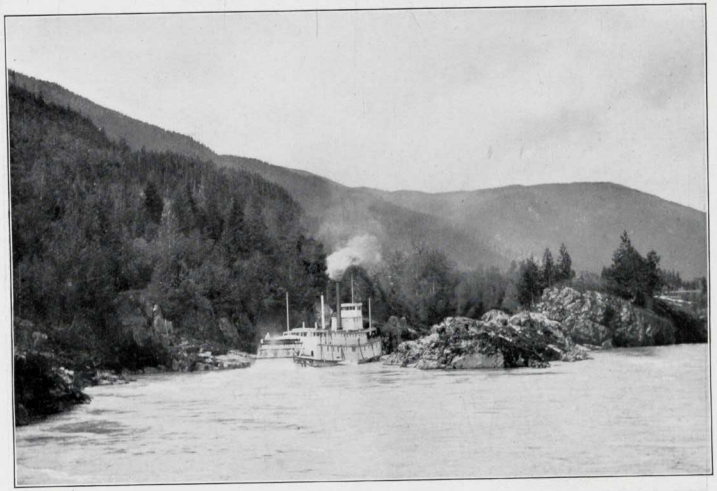
FROM an exploration of the Kitamaat and Lakelse valleys and Skeena River plateaus, made by Mr. E. S. Wilkinson, P. L. S., in 1897, it is found to contain ample agricultural land for the maintenance of a prosperous colony. In the Kitamaat Valley near the sea there are considerable tide flats, reaching to the timber and covered with coarse grass; the higher portions of these flats could be easily reclaimed and made productive by means of small dykes, the soil of upwards of 300 acres consisting of from three to five feet of a rich silt, with gravel sub-soil. On the eastern side of the inlet the valley extends northerly for about eighteen miles, covered with groves of spruce, cedar and hemlock, interspersed with open areas, making it a much easier task to clear than it usually is on this Coast. On the west side of the valley extensive swamps occur for eight miles, which could be easily drained, as there is a sufficient fall, and the ground is easy to ditch. The soil of the valley is composed of a fine mud silt, from three to six feet thick, with a sub-soil of eight feet of gravel, and under that a hard blue clay; it is very rich and fertile, and capable of growing very heavy crops, especially of potatoes. All other vegetables are found to thrive, while this valley and the contiguous benches of the Skeena are declared to be absolutely free from summer frost. The valley contains an area of 45,000 acres eminently suitable for settlement; while above the forks of the river a further area of about 20,000 acres of good land occurs, although not quite so suitable for settlement. Some species of salmon run up the Kitamaat River, but not in sufficient numbers to justify cannery operations; trout and charr also frequent the river, and Kitamaat Arm is favored with annual runs of oolachan. Bear and caribou are found in the valley in the winter, and large crops of cranberries grow in the swamps. The valley at the north and south and east of Lakelse Lake, and included in the first plateau above Kitamaat Valley, contains an area of from 5,000 to 6,000 acres, a large portion of which is good soil. Mr. Wilkinson, in his report, states, however, that he does not consider this valley to be of the same importance as the Kitamaat Valley, owing to the greater difficulty of draining it, which could only be accomplished by lowering the outlet of Lakelse Lake. Along that portion of the Skeena River prospected by Mr. Wilkinson during his summer expedition in 1897, several long benches of land were examined on the east side of the river and to the south of Kitsalas Canyon, containing an area of about 3,000 acres of land very suitable for settlement. There is also an area of about 1,500 acres, at the mouth of the Kitsumgalum Valley, of very similar land, while there are benches of land farther down the river also available when better means of access from the coast is secured.

OSOYOOS DISTRICT.

LIMITED areas of highly-timbered, arable and bench land are contained in what is known as the Fire Valley, to the Lower Arrow Lake, where Mr. John A. Coryell, P. L. S., in 1891 subdivided into sections the land suitable for settlement. A considerable portion of these have already been taken up, while isolated homesteads are still obtainable, and should command a profitable market



SCOWS AT BENNETT, B. C., LOADING FOR DAWSON.



SKEENA RIVER—STR. "CALEDONIA" ASCENDING.

in the mining camps of the district. The Kettle River and Okanagan Valley, explored by Mr. Burnyeat, P. L. S., in 1891, contains numerous ranges adapted for stock-raising. The greater part of the Kettle River Valley is open, and contains rich arable land, with some scattering pine and fir, thick cottonwood and willow brush fringing the rivers. A high altitude operates against the successful raising of cereal crops, but hay seems to thrive luxuriantly.

In the White Valley region Mr. F. H. Latimer, P. L. S., made an exploratory survey in 1891, extending through Townships 40, 43 and 44, and half a mile into Township 41. The district is found to be comparatively level country, and while there are limited areas of good arable land, the district offers superior facilities as a grazing country.

A reconnaisance survey of the North Fork, West Fork and Upper Kettle River, made by Mr. C. DeB. Green, P. L. S., in 1894, shows the valley to average one mile in width, with a rich soil nearly everywhere, more suitable for hay than for other crops, although there are good benches above these lower lands. Along the West Fork of the Kettle River there is good range land on the north; then, about four miles up, the valley widens, and excellent pre-emptions are to be had, the land being good and easily brought under cultivation. It consists of small prairies, divided from one another by small pine and alder. These continue for four or five miles, when the valley narrows for about eight miles more, when some very rich bottom land, half a mile wide, begins and continues for practically twenty miles, growing wider the further north it is pursued until a stony bench is met and the valley widens to at least half a mile. This bench grows the finest sort of bunch grass, and here, as well as on the west of the meadows for 15 miles north on the level bench land, there is excellent opening for cattle ranches. In the valley of the main river the bench levels are rich and easily cleared, and after leaving Cedar Creek the whole country is heavily timbered with light growth, both on the hills and in the bottoms. Mr. Green has estimated the acreage suitable for settlement to be approximately as follows: North Fork Kettle River, 25,000 acres; West Fork, 20,000 acres; Upper Kettle River (to the end of his exploration), 30,000 acres.

Kettle River Valley.

The territory known as the Trinity Valley, lying within a circle of forest-clad hills between the valleys of the Spallumcheen and Shuswap and Mabel lakes, was explored by Mr. J. P. Burnyeat, P. L. S., in 1895, and found to have a length north and south of about 17 miles, containing within its lines an area of some 20,000 acres of good land, suitable for agricultural and settlement purposes, at an approximate height of 2,300 feet above sea level. The soil for the most part consists of a reddish brown loam, interspersed with a small shale, with a sub-soil of gray clay. Numerous beaver meadows are found throughout the valley, varying in extent from one acre to several hundred. These meadow lands are of the richest description, and for the most part easily reclaimed. The soil is found to consist of about two feet of rich vegetable deposit, below this two feet of black sandy loam, with a sub-soil of pure blue clay. The facilities for irrigation throughout the district are unequalled, while numerous water-powers are found on several of the largest streams. Fruits and vegetables of all sorts flourish luxuriantly, while cereals may also be grown to advantage.

Trinity Valley.

THE LOWER OKANAGAN.

THIS district, situated in the Osoyoos District of Yale, which will shortly be brought into direct touch with the centres of provincial population by means of railway construction, offers considerable attraction also to prospective settlers. From a report made upon it by Mr. John A. Coryell, P. L. S., Townships 88, 83, 89, 50, 54, 65, 66 and 67 all contain good arable land, the soil being a rich gravelly clay loam, while water is abundant. The district is especially adapted to cattle-raising, excellent bunch-grass being found in all portions of it, while farming can also be carried on with profit in the greater portion. Approximately about 5,000 acres have been taken up, the remainder being still available for settlers. At the head of Reed Creek and on the mountain slope west of Camp Fairview there is a considerable amount of fir and pine timber suitable for milling purposes, while in Townships 65 and 66, pine, fir and tamarac, averaging from 12 to 30 inches diameter, can be obtained in abundance for commercial purposes. The balance of the timber throughout the district is too scattering to be of utility. In the spring and autumn deer are plentiful, as well as mountain and willow grouse. Bear are also frequently to be met with. There are limited areas of available agricultural land also to be found in the Harris, Creighton and Cherry Creek Valley and in Shuswap Flat, the land being, as a rule, black loam, thickly grown over with fir, cedar and spruce. In the Creighton Valley there is considerable good meadow land, while the water is abundant and of fine quality. In Township 45 the bottom land is spoken of as but lightly timbered, while all gardens that have been put in thrive rapidly, even melons being grown with advantage. Bench lands in Townships 44 and 57 could be made productive by irrigation, which in the former township can easily be arranged. Game is very plentiful in all parts of this district.

The Lower Okanagan.

VANCOUVER ISLAND.

THERE are available lands for colonization in considerable area on both the eastern and western coasts of Northern Vancouver Island, with trail connection between these two areas. In the vicinity of Cape Scott, and reached directly by western coast steamers to Quatsino Sound, a considerable area of meadow land is found, upon which a settlement of Danish colonists is at the present time located. From the report of Mr. E. A. Cleveland, P. L. S., who surveyed this district in 1897, there is a minor portion contiguous to the sea which requires inexpensive dyking to become most productive, and safe from inroads of high water. The area of grass land and tidal flats includes about 635 acres, while the country rising from the water is timbered with fairly heavy pine, cedar, yellow cedar and hemlock, interspersed with considerable areas of fairly open and lightly timbered agricultural land. There

North End Country.

is an abundance of good water for domestic purposes in all parts of the Cape Scott section, while one or two good water-powers exist for small mills or other appurtenances of a successful colony. The soil generally is wet, but can be easily brought to a satisfactory condition by drainage of the open flats. The country has numerous small rounded hills, all of which are covered with timber. Vegetables and small fruits grow with advantage, but the district as a whole seems best adapted for dairying and stock-raising, together with the development of the deep sea fisheries near at hand—the halibut supply in the immediate vicinity being apparently inexhaustible. From this section of the Cape Scott district a trail facilitates communication with Shushartie Bay, about 20 miles to the eastward and on the opposite side of the Island. In this district, too, a considerable area of good grass land is available for settlement.

Along Cache Creek Mr. H. M. Burwell, P. L. S., reports the bottom land is from a quarter to half a mile in width; it consists of a rich loam soil, with a gravelly sub-soil, and is heavily timbered with spruce, hemlock and balsam, the spruce being large and good and of great value as lumber to settlers. The streams abound with trout, while large salt-water fish are obtainable near at hand. In Township 42 and the major portion of township 43 there is a considerable area of open grass land, lightly timbered, the soil being a mixture of sandy loam and gravel, with occasional boulders. To the south of Deep Bay, which is in Section 27, there is a considerable area of open and level grass land, which is flooded by the very high tide. The soil of this low land is a rich loam, and the grass the best that has been observed in that part of the country. By building a short dyke about six feet in height, upwards of 1,000 acres of first-class prairie land could here be reclaimed. Deep Bay, which has a beautiful white sandy beach, is one of the most picturesque spots in Northern British Columbia. In Township 24, Rupert District, there is also a considerable extent of open country, occurring in patches, which, if drained, would make excellent pasture lands. Shushartie Bay is one of the best harbors on the Island seaboard, and is a regular port of call for steamers to Victoria, by which the settlers would be placed in direct touch with a large and profitable market for their products. The game supply in the contiguous district is generous, bear, elk and numerous small deer abounding, while the sloughs afford food for numerous water-fowl.

Burwell's Report.

In an extensive report of his exploratory survey in the northern portion of Vancouver Island in 1887, Mr. J. H. Gray, P. L. S., mentions having encountered good agricultural land, generally free from underbrush, in the vicinity of Klaanch River and Anutz Lake. He also estimates that there are 3,000 acres of excellent land, timbered throughout, in the vicinity of Anutz Lake. Along Davie River there is some excellent farming country, including several open meadows, although the district generally toward Campbell River is not especially favorable for agriculture. Along Campbell River is found some good prairie, while the Salmon River Valley is estimated to average 1,000 acres to the mile of excellent bottom land, the soil being composed of alluvial deposit on gravel. It is heavily timbered, large spruce and hemlock predominating; while the lower regions would be subject to overflow at extreme flood. Along the white river large areas of excellent grazing land are found; while embracing all the lands of the Salmon River proper, both on White River and the country lying south and southeast from Salmon River and towards Campbell Lake, it is estimated that there would be in one block fully 35,000 acres available for settlement, of which two-thirds would be river or bottom land.

Report by J. H. Gray.

In various townships surveyed by Messrs. Hermon and Hawkins at the north end of Vancouver Island during 1891, the total amount of arable lands explored was 50,000 acres; of pastoral lands explored, 50,000 acres; and of pastoral lands

unexplored, 100,000 acres. The soil is described as a vegetable loam, having a depth of from one to three feet, and resting upon the bed-rock; it is highly suitable for pastoral purposes, requiring only a comparatively small expenditure to render it fit for immediate occupation, the entire area being well watered and of easy access from the coast, while numerous isolated patches of pine timber are noted, but in no place in sufficient quantity to be of any value for commercial purposes. The fishing industry is capable of large development, while bear, elk, beaver, deer and water-fowl are plentiful.

Messrs. Hermon & Hawkins.

A further report of subdivision surveys was made by Messrs. Hermon and Hawkins in 1892, the initial point of their operations being Shushartie Bay. The western and central portions of this township are described as about 50 per cent. open grass lands; the southern portion as about 15 per cent. open grass lands, but considerably cut up by small lagoons. In summarizing the result of their operations throughout this district, Messrs. Hermon and Hawkins present the following table as the most efficient means of showing the approximate area suitable for pastoral and agricultural purposes :

Pastoral and Agricultural Areas.

Townships.	Area, Grazing Lands. Acres.	Area, Agric'l Lands. Acres.
8	7,000	.....
9	7,000	.....
21	17,000	.....
20	5,000	.....
24	23,040	.....
23	6,500	640
32	11,200	600
33	23,040	.....
34	11,000	2,000
35	6,000	3,500
36	12,000	3,000
37	2,400	3,000
41	5,000	.....
42	17,000	.....
	143,180	12,740

By an expenditure of $5 per acre for clearing and draining, the value of the pastoral land will be greatly enhanced; by an expenditure of from $50 to $100 per acre, the agricultural lands would be brought under cultivation.

A very small amount of cultivation would greatly improve the value of the country for pastoral purposes, such as the introduction of cultivated grasses known to be suited to a humid climate. Although the country is not of a low or swampy nature, yet owing to the considerable rainfall a certain amount of surface drainage would be necessary to provide a ready outlet for storm water. The soil in the pastoral lands is largely composed of glacial drift and rock detritus, covered with varying depths of vegetable fibre and sandy loam from one to three feet deep; the arable portions are composed of alluvial deposits of black loam, two to four feet deep, resting on a sub-soil of boulder clay and gravel, and covered with a heavier growth of timber, dense brush, and in some parts heavy windfalls. The climate is more equable and humid than that of the southern portion of Vancouver Island, the mean relative humidity being about 92, and the rainfall slightly in excess of that of the southern portion of the Island. The district is not suited for the production of cereals, owing to the humidity of the climate, although potatoes carrots, beets, turnips and all vegetables

Atmospheric Conditions.

of this class would do well. Small fruit such as currants and berries, plums, cherries, etc., would, judging from the wild fruits found, prove equally successful. In fact, anything not requiring to be dried for maturity may be successfully cultivated in this district. The great value of the country, however, lies in its adaptability for agricultural purposes.

Another excellent agricultural district in close touch with the centres of population by the west coast steamers from Victoria is in the Clayoquot district of Vancouver Island, surveyed in 1895 by Mr. T. S. Gore, P. L. S. In his report he states that there is about three square miles between Mud Bay and the Second Narrows that is almost entirely free from timber, and could be readily put under cultivation.

The West Coast.

The soil is a fine loamy sand, with a few inches of dark soil on top, and the whole of the tract is well watered and drained. The land from the Second Narrows to Ucluelet Arm is of the same character and would grow good grass and good crops. The land surveyed, although the soil is light, would be well suited for growing vegetables of all kinds, and also for cattle-raising. In Mr. Gore's survey about 14,000 acres were laid out into lots, while he saw land of the same character in the immediate vicinity, amounting to about 23,000 acres, still unsurveyed, as follows: Between Long Bay and Sutton surveys, Kennedy Lake, 10,000 acres; Vargas Island, 7,000 acres; south end of Floriez Island, 6,000 acres.

From the report of Mr. Henry Fry, P. L. S., it is apparent that in Salt Spring and adjacent islands, situate midway between Vancouver and Victoria, there is still a considerable area of available lands well adapted for grazing purposes. Sheep raising might be carried on with especial profit, while there are a few small swamps which, if drained, would make excellent hay land. On Valdez Island, situate between the Island of Vancouver and the Mainland of British Columbia, and with a total length of about 27 miles and an extreme width of 14 miles, there is, according to the report of Mr. R. A. Palmer, P. L. S., a considerable amount of connected

Salt Spring and Adjacent Islands.

good land contained in what is known as the Cape Mudge peninsula. Along the shore the land rises to a height of 40 or 50 feet above high water, and then extends almost level over a portion about eight miles long, from north to south, by two to three miles wide. Parts are heavily timbered with fir, hemlock, spruce and alder, while dotted here and there are a number of open grassy meadows, varying from 10 to 100 acres in extent, and offering a special advantage to the settlers. There are at present 50 or 60 permanent residents on this part of the Island, and wherever they have grown any crops they have had good returns, potatoes, hay and oats having yielded especially well. There is still room for a large number more, the locality giving promise of being one of the most prominent settlements on the coast. Frequent steamship communication places at command the market of the city of Vancouver, while road-making for the opening up of the Island itself is attended with little difficulty. Deer are plentiful, and in the waters of the straits and bays fish are abundant. On Cortez Island, adjacent, there is also a considerable area of good agricultural land, while a number of other of the near-by islands offer good inducements to settlers.

QUEEN CHARLOTTE ISLANDS.

THE Queen Charlotte Islands, the extreme northwestern lands of British Columbia, lie in the Pacific Ocean, between 51 and 55 degrees of north latitude. They comprise over 150 islands and islets, their length being 156 miles, and greatest width 52 miles. Provost, Moresby, Graham and North Islands,

extending northwesterly in the order mentioned, 12, 72, 67 and 5 miles, respectively, constitute 80 per cent. of their entire area. Dixon Entrance, on the north, with an average width of 33 miles, separates Graham Island from the Prince of Wales group of Alaska. Queen Charlotte Sound, from 30 to 80 miles in width, lies between them and the mainland of the province.

Geographical Position and Extent.

High, steep mountains, dense and almost unbroken forests, islands and islets in great number, and waterways most wonderful, extend for a thousand miles along this northwest coast. "Only mountains, forests and water," replied an Indian of whom I made inquiries concerning this region. The Queen Charlotte Islands, in common with all those lying off the northwest coast of this continent, are evidently the mountain tops of a submerged land, separated from it by a mighty volcanic upheaval, followed by the sinking of the earth's surface, and the inflowing of the waters of the ocean, forming the most remarkable labyrinth of inlets, sounds, straits, channels and passages on the face of the globe. A continuous range of mountains, from 600 to 5,000 feet in height, extends the entire length of the islands nearest their western coast, reaching their maximum elevations on Moresby Island, between Darwin Sound and the head of Cumshewa Inlet. These are clothed with an evergreen forest of spruce, hemlock and cedar, from near their summits down to the coast, with the exception of the comparatively small areas as hereinafter specified. The shores of the island from Cumshewa Inlet southward to Cape St. James, and from thence northward around the west and north coast to Massett, are uniformly rock-bound, containing, however, many stretches of fine sandy or gravelly beaches. From Massett to Dead Tree Point, Moresby Island, a distance by the coast-line of about 75 miles, a magnificent broad beach of white sand extends the greater portion of the way. The shores of Naden Harbor and Skidegate Inlet and the channel are also generally low and sandy. With the exception of the northern and eastern portion of Graham Island, the base of the mountains reaching down to the sea, with only occasional narrow benches and gradual foothill slopes. The highest elevations on the immediate coast, from North Island east and southward to Cumshewa Inlet, Klas-kwun Point, Tow Hill and Cape Ball, of Moresby Island, do not exceed 400 feet. From thence to Cape St. James there are several bold, rocky bluffs, from 300 to 800 feet in height; but along the west side of Moresby Island, between Henry Bay and Gold Harbor, the mountains present, for considerable distances, an almost perpendicular front of from 1,000 to 2,500 feet in height, and in many places the mountains bordering the inlets to the northward are almost equally high and precipitous.

General Physical Features.

There are hundreds of streams upon the islands, from 10 to 25 miles in length, and from 15 to 150 feet in width.

The climate of the islands, being under the influence of the warm Japan current, is much milder than upon the coast of the mainland opposite. I found vegetation more advanced at Massett, and all along the northern and eastern shores of the islands, in April than at Port Simpson. It is rarely severely cold, and then only a few days at a time. Snow falls, according to elevation, from one to five feet in depth, and remains upon the mountain tops until late in summer, and in a few deep gorges on their northern slopes throughout the year. It not infrequently reaches down to the coast, but then generally disappears in a short time. The temperature is equable, the extreme heat of summer seldom exceeding 75 degrees Fahrenheit. The annual rainfall varies, according to local topography, from 45 to 75 inches, the west coast, especially at the heads of the inlets, receiving much the largest amount, and the north and eastern portions of Graham Island the minimum. There were about 55 clear days in the months of June, July and August of the past season, which I was informed was about an

Climate.

average one in that respect. Throughout the winter months the sky is almost continuously overcast, one rainstorm—frequently accompanied, especially on the west coast, by violent gales—succeeding another, with but few and short intervals of clear weather. The winds are very changeable, those from the north being the most prevalent and reliable.

Soil.

A light sandy soil generally prevails all over the islands except those large areas covered by rocky mountains. The best lands lie mainly at the heads of inlets and mouths of the larger streams. There are occasional tracts of swampy lands, containing a deep, soft, fibrous deposit, resembling peat. A clayey sub-soil was seen in a few places near Cape Ball, on the east coast of Graham Island.

Agricultural and Grazing Lands.

There are about 15,000 acres of clear land upon the islands, on and near the coast, including river tide meadows. The largest tracts lie on the north and east side of Graham Island, as more specifically located in Progress Reports Nos. 1 and 3. The mountains embrace probably 20,000 acres of open, timberless lands, producing considerable pasturage. The grasses of the coast, with the exception of some meadows, are generally coarse and thin. Graham Island will support a few hundred cattle, by cutting all its meadows for winter feeding. The grazing of the interior is very limited, owing to the density of the forest growth, its numerous swamps and almost impassable deadfalls.

Forest Growth.

The forest growth is very dense, and composed chiefly of spruce, hemlock, red and yellow cedar. I have measured several spruce trees, and also red cedars, from 30 to 33 feet in circumference, the finest specimens having been found on Skidegate and Massett Inlets. With the exception of these localities, I have seen no place upon the islands where the available quantity of these woods is sufficient to warrant the erection of mills for their manufacture for exportation. There are fine specimens of yellow cedar of very scattering growth, and several bodies of considerable size on the borders of the interior lakes of Graham and Moresby Islands, as hereafter more specifically described in Progress Report No. 2. Its utilization is of doubtful practicability, on account of its distance from navigable water and the obstructions of the streams flowing therein. There is an occasional alder bottom, hemlock is quite common, bull pine is found in a few localities, and yew, dogwood and crab-apple occur upon all the islands. There is a dense undergrowth of salal, whortle, salmonberry, raspberry, and other bushes and shrubs.

Fish, Etc.

The waters surrounding the Queen Charlotte Islands abound with the most valuable varieties of fish found in this region. Halibut are caught in unlimited quantities upon banks near all the Indian villages; small salmon of excellent quality frequent nearly all the larger streams in the spring, and a much larger though inferior kind in the fall of the year. Immense schools of dogfish feed on the shoals off the north and eastern shores of the islands; herring of good size and excellent quality visit Skidegate and other inlets in such great quantities that their spawn forms an important article of diet with the natives. Flat-fish, rock-cod, salmon and brook trout, clams and mussels are plentiful.

Coal.

Numerous veins of coal have been previously discovered on Moresby and Graham Islands, the most important of which are the anthracite deposits situated on Skidegate Inlet, and described under the head of "The Cowgits Coal Mine" in Progress Report No. 4. There are outcroppings of coal in several other places on and near the shores of this inlet, viz., on its south side, nearly opposite the Cowgits seams, on Alliford Bay, and on the north side about half a mile from the Indian village of Skidegate. These coals are of a bituminous character, but the veins exposed are only a few inches in thickness. Beds of

lignite formation lie on the north side of Graham Island, between Tow Hill and Chown Point, on the Yakuon and Mamin rivers of Massett Inlet, on Lignite Brook and Naden Harbor, and on the west coast near the sea otter hunters' camp of Tledoo. Coal has also been found at the head of Skaloo Inlet.

Copper-bearing rocks and veins occur in several localities on the east coast of Moresby Island, and shafts have been sunk into them at Copper Bay and opposite Copper Island, and abandoned.

Cereals and Vegetables.

Oats are the only cereal which has been successfully grown on the islands. Potatoes, turnips, cabbages, peas and garden vegetables generally, with the exception of Indian corn, tomatoes and melons are raised.

Fruits.

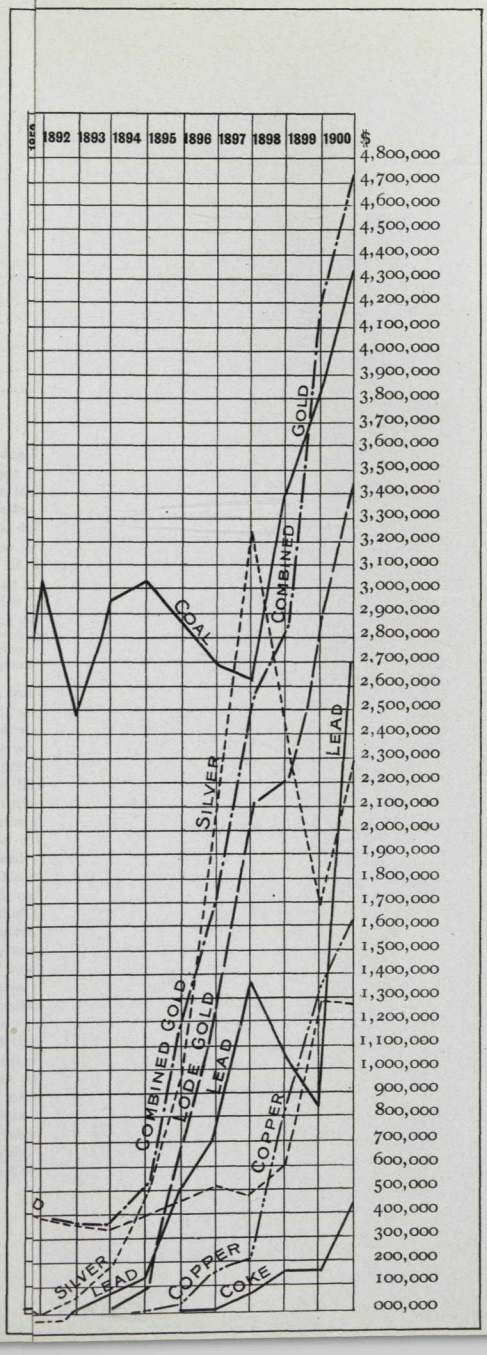
Crab-apples, red, blue and black whortleberries, Scotch, salal, salmonberries and strawberries are very abundant. Cranberries were found on the north and east side of Graham Island. A few black currants and gooseberries were also seen. Apple and pear trees grow well, but bear an inferior fruit which seldom ripens.—From Chittenden's Report on Queen Charlotte Islands.

PLACER GOLD.

The following table contains the yearly production of placer gold to date, as determined by the returns, sent in by the banks and express companies, of gold transmitted by them to the mints, and from returns sent in by the Gold Commissioners and Mining Recorders. To these yearly amounts one-third was added up to the year 1878; from then to 1895 and for 1898 and 1899, one-fifth, which proportions are considered to represent, approximately, the amount of gold sold of which there is no record. This placer gold contains from 10 to 25 per cent. silver, but the silver value has not been separated from the totals, as it would be insignificant.

Yield of Placer Gold Per Year to Date.

1858	$ 705,000	1880	$1,013,827
1859	1,615,070	1881	1,046,737
1860	2,228,543	1882	954,085
1861	2,666,118	1883	794,252
1862	2,656,903	1884	736,165
1863	3,913,563	1885	713,738
1864	3,735,850	1886	903,651
1865	3,491,205	1887	693,709
1866	2,662,106	1888	616,731
1867	2,480,868	1889	588,923
1868	3,372,972	1890	490,435
1869	1,774,978	1891	429,811
1870	1,336,956	1892	399,526
1871	1,799,440	1893	356,131
1872	1,610,972	1894	405,516
1873	1,305,749	1895	481,683
1874	1,844,618	1896	544,026
1875	2,474,004	1897	513,520
1876	1,786,648	1898	643,346
1877	1,608,182	1899	1,344,900
1878	1,275,204	1900	1,278,724
1879	1,290,058		
		Total	$62,584,443


1892
1893
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1895
1896
1897
1898
1899
1900
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200,000
100,000
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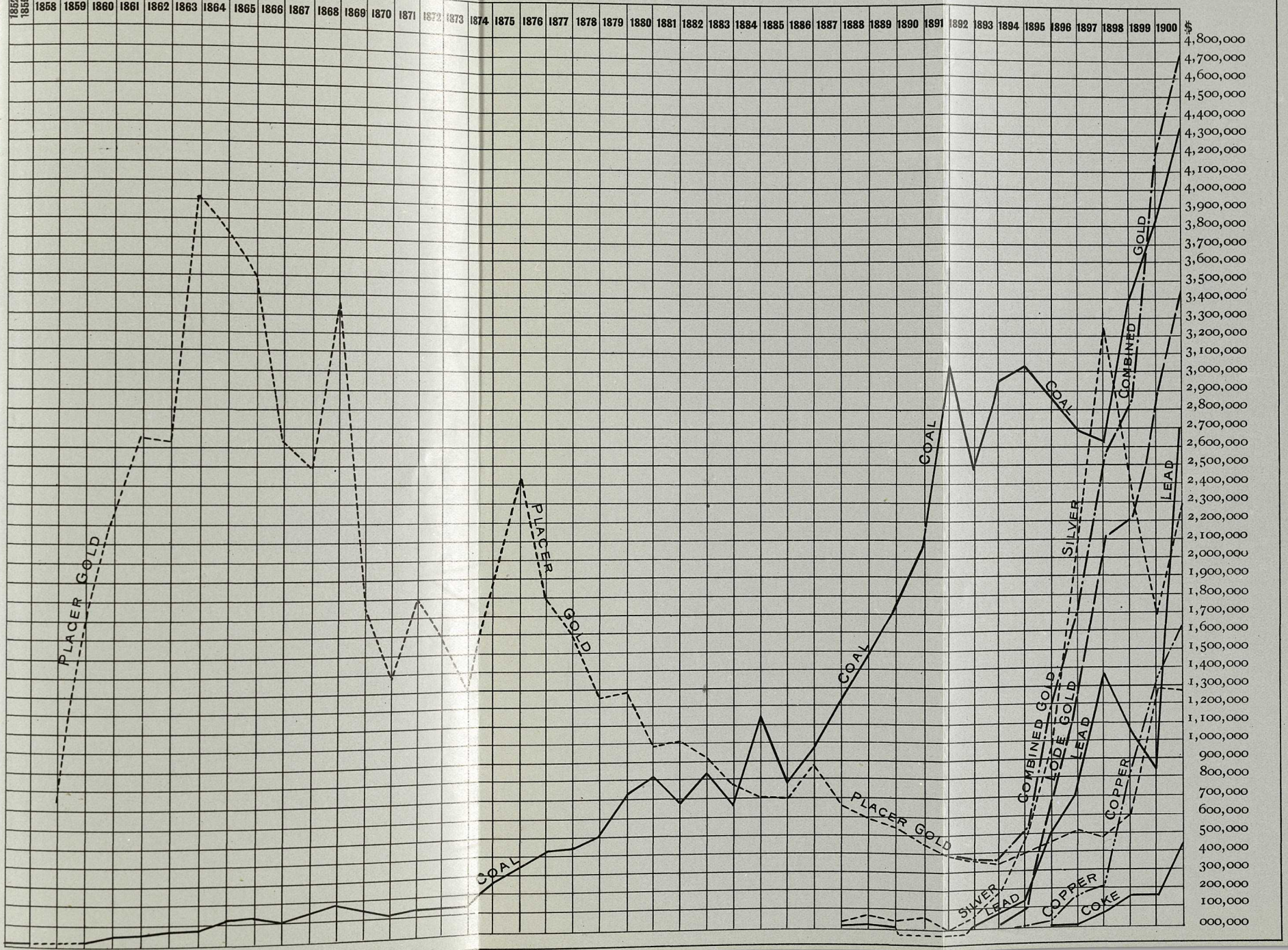
GOLD
COMBINED
COAL
LEAD
SILVER
COMBINED GOLD
LODE GOLD
LEAD
COPPER
SILVER
LEAD
COPPER
COKE

TABLE

SHOWING MINERAL PRODUCTION

OF

BRITISH COLUMBIA



MINES AND MINING.

IN dealing with the general conditions of mining in British Columbia, the question has often arisen in the minds of outsiders as to how it was that a province so long known to the world as a mineral country, so much and so continuously talked about, and one that, in fact, sprang to life on account of auriferous wealth, discovered so many years ago, has in the past proved such a disappointment to those who looked for development on a large scale. It is true that in the early period of the history of the province much gold was taken out. In fact, its placer diggings proved to be very rich, but they were, so far as gold could be produced by primitive appliances, soon exhausted, and, despite all expectations, the output after the first few years continued to steadily decline, with no compensating development of new fields, or progress in lode mining, until very many began to question if, after all, their faith in mines was not largely founded upon myth. Writers and speakers since the first had declaimed on the immense possibilities of the mineral resources, until it became a monotonous strain; new finds and new ventures cropped up with unvarying regularity, and a great deal of local capital from time to time was invested in the various schemes; but all without returns. Hope was oft deferred. Foreign capital, that jewel of great price, eluded all efforts to entice it into assisting the most favorable propositions. The few ventures in which it embarked in a preliminary way were doomed to misfortune. So on it went, year after year, the close of each seeing bright hopes for the next, which were never realized. The public grew skeptical.

A Source of Disappointment.

The writer remembers, not longer than twelve years ago, that the opinion was expressed by many, not incompetent to form one on such subjects, that British Columbia was a doubtful field for mining, and that even where local deposits of value existed, conditions rendered exploitation extremely unfavorable. No quartz mines up to that time had been worked, hence nothing had been demonstrated; and without demonstration no number of "indications" could furnish proof to experienced mining men and capitalists. Much was heard at that time about "broken formations" and "refractory ores," which in public esteem rendered the rich surface exposures extremely unsafe as a criterion by which to determine what might lie underneath. There was no doubt of the extensive coal measures which existed, but the value of these was restricted by a limited demand. Analyses had demonstrated the quality of iron ores, and examination of lodes had placed their magnitude beyond question. Here, again, lack of access to markets and the conditions of labor forbade the possibility of blast furnaces in the near future; so that even in the matter of coal and iron, where, with the contiguity of wood, the natural conditions were perfect, there was the absence of other and necessary conditions. In the meantime other countries—Australasia, the United States and South Africa—were going ahead and attracting capital by the millions. It seemed as though British Columbia's time would never come.

The explanation of this unsatisfactory state of affairs, which, as has been stated, did not fail to excite comment, may be given in three words—LACK OF COMMUNICATION. No one who has not lived in British Columbia, and especially who has not travelled in the interior, can properly appreciate what that means.

The Explanation of It.

It is a country of enormous distances and of rugged exterior. Without developed resources to start with, it was next to impossible to induce capitalists to build railways at unusual cost and under unusual difficulties. On the other hand, the resources could not be developed without railways to assist. The situation was a perplexing one, and the obstacles many and difficult to overcome.

The C. P. R., as a through line, furnished an avenue of traffic only—a way of getting in and out of the province. Strangely enough, it uncovered no mineral veins of any promise throughout its entire length. It did not connect itself with those wonderful chains of interior lakes, which are great natural highways. It required, therefore, not only a main line, but branch lines to reach these waterways, and independent lines from the south as well; but even after the arterial system was established, a smaller network had yet to be accomplished. The mines which lie up steep mountain sides and in other comparatively inaccessible and impassable places had to be reached by trails and tramways and roads and short lines of railway. Prospectors must have communication with the base of supply; afterwards miners must be able to haul in machinery; then the ore must come out and be transported at a rate cheap enough to produce a profit, the sine qua non of all mining operations.

Splendid Progress.

Little by little, after the construction of the main line of the C. P. R., all this was brought about, at least to a degree which has rendered development in its present stage possible. It appeared slow to those in a hurry to get rich, and to those who desired to see long cherished hopes realized before they died; but in reality, in the face of the many difficulties to encounter, it has been wonderfully quick work. It is, indeed, astonishing that so much has been accomplished in so short a time. The C. P. R., it must be borne in mind, was completed within the past 15 years. Much has been done, but in respect to communication the province has but entered upon the threshold of the possibilities that have been afforded thereby, and through its efforts in the past has only demonstrated the needs of the future in rendering available the opportunities which so wide and richly endowed mineral areas suggest.

EARLY HISTORY OF MINING.

HOW recent the knowledge of our mineral wealth is may be judged from the fact that Robert Greenhow, in 1844, wrote as follows: "Oregon, indeed, contains lands in small detached portions which may afford to the industrious cultivator the means of subsistence, and also, perhaps, in time, of procuring some foreign luxuries; but it produces no precious metals, no opium, no cotton, no rice, no sugar, no coffee; nor is it, like India, inhabited by a numerous population, who may easily be forced to labor for the benefit of the few.

Oregon Territory.

With regard to commerce, it offers no great advantages, present or immediately prospective. It contains no harbor in which articles of merchandise from other countries will probably at any future period be deposited for re-exportation; while the extreme irregularity of its surface, and the obstruction to the navigation of its rivers, the removal of which is hopeless, forbid all expectation that the productions of China, or any other country bordering on the

Pacific, will ever be transported across Oregon to the Atlantic regions of the continent."

Oregon as it was then known and the Oregon about which the above was written included all that vast region of the coast from the Columbia River to Alaska, or, more widely speaking, what now constitutes Oregon, Washington and British Columbia, exclusive of the New Caledonia Territory. Greenhow was arguing in connection with what was then a live subject of dispute between Great Britain and the United States, viz., the Oregon boundary question, and was pointing out that from material considerations the possession of this vast country would be of no particular advantage to either country, and, except for political reasons, was not worth striving for; but, apart from that, he was an exceedingly well informed man of his day, and wrote conscientiously. How far he was mistaken on every count, it is not necessary to indicate here. In no one statement was he more mistaken than that there were "no precious metals."

It is true that the celebrated David Douglas, the botanist, unfortunate as he was gifted, in the early twenties discovered the well-known Blue Bell mine on Kootenay Lake, but that was an accidental circumstance that told the few little and the world nothing.

Just how, when and where gold was first discovered in British Columbia is not easy to state with precision, notwithstanding the many accounts we have of it.

* * * *

Discoveries at Queen Charlotte Islands.

The early discoveries of gold in small quantities range between the years 1850 and 1857. In 1850 specimens came from Vancouver Island and Queen Charlotte Islands. An incipient mining boom took place at Queen Charlotte Islands in 1851 and 1852. Dr. Dawson says that from one little pocket or seam of gold in Gold Harbor, Moresby Island, between $20,000 and $75,000 were taken, or were reported to have been taken. It is also stated by others that more was lost in the harbor in the operation of mining than was recovered. However, much or little, the find ended there. About the same time, Indians from up the Skeena River brought pieces of gold to the Hudson's Bay Company's fort, but the several expeditions to find it in place met with failure.

In the interior, gold was found in the Natchez Pass and Similkameen as early as 1852, and in 1854 Colville Indians were known to have had nuggets in their possession. It is stated in Bancroft that Chief Trader McLean procured gold dust from Indians near Kamloops in 1852. Various authorities place the first finds at various places. However, between 1855 and 1857 discoveries were made on the Thompson, on the Fraser, on the Columbia and at Colville, and the news of these discoveries, together with the despatches of Governor Douglas, soon attracted attention to British Columbia as a possible gold field. Exploiting for gold was stimulated by the California excitement, and the discovery of any new field was sure to produce a rush. Several parties prospected and worked on the Fraser and Thompson rivers in 1857, with good success, and the news caused the Fraser River excitement, many of the participants in which are still living.

The Rush of 1858.

It is an old story now of how the people from San Francisco rushed into Victoria by the thousands and set up their tents; of how they rushed up the Fraser River, often crossing the Gulf of Georgia in open boats; how others came up the tableland of the interior; how they crossed the Isthmus of Panama and rounded the Cape; how they entered from Whatcom, and plodded wearily overland from Eastern Canada. Victoria became a city in a day, and the Mainland solitude was converted into a Crown Colony in a year. The vicissitudes and hardships of the eager throng as they pushed their way up the turbulent Fraser, with facilities of transport limited, provisions dear as gold

itself, an unknown region to penetrate, and each a stranger among a strange crowd of adventurers, constitute a chapter of history in itself somewhat foreign to the history of mining development. We have to do with results rather than incidents.

COAL, still the predominant wealth producer in minerals in this province, was known to exist at a much earlier period than was gold. It was discovered at Fort Rupert in 1835, and was used in small quantities. The Indians are credited with making its existence known to the whites, the circumstance being ascribed to an accident. Some development work was done at Fort Rupert by the Hudson's Bay Company, but the mines there were abandoned in 1851 for those at Nanaimo, which were discovered in a manner somewhat similar to those at Fort Rupert. The Indians had observed a blacksmith using coal, and had informed him that there was plenty of such black stone at Nanaimo, which upon investigation proved to be true. The work of mining was begun in 1851, and has never been discontinued.

Coal Mining.

Coal is said to have been found at Burrard Inlet in an outcropping on the shore, and H. M. S. "Plumper" obtanied enough of it there to steam the ship to Nanaimo. No subsequent indications have been reported. Borings in the vicinity have proved unsuccessful in revealing a pay deposit. The coal beds of Queen Charlotte Islands, now attracting some attention, were discovered as far back as 1852, and anthracite was known to exist.

The finding of coal at Departure Bay by the late Hon. Robert Dunsmuir and its subsequent development by him into the great industry it is at present, and the fortune it brought with it, are too well-known to require detailed mention here. From 3,000 tons in 1852 the output has gradually risen to 1,500,000 tons (in round numbers) per annum.

UP to 1858 nothing but preliminary work had been done, and little was known of the mineral resources of the province except those revealed by the fragmentary discoveries of Indians and officials of the Hudson's Bay Company. It was in 1858 that gold mining really began, and from that period dates the history of mining in this province. The increase in the production of gold was rapid, and from $705,000, which is a rough estimate of the output in 1858, it rose in 1868 to $3,913,563. This latter amount came largely, if not altogether, from the Fraser and its tributaries. In following the somewhat irregular and uncertain course of mining in British Columbia, we find that there were series of excitements, all followed by "rushes" to new camps, and that interest in mining was proportionately stimulated, each of these being marked by an increase in the mining output for the time being. Thus we have a decline from 1862 to 1870, then an increase, then a decrease to 1873, then a jump in 1875 to $2,474,000, since which there has been a decline until the present mining activity began, which, roughly stated, was twelve years ago.

Results of "New Finds."

Coming back to the years 1858-59, during which time the work of mining was mainly confined to the Fraser River as far as Yale, we find that the same restless spirit which actuated miners in Australia and California was present here, and that daring prospectors had penetrated far into the interior. In 1861, after laborious and hazardous journeyings, Williams and Lightning Creeks, Cariboo, two of the most noted gold producers of British Columbia, were discovered, and in this and the following years most of the other rich creeks in Cariboo became known. Then

began that rush which is the most notable event in the history of British Columbia, and one which has had the most lasting effect in determining its future. The finds were very rich, and the lucky prospectors who became owners of claims amassed large sums of money in a very short space of time. These discoveries caused a second immigration from the outside world, which continued to grow until the year 1864. It will be remembered that the first immigration to Victoria, in 1858, from California, estimated at between 23,000 and 30,000 persons, was followed by almost as rapid an emigration, owing to the disappointment experienced by the greater number in not finding the gold equal to their expectations.

The second period of inflation was the result of letters from miners and others to papers in Great Britain, Eastern Canada, the United States, Australia and elsewhere, principal among which is a rather remarkable series of letters to the London "Times." One of the direct results of accounts published in outside papers was the celebrated overland party which came from Eastern Canada in 1862. A number of persons now living in British Columbia formed a part of that party, and their trials and tribulations in making the long and weary journey will ever remain an interesting chapter in our annals.

Second Excitement.

Up to 1866 the principal operations were confined to Cariboo, but there were, in the meantime, several lesser excitements, notably the discovery of rich placer deposits on Wild Horse Creek, in the Kootenay district, in the extreme southeastern part of the province, and Rock Creek, in Yale. Then the Leech River excitement in 1864, in the southern part of Vancouver Island. And, again, the Big Bend excitement of 1865. The deposits of the last named place were found to be rich, but the inaccessibility of the region, the total lack of facilities for bringing in provisions, and the great hardships consequent upon prospecting and mining in this district, proved too great for continued success, and the excitement quickly subsided. It is quite probable, however, that the Big Bend country will soon again excite the interest of miners and prove a rich field for them.

Shortly after the discovery of the Cariboo gold mines, the restless prospector began pushing his investigations further north, and in 1869 the Omineca country was reached, where an excitement of not inconsiderable dimensions took place, and numbers rushed in. These mines were fairly remunerative for a time, and have been more or less operated ever since, but in 1872 the rich northern mines of the Cassiar district, at the headwaters of the Dease, were brought to light, and the second most notable mining epoch was effected. Out of this district some five or six millions of dollars in gold were taken. True to his instinct, after the first richness of the Cassiar creeks was exhausted, the prospector pushed further and further north, until in 1880 gold was found in paying quantities in the tributaries of the Yukon. Ever since that time this district, which extends further north than the extreme limit of the province, to the Land of the Midnight Sun, has been the field for miners and prospectors.

Cassiar and the Yukon.

In 1885 Granite Creek, a tributary of the Similkameen, afforded evidences of rich placers, and a small "rush" occurred, and although not so rich as was supposed at first, it has ever since occupied the attention of prospectors, and during the past seven years has experienced considerable exploitation.

The period between 1858 and 1885 may be now regarded as an historical one, the events relating to which and the development being those associated with placer deposits, and the machinery being such as is employed in the primitive cradling of the rocker and the more antiquated modes of hydraulicing. Since then attention has been directed to quartz mining, in which, if we except the somewhat notable quartz excitement of Cariboo by which a number of worthy citizens of the province lost money, nothing heretofore has been done, and without means of communication nothing indeed was possible.

Quartz Mining.

GOLD was first discovered in Vancouver Island in the year 1850, or some time prior to its existence being known on the Mainland. The late Mr. Pemberton, in his book, "Vancouver Island and British Columbia," says he broke off, almost at random, pieces of gold-bearing rock in various places "within a walk of Victoria." He referred to the year 1852, the same that the Hudson's Bay Company despatched the "Una" to Queen Charlotte Islands, where, anchoring in Mitchell Harbor, a small vein of very rich quartz was exploited. Mr. Pemberton says that the heaviest specimens received from there weighed from 14 to 16 ounces.

Macfie in his book says that the first appearance of gold in Vancouver Island that excited notice was found in 1863 in a district about 14 miles from Victoria, now known as Goldstream. Here, he says, the precious metal was extracted from quartz rock, there being no placer "diggings." "In a short time," the account goes on, "the auriferous ground was staked out, and ten companies were formed to work it, which they did with varied success. The Parmeter Company, in order to test thoroughly the rock they had blasted, sent half a ton to San Francisco to be crushed and assayed. A bar of amalgamated silver and gold was the result, giving an average of $25 to the ton. * * * Other quartz mining companies engaged in the same neighborhood, though invariably finding fair prospects, have not been so successful as the Parmeter; but the chief obstacle to progress, as in relation to other resources, has been the want of adequate capital."

Mining at Goldstream.

Dr. Brown, who was among the first to explore the interior of the island of Vancouver, and who made a somewhat celebrated journey across, sent the news of the discovery of gold in one of the forks of the Sooke River, and his despatch, dated July 21, 1864, created a great deal of excitement.

Dr. Brown's letter contained the following: "The discovery which I have to communicate is the finding of gold on the banks of one of the forks of the Sooke River, about twelve miles from the sea in a straight line, and in a locality never hitherto reached by white men, in all probability never even by natives. I forward an eighth of an ounce, or thereabouts, of the coarse scale gold washed out of twelve pans of dirt, in many places twenty feet above the river, and with no tools but a shovel and a pan. The lowest prospect obtained was three cents to the pan; the highest $1 to the pan. The diggings extend for 25 miles, and would give employment to more than 4,000 men." Mr. Foley, a member of Dr. Brown's expedition, before a committee of Victoria gentlemen explained at some length the character of the country and the nature of the deposits. He had prospected till, in ascending Leech River, he had advanced 22 miles from Sooke Harbor. "As he ascended," Macfie says, "the quality of the gold grew coarser, yielding 25 cents to the pan. The prospects became richer and the gold got coarser as he travelled along the North Fork of the Leech River." Nuggets as high as $70 in value were found, and as high as $35 a day was earned. It was estimated that $30,000 was taken out of the Leech River in little more than a month after the excitement began.

The discoveries referred to drew hundreds, if not thousands, of people from Victoria to the district. There were to be seen men of all classes, some of whom are well-known citizens of Victoria, with their prospecting pans and outfits. The Hon. D. W. Higgins, ex-Speaker of the Legislative Assembly, says that when the first California miners came to Victoria during the excitement of 1858 and later, they expressed it as their opinion that the mountains in the vicinity of Goldstream and Sooke were gold-bearing, and some panning out was done to verify this theory, but the results were not of such a character as to induce them to continue.

A Local Turn-out.

In Mr. Pemberton's book we find that in the appendix, describing a trip from

Cowichan Harbor to Nitinat, dated November 12, 1857, there are references to gold-bearing rocks and indications of mineral wealth.

On page 160 of the some book we find a chapter headed "Professor James Tennant on the Rocks of Vancouver Island," in which it is reported (1852) that a number of specimens contain gold.

It will be seen, therefore, that the prospects of gold and minerals generally were well understood as regards Vancouver Island, and that its possibilities were suggested long before gold in Cariboo was known or thought of. The existence also of copper, iron and various structural materials was noted in many parts of the Island and contiguous islands, and was referred to at length by the early writers of Vancouver Island.

Reference to more recent developments at Mount Sicker, Goldstream, Alberni and the West Coast will be dealt with in special chapters.

TRAIL CREEK DISTRICT.

THE mining division of Trail Creek occupies a large geographical area, lying between the eastern boundary of South Yale and the Columbia River. Apart, however, from the mineral belt known as the Rossland camp, no productive mines have as yet been developed in the division. The mineral zone containing the mines at Rossland is indifferently called "The Rossland Camp," "The Trail Creek District," and "The Trail Creek Mines."

The mineral belt lies on the headwaters of Trail Creek, a small tributary of the Columbia River. The mountains here form a horseshoe-like divide between the waters of Trail Creek and of Little Sheep Creek, of which the former falls into the Columbia River north of the international boundary at Trail, and the other south of the international boundary at a point opposite Northport, in the state of Washington. There are thus two outlets to the main watercourse from the Rossland mines. The mines themselves are, in an air line, about six miles north of the international boundary.

Geographical Characteristics.

According to expert opinion (condensed from the expert examination of Mr. Clarence King in the suit of the Centre Star Mining Company vs. the Iron Mask Mining Company), the Rossland mineral belt is roughly of circular shape, forming the core of a volcanic eruption and betraying the presence of three varieties of the dark-colored, close-grained tough eruptive rock known as the country rock of the belt, these three varieties, however, being closely related to one another. The veins that intersect this belt are what are known as shear zone fissure veins, some of them certainly, and probably all of them. The mineral, according to this authority, has made its way upwards by more or less well-defined and parallel planes of cleavage in the rock, and has replaced the country rock (to a greater or less extent) lying between the different fissures in the same shear zone vein. The mineral itself is pyrrhotite, chalcopyrite and arsenopyrite, with traces of zinc blende and galena. It carries gold and silver in varying quantities. No certain conjunction has been discovered between any one of the base metals in the ore and the presence of gold and silver in commercially valuable quantities. The formation has also been subjected to the intrusion of very numerous dykes of a later origin than the country rock itself. The presence of these intrusive dykes has been one of the gravest difficulties in the way of underground exploration.

Of these veins, or systems of veins, there are a very large number in the Rossland belt. The mineralization of the belt is extraordinarily extensive. But the bodies of commercially valuable ore which have been so far developed are confined to a small number of veins, and to more or less well-defined chutes in these veins.

History of the Rossland Camp.

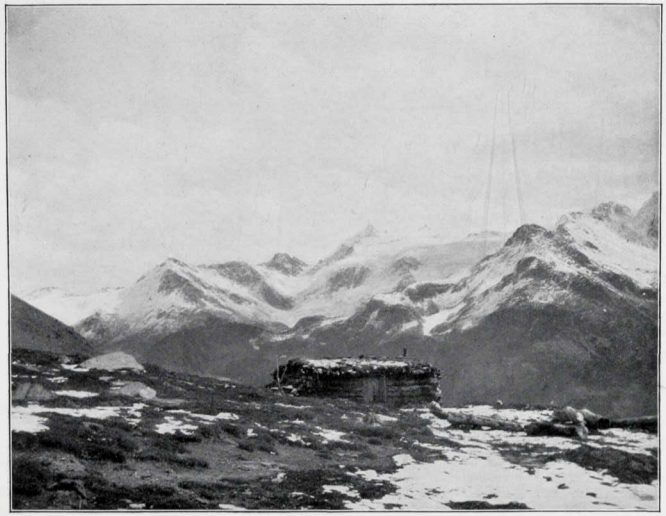
The name Trail Creek is derived from the Dewdney trail, which follows the course of this stream to the Columbia River, and traverses the mineral zone. The first claim located was located on the Dewdney trail. Afterwards the productive portion of the district was located about half a mile to the north of the Dewdney trail, on the southern slope of the now well-known Red Mountain. Intermittent development work was maintained on the Le Roi, War Eagle, Centre Star and Josie for some years prior to 1894, and a few tons of ore shipped from the Le Roi for experimental purposes. In 1894 the main pay chute of the War Eagle was discovered, and shipments of ore were begun during the winter of 1894-95. These were made by wagon over both routes to the Columbia River, and at Northport the ore was transferred to the cars on the Spokane & Northern Railway and transported to East Helena, Great Falls, or Everett, in the state of Washington, for treatment. The greater part of the ore went to Great Falls and East Helena. The rate of freight and treatment was in the neighborhood of $14 per ton, and it cost from $2.50 a ton up to transport the ore to the Columbia River, according to the condition of the roads. The average value of the ore so shipped from the War Eagle mine was $40, and the average value of that from the Le Roi was $35. Only picked portions of the veins were mined. No official record has been kept of the amount or value of the ore mined and shipped up to the end of 1895. The following table gives the tonnage and value of the ore extracted since:

Year.	Tons.	Gold, oz.	Silver, oz.	Copper, lbs.	Total.
1896	38,075	55,275	89,285	1,580,635	$1,243,360
1897	68,804	97,024	110,068	1,819,586	2,097,280
1898	111,282	87,343	170,804	5,232,011	2,470,811
1899	172,665	102,976	185,818	5,693,889	3,229,086
1900	217,,636	111,625	167,378	2,071,865	2,739,300

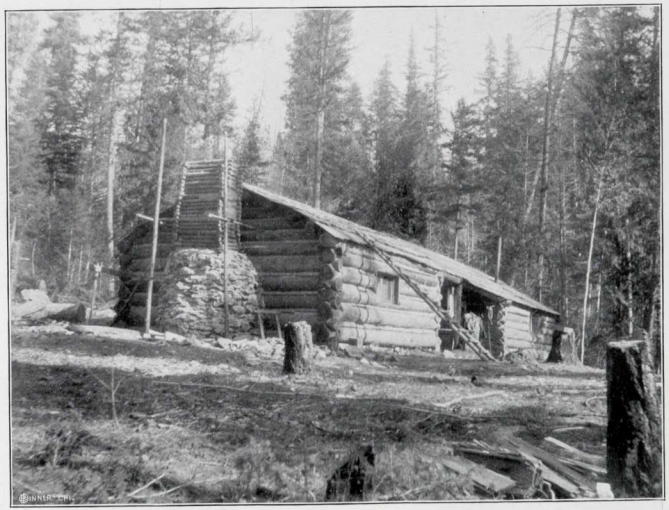
Mining and Treatment.

The ores of the Rossland camp are reduced by smelting to an auriferous copper matte, which is shipped for treatment. The first reduction in the scale of costs was made in 1896 by the construction of a smelter at Trail, and a narrow-gauge railway from Trail to Rossland. A rate of freight and treatment from the mines of $11 a ton was then secured. In 1898 the Northport smelter, served by the Red Mountain Railway, built from Northport to Rossland, was completed by the Le Roi Company. The smelter afforded a rate of freight and treatment of $8 a ton, since reduced to $4.50 a ton, while the rate at Trail is $6 a ton, subject, however, to special arrangements, as in the case of low-grade silicious ore purchased by the Trail smelter from the Le Roi mine for use in its treatment of silver-lead ores. The rate for freight and treatment does not include the cost of transporting and refining the resultant copper matte, which is met by a deduction of five cents per pound on the current market price of the copper in the ore.

Very large sums of money have been spent in the development and equipment of the principal mines in Rossland, in order to secure the greatest possible economy in the extraction of the ore. It may be said that the practical minimum has been reached in the Le Roi mine, where it is estimated that a charge of $3.25 per ton covers the entire cost of extraction, development and superintendence. The charge, however, varies in different mines, according to the size of the vein, the completeness of the equipment and the horizontal extension and regularity of the pay chutes in the vein.



TYPICAL MINER'S CABIN—IN THE MOUNTAINS.



TYPICAL MINER'S CABIN—IN THE WOODS.

Prior to the introduction of the eight-hour system the work was all done by day labor. The wages of machine men were $3.50 per day, except in shaft work or wet ground, where the rate was higher; muckers were paid $2.50 a day. Since March, 1900, the contract or piece-work system has been introduced. The wages of muckers remain $2.50 a day. The contract system apparently gives satisfaction, and according to the reports of the different companies has resulted in an economy of labor.

Labour Conditions.

The labor employed in the mines is largely recruited from Canada and the United Kingdom. The following table gives the nationality of the men employed in the Le Roi and associated mines, according to a census made by the management:

Name of Mine.	British.	United States.	Swedish.	Italian.	Finnish.	French.	German.	Austrian.	Poles.	Total.
Leo Roi	310	122	59	56	16	15	14	3	1	596
Leo Roi No. 2	69	34	7	6	2	..	..	..	..	118
Rossland Great Western	45	31	3	2	..	..	..	..	..	81
Columbia-Kootenay	14	7	2	..	1	..	..	..	..	24
	438	194	71	64	19	15	14	3	1	819

The percentages are: British, 53 per cent.; United States, 24 per cent.; Swedish, 9 per cent.; Italian, 8 per cent.; other races, 6 per cent.

The number of men employed in and about the mines of the camp is from 1,200 to 1,500.

Le Roi mine, owned by the Le Roi Mining Company, of London, England; address, 43 Lothbury, London, E. C., Eng.; capital, 1,000,000, divided into 200,000 shares of £5 each. Since its acquisition by the company now owning the mine, one dividend of £50,000 has been paid. The profits earned by the mine have been sunk in purchasing a quarter interest in the Northport smelter, in addition to the three-quarters already owned; sinking a vertical shaft and equipping it with hoisting machinery; doubling the capacity of the smelter, and in otherwise developing and equipping the mine. Prior to its purchase, by the present company, profits amounting to $1,055,000 were distributed.

Principal Mines of the Camp.

The following table gives the tonnage and average value per ton of the ore shipped during the six months ended 31st December, 1900:

Month.	Tons.	Gross Value.	Value per Ton.
July	17,301	$ 243,576 44	$14 03
August	19,302	238,427 06	12 34
September	15,831	184,563 09	11 65
October	16,115	222,752 20	13 82
November	14,958	218,644 79	14 61
December	14,431	244,846 79	16 97
Totals	97,938	$1,352,810 27	

Average value per ton, $13.81.

During the first six months of the year 51,448.12 tons were shipped, of a gross value of $702,877.22. The total amount of ore shipped during the year 1900, according to the annual report of the company, was 149,386.12 dry tons, of a gross value of $2,055,678.49, and of an average gross value per ton of $13.76.

The Le Roi mine is developed to the 900-foot level, and sinking is maintained all the time. The stopes are of enormous width on the eighth and ninth levels. At one point the ore is 105 feet in width.

Owned by the Le Roi No. 2 Mines, Limited, of London; address, 43 Lothbury, London, E. C., England. Under the same general management as the Le Roi. Capital, £600,000, divided into 120,000 shares of £5 each; registered 1900.

Le Roi, No. 2.

This property is a consolidation of certain claims lying to the west of the Le Roi and War Eagle, of which the most important are the Josie and the No. 1. The group has been undergoing careful and adequate development. During 1900, 2,997 tons were shipped. The average value in gold and particularly in copper from this property is higher than in the case of the Le Roi.

Owned by the Rossland Great Western Mines, Limited, of London, England. Address, 43 Lothbury, London, E. C., Eng.; under the same general management as the Le Roi. Capital, £500,000, divided into 100,000 shares of £5 each. Registered 1900. This property is a consolidation of the Nickel Plate, Golden Chariot and Great Western claims, lying to the east of the Le Roi. It has been and is being very extensively developed. No shipments were made during 1900.

Rossland Great Western.

Owned by the Columbia-Kootenay Mining Company, Limited, of London, Eng. Address, 43 Lothbury, London, E. C., Eng. Under the same general management as the Le Roi. Capital, £500,000, divided into 500,000 shares of £1 each. Registered 1898.. This property is situated on the eastern boundary of the Rossland mineral belt. It has been extensively developed. No ore has as yet been shipped under its present management. The four groups mentioned above include all the property in the Rossland camp purchased and developed by the British America Corporation, Limited, now liquidated. They are managed from the offices of the Rossland Great Western Mines, Limited, at Rossland, B. C., and are under the general superintendence of Mr. Bernard Macdonald.

Columbia-Kootenay.

Owned by the War Eagle Consolidated Mining & Development Co., Limited, of Toronto, Ont. Capital $2,000,000, divided into 2,000,000 shares of $1 each. The total output of this mine to 31st January, 1900, has been 131,976 tons of ore, of a gross assay value of $2,646,612. The sum of $545,000 has been distributed as profits. During 1900 the mine shipped 10,278 tons. This was shipped prior to the disturbance in labor conditions in March, 1900. During the rest of the year the mine has been undergoing development. The main shaft was 1,307 feet deep at 1st February, 1901.

War Eagle.

Owned by the Centre Star Mining Company, Limited, of Toronto, Ont. Capital $3,500,000, divided into 3,500,000 shares of $1 each. The Centre Star is the eastern extension of the Le Roi, and the workings in the two mines are connected. The mine has been very extensively developed to a depth of 431 feet, measured on the vein. The total amount of ore produced up to 30th September, 1900, was 31,121 dry tons, averaging $17.06, smelter's gross assay value. The amount of ore shipped during 1900 was 40,875 tons, active shipments having been resumed during the last quarter of the year. Up to 1st January, 1901, $70,000 have been distributed in dividends. The mine is under the same general management as the War Eagle.

Centre Star.

Owned by the Iron Mask Mining Company, Limited, of Spokane, Wash. Capital $500,000, divided into 500,000 shares of $1 each. The Iron Mask is the eastern extension of the War Eagle. It has been under slow, steady development for a number of years. The expense of development has been largely met from the receipts of ore sold. No dividends have as yet been paid. During 1900, 2,739 tons were shipped.

Iron Mask.

In addition to the properties mentioned, many others in the Rossland belt have been and are under development, and some have made small shipments from time to time. It is not improbable that the productive area will meet with considerable enlargement as development work and underground exploration go on. Mention should also be made of the Velvet mine, on Sophie Mountain, which, although it is not in the Rossland belt, is usually associated with it. This property has been extensively developed by the London company which owns it.

THE SLOCAN.

PROPERLY speaking, the Slocan District includes that tract of country inclosed by Lakes Kootenay and Slocan, the Slocan River, and the height of land or divide at the mouth, an area of 40 miles from east to west, and about 75 from north to south. This naturally circumscribed territory lies within the silver-lead zone of the province, and has probably the greatest producing capabilities in that respect of any similar area on the continent. To a considerable extent the geology of the district disappoints the "old-time" miners of other countries, who have operated silver-lead mines. The lower granite or granitoid rocks, pushed up through the metamorphosed stratified, mostly slate, formations of later periods, occupy much of the entire area, though they differ in sections, in appearance and color. Many of them are gray, others are characterized by mica, and frequently with hornblende. In some portions appear the coarse porphyry with twined feldspar and crystals. From appearances the granites are intrusive and of a later age than the stratified rocks, though much changed in contacts. The accumulations throughout bear evidence of immense pressure in the upheavals of ages past that formed the mountain ranges of the entire west coast of America.

The metal is found in fissures or veins in the rocks, which run diagonally across the hills, with more or less regularity, often to the tops and down the other sides, but following no apparent rule of uniformity. As far as operations of late days go, the evidences show these metal-filled seams go to an unknown depth. As far as explorations have been made in depths, they are found and may extend to the bottom of the entire crust. It will remain for shaft operations from the lowest levels to throw light on this important matter. In this district the "strikes" or directions of the fissures across the country are altogether determined by the course of the mountain ranges. In some places, owing to the irregularity of width, they wholly disappear in "pinch-outs," and in other places they are of great width, forming what are technically called "chutes." These "pinch-outs" are a puzzle to inexperienced mining men, and have, in this district, been the cause of much loss of money to many and of gain to others. Often when encountered, the properties have been thrown up as useless, only to be taken up by others extending the tunnels, and striking the metal again. Width of fissure is to some extent characteristic of locality and almost always of quality of ore, the narrower seams carrying the higher grades of metal. Around Ainsworth, for instance, the seams are of great width and the metal of lower grade; while, on Reco Mountain, the Reco, Good-enough and other seams are very narrow, and the metal is of the highest grade.

The great drawback of the district for some time was the lack of shipping facilities, but now, in the branches of the C. P. R., the Kaslo & Slocan Railway, and the very superior boats on the lakes bordering the district, in connection with the roads, the requirements of the district are very fully met.

The district, too, is well supplied with business houses, furnishing every convenience and accommodation for the settler that is possessed by older communities. The towns of Kaslo, Sandon, Three Forks, Ainsworth, New Denver, Silverton, Whitewater and Slocan, having from 200 to 2,000 of a population, have large stores carrying all necessary supplies, first-class hotels, water and light systems, and all other modern facilities for doing business.

MINES AND MINING.

As intimated above, the Slocan is a typical mining district. Along the river banks and lake shores there are a few patches of land suitable for market gardening, cattle ranching, etc., but these are insignificant as compared with the distinctive mining aspects of the country as a whole. The history of the district shows that it is essentially the poor man's country. The largest property in the district, the Payne, was but a few years ago bought for a very small sum; and many other properties that may yet be paying properties can now be bought at a moderate price and worked by men of very moderate means. All work in the district is done on the tunnel system, there being no shafts of any importance. The mining industry in the Slocan has developed under many disadvantages. At first progress was slow, owing to lack of railway communication. After the advent of railways came the slump in the value of silver and lead. Next followed labor troubles, the consequences of which were felt for over a year; and next the refusal of the American smelter and refinery trust to handle the ores, and, being without Canadian facilities to treat it, another year of unsatisfactory results followed. In the face of all these difficulties, however, the industry has gone steadily on, until it is now one of the most important in the Canadian list. Values in all the Slocan properties are chiefly in silver and lead, varying from 300 ounces of the former and 70 per cent. of lead to 50 ounces of silver and 10 per cent. of lead. It may be, however, noted that in nearly all properties, under a law of compensation, where the silver runs low the lead runs high, and vice versa, thus giving all properties, one way or the other, a paying output.

Although, as far as work has gone, the mines around Sandon, the centre of the district, have given the best results for the expenditure, it is difficult to even anticipate what the future may bring forth. Ground that has been for years walked over as unpromising has lately produced properties that are taking a high rank.

THE VARIOUS MINING CAMPS.

Tributary to Sandon, the centre of the district, are about 125 properties on which more or less work has been done. About 35 of this number have shipped. The Payne, the Star, the Ruth, the Noble Five, the American Boy, the Trade Dollar, the Last Chance, the Reco, the Goodenough, the R. E. Lee, the Blue Bird, the Ajax, the Wonderful, the Ivanhoe, the Eureka, the Miller Creek, the Sovereign, the Vulture and the Coin are regular shippers, the first nine being dividend-payers. Of late days the most work has been done on the Payne, the Ruth, the Star, the Last Chance, the American Boy, the Trade Dollar, the Ivanhoe, the Sovereign and the Miller Creek. The Star has had a mill and a gravity tram for some years; the Noble Five a mill and aerial tram six years, but during the past year the Ruth and the Ivanhoe have put up mills and aerial trams of large capacity. The Payne and the Last Chance ship their non-concentrating ores directly over gravity trams to the smelters, through ore houses.

The best properties around Kaslo are the True Blue, the Leviathan, the Montezuma, Slocan Liberty, the Bismarck, the Gibson, the Silver Bell and the Silver Bear. There are a dozen or more others on which work has been done, but not enough to justify extended comments.

In the Ainsworth camp are notably the Blue Bell, the first located property in the district; the Eureka, the Silver Glance, the Tariff, the Irvin, the Tamarack, Number One, Sky Line, New Jerusalem, Albion, Highlander, Little Phil, Black Diamond, Highland, Amazon. The Highlander has a mill and tram. Owing to the labor strike and the unsettled condition of the markets, none of these properties have shipped much the last two years; but all of them, under fair conditions, are in shape to turn out large bodies of ore on very short notice.

At Whitewater, the principal developed mine is the Whitewater, which has been operated steadily the past year, paying to date about $350,000 in dividends. The Charleston, Wellington, Jackson and Dardanelles, though having done well in past years, have also laid idle the last two years. The Hillside has shown up remarkably well under development the past year, and may be ranked as a regular shipper.

The Rambler-Cariboo is the largest property at McGuigan, and has been a steady shipper and dividend-payer the past two years. The Sunset, owned by G. W. Hughes, is another important property, paying dividends right along, though in its initial stages only. The Washington has paid dividends in past years, but has had but little work done on it the past two seasons. The Antoine has been a dividend-payer also, but operations on it the past two years have not been very extensive, for causes known only to the management. The Red Fox, Silver Bell, Ruby Silver and Surprise have all small veins but very high-grade ore, and have been worked on a moderate scale the past year or more.

At Three Forks the largest property is the Idaho, which is being worked regularly and paying handsomely. In magnitude the Alamo comes next, a regular shipper of concentrating ore through the mill at the railway. The Queen Bess has lately passed into the hands of an English company, who are putting all the profits into opening up the property, which is proving itself a valuable one. The Monitor has also recently fallen into English hands, who are working it extensively and being well repaid in regular shipments of valuable ore. The Idler and the Hustler have also shipped regularly in past years, but have not been extensively worked the past year.

The chief mine of New Denver is the Bosun, a regular dividend-payer, though a new property. A few years ago it was bought for a few hundred dollars. The California, Mountain Chief and Mollie Hughes have also shipped, but are doing but little of late years.

The largest properties of Silverton are the Wakefield, Alpha, Emily Edith, Hewett, Vancouver, Monday and Surprise, all steady shippers, the last-named very extensively. The Wakefield has had a mill for some time, but the Surprise is showing one erected this spring (1901). There are many other properties tributary to the town that promise well—sufficient to make the place one of very considerable importance.

After a great many vicissitudes, the Arlington is proving itself, from its shipments and dividends of late, to be the large mine of Slocan City. It now employs many men, with unqualified satisfaction to the owners. The Two Friends, Howard, Golden Wedge, Bank of England, Chapleau, Bondholder, Kalispel, Evening Star, Nupowa, Poker, Tamarack, Republic and Black Prince have all been shippers and were worked the past year to a limited extent.

With the idea of giving the reader at a glance the relative proportions of the several properties referred to, a table is appended, showing their outputs for the past complete year, the number of hands employed by each when in regular operation, and the dividends paid to date by those that have paid them. It is, however, difficult to arrive at the dividends accurately, as some of the properties are held privately. Others, again, declare no dividends, but put all profits into improvements from time to time. The figures, however, are the most accurate procurable.

They show that some mines worked men without shipping in development, and often shipped from work done the year before. Some of the dividend-payers, again, were idle last year, the dividends coming from previous years' operations:

LIST OF SHIPPING PROPERTIES.

Mine.	Tons Shipped in 1900.	Men Employed.	Dividends to date.
Payne	9,300	100	$1,500,000
Last Chance	2,500	60	275,000
Whitewater	5,298	65	250,000
Ruth	1,100	50	350,000
Star (Slocan Star)	1,100	110	450,000
Rambler	1,500	35	90,000
Arlington	1,335	60	.....
Queen Bess	1,223	45	35,000
Bosun	1,140	40	35,000
Idaho	1,100	30	300,000
Enterprise	1,020	35	.....
American Boy	400	20	.....
Wakefield	3,500	45	.....
Trade Dollar	.....	16	.....
Sovereign	121 1-2	10	.....
Vancouver	120	10	.....
Mountain Con	.....	22	.....
Reco	30	4	350,000
Sunshine	.....	6	.....
Hewett	85	14	.....
Noble Five	64	30	50,000
Black Prince	.....	12	.....
Soho	.....	12	.....
Carmth	.....	12	.....
Hustler, Jr.	.....	3	.....
Ajax Fraction	44	10	.....
Ivanhoe	.....	20	.....
Vulture	.....	19	.....
Sunset (Jackson Basin)	.....	16	.....
Surprise No. 2	39	14	20,000
Antoine	15	9	20,000
Cubo Lode	.....	9	.....
R. E. Lee	22	8	.....
Hartney	20	15	.....
Galena	20	2	.....
Emily Edith	20	33	.....
Kilo	.....	4	.....
Two Friends	.....	12	20,000
Bondholder	30	12	.....
Florida	125	11	.....
Slocan Chief	.....	9	.....
Argenta	.....	9	.....
Bondholder	36	9	.....
Hampton	10	6	.....
Wonderful	.....	6	.....
Capella	7	4	.....

LIST OF SHIPPING PROPERTIES—(Continued).

Mine.	Tons Shipped in 1900.	Men Employed.	Dividends to date.
Nukowa	.....	4	.....
Peoria	.....	4	.....
Hillside	3	3	.....
N. Bell	.....	5	.....
Topeka	.....	3	.....
Cain	.....	4	.....
The Best	.....	...	$50,000
Dardanelles	.....	14	50,000
Monitor	.....	5	40,000
Jackson	.....	15	40,000
Goodenough	15	3	35,000
Washington	.....	12	35,000
Treasure Vault	.....	25	.....
Blue Bird	.....	8	.....
Miller Creek	.....	6	.....
Ajax	.....	14	.....
Caudron Group	.....	6	.....
Madison	.....	4	.....
Sapphire	.....	5	.....
Alamo	.....	20	.....
Great Western	.....	6	.....
Minnehaha	.....	7	.....
Red Fox	.....	6	.....
Comstock	.....	60	.....
Galena Mines	.....	12	.....

NELSON DISTRICT.

WITH the exception of the early discoveries located on the shores of Kootenay Lake, the Nelson district is the oldest in British Columbia in which lode mining for the precious metals has been carried on. It is of irregular area, and has been defined by including that portion of territory lying east of the Columbia not contained in the Slocan district. It embraces three known mineral belts of wide and distinct characters, namely, the copper-silver deposits of Toad Mountain, the free gold belt to the immediate south of Kootenay River, and the mineral zone known as the Ymir and Erie camps. The earliest discovery was the famous Silver King mine, on Toad Mountain, accidentally discovered in 1886 and located in the following year. This mine was incorporated in 1893 as the Hall Mines, Limited, and afterwards reconstructed as the Hall Mining & Smelting Company, Limited. The company carries on a custom smelting business at Nelson, where its works are situated, in addition to treating the output of its own mine. The work last year was confined to development only. On the free gold belt are situated the Athabasca, Granite, Poorman, May and

Three Distinct Belts.

Jennie, Venus, Juno and other properties containing veins of gold ore. The general method of treatment is by milling and amalgamation with a shipment of the concentrates to a smelter; but on the Athabasca a cyanide plant for the recovery of gold not saved on the plates has been installed. The production from the Athabasca mine in 1900 was valued at $170,688.96, and the total expenditure for mining, milling and maintenance, $144,477.71.

In the Ymir section of the district the most important mine is the Ymir, owned by the Ymir Gold Mine, Limited, of London, capital £200,000, in £1 shares. On this property the method of treatment is by milling and amalgamation, with the shipment of concentrates to a smelter. Eighty stamps are in operation at the mill. There are approximately one and a half miles of underground development in the mine. The ore is quartz, carrying galena, pyrites and blende, with gold and silver values. The total number of tons crushed during the year 1900 was 42,660, the gross value of which was $379,612.03, the average value per ton being $8.8812, and the average cost of production per ton $4.8402. In addition to the Ymir mine, mention should be made of the Second Relief, owned by Messrs. Finch & Campbell, on which a 20-stamp mill is being installed; of the Arlington, at Erie, on which a mill is now in operation; of the Yellowstone, at Erie; and also of the Porto Rico and Tamarack, at Ymir, which are under development and have already been to a limited extent productive.

The Ymir Mines.

THE BOUNDARY COUNTRY.

IN the very centre of the Boundary country there are a dozen mining camps, in each of which numerous mineral claims have been located. Of these camps there are five that, as a result of the comparatively large amount of development work done on them, have come into prominence. These are Deadwood, Greenwood (also know as Phoenix), Summit, Wellington and Central (or White's) camps. Most of the ore shipped from district mines has so far been the product of the three first-named camps, Greenwood camp having a long lead in this connection, with Summit camp next and Deadwood camp third on the list. The positions of the latter two are, however, likely to soon be reversed, for the daily output of Deadwood camp is now nearly three times as large as that of Summit camp. Wellington and Central camps have both ceased shipping for the time being.

DEADWOOD CAMP.

At present the only producing mine in Deadwood camp is the Mother Lode. The Morrison bids fair to ere long join the comparatively few regular shippers the district yet possesses; and possibly the Crown Silver, of the Sunset group, will do likewise before the close of the current year. Other claims which have been under development are the Ah There, Buckhorn, Geryhound, Great Hopes, Marguerite and Sunset, all classed as copper-gold properties. The D. A. and Gold Bug, two of the Boundary Creek Mining & Milling Company's claims, having narrow

veins rich in gold and silver, are two more claims that have not yet come up to expectations. The following is a summary of the chief development work done in this camp to April 30 :

Name of Mine.	Sinking and Raising.	Drifting and Crosscutting.	Total Number of Lineal Feet.
Mother Lode	831	4,545	5,376
Sunset and Crown Silver	601	2,638	3,239
Morrison	380	2,100	2,480
Buckhorn	327	510	837
Great Hopes	75	730	805
D. A. and Gold Bug Group	320	454	774
Marguerite	256	493	749
Greyhound	212	350	562
Ah There	240	40	280
Total	3,242	11,860	15,102

There are seven steam power plants in Deadwood camp, the largest of which are those in operation at the Mother Lode and Sunset. The plant installed at the Mother Lode in 1898 included two 60-horse-power boilers, an 18x24 Ingersoll

The ores here, as in Deadwood and Summit camps, are principally chalcopyrite, carrying also values in gold and silver. Some of the ore bodies are of large extent, and, judging by the experience gained in treating the Mother Lode ore, the general "run of mine" ore will return a profit, if a favorable freight and treatment rate be obtained. The deepest shaft in the camp is that on the Sunset, now down about 350 feet and still sinking. Arrangements are being made, though, to deepen the Mother Lode shaft to 500 feet. The Mother Lode ore chute has been proved by three crosscuts to be at the 200-foot level about 90 feet in width along a distance of quite 350 feet, and the work in hand at the 300-foot level, so far as it has gone, appears to indicate that this comparatively large width is maintained at this lower level. A large vein of ore has also been cut on the Morrison. There are about 50 men employed at the smelter, and not less than 200 more at the several mines of the camp, to which a branch of the C. P. R. has been extended.

GREENWOOD CAMP.

This camp has had more development work done in it to date than any other camp in the district. Its principal properties are the Miner-Graves group, including the Old Ironsides, Knob Hill, Victoria and Grey Eagle; the Dominion Copper Company's group, the most important claims of which are the Brooklyn, Stemwinder, Idaho and Rawhide; and the Snowshoe and Gold Drop, each owned by a separate company. There are as well other promising claims in this camp. Greenwood camp is noted for its big deposits—which may without any exaggeration be described as enormous—of copper-gold ore. Values do not yet, as a rule, run high, the average value, for instance, of more than a million tons of ore blocked out in the Knob Hill having been placed by the mining superintendent at $8.37. In nearly all cases, with any depth the ore shows a general sameness of appearance, i. e., chalcopyrite with hematite (micaceous iron) and some iron pyrites mixed with calcite and some quartz in a greenish, eruptive rock, showing considerable alteration and sometimes having a schistose structure. In some cases the ore bodies along their trend are capped with magnetic iron oxide, through which is disseminated in varying quantities ,though as a rule small percentages) of copper pyrites. The ore bodies appear to occur in contact with lime and diorite that have a general northerly and southerly trend and an easterly dip. Some of the ores are self-fluxing, and all are adapted for smelting. The number of feet of development work done on the leading properties is as follows :-

Name of Property.	Sinking and Raising.	Drifting and Crosscutting.	Total Feet.
Old Ironsides	903	2,691	3,594
Knob Hill	987	3,422	4,409
Victoria	92	2,823	2,915
Grey Eagle	...	477	477
Brooklyn	710	3,215	3,925
Stemwinder	325	165	490
Idaho	122	.....	122
Rawhide	72	400	472
Snowshoe	971	4,086	5,057
Gold Drop	395	1,520	1,915
War Eagle	413	660	1,073
Total	4,990	19,459	24,449

With the exception of the Rawhide, all the above-mentioned Greenwood camp mines are worked by power plants, the largest of which, of course, are those of the Miner-Graves properties, represented by about 600 horse-power.

The Old Ironsides No. 2 shaft, now down 400 feet, is the deepest shaft in the district. The Stemwinder shaft is 325 feet in depth. Spur railway lines connect with the Snowshoe, Brooklyn, Stemwinder, Old Ironsides and Knob Hill mines. The Old Ironsides and Knob Hill group are by far the biggest shippers in the Boundary district, and there is little likelihood of the mines of any other company coming anywhere near them as regards output of ore, especially after they shall have doubled their present daily output of 620 tons, which they are preparing to do concurrently with the increase now being made in the treatment capacity of the Granby smelter at Grand Forks. These mines have large and comfortable bunk and boarding houses for their men, besides a number of cottages for the families of married employees.

SUMMIT CAMP.

Summit camp also contains numerous mineral locations. Prominent among these is the B. C., which is considered to be one of the most promising mines in the Boundary country. The ore body is very wide, and consists of solid copper pyrites and pyrrhotite, carrying from 10 to 16 per cent. copper and 8 to 10 ounces silver per ton. Its working shaft is 1,410 feet in depth. Three distinct chutes of ore have been exposed by the work done so far, and those yield ore of a higher average value than that met with in some of the other camps of the district. The plant of the B. C. includes four boilers, together about 225-horse-power. The plant of the Oro Denero includes boiler, air-compressor, machine drills, hoisting engine and steam pump. The Maple Leaf, one of the Rathmullen group of claims, is similarly equipped, and a small power plant is now installed on the R. Bell. The Blue Bell, on which development work has but recently commenced, has short drifts at both the 50-foot and 100 foot levels, in a body of nice ore. Other well-known claims in Summit camp are the Emma, Mountain View, Cordick, Josie, Wake, and half a dozen others. The development work includes the following :

Name of Property.	Sinking and Raising.	Drifting and Crosscutting.	Total Feet.
B. C.	1,410	5,247	6,657
Oro Denero	185	760	945
R. Bell	360	574	934
Maple Leaf	225	450	675
Mountain View	60	158	218
Blue Bell	100	109	209
Emma	124	65	189
O. P.	130	40	170
Total	2,594	7,403	9,997

Branch lines connect this camp with the C. P. R. main line at Eholt. There are about 130 men employed in the camp. Summit camp is eight miles from Greenwood. North of Summit camp about two miles is Pass Creek, along which some promising discoveries of copper ore have been made.

WELLINGTON CAMP.

In this camp there are four properties that have been worked, but all except the Winnipeg are idle just now. These are the Athelstan, Winnipeg, Golden Crown and Hartford. The number of feet done in development is as under :

Name of Property.	Sinking and Raising.	Drifting and Crosscutting.	Total Feet.
Athelstan	260	185	445
Winnipeg	850	2,560	3,410
Golden Crown	461	1,882	2,343
Hartford	167	120	287
Total	1,693	4,679	6,372

The Winnipeg is down 400 feet, and the Golden Crown 322 feet. Both have run drifts and crosscuts at several levels down to the 300-foot, and the Winnipeg is now crosscutting at the 400-foot level. Both mines are equipped with steam boilers, hoists and pumps, air-compressors, machine drills, etc. The Athelstan also has a power plant, but of smaller capacity. The country rock here is of a dark feldspathic nature, while some of the principal ore bodies occur in gabbro, which appears in quite extensive areas, and in the case of the Winnipeg vein the enclosing rock is serpentine; this, however, is merely an altered gabbro. The ore in this camp is chiefly pyrrhotite near the surface, but as depth is gained it becomes silicious and carries higher gold values.

CENTRAL CAMP.

In Central camp there are several properties considered very promising that have been idle for some time. These include the Mabel, Oro, Cornucopia, and the City of Paris and Majestic group. The City of Paris has shipped about 2,000 tons of ore to the Granby smelter. The two last-named mines together get their power from the same plant, which includes two 80-horse power boilers, a 10-drill duplex air compressor, six machine drills, steam hoist, pump, etc. The No. 7 is equipped with a 100-horse power boiler, a four-drill compressor, two machine drills, hoisting engine, pumps, etc. The following is the chief development work done in this camp :

Name of Property.	Sinking and Raising.	Drifting and Crosscutting.	Total Feet.
City of Paris	720	4,380	5,100
Majestic	...	1,150	1,150
No. 7	254	770	1,024
Norfolk	140	150	290
Mabel and Oro Group	175	...	175
Totals	1,289	6,450	7,739

The ore is in two general classes, i. e., the silicious ore quartz ores, carrying gold and silver in galena, blende, pyrites and tetrahedrite, and the heavy sulphide ore carrying copper. Of the first class, the ore occurs in veins up to ten feet in width, and assays as high as $80 in gold, with 200 ounces in silver per ton. Of the second class, the ore bodies are large, and give good copper values, with some gold.

SKYLARK AND PROVIDENCE CAMPS.

These are situate in the immediate vicinity of Greenwood. Narrow veins of ore, rich in gold and silver, are the chief characteristics of these camps. Between 150 and 200 tons, in all, of high-grade ore have been shipped from the Providence, Strathmore, Last Chance and Skylark claims, the values returned being generally comparatively high. The Last Chance is equipped with a steam power plant.

SMITH'S CAMP.

In Smith's camp quartz ores prevail, values being in gold and silver. The Republic group of four claims has had the most development work done on it in this camp, this consisting of 317 feet of sinking and raising, and 380 feet of drifting and crosscutting. The Boundary Falls and neighboring claims occasionally show free gold. The American Boy, Ruby and Golconda group, the last-named having arsenical iron and copper ores, are other well-known claims. The ores in this camp occur in veins from one foot to five feet in width, giving good gold values, and in some cases high silver values.

COPPER CAMP.

Copper camp has immense surface showings of copper ore, but as yet only a very limited amount of development work has been done in the camp, the principal claims in which are the Big Copper and King Solomon. There is a small steam power plant on the latter claim. The copper deposits here occur in contact with lime and porphyry, and show large surface outcrops of iron oxide (red hematite) and quartz. In some cases native copper, cuprite and copper glance are distributed through this capping, more or less uniformly. Some excellent copper values are obtained in this camp.

LONG LAKE CAMP.

Long Lake camp contains chiefly gold-quartz ores, in which tellurides of gold occur. The Jewel and Denero Grande are adjoining claims, operated by the same company, which has done the most development work in this camp. The Jewel shaft is down 348 feet. This mine is equipped with two boilers, together 75-horse power, a four-drill straight-line air compressor, three machine drills, steam hoist, pumps, etc. A stamp mill and cyaniding plant will probably be installed during the present year. Both the Jewel group and the Ethiopia have been acquired by English companies. The development work done in Long Lake camp includes the following :

Name of Property.	Sinking and Raising.	Drifting and Crosscutting.	Total Feet.
Jewel and Denero Grande	749	1,543	2,292
Ethiopia	...	305	305
North Star	94	230	324
Enterprise	150	...	150
Lakeside	50	55	105
Totals	1,043	2,133	3,176

OTHER CAMPS.

Seven miles north of Greenwood, up Boundary Creek, is Kimberley camp. Numerous claims have been located here, but as yet not much development has been done. The surface showings are good, but values appear to be low, so capital has

not been attracted to these claims. The ore is heavy sulphides, both copper and iron. In Graham's camp, near Midway, there are outcrops of as nice looking ore as has been found on the surface anywhere in the district. Some 500 to 600 feet of tunnelling has been done, but this work has not proved sufficient to determine whether or not the ore goes down. In West Copper camp, nine miles northwest of Greenwood, among many claims located are some that, with development, should prove valuable. The ores are reported to be arsenical iron pyrites, giving assays in gold up to $36 per ton.

WEST FORK OF KETTLE RIVER.

The Carmi, Sally, Washington and Idaho are the best known of the numbers of locations made on the West Fork of Kettle River and its tributary creeks. Of these the Carmi is the only one that has sent out much ore. Last winter a quantity, variously stated at from 650 to 1,100 tons,, was hauled nearly twenty miles over a rough sleigh road, and thence some thirty miles farther by wagon to Midway, whence it was sent by rail to the Greenwood smelter. A trial carload was taken out at the Sally as well. Two shafts, the deeper 110 feet, have been sunk on the Carmi, and 220 feet of drifting and crosscutting have also been done. The plant of this claim, taken in under difficulties, consists of a small upright boiler, a 60-horse power horizontal return tubular boiler, a 6x8 link motion hoist, a sinking pump and a machine drill. On the Washington and Idaho are a 12-horse power upright sectional boiler and a 5x5 hoist, which was months on the way before it reached its outlying destination. The only underground development work done on this group is a shaft sunk 100 feet, whilst about 250 feet of tunnelling have been done on the Sally. In the neighborhood of these several claims are three townsites, all within a distance of nine or ten miles of each other. Beaverton had the start, but both Rendell and Carmi are now active competitors, and it is likely that one of these two will become the principal town in that locality.

UPPER MAIN KETTLE RIVER.

There are several camps on creeks running into the main Kettle River above Rock Creek, but practically no work other than assessments is being done on them at present. These include Douglas and Atwood's Oro Fino group, near Rock Creek; the Crown Point and Barrett's groups, on James Creek; Perkins' group, near Westbridge—a townsite at the confluence of the West Fork with the main River—and camps on Canyon and other creeks above it. On the Montana, Colorado and Fourth of July claims, on Canyon Creek, good showings of copper-gold ore occur. About $2,000 has been spent here in development. On the Silver Dollar and Barnato claims on Horseshoe Mountain, are big bodies of quartz and arsenical iron, carrying gold. The O. K. and Fletcher's groups have large iron-cap showings, with streaks of high-grade quartz and traces of telluride. A lot of surface prospecting has been done on the Mogul, Riverside, Hackla and other claims, but in no instance sufficient to prove permanence.

NORTH FORK OF KETTLE RIVER.

On the North Fork of Kettle River there are several groups of claims, distant 10 to 15 miles from Grand Forks. The best known of these are the Earthquake, Golden Eagle, Volcanic, Pathfinder and Little Bertha, on the eastern side of the river; and the Seattle, Humming Bird and Strawberry, on the western side. The Humming Bird is reported to have shipped 300 tons of ore to the smelter; the Golden Eagle has sent about 120 tons, and the Little Bertha and Strawberry a car-

load each. The Humming Bird has 400 to 500 feet of crosscutting and drifting. On the Pathfinder there are two shafts, 135 and 125 feet in depth, respectively, and about 700 feet of crosscutting and drifting. It is stated that there are three main ore bodies on the Pathfinder, of a somewhat irregular character, partially developed by these workings, and that these ore bodies are large masses of low-grade pyrrhotite, carrying gold, silver and copper. The power plant on this property consists of a 50-horse power boiler, a 16x24 straight-line air compressor, air receiver, two machine drills, 6x8 hoisting engine, pumps, etc. There is, besides, a small power plant on the Golden Eagle.

Up the East Fork of the North Fork there is a very promising country known as Franklin camp, which for size of ore bodies, so far as shown by the very limited amount of work done, and specimen assay values, compares very favorably with what was known of the older camps at a similarly early stage. A trail was cut out last year to connect with the wagon road from Grand Forks; but the construction of a wagon road is an urgent necessity for the getting in of mining supplies and machinery, otherwise the mineral resources of this camp must remain undeveloped. A sum of money has been placed in the estimates for this road. Numerous mineral claims have been located here, and of these the best known at the present time are the Banner, McKinley, Gloster and Polard.

SUMMARY.

A summary of the number of lineal feet of work done in development in the several camps gives a total of 75,694 feet, as under :

Camp.	Feet of Work.
Greenwood	24,449
Deadwood	15,102
Summit	9,997
Central	7,739
Wellington	6,581
Long Lake	3,176
Smith's	1,650
Skylark and Providence	2,000
Prospecting and other work	5,000
Total	75,694

THE SMELTERS.

Last August, at Grand Forks, the Granby Company started its first furnace, and in October its second furnace was "blown in." The quantity of ore treated at this smelter to April 30 is 136,443 tons. The British Columbia Copper Company commenced smelting at Greenwood on February 18, and in a little more than ten weeks, to April 30, smelted 24,857 tons of ore. The tonnage treated at these smelters, month by month, is as under :

Granby Co.		B. C. Copper Co.	
Month.	Tons.	Month.	Tons.
August, 1900 (11 days)	2,902	February, 1901	3,016
September	8,753	March	10,519
October	14,215	April	11,322
November	18,050		
December	18,467		
January, 1901	17,640		
February	17,708		
March	19,713		
April	18,995		
Total	136,443	Total	24,857

MEN EMPLOYED.

The approximate number of men employed in the Boundary district in connection with mining and smelting is as follows :

Camp.	Men.
Greenwood	400
Deadwood	200
Summit	130
Wellington	30
Central	25
Other camps	50
Smelters	120
Total	955

BURNT BASIN DISTRICT.

THE Burnt Basin District is a mineralized area lying west of Rossland, near Christina Lake, and is intersected by the Columbia & Western Railway. It may be said to be tributary to Cascade City, situated on that line. As yet not sufficient has been done to demonstrate its producing capabilities, capital not having taken hold of any of the properties in a large way. The ore bodies so far exposed are largely gold and copper-bearing. There are also silver and lead-bearing veins. Among those properties which have been most developed are the Bonanza, Cascade, Christina and Britannia, John Bull, Mystery, Preston and the Cooper group, the Mother Lode, Tammany, Ennismore and the Contact. There are also a number of other claims upon which from $200 to $500 worth of work has been done. The assay values have been sufficiently high to give promise of future good results.

EAST KOOTENAY.

THE District of East Kootenay, which includes the Golden, Windermere and Fort Steele mining divisions, comprises an extensive area, embracing the eastern slopes of the Selkirk and Purcell Mountains, the upper portion of the Columbia and Kootenay Valley, and the western slope of the Rocky Mountain range. The productive area is at present chiefly confined to sections of the Fort Steele division, or in the drainage area of the Upper Kootenay River and its tributaries south of Findlay Creek—which is itself of very considerable extent, aggregating approximately 7,000 square miles. In the Fort Steele district are situated the Crow's Nest coal fields and the three important silver-lead producing mines, namely the St. Eugene, the North Star and the Sullivan group; while both in this division and in those of Golden and Windermere are numerous partially developed prospects of unquestionable promise. In this connection special reference may be

made to the Paradise and Delphine groups, in the latter division, from the former of which properties production has already commenced, despite unfavorable conditions in the matter of inadequate transportation facilities.

Early History of Mining.

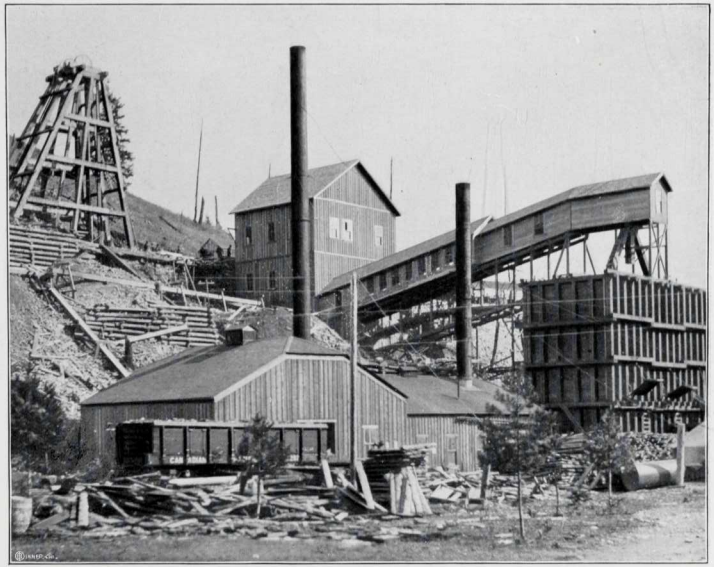
The commencement of mining operations in the East Kootenay district dates from 1864, when rich discoveries of alluvial gold deposits were made on Wild Horse Creek, which joins the Kootenay River at Fort Steele. It is officially estimated that ordinary claims on two miles of this creek yielded from $20 to $30 to the hand per day, and that from 1864 to 1866 five thousand persons were engaged in placer mining in East Kootenay. By the close of 1866 the locality was largely abandoned, except by Chinese. But of late years the old workings have been operated by hydraulic methods. Meanwhile in 1888 attention was first directed to quartz mining, 102 claims being located that year in the Golden and Windermere divisions; but practically no important discoveries were made until 1892, when the North Star mine was located by a prospector named Joseph Bourgeois, who was also the discoverer of the principal Rossland mines. Many years previous to this, however, in the late seventies, the outcrops of coal in the Crow's Nest Pass Valley had been noted, and the value of the measures subsequently computed by Dr. Selwyn, in a report published by the Canadian Geological Survey in 1891. Active mining operations were inaugurated at the North Star mine in 1895, and in September of that year two carloads of ore were shipped to the Everett smelter, via Jennings, the gross smelter returns being $68.70 per ton. Operations were first systematically commenced also during this year at the Sullivan and St. Eugene mines. Contemporaneously with the construction in 1897 of the Crow's Nest Pass Railway from Fort McLeod, in the Northwest Territories, through the Crow's Nest Pass and along the valleys of the Kootenay, Moyie and Goat Rivers, to Kootenay Lake, the work of opening up the vast coal fields of the Crow's Nest area was started, and by the time the railway reached the mines 10,000 tons of coal had been banked out, and more than 4,000 feet of heading had been driven. The building of the railway exerted a most stimulating effect on the mining industry generally in East Kootenay, reviving the interest in the resources of the northern portions of the district, which has since been the scene of much prospecting activity, while the silver-lead production from the Fort Steele division has since eclipsed that of the Slocan. The district is, including coal, now second in point of production to the Nanaimo district, and, excluding coal, second to the Trail Creek division. The progress that has been made is well shown in the following tables of production :

Crow's Nest Pass.

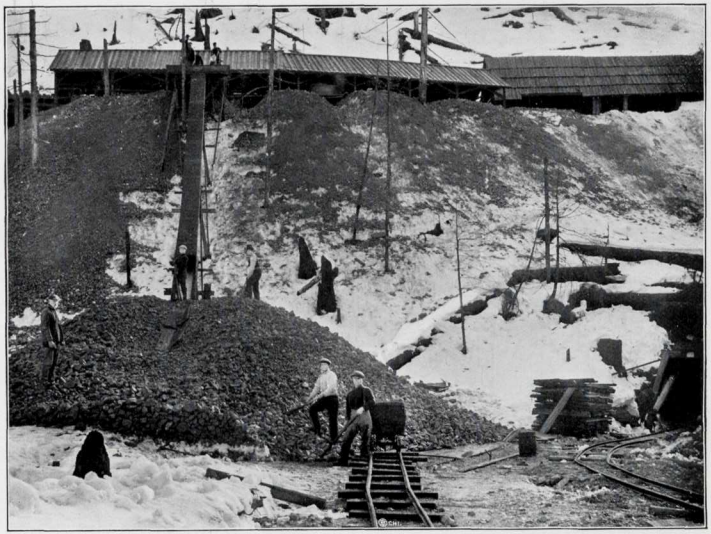
Year.	Gold (Placer).	Silver.	Lead.	Copper.
1895	$17,575 00	$.....	$.....	$.....
1896	21,076 00	49,443 00	83,908 00	.....
1897	12,000 00	69,760 00	82,036 00	.....
1898	17,000 00	33,623 00	77,765 00	.....
1899	10,000 00	19,891 00	36,834 00	69 00
1900	10,300 00	561,598 00	1,643,314 00	348 00

Year.	Coal. (Tons of 2,240 lbs.)	Coke. (Tons of 2,000 lbs.)
1898	9,954	361
1899	102,610	29,658
1900	103,572	65,915

The labor conditions in the metalliferous districts are similar to those obtaining in West Kootenay. The cost of sinking a 5x8 shaft in hard diorite at the North Star mine is estimated at $28.26 per foot. At the Crow's Nest collieries the average wages earned by the miners is $3 to $4 per day; general mine labor costs $2 to



SHAFT HOUSE AND ORE BINS—NEAR GREENWOOD, B. C.



LENORA MINE, Mt. SICKER—ORE SHEDS AND DUMP.

Labour Conditions, &c.

$2.75 per shift; general surface labor, $1.75 to $2; boys receive $1 to $1.75. The duration of shift underground is eight hours, "from pit's mouth to pit's mouth." Miners are charged for oil, powder, squibs, and lost or broken tools, but not for tools and repairs. Not more than four pounds of powder are allowed to a pair at one time. The prices paid for work in 1900 were as follows: Per ton, in rooms with lights, 60 cents; with closed lights, 80 cents. In narrow work the usual tonnage is paid, also yardage, and $1 per set for timbers. The allowance for branching a stall is $1.25; other "considerations" are settled as they arise. About 350 men were employed in the coal mines in 1900, and 415 in the production of metalliferous mines of the district.

PRINCIPAL MINES.

The North Star group is owned by the North Star Mining Co., Limited; authorized capital, $1,500,000, in shares of a par value of $1; head office, Board of Trade Building, Montreal. The property comprises the North Star, O. K., Dreadnaught, Rowan, Daffodil, Notre Dame, Dorae, Maverick, Good Luck, Canton, Full House, Brandon, Stemwinder and Ontario mineral locations. Situated 16 miles west of the Kootenay River as it flows from its source southwards. A branch line of railway was built from the brook in February of last year to Kimberley, to which point—a distance of four miles—the ore is transported by means of an aerial tramway, having an hourly capacity of ten tons. Shipments were made last year after the completion of the railway at the rate of 2,000 tons monthly. Since June 1, 1900, two dividends, aggregating $79,000, were paid. The ores are clean, and consist of silver-lead sulphides and carbonates, requiring no concentration or sorting. The ore bodies occur in the form of more or less parallel depressions or channels, several hundred feet in length, with a maximum width of 75 feet and a maximum depth of 40 feet. The ore is extracted in large chambers, timbered with square sets. The product last year was shipped to smelters at Nelson, Great Falls and Omaha.

North Star Group.

The Sullivan group of mineral claims, situated on the northeast side of Mark Creek, and about one and a half miles north of the North Star mine, is owned by the Sullivan Group Mining Company, Limited; authorized capital, $2,500,000, in $1 shares; head office, Spokane, Wash. The mine has been under development for several years. The ore body has been proved to be of considerable extent. The ore is a fine-grained galena, having an average value of 40 per cent. lead and 20 ounces silver per ton. During 1900, 5,000 tons of ore were mined, averaging from 16 to 17 ounces silver and 33 to 35 per cent. lead per ton.

The St. Eugene group of mines, comprising the St. Eugene, Peter, Moyie, Queen of the Hills, Lake Shore and other properties, situated to the east of the town of Moyie, on Moyie Lake, is owned by the St. Eugene Consolidated Mining Company, Limited; capital, $3,500,000, upon which a dividend of $105,000, or 3 per cent., was paid for the quarter ending December 31, 1900. The St. Eugene mine produced during last year a greater aggregate tonnage of ore than any other single producing mine in British Columbia, the output being between 65,000 and 70,000 tons, with concentrates carrying from 65 to 70 per cent. lead. The silver contents vary from 1-2 ounce to 2-3 ounce to the per cent. lead. The ore is conveyed to the concentrator, which was built last year and is the largest of its kind in the province, by means of an aerial tramway, at a cost of seven cents per ton. Most of the concentrates were shipped last year to Mexico.

St. Eugene Group.

The property of the Crow's Nest Coal Company, Limited, (authorized capital $4,500,000) comprises 11,169 acres of coal lands, situated near Marten Creek, Coal Creek and Morrisey Creek. On the eastern portion of the property, near Marten

Creek, containing 3,969 acres, there are fifteen seams of coal, four of which are cannel or gas coal. The remaining seams are bituminous and admirably adapted for coking. In the western section, 12 miles distant, are 12 superimposed seams of coal outcropping from the mountain slopes, varying from 2 to 30 feet in thickness. The method of working is by the pillar and stall system. The present output is from 1,200 to 1,400 tons a day. The number of coke ovens now in operation is 312, but others are in course of building. The ovens are of the ordinary bee-hive shape, 12 feet in diameter, placed in double rows. The average charge of coal is 6.5 metric tons; the production of coke per charge averages 4.50 percentage, in coke 68 per cent. Time of burning, 72 hours; average output for each oven per day, 1.5.

Crow's Nest Coal Co.

TROUT LAKE AND LARDEAU.

THE Trout Lake mining division is situated north of the Slocan, between the Ainsworth division on the east and the Lardeau division on the west. The characteristic ore of this district is argentiferous galena, with which in many instances tetrahedrite is associated, and occasionally gold values are obtained. The country is essentially rugged, and the mines are generally difficult of access and situated at high altitudes. The more important mines so far opened up are found in the vicinity of Ferguson, and include the Silver Cup, the Sunshine, the Nettie L., the Triune, the Alpha group, the Badshot. The nature of the ore from this neighborhood is exceptionally high-grade, and to this is attributable the fact that profitable production has been possible, notwithstanding the enormous present cost of transport. With the completion of the railway now under construction into the district, the productive area will be considerably increased, and be conducive to the more active exploitation of the lower-grade ore bodies. In 1900, 265 tons of ore were shipped from the Silver Cup mine, averaging 35 per cent. lead, 145 to 150 ounces silver, and about $4 in gold, or having a net value of $90 per ton sacked at the mine. Both the Nettie L. and the Triune also shipped during the year, the latter sending 100 tons to the Trail smelter, the reported values being 325 ounces silver, $12 in gold, and 25 per cent. lead. The total value of the metal production during 1900 from the Trout Lake, Lardeau and Revelstoke divisions was $81,028.

THE BIG BEND.

THE improvement in the transportation facilities on the upper river which the launching of the steamer Revelstoke this summer will soon effect, is likely, the Revelstoke Herald says, to bring once more into considerable prominence the once famous placer diggings of the Big Bend. The first discovery was in 1865, at the time when the Cariboo excitement was at its height, and the chief rush was

made in the following year, when several thousand miners flocked in from the south by steamer and from the west by a trail constructed from Seymour, at the head of the Seymour Arm of Shuswap Lake, to Laporte, on the Columbia River. Placer mining was in its infancy, and the methods were crude.

French Creek is reported to have yielded $32,000 in 1865 and $100,000 in 1866. Four, six and even twelve ounces to the day per hand were obtained on some claims, and one nugget worth $253 was found. Its neighbor, McCullough Creek, is credited with another $100,000 in 1866, and some of its claims yielded $100 a day to the hand. On French Creek a small town sprang up; a sawmill was put up, and a very lively mining camp, with all the usual concomitants, was in existence; while Seymour, at the head of Shuswap Lake, was another prosperous town, as the base of supplies for the gold fields. But the era of prosperity and activity was brief.

But little work of any importance was done on the Big Bend placers till 1879, when a company obtained the Ophir lease, on McCullough Creek, for hydraulic purposes, and installed a plant. Their plant was very inefficient and was handled by incompetent men; but, despite the disadvantages, the first year their returns were $50,000. The plant was subsequently destroyed by a slide, and nothing more was done till 1897, when a Chicago company purchased rights on French Creek and commenced operations. In 1898, late in July, their plant (a very extensive one) was installed under California management, and though they commenced late in the year, they cleaned up $48,000. Both here and on McCullough Creek the gold found on bedrock and in the lower gravels was found to be all coarse. Above the French Creek Hydraulic Company's ground a creek claim, the Consolation, has been worked for several years by means of drifts and shafts, with good results, bedrock yielding on an average $2.50 per yard of coarse gold.

The formation throughout the district is the same, that is to say, micaceous and schistose slates, quartzites and shales, carrying pyritic and magnetoid iron ores and large quantities of oxides. The rocks are metamorphic, and lie almost horizontal.

At the present time the principal placer operations going on in the Big Bend are on the Ophir claim, at the mouth of McCullough and Smith Creek, which empties into the Columbia opposite the mouth of Goldstream. The Ophir has been acquired and is being operated as a hydraulic proposition by parties from the Okanagan. On Smith Creek there are now two companies at work—the Revelstoke Syndicate, owning the Revelstoke claim, and the Duquesne Mining Co., of Pittsburg, Pa., which owns three claims immediately above it. On the Revelstoke a quantity of gold was taken out of one small area of exposed bedrock last year, and the indications throughout the high level gravels have been excellent. The Duquesne Company is only just getting to work.

CARIBOO.

THE District of Cariboo is the oldest and best known in British Columbia, from a mining point of view, and contained at one time perhaps the richest mining camps on the American continent. As is explained elsewhere, however, after the richest claims had been worked over by means of the primitive appliances used for mining, the industry declined, and for many years Cariboo suffered depression as the result of the loss of its old-time activity and population. However, in recent years it has attracted the attention of capitalists to a very great degree, the

industry having been diverted from washing out gold in the old-fashioned way to the development of the deep placers in the district according to new and modern methods. The new era of mining development began to manifest itself about nine years ago, when Sir William Van Horne, president of the Canadian Pacific Railway, and others associated, undertook the task of developing mining interests which had been concentrated for the purpose. The services of J. B. Hobson, mining engineer, of long experience in California, were enlisted, and the work began, and has since continued, so far as this particular enterprise is concerned, under his direction. Since that time other companies have begun to operate, and some of them on a very large scale. In fact, everything has drifted into big companies in the way of mining in Cariboo now, large capital and concentration being necessary to carry on the large enterprises whereby the gold in the ancient beds of rivers may be rendered available. Immense dams have been constructed, miles of fluming, extensive tunnelling and other modern methods employed to reach the pay gravel. It would be impossible without elaborating at too great length to indicate the nature of the operations of the various companies. In regard to last year's operations, we quote as follows from the

MINISTER OF MINES REPORT.

"There have been, during the season, in the neighborhood of 150 companies working throughout the whole district, employing, approximately, 1,200 men (about one-half of whom are Chinese), but few companies of any magnitude are as yet placed on a paying basis. The smaller mines in various stages of development, from the initiatory proceeding of being opened up, to the producing mine, it will be unnecessary in this report to particularize."—From Report by John Bowron, Gold Commissioner, Cariboo.

"The Miocene Gravel Company, of Horsefly, completed their great shaft at a depth of 530 feet, or thereabouts, and, tunnelling through bedrock, tapped the long-sought-for channel, with results altogether satisfactory to the management. This company is now about to put in heavier machinery for the actual working of the mine.

"The Horsefly Hydraulic Mining Company, also of Horsefly, has continued tunnelling operations, and is, I am informed, so well pleased with the dirt taken out that it contemplates putting on a large force of men next season.

"The Cariboo Mining Syndicate, of the North Fork of the Quesnel River, has been continuously engaged during the past winter and summer prospecting its ground, and is now arranging to set up a boring machine on the property, for the more rapid exploration of the same.

"The Onward Company, of Keithly Creek, after having conducted prospecting operations continuously for the past ten years or more, at a very considerable expense, has late this past autumn been, at least in part, rewarded for its perseverance by striking pay in good quantities, though not yet feeling certain it is on the sought-for channel.

"The Roses Gulch Company, of the South Fork of the Quesnel River, has its property opened up for hydraulicing on a small scale, and last spring and autumn took out a quantity of coarse gold. Experienced men speak favorably of this proposition, and say that, with sufficient water, which can be had with a reasonable outlay of capital, it will develop into a profitable mine.

"Outside of the above-mentioned producers and undertakings, there has been no development work of any consequence. On some other leases a little work has been done, but in the majority of cases the ground has been left wholly unrepresented. Withal it must be said that the season of 1900 marks an epoch in the history of the Quesnel Mining Division, for the wonderful output of the Consolidated Cariboo hydraulic mine—upwards of $350,000—has established beyond all doubt the fact that there are here well-defined deep auriferous channels, which, in richness and facility of working, compare favorably with anything of the kind known to the mining world. There can be little doubt but that many strong companies, encouraged by the success of the Consolidated Cariboo Hydraulic Mining Company, will, during the coming season, commence systematic and thorough development work on properties in this neighborhood."—From Report by James Murphy, Mining Recorder, Quesnel Forks.

To indicate the nature of the operations being carried on in Cariboo, which promise to reinstate it once more as the leading gold-producing district of British Columbia, a description is given here of the operations of two representative companies, which are both under the direction of Mr. Hobson and practically owned by the same shareholders—the more important one first : The property of the

CONSOLIDATED CARIBOO HYDRAULIC MINING COMPANY, LTD.,

of Toronto, Canada, is located in the heart of the Quesnel River region, famous for its rich shallow placers, its extensive system of ancient river channels, and its immense deposits of high-grade auriferous gravels.

It is situated at Bullion, Cariboo District, British Columbia, on the southerly side of the South Fork of the Quesnel River, about four miles easterly from the town of Quesnel Forks, four miles westerly from the outlet of the great Quesnel Lake, about 190 miles via the 150-Mile House and Beaver Lake, and about 170 miles via the 108-Mile House and Horsefly, by wagon road from Ashcroft, on the line of the Canadian Pacific Railway.

The property comprises 34 placer mining leases, aggregating 2,584 acres of land, and a block of pasture land containing 320 acres. The mining leases cover, for a distance of about ten miles, the auriferous deposits of a system of ancient rivers.

The ancient river now being exploited lies parallel to the course of the South Fork of the Quesnel River for a distance of about two miles, and has its outlet at Dancing Bill Gulch. This channel can also be opened and successfully exploited at Blackjack Gulch, about one and a half miles easterly from Dancing Bill Gulch.

The second ancient river covered by the company's leases is one of stupendous proportions. It apparently had its source east of the company's mines, in the Quesnel Lake region, and passed westerly down the depression of the Little Lake Valley towards Morehead Creek, and has its outlet at the confluence of said Morehead Creek with the main Quesnel River, about seven miles below Quesnel Forks. The deposits of this great channel can be attacked and successfully exploited at two other points, viz., first at Blackjack Gulch, by the extension of the main sluice tunnel that will eventually be driven to work the bottom gravel of Pit No. 2; second, by opening and exploiting an hydraulic pit in the channel outlet at the confluence of Morehead Creek with the main Quesnel River.

The deposits included in the company's property vary from 400 to 600 feet in depth from surface to bottom of channel. The quantity is estimated at 500,000,000 cubic yards of high-grade auriferous gravel that is available for future washing by hydraulic process.

The South Fork and main Quesnel Rivers are torrential streams of great volume, and afford an ample dump for the debris to result from the entire working of the company's property.

The Consolidated Cariboo Hydraulic Mining Company's water supply system, as now completed, consists of three miles of well-constructed canals, having a capacity for delivering at the mine 5,000 miners' inches of water, under a head of 420 feet. The sources of supply are at Bootjack Lake and Polley's Lake, about nineteen miles distant, and Morehead Lake, ten miles distant from the company's mines at Bullion. All the above-named lakes have been converted into efficient storage reservoirs by the construction of substantial dams across their outlets. These reservoirs have an aggregate capacity for storing 1,016,000,000 cubic feet of water, which is equal to 470,370 miners' inches of water. This storage supply is greatly augmented by the waters of Dancing Bill Gulch and other streams tributary to the main canals between the storage reservoirs and the mines, and ensures a supply, varying with the precipitation, of from 3,000 to 5,000 miners' inches of water throughout the mining season of six to seven months. The water supply system also includes two

pooling reservoirs located on Blackjack Gulch, and can also be increased 2,000 miners' inches, if desired, by utilizing the waters of Little Lake, and can be still increased by 10,000 inches or more if desired. The mine equipment consists of a portable hydraulic plant of four lines of 30-inch and 22-inch riveted steel pipes, aggregating 6,000 feet; six No. 8 hydraulic giants; steam-power hoisting and pumping engine; work and repair shops; steam-power sawmill, and all modern appliances necessary in so isolated a portion of the province to carry on the industry successfully and uninterruptedly. There are also gold-saving appliances consisting of a double extended system of sluices, seven feet wide by four feet deep, aggregating 2,380 feet in length; a melting plant consisting of three retorts, having a capacity for treating 12,000 ounces of amalgamated gold at a single charge; melting furnaces; assay plant, etc.; electric lighting plant; telephone system; stores for general and mining supplies; and in fact every other convenience or necessity of a complete equipment. During the progress of the hydraulic work done in the vicinity of Dancing Bill Gulch by the Consolidated Cariboo Hydraulic Mining Company and its predecessors, there have been washed off the hydraulic excavation about 5,750,000 cubic yards of gravel, which has produced, so far as known, about $1,428,000. The company's property is probably the largest of, and the high grade of its deposits entitles it to a place among, the richest hydraulic mines in the world.

Second, the property of

THE HORSEFLY HYDRAULIC MINING COMPANY

is situated on the southwest side of the Horsefly River, about seven miles above its confluence with the great Quesnel Lake, 150 miles from the main line of the Canadian Pacific Railway. The property comprises 28 mining leases, aggregating about 2,820 acres of land, which cover, for a distance of seven miles, the auriferous gravel deposits of an ancient Miocene river of stupendous proportions.

The deposits are composed of sand, gravel, and well-rounded water-worn cobbles and boulders of quartz and other metamorphic rocks, very similar in character to the famous deep gravel deposits of the tertiary rivers of Central California.

Part of the auriferous deposits in the company's property is free, and yields readily to hydraulic process; other parts are cemented from the surface to bedrock, forming beds of conglomerate that cannot be worked by hydraulic process, and is crushed in a stamp-mill for the recovery of the gold. The depth of the deposits, so far as known, is about 150 feet from surface to bedrock.

The water supply system consists of twelve miles of canal, connected in two places with 8,000 feet of 30-inch pipe, laid in the form of inverted syphons, to carry the water across two depressions about 180 feet in depth. This canal system has a capacity for delivering at the mine 2,000 miners' inches of water throughout the season of about seven months.

The source of the water supply is on Mussel Creek, a tributary of the Horsefly River, about twelve miles distant from the mine, and two large lakes tributary thereto. There are also two lakes—one on the line of the canal, about eight miles from the mine, and one at the end of said canal—which have been converted into storage and pooling reservoirs by the construction of substantial dams at their outlets.

The property is equipped with a portable hydraulic plant, consisting of two lines of 22-inch steel pipe and two No. 8 hydraulic giants. There is an extended system of sluices, six feet wide by three, included in the gold-saving appliances. The property is also equipped with an improved ten-stamp mill, operated by water-power, for crushing the cement gravel for recovery of the gold. The mine is being opened for operation on a large scale by the drifting and milling process.

The working cut and tunnel have been driven through the northerly rim of the channel for a distance of about 1,200 feet; 3,165 feet of working gangways and drifts have been driven through the deposits at right angles to the main tunnel, to explore, block out and open the auriferous gravel for extraction by the drifting process.

During the progress of opening up the mine for operation by the drifting and milling process, 9,901 tons of cemented gravel, bedrock, etc., mined from the various drifts, were put through the company's stamp-mill, and produced $14,564.21, an average of about $1.46 per ton.

BRIDGE RIVER.

LILLOOET has always been, to some extent, a mineral-producing district, but the part to which latterly attention has been particularly directed is the Bridge River district. Mr. Brewer, M. E., in the Minister of Mines' report, 1900, says in part:

"The discovery, during 1897, of rich float on Cadwallader Creek, which flows into the south fork of Bridge River not far from its source, caused a stampede of about 300 prospectors into that locality in 1898, when the Little Joe, Ida May, Lorne, Woodchuck, and a large number of other claims were staked. Wherever any natural exposure of the outcrop of a vein occurred, remarkably rich specimens of quartz were found, carrying particles of free gold, often as large as grains of wheat. But these natural exposures were of rare occurrence, because the surface of the ground is usually covered for a depth of from ten feet upwards with the residue from decomposed gneiss or granite, the mica and feldspar having suffered by degradation, leaving a bed of particles of the insoluble silica which the earlier prospectors termed "cinder."

Rich Exposures.

During the summer of 1897 the attention of Vancouver investors was attracted by the rich specimens of free gold in the quartz, and the Little Joe, Ida May and Forty Thieves groups were bonded by syndicates, development work being begun with vigor. This work has resulted, so far as concerns the Little Joe, which, with adjoining claims, to day comprises the Ben d'Or group, in a production of nearly $70,000 to date from amalgamation, with about $5,000 tons of tailings saved for treatment by the cyanide process, an average sample of which assays $11.60 per ton. Considering this section of the Lillooet mining division from a geological standpoint, it has apparently escaped many of the complications so general in other portions of the province. From the mouth of the south fork of Bridge River, up that stream and up Cadwallader Creek itself, there is little if any evidence of convulsions of the earth's crust. Severe degradation of the rocks is evident on every side, but this is attributable to weathering, erosion, and—partially at least—to glacial action. The work of erosion is being extensively carried on at the present day. The altitude of the outcroppings on the properties on Cadwallader Creek is from 3,900 to about 4,200 feet above sea level, while the summits of the near-by mountains are at a much higher altitude.

Ben d'Or Group.

KAMLOOPS.

THE principal centre of mining activity in the Kamloops mining division is at present the area known as Coal Hill, situated three miles to the south of the town of Kamloops. Here are found considerable areas of gabbro, closely associated with granites, which along the fractures have become impregnated with chalcopyrite, magnetite and iron pyrites. Interest was first manifested in these deposits in 1895-96, and development work of a more or less desultory character was carried on until the beginning of 1900. Last year, however, the more satisfactory values obtained from some of the properties at increased depth, and the circumstance that capital had meanwhile been induced to investigate conditions, under joint stock company auspices, acted as a further stimulus, and exploitation was consequently conducted on more vigorous lines, in several instances, with encouraging results. The more developed properties are the Python group, which has been explored to a depth of 125 feet, and which is said to show an average width of ore of eight feet; the Iron Mask, bonded by the B. C. Exploring Syndicate, of London, England, the ore here being chalcopyrite and magnetite, carrying from 4 to 16 per cent. copper and from $4 to $5 in gold; the Kimberley group of eight claims, owned by the Kimberley Copper Mines Company, of Woodstock, Ont., and the Noonday and Truth groups. At Cherry Creek, in addition to the Glen iron mines, the product from which to the extent of 1,000 tons is being consigned to the Hall Mines smelter, to be used for fluxing purposes, is a very promising copper property known as the Copper King, whence last year 15 tons of high-grade ore were sacked for shipment, while 60 more tons were on the dump. Both at the Big Shuswap Lake and Criss Creek camp several discoveries of an encouraging character have been made and are under development; while at Copper Creek the Tenderfoot mine has been opened up by work aggregating 400 feet, exposing an ore body 18 feet wide, the average contents of which are 6 per cent. copper, $2 in gold, and a small silver value. At this mine 200 tons of ore have been extracted.

Coal Hill Properties.

The Glen Iron Mines.

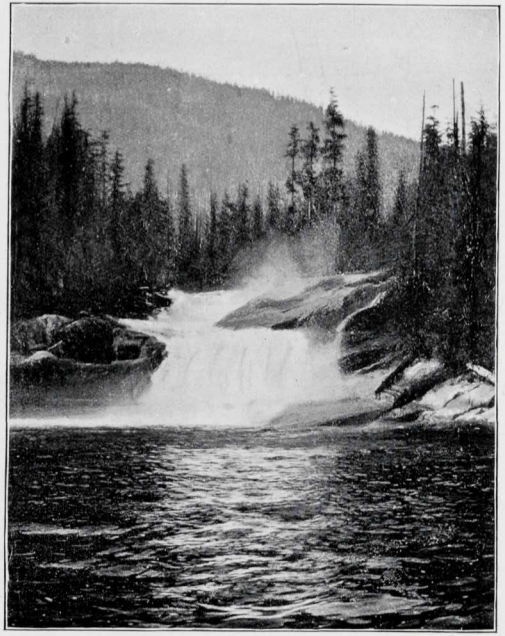
The present excellent demand for quicksilver is likely to direct increased attention to the cinnabar-bearing rocks near Savonas, which can be traced throughout a section approximating forty-five miles long and one mile wide, running north and south from Kamloops Lake. Last year (1900) the development of the acquired properties was generally inconsiderable, but several large bodies of mineralized rock of moderate grade were exposed. One per cent. ore is successfully treated in California, and even lower-grade material in Russia, hence there is no reason why the Savonas mines, which yield quite equally good returns, should not be profitably operated. In one property, known as the Briar, at Savonas, are several tons of picked ore on the dump, probably containing from 20 to 30 per cent. quicksilver.

A Quicksilver Mine.

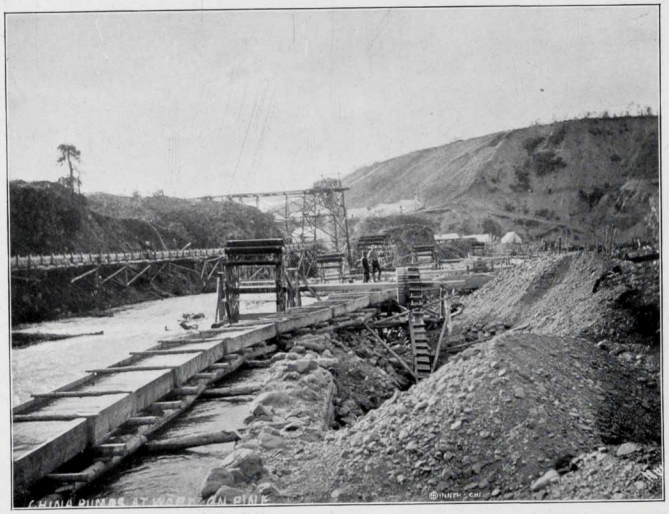
In Kamloops district the coal indications in several localities are eminently favorable, and arrangements are now being effected to establish the existence and extent of certain measures by diamond drilling. Much interest is meanwhile being taken in the inauguration of dredging enterprises on the North Thompson River and its tributaries. From tests made, the black sand obtained from bars on the Clearwater River yielded returns of 33 cents per cubic yard, while claims on Jamieson Creek, North Thompson River, yield from 16 to 55 cents from the surface gravel. Last season no less than 33 leases were issued, and extensive operations are about to commence. The conditions

Coal and Placer Deposits.

SKADAM FALLS, KAMLOOPS.



CLOWHOM FALLS—INDUSTRIAL POWER CO.



PLACER GOLD MINING ON PINE CREEK—ATLIN M. D.

here have been pronounced by New Zealand experts as extremely similar to those existing on the Clutha River, which is the principal scene of successful dredging operations in New Zealand, and already two large dredges of the New Zealand bucket pattern have been built to work the leases on the North Thompson.

SIMILKAMEEN.

SIMILKAMEEN District extends from Nicola Lake to the international boundary, and lies between the Yale mining division on the west, and the Vernon and Osoyoos divisions on the east, and includes the watersheds of the Tulameen and Similkameen rivers. The geological characteristics of the territory include most of the formations represented in British Columbia, while the mineralized area is extensive and remarkable for the variety of the minerals of economic importance found within its limits. Mining was first prosecuted in the Similkameen Valley in the year 1859, when the auriferous gravels of Granite and other streams were discovered. Placer operations have been intermittently carried on since, but on no very considerable scale. The district, however, has of late attracted a great deal of attention owing to the promising nature of the copper and coal discovered in the neighborhood of Princeton and other localities. On following down stream to Princeton, many outcrops of coal are seen in the river bed, their strike approximating east and west. These same outcrops appear in the Similkameen River on going south from Princeton. One property near this place has been preliminarily explored by a tunnel 65 feet in length, and here the seam aggregates in thickness from six to eight feet. Another exposure shows the aggregate thickness to be over 20 feet. As the developments so far undertaken have been very superficial, the analyses made of the coal cannot be regarded as specially valuable, but an analysis of a sample taken from the above-mentioned drift was as follows :

General Conditions.

Coal Formations.

Moisture	4.5
Volatile matter	37.5
Fixed carbon	50.0
Ash	7.5
	99.5

The coal, however, has proved satisfactory for blacksmithing purposes, and has made good coke in the laboratory. So far as ascertained the coal basin comprises an area of about 50 square miles. None of the metalliferous lode mines of the district have yet been rendered productive, and indeed few of them can be said to have passed the prospect stage. Some of the ore bodies, notably those of Copper Mountain, carrying chiefly copper, in the form of bornite and chalcopyrite, are of great size, though generally of low grade, and it is estimated by a resident engineer that to place a mine of this description on a productive and permanent basis would require an expenditure of not less than half a million dollars. The most developed mine in this section is the Sunset, upon which a shaft has been sunk to a depth of about 200 feet. The Lower Similkameen Valley has lately been considerably prospected, the scene of the great-

Mineral Properties.

est activity being Camp Hedley, on Twenty-Mile Creek, a stream flowing into the Similkameen River. Several properties here, including the Nickel Plate mine, which has been extensively developed, some time ago were acquired by Mr. Marcus Daly, a well-known American mine operator. In conclusion, it may be remarked that the Similkameen district is one of great potentialities, and when supplied with adequate transportation facilities, as is hoped will not long be delayed, will become an important factor in contributing to the mineral production of the province.

Lower Similkameen.

OMINECA DISTRICT.

THE Omineca District comprises such portions of the drainage area of the Peace River and its tributaries as may lie within this province, the drainage area of the Stuart and Nechaco rivers above their junction, and the drainage area of the Salmon River above its junction with the Fraser River.

The principal creeks being worked at the present time are Manson, Germansen, Slate, Lost, Kildau, Black Jack, Tom's and Vital creeks. The Forty-Third Mining & Milling Company of Cariboo, Limited Liability, have spent over $200,000, and have built over eight miles of ditch and flume, eight miles of wagon roads, and have a very complete hydraulic plant at work. Other companies working in the district are the Arctic Slope Company, of Victoria; the St. Anthony Company, of Santa Barbara, California; the Vital Creek Mining Syndicate, an English company; the Mayflower Company, and the Tilton Company. Routes into the district are: By, first, the Skeena River, by steamer from Essington to Hazelton (175 miles), by trail from Hazelton to Manson (190 miles); second, from Ashcroft to Quesnel by stage, from Quesnel to Manson by trail. The Omineca district has only been prospected to any extent along the creeks above mentioned and along the Omineca and its tributaries. Several quartz claims have been recorded on, and about Mount Selwyn, at the junction of the Peace and Parsnip rivers, this quartz is free-milling and reported to be rich.

There is a vast amount of country north of the Peace River and northwest of the Findlay that has not yet been prospected. A few white men have passed over a small portion of it, and report gold in most of the creeks, but little or nothing is known of it.

ATLIN AND BENNETT.

FOLLOWING the rush to the Klondike came the discoveries in Atlin in the fall of 1898, and the rush of that and the next year. The towns of Bennett, Atlin and White Horse sprung into existence as a consequence. From the sea at Skagway to Bennett is a distance of about 40 miles, but the town lies on the further side of the mountain range, and is reached by the White Pass & Yukon

railway, which has been extended as far as White Horse, the present head of navigation on the Yukon. Bennett is situated at the southern end or head of the lake of the same name, the first of a series of great lakes and connecting waterways, navigable for steamers, the waters of which flow northward into the Yukon River, past Dawson, and thence westward through Alaska, finally being discharged into Behring Sea. Atlin Lake is about 60 miles long and five miles wide, its length lying nearly north and south, the northern portion being in the Yukon Territory, and the southern in British Columbia. It empties through the Atlin River into Taku Arm at Taku City. The town of Atlin is situated near the present mouth of Pine Creek, on gradually rising land.

Means of Access.

The placer discoveries in this division which have so far proved of any consequence may be said to have been confined to a small area within a short distance of the town of Atlin, comprising the drainage area of Pine, Spruce and McKee creeks. From opinions pretty generally expressed by competent mining men, the placers of Atlin are well adapted for hydraulicing, in which the greater possibilities lie. That system is necessary to be adopted on a large scale for successful results. A good deal of gold in a small way has been taken out of the various creeks. Some quartz mining has gone on, both in the Bennett and Atlin districts, but as yet development has not reached the point of demonstration.

Prospects for District.

THE PORCUPINE DISTRICT.

THE territory recently added to the province of British Columbia by the modus vivendi entered into between Great Britain and the United States, is situated in what was previously southeast Alaska, and is known as the Porcupine district of the Lake Bennett mining division. Placer mining is extensively carried on in the ceded district, and the returns have been very satisfactory. Recent discoveries on Bear and neighboring creeks which flow into the Chilkat River and which waters a part of the new country, are of a most promising character, and many claims have been already taken up. The British Columbia Government has established a recording office, with the necessary officials on the spot for the convenience of miners. A post of the Northwest Mounted Police is also in the district.

The district is reached at present from Haynes Mission, on the Lynn Canal, by following the Chilkat Inlet, either by canoe or on the banks by the Dalton trail; those going to the southern portion of the district continuing on the trail, the Klihini River being too swift to be ascended in canoes, or the Chilkat River, to the new gold fields.

The entire district is mountainous and picturesque, glaciers being on all hands, but it is not difficult to traverse during the late spring and summer months. There is plenty of wood and water; game of all sorts abounds, and settlements, either of white men or Indians, are only a few miles apart.

Very little land is under cultivation, but there are evidences that the forest once cleared, the valleys would well repay the settler.

The whole district is an extremely interesting and attractive one. The climate is bracing in summer and not excessively cold in winter, the snowfall being average and the air dry.

SKEENA MINING DIVISION.

THIS part of the Coast is coming into prominence. On Observatory Inlet there is a group of claims owned by Messrs. Flewin, Rudge and Robertson, of Port Simpson, upon which a bond of $46,000 has been taken, the Bonanza claim showing a lode five feet wide, containing chalcopyrites. No development work has been done on this property, with the exception of open cuts; still, the property at the present time looks very promising.

Observatory Inlet.

At Kitsalas Canyon, on the Skeena River, approximately 80 miles from Port Essington, there is a mining camp of some importance. This section of the country has been opened up by the Ptarmigan group of claims, owned by Mr. Howard Gould, of New York, upon which there has been a considerable amount of work done. Up to this spring about $50,000 has been spent upon this property. A very rich strike was made on the 150-foot level. Samples across a width of eight feet are said to carry 2 ounces gold, 300 ounces silver, and 4 per cent. copper. In the drifts and stopes of the mine there are some very good showings, and the property looks very promising to become a large shipper. A wagon road is being constructed from the river to the mine, with the anticipation of shipping ore as soon as completed, and the owners are talking of erecting a 50-ton smelter this fall.

At Kitsalas Canyon.

Several claims are being worked with encouraging results in close proximity. The Golden Crown, owned by Mr. Anderson, shows samples of gold quartz assaying from $18 to $20, and specimens as high as $642 have been found. This property at the present time is said to be bonded to an English syndicate for $30,000. Mention might be made here of the Toulon claim, belonging to Mr. Kendall, which is at the present time bonded to Montana people for $20,000. On this property a very fine ledge of quartz has been opened up, carrying bornite and red copper ore. On the Monte Cristo, Emma, I. X. L. and Boot Jack there has been a lot of development done, with gratifying results. These properties, it is alleged, would be in active operation to-day if proper transportation facilities were provided.

Other Properties.

On the Uc-stall River, about 20 miles from Port Essington, Messrs. John Bryden, Swinnerton and others are operating a sulphur mine, which averages 51 per cent. Regarding this the Minister of Mines' report says :

"The chief interest in this property is that it is the first workable deposit of pyrites, suitable for sulphuric acid making, found in the province or on the Pacific Coast, and, taken in connection with the certain growth of the wood-pulp industry within the next few years, it may have some future importance. The ore seems eminently suited for sulphuric acid making, although, to judge from samples seen, a large percentage of ore would have to be burned in shelf-burners of some sort, as it is too friable for ordinary kilns.

A Sulphur Mine.

"The ore would have to come into direct competition with Japanese sulphur, which is obtainable alongside wharf on the Coast at from $20 to $25 per ton. The present demand for the ore, supposing it entirely replaced the imported sulphur, would be about 15,000 or 18,000 tons per year."

This section is one of the most promising in the northern part of British Columbia, and within the past two years capital has been paying a great deal of attention to it, and there is no doubt that as soon as the railroad from Kitamaat to Hazelton is completed, there will be several good shipping mines in this district.

CAMP McKINNEY.

THE discovery of Camp McKinney was made in 1884 by two placer miners, who uncovered free gold-bearing quartz. The camp, however, takes its name from Al. McKinney, who located the first mineral claim, staking out the now famous Cariboo mine. Camp McKinney has been ever since a more or less active field for prospectors and miners. It is situated at an altitude of 4,600 feet, on round-topped hills, almost midway between Penticton and Greenwood, about 56 miles from the former and 40 miles from the latter. It is bounded on two sides by the forks of Rock Creek, while Rice Creek flows through the centre. The Government wagon road affords communication between the points referred to. Rock Creek, a short distance in the direction of Greenwood, was in the sixties a very active placer mining camp, and several million dollars are said to have been taken therefrom. Of later years the deposits have only been worked at intervals. The formation is in a northerly and southerly direction, and consists mainly of highly altered schistose, diabases banded with quartzites, crystalline limestones and gneisses. West of the camp there is a large tract of granite, gneiss and porphyry. The veins for the most part are fissures, cutting across the formation in an easterly and westerly direction, in which faults frequently are encountered. The ores in the central portion of the camp are carried in quartz or quartzites, and are free-milling or concentrating. About two miles due west, however, there have been found dykes carrying good values in pyrrhotite, pyrites and chalcopyrite.

Location of Camp.

Formation and Ores.

Among the principal properties is the one already referred to, the Cariboo, which has for years paid regularly, the dividends amounting in the aggregate to $478,087. It is owned by the Cariboo-McKinney Milling & Mining Company, of Toronto. Very considerable work has been done in this mine. The milling output is about 1,500 tons per month. The Company own the Okanagan, Saw Tooth Fraction, Amelia, Cariboo, Alice, Emma and Maple Leaf. The Minnehaha, lying south of the Cariboo, is owned by the Gold Mining Company of Toronto. For some time considerable development was carried on, but results not having proved as satisfactory as was expected, it was closed down, awaiting further explorations in search of the main ore body. Other properties more or less well known and developed are the Kamloops, the Sailor, the Waterloo and the Fontenoy.

Principal Properties.

At one time there was considerable activity in Camp McKinney (the result to some extent of speculation), and a number of properties were worked, but at the present time operations are confined to a few leading properties. In many respects it is a promising camp, with, however, the vicissitudes incident to a free-milling industry. The formation and mineral characteristics are said to be similar to those existing at Chesaw and Republic, on the American side of the line.

Nature of Operations.

THE COAST AND VANCOUVER ISLAND.

THE years 1899-1900 may be said to have marked an important epoch in the history of mining development and activity in that portion of the province usually described as "The Coast and Other Districts," which includes the mining divisions of Nanaimo, Alberni, the West Coast of Vancouver Island and Victoria. In this reference, however, for purposes of convenience a further addition to the territory under review may be made in including the Howe Sound district, which rightly belongs to the New Westminster division. But to return. The statement that in this territory a new era of industrial advancement commenced in 1899 is based on facts which are sufficiently demonstrable, and resulted in the division last year taking rank only second to Boundary district as the most important copper-producing area in British Columbia. Not only were further promising discoveries of copper ore made during this period, but many properties ranking previously as merely prospects were advanced, not perhaps to the stage where they can be properly described as mines, but far enough to warrant the highest expectations concerning their future productive capabilities, while the older established mines increased their outputs to an appreciable degree. Comparison, however, is best afforded from the following table :

Another Kootenay.

	Gold, Placer.	Gold, Lode.	Silver.	Copper.	Total.
1897	$ 5,000	$ 940	$ 853	$ 2,597	$ 9,390
1898	.....	8,100	1,187	10,150	19,437
1899	.....	127,241	13,787	114,620	255,648
1900	14,050	60,430	21,232	355,202	450,914

It will be noticed from the above that the only depreciation last year was in the value of the yield from lode gold mining, and this is accounted for by the suspension of operations at one mine, the Dorothy Morton property at Shoal Bay, which after a brief and brilliant career was closed down in consequence of the exhaustion of the ore supply. In fact it appears that a large proportion of the moderately high-grade free-milling quartz deposits so far discovered in the Coast districts are mere pockets, and that the future of the mining industry in these localities depends on the successful development of the large bodies of copper-gold ores which predominate.

THE HOWE SOUND DISTRICT.

Although it is affirmed that some of the claims comprising the Britannia group of mines were located nearly twenty years ago, the great showings of ore on these properties, two to four miles distant from the shore line, were not discovered until 1897. An interest was subsequently acquired in the property by Messrs. Boscowitz & Co., of Victoria, who spent a considerable sum in preliminary exploitation. A local company was afterwards organized, in which the principal shareholder is Mr. H. C. Walters, who is also the managing director of the corporation. Considerable development work was prosecuted last year, and it is estimated by a reputable engineer that the exposures represent the equivalent of between 1,500,000 and 2,000,000 tons in sight. The ore, chiefly chalcopyrite, white iron and copper pyrites, averaging perhaps $6 to $7 in value to the ton, occurs in a schist formation, apparently extending about 20 inches southeast from the beach. The mines are situated at an altitude of 3,500 feet above sea level. The conditions are such that mining could be carried on in a most economical manner by probably quarrying, though as the ore is neither water-concentrating nor self-fluxing, some difficulty is to be anticipated in successfully discovering a suffi-

An Enormous Showing.

ciently cheap method for metallurgical treatment. Water-power and timber for mining purposes are both available in the locality. In addition to the Britannia group, several other properties of almost equal promise, including the Goldsmith, Marlborough and Empress group, have been located in the same neighborhood.

TEXADA ISLAND.

Texada Island is situated in the Straits of Georgia, between Vancouver Island and the Mainland, and is 27 miles in length, and has an extreme breadth of a little more than five miles. Exploratory work has been conducted at intervals for many years, prospecting being chiefly confined to the northern portion of the Island; but it was not until about four years ago that mining operations were commenced extensively on systematic lines. The result of these developments has been generally satisfactory. The geological formations in the present productive area are very similar to those of the West Coast of Vancouver Island, but the gold values are considerably higher, averaging from $8 to $9 per ton, and in individual cases often considerably higher. From the town of Van Anda northwards the principal ore deposits are copper carbonates and bornite, and in the Copper Queen mine, one of the Van Anda group, at the 400-foot level averages $25 per ton in value. This mine has been opened up to a depth of 500 feet, and the adjacent mine, the Cornell, owned by the same company, to about 200 feet. Previous to the erection of a smelter of 50 tons capacity in 1899 (increased last year to 75 tons), the ore was sent to Swansea, Wales, for treatment. Last year 8,000 tons of ore of the exceptional high grade above mentioned were matted locally. The smelter returns from June to December, 1899, were as follows: Total ore smelted, 4,133 tons, yielding 442,005 lbs. fine copper, 9,523 oz. fine silver, and 1,440 oz. gold; total value, $99,484.03. In addition to the Van Anda company's properties, the Marble Bay mine is now entering the productive stage. The important iron occurrences on the west coast of Texada Island are worth more than passing reference. The property, comprising 2,700 acres of land, on which the iron in the form of magnetite occurs, was purchased by the Puget Sound Iron Company some thirty years ago. For a period the ore was mined and turned to commercial uses. Operations were, however, discontinued until quite lately, when it was decided to resume upon a far more considerable scale. The deposits are said to be traceable for four miles, following the coast line, from which they are distant from a quarter to three-quarters of a mile. The development to date has exposed 8,000,000 tons of ore, which is remarkably free from impurities. The output of the Van Anda mines for 1900 was 7,054 tons, an increase of over 100 per cent. on the 1899 returns.

Satisfactory Results.

Iron Deposits.

MOUNT SICKER.

The Mount Sicker mining area lies about six miles distant from tidal water, on the east coast of Vancouver Island, south of the Chemainus River, and at about an equal distance from Westholme Station, on the Esquimalt & Nanaimo Railway. On the south slope of the mountain, the altitude of which is 2,000 feet above sea level, are located what are at present regarded, in consequence of their development, as the most important mines—the Lenora and the Tyee, the former of which has been productive for over a year past. The locality was first prospected in 1896, but, though the indications were favorable, it was not until 1899 that serious mining commenced.

The result of operations in 1900 was such as to justify in the most satisfactory manner the earlier high expectations entertained concerning the extent and value of

the ore deposits of this area. The Lenora mine, which is owned by a private syndicate, is under the management of Mr. Henry Croft, and is producing at the rate of about a thousand tons of ore monthly, from which smelter returns have been received showing the consignments to yield in value from $20 to $30 per ton, copper and gold being the principal constituents, though occasionally exceptionally high silver values are obtained. The width of the ore body varies from 3 feet 6 inches to 20 feet. The ore is very uniform in value, and consists of about 22 per cent. iron and 24 per cent. silica, with chalcopyrite. Mining is economically conducted, as the country rock, consisting of mica, talcose and graphite schists, is exceptionally soft. The Lenora mine is worked by means of tunnels, Nos. 1 and 2 of which have been driven 1,000 and 600 feet respectively. Last year a three-foot-gauge railway was built from the mine to Westholme Station, at a cost of $45,000, and is used for the transport of ore, which is trans-shipped to the smelter at Tacoma. To March 23, 1901, the Lenora mine shipped 11,867 tons, the value of which, according to smelter returns, was $175,831.42. Another important mine is the Tyee, which will shortly enter the productive stage. This property adjoins the Lenora on the east, and is owned by the Tyee Copper Company, of London, England, which commenced operations on July 1, 1900, but prior to this time the mine had been exploited by the Tyee Development Company. The main workings consist of two shafts, the deepest of which is 200 feet, from which crosscuts in several directions have been driven. The ore bodies are the same as those found on the Lenora; and in the crosscuts to the north at the 160 and 200-foot levels the ore was encountered and proved to be about 16 feet wide. The mine is equipped with two 50-horse-power boilers, a hoisting engine and a three-drill compressor. Other promising claims in the same locality are the Copper Canyon group, the Fortuna, the Queen Bess, the Botha and the Mona. The country rock in this district is a quartzite schist. The ore occurs as bedded lenticular veins, lying parallel and conformable with ten enclosing schists, and occupying fissures and bulges in them. The lode matter consists of a quartz gangue, usually dark-blue in color, carrying chalcopyrite and iron pyrites with gold values, and are thoroughly typical ores of their class, not likely to present any difficulties in treatment by ordinary methods.

The Lenora Mine.

The Tyee and Others.

GOLDSTREAM.

Goldstream was erstwhile, in the early sixties, the scene of a placer mining excitement on a small scale; but, except in one instance, enterprise on these lines has entirely ceased. Interest was again directed to the locality, however, in 1896 by the discovery of copper deposits on Mount Skirt, eleven miles from Victoria. The properties, consisting of five claims, were acquired by the Ralph Mining Co., and since development work on a more or less extensive scale has been in progress. The ore is a chalcopyrite, carrying, in addition to copper, small gold values. Several hundred tons have been extracted in course of development, but it is doubtful whether shipments could be profitably made, the successful operation of the mines depending on the establishment of a matting plant in the immediate vicinity.

THE WEST COAST OF VANCOUVER ISLAND.

Nearly the whole of the West Coast of Vancouver Island is well mineralized, and promising copper properties are being developed in various localities, including the San Juan Valley, Alberni District, Clayoquot, Sydney Inlet and Quatsino Sound. The only properties, however, which may be accurately described as mines are the Monitor and Three Joys, locally known as the Hayes mine, in the Alberni district. The Monitor group is owned by the Monitor Copper Mining Company, Limited, 20 Nassau Street, New York, and

Alberni District,

HARRISON LAKE—NEW WESTMINSTER M. D.

SHORE LINE—WRECK BAY PLACERS—W. COAST V. I.

comprises several claims situated about two miles from the mouth of Alberni Canal, on the north. Development work has been confined practically to two claims, the John Bull and Uncle Sam, from which in 1900 a shipment of several hundred tons of ore was made to the Tacoma smelter, the returns from which place the value of the product at about 10 per cent. copper, with small gold and silver values. The mine was opened up by means of a tunnel, 200 feet in length. The ore is transported to deep water by an aerial tramway. The Hayes group, owned by the Nahmint Mining Company, of Portland, Oregon, is situated at an elevation of 1,750 feet above sea level, on the west side of Alberni Canal, and consists of six Crown-granted mineral claims. The ore is chalcopyrite, with a neutral gangue, the metallic contents of which, from smelter returns, average 13.27 per cent. copper, 1.06 ounces silver, and 65 cents gold per ton, and is mined at a profit of $9.60 per ton. It is estimated that at the close of 1900 there were 63,000 tons of first-class and 60,000 tons of second-class ore on the dumps. The ore chutes are found to vary in width from 6 to 28 feet, and in length from 65 to 148 feet, but the limit of the ore-bearing ground has not been found. The country rock is altered porphyry. The work done to December, 1900, aggregates over 3,000 feet in shafts and tunnels, of which 1,147 feet were driven last year. The deepest workings are 400 feet below the outcrop. No stoping, however, has been attempted, all the ore shipped or on the dump having been extracted in the course of development.

The Hayes Group.

During the past year the large exposures of magnetite iron ore found on Copper Island, Barclay Sound, have been actively exploited, with so far most gratifying results. The ore is remarkably pure of deleterious materials, and contains a very high percentage of metallic iron. Iron deposits at Sooke, Chemainus and other localities on Vancouver Island were also exploited during 1900. Attention was first directed in 1899 to the auriferous black sands of Wreck Bay, situated on the West Coast about five miles north of Amphitrite Point. All the available sand in this locality has been staked as hydraulic claims, five out of ten of which have been consolidated and are being operated by the Uclulet Placer Mining Co. During 1900 this company expended some $16,000 in plant and equipment, and in the course of the season washed 600 yards of gravel, which yielded $9,400, or about $15.50 per yard.

Iron and Black Sand.

COAL MINING ON VANCOUVER ISLAND.

THE oldest established and most important industry of Vancouver Island is coal mining. Coal was first discovered on the Island at Fort Rupert, in 1835, and mining was carried on intermittently by the Hudson's Bay Company for several years, and finally abandoned at that point, the coal measures being considered not wide enough. Mining was resumed at Nanaimo in 1851, and has been continued ever since. The Hudson's Bay Company disposed of their coal lands at Nanaimo to the New Vancouver Coal Company in 1862, and that company is operating the mines successfully, the deposits showing no signs of exhaustion, and the output increasing from year to year. The New Vancouver Coal Company is operating over a large area on Vancouver and the adjacent islands. There are six shafts on the property, viz., Nos. 1 and 2, in the

New Vancouver Coal Co.

city of Nanaimo; the Northfield, the Southfield, the Harewood and the Southfield No. 2, all within a radius of six miles from the city, and connected with the company's shipping docks by a railway. There are also the Protection Island and Newcastle Island mines, which have separate shipping facilities. About 1,500 men are employed in these mines, which are the chief support of Nanaimo, a city of over 8,000 inhabitants.

The growing importance of the coal industry at Nanaimo incited others to search for coal, among them the late Hon. Robert Dunsmuir, who discovered extensive deposits at Comox and Wellington. The Wellington mines were discovered in 1869 and were worked successfully for many years, being finally abandoned in 1900 for the more promising measures at South Wellington and Extension. The Extension mine was only opened in 1898, but development has been so rapid that already the output aggregates 2,000 tons per day, and this, through the admirable plan of working, may be easily doubled at any time. Diamond drill borings demonstrate the fact that there is coal enough to supply 2,000 tons a day for 100 years. At present three inclines are being sunk at different points, all converging to a main tunnel, which now pierces the earth for over a mile, and which will eventually be the main highway of the mine. The Extension mines are eight miles from the new town of Ladysmith, a splendid harbor on Oyster Bay, where the Wellington Colliery Company (which owns and operates these mines, as well as those at Alexandria and Comox) has bunkers and wharves that will accommodate and load five of the largest steamships at one time. The Alexandria mine, which is also close to Ladysmith, is producing about 800 tons a day and is being systematically developed.

The Dunsmuir Mines.

The Comox mines are situated eleven miles northwest of Union Bay, on the east coast of Vancouver Island, with which they are connected by a narrow-gauge railway. They cover some 300 square miles, and are noted for the superior quality of the coal, which is the best for steam purposes in the world, excepting only the Welsh. These mines are now supplying the British and United States Pacific squadrons. They have been worked since 1887. Six shafts are being worked, connected by slopes and levels, and about 1,600 tons a day are produced. These mines are said to be practically inexhaustible, the present workings and explorations with the diamond drill demonstrating the presence of immense quantities of coal.

Comox Mines.

All these mines are situated on the east coast of Vancouver Island, and occur in two distinct coal measures—the Douglas, on which are located all the mines of the New Vancouver Coal Company, and the Alexandria, of the Wellington Colliery Company; and the Wellington, on which all the other mines of the Wellington Colliery Company are situated. These great coal measures are, strange to say, only separated by about 350 feet of shales, sandstones and conglomerates. So far they are the only coal fields that have been developed, although numerous and strong indications of coal exist at several points on the north and west coasts. The most important of these is being developed on Quatsino Sound, which gives promise of future success. Outcroppings of coal-bearing rock are found on the southwest coast, at Hesquoit Harbor and at Carmanah Point, but as yet nothing has been done to prove the value of these indications.

Other Prospects.

The capital actually invested by the two operating companies is, in round figures, $3,000,000, and their combined monthly payrolls amount to about $230,000, or $2,760,000 annually.

IRON ORES OF BRITISH COLUMBIA.

THE Engineering Magazine of New York and London contains an article in the issue of December, 1900, by H. Mortimer Lamb, editor of the British Columbia Mining Record, in which is epitomized the most available information on the subject of iron deposits in British Columbia, and from which are here extracted the points of principal value and interest.

The editors of the Engineering Magazine as a foot-note make the following comments which are of interest in this connection:

"Conditions on the Pacific Coast of America afford one of the most interesting studies now open in the economies of industry. Immediately at hand are vast stores of fuel and iron—the prime elements of all manufacture. Across the Pacific are the enormous new markets of the East, which water transport is bringing nearer every week. Wherever such conditions exist, foci of industry have been created. The dawning century seems likely to witness the birth of new Clevelands, Pittsburgs, Manchesters, in the neighbourhood of Puget Sound. Mr. Lamb's article is essentially a review of some of the material of this new world of wealth."

A New Iron Centre.

Although discoveries of large bodies of iron-bearing ores have been made in various localities of the province at intervals since 1872, no annual production has much exceeded 2,000 tons, and on only one or two occasions has the aggregate output of one year reached that figure. The productive sources have been practically limited to three, or more properly speaking, two mines; one, the Glen Iron Mine, on the line of the Canadian Pacific Railway at Cherry Bluff, near Kamloops, and the other the Puget Sound Iron Company's properties at Texada Island. In the case of the former the product has been exclusively used for fluxing purposes by the smelters at Tacoma, Revelstoke and Nelson, while the Texada ore has been shipped to Irondale, Washington Territory, and there smelted with a mixture of from 1-9 to 3-10 of bog ore, making an excellent foundry pig, which was subsequently marketed in San Francisco and utilized by the Union Iron Works in the construction of the United States warships Olympia, Monterey, Charleston and Oregon. In addition to the two mines mentioned, more or less extensive bodies of iron-bearing ores have been discovered at Sooke, Chemainus and Barclay Sound, on Vancouver Island; at Rivers and Knight Inlets, on the Mainland coast; on the Queen Charlotte Islands, and also in several localities of the inland districts of Similkameen and Cariboo.

Sources of Supply.

The Puget Sound Iron Company's property of 2,700 acres is situated on the southwest side of Texada Island. The ore-mass, which on the surface varies in width from 20 to 25 feet, is an irregular contact deposit between limestone and granite, traceable northward for nearly four miles along a ridge following the coastline, and distant from it a quarter to three-quarters of a mile. Sufficient development work has been done to expose an ore-body estimated by experts as representing 5,000,000 tons of commercially valuable iron in sight. In the course of development, at one point, copper in the form of solid pyrites was found in irregular bunches and stringers in the magnetite, but with increased depth this disappeared. Analyses of the ore have been made on several occasions in the laboratory of the Canadian Geological Survey, one result showing 68.40 per cent. of iron, with only .003 per cent. of phosphorus; but a more detailed test gave:

Texada Island.

Iron	69.85
Manganese	trace
Siliceous matter	2.75
Sulphur	.6
Phosphoric acid	trace
Moisture	trace

The formation containing the iron ore of Texada Island is believed to be the same as that constituting the greater part of Vancouver and its adjacent islands.

The profitable local manufacture on a large scale of iron from these ores is not altogether a remote contingency, for, as I have previously stated, in a limited way

the ore has already been turned to commercial uses on the Pacific Coast. Sufficiently cheap labour might be secured by the employment of Orientals, both Chinese and Japanese; an abundant supply of excellent fuel is available in the immediate vicinity, and a permanent market for the product would be assured in the industrial centres of the Pacific seaboard. A further incentive is the bounty granted by the Dominion Government on pig iron manufactured in the country from Canadian ores. On the other hand, supposing that local manufacture is not at present practicable, the coast iron deposits being, without exception, situated within easy access of deep water, transportation costs on the shipment of the crude ore to Puget Sound points would be very light, not exceeding 50 or 60 cents per ton. In addition to this charge, however, the duty of 40 cents per ton on ore imported into the United States must be considered.

Industrial Conditions.

On Queen Charlotte Islands, clay iron-stones, the nodules varying in weight from a pound to many tons, are of frequent occurrence in the coal rocks, and might be profitably worked in conjunction with the coal seams. Magnetic iron ores of excellent grade also occur in considerable mass on these islands, to the east side of the entrance to Harriet Harbour; while remarkably pure specimens of magnetite, containing 71.57 per cent. of metallic iron, have been brought from an island in the Walker group.

Queen Charlotte Islands.

On the Mainland at Rivers Inlet, near the mouth of the Kildella River, an extensive deposit of ore is found outcropping in a contact of granite and limestone, the average of several analyses being 69.5 per cent. of metallic iron and .01 of phosphorus. A deposit, described as a vein 25 feet wide, also occurs on the north shore of West Redonda Island, in the Gulf of Georgia. The ore is a highly magnetic, somewhat finely-crystalline, granular, massive magnetite, an analysis affording the following results: Metallic iron, 65.896; phosphorus, none; sulphur, .015. A small shipment of ore was made from this island some years ago, the iron being smelted in Washington Territory and converted into car wheels. Much attention has meanwhile been directed to the iron deposits of Vancouver Island. Of these the most important are the deposits at Barclay Sound, in the Alberni division on the west coast, and the deposits in the hills to the east of Sooke Harbor, on the south coast, in the Victoria mining division.

The Coast Deposits.

The first exposure of iron-bearing ore in the Barclay Sound locality is met with on the mainland about a mile up the Sarita River. Here there is a considerable showing of magnetite in a contact of coarsely-crystalline limestone and diabase. The ore body, which is said to be 80 feet wide, extends back in an easterly direction a considerable distance, the exposure having been prospected by the sinking of shallow pits and with crosscuts along its length for 800 feet. The deposit has also been partially explored by means of a tunnel, and solid ore has been encountered at a depth of about 90 feet, 60 feet from the mouth of the tunnel. In a direct line northwest by west, a continuation, apparently, of the same deposit, is exposed both on Copper Island, some two and a half miles distant, and again at Sechart, on the mainland eight miles to the northwest. Mr. Carlisle, formerly provincial mineralogist of British Columbia, examined these deposits in 1897, and described them in his annual report of that year as a ledge of magnetite lying in what appeared to be diorite, and next to a very extensive area of limestone, which at the point of contact with the eruptive rock is completely crystallized into large coarse crystals. Both on Copper Island and at Sechart, the ore body, which has the appearance of being a primary deposit, has been traced for a distance of several thousand yards, the exposures in some places having been scraped clear, giving a width of over 100 feet of magnetite of good quality. Analyses of ore from these localities have been made in England, Pittsburg and Vancouver, the results being as follows:

Barclay Sound.

	1	2	3	4	5	6
Iron	64.00	64.01	66.62	66.60	67.98	69.160
Silica	7.35	.....	2.00	.....	2.67	1.500
Alumina	0.52	.....	.....	0.14	.....	.....
Sulphur	0.0054	0.008	0.02	0.006	trace	trace
Phosphorus	0.0071	0.01	0.01	0.003	0.008	0.007
Lime	3.76	.....	4.00	.....	3.000	0.250
Manganese	trace	.....	.....	.....	0.250	0.160
Magnesia	.....	.....	.....	.....	1.150	0.120

In passing, it may prove interesting to state that the rare mineral ilvaite has been discovered at the head of Barclay Sound, occurring in large irregular masses in a vein about 20 feet wide, an analysis affording the following results:

Silica	29.81
Alumina	0.16
Ferric oxide	18.89
Ferrous oxide	32.50
Manganous oxide	2.22
Lime	13.82
Magnesia	0.30
Water	1.62
	99.32

Up to the present time the iron areas have been held by men unable, through lack of necessary means, to develop them; but recently the properties in all three localities were acquired under option by capitalists of Pennsylvania, who have commenced systematic exploration and development. If these result satisfactorily, the ores can be quarried out, it is stated, at a cost of about 20 cents per ton, and delivered on board steel scows for an additional 30 cents or less.

The magnetic iron ores at Sooke Harbour are somewhat similar in character to those of Texada Island. The deposit, which, according to Dr. Dawson, partakes more of the nature of a stock-work than a true vein, can be distinctly traced in a northeasterly direction for over half a mile, and varies from 15 to 20 feet in width. The country rock is a coarsely-crystalline diorite, containing much hornblende.

Sooke Harbor.

Analysis of the ore made by Dr. Wallace, city analyst of Glasgow, Scotland, shows it to be of fine quality, averaging over 60 per cent. of metallic iron practically free from all impurities. As in the case of the Barclay Sound properties, comparatively little even preliminary work has been done to prove the permanency or extent of the Sooke exposures; but it is stated by an engineer who examined the deposit that the promise of an almost unlimited supply of ore is undoubted, and that with the favorable facilities for working, the ore could be mined and placed on board scows at a maximum cost of $1 per ton. In the same neighbourhood occurs an exposure of hematite, but the deposit is apparently not extensive.

Of the more notable occurrences of iron-bearing ore in the interior of the province, the most important is the deposit of magnetic iron, known as the Glen Iron Mine, near Kamloops. The mass of the dioritic rock in this locality is much shattered, the cracks and interspaces being filled with the ore, which forms veins of

Iron at Kamloops.

varying degrees of thickness. The ore, which is of excellent quality, containing 66.83 per cent. of metallic iron, with very little phosphorus or sulphur, is in some few places mixed to a slight degree with calcite and felspar, but not sufficiently to affect its smelting qualities. The veins, four in number and running in an easterly and westerly direction, being nearly vertical or dipping north at wide angles, vary from 10 to 20 feet in width, and are traceable on the surface for several hundred feet. Since 1891 the annual production from this mine has been from 500 to 2,000 tons, the ore being mined and conveyed by an aerial tramway to the railway.

In 1888 Dr. Dawson reported a remarkable occurrence of magnetic iron ore about half a mile below the lower falls of the Kootenay River. The ore was found in large loose masses weighing several tons, but owing to the want of good exposure, its actual relations to the rocks adjacent were not ascertained. The place

Kootenay River.

of this occurrence is near, if not in, the line of junction of the granites with the here highly-altered rocks of the stratified series. It appeared to be associated with a dyke of green-grey augite-porphyrite, and it is probable that the iron ore, when in situ, may form irregular masses along the borders of this dyke. Another noteworthy discovery was made last year by a German geologist, a Mr. Ludloff, in the Cariboo district, of red hematite in a deposit measuring, so he asserts, 500 feet thick. At present, however, little if any commercial value attaches to discoveries of iron in regions so far remote from the railway or other means of communication as that of Fort George, on the Fraser River, the locality in which this occurrence of soft red hematite was discovered by Mr. Ludloff.

At present the extent of information available in respect to the iron deposits of British Columbia has more of a scientific than of a practically commercial interest. As exploration, however, is usually governed by practical considerations, it is probable that those deposits of which anything is known bear but a meagre relation to

Great Potentialities.

those of which nothing is as yet definitely ascertainable. It is not too much to say that British Columbia possesses enormous potential resources in her iron deposits, but that these resources must wait

for commercial development upon the development of those industries which stimulate a demand for iron. Sooner or later the political reasons which led to the construction of United States battleships on the Pacific Coast, for which, as we have seen, British Columbia iron was partially utilized, will give place to commercial reasons connected with the development of trade on the Pacific necessitating the building of a large mercantile marine. Sooner or later manufacturing industries, with the constant demand for the iron which is their base, will be brought into being to supply the ever-increasing market of the Orient. When these things happen, British Columbia, with its abundant coal and lumber in direct connection with its iron, must become the seat of a great iron industry. Meanwhile these resources are chiefly attractive to those who combine in a very rare degree the gift of foresight and indomitable patience.

BRITISH COLUMBIA MINING LAWS.

BRITISH COLUMBIA, from a prospector's point of view, is a most favorable field for the poor man. Its mining laws, as will be seen from the following resume, are very liberal in their terms, in fact more so than almost any place in the Empire. The capitalist also is amply protected, and the very low rentals for hydraulic leases make this province an ideal field for that class of mining investment.

A FREE MINER'S PRIVILEGES.

A free miner, under the law of this province, is a person, male or female, over the age of 18, who is the holder of a valid free miner's certificate. This document costs $5 for a full year, all expiring on the 31st of May, but when taken out at any other time, only the proportionate part of the fee is charged. This entitles the holder to enter on all lands of the Crown, or other lands on which the right to so enter is reserved, and prospect for minerals, locate claims and mine. Claims cannot be located on Indian reserves, or within the curtilage of any dwelling house. Immediately upon a miner allowing his certificate to lapse, his mining properties, if not Crown granted, revert to the Crown, if he is the sole holder. When he holds only an interest, his share, under such circumstances, reverts to his partners or co-owners. It is not necessary for a shareholder in an incorporated mining company, as such, to be the holder of a free miner's certificate.

MINERAL CLAIMS.

A mineral claim is a rectangular piece of ground not exceeding 1,500 feet square, and all angles must be right angles, unless the boundaries, or one of them, are the boundaries of a previously surveyed claim. The claim is located by erecting three legal posts, which are stakes not less than four feet above ground, and squared four inches at least on each face for not less than a foot from the top. A tree stump so cut and squared also constitutes a legal post. The "discovery post" is placed at the point where the mineral in place is discovered. Nos. 1 and 2 posts are placed as near as possible on the line of the ledge or vein shown by the discovery post, and mark the boundaries of the claim. Upon these posts must be written the name of the claim, the name of the locator, and the date of the location. On No. 1 post, in addition, the following must be written: "Initial post. Direction of post No. 2 (giving approximate compass bearing); —— feet of this claim lie on the right, and —— feet on the left of the line from No. 1 to No. 2 posts." The location line between Nos. 1 and 2 posts must be distinctly marked—in a timbered locality by blazing trees and cutting underbrush, and in bare country

by monuments of earth or rock not less than two feet in diameter at the base, and at least two feet high, so that the line can be distinctly seen.

Mineral claims must be recorded in the Mining Recorder's office for the division within 15 days from the location, one day extra being allowed for each 10 miles from the office after the first 10. If a claim is not recorded in time, it is deemed abandoned and open for re-location, but if the original locator wishes to re-locate, he can only do so by permission of the Gold Commissioner and upon payment of a fee of $10. This applies also to a claim abandoned for any reason whatever.

Mineral claims are, until the Crown grant is issued, held practically on a yearly lease, the condition of which is assessment work on the same during the year to the value of at least $100, or payment of such sum to the Mining Recorder. Such assessments must be recorded before the expiration of the year, or the claim is deemed abandoned. If, however, such record is omitted, a free miner may, within the expiration of thirty days thereafter, record such assessment upon payment of a fee of $10. This, however, will not hold the claim if it has been re-located by another free miner in the meantime. A survey of a mineral claim may now be recorded as an assessment at its actual value to the extent of $100. If during any year work is done to a greater extent than the required $100, any further sums of $100, but not less, may be recorded and counted as further assessments. As soon as assessment work to the extent of $500 is recorded, the owner of a mineral claim is entitled to a Crown grant on payment of a fee of $25, and giving the necessary notices required by the Act. Liberal provisions are also made in the Act for obtaining mill-sites and other facilities in the way of tunnels and drains for the better working of the claims.

PLACER CLAIMS.

Placer mining is governed by the "Placer Mining Act,' the interpretation clause giving its scope as "the mining of any natural stratum or bed of earth, gravel or cement, for gold or other precious minerals, or stones." There are several classes of placer mining, which are defined in the Act as follows:

Creek Diggings—Any mine in the bed of any stream or ravine.

Bar Diggings—Any mine between high and low water marks on a sea, river, lake, or other large body of water.

Dry Diggings—Any mine over which water never extends.

Precious Stone Diggings—Deposit of precious stones, whether in veins, beds, or gravel deposits.

Placer claims are practically 250 feet square, with the exception of bar diggings, which on tidal waters are a strip 250 feet long, running from high to low water marks.

Placer claims are located by placing a legal post at each corner, with a notice placed on one marked, "Initial Post," stating the name of the claim, its length in feet, and general direction, and giving the name of the locator and date of location. Placer claims must be recorded within 15 days after location, but an additional day is allowed for each 10 miles, after the first 10, the claim is distant from the Mining Recorder's office. A free miner wishing to hold a placer claim for more than one year must record the same before the expiration of each year from the date of the original record.

To hold a placer claim, it must be worked by the owner, or some one on his behalf, continuously, as far as practicable, during working hours. If not so worked for a period of 72 hours, except during the close season, lay-over, leave of absence, sickness, or for some other reason to the satisfaction of the Gold Commissioner, the claim is deemed abandoned. Lay-overs are declared by the Gold Commissioner upon proof being given to him that the supply of water is insufficient to work the claim. He has also the power to declare a close season, by notice in writing and

published in the Gazette, under similar circumstances, for all or any claims in his district. Tunnel and drain licenses are also granted by him on the person applying giving security for any damage that may arise. Grants of right-of-way across other claims are also given on payment of a fee of $25, which carry the right for tolls, etc., on the tunnel or drain which may be constructed. These tolls, however, are, so far as the amount goes, under the discretion of the Gold Commissioner.

No special privileges are allowed to the discoverers of mineral claims, but under the "Placer Mining Act" the following extra sized claims are granted to those proving a new discovery to the satisfaction of the Gold Commissioner:

One discoverer, one claim, 600 feet in length.

Two discoverers, two claims, 1,000 feet in length.

But further members of the party are only permitted a claim of the ordinary size. The width is that of ordinary claims of the same class.

No free miner can hold, by location, more than one mineral claim on the same vein or lode, and in placer claims he can only locate one on each creek, ravine or hill, and not more than two in the same locality, only one of which may be a creek claim.

CO-OWNERSHIP AND PARTNERSHIP.

In both the "Mineral" and "Placer Mining" Acts provision is made for the formation of mining partnerships, both of a general and limited liability character. These are extensively taken advantage of, and have proved very satisfactory in their working. By an amendment to the "Mineral Act" passed last session, provision is made for the collection of the proportion of assessment work that may be due from any co-owner in a mineral claim. It should not be forgotten that if any co-owner permits his free miner's certificate to lapse, the title of his associates is not prejudiced, but his interest reverts to the surviving co-owners.

HYDRAULIC, DREDGING AND PRECIOUS STONE LEASES.

Leases of unoccupied Crown lands may be granted by the Lieutenant-Governor-in-Council, upon recommendation of the Gold Commissioner, after location by placing a legal post at each corner of the ground applied for. On the post nearest the placer ground then being worked the applicant must post a notice stating the name of the applicant, the location of the ground to be acquired, the quantity of ground, and the term for which the lease is to be applied for. Within 30 days application must be made in writing to the Gold Commissioner, in duplicate, with the plan of the ground on the back, and the application must also contain the name of each applicant, the number of each applicant's free miner's certificate, the locality of the ground, the quantity of ground, the term of the lease desired, and the rent proposed to be paid. A sum of $20 must accompany the application, which is returned if the application is not granted. The term of leases must not exceed 20 years. The extent of ground covered by leases is not to be in excess of the following: Creek, half a mile; hydraulic diggings, 80 acres; for dredging leases, 5 miles; precious stone diggings, 10 acres. Under order-in-council the minimum rental for a creek lease is $75 per annum; for hydraulic lease, $50 per annum, with a condition that at least $1,000 per annum shall be spent in development. For dredging leases the usual rental is $50 per mile per annum, development work $1,000 per mile per annum, and 50 cents royalty per ounce on gold mined. No figures are available regarding precious stone diggings.

TAXATION ON MINES.

Mineral or placer claims, when crown granted, are subject to a yearly tax of 25 cents per acre, but if $200 is spent in work in a year this tax is not levied. A tax of 2 per cent. is levied quarterly on all ores and other mineral substances mined

in the province, but where ore-producing mines produce under $5,000 in a year, half the tax is refunded, and placer or dredging mines that do not produce a gross value of $2,000 in a year are entitled to refund of the whole tax. These taxes are in substitution for all taxes on the land, and personal property tax, in respect of sums so produced, so long as the land is only used for mining purposes. By the "Land Act" a royalty of 50 cents per M, board measure, is levied on timber suitable for mining props, a cord of props being considered as 1,000 feet, board measure.

COAL AND PETROLEUM PROSPECTING.

Coal or petroleum prospecting licenses may be procured after 30 days' notice, placed on the land and in the Government Office of the district, and also published in the Gazette and a local paper for the same time. Application must be made in writing to the Gold Commissioner, in duplicate, accompanied by plans of the land and a fee of $50. A license may be issued for not more than 640 acres of land for one year, the said $50 covering the first year's rental. All lands must be in a square block, and run due north, south, east and west. At the expiration of the first year an extension may be granted for a second and third year. Land for which a license has been granted may be leased (upon proof being given of the discovery of coal) for five years at a rental of 10 cents per annum per acre; the lease also contains provision for a royalty of 5 cents per ton on coal and 1 cent per barrel of petroleum. If the lessee is able to prove that he has worked the land continuously, he may, within three months of the expiration of his lease, purchase the land at $5 per acre.

LANDS IN RAILWAY BELT.

By arrangement with the Dominion authorities, the Provincial Government administer all minerals in the railway belt, but not stone, coal, petroleum, etc.

MINING RECORDERS IN OUTLYING DISTRICTS.

Where mineral is discovered in a part of the province remote from a Mining Recorder's office, so that the provisions of the Act cannot be justly enforced, the miners themselves may, by a two-thirds vote at a meeting for that purpose, appoint a Mining Recorder from among themselves. He can issue free miners' certificates, records of mining property, etc., and such records will be valid, notwithstanding any informality. Under the Act such Mining Recorder shall, as soon as possible, forward a list of the free miner's certificates issued by him, and of records made, to the nearest Gold Commissioner or Mining Recorder, together with the fees required by law therefor.

TABLE OF FEES.

Individual free miner's certificate	$ 5 00
Company free miner's certificate (capital under $100,000)	50 00
Company free miner's certificate (capital over $100,000)	100 00
Recording mineral or placer claim	2 50
Recording certificate of work on mineral claim	2 50
Re-record of placer claim	2 50
Recording lay-over	2 50
Recording abandonment of mineral claim	10 00
Recording abandonment of placer claim	2 50
Recording any affidavit under three folios	2 50
Per folio over three, addition	30
Records in "Record of Conveyances," same as affidavits	... ..
Filing documents under "Mineral Act"	25
Filing documents under "Placer Mining Act"	1 00
For Crown grant under "Mineral Act"	25 00
For every lease under "Placer Mining Act"	5 00

MINING STATISTICS.

Total Mineral Production for all Years up to and including 1900.

Gold, placer	$ 62,584,443
Gold, lode	12,812,860
Silver	13,649,809
Lead	7,619,956
Copper	4,362,583
Coal and Coke	49,140,917
Building Stone, Bricks, etc.	1,950,000
Other Metals	34,640
Total	$152,155,208

Production for each Year from 1890 to 1900 (inclusive).

1852 to 1899 (inclusive)	$ 71,981,634
1890	2,608,803
1891	3,521,102
1892	2,978,530
1893	3,588,413
1894	4,225,717
1895	5,643,042
1896	7,507,956
1897	10,455,268
1898	10,906,861
1899	12,393,131
1900	16,344,751
Total	$152,155,208

Production of Lode Mines.

The information as to production in the earlier years is obtained from the "Mineral Statistics and Mines" for 1896, Geological Survey of Canada.

Year.	Gold.	Silver.	Lead.	Copper.	Total Values.
1887	.....	$ 17,331	$ 9,216	.....	$ 26,547
1888	.....	75,000	29,813	.....	104,813
1889	.....	47,873	6,498	.....	54,371
1890	.....	73,948	*Nil.*	.....	73,948
1891	.....	4,000	*Nil.*	.....	4,000
1892	.....	66,935	33,064	.....	99,999
1893	$ 23,404	195,000	78,996	.....	297,400
1894	125,014	470,219	169,875	$ 16,234	781,342
1895	785,271	977,229	532,255	47,942	2,342,397
1896	1,244,180	2,100,689	721,384	190,926	4,257,179
1897	2,122,820	3,272,836	1,390,517	266,258	7,052,431
1898	2,201,217	2,375,841	1,077,581	874,781	6,529,420
1899	2,757,573	1,653,708	878,870	1,351,453	6,751,604
1900	3,453,381	2,309,200	2,691,887	1,615,289	10,069,757
	$12,812,860	$16,649,809	$7,619,956	$4,362,583	$38,445,208

Coal and Coke Production per Year to Date.

COAL.

Years.	Tons (2,240 lbs.)	Value.
1836-52	10,000	$ 40,000
1852-59	25,396	101,592
1859 (two months)	1,989	7,956
1860	14,246	56,988
1861	13,774	55,096
1862	18,118	72,472
1863	21,345	85,380
1864	28,632	115,528
1865	32,819	131,276
1866	25,115	100,460
1867	31,239	124,956
1868	44,005	176,020
1869	35,802	143,208
1870	29,843	119,372
1871-2-3	148,549	493,836
1874	81,547	244,641
1875	110,145	330,435
1876	139,192	417,576
1877	154,052	462,156
1878	170,846	512,538
1879	241,301	723,903
1880	267,595	802,785
1881	228,357	685,071
1882	282,139	846,417
1883	213,299	639,897
1884	394,070	1,182,210
1885	265,596	796,788
1886	326,636	979,908
1887	413,360	1,240,080
1888	489,301	1,467,903
1889	579,830	1,739,490
1890	678,140	2,034,420
1891	1,029,097	3,087,291
1892	826,335	2,479,005
1893	978,294	2,934,882
1894	1,012,953	3,038,859
1895	939,654	2,818,962
1896	896,222	2,688,666
1897	882,854	2,648,562
1898	1,135,865	3,407,595
1899	1,306,324	3,918,972
1900	1,439,595	4,318,785
Total	15,963,471 tons.	$48,271,937

COKE.

1895-6	1,565	$ 7,825
1897	17,831	89,155
1898 (estimated)	35,000	175,000
1899	34,251	171,255
1900	85,149	425,745
Total	173,796 tons.	$ 868,980

AMOUNT AND VALUE OF MINERAL PRODUCTS FOR 1898, 1899 AND 1900.

	1898.	1899.	1900.
Gold, placer	$ 643,346	$ 1,344,900	$ 1,278,724
Silver	2,375,841	1,663,708	2,309,200
Gold, lode	2,201,217	2,857,573	3,453,381
Copper	874,781	1,351,453	1,615,289
Lead	1,077,581	870,870	2,691,887
Coal	3,407,595	3,918,972	4,318,785
Coke	175,000	171,255	425,745
Other materials	151,500	206,400	251,740
	$10,906,861	$12,393,131	$16,344,751

STATEMENT OF REVENUE CONTRIBUTED BY BRITISH COLUMBIA TO THE DOMINION.

	1898.	1899.	1900.	1901.	Tt'l, 30 yrs.
Customs	$2,290,272	$2,090,000	$2,354,775	Estimated	$28,326,792
Warehouse Fees	2,140	2,300	2,280	.....	48,776
Petroleum Inspection	134	172	175	.....	7,664
Casual	2,818	.....	1,688	.....	4,519
Chinese Immigration	109,754	220,310	215,102	.....	1,445,571
Excise	420,510	512,223	512,495	.....	4,163,042
Weights and Measures	577	475	792	.....	21,463
Gas Inspection	478	445	545	.....	8,652
Electric Light Inspect'n	752	780	750	.....	2,322
Methylated Spirits	1,225	119	1,000	.....	5,012
Casual	.....	.....	.....	.....	530
Post Office	247,282	248,795	250,000	.....	2,365,561
Money Orders	.....	.....	.....	.....	49,609
Public Debt—					
Premium Dist. and Ex.	.....	.....	.....	.....	58,447
Interest on Investments	.....	.....	.....	.....	257,536
Public Works—					
Telegraphs	1,830	2,204	2,500	.....	119,799
Penitentiary	771	1,482	1,628	.....	53,729
Experimental Farm	1,101	675	800	.....	5,174
Esquimalt Dry Dock	62,228	10,316	6,660	.....	218,868
Marine—					
Sick Mariners' Fund	8,558	8,247	9,708	.....	127,063
Steamboat Inspection	7,012	6,612	6,188	.....	48,004
Examination of Masters and Mates	.....	859	900	.....	4,004
Casual	25	.....	.....	.....	44,419
Fisheries	47,865	45,802	53,195	.....	352,000
Superannuation	.....	.....	.....	.....	45,000
Dom. Lands and Timber	33,853	42,202	35,000	.....	600,901
Miscellaneous	.....	.....	.....	.....	340,892
Estimated, 1901	.....	.....	.....	Estimated	3,750,000
Totals	$3,240,087	$3,194,808	$3,455,531	$3,750,000	$42,475,349

ADDENDA.

THE following table gives the approximate mileage of all roads and trails in the several electoral ridings throughout the province, built and maintained by the province of British Columbia :

District.	Roads.	Trails.
South Victoria	117.75	.....
North Victoria	46.75	12.50
Esquimalt	178.10	16.90
Cowichan	142.25	21.50
Alberni	82	65
Nanaimo City	20	.....
South Nanaimo	167.50	56.50
North Nanaimo	157	.....
Comox	82.25	12
Westminster	282.12	124.40
Yale—North Riding	723	144
Yale—West Riding	601	12
Yale—East Riding	664	258
Lillooet—West Riding	181.25	155
Lillooet—East Riding	302.50	5
Cariboo	721	757
West Kootenay—Revelstoke Riding	106.50	513
West Kootenay—Slocan Riding	109.37	355.25
West Kootenay—Nelson Riding	97	290.50
West Kootenay—Rossland Riding	164.40	124
East Kootenay—North Riding	178.50	565
East Kootenay—South Riding	440	385
Cassiar	51.25	542
Grand Totals	5,615.49	4,414.55

THE EDUCATIONAL SYSTEM.

ON page 152 will be found a chapter on the educational system of the province. Since that was written (1897), there have been several important amendments to the School Act, and important modifications of the curriculum. From the introducing of the public school system of 1872 until the passing of the amendment of 1888, the whole cost of maintaining the schools was paid directly from the Provincial Treasury. By the amendment of 1888, the City Councils of Victoria, Vancouver, New Westminster and Nanaimo were required to refund one-third of the

The Newer Features.

amount of the salaries of the teachers employed in the schools of these cities. Since that time the municipal corporations of the various cities and towns throughout the province have been required to bear more and more the cost of education within their respective limits. By an Act passed during the session of 1901, all city school districts are divided into three classes, and a per capita allowance of $13, $15 and $20, respectively, based on the average actual daily attendance of public school pupils, is now the full amount of pecuniary assistance granted these cities by the Provincial Government. The salaries of all the rural school teachers are fixed and voted each year by the Legislature.

Cost of Education.

For all purposes during the year 1899-1900 the cost of education to the province was $307,479, and to the cities $81,886.39, or a total of $389,365.39. There are at present in operation four high schools, with a staff of 13 teachers; 48 graded schools, with 235 teachers; and 246 common schools, in which are employed 246 teachers.

School Board.

The management of schools in rural districts is entrusted to a Board of three Trustees, elected by the duly qualified voters of the district. In city school districts the School Board consists of seven, five or three members. In cities of the first class there are seven trustees; in cities of the second class, five trustees; and in cities of the third class, three trustees. These are elected by the votes of the electors that are duly qualified to vote for Mayor, and they act without emolument, except the Secretary of the Board. Women, the wives of qualified freeholders or leaseholders (except the latter be trustees), are eligible for the position of School Trustee, and in several cities act in that capacity with satisfactory results.

High School Curriculum.

As previously remarked, the curriculum of the high school has been thoroughly revised. In 1896 authority was granted the Boards of Trustees of the various high schools in the province to enter into affiliation with any of the leading Canadian universities, and shortly after the passing of this Act the Board of Trustees of the Vancouver high school secured affiliation with McGill University. University classes are now carried on in the Vancouver high school, and the results so far have been eminently satisfactory.

Certificates of Qualification.

The standard of qualification for teachers is as high as in any other province of the Dominion. Examinations take place in June of each year in those cities in which high schools are established. Certificates are of four classes—Third Class, Second Class, First Class, and Academic certificates. All certificates are valid for life or during good behaviour, except Third Class certificates, which are valid for three years; but no person is allowed to renew a Third Class certificate. All applicants for Second Class, First Class and Academic certificates must be graduates of the Provincial Normal School or of other normal schools approved by the Council of Public Instruction; except that a period of ten years of active service in the public schools of the province is deemed equivalent to graduation from the Normal School. To secure a Third Class non-professional certificate, a candidate must pass the examination set for the junior grade candidates in the high school; while Second Class, First Class and Academic certificates are granted to those that successfully pass the intermediate senior and senior academic examinations, respectively, of such high schools. The Provincial Normal School was established in 1901, and is located in the city of Vancouver.

COMPARATIVE STATEMENT OF ATTENDANCE AND COST OF PUBLIC SCHOOLS 1895-96 TO 1899-1900.

1896-97	199	15,798	9,999.61	63.29	$220,810 38
1897-98	213	17,648	11,055.65	62.64	247,756 37
1898-99	224	19,185	12,304.32	64.13	268,653 46
1899-1900	231	21,531	13,438.41	62.41	284,909 10

The following table shows the cost of each pupil on enrolment and on average daily attendance during the past four years :

Year.	Cost of each pupil on enrolment.	Cost of each pupil on average daily attendance.
1896-97	$13 97	$22 08
1897-98	14 03	22 40
1898-99	14 60	21 83
1899-1900	13 29	21 29

Average monthly salary in city districts for principals and teachers...$60 52
Average monthly salary in rural districts for teachers and monitors... 51 33

Statistical Abstract of Attendance for 1899-1900.

Number of pupils enrolled during the year	21,531
Increase for the year	2,346
Number of boys enrolled	11,076
Increase for the year	1,270
Number of girls enrolled	10,455
Increase for the year	1,076
Average actual daily attendance	13,438.41
Increase for the year	1,134.09
Number of pupils enrolled in high schools	553
Increase for the year	63
Average actual daily attendance in high schools	344.91
Average actual daily attendance in graded schools	9,013.16
Average actual daily attendance in common schools	4.080.34
Number of school districts at the close of the year	231
Increase for the year	7

AS A TOURIST AND SPORTING RESORT.

To the tourist in search of majestic scenery and natural wonders, there is no section of the world offering so tempting a field for exploration as the province of British Columbia—a province whose mountains surpass the Alpine wonderland of Europe, whose island-dotted waterways present pictures of panoramic beauty, eclipsing those of the Thousand Island Park, whose mingling of mountain and sea in scenery suburb is without parallel in the length and breadth of Canada.

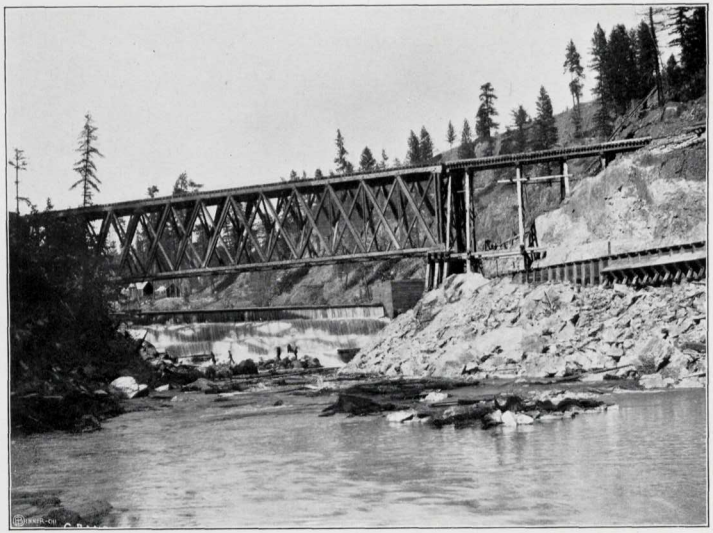
The fact that in exploring the mountains or the coasts, the glaciers or the hundred and one other natural wonders of the province, one is not following a beaten trail, but enjoys to some extent a discoverer's opportunities, adds greatly to the attraction of the field; while it is safe to say that no equally new country possesses better facilities of communication and accommodation than here are at command.

The sportsman, too, finds this westernmost province of Canada a veritable happy hunting ground. Not only are deer and bear to be got conveniently close to the centres of population and civilization, with their attendant comforts, but the rivers, lakes and mountain brooks teem with game and fish; feathered spoil of the most tempting variety is to be had in almost every quarter of the province; and if one wishes to go farther afield for bigger game, there are the mountain goat, the lordly elk, the caribou—in fact each and all of the monarchs of the primeval wilderness adapted to the geographical position of the country.

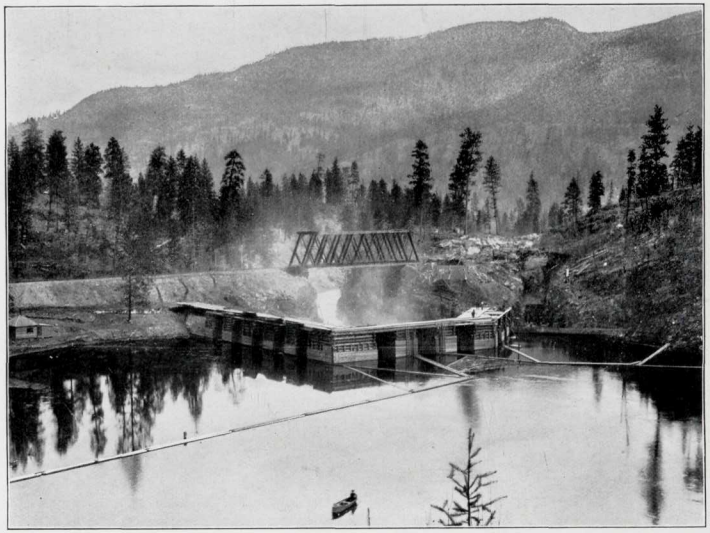
The game law has been framed in wisdom to preserve for legitimate sportsmen the treasures of the forest, field and stream, while to the visitor with gun or rod it will be found exceptionally generous. An abstract of its provisions is attached:

SYNOPSIS "GAME PROTECTION ACT, 1898."

Species of Birds, Animals, &c.	Unlawful to shoot or destroy during close seasons as shown below (dates both inclusive.)	Unlawful to buy, sell or expose for sale, show, or advertisement.	Unlawful to Kill or Take.
Beaver	1st April to 1st November.	.....	
Birds living on noxious insects	At any time	At any time	
Bittern	1st March to 31st August.	At any time	
Blackbird (English)	At any time	At any time	
Caribou	1st January to 31st August.	Before October 1st	More than five in one season.
Caribou (cow or calf)	At any time	At any time	
Chaffinch	At any time	At any time	
Deer (fawn under twelve months)	At any time	At any time	
Deer (buck)	December 15 to August 31.	Before September 1st	More than 10 in 1 season, hunt with dogs, kill for hides alone.
Deer (doe)	December 15 to August 31.	At any time	
Duck (of all kinds)	1st March to 31st August.	During close season	More than 250 in one season.
Elk, Wapiti (bull)	1st January to 31st August.	At any time	More than two in one season.
Elk, Wapiti (cow)	At any time	At any time	
Elk, Wapiti (calf under two years	At any time	At any time	
Grouse of all kinds (including Prairie Chicken)	1st January to 31st August.	At any time, except Blue Grouse, which may be shot during season	
Gull	At any time	At any time	
Hare	1st January to 31st August.	Before October 1st	
Heron	1st March to 31st August.	During close season	
Land Otter	1st April to 1st November.	.....	
Linnet	At any time	At any time	
Marten	1st April to 1st November.	.....	
Meadow Lark	1st March to 31st August.	At any time	
Moose (bull)	1st January to 31st August.	Before October 1st	More than two in one season.
Moose (cow and calf under 12 months)	At any time	At any time	
Mountain Goat	December 15 to August 31.	Before October 1st	More than five in one season.
Mountain Sheep (ram)	December 15 to August 31.	Before October 1st	More than three in one season.



DAM AND HEAD OF FLUME—GRANBY SMELTER.



DAM—CASCADE WATER POWER, CASCADE, B. C.

Mountain Sheep (ewe or lamb)	At any time	At any time	
Partridge (English)	At any time	At any time	
Pheasant (cock)	At any time	At any time	
Pheasant (hen)	At any time	At any time	
Plover	1st March to 31st August.	During close season	
Quail (of all kinds)	At any time	At any time	
Robin	Farmers only may shoot in gardens between June 1 & September 1	At any time	
Skylark	At any time	At any time	
Thrush	At any time	At any time	
Eggs of protected birds	At any time	At any time	To take or destroy at any time.

Note.—It is unlawful—

1. To enter land enclosed by fence, water, or natural boundary, for hunting purposes, after notification, or if sign is posed stating "Hunting or shooting on these lands forbidden under British Columbia Game Laws." Section 17.
2. For non-residents to shoot without a license. Section 14.
3. For Indians, not residents of this province, to kill game at any time of the year. Section 12 (b).
4. To export, and to transport for export by railway, steamship or express, in the raw state, game birds of every kind, and also all animals protected by the Act except bear, beaver, marten and land otter. Section 4.
5. To use traps, nets, snares, gins, baited lines or drugged bait to catch game birds. Section 6.
6. To expose for sale any deer without its head on, or any game bird without its plumage. Section 9 (d).
7. To use batteries, swivel-guns or sunken punts in non-tidal waters to take wild ducks or geese. Section 9 (c).
8. To shoot any wild fowl in Victoria and Vancouver Harbors. Section 3.
9. For unlicensed non-residents to trap or kill bear or beaver for their pelts. Section 25.
10. To kill any game bird between one hour after sunset and one hour before sunrise. Section 9 (a).
11. To kill game birds or animals imported for acclimatization purposes. Section 5.
12. To buy or sell heads of mountain sheep. Section 9 (b).
13. To take trout by any other device than hook and line. No salmon roe to be used as bait. Section 8.

*Farmer may kill deer depasturing fields, or in unorganized tracts for food. Section 11.
*Free miner has right to kill game for his own use. Section 12.
*Lieutenant-Governor may, by proclamation, remove disabilities. Section 24.

PROVINCIAL HEALTH.

SINCE the publication of the Year Book, the administration of the Provincial Health Act, as outlined from pages 158 to 161, and the personnel and nature of the Provincial Board have been changed. Instead of a provincial body of physicians being appointed, the members of the Executive are constituted a Board of Health, the administrative work being performed by a Secretary of the Board, who is a medical man. This arrangement is in some respects a desirable one, both from the standpoint of economy and expedition. The Secretary, who is necessarily an expert,, is allowed a very free hand, and is able in cases of emergency to act more quickly on the responsibility of the Executive than through a body the members of which are widely separated. Dr. C. J. Fagan, who was appointed in the fall of 1899, has since occupied the position of Secretary, and the work of the Provincial Board of Health, under his advice, has been quite successful. Several incipient outbreaks of smallpox in various parts of the province were quickly suppressed, and the bubonic plague in 1900, which had got a foothold in San Francisco and as far north as Port Townsend, was, by prompt precautionary efforts, averted. Regulations for this purpose were issued in 1900 and carried into effect. In connection with the office of the Provincial Board of Health, a complete bacteriological outfit and a well-equipped chemical laboratory have been provided, and an important branch of sanitary work is thus carried on by the Secretary, who is also a chemist and bacteriologist. Dr. Fagan has made several important recommendations in regard to the general sanitation of the province and the regulation of the Chinese and Japanese so as to surround them with wholesome sanitary conditions and thus avoid the propagation of epidemic and endemic diseases. Dr. Fagan was a delegate on behalf of British Columbia to Ottawa, where he attended the recent tuberculosis convention. He made several important recommendations, and as a consequence the treatment of consumption will have greater attention from the Government of this province, in common with the other Governments of Canada.

The Secretary's Duties.

Preventive Efforts.

AGRICULTURAL DEVELOPMENT.

IN a general way, agriculture is in a much healthier condition than at the time of the issue of the Year Book of 1897. At that time it was truly stated that the farmer had struck rock bottom. At the present time improved methods of soil cultivation are in use to a greater or less extent in all districts, and "farming" is gradually taking the place of the old plan of "cropping the land," without any attention to rotation or return to the soil of plant food. A notable feature of the new order of things is the demand for improved and pure-bred stock. In this connection the Dairymen's Association are doing excellent work, with the assistance of the Dominion Live Stock Commissioner, and auction sales of pure-bred animals, chiefly Shorthorns, have been successfully held in various parts of the province. The number of creameries in operation has been doubled, and the older established ones have largely increased their output. The butter made fetches a

Improved Methods.

Live Stock and Dairying.

higher price than the best imported article, owing to its superior quality and freshness.

Fruit-growing in the Okanagan District has proven successful beyond the best hopes of its progenitors, and in the course of a few years is certain to become a leading item of production. At the present time orchard extension is retarded by the want of enterprise of many of the holders of large areas of the land most suited for the purpose. Sub-division of the land is bound to come in the near future, and prosperous orchards and gardens will diversify the face of the country and take the place of wheat fields, displacing a crop of which the land has grown tired by constant repetition. In the Fraser Valley fruit-growing has suffered a set-back of recent years, from the prevalence of fungous diseases affecting trees and fruit; still many valuable varieties have demonstrated resistant powers against attack, and the problem is really one of adaptability. The grading and packing of fruit sent to market now compares favorably in most cases with that of California and Oregon, and has ceased to be a reproach to the growers.

Fruit Growing.

The cost of clearing land has been materially reduced by the use of powder for blasting stumps, and improved stumping machinery, and the addition to the acreage under cultivation in timbered districts is large in the aggregate. Irrigation problems in the arid districts form the question of the day, and there are excellent opportunities for the investment of capital in bringing water from a distance in sufficient quantity to irrigate large bodies of excellent soil, only requiring water privileges to bring about their cultivation in valuable crops, such as fruit, hops and tobacco.

Clearing and Irrigation.

At no time in the history of the province has the outlook been so promising for agricultural interests generally as now. Assured markets and profitable prices for produce, owing to the ever-increasing demand, and the reduction of the cost of production, have brought about this satisfactory state of affairs.

The Dairymen's Association was established in 1894, and was incorporated the same year by Act of the Legislature. The objects of the Association were to promote and encourage the dairying interests of the province. Its meetings have often been of particular interest, and have without doubt assisted in bringing about the adoption of the creamery system in our province. Assistance has also been tendered to the various exhibitions by prizes, judging in the dairying classes, and introducing proper scoring methods.

Dairymen's and Live Stock Ass'n.

The three pioneer creameries of the province—the Delta, Cowichan and Eden Bank (Chilliwack) were established about the same time, 1894-95, and have steadily increased their output year by year, this output being, respectively, last year: Chilliwack, 107,615 lbs.; Delta, 75,000 lbs.; Cowichan, 71,000 lbs. The New Westminster creamery turned out 80,000 lbs.; and other creameries have been started in Sumas, Mission, Salt Spring, and, lastly, Victoria, with a modern plant of large capacity. The Dairymen's Association is—and should be more so—a connecting link between the various creameries, and will always endeavor to keep up that good feeling and healthy rivalry which at present exists between them.

B. C. Creameries.

The adoption of the creamery system soon brought about improved methods and a demand for better stock, while a rise took place in the price of all meats, due to various causes; and it became evident to the directors of the Association that breeding stock for milk products, and also for beef, mutton and pork, would be required, and that the supply from local breeders would be quite inadequate to the demand. About 1899 the Ontario Government was organizing the export trade in pure-bred stock amongst their

Breeding Stock.

breeders, and made arrangements whereby their Department of Agriculture would select, purchase and ship stock to order for individuals or Provincial Government. After a good deal of correspondence and deliberation, the directors, with the consent of the Provincial Government, decided to import one carload of stock and offer the same at auction at the New Westminster fair in 1900. A mixed carload, containing Shorthorns, Ayrshires and Jerseys, and a few swine, were sold, at a slight loss to the Association. The venture, however, was successful enough to warrant further work in this direction, and the correspondence and enquiry for more fully justified another importation. In March, 1901, three carloads of mixed stock were put up at auction at New Westminster, with great success. Several hundred people attended the sale, and the bidding was brisk. The eight Shorthorn bulls averaged $180 each. The Secretary was then instructed to proceed to the upper country, the result of which was a sale at Ashcroft of one carload of twenty Shorthorn bulls at auction. Although circumstances were unfavorable to the success of the sale, owing to the time of year and the necessarily short notice, the cattle sold at an average price of $98, which price covered the expenses. The bulls were pronounced to be, by all who saw them, as good a lot as ever came into the country, and buyers were well pleased with their purchases. In the Okanagan and Spallumcheen orders were taken for a carload of mixed stock. At the last session of the Legislature a substantial guarantee against loss was given to the Association, to enable them to carry out the work. So far, however, no claim has been made on the Government, and it is hoped that such a claim will never be necessary, as it is not desirable that any stock should be sold at less than cost price. It is the wish of the Association to assist in building up the pure-bred herds of the province, which should supply the needs of our lower country and of the interior. The latter requires at least from 150 to 200 bulls every year. The Association propose to hold sales of pure-bred stock every spring and fall both on the Coast and in the Upper Country and hope in a short time that these sales will consist almost entirely of pure-bred stock.

Sales of Stock.

Government Guarantee.

PULP AND PAPER INDUSTRY.

NO mills for the manufacture of wood pulp or paper are at present established in this province, but no portion of Canada can show greater advantages for these industries. Water-powers can be found on the coast of the Mainland which afford unique facilities for industrial works, owing to their situation adjacent to deep water, to their ease of development, and to their being in the centre of the timber areas. Illustrations of two important water-powers are given in this volume, and other desirable water-powers are known to exist further north, which, at a future time, will also be used for industrial purposes. In addition to the water-powers on the coast, there are numerous fine water-powers in the interior of British Columbia, where can also be found immense quantities of wood suitable for pulp; but at the present time the rate of freight to the coast would be a bar to successful competition in the outside markets.

Water Powers.

Along the coast-line of British Columbia and Vancouver Island, practically inexhaustible areas of pulp woods can be found. South of Knight's Inlet the most

abundant wood is the Douglas fir, which is successfully used for the manufacture of chemical pulp. Its suitability for mechanical pulp is not so certain. North of Knight's Inlet is the spruce and hemlock belt, affording enormous supplies of excellent pulp-wood—the Sitka spruce especially being unexcelled by any other wood for pulp purposes. These woods cover large tracts immediately contiguous to the sea coast, so that logs can be landed at the mills at very low cost.

Pulping Woods.

An important point in favor of industries on the sea-coast of British Columbia is the mildness of the winters, which admits of operations being carried on throughout the whole year. The forests of this province are much more densely wooded than those of Eastern Canada, 500 cords per acre being not uncommon, while from 100 to 150 cords may be taken as a fair average of good timber lands. With proper husbanding the forests are practically inexhaustible for pulp-wood purposes. This is essentially a timber country. Atmospheric conditions are especially favorable to tree growth, which is very rapid, and the extent of otherwise valueless country along the coast that can be devoted to forestry is enormous. Owing to its wealth of raw material, excellent water-powers and geographical position, British Columbia occupies a position of eminent advantage in competing for the pulp and paper trade of the Pacific. A practically unlimited market is afforded by Australia, Japan, China and the western coast of America—both North and South.

Economic Conditions.

The Industrial Power Company, after cruising many miles of the coast in the search for a suitable water-power, has finally secured Clowhom River Falls, Sechelt Inlet. Clowhom River empties into the sea over a series of falls, the altitude between the top of the highest fall and sea-level being 120 feet. Twelve thousand horse-power (12,000 h. p.) is available from these falls, a special feature being the comparatively low cost at which the power can be developed, the ground being very favorably situated for that purpose. Mills can be erected practically at the edge of the ocean, thus securing excellent shipping facilities; and as there is no ice (as in Eastern Canada), shipments can be made during the whole year without incurring the expense of railway haulage. By the agreement recently entered into by this company with the Honorable the Chief Commissioner of Lands and Works, a large area of timber lands situated on the north end of Vancouver Island, and on the Mainland opposite, has been reserved for two years, to enable the company to select the timber necessary for its undertaking.

Industrial Power Co.

One of the most important water-powers of the province, viz., that at Powell River, has been secured by the Pacific Coast Power Company. Powell River forms the outlet of Powell Lake, and flows into Malaspina Straits, about 80 miles north of Vancouver. The power available at this point is estimated at 18,000 horse-power, and its situation is admirably adapted as a centre of industrial activity. Thirty miles to the west are the coal fields of Vancouver Island; and Texada Island, with its rich copper and gold mines, is only ten miles distant. There is every reason to believe that in the near future mills of various kinds, utilizing this fine natural power, will be established at Malaspina—the name given to their townsite by the Pacific Coast Power Company, and where the company holds about 1,800 acres of freehold land. Important timber areas have been reserved at Kingcome and Tsaw-Watti Rivers and at Thompson and Wakeman Sounds, to assist the company in its selection of spruce and other timber lands necessary for supplying pulp-woods to the mills which this company propose to erect.

Powell River Falls.

An important factor bearing upon the future of British Columbia as the centre of the pulp and paper trade of the Pacific is the rapid depletion of the forests of the United States, and it is confidently anticipated that the importation of Canadian pulp and pulp wood to that country—already large—will continue to rapidly increase. In conclusion, there is no industry, not even mining itself, which gives greater promise of commercial value and general importance than that of the manufacture of wood pulp and paper in this province.

Future Importance.

The Legislature of British Columbia passed an Act at the last session which authorizes the government to enter into agreements with pulp companies granting them leases of pulp lands on very favorable terms, both as regards rental and royalties, and to reserve areas out of which selections of pulp lands may be made. Under the powers of this Act, agreements have been made with the Industrial Power Company, of Nelson, B. C., and the Pacific Coast Power Company, of Victoria, B. C.

Legislation.

A special feature of British Columbia timber areas is their density, the yield being greatly in excess of that obtainable from equal areas in Eastern Canada. The average cut in Ontario is about 10 cords per acre, while upon the lands secured by this company the estimated cut is over 100 cords per acre. This density enables logging to be carried on to great advantage, and it is estimated that the cost of wood at the mills for many years will be at least one-third the average cost to Eastern American mills.

Density of Timber.

Cheap coal of excellent quality can be obtained from Nanaimo or Union, about 90 miles distant, and shipments can be made direct by water to the mills. The markets that can with special facility be supplied from British Columbia are: British Columbia, Japan, Australia, China, New Zealand, Hawaii, the Philippines, Fiji, Western Coast of South America, Western Coast of Mexico, and Asiatic Russia.

Fuel and Markets.

The home market is a rapidly-growing one, and with the steady growth of population a correspondingly rapid increase of the requirements in the way of paper may reasonably be anticipated. The long distance from the Eastern mills and the freight rates make competition from the East impossible.

British Columbia.

Japan probably furnishes the greatest possibilities for the future, the imports of paper in 1900 amounting to over $2,000,000, and that of pulp to about $230,000. Both the demand for pulp and paper in Japan is increasing very rapidly, and the pulp mills of this province will be in the best possible position to supply it.

Japan.

There are no statistics available regarding the trade with China, still an importation of $375,000 in 1900 from the United States alone shows that the market is a valuable one. The South and Central American republics also show a large increase in imported paper.

China.

The Australian market is perhaps the most important at the present time. There are no suitable pulping woods on that continent, and no water-powers, so that Australia is almost wholly dependent upon outside sources for its supply of paper, its total importation for 1900 being about $5,000,000.

Australia.

If preferable trade duties are arranged between Canada and Australia, as now seems probable, Canada (and British Columbia in particular) will occupy a position of great advantage as compared with other countries competing for this trade. It is to be noted that a considerable portion of the paper imported into Australia from Great Britain and the United States were manufactured from pulp shipped from Eastern Canada. The freight charges (and customs duties, in the case of the United States) on this must materi-

Preferential Trade.

Geographical Position.

ally increase the cost, and can be entirely avoided by manufacturing the paper in British Columbia. The advantage of geographical position possessed by British Columbia in competing for the Oriental and Australian trade is shown by the following table of distances :

	From Vancouver. (Miles).	From London. (Miles).
Yokohama	4,283	12,186
Hongkong	6,271	10,185
Shanghai	5,461	10,995
Brisbane	6,755	12,465
Sydney	7,265	12,558
Auckland	8,058	13,500

TAXATION AND ASSESSMENT.

Assessed Value.

TAXES are paid on the assessed value of all property. The assessed value is the actual cash value as the property would be appraised in payment of a just debt from a solvent debtor. The rate of taxation is as follows: On real estate, four-fifths of one per cent.; on wild land, 3 per cent.; on personal property, three-fourths of one per cent. On income exceeding $1,000: Class A, upon excess not above $10,0000, 1½ per cent. up to $5,000, and 2½ per cent. on the remainder; Class B, on $10,000 and not exceeding $20,000, 2 per cent. up to $10,000 and 3 per cent. on remainder; Class C, on $20,000 and not exceeding $40,000, 3 per cent. up to $20,000, and 3½ per cent. on the remainder; Class D, on all others in excess of $40,000, 3½ per cent. up to $40,000, and 4 per cent. on the remainder.

Higher Rate of Taxation.

Taxes are payable on the 2nd of January in each year, but if paid on or before the 30th June, the rate is as follows: On real estate, three-fifths of 1 per cent.; on wild land, 2½ per cent.; on personal property, one-half of 1 per cent.; on income upon excess of $1,000, under Class A, on $1,000 and not exceeding $10,000, 1 per cent. up to $5,000 and 2 per cent. on the remainder; Class B, on $10,000 and not exceeding $20,000, 1½ per cent. up to $10,000 and 2½ per cent. on the remainder; Class C, on $20,000 and not exceeding $40,000, 2½ per cent. up to $20,000 and 3 per cent. on the remainder; Class D, on all others in excess of $40,000, 3½ per cent. up to $40,000 and 3½ per cent. on the remainder.

Lower Rate.

Banks and other corporations transacting business in the province are taxed the same as individuals. All have to make returns, on forms provided, to the assessor, and these returns must be full and complete of all personal property and of the gross income. Certain deductions are allowed from personal property and from income under rules laid down by the Lieutenant-Governor-in-Council, which are printed on the returns. The tax is calculated on both personal property and on income, and if tax on either is greater, the tax on the greater is taken; if equal, the tax on income is taken.

Penalty.

Cattle and sheep depastured on Crown lands are taxed 25 per cent. per head on all cattle, and 5 per cent. per head on sheep. This tax entitles owners to depasture for six months. If tax is not paid on demand, it may be collected by distress and sale.

Taxes in Arrear.

Taxes not paid when due and on demand may be recovered by distress and sale of goods and chattels, and may be levied against lands. Lands may be sold for arrears of taxes at any time after publication for 30 days, and may be redeemed at any time within two years upon paying costs and interest at 12 per cent. per annum.

Mineral Tax.

Mines and minerals are regarded as a separate class of property for taxation purposes. Two per cent. tax on the assessed value of all ore or mineral-bearing substances, the assessed value to be based on the market value of the ore at the mine, deducting from the gross output the cost of transportation to smelter and cost of smelting or reduction only. Ore not sold or removed from the mine is not taxed. Placer or dredging mines not producing in any one year a gross value of $2,000 are entitled to a refund of the whole tax; other mines not producing in any one year a market value of $5,000 are entitled to a refund of one-half of the tax. The 2 per cent. tax is in substitution for all taxes upon the land, and for taxes on personal property used in the workings of the mines, and for the income from the mines. Mine-owners must notify assessor of any mine being in active production, and no ore can be shipped until such notification has been made. All mineral taxes are payable quarterly. Mine-owners must make returns to assessor, verified on oath, within seven days from end of quarter, under penalty for non-compliance.

Revenue Tax.

Residents in the cities of Victoria, Vancouver, Nanaimo and New Westminster are taxed annually $3 per head, due after the 2nd January in each year, for municipal purposes; after the 1st of January, 1902, this tax is payable to provincial assessors for the use of the province. All persons outside the above-named municipalities pay the same tax to provincial assessors and collectors. Employers of labor are responsible for the tax on employees, and may deduct tax from wages. Employers must furnish assessor with list of employees on demand.

Exemptions.

There is the usual list of exemptions, which include all incomes up to $1,000; capital invested in government or municipal bonds or debentures; income of a farmer from his farm; income of merchants, income of mechanics or other persons derived from capital liable to assessment; all property, real or personal, situate out of the province; so much of the personal property as is due on account of the sale of land, if the fee is still in taxpayer; so much of the personal property equal to just debt owing on account of the purchase price of the said personal property to the vendor thereof; the net personal property when under $300; ministers' salaries, household effects, books, etc. (except furniture rented from which a revenue is derived); homesteads to the value of $500; dividends or interest from companies when the personal property or income of such companies is assessed or taxed.

Railway companies are assessed under the Railway Assessment Act, at the rate of $3,000 per mile, and the tax levied at the rate mentioned above on real estate. This tax includes personal property.

Coal and Coke.

Every owner of a coal mine shall pay a tax of five cents per ton upon all coal (except shipments to coke ovens in the province) since 1st July, 1900; and every owner of coke ovens shall pay a tax of nine cents per ton upon all coke since that date shipped, exported or delivered from said coke ovens; provided, however, that no tax has been paid upon the coal from which the coke has been produced.

For rate of municipal taxation see Statistics.

PROVINCIAL ASSESSMENT, 1900.

	Real Property.	Wild Land.	Personal Property.	Income Tax.	Total.
Alberni	$ 254,737	$ 178,333	$ 19,000	$.....	$ 452,070
Atlin	294,325	.....	255,400	7,000	556,725
Cariboo	309,200	3,700	310,650	14,400	637,950
Cassiar	3,838	.....	39,650	500	43,988
Coast, The	609,552	579,986	199,000	.....	1,388,538
Comox	630,386	317,066	208,390	8,600	1,164,442
Esquimalt	1,832,936	90,098	63,700	.....	1,986,734
Islands, The	298,870	27,430	18,400	.....	344,700
Kootenay, West	2,188,112	415,975	1,435,300	369,940	4,403,327
Kootenay, East	1,174,302	253,444	335,500	15,720	1,778,966
Lillooet	829,610	54,575	407,000	2,020	1,293,205
Nanaimo	1,970,950	128,543	1,539,800	41,600	3,680,893
N. Westminster & Dist.	683,458	40,724	1,500,280	60,610	2,285,072
Vancouver and District	497,937	235,713	2,993,985	613,192	4,340,827
Victoria and District	2,686,216	51,658	4,303,447	766,991	7,808,312
Yale	5,175,966	420,939	1,376,994	21,040	6,994,939
Totals	$19,434,395	$2,789,184	$15,006,496	$1,921,613	$39,160,688

Amount taxes collected from the foregoing sources for year ending June 30, 1900	$258,611
Revenue mineral tax, year ending June 30, 1901	31,894
Revenue tax, @ $3 per head	95,862
Royalty on coal, six months ending December 31, 1900	39,181
Succession duty, year ending June 30, 1900	18,791
Timber royalty and licenses	97,518
Free miners' certificates	133,766
Mining receipts, general	194,304

LOANS, BRITISH COLUMBIA, TO 30th JUNE, 1900.

Year.	Amount Issued.	Amount Redeemed.	Amount Payable	Rate of Interest.	When Redeemable.
1877	$ 727,500	$ 264,810	$ 462,090	6 per cent.	July 1, 1907
1887	996,190	614,980	381,210	4½ per cent.	July 1, 1917
1891*	2,139,141	.....	2,139,141	3 per cent.	July 1, 1941
1893*	599,945	.....	599,945	3 per cent.	July 1, 1941
1895*	2,037,000	.....	2,037,000	3 per cent.	July 1, 1941
1899*	1,649,000	.....	1,649,000	3 per cent.	July 1, 1941
1897*	100,000	20,000	80,000	3½ per cent	July 1, 1907

*Issue of inscribed stock.

The following have been guaranteed in aid of railways:

1890—Interest of the Shuswap & Okanagan Railway Company's bonds, 4 per cent. per annum on $1,249,763 ..... $49,980 52

1892—Interest of the Victoria & Sidney Railway Company's bonds, 2 per cent. per annum on $300,000 ..... 6,000 00

1893—Principal and interest of the Nakusp & Slocan Railway Company's bonds, interest at 4 per cent. per annum on $647,072 ..... 25,882 88

All of the above are terminable in 25 years.

Against the guarantee to the Shuswap & Okanagan and Nakusp & Slocan Railways, the province receives 40 per cent. of the gross earnings, under agreement with the C. P. R. Co., which company is operating both lines.

In aid of dyking and drainage, the Dyking Acts guarantee the payment by the Government of the principal on $671,000 of debentures redeemable in 1937, with interest at 3½ per cent. per annum. As security to the Government, the lands of

the six dyking districts are liable for the payment, by a special dyking rate, levied annually.

Net public debt of the province, being balance of liabilities over assets at 30th June, 1900 ..... $5,768,964
Net revenue, 1900 1,544,108
Net expenditure, 1900 1,831,205

EXPENDITURE BY THE DOMINION ON ACCOUNT OF THE PROVINCE OF BRITISH COLUMBIA.

	1898.	1899.	1900.	1901.	Tt'l, 30 yrs.
Public Debt—					
Interest	.....	.....	.....	.....	$ 865,037
Premium D. & E.	.....	.....	.....	.....	43,336
Sinking Fund	.....	.....	.....	.....	872,448
Redemption	.....	.....	.....	.....	471,093
Charges, man	3,764	3,862	3,782	.....	185,846
Lieutenant - Governor	9,000	9,000	9,000	.....	243,000
Administration of Justice, Judges, etc.	43,332	43,578	41,670	.....	1,027,665
Penitentiary	40,269	42,074	40,447	.....	765,190
Experimental Farms	8,735	8,593	8,750	.....	114,187
Quarantine	18,391	17,529	20,000	.....	145,883
Immigration	.....	.....	.....	.....	40,351
Pensions, etc.	.....	.....	.....	.....	500,000
Militia	15,000	15,442	16,000	.....	207,444
Public Works—					
Buildings	69,952	33,069	75,516	.....	1,319,698
Harbors and Rivers	117,720	93,946	70,787	.....	1,006,341
Dredging	30,258	31,688	14,315	.....	472,107
Telegraphs	12,607	17,305	378,500	.....	1,054,514
Agency	1,791	1,989	2,091	.....	84,240
Mail Subsidy	5,000	5,000	5,000	.....	661,190
Marine—					
Dominion Steamers	23,000	20,065	22,000	.....	542,656
Lighthouses	31,718	42,530	35,000	.....	677,150
Meteorological	2,000	2,876	3,000	.....	18,315
Marine Hospital	4,415	5,186	5,250	.....	99,585
Steamboat Inspection	2,900	3,641	3,750	.....	41,127
Fisheries	8,508	8,460	8,500	.....	103,360
Hatchery	2,389	3,736	3,750	.....	69,661
Indians	112,936	109,796	114,878	.....	1,852,213
Subsidies	242,689	242,689	242,689	.....	6,472,719
Dominion Lands	7,350	7,350	7,350	.....	160,895
Customs	28,196	93,216	96,780	.....	1,651,052
Excise	18,293	18,793	20,077	.....	255,995
Weights and Measures	577	2,157	2,200	.....	22,951
Gas and Electric Light	478	1,052	1,050	.....	9,412
Esquimalt Dry Dock	11,746	11,957	13,262	.....	651,052
Post Office	225,000	227,781	230,000	.....	3,611,020
Chinese Immigration	30,600	51,130	.....	.....	328,957
Miscellaneous	5,175	16,729	.....	.....	225,793
Estimated 1901	.....	.....	.....	1,450,000	1,450,000
Railway Subsidies	.....	.....	.....	1,139,760	1,139,760
Totals	$1,183,779	$1,192,192	$1,495,394	$2,589,760	$28,968,091

MUNICIPAL STATISTICS—URBAN.

	Assets.	Liabilities.	Total Assessment.	Rate Taxation, mills.	Total Taxes.	Total Acreage.	No. of Ratepay's.	Receipts.	Expenditure.	Deb'ture Debt.
Columbia	$ 5,554	$ 9,000	$ 462,550	10	$ 4,308	960	149	$ 6,793	$ 6,754	$ 9,000
Cumberland	1,909	.....	166,300	3 ½	1,324	40	138	3,412	3,372	.....
Grand Forks	149,604	184,000	964,645	17	15,237	737	301	104,772	102,225	.....
Greenwood	128,554	128,554	1,006,480	20	20,370	640	425	32,023	25,339	.....
Kaslo	62,736	37,715	447,312	24	11,512	480	444	21,711	19,934	36,333
Kamloops	71,123	43,382	426,465	20	933	8,764	317	30,127	26,819	32,500
New Westminster	961,514	1,029,142	3,299,930	24	85,317	2,540	1,445	230,542	229,535	994,000
Nanaimo	78,896	79,723	1,385,925	21.28	36,497	650	719	82,561	82,543	70,500
Nelson	246,595	275,302	2,059,835	11.50	23,118	483	700	153,444	165,417	175,000
Rossland	161,238	227,000	1,669,740	20	69,273	800	775	196,392	180,781	227,000
Revelstoke	25,658	23,271	564,192	16.25	7,192	595	307	17,726	17,608	21,500
Sandon	.....	.....	.....	....	.....	.....	.....	.....	.....	.....
Vancouver	2,095,802	2,617,359	16,190,275	20	369,198	6,000	5,000	827,835	827,835	2,562,089
Victoria	1,836,902	1,889,849	17,167,370	21	342,170	5,400	3,100	773,945	764,455	1,879,438
Vernon	44,043	42,000	333,840	15	7,441	1,700	261	23,930	22,953	42,000
Phoenix	.....	.....	.....	....	.....	.....	.....	.....	.....	.....
	$5,870,128	$6,586,297	$46,144,859		$993,890	29,789	14,081	$2,505,212	$2,475,570	$6,049,360

MUNICIPAL STATISTICS—RURAL.

	Assets.	L'abilities.	Total Assessment.	Rate Taxation, mills.	To'l Taxes Imposed.	Total Acreage.	No. of Ratepayers.	Receipts.	Expenditure.	Deb'ture Debt.
Burnaby	$ 18,993	$ 35,000	$ 678,996	9	$ 10,173	21,500	595	$ 11,875	$ 9,437	$.....
Chilliwack	18,715	19,524	740,470	7	9,477	60,000	628	13,521	13,521	19,000
Coquitlam	15,526	22,908	245,446	9	4,118	.....	153	5,793	5,285	20,000
Delta	31,538	71,387	1,747,920	10	18,957	.....	360	46,626	46,502	102,925
Kent	2,546	75	11,622	5	2,096	12,027	123	1,848	1,651	.....
Maple Ridge	4,433	212	246,957	10	3,183	8,294	256	5,573	5,083	.....
Matsqui	11,162	1,917	705,778	5	4,555	49,988	324	7,878	6,697	1,917
Mission	2,913	.....	161,486	10	2,658	19,264	204	1,751	1,686	.....
North Cowichan	1,155	86	988,605	3.77	4,393	.....	259	3,493	3,299	.....
North Vancouver	33,769	81,375	885,939	15	13,763	63,834	1,093	34,107	33,815	72,000
Richmond	81,716	207,763	1,586,662	10 1-6	26,949	30,286		32,229	32,229	180,000
South Vancouver	16,462	36,125	1,245,882	10	15,034	.....	645	17,788	17,108	35,000
Spallumcheen	66,136	65,000	522,977	6	4,086	58,930	184	5,227	4,746	65,000
Sumas	3,955	6	130,778	5	548	28,446	115	.....	.....	.....
Surrey	30,024	30,024	932,989	7.5	10,276	73,680	1,103	17,536	12,131	25,000
Langley	12,178	1,667	842,528	5	6,364	76,542	640	7,650	6,754	.....
	$339,043	$571,402	$11,675,035		$136,630	501,791	6,682	$205,245	$193,190	$510,842

Number of Men Employed and Capital Invested in Fishing Plant and the Fur Sealing Industry of British Columbia, for the Year 1899.

	Fisheries.		Fur Sealing.	
	No.	Value.	No.	Value.
Number of fishermen in vessels..	23,806	$.....	820	$.....
Number of vessels.....	153	313,550	26	84,500
Number of boats.....	4,829	250,350	68	6,800
Number of canoes.....	.....	.....	285	14,250
Salmon canneries.....	69	1,380,000	...	.....
Oil factories	2	35,000	...	.....
Cold storage and freezers.....	6	75,000	...	.....
Salteries	2	5,000	...	.....
Gill nets and seines.....	682,734	518,823	...	.....
Other material	.....	27,050	...	.....
Totals	.....	$2,604,773	...	$105,550

Imports into the Province of British Columbia.

	Goods Entered for Home Consumption.			
	Dutiable Goods.	Free Goods.	Total.	Duty Collected.
To June 30, 1897....	$4,848,826	$2,077,678	$6,926,504	$1,558,889 20
To June 30, 1898....	5,593,247	727,191	6,320,438	1,996,773 48
To June 30, 1899....	5,619,194	1,154,318	6,773,512	2,111,322 44

Value of Fishery Products of British Columbia, By Years Compared with Canada.

Fishery Output.	British Columbia.	Canada.
1896	$4,314,857 00	$20,407,425 00
1897	6,138,865 00	22,783,546 00
1898	3,713,101 00	19,667,121 00
1899	5,214,074 00	21,891,706 00
1900	6,787,756 50	20,000,000 00

The British Columbia Salmon Pack. Pack by Districts.

	Cases, 1897.	Cases, 1898.	Cases, 1899.	Cases, 1900.
Fraser River.....	879,775	264,331	527,396	331,361
Rivers Inlet.....	40,091	105,362	83,628	91,587
Skeena River.....	69,531	102,964	122,901	135,424
Naas River.....	37,807	20,000	19,442	20,200
Other places (Lowe Inlet, West Coast V. I., Namu Harbor, Alert Bay, Gardiner's Inlet).....	.....	.....	12,150	27,958
Totals	1,027,204	492,657	765,517	606,530

Sealing Catch of British Columbia.

The catch for the past six years has been :

1895	74,124	1898	28,552
1896	55,677	1899	35,346
1897	30,410	1900	35,548

BRITISH COLUMBIA FISHERIES.

KINDS.	1897.	1898.	1899.	Total Values from 1876 to 1899 inclusive.
Salmon, in cans	$4,927,418 80	$2,364,245 20	$3,644,391 20	$39,809,139 10
Salmon, fresh and smoked	190,046 90	111,585 00	208,505 00	3,425,268 50
Salmon, salted	68,110 00	186,000 00	154,500 00	1,107,926 00
Herring, all kinds	18,065 00	29,650 00	37,450 00	279,719 00
Trout	6,430 00	32,880 00	32,880 00	142,813 00
Sturgeon	56,884 80	37,500 00	13,932 50	348,967 60
Halibut	98,375 00	98,500 00	103,750 00	1,100,387 00
Oolachans	41,900 00	47,200 00	55,200 00	336,401 00
Oysters, Clams, Crabs and Prawns	40,080 00	48,580 00	48,580 00	484,259 00
Smelt	3,500 00	3,925 00	3,700 00	46,240 00
Skil	1,050 00	1,100 00	1,100 00	58,892 00
Tooshqua	.....	.....	.....	72,157 00
Cod	14,375 00	26,125 00	26,875 00	171,366 00
Fur Seal Skins	304,100 00	285,520 00	441,825 00	8,331,744 00
Hair Seal Skins	3,750 00	5,700 00	5,700 00	*15,150 00
Sea Otter Skins	6,000 00	10,000 00	.....	108,175 00
Assorted or Mixed Fish	21,950 00	23,300 00	24,025 00	367,879 50
Fish Oils	28,650 00	37,357 50	43,560 00	1,274,285 50
Fish Products	8,179 40	13,933 40	18,100 00	339,133 90
Fish for Home Consumption	300,000 00	350,000 00	350,000 00	3,160,612 50
Totals	$6,138,864 90	$3,713,101 10	$5,214,073 70	$60,998,515 60

Hatchery Distribution of Salmon Fry, British Columbia.

1896	10,393,000
1897	5,928,000
1898	5,850,000
1900	6,200,000
Total	88,375,800

Hospitals, 1900.

Name of Hospitals.	No. of Beds.	No. of Patients.	P. O. Address.
Provincial Royal Jubilee	52	844	Victoria.
Kootenay Lake	33	523	Nelson.
Golden, General	11	137	Golden.
Vernon, Jubilee	14	86	Vernon.
Mater Misericordia	30	415	Rossland.
St. Eugene, General	45	299	Cranbrook.
Greenwood	25	126	Greenwood.
Vancouver City	71	716	Vancouver.
Royal Columbian	28	61	New Westminster.
Chemainus	11	75	Chemainus.
Nanaimo	50	304	Nanaimo.
Sandon	9	103	Sandon.
Union, Comox	8	71	Cumberland.
Port Simpson	12	87	Port Simpson.
Royal Cariboo	7	24	Barkerville.
Atlin	8	42	Atlin.
Royal Inland	18	180	Kamloops.

Railway Statistics, British Columbia.

Summary Statement of Capital for the Year Ending 30th June, 1900.

	Length of Line Completed. Rails laid, Miles.	Dom. Gov. Aid Paid up.	Prov. Gov. Aid Paid up.	Total cost of Railway and Rolling Stock.
Bedlington & Nelson	15.16	$.....	$	$ 474,494 60
British Yukon	64.75	.....	.....	2,398,010 50
Crow's Nest Branch	288.75	3,116,250	*.....	●10,150,000 00
Columbia & Kootenay	60.50	88,800	*.....	1,369,939 45
Columbia & Western	159.20	.....	.....	5,851,973 78
Esquimalt & Nanaimo	78.00	750,000	.....	3,028,874 67
Kaslo & Slocan	31.80	.....	*.....	954,224 14
Nakusp & Slocan	36.30	117,760	‖1,064,834	❖665,250 00
Nelson & Fort Sheppard	59.40	.....	*.....	2,745,413 17
Red Mountain	9.53	.....	.....	407,664 83
Shuswap & Okanagan	50.80	163,200	‖.....	❖1,250,000 00
Victoria & Sidney	16.26	.....	‖.....	435,585 11
N. Westminster Southern	22.00	.....	.....	●400,000 00
Canadian Pacific, main line and branches	503.30	.....	.....	●27,775,000 00
Electric tram lines	46.00	.....	.....	●275,000 00
Totals	1,443.75			$58,433,431 00

*British Columbia land grant. ‖Guarantee of interest. ❖Exclusive of rolling stock. ●Estimated.

LUMBER AND TIMBER.

STATEMENT OF SHIPMENTS OF LUMBER FROM BRITISH COLUMBIA AND PUGET SOUND.

1900.

Destination.	Hastings Mill.	Moodyville.	North Pacific Lumber Co., Barnet.	Can. Pacific, Port Moody.	Royal City Planing Mills, New Westminster.	Chemainus.	Total Exports from B. C. Mills.	Puget Sound Mills.	Total.
U. K. and Continent	9,850,860	2,809,813	.....	.....	.....	12,382,940	25,043,613	8,473,614	33,517,227
Australia	4,698,580	7,230,490	657,003	687,353	.....	20,661,347	33,936,773	63,612,563	97,549,336
Oceanica	.....	.....	.....	.....	.....	.....	.....	5,041,866	5,041,866
Africa	2,149,018	.....	.....	.....	.....	3,738,367	5,887,385	12,298,256	18,185,641
Peru	831,236	3,723,114	.....	.....	.....	.....	4,554,350	14,847,020	19,401,370
Chile	890,660	1,461,692	.....	.....	.....	1,506,478	3,858,830	16,616,052	20,474,882
Other S. Am. Ports	327,995	.....	.....	.....	.....	.....	327,995	3,738,965	4,066,960
China and Japan	4,064,028	4,087,373	.....	.....	1,312,100	.....	9,463,501	20,332,514	29,796,015
Siberia	.....	.....	.....	.....	.....	.....	.....	1,413,817	1,413,817
U. S. Atlantic Ports	1,061,405	.....	.....	.....	.....	.....	1,061,405	1,261,969	2,323,374
Mexico	.....	.....	.....	.....	.....	76,701	76,701	9,220,853	9,297,554
	23,873,782	19,312,482	659,003	687,353	1,312,100	38,365,833	84,210,553	156,857,489	241,068,042

The shipments of lumber East of the Rocky Mountains from mills in British Columbia amounted to 27,047,051 feet.
The shipments of Shingles amounted to 225,000,000.

In 1900 the timber cut on Crown lands was	152,488,199 feet.
" " " " in cordwood was	19,202,900 "
In 1900 the timber cut on leaseholds was	61,140,883 "
" " " private property	9,745,641 "
" " from E. & N. Ry. lands	27,472,770 "
" imported timber was	6,386,077 "
	276,236,470 feet.

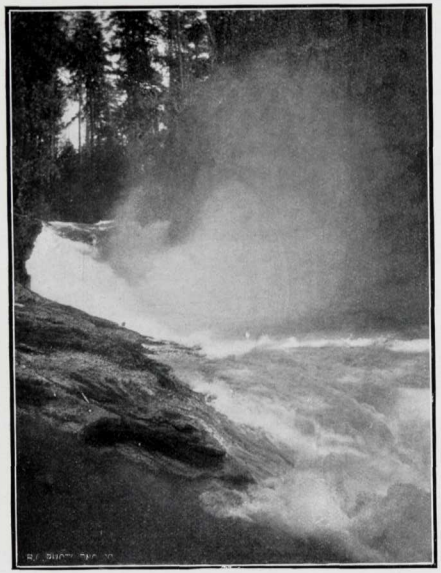
The total revenue derivable from timber resources was $145,766.00.

IMPORTS FOR THE FISCAL YEAR ENDING JUNE 30th, 1900. BRITISH COLUMBIA.

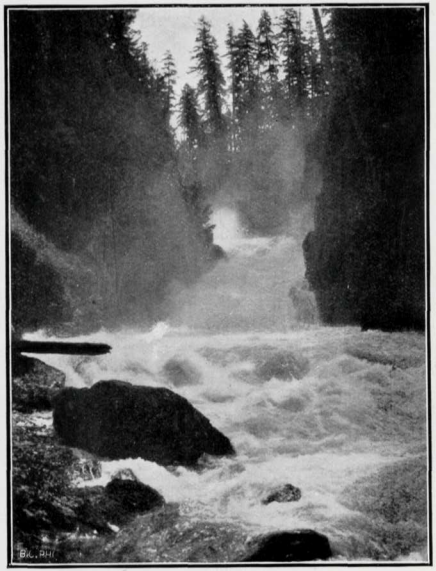
	Total Imports.					
	Dutiable.	Free Goods.	Total Imports.	Total Revenue, 1900.	Total, 1899.	Total, 1898.
Victoria	$2,494,441	$ 881,557	$ 3,389,811	$ 947,484	$ 961,980	$ 896,838
Nanaimo	276,360	72,141	354,632	88,108	81,745	65,358
Vancouver	3,011,481	856,051	3,877,173	911,811	764,142	667,842
New Westminster	440,154	204,381	662,542	135,659	218,267	178,321
Nelson	664,678	167,252	841,814	188,198	128,607	256,167
Bennett	1,075,479	158,679	1,234,176	256,247	.....	.....
Kaslo	100,941	19,608	126,549	29,400	51,724	.....
Rossland	615,056	153,944	769,000	164,835	144,271	.....
Total, 1900	$8,684,590	$2,573,631	$11,255,679	$2,721,746	$2,350,739	$2,064,528

EXPORTS FOR THE FISCAL YEAR ENDING 30th JUNE, 1900. BRITISH COLUMBIA.

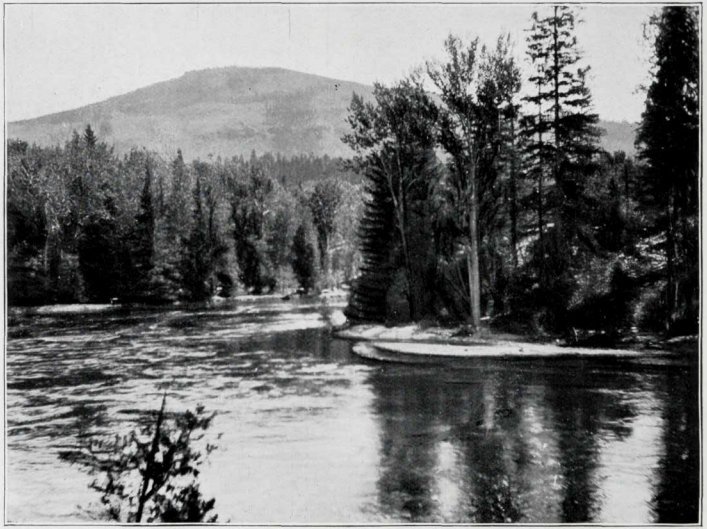
Port of.	The Mine.	Fisheries.	The Forest.	Animals and their Prod'e.	Agricult'l Products.	Manufr's.	Miscellan's.	Coin Bullion.	Total, 1900.	Total, 1899.
Victoria	$ 375,503	$ 866,232	$ 12,159	$410,637	$ 7,070	$ 99,851	$ 420	$280,082	$ 2,051,954	$ 1,734,930
Nanaimo	3,362,279	20	280,645	3,024	1,359	32,017	.....	.....	3,679,344	3,031,413
Vancouver	1,502,098	223,627	354,117	60,174	68,148	221,056	38,294	17,226	2,484,740	911,251
New Westminster.	38,602	2,353,118	62,192	8,002	392	11,326	249	2,000	2,475,879	2,000,171
Nelson	794,341	.....	1,626	631	108	19,196	.....	383,323	1,199,225	1,104,664
Kaslo	960,176	.....	.....	.....	.....	.....	1,240	.....	961,416	2,961,156
Rossland	4,913,816	.....	146	1,559	39	62,438	450	12,900	4,991,348	3,004,440
Totals, 1900	$11,946,815	$3,442,997	$710,883	$484,027	$77,116	$445,884	$40,653	$695,531	$17,843,906	$14,748,025



POWELL RIVER—UPPER FALLS.



POWELL RIVER—MIDDLE FALLS.



MAIN KETTLE RIVER—KETTLE RIVER M. D.

SHIPPING.

DESCRIPTION.	1897. No.	1897. Tons.	1898. No.	1898. Tons.	1899. No.	1899. Tons.	1900. No.	1900. Tons.
Coasting steamers—in.....	5,770	1,648,999	6,826	1,695,010	5,734	1,315,613	9,021	2,399,116
Coasting steamers—out.....	5,787	1,566,705	6,846	1,698,603	5,882	1,385,341	10,115	2,029,702
Coasting vessels (sail)—in.....	368	49,753	304	50,116	408	85,940	465	205,746
Coasting vessels (sail)—out.....	417	71,221	303	57,659	316	92,251	480	229,238
Canadian cargoes—in.....	191	*9,672	176	*14,453	132	*34,091	261	35,578
Canadian cargoes—out.....	7	*2,713	180	75,746	135	50,628	277	117,733
British cargoes—in.....	165	*230,183	133	*242,834	116	*229,621	126	246,923
British cargoes—out.....	143	*255,989	175	309,586	125	217,727	163	288,579
Foreign cargoes—in.....	377	*655,792	892	*675,430	863	*669,137	900	677,156
Foreign cargoes—out.....	1,168	*744,572	1,124	1,025,820	828	701,525	1,064	1,014,969
Foreign vessels in ballast—in...	672	*553,921	899	*719,909	677	*608,692	725	693,045
Foreign vessels in ballast—out..	697	42,232	625	370,658	554	338,922	177	19,374
British vessels in ballast—in.....	78	*186,483	91	*170,237	108	*215,654	101	196,969
British vessels in ballast—out....	58	127,241	61	115,382	83	143,802	59	127,211
Canadian vessels in ballast—in..	54	*8,919	136	45,777	176	58,472	346	90,658
Canadian vessels in ballast—out.	230	14,087	272	27,211	164	15,209	73	8,452
Totals	16,182	6,168,482	19,043	7,294,418	16,241	6,162,625	24,353	8,404,792

PROVINCIAL ELECTIONS, 9TH JUNE, 1900.

	Votes Polled	Ballots Cast	No. Vrs. on List
Alberni—			
Neill	108	202	307
Redford	57		
Thompson	33		
Cariboo—			
Hunter	302	489	804
Rogers	289		
Jones	201		
Kinchant	177		
Cassiar—			
Clifford	318	689	1,101
Stables	277		
Irving	244		
Godfrey	198		
Chilliwack—			
Munro	267	534	840
Ashwell	251		
Cowichan—			
Dickie	224	340	570
Ford	107		
Comox—			
Mounce	338	643	1,018
McPhee	279		
Delta—			
Oliver	324	729	1,357
Berry	215		
Forster	173		
Dewdney—			
McBride	338	634	1,117
Whetham	285		
Esquimalt—			
Pooley	230	410	698
Hayward	272		
Higgins	111		
Fraser	75		
Bizanston	50		
Kootenay—North East—			
Wells	246	435	740
Armstrong	111		
Burnett	78		
Kootenay—South East—			
Smith	428	1,018	1,612
Fernie	383		
Costigan	171		
Kootenay West—Nelson—			
Houston	747	1,604	2,520
Fletcher	508		
Hall	293		
Kootenay—Revelstoke—			
Taylor	513	899	1,661
McRae	368		
Kootenay—Rossland—			
Curtis	1,323	2,361	3,919
Mackintosh	1,287		
Kootenay—Slocan—			
Green	639	1,221	2,060
Keen	373		
Kane	170		
Lillooet East—			
Prentice	164	212	314
Graham	43		
Lillooet West—			
Smith	134	227	354
Skinner	80		
Lochore	7		
Nanaimo City—			
Smith	763	872	1,344
Yates	86		
Nanaimo North—			
McInnes	238	506	826
Bryden	195		
Dixon	73		
Nanaimo South—			
Dunsmuir	249	474	580
Radcliffe	225		
New Westminster City—			
Brown	628	1,195	1,564
Reid	540		
Richmond—			
Kidd	222	580	1,291
Rowan	204		
Wilkinson	133		
Vancouver—			
Garden	1,787	4,248	7,940
Martin	1,737		
Tatlow	1,645		
Gilmour	1,465		
Wilson	1,457		
Macpherson	1,435		
McQueen	1,391		
Wood	1,344		
Dixon	853		
Carter-Cotton	802		
Williams	716		
MacClain	683		
Victoria City—			
Helmcken	1,688	3,062	4,346
Hall	1,597		
Turner	1,552		
McPhillips	1,449		
Martin	1,352		
Brown	1,259		
Yates	1,233		
Beckwith	1,154		
Victoria North—			
Booth	123	285	423
White	117		
Robertson	41		
Victoria South—			
Eberts	259	476	750
Sangster	208		
Yale East—			
Ellison	619	1,060	1,738
Snodgrass	351		
Raymer	45		
Yale North—			
Fulton	504	986	1,451
Deane	388		
Palmer	84		
Yale West—			
Murphy	352	510	824
Beebe	149		

DOMINION ELECTIONS IN BRITISH COLUMBIA, 1900.

	Burrard.	New Westmin'r.	Vancouver.	Victoria.	Yale and Cariboo.
*George R. Maxwell	2,716	.....	.....	.....	.....
James F. Garden	2,089	.....	.....	.....	.....
Hon. E. Dewdney	.....	1,627	.....	.....	.....
*Aulay Morrison	.....	1,772	.....	.....	.....
*Ralph Smith	.....	.....	1,256	.....	.....
Clive Phillipps-Wolley	.....	.....	868	.....	.....
William Sloan	.....	.....	832	.....	.....
*Hon. E. G. Prior	.....	.....	.....	1,872	.....
*Thomas Earle	.....	.....	.....	1,775	.....
R. L. Drury	.....	.....	.....	1,657	.....
George Riley	.....	.....	.....	1,640	.....
*W. A. Galliher	.....	.....	.....	.....	3,112
C. Foley	.....	.....	.....	.....	2,652
John McKane	.....	.....	.....	.....	2,583
Number of valid votes polled	4,805	3,399	2,956	6,944	8,347
Rejected ballots	36	9	26	33	43
Spoiled	33	21	16	37	84

* Elected.

TABLE OF POPULATION.

IT was hoped that the results of the Dominion Government census-taking would have been known in time for publication in the Year Book, but in the absence of official returns, the following careful estimates have been arrived at:

The population of the province of British Columbia is 150,000.

Alberni	150	Golden	725	Revelstoke	2,500
Ashcroft	400	Grand Forks	1,061	Rossland	8,000
Atlin	341	Greenwood	1,500	Sandon	1,500
Barkerville	100	Kamloops	2,200	Silverton	295
Camp McKinney	223	Kaslo	1,550	Slocan City and Brandon	500
Chemainus	300	Ladners	500	Steveston	300
Chilliwack	500	Midway	238	Trail	1,500
Columbia	450	Nakusp	400	Trout Lake City	400
Cranbrook	1,400	Nanaimo	6,000	Vancouver	26,000
Cumberland	758	Nelson	5,500	Vernon	550
Duncan	196	New Denver	400	Victoria	21,000
Esquimalt	250	New Westminster	6,427	Ymir	600
Fernie	2,500	Phoenix	1,200		
Ferguson	300	Princeton	300		
Fort Steele	425	Quesnel	150		

LABOR STATISTICS.

AS OFFICIALLY REPORTED IN THE LABOR GAZETTE.

	Greenwood.	Kamloops.	Nanaimo.	Nelson.	N. Westm'r.	Vancouver.	Victoria.	Nanaimo.	N. Westm'r.	Vancouver.	Victoria.	N. Westm'r.	Vancouver.	Victoria.	Victaria.
	BRICKLAYERS AND MASONS.							BLACKSMITHS.				BOILER MAKERS.			
Wages per hour.....c	66	55	55 5-9	62½	50	50 24	50 25	.....	....	25 33	30 32½	....	35	35 21	40*
Wages per week.....$	36	30	30	30	27	27	27	18.75	...	14	18	...	20	20	....
Average hours per week.	54	44	53	48	48 54	48 54	48 54	51	....	17 55	19½ 60	....	55	59 60	....
Rate for Overtime.....	....	1½	1½	1½	1½	1½	1½	.....	....	1½	1½	....	1½	1½	....
Average d'n season, mos.	6	6	8	8	6 12	8 9	9 10	.....	...	....	....	....	.....	....	....
	BUILDLRS' LABOR'S AND SCAF'RS.							B'K. HELPERS.				HOLDERS-UP.			
Wages per hour.....c	39	25	27⅔	27½	27½ 30	25 30	25 30	.....	....	16 20½	20	....	22½ 25	20 22½	25‖ 30
Wages per week.....$	21	13½	15	18	12 16	13 16.20	13½	15	....	8 14	12	....	14	11 13½	....
Average hours per week.	54	54	53	48	48 54	54	45 54	51	....	55	60	....	55	59 60	....
Rate for Overtime.....	....	1½	.....	1½	1½	1½	1½	.....	...	1½	1½	....	1½	1½	....
Average d'n season, mos.	6	8	9	10	6 12	8	9 10	.....	...	..	....	....	.....	....	....
	CARPENTERS AND JOINERS.							TINSMITHS.				HELPERS.			
Wages per hour.....c	45	33½	33½ 38	44½	25 33½	33⅓	33⅓	.....	30	30	36	25	20 22½	20	30¶ 40
Wages per week.....$	24	18	18 21	21	18	16.65	18	.....	....	16½	18	13½	12 12.80	11 12	16½
Average hours per week.	54	54	53	48	54	50	54	.....	54	55	60	54	55	59 60	50
Rate for Overtime.....	....	1½	.....	1½	1½	1½	1½	.....	1½	1½	1½	1½	1½	1½	1½
Average d'n season, mos.	....	12	9	10	7 12	8	9	.....	...	...	....	....	.....	....	....
	CARPENTERS' HELPERS.							HELPERS.				HEATERS.			
Wages per hour.....c	....	22½	27½	....	20 24	.....	22	.....	....	20	20 22½	....	20 17½	17½ 20	....
Wages per week.....$	....	12	15	....	10 12	.....	12 12½	.....	11	12	12	....	9 10½	4 12	....
Average hours per week.	....	54	53	....	54	.....	54	.....	....	55	60	....	55	59 60	....
Rate for Overtime.....	....	1½	.....	....	1½	.....	1½	.....	1½	1½	1½	....	1½	1½	....
Average d'n season, mos.	....	12	9	....	7 12	.....	9	.....	...	....	....	....	.....	....	....

*Polishers and Platers. ‖Buffers. ¶Iron and Brass Moulders and Pattern Makers, Finishers and Mounters.

PRINTING AND PRESSWORK.

Wages in the printing trade vary somewhat according to locality. For machine composition the standard is 50 cents per hour on morning papers, and from 40 to 45 cents per hour for evening papers and bookwork; by the week on morning papers, $22.50 to $27, and from $20 to $24 for evening papers and other work. Time and a half is usually allowed for overtime per hour, 48 hours being the standard weekly time.

For hand composition wages are 50 cents per 1,000 ems on morning papers, and 40 to 45 cents on evening papers and for bookwork; 50 to 60 cents per hour is paid on morning papers, and 31½ to 60 cents on evening and weekly papers and for book and job work. The high rate is unusual, however, and is only paid at Nelson. The weekly wage on morning papers is $21 to $22.50, and from $18 to $21 on evening papers and for other work. The usual time and a half for overtime is allowed. The hours per week vary from 42 to 54, 53 and 54 being the average.

The foregoing are union wages. In towns not organized the wages are from $12 to $18 per week.

Pressmen's wages are from $3 to $3.50 per day, $17 to $21 per week, with 48 to 54 hours per week. Pressmen's assistants receive $2.50 per day and upwards, from $12 to $18 per week; apprentices, from $4 to $15 per week.

MINERS' WAGES.

The wages in the Crow's Nest coal mines are: Average daily, underground miners, $3.50; underground labourers, $2.25; above ground labourers, $2; mechanics and skilled labour, above ground, $3; boys, underground, $1; boys, above ground, 75 cents.

White miners in the Nanaimo colliery, $3 to $4.50; labourers, underground, $2.50 to $3.50; labourers, above ground, $2.50; mechanics and skilled labour, $3 to $4; boys, $1 to $2 (underground); boys, above ground, $1 to $1.50; Chinese, above ground, $1.12½ to $1.25.

The current wages paid in and about metalliferous mines are as follows: Miners, $3 to $3.50 per day (12 to 14 shillings); helpers, $2 to $2.50 per day (8 to 10 shillings); labourers, $2 to $2.50 per day (8 to 10 shillings); blacksmiths and mechanics, $3 to $5 per day (12 to 20 shillings).

FISHERMEN.

The men in the fishing industry are partly engaged as fishermen and partly as operatives in the canning factories. A large number of Indians, Chinese and Japanese are engaged, as well as white men. In the fisheries Indians take a large part, and in the canneries the majority of the employees are Chinese.

Most of the fishing has been done by whites and Indians, but latterly Japanese fishermen have taken a prominent part. Payment is usually made at a specified rate of so much per fish, the rate ranging from 6 cents to 30 cents per fish, according to the quantity caught and the general state of the market, the average price being about 15 cents per fish. White men who follow fishing exclusively (of such men one of the firms has 100 in its employ) average about $600 per year.

In the canneries the white labour is mainly employed in superintending and directing work. Foremen receive $100 to $125 per month, or, in some cases where they are employed under a more permanent agreement, from $600 to $1,000 for the season. The wages of the other white employees range from $40 to $100 per month; foremen's assistants receive from $60 to $75 per month, bookkeepers from $60 to $65 per month, all with board; watchmen and tallymen, from $40 to $50; and white employees generally from $40 to $60 per month. The Chinamen, as a general rule, work under contract with one firm, and receive from $35 to $50 per month. In some cases Indian women are employed, receiving from 15 to 20 cents per hour, without board.

The hours of labour per day vary according to the run of the fish. Sometimes the working day consists of as much as 16 hours, although the average day is probably within 10 hours.

LOGGERS AND MILLMEN.

The following statement shows the wages paid per hour to the several classes of men employed in the woods by a company operating in Vancouver: Head skidder,

30 cents per hour; hock tender, 35 cents; undercutter, 30 cents; head faller, 35 and 30 cents; second faller, 27½ cents; head loader, 27½ cents; donkey engineer, 27½ cents; bucker, 27½ cents; second loader, 25½ cents; sniper, 27½ cents; second hock tender, 27½ cents; head barker, 22½ cents; head swamper, 30 cents; skid-road man, 22½ cents; labourer, 20 cents.

The returns from Vancouver Island, B. C., which also represent approximately the conditions in other mills, are: Sawyers, $5; setters, $2.50; filers, $3.50 to $6.50; edgers and trimmers, $2.50 to $3; bookkeepers, $75 to $100 per month; foremen, $75 per month to $2,000 per year; sorters, $2.50 to $3; yardmen, $2.50 to $2.75; engineers, $2.50 to $3.50; inspectors, $2.50 to $2.75; others, $1.75 to $2.

SEALING.

The wages paid in sealing on the average are as follows: Boat-pullers and steerers, $25 per month and 50 cents per skin taken in the boat; hunters (white), $3 per skin); hunters (Indian), $2 per skin.

Masters of sealing vessels report a scarcity of good experienced men. In winter months an inferior class of labour is plentiful; in summer it is reported difficult to secure men, even with an increase of wages to $30 per month and 50 cents per skin.

CIGARMAKERS.

Cigarmakers for 1,000 cigars of 10-cent goods receive from $10 to $21, the rate varying with the place; for special brands, $14 to $21, 48 hours per week; strippers, $3 to $12 per week; packers, $1.50 to $1.80 per 1,000; foremen, $25 to $56 per week. There are cigar factories at Kamloops, Nanaimo, New Westminster, Vancouver and Victoria.

ON THE C. P. R.

Gang bosses on the C. P. R. from Laggan to Vancouver, within British Columbia, receive 35 cents per hour; the minimum wage for fitters and machinists from Laggan to Kamloops is 31 cents per hour, for new men 26 to 30 cents, and for apprentices 25 to 29 cents; from Kamloops to Vancouver the wage is one cent per hour less. Trackmen's wages are $1.40 per day. At the time of writing, a strike for higher wages was in progress.

FARM LABOUR.

Owing to the scarcity of farm labour in British Columbia, labour is principally performed on farms by Chinese and Japanese, although white men are invariably preferred where available. There is no very definite scale of wages as yet. Chinese and Japanese receive from $10 to $20 per month, and white men from $15 to $30; without board, Chinese and Japanese receive from $20 to $35. The demand is irregular.

GOVERNMENT WAGES.

The wages paid by the Provincial Government vary somewhat, according to the district; but, speaking, generally, labourers employed on public works receive from $2 to $2.50, and foremen from $3 to $3.50 per day. There is a clause in all contracts for public works that contractors must pay the rate of wage in the district current at the date of signing the contract.

IRON AND STEEL.

AS in the case of paper and pulp, the possibilities of the iron and steel industry are shown by the markets which are at present being supplied from the United States and the nations of Europe, and which could be best supplied from British Columbia, provided other conditions for production on a competitive basis were present. There are several factors eminently in favour of the industry on this Coast, so far as the markets in question are concerned :

Important Factors.

Geographical relation ;

Large deposits of magnetite and hematite ore ;

Mainly located at the very edge of ocean navigation ;

The price of labour in Eastern iron and steel centres is levelling, and will inevitably continue to level, upwards.

There is every reason to believe that with the compensating natural advantages of this Coast, production is possible on a competitive basis at the present prices of labour. What, therefore, is wanted is the development of ore bodies sufficient to justify the erection of blast furnaces and iron and steel works. It is impossible at the present time to obtain complete returns of imports of all countries which would afford a market for British Columbia iron and steel, if produced, but the trade returns of the United States and Great Britain are a fair indication of the market as a whole. Taking the Philippine Islands, China, Japan, Mexico, Guatemala, San Salvador, Nicaragua, Costa Rica, Republic of Colombia, Venezuela, Ecuador, Peru, Chile, Brazil, Uurguay and the Argentine Republic, the British East Indies, Hongkong and Australasia, the markets of which are either now or would be in the future equally available for British Columbia products as for those of the United States and the European countries, it is found that in products of iron and steel, such as could be reasonably manufactured on this Coast, if iron mines were developed and iron works established, the amounts imported from Great Britain alone aggregated £13,270,000 for the year 1900. Japan from all countries imported of iron and steel manufactures nearly $16,000,000 worth, an increase of about $8,000,000 over the preceding year.

What is Wanted.

Our Natural Market.

The seven colonies of Australasia in 1898 imported £8,681,451 worth of all descriptions of iron, machinery and iron manufactures, which was an increase of over £4,500,000 since 1894, and average yearly imports within the latter period of £6,535,901. Of course, the whole of this amount does not represent what could be supplied by British Columbia, as it includes manufactured iron products of all kinds, but it indicates generally the extent of the market. In Coghlan's Book, "The Wealth and Progress of New South Wales," he remarks : "The quantity of pig iron required to produce the material represented by these values is approximately 130,000 tons, and 470,000 tons for New South Wales and the whole group of the colonies, respectively

Promising Fields.

PAPER AND PULP FIGURES.

THE accompanying figures are simply given to illustrate the extent of market which is legitimately open to British Columbia when its paper and pulp industry is fairly established. With the exception of Japan and Australia, complete returns of the imports are not yet available, but the imports from the United States and Great Britain afford a good indication of the market as a whole. Taking the same countries as are included in the remarks on the iron industry, namely, the South American Latin republics, Australasia, etc., the value of paper exported to them by Great Britain in 1900 amounted to £5,774,162.

Our Natural Markets.

Japan alone of books and paper stationery imported $2,630,905 worth; of this amount, $267,560 was for packing paper and $1,426,667 for printing paper. In the year 1900, $227,564 worth of pulp for paper-making was imported, being practically

Their Extent and Value.

double the amount in 1898. In 1900 the value of the exports of paper and manufactures of paper from the United States to the countries, the markets of which will be tributary to British Columbia, was $1,490,635, of which amount $173,825 was for printing paper and $236,305 for writing paper and envelopes. The United States exported to the countries in question $36,448 worth of wood pulp.

PROVINCIAL ADMINISTRATIONS.

ON a previous page is given the Provincial Administration in power in 1897, which was succeeded in 1898 by :

Premier and Chief Commissioner of Lands and Works.....Hon. C. A. Semlin
Minister of Finance and Agriculture.....Hon. F. C. Cotton
Attorney-General.....Hon. Joseph Martin
Provincial Secretary and Minister of Mines.....Hon. J. F. Hume
President of the Council.....Hon. R. McKechnie, M. D.

From the Semlin Administration Hon. Joseph Martin, Attorney-General, in 1899 retired, and was succeeded by Hon. Alex. Henderson, recently appointed a Judge of the County Court for Vancouver County.

As a result of the defeat of the Semlin Administration in 1900, Hon. Joseph Martin formed an administration as follows :

Premier and Attorney-General.....Hon. Joseph Martin
Minister of Finance and Agriculture.....Hon. J. C. Brown
Provincial Secretary.....Hon. G. W. Beebe
Chief Commissioner of Lands and Works.....Hon. J. S. Yates
Minister of Mines.....Hon. Smith Curtis

A general election soon followed, the result of which was that the following administration was formed, and at present is :

Premier and President of the Council.....Hon. James Dunsmuir
Minister of Finance and Agriculture.....Hon. J. H. Turner
Attorney-General.....Hon. D. M. Eberts
Chief Commissioner of Lands and Works.....Hon. W. C. Wells
Provincial Secretary and Minister of Education.....Hon. J. D. Prentice
Minister of Mines.....Hon. Richard McBride

MINING RECORDS, 1900.

Free miners' certificates issued	9,912
Mineral claims recorded	5,292
Certificates of work granted	8,988
Bills of sale, etc., recorded	3,042
Certificates of improvements granted	519
Placer claims recorded	74
Water rights granted	59
Mining leases granted	109
Crown grants	25

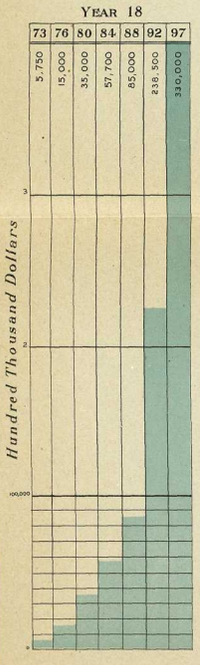
POST OFFICE STATISTICS.

Number of post offices	364
Letters registered	221,000
Letters posted	9,955,000
Post cards sent	760,000
Number of letters per head*	52.65
Number of money orders issued	107,078
Amount of money orders issued	$1,864,691
Number of money orders paid	39,936
Amount of money orders paid	$915,756
Gross postal revenue	

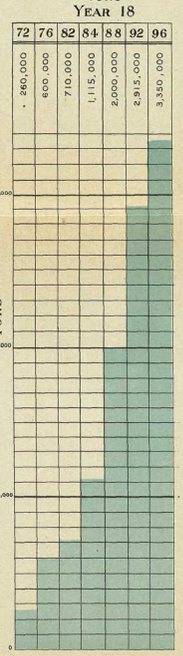
*The average number of letters per head for the whole Dominion was 33.15.

SKETCH MAP
OF THE SOUTHERN PORTION OF
BRITISH COLUMBIA
indicating
CHIEF MEANS OF COMMUNICATION
and
AGRICULTURAL AND PASTORAL LOCALITIES
DEPARTMENT OF LANDS AND WORKS
VICTORIA 1897
PACIFIC
OCEAN
MINISTERIAL DISTRICT
COMOX DIST.
COWICHAN DIST.
NANAIMO DIST.
ALBERNI DIST.
Cape St James
Mallenk Sound
Queen Ch.
King I.
Burke Ch.
Bella Coola R.
Rivers Inlet
Smith Sd.
QUEEN CHARLOTTE Sd.
Seymour Inlet
Kingcombe Inlet
Bentinck A.
Cape Scott
PORT RUPERT
QUEENSTOWN
QUATSINO SD.
Cape Cook
Gilford
Knight Inlet
Loughborough Inlet
Bute Inlet
Tatla L.
Tatlatch L.
CHILCOH L.
Chilanko R.
Chilcotin River
Toba Inlet
Powell Lake
Jervis Inlet
Walden
KYUQUOT SD.
ESPERANZA INLET
NOOTKA SOUND
COMOX
UNION
Texada I.
Howe Sound
Burrard Inlet
FRENCH CR.
STRAIT OF GEORGIA
VANCOUVER
BARRY PT.
BEAVER CR.
STUART L.
ALBERNI
NANAIMO
NUPERI
CLAYOQUOT SD.
BARCLAY SD.
C. Beale
COWICHAN
COWICHAN
CARMANAH
SOOKE
ESQUIMALT

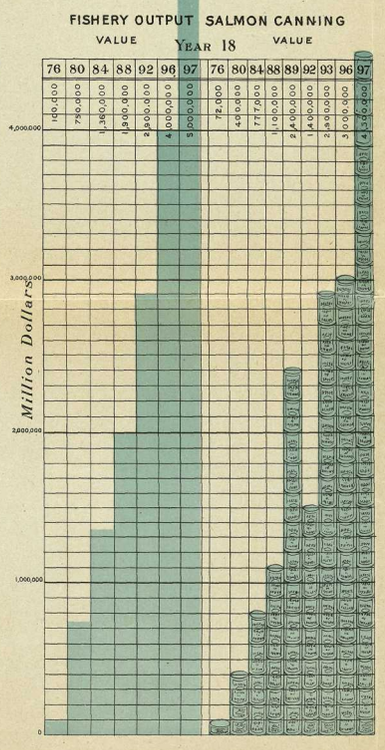
INLAND REVENUE
VALUE
YEAR 18



SEA GOING SHIPPING EMPLOYED
TONS
YEAR 18

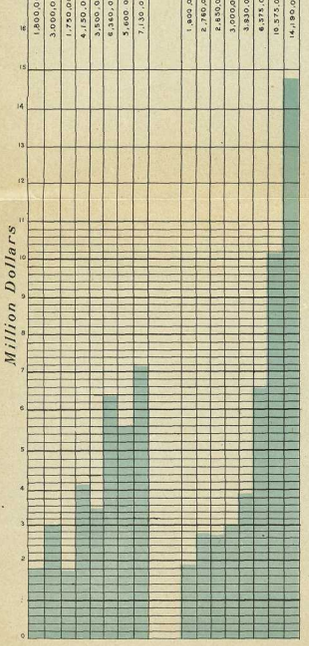


FISHERY OUTPUT
VALUE
YEAR 18



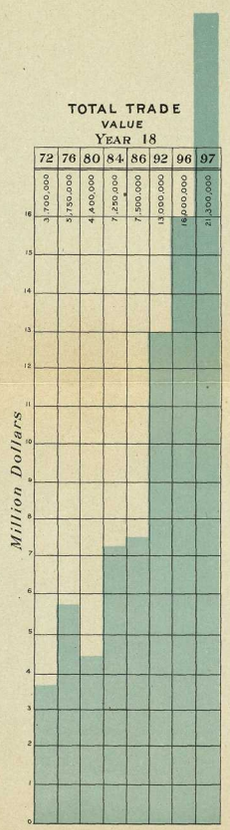
SALMON CANNING
VALUE
YEAR 18

IMPORTS
VALUE
YEAR 18

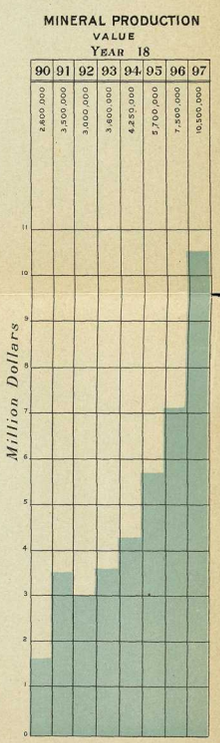


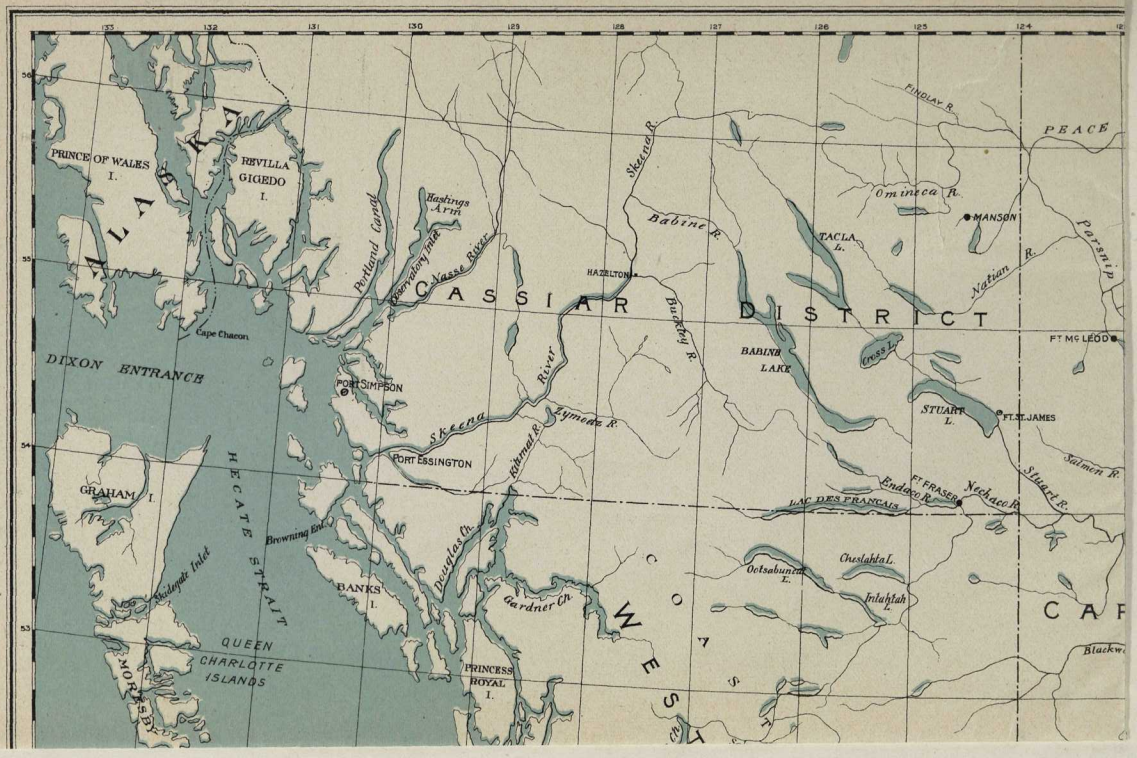
EXPORTS
VALUE
YEAR 18

TOTAL TRADE
VALUE
YEAR 18



MINERAL PRODUCTION
VALUE
YEAR 18

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Skeena R.
Babine R.
HAZELTON
CASSIAR DISTRICT
Bulkley R.
River
Cape Chacon
DIXON ENTRANCE
PORT SIMPSON
Skeena
Zymoetz R.
Kitsumkalum R.
PORT ESSINGTON
GRAHAM I.
HECATE STRAIT
Browning Inlet
Skidegate Inlet
Douglas Ch.
BANKS I.
Gardner Ch.
QUEEN CHARLOTTE ISLANDS
MORESBY
PRINCESS ROYAL I.
WEST COAST
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PEACE
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MANSON
TACLA L.
Parsnip
Nation R.
BABINE LAKE
Cross L.
Ft McLEOD
STUART L.
Ft. ST. JAMES
Salmon R.
Stuart R.
Ft. FRASER
Nechaco R.
Endako R.
LAC DES FRANCAIS
Chislakta L.
Ootsabuna L.
Inlukhah L.
CAR
Blackw

ANNOUNCEMENT.

SINCE the publication of the British Columbia Year Book and Compendium by the author three years ago, the copies remaining unsold have been purchased by the Government; and in order to bring them fully up to date, and at the same time to preserve all the useful information these volumes originally contained, it was decided to take out all the pages after 294 in the Year Book and all after 104 in the Compendium, and insert in their place new matter, though similar in character.

Owing to lack of space, however, much has been omitted that was intended to be included in this edition. The publication has also been delayed longer than was anticipated, owing to the inability to have the printing done sooner; but, so far as possible, the most important information has been rendered available. In the next issue, while preserving the main features of the 1897 edition, it is hoped to present not only what has been omitted in this, but much entirely new matter.

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