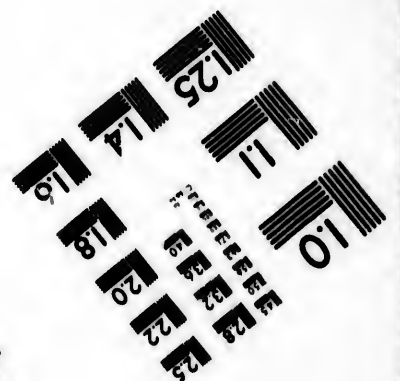
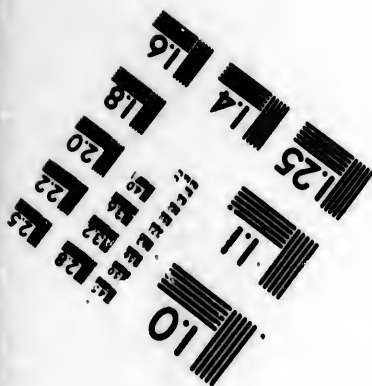
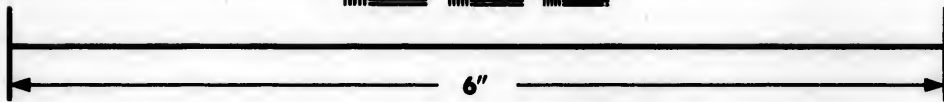
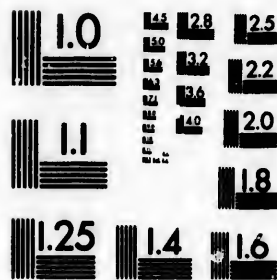


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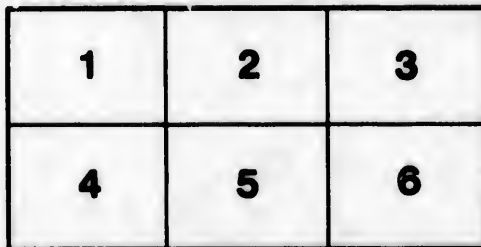
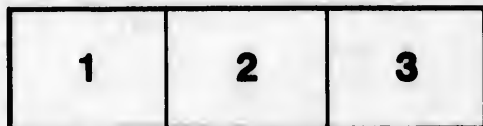
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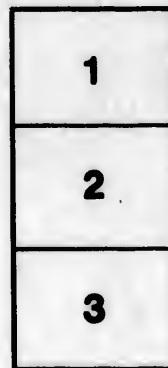
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THE YEAR BOOK OF BRITISH COLUMBIA



COMPENDIUM.



R. E. GOSNELL.



The Esquimalt & Nanaimo Railway Co.

VICTORIA, BRITISH COLUMBIA,

Has a Large Area of Lands suitable for Farming on
Vancouver Island to be Sold on Easy Terms.

REGULATIONS.

Unsurveyed land is only sold in square blocks of 160 acres, bounded by North and South and East and West lines, and to be surveyed so as to conform with other surveys that may have been made previously in the vicinity, and not to leave jogs in the lines, nor small fractions of land unsold.

The general price for such land for agricultural or grazing purposes is THREE DOLLARS (\$3.00) PER ACRE, purchaser to pay for conveyance and have survey made at his own expense.

In surveyed districts the price is from THREE DOLLARS AND TWENTY-FIVE CENTS (\$3.25) PER ACRE, which includes cost of survey and conveyance.

The usual terms for payment are one-tenth down, balance in nine equal annual instalments, with interest at 6% per annum on unpaid instalments; or the purchaser can pay up in full at any time and obtain conveyance.

Special terms may be arranged with the Railway Company when desired.

All mineral rights are reserved by the Railway Company in lands sold under the above conditions.

A purchaser may obtain as many blocks of 160 acres as he wishes.

There are no restrictions imposed upon purchasers as to residence or settlement duties.

Maps and other information will be furnished upon application.

Canadian Pacific Navigation Co., Ltd.

Time Table, No. 35, (Taking Effect August 1st, 1898.)

VANCOUVER ROUTE.

Victoria to Vancouver daily, except Monday at 1 o'clock.

Vancouver to Victoria daily, except Monday at 13 o'clock, or on arrival of C. P. Railway No. 1 Train.

NEW WESTMINSTER ROUTE.

Leave Victoria—For New Westminster, Ladner's Landing and Lulu Island, Sunday at 23 o'clock; Wednesday and Friday at 7 o'clock. Sunday's steamer to New Westminster connects with C. P.

R. Train No. 2 going East, Monday.

For Plumper Pass—Wednesdays and Fridays at 7 o'clock.

For Moresby and Pender Islands—Fridays at 7 o'clock.

Leave New Westminster—For Victoria, Monday at 13.15 o'clock. Thursday and Saturday at 7 o'clock.

For Plumper Pass—Saturday at 7 o'clock.

For Pender and Moresby Islands—Thursday at 7 o'clock.

FRASER RIVER ROUTE.

Steamer leaves New Westminster for Chilliwack and way landings every Tuesday, Thursday and Saturday at 8 o'clock, during river navigation.

NORTHERN ROUTE.

Steamships of this Company leave Victoria for Fort Simpson via Vancouver and intermediate ports on the 10th, 20th and 30th of each month, and for Queen Charlotte Islands on the 10th of each month.

KLONDIKE ROUTE.

Steamers of this Company leave weekly for Wrangel, Juneau, Skagway and Dyes.

BARCLAY SOUND ROUTE.

Steamer "Willipa" leaves Victoria for Alberni and Sound Ports the 10th, 20th and 30th of each month, and for Quatsino and Cape Scott on 30th.

THE COMPANY RESERVES THE RIGHT OF CHANGING THIS TIME TABLE AT ANY TIME WITHOUT NOTIFICATION.

E. A. GARLETON, General Agent.

JOHN IRVING, Manager.

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Official information respecting various
resources of the Province of British
Columbia

Its Conditions,
Its Climate,
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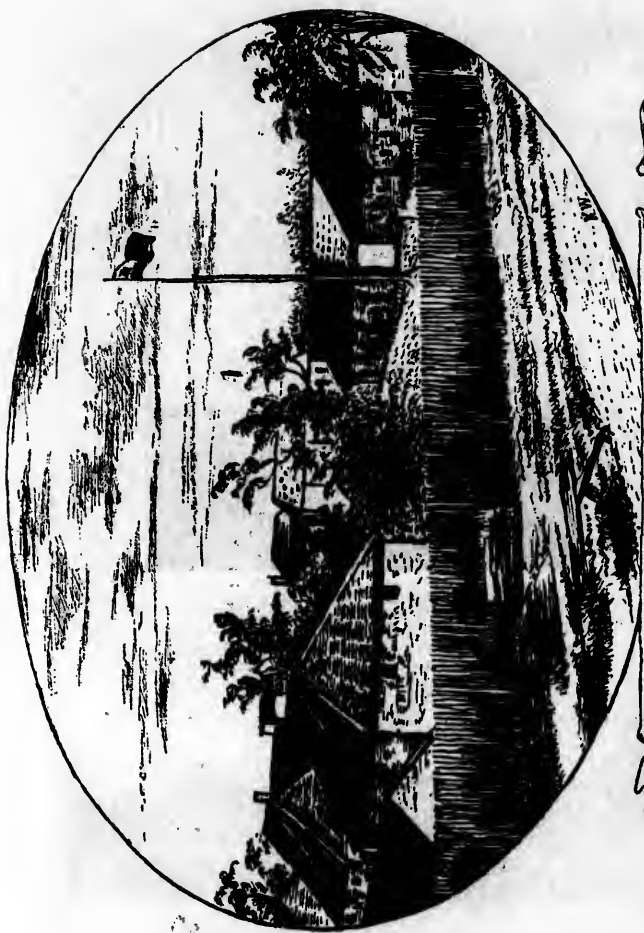
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Statistics and General Information:

Secretary Bureau of Statistics; or by application to Hon.
Minister of Immigration, Victoria, B.C.; or to Agent
General for British Columbia, 39 Victoria Street,
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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

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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,

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VICTORIA, B. C.
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HIS EXCELLENCY LORD ABERDEEN.



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.

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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, it 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.

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 familiarised 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 Selkirks. 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.

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-alides 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

Interior Plateau. 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.)

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.

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.

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

Yale. 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 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 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

Lillooet. 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 Cache 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 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 a 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

Westminster District. 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 Westminister 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 Westminister, which is often referred to as the fresh water terminus, and is the centre of the salmon canning industry.

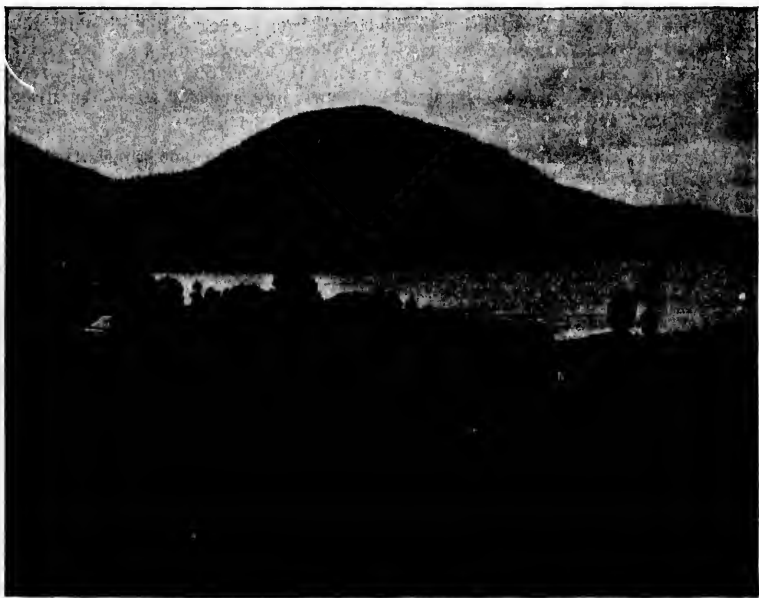
North of Yale and Lillooet lies the great district of Cariboo, which extends from 52° to 60° north latitude, the latter being the northern boundary line of the Province, and from the 120th to the 126th degree of west longitude, containing in the aggregate the vast area of about 96,350,000 acres. It is 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 hydraulic 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 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 53 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, YALE.



CAYOOSE CREEK VALLEY—ENTERING THE FRASER.



NEW WESTMINSTER



VANCOUVER CITY, (FROM



NANAIMO CITY



VICTORIA CITY, 1897, (FROM DCME OF



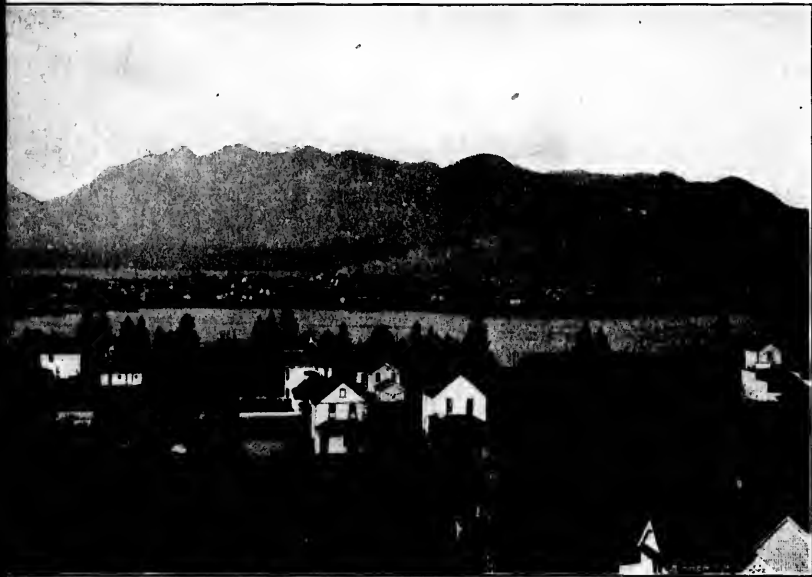
NANAIMO CITY.



1897, (FROM CORNER OF NEW PARLIAMENT BUILDINGS).



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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 longitude, 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.

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



NEW WESTMINSTER CITY.



VANCOUVER CITY, (FROM MOUNT PLEASANT)



NEW WESTMINSTER CITY.



CITY, (FROM MOUNT PLEASANT).

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

Vancouver Island.

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

Its Political Divisions.

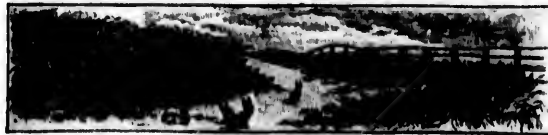
Salt Spring Island, and others of a group known as The Islands, lies east of Cowichan and Esquimalt Districts, on and in the Gulf of

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.

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 obtained, 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.



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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.

Ashcroft. The B.C. Express Company have their headquarters, and the "British Columbia Mining Journal," a very reliable and well written newspaper, is published there.

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

Barkerville. mining town and is the centre of a mineral district which is again rapidly coming into prominence.

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 abundant, 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

Esquimalt. 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.

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

Fort Steele. 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.

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 Falliser, 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

Golden. 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.

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

Greenwood. 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.

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, 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.

Harrison
Hot Springs.

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.

Kamloops.

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.**

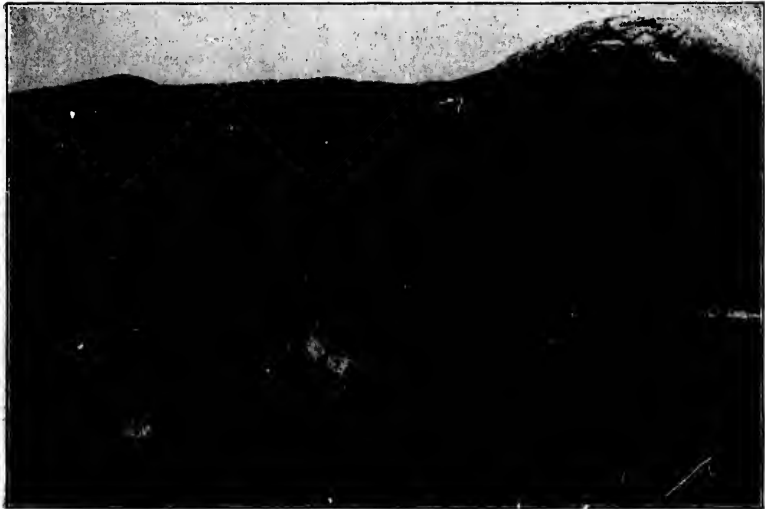
Kamloops is well supplied with stores of general merchandise, lumber mills, schools and churches of nearly all denominations; and very many of the citizens have supplied themselves with residences of comfortable and pretty design. At Kamloops the "Inland Sentinel" is published. [The Kamloops "Standard" 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 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 ("Kootenaiian").

J. B. McKILLIGAN.



ROSSLAND.



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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.

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."

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.

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.

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

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 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

New Denver. Slocan City. Steamer accommodation is had daily to Roseberry, Silvertown 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.

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

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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 is situated on the Kootenay Lake, eighteen miles from Kaslo and eight miles from Ainsworth on the opposite side. At this point the Kootenay

Pilot Bay. 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, 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.

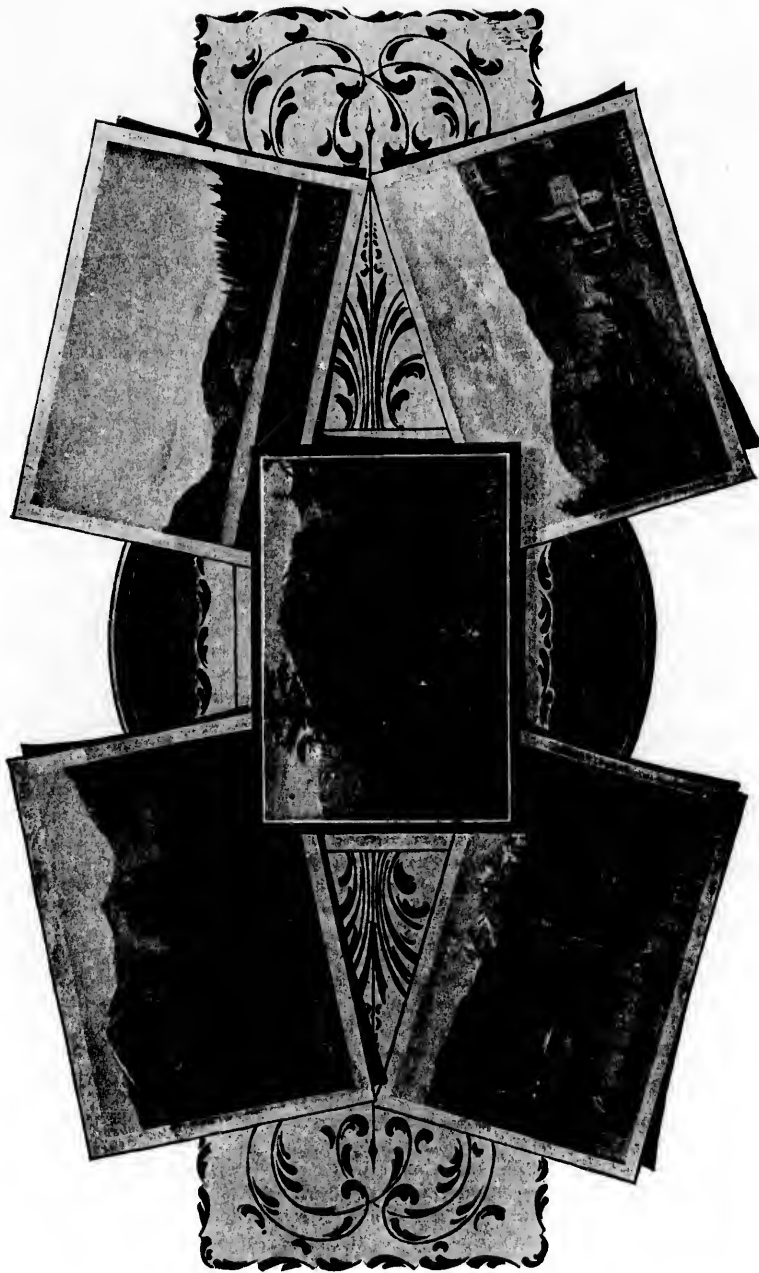
Port Simpson is a Hudson's Bay Company's post on the northwest coast of British Columbia near Alaska, 640 miles north of Victoria. A large village of Tsimpshean Indians is located here, and in connection with this there is a Methodist Mission and several industries. The harbour at Port Simpson is a good 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.

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.

Revelstoke. 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 Cristo, 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.

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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 pyritic 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

Rossland. 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

A Great Power System. 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.

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."

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 is a mining camp on Slocan Lake at the mouth of Four Mile Creek, four miles below New Denver, nine miles from Roseberry, 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.

Silverton.

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.

Steveston.

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.

Three Forks.

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.

Trail.

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.

Union.

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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

Vancouver. 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

Social Features.

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.

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

Vernon.

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.

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

Victoria.

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

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.

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.



Facsimile of \$20 gold piece coined in the British Columbia Mint.

(By kind permission of Hon. J. S. Helmcken).

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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

Continental
Climate.

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.

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.

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

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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:

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.

Cañons 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 one 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 Squimalt. 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

Fogs and Tides. 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.

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

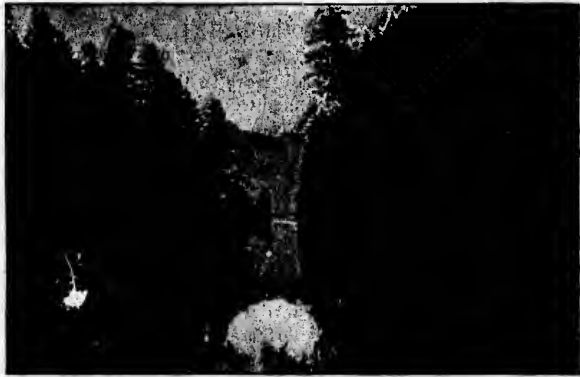
Northern Interior.

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.

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."



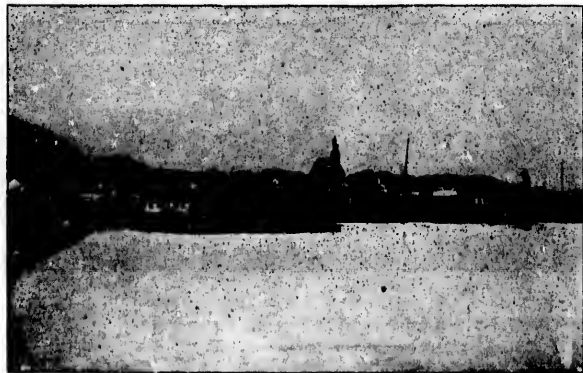
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FREDERICK ARM.



"SAM'S LANDING" AND STAGE—KOOTENAY.



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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.	Abbotsford.	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	26.3	30.2	33.4	25.9	18.4	12.1	12.1
	Monthly mean..... 40.9	38.22	37.03	33.85	39.65	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	58.7	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	50.0
	Mean lowest..... 43.11	40.7	36.6	32.3	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	59.05	64.57	58.19	59.36	49.72
	Average..... 55.5	57.0	55.6	51.9	59.0	59.0	64.6	58.2	59.4	49.7
July.....	Mean highest..... 70.3	75.8	75.7	63.4	84.2	82.2	89.3	83.4	85.8	73.9
	Mean lowest..... 51.0	51.3	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	66.58	65.77	73.72	65.04	67.28	59.45
	Average..... 60.3	64.4	63.6	58.1	66.6	65.8	73.7	65.0	67.3	59.3
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	77.0	61.8	67.6	62.9
	Mean lowest..... 44.5	44.9	43.1	43.2	45.1	47.7	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	42.44	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	42.6	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.	Fort Simpson.	Abbotsford.	Agassiz.	Spence's Bridge.	Mission Valley.	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	15.8	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	5.8	2.1	3.1	0.6	1.0	3.0	18.1
April.....	Rainfall.....	2.98	1.68	1.15	5.8	2.1	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	4.28	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.....	9.6	6.0	0.7	13.61	7.81	8.24	0.6	1.2	0.4	9.7
November.....	Rainfall.....	6.95	6.06	4.52	13.61	7.81	8.24	0.51	0.3	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	0.67
	Snowfall.....	2.4	3.0	3.8	15.4	6.4	7.6	3.6	25.0	7.2	36.8
Year.....	Rainfall.....	37.47	38.23	31.46	96.28	56.32	61.96	6.87	5.52	11.20	17.94
	Snowfall.....	31.0	52.1	55.9	60.00	28.6	48.9	28.8	59.7	40.70	101.2

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.	Fort Simpson.	Abbotsford.	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	4.35	1.10	1.57	1.64	2.12
June.....		1.19	0.88	1.37	4.56	3.96	3.97	0.74	0.86	1.32	3.13
July.....		0.36	0.27	0.80	5.20	1.29	1.55	0.36	0.28	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.

	Upper Mainland..... A	Lower Mainland..... B	North-West Coast..... C	Vancouver Island..... D	Gulf Islands..... E
Elevation above Sea Level, in feet.....	28	0	52	760	26
Highest temperature registered during the year 1896.....	86.4	88.0	85.0	93.0	84.0
Lowest temperature registered during the year 1896.....	16.7	8.0	9.0	3.0	-13.0
Annual mean temperature during the year 1896.....	47.73	47.18	47.81	48.31	35.61
Mean daily range of temperature during the year 1896.....	13.5	17.1	20.1	18.3	19.6
Rainfall during the year 1896, in inches.....	38.77	33.71	64.70	54.12	8.01
Number of days of Rainfall.....	199	195	128	154	41
Amount of Snowfall, in inches.....	41.9	43.1	35.5	20.9	30.9
First Frost.....	Oct. 5	Oct. 24	Sept. 7	Oct. 26	Sept. 8
Last Frost.....	Apr. 17	May 15	Apr. 18	Apr. 18	June 4
First Snow.....	Nov. 4	Nov. 10	Nov. 11	Nov. 14	Sept. 2
Last Snow.....	Apr. 7	Apr. 28	Mar. 28	Mar. 28	Apr. 1
Warmest Day.....	July 21	July 14	June 26	June 26	July 22
Mean Temperature.....	70° 10'	73° 30'	73° 30'	76° 30'	67° 00'
	Esquimalt.	French Creek.	Agassiz.	Abbotsford.	Spence's Bridge.
	D	D	B	B	A
	Barkerville.	Port Simpson.	Hazelmere.	Mission Valley.	Port Steele.
	A	C	B	A	A
	Salmon Arm.	Rivers Inlet.	Kuper Island.		
	A	C	E		

Barkerville. 0.34, 0.17, 24.3, 18.1, 0.51, 3.3, 1.13, 0.3, 2.76, 3.02, 1.3, 1.45, 9.7, 1.01, 25.9, 5.0, 36.8, 17.94, 16.13

Sept. Barkerville. 15.0, 14.1, 13.9, 9.6, 9.5, 2.2, 2.2, 2.2, 2.2, 2.2

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 *litterati* 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

Up the
Gulf of Georgia.

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.

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

Seymour
Narrows.

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.

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.

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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.

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 Crocroft 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 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 cannery 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 hemlock, 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.

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

Fort Rupert

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.

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,

**The Scenery
on the Way.**

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 dream-like—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

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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 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 we pass into Lama Passage, where the Bella Bella Indians reside. They have a 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.

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.

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.

A Beautiful Landscape.

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 over-

land, 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.

Leaving the Skeena, we pass out into Chatham Straits, and, rounding the Tsimpsaan 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.

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.

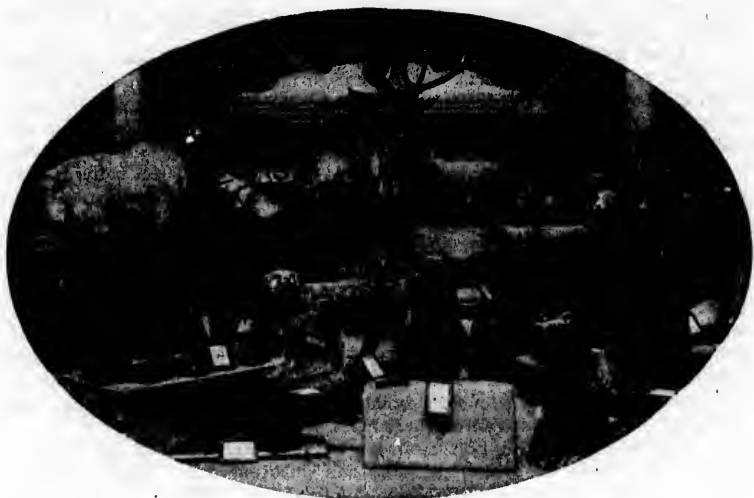
Bidding good-bye to Fort Simpson, we sail past the mouth of the Naas River, where there are several canneries and imposing views across Chatham Strait, around Cape Fox, into Dixon's entrance and into Alaska. On the way up we sail by Tongas Islands, the home of the Tongas Indians. In Tongas is where Mr. 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.

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NANAIMO IN 1860.



B.C. MAMMALS IN PROVINCIAL MUSEUM.



HUNTING BIG HORN ON ASHNOVA MOUNTAINS.

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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 unorganised territory with sparse population and the number of Indians, who slaughter for the heads and hides, the law is difficult of enforcement.

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.

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.

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.

Perhaps the next two most important representatives of our forest wealth

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are the red cedar (*Thuja gigantea*) and the yellow cedar (*Thuja 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—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,

Red and
Yellow Cedar.

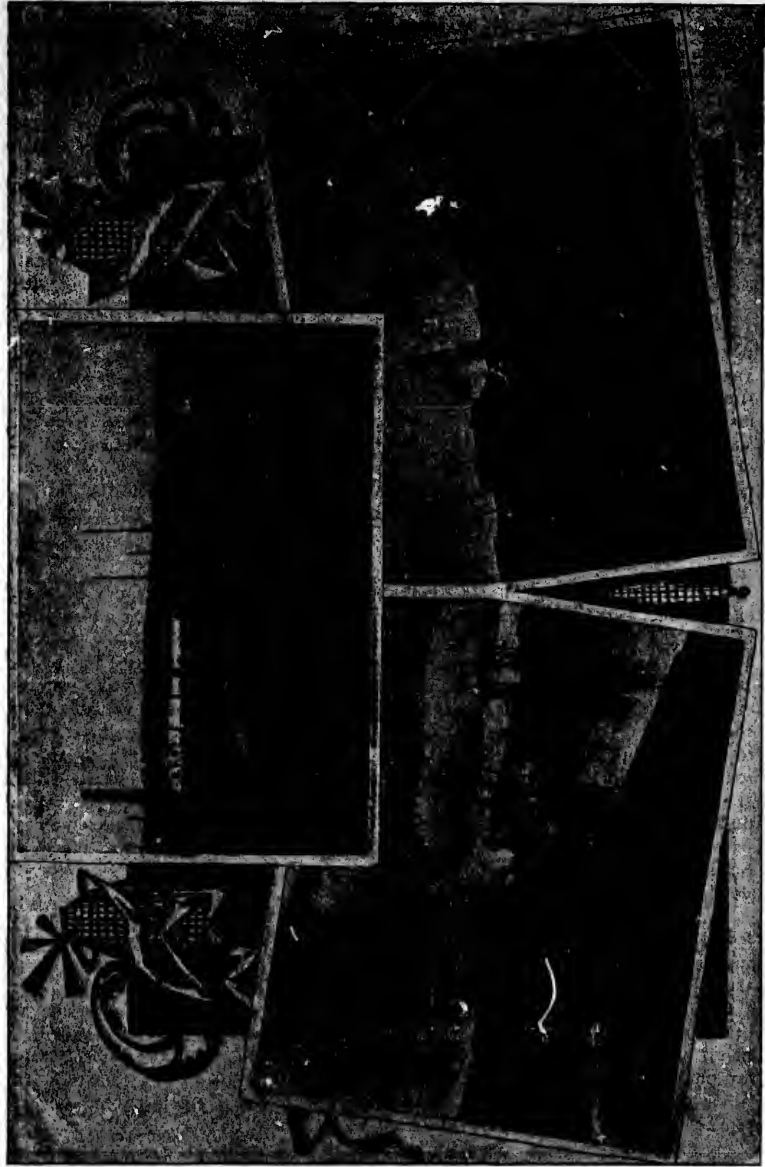
and I was going to say useful. It is very strong, comparing with the Douglas fir in this respect, is wonderfully durable, finishes to perfection, and grows to great dimensions. Lying farther north, it will not be probably as soon in demand as the more ubiquitous red variety, but is already occupying 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.

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 Sitichensis*). 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.

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



SAYWARD MILLS, VICTORIA.

ESQUIMALT DRY DOCK.

BRUNETTE SAW MILL, NEW WESTMINSTER.

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(*Acer clineatum*), 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.

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

Timber
Limits.

SAYWARD MILLS, VICTORIA.

ESQUIMALT DRY DOCK.

BRUNETTE SAW MILL. - NEW WESTMINSTER.

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

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.

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

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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?

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

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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).

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.

Conditions of License.

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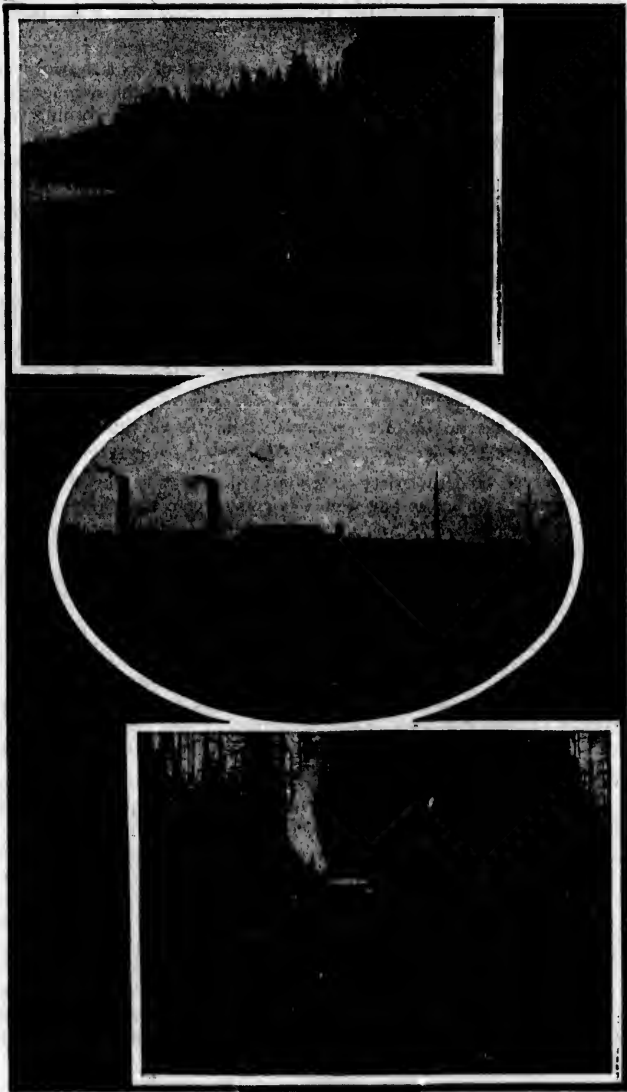
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Permits to cut timber, subject to dues hereafter specified, are granted by public competition, except to actual settlers, who can cut timber for their own use without competition.

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.

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.

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.

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.

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 pile, 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.

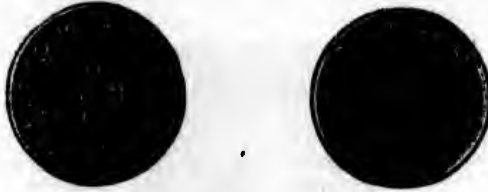
THE LUMBER CUT.

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).

*Particulars not received.

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EXPORT OF LUMBER, 1896.

DESTINATION.	SHIPPED FROM VANCOUVER.		SHIPPED FROM MOODYVILLE.		SHIPPED FROM NEW WESTMINSTER.		SHIPPED FROM VANCOUVER ISLAND.	
	Cargo, fl.	No. Vessels.	Cargo, fl.	Value.	Cargo, fl.	Value.	Cargo, fl.	No. Vessels.
Germany.....	776,772	1						
South America.....	6,103,327	5	887,330	\$14,574			1,125,776	4
Great Britain.....	6,094,145	6					865,954	1
South Africa.....	3,831,830	3					692,307	1
Australia:							849,269	1
Adelaide.....	1,310,386	1	1,120,000	10,000	1,260,547	*	841,546	1
Fremantle.....	2,347,747	2	987,802	*			2,775,505	2
Geraldton.....	714,283	1	767,566	3,739			11,732	
Melbourne.....			2,888,815					
Port Pirie.....								
Sydney.....	469,972	1						
France.....	1,019,000	1						
Gibraltar.....	1,797,000	2						
Valparaiso, I. O.....	2,875,719	3	1,495,988	6,965			753,086	1
California.....	1,461,012	4						
Kobe, Japan.....	1,056,074	2	7,894,209	71,838			5,188,818	7
China.....								
Exports for first 6 mos. '97	22,334,369	20	16,038,930	127,116	2,232,587	\$ 7,687	13,092,261	18
					1,018,000		\$101,791	8

*Particulars not received.

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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 climate 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: Quinnet, Chinook or Tyee salmon (*Oncorhynchus tshawytscha*); silver salmon, or coho (*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 quinnet, the first

salmon to appear, is the largest, varying from ten to seventy-five pounds in weight. It is the most important of the salmonidae 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 coho is infinitely superior to the sockeye as a table fish, though not so rich in flavour as the tye 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.

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

Salmon
Canning.

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 of pleasant and effective sarcasm directed against the supineness of the British authorities in the matter, but nevertheless a fiction.

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.

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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

Halibut
Fisheseries.

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.

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

Black Cod,
or "Skil."

as a commercial venture this fishery has been abandoned; 'he 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."

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

The
Oolachan.

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 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 Gadidae, 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 north-west coast.

There are two other species of fish sold locally as cod, one the *Ophiodon elongatus* or "cultus cod," and the red rock cod (*Sebastes 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.—*Sebastes 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 Sturgeon.

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.

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

Uses of
the Dog Fish.

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.

In addition to the dog-fish there are several other oil-bearing fishes, the principal of which is the *Hydralagus colioei*, 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. Ash-down 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.....	3,603,300	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 †Ontario..... \$26,192,442 00
 †New Brunswick..... 68,950,855 00 †Manitoba and N.W. Territories.. 5,750,000 00
 †Prince Edward Island..... 24,270,580 00 †Values for 1896, estimated on basis
 †Quebec..... 44,557,212 00 †From 1896.
 of preceding years.

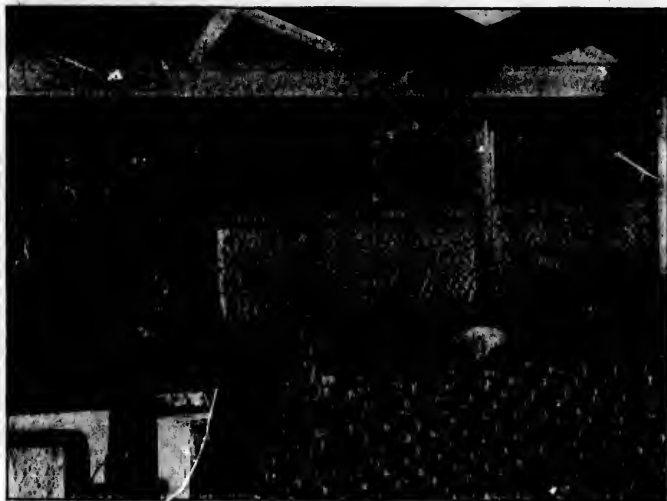


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INTERIOR OF A SALMON CANNERY.



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SCHEDULE OF CANNERIES, 1896.

Name of Cannery.	Owners or Agents.	Name of Cannery.	Owners or Agents.
SKEENA RIVER.			
Carlisle	Carlisle Packing Co., Munn, Holland & Co.	Pacific Coast... Federation ...	N. H. Bain. Walter Morris.
Standard	Victoria Canning Co. Ld.	Malcomb & Windsor ...	Malcomb & Windsor.
Inverness	Turner, Beeton & Co.	Star	Costello & McMoren.
Balmoral	Turner, Beeton & Co.	Fishermen's... John A. Hume.	S. Hinchcliffe. J. A. Hume & Co.
Windsor	B. C. Canning Co., Ltd.	Sea Island.....	Munn & Co.
North Pacific British Amer- ican	A. B. C. Co. H. Bell-Irving & Co.	Imperial	Short & Squire.
Skeena Cann'ry	Cunningham & Son	Canadian Pacific	Canadian Pacific Can. Co.
Royal Canadian	Royal Can. Packing Co.	Delta	
NAAS RIVER.		Harlock	Victoria Canning Co., Ltd.
Naas Harbour	{ Federation Brand Can- ning Co.	Holly	
Mill Bay			
RIVERS' INLET.		Wellington ..	
Brunswick	Brunswick Canning Co.	Terra Nova ...	Rowen Bros.
Good Hope....	H. Bell-Irving & Co.	Atlas	Hobson & Co.
Victoria	{ British Columbia Can- ning Co., Ltd.	Richmond....	J. H. Todd & Son.
Rivers Inlet.}		Beaver	Provincial Canning Co.
Warnock.....	Victoria Can. Co., Ltd.	Provincia.....	E. Penzer.
Lowe Inlet Cannery.....	Cunningham & Rhude.	Anglo Americ'n Brunswick ...	Brunswick Canning Co. Boutillier & Co.
Alert Bay Can- nery	S. A. Spenser.	Boutillier.....	
Namu Harbour Cannery.....	R. Dranie.	Phenix	
Clayoquot C a nery	{ Clayoquot Fishing & Trading Co.	Britannia....	
Nootka Cann'ry	West Coast Packing Co.	Wadhams ...	H. Bell-Irving & Co.
FRASER RIVER.		Canoe Pass ..	
Ewens	A. Ewen & Co.	British Amer- ican	
Westham Isl'nd	McDonald Bros.	B. C. Cannery..	P. Birrell.
Westminster...	Sam Tung.	Industrial	H. Youdal.
		Alliance.....	R. Colquhoun.
		Dinsmore I'd.	Goodmarphy & 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	196,293	1894	494,371
1884	141,242	1895	566,395
1885	108,517	1896	601,570
1885	161,264	1897	1,024,371

SKEENA RIVER.				NAAS RIVER.			
	1896.	1897.		1896.	1897.		
Anglo B.C. Packing Co..	22,919	16,200	Federation Brand Salmon Canning Co.	14,649	20,000		
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	R. Draney	3,987	4,357		
RIVERS INLET.				ALERT BAY.			
	1896.	1897.		1896.	1897.		
Anglo B.C. Packing Co..	30,407	8,000	Alert Bay Canning Co...	2,840	8,835		
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					
Wharneck Cannery:							
Wadhams.....		6,500					
Vancouver Packing Co. (new).....		3,300					
Total, Rivers Inlet	107,468	40,300	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 1895:—

	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	1,321	\$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.....		4,600 00				
Gill nets and seines.....		296,700 00				1,713,190 00
Other material.....		15,850 00				4,208,311 00
		\$1,664,010 00		\$421,425 00		\$9,253,848 00

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

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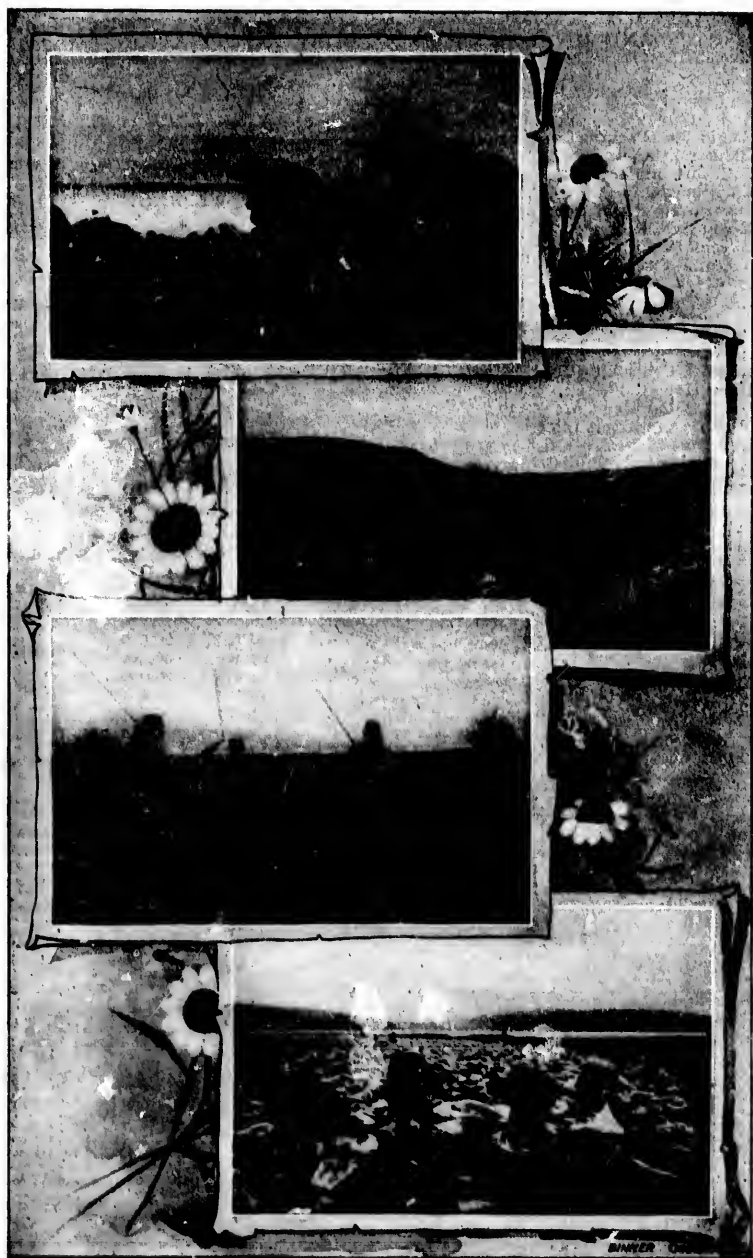
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A CHAPTE IN SEALING LIFE.

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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.

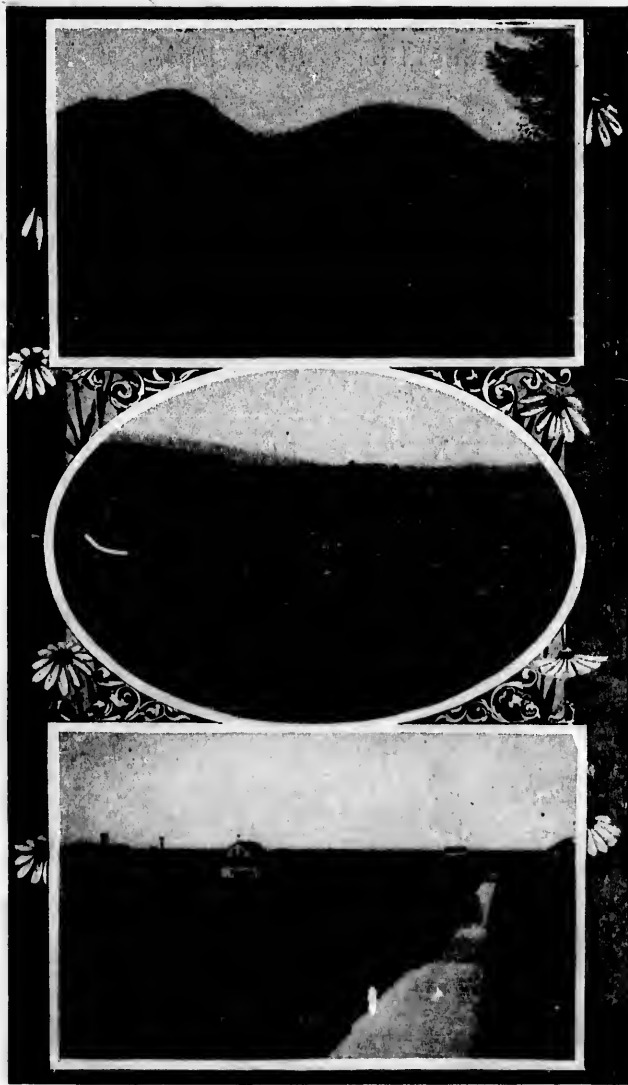
SEALING OPERATIONS IN BRITISH COLUMBIA SINCE 1890.

	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	\$418,666	\$513,000	\$384,200	386,600	\$419,360
4 Number Whites.....	716	716	961	847	888	705
5 " Indians.....	678	336	571	432	578	854
6 " Canoes.....	250	.....	280	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.

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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

**Agricultural
Districts.**

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

Outlying Areas.

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

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

Improved Farms. 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.

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

Farming Described. 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

Changed Conditions. 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

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.

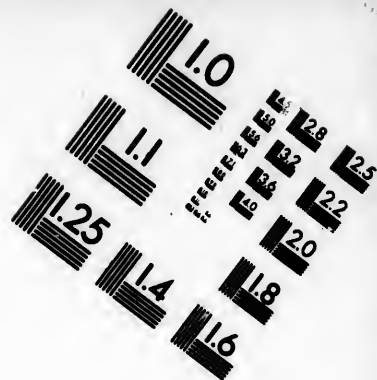
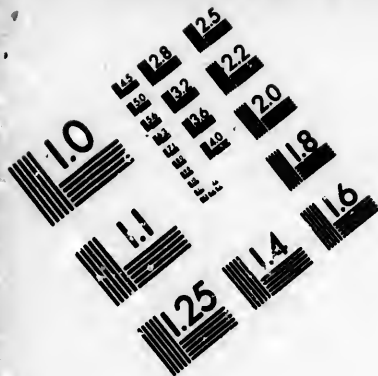
Climate is, of course, a factor which always affects the agricultural conditions of any country—is, in fact, in itself one of the main factors. Elsewhere, this subject has been dealt with fully. As will have been seen there are several distinct climatic zones in the Province, and the treatment of agriculture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

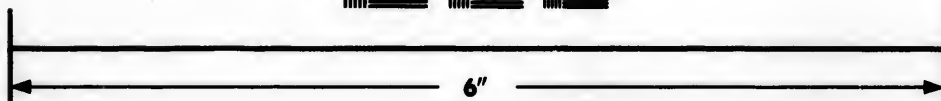
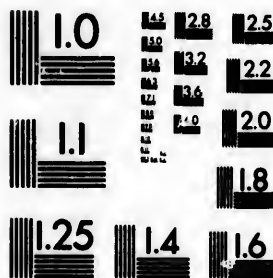
Adverting to insect pests and plant diseases, these have been of recent importation, coming with nursery and fruit shipments from the East and South. Previous to that the farmers enjoyed peculiar freedom from insect enemies, blight or disease. Once here, however, they made rapid progress. In their eradication 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





**IMAGE EVALUATION
TEST TARGET (MT-3)**

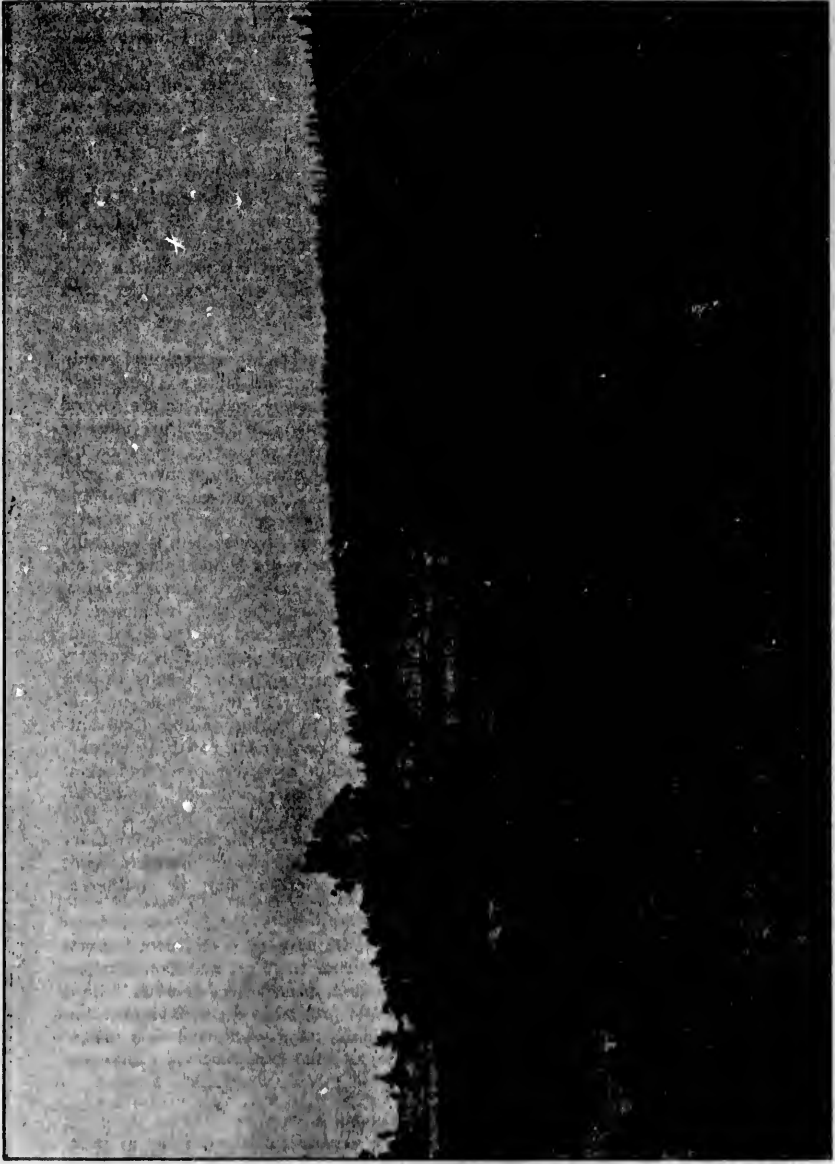


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kernel is too soft for milling purposes, and in limited quantities is mainly valuable for feeding chickens; fruit and vegetables requiring plenty of heat and sunshine to mature them—grapes, peaches, nectarines, almonds, tomatoes, water melons, and 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.

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

The Coast
Considered.

Eastern vs. Local
Experience.

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.

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.

Special Products. 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.

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 predominant 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.

Soils and Sub-soils.

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 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.

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

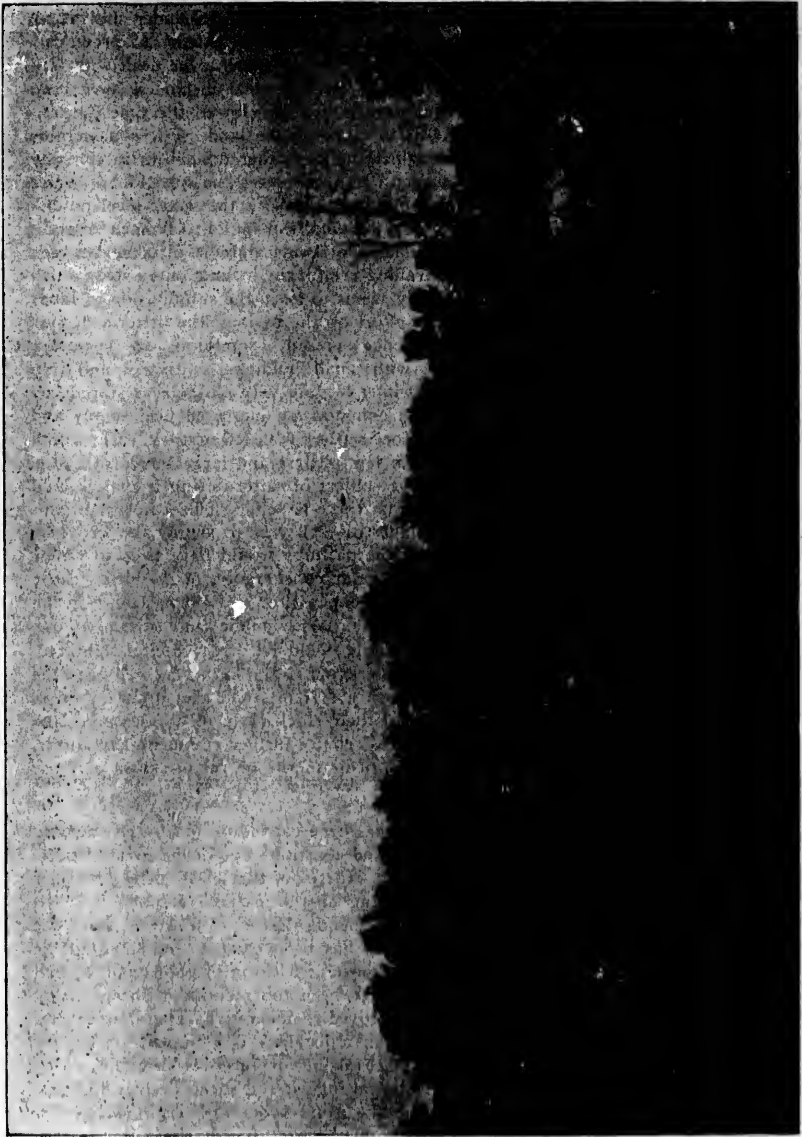
**Drainage and
Irrigation.**

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.

**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.



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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.

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.

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



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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.

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.

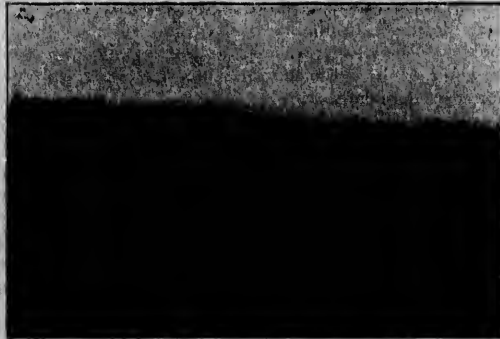
Dairying. Blue jays and robins are complained of by orchardists, and owls sometimes infest the poultry yard. In the interior irrigation is a problem; and on the Lower Mainland dyking and draining are important considerations. The difficulty and expense of clearing land have not been overlooked. Indeed, 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.

Farmers' Drawbacks. 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.

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.



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.

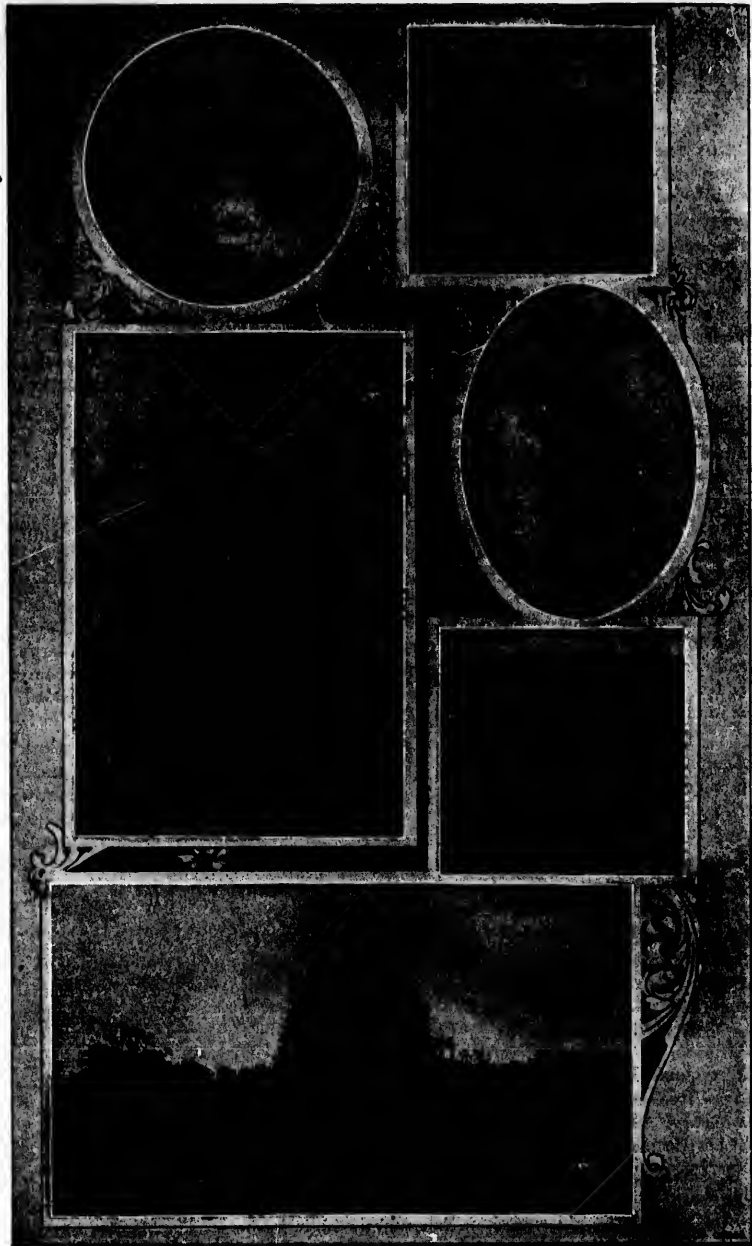
There are, however, several large areas of land which can be reclaimed with advantage for a comparatively small sum per acre. Some of these are already reclaimed, others are in process of reclamation, and the day is probably not distant when the remainder will be taken in hand.

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

At Agassiz.

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.

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.**

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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.

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.

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.

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 1830; 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.

Matsqui
Flats.

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.

On the west of the Pitt are the two areas of Coquitlam separated from each other by De Bovillie 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.

Coquitlam.

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.

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.

Other
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.

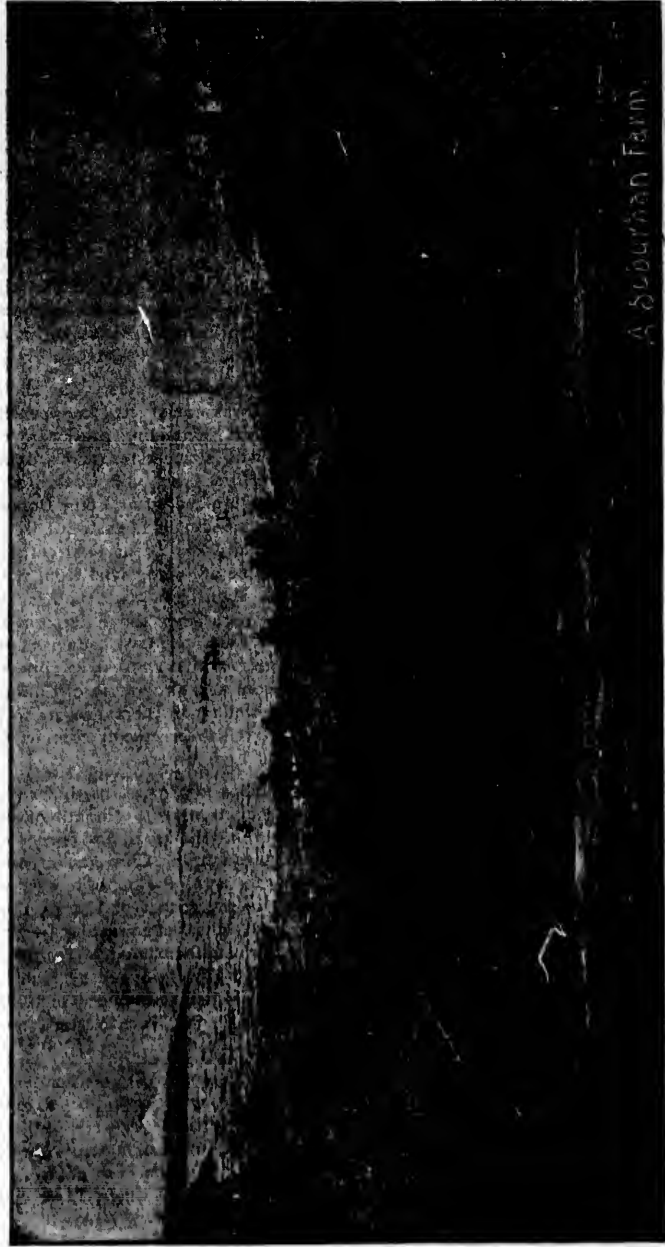
The Delta lands are affected by the tidal waters of Boundary Bay and those of the Fraser River. Several years ago a dyke was constructed commencing at the south-easterly corner near the Semiahmoo trail, extending southward to the mouth of Big Slough. Here a dam was built with sluice-gates, and a dyke, 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

Delta System. 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.

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

Richmond Municipality. 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.

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



A Suburban Farm.

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.

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.

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.

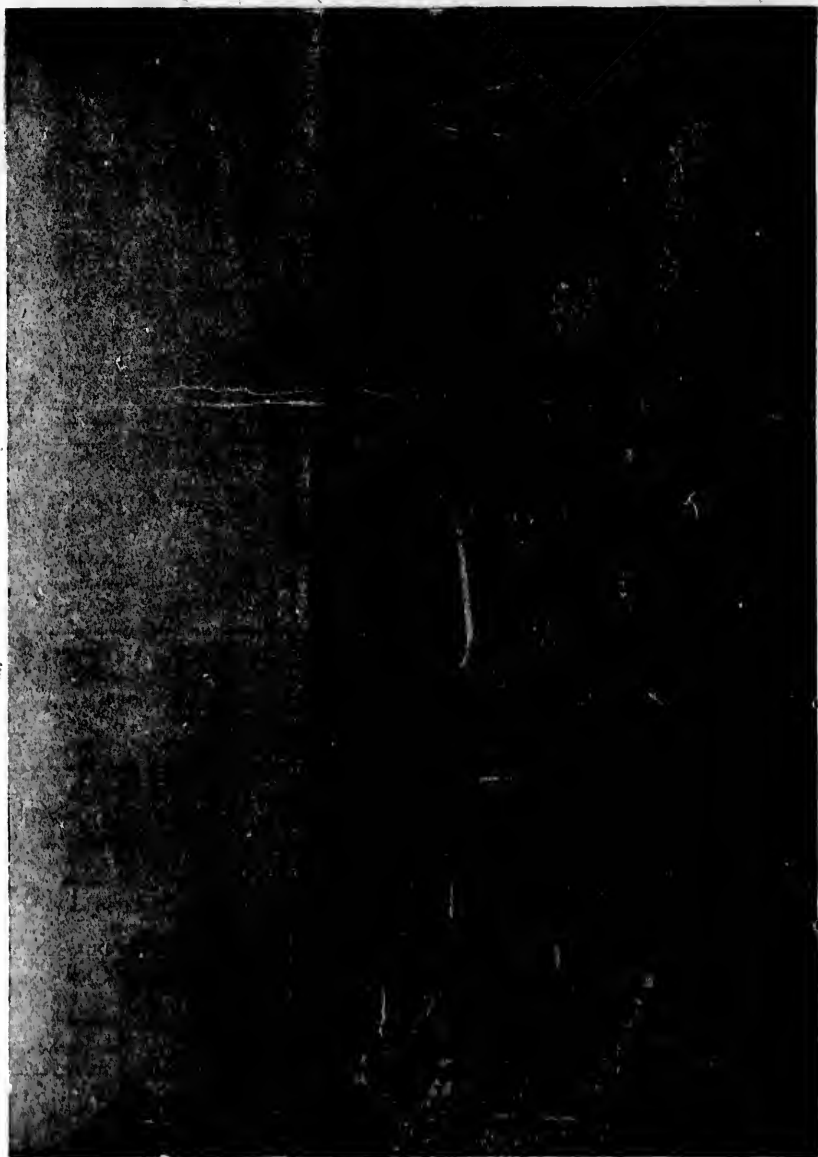
This area of 45,000 acres is sub-divided by natural topographical features into five sections, varying in extent from 8,000 to 10,000 acres each.

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

A Suburban Farm.

(The property of Dr. John Duncan, Victoria.)

GLENGARRY FARM, METCHOSIN.



SEEDING, OKANAGAN.

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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.

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.



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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

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.

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.

Flax
Growing.

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.

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.

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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.

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

Forestry. 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 spaces, 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. D. M. Eberts,
Attorney-General.

Hon. C. E. Pooley, President Council.

MEMBERS OF THE PROVINCIAL EXECUTIVE.

PRICES OF PRODUCTS.

REGARDING the price of products, it is very difficult to arrive at what is an average price, which would apply over any considerable area of the Province or any period of time. The marketing of local produce has not yet been systematized in the same way as that of outside produce. The supply is much more irregular and the facilities for reaching market are comparatively less adequate and perfect. There is, also, the difference between the prices received in a retail way and in job lots at a river bank. Either one given by itself without explanation would be misleading. Then again the prices received by individual ranchers in Cariboo,

Not a Galde.

Lillooet, East Kootenay and the southern part of Yale, if given without reference to the conditions governing sale, would lead to extraordinary misapprehension. In these places farmers are much isolated, their farms being far apart. There is only a local demand, and a limited demand at that, yet prices are very high compared with quotations at the Coast, because little is grown and the demand is limited as well. It would, therefore, for practical purposes, afford but little information to give the prices paid at many interior points, and they are not referred to. What has been considered of much more value are the average prices at New Westminster, where the only regular and successful market has up to the present been established, and they will serve as a fairly good guide to those obtaining farm produce on the Lower Mainland and Coast generally. At Vancouver, Victoria and Nanaimo, although there are market houses at the former two, most of the farmers' produce is retailed by grocers and other dealers, and the prices paid to the farmers are not easily obtained.

Quotations at New Westminster are:—

Butter—summer, 17½c.; winter, 22½c. to 25c. per lb. Eggs—summer, 16c.; winter, 35c. Poultry—Spring chickens, \$3 per dozen; hens, \$4.50 per dozen; young ducks, \$4.50; ducks, \$5.50; turkeys, 17½c. per lb.; geese, \$1 apiece.

Beef—fall, 5½c. per lb., summer, 7c. to 7½c.; mutton, 7c. to 8c.; lamb, 8c.; veal, 6c. to 8c. (7c. being an average); pork, 5c. to 7c.

Potatoes—fall, \$12 to \$14 per ton; mangolds, \$7; carrots and turnips, \$8; onions, \$1.25 to \$1.50 per 100 lbs.; parsnips, 1c. to 1½c. per lb.; cabbages, ½c. to 1c. per lb.

Apples—\$1 to \$1.25 per box of 40 lbs.; pears, \$1; cherries and small fruits vary very much and are from 5c. to 8c. per lb.

Taking Ladner's Landing as the point most central in relation to the four cities of the Coast, the following is a fair average of the prices of oats, hay, wheat, potatoes and carrots for the years 1895-96: Oats, \$18 per ton; hay, \$8; wheat, \$22; potatoes, \$8; carrots, \$6.

Milk is supplied by dairymen at from 8c. to 10c. per quart.

For three or four years, owing to competition from Washington, Oregon and California, where prices were very low and the markets in the state of chronic congestion, prices in British Columbia have ruled correspondingly, but during the latter part of 1896 and the present year a very great improvement has taken place and produce is in demand.

This is owing to a general improvement in the business situation, and to a large extent, the mining activity, as a factor in business, is responsible for it.

NOTE—Prices, since the above was written, have advanced all round.—Ed.

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MEMBERS OF THE PROVINCIAL EXECUTIVE.

LEGISLATION AFFECTING AGRICULTURE.

A GOOD deal of attention has been paid to the subject of agriculture from a statutory point of view, and the interests of the farming community have been carefully looked after, the legislation affecting them being developed, as in the case of other interests, as their requirements were made apparent from time to time.

The provisions for the regulation of the Department of Agriculture and for defining the powers and duties of the Minister of Agriculture and other officers of the Department will be found in the "Department of Agriculture Act." The Act also contains provision for the appointment of a Statistician, and for the collecting, abstracting and tabulating of statistics and information of public interest; a general report being presented to the Minister at the close of every year. All

Agricultural Department. persons engaged in agricultural, horticultural, and pastoral pursuits, and the officers of all societies dealing with these and allied subjects, are required to supply to the Statistician, in reply to his official enquiries, details, statistics and information regarding the matters within their cognizance to which such enquiries relate.

Provision is made for the interchange between the Federal Authorities and the Provincial Department of information and statistics relating to the subjects above mentioned.

For the prevention of the running at large of certain animals and the prevention of injury by and to domestic animals, the Animals Act contains provisions restricting the running at large of certain animals, and provisions to prevent injury by dogs, and for the arrest and sale of animals unlawfully at large. It is

Animals. also enacted that in any action brought to recover damages for injury caused by animals of a domestic nature it shall not be necessary to prove that the owner of the animal knew or had the means of knowledge that the animal causing the injury was of a vicious or mischievous nature or accustomed to do acts causing injury.

These and cognate subjects are dealt with in a series of Acts to which only the briefest reference is here possible.

In regard to dairying, provision is made by the Dairymen's Association Act for the formation (a) of a Provincial Dairymen's Association having for its object the general advancement of dairying throughout the Province; (b) the local Dairying Associations known as cheese and butter associations for the purpose of carrying on the business of manufacturing cheese and butter

Dairying and Cattle Farming. and certain objects incidental thereto, or which may profitably be combined therewith; and (c) the establishment of creameries on the co-operative system, which, when so established, may, on complying with the requirements in the Act contained, obtain Government aid by way of loans to the extent of a sum equal to one-half the actual cost of creamery buildings, plants and fixtures, such loan to bear interest at the rate of five per cent. and to be re-payable in three installments, the first at the expiration of two years and the remaining installments yearly, so that the whole loan be paid with interest within four years.

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

In regard to cattle, the Cattle Farming Act makes provision whereby the owners of cattle may entrust them to a farmer under registered agreement for the purpose of securing their care and increase, the effect of the registered agreement being to protect the entrusted cattle from all claims against and liabilities of the farmer to whom they are entrusted. The cattle lien Act confers upon registers of cattle and animals and keepers of livery stables a lien upon cattle and effects left with them for the value or price of any food, care, attendance or accommodation furnished such cattle and animals. The Cattle Act contains elaborate provisions for the protection and marking of cattle. Regarding the establishment of registries for and the mode of registration of brands and marks upon cattle; provides penalties for contravention of the Act; provides a mode of transfer of the brands and marks; for the inspection of hides (it being provided that no slaughter of cattle shall take place except at a definite and recognized place of slaughter); and also provides for a record for cattle shipped from east of the Cascades into the remaining portions of the Province, so as to guard against the stealing of cattle; and by the Breeding Stock Act and Cattle Ranges Act and the Act respecting island pasturage, 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.

For the prevention and eradication of disease among cattle the Contagious Diseases (Animals) Act contains provision for the appointment of Inspectors for the inspection of cattle and for the quarantining, and wherever necessary the destruction of cattle infected with disease, the provisions of the Act being in an especial degree for the prevention and eradication of tuberculosis and pleuro pneumonia in cattle, and to guard against the transmission of disease by the use of milk.

Associations and societies in respect of the following classes of subjects: (a), Agricultural and Horticultural; (b), Benevolent and Friendly; (c), Co-operative; (d), Industrial and Provident; and (e), Investment and Loan, may be formed under the provisions of the Act relating to each of these subjects respectively. Space does not permit detailed reference to these statutes, but it may be said that the Provincial legislation in this behalf has been in an especial degree comprehensive and well considered, and has in operation afforded the most satisfactory results.

In view of the fact that there exist throughout the Province large tracts of land which can be rendered available for cultivation by the undertaking and construction of adequate dyking and drainage Acts, careful and extended provision is made by the Drainage, Dyking and Irrigation Act for the appointment of Commissioners and their investment with powers to undertake and carry out works of the above character, and by the Fencing Act and the Line Fences and Boundary Water Courses Act provision is made for the delineation of the boundaries of land, the maintenance of proper fencing and the adjustment of disputes between adjoining land owners.

For the provisions relating to the pre-emption of land, etc., see "Crown Lands" in the chapter on "Forestry."

At the last session of the Legislative Assembly of British Columbia an Act was passed providing for the establishment of Farmers' Institutes, which may be organized by petition to the Minister of Agriculture, signed by fifteen persons resident in any district in which it is proposed to organize.

The objects of these Institutions are the encouragement and improvement of agriculture, horticulture, arboriculture, manufactures, and the other useful arts. The annual fee to each member is fifty cents, which the Government supplements as follows: To each Institute whose membership can be shown to amount to fifteen to one hundred, a sum of fifty cents for each paid-up member, and twenty-five cents for each paid-up member over one hundred, 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 in each of the three divisions referred to, and also of a Central Farmers' Institute for the whole of the Province, and also for the amalgamation of the Fruit Growers' Association, or any existing agricultural association, with the Central Farmers' Institute, for the purpose of carrying on the work of both in conjunction, if deemed desirable. Authority is taken under the Act by the Lieutenant-Governor-in-Council, to frame Rules and Regulations, which define in greater detail, the work of the Institutes and the system under which they may operate. In connection with this Act, which is largely based on Acts in Ontario and Manitoba, an important departure has been made as follows:—

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

**A Co-operative
Feature.**

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 pertinent 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 ten dollars 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 twenty-five per cent. of the capital stock be subscribed at the time of making application.

One 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*. The Board has been in existence for several years and the members have been very active in the

**Inspection,
Quarantine.**

performance of their duties of inspection and quarantine, and their efforts both in an educative and preventive way have been largely successful.

In respect to the Dominion regulations for this Province relating to the inspection of stock entering Canada which are contained in an Order-in-Council promulgated on the 25th of January, 1897, they are too elaborate to be given here. Suffice it to say, complete regulations exist governing all classes of stock entering the Province and are capable of very rigorous enforcement.

Under the Canadian Customs tariff, the following free goods are admitted: "Wearing apparel, household furniture, books, implements and tools of trade, occupation or employment, musical instruments, domestic sewing machines, live stock, carts and other vehicles and agricultural implements in use by the settler

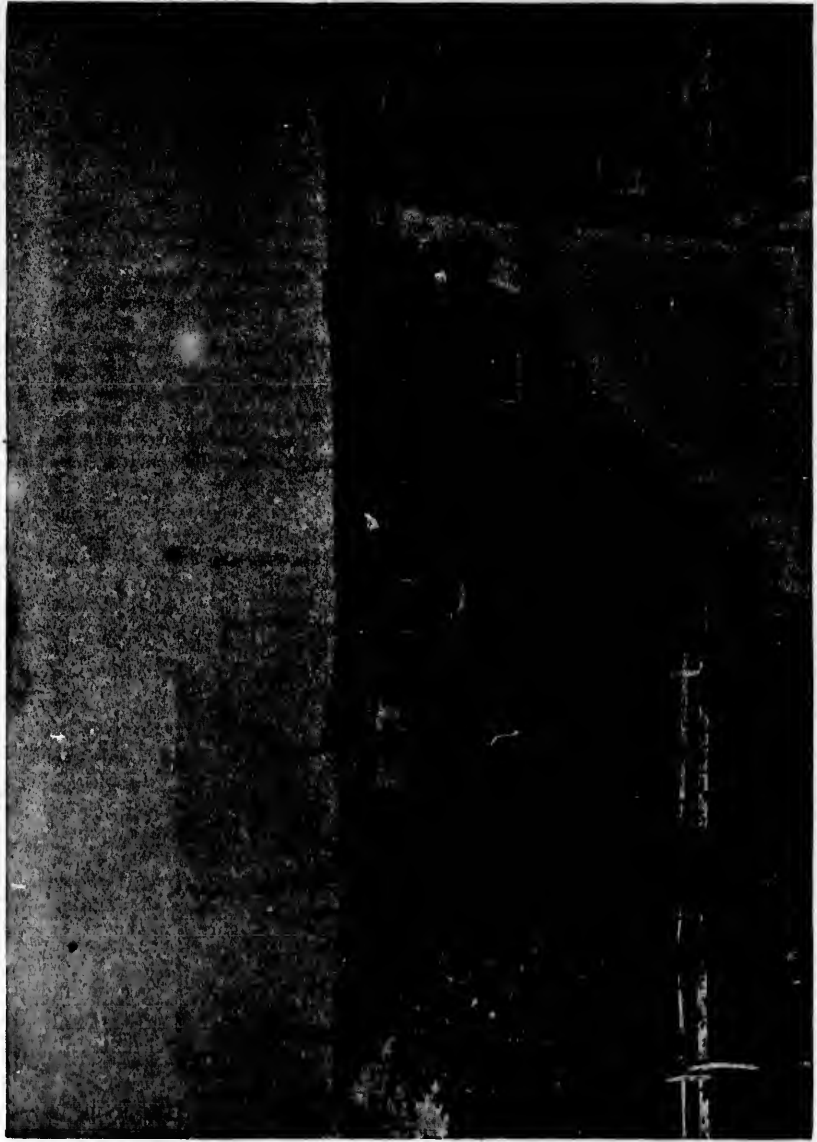
Settlers' Effects. for at least six months before his removal to Canada, not to include machinery or articles imported for any use in any manufacturing establishment or for sale; also books, pictures, family plate or furniture, personal effects and heirlooms left by bequest: provided that any dutiable article entered as settlers' effects may not be so entered unless brought with the settler on his first arrival, and shall not be sold or otherwise disposed of without payment of duty until twelve months' actual use in Canada: Provided, also, that under regulations to be made by the Controller of Customs, live stock, when imported into Manitoba or the North-West Territories by intending settlers, shall be free until otherwise ordered by the Governor-in-Council."

The following is the authorized number of live stock allowed to be imported under the conditions of the excerpt above quoted:

Horses, one to every ten acres, sixteen in all allowed; cattle the same; sheep, one to each acre; 160 in all allowed; swine the same.



ARROWHEAD—WEST KOOTENAY.



JUBILEE FARM—DELTA.

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LAND CLAUSES CONSOLIDATION ACT.

BY an ordinance known as the "Vancouver Island Lands Clauses Consolidation Act, 1863," taking effect on the 25th of February, 1863, the English Lands Clauses Consolidation Act, 1845, was applied to the former colony of Vancouver Island, with necessary adaptations to render its provisions applicable to local institutions and circumstances. This ordinance was consolidated as Chap. 65 of the Consolidated Acts, 1888, and remained in force in Vancouver Island until the passing of the Lands Clauses Consolidation Act, 1897. This latter Act applies to the whole Province, and contains the provisions of the

Complete
Procedure.

English Act of 1845, with the necessary adaptations introduced in the ordinance above referred to, and with such further amendments as are necessary to insure the proper working of the Act under the local conditions as at present existing. The Act contains a complete procedure relative to the acquisition of lands required for undertakings or works of a public nature, as well by agreement as by the exercise of statutory powers of eminent domain, and its provisions are, by the Water Clauses Consolidation Act, 1897, expressly made applicable to the procedure upon the exercise of any of the powers relating to the acquirement of lands and property thereby conferred upon municipalities and incorporated companies.

The "Crown Franchises Regulation Act, 1897," makes provision for determining the rights to charters, franchises and offices held from the Crown. Proceedings under the Act may be instituted by the Attorney-General, or by the Attorney-General with the leave of the Supreme Court, on behalf of any person desirous of bringing proceedings under the Act, termed a "Relator."

Qua Warrants.

In any action brought under the Act, the Supreme Court may adjudge:

- (a.) That any defendant be ousted and excluded from any office by him usurped, intruded into or unlawfully held, and that such defendant deliver up to the person, and within the time appointed by the Court, all property, books, documents, papers, and effects in his possession, custody, or power, belonging, relating or appertaining to the said office; and that such office vest in the person by law entitled thereto, or that the procedure by law provided for the vesting of such office be followed to ascertain the person lawfully entitled thereto;
- (b.) That any person or persons be restrained from doing and exercising acts as and the powers of a corporation without being legally incorporated;
- (c.) That any corporation has, by any act done or omitted, surrendered or forfeited its corporate rights, privileges, or franchises, and that such corporation be dissolved and wound up under the Statutes regulating the winding up of corporations; or that any corporation be restrained from contravening or offending against its Act of Incorporation, or against any Act or Acts under the provisions of which it has been incorporated; or against any Act or law for the time being in force in this Province; or
- (d.) That any corporation has surrendered and forfeited its powers, privileges, and franchises through non-user during the full term of three years.

The Companies Clauses Act, 1897, relates to the constitution and management of joint stock companies empowered to carry out undertakings of a public nature, and embodies the provisions of the English Companies Clauses Consolidation Act, 1845, an Act apparently in force in this Province so far as applicable by virtue of

Companies'
Clauses.

the Statute respecting the application of English law. On the second reading of the Act, during the last session of the Legislature, it was stated that the Act was brought forward with special reference to the provisions of the Water Clauses Act, 1897; and in this last-mentioned Act it is provided that any company desiring to avail itself of the powers and privileges thereby conferred and created must be specially incorporated so as to be exclusively governed by the Companies Clauses Act.

WATER CLAUSES CONSOLIDATION ACT.

THIS is an Act passed during the session of 1897, confirming to and declaring to be vested in the Crown all unrecorded and unappropriated water and water power in the Province, and making provision for the acquirement and regulation of water rights for the following classes of objects, namely, ordinary, domestic and agricultural purposes; mining, including milling, concentrating and smelting; the establishing of water works systems by municipalities; the supplying of water to municipalities and unincorporated localities by companies; and the application of water power to electrical, industrial and manufacturing purposes by power companies. It repeals the provisions relating to the acquirement of water rights of the Mineral Act, 1896, the Placer Mining Act, 1891, and the (Crown) Land Act.

Water Rights
for
Various Purposes.

The first part of the Act, after declaring the rights of the Crown, provides that no right to the permanent diversion or exclusive use of water can be obtained by prescription, and that the Lieutenant-Governor in Council may promulgate general rules and orders fixing and providing for the collection of rents, tolls and royalties for the use of water; these are to be fixed for a period of three years, and to be thereafter subject to triennial adjustment.

Then follow parts 2, 3 and 4 of the Act respectively, making provision for:

- (a) The acquisition of water by record for domestic, agricultural and mining purposes;
- (b) The supplying of water by water works systems to cities, towns and incorporated localities; and,
- (c) The acquisition of water for electrical, industrial or manufacturing purposes by power companies.

The principle of the Act is to render the water and water powers of the Province available to the fullest extent in aid of Provincial development; to limit the amount of water held under any record to an amount actually necessary for the carrying out of the object for which the record is obtained; to give priority where necessary to applications for the obtaining of water for domestic and agricultural purposes; and to provide means whereby water records can be adjusted so as to prevent any water or water power being locked up, and prevented from being applied to a beneficial purpose. To review the procedure provided in respect of the obtaining and regulation of each of the classes of rights above referred to would require a great amount of space, and would involve more reference to detail than is expedient in a work like the present.

The Principle
of the Act.

In order to obtain water records for electrical, industrial or manufacturing purposes, a company must incorporate pursuant to the provisions of the Act relating to specially incorporated companies; and before commencing its works must obtain from the Lieutenant-Governor-in-Council a certificate setting forth that the proposed undertaking of the company has been approved. These power companies are (except as to the procedure to secure incorporation) governed by the "Companies Clauses Act, 1897."

Part V. of the Act contains procedure for the expropriation and acquisition of land in aid of the exercise by municipalities or companies of privileges and powers acquired under the Act. It guards against an oppressive exercise of a power to expropriate; and provides that such power shall be carried out under the provisions of the Lands Clauses Consolidation Act, 1897.

COMPARATIVE STATEMENT OF AGRICULTURAL IMPORTS.

	30th June, 1894.	30th June, 1895.	30th June, 1896.
	Value.	Value.	Value.
Live Stock	\$ 438,041 00	\$ 159,573 00	\$ 282,401 00
Meats, etc.	482,824 00	495,671 00	445,706 00
Breadstuffs, and products of...	651,206 00	650,664 00	642,099 00
Fruit and Vegetables.....	198,786 00	169,309 00	187,267 00
Trees and Shrubs.....	10,729 00	3,187 00	3,158 00
Oils.....	16,748 00	11,742 00	22,011 00
Dairy Products.	659,843 00	513,767 00	579,221 00
Miscellaneous	164,177 00.	157,386 00	200,435 00
Total.....	\$2,422,354 00	\$2,161,299 00	\$2,362,298 00



NICKEL PLATE MINE, ROSSLAND.



LOOKING DOWN HALL CREEK, FROM NEAR THE WAGNER GROUP—TROUT LAKE DISTRICT.



CONCENTRATOR—LANARK MINE, ILLECILLEWAET.

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 source of 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.

A Source of
Disappointment.

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 favourable 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.

The writer remembers, not longer than eight 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 unfavourable. 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 labour 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. It is a country of enormous distances and of rugged

The Explanation
of it.

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

Splendid
Progress.

produce a profit, the *sine qua non* of all mining operations. 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 who were 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 decade. 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.

It was fortunate, and, in fact, this gives the key-note to the great activity in mining matters in Kootenay at the present time, that the lodes discovered on Toad Mountain, in the Slocan District, and at Rossland, were so rich in character that at the outset shipments of ore could be made at such an enormous cost, owing to the lack of facilities of transport, and at the same time return a handsome profit. Ore that brought from \$50 to \$200 a ton at the smelter, and was known to exist in large and well-defined lodes, at once solved the problem of communication and set at rest the future of a country so rich. Capital hesitated no longer.

*EARLY HISTORY OF MINING.

HOW recent the knowledge of our mineral wealth is may be judged from the fact that Robt. Greenhow, in 1844, wrote as follows: "Oregon, indeed, contains land 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 labour for the benefit of the few. With regard to commerce, it offers no great advantages, present or immediately prospective. It contains no harbour 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
Territory.

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, now the main base of supplies for the Pilot Bay smelter, 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.

* * * *

The early discoveries of gold in small quantities range between the years 1850 and 1857. In 1850 specimens came from Vancouver Island and Queen Char-

*The above, from the pen of the author, appeared in the Christmas number of the "B.C. Mining Record," December, 1895, and in succeeding issues.



THE "LIME DYKE"—HALL CREEK, TROUT LAKE DISTRICT.



CEMENTED GRAVE.—HORSEFLY MINE, CARIBOO.

lotte 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 Harbour, 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 harbour 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.

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.

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 River 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

Discoveries at
Queen Charlotte
Islands.

The
Rush of 1858.

Results of
"New Finds."

been a decline until the present mining activity began, which, roughly stated, was five years ago. The effect of the activity of the last four or five years was not shown until last year for the reason that it was mainly directed to development of quartz veins. From this time onward we may expect to see the output steadily increasing.

Coming back to the years 1858-9, 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 labourious 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. 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 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 head waters 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 finally 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, and though not meeting with the returns with which they were rewarded in the Fraser River, and Lightning, Williams and other creeks in Cariboo, the returns have, nevertheless, been sufficient to attract them year after year. At the present time (Dec., 1895) the Yukon is a prospectively rich country, and during the last year or two, many adventurers have gone in, and the success of their efforts has been such as to attract the attention of the Government of Canada, the field being considered of sufficient value and importance to justify its borders being protected by detachments of the North-West Mounted Police. Great hopes are entertained of this most northerly mining district, and when easy communication by rail or otherwise is established, it is anticipated that results not second to Cariboo itself will be achieved. [Which is proving more than true, as the present excitement is the result of even greater finds than those of the early Cariboo days.—ED.]

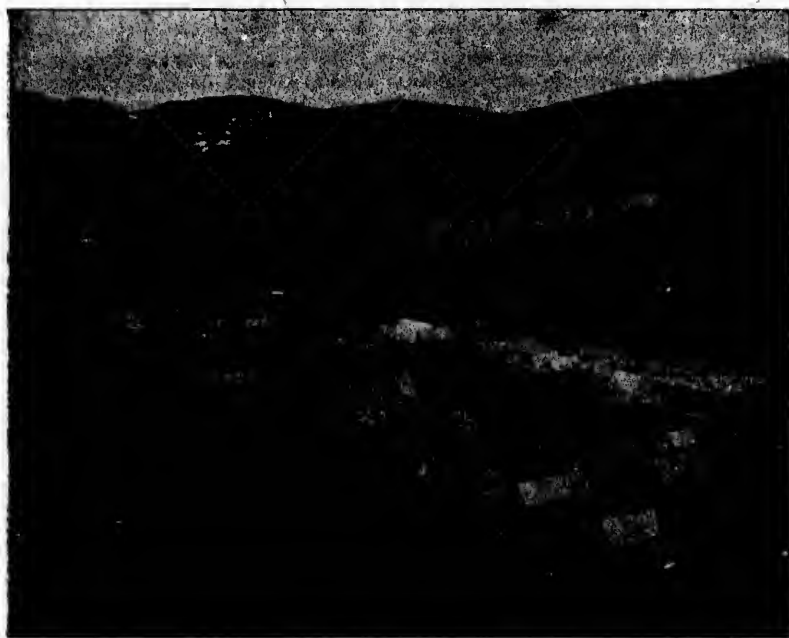
In 1885, Granite Creek, a tributary of the Similkameen, afforded evidences of rich placers, and a small "rush" occurred, and although not so rich as was supposed at first, it has ever since occupied the attention of prospectors, and during the past two years has experienced very considerable exploitation.

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 hydraulic mining. 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. The latter period is one to which we will devote more particular attention in future articles. It may be called the railway era of British Columbia.

The extensions of railways and the branch lines in the various mining districts in the southern portion of Kootenay has made possible the development of which we hear so much to-day, and which promises in the near future to give us rank with the great mining countries of the world.

As to the earlier period referred to a great deal is given in Bancroft's History of British Columbia, more particularly with reference to the excitement of Cariboo. Dawson, from whose pages much of the foregoing has been condensed, says that the details there collected may be consulted with advantage, and have been frequently referred to in connection with localities mentioned in later pages of his report. It must be added, however, that many of the statements quoted by Bancroft must be accepted with caution, having been derived often from newspapers of the time and other sources not always trustworthy, but which it has naturally been impossible for the compiler to check, and many of which call for an intimate knowledge of the country to properly correlate.

Dawson, in the report referred to, in concluding his historical summary of events up to the time when it was written, says:—



BARKERVILLE, CARIBOO, B.C.



CENTRE STAR GULCH, ROSSLAND, B.C.

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"While it may now be safely affirmed that gold is very generally distributed over the entire area of the Province of British Columbia, so much so that there is scarcely a stream of any importance in which at least 'colours' of gold may not be found, the enumeration of the principal discoveries of mining districts

Gold Everywhere. shows very clearly that most of these are situated along the systems of mountains and high plateaus which comprise the Purcell, Selkirk, Colorado and Cariboo ranges, and the north-west continuation lying to the south-west of the Rocky Mountain range, properly so called and parallel in direction with it. Of all the gold producing districts that of Cariboo has proved the richest and most continually productive."

We have thus hastily glanced over a comparatively speaking wide stretch of history, the details connected with which are of extreme interest, but which must be dealt with by sections to be fully appreciated.

ALBERNI AND THE WEST COAST.

LITTLE has been done as yet in demonstrating the mineral wealth of Alberni, although for a time it was the scene of a good deal of activity in prospecting.

The principal development has taken place on the Consolidated claims, Mineral Hill, where the Messrs. Dunsmuir expended considerable money. A brick of gold was extracted, but, not meeting with the expectations at first formed, these gentlemen relinquished operations. Development has been undertaken by the original shareholders of the mine, however, and, it is stated, with prospects of success.

Prospecting has been continued along Alberni Canal, on Barclay Sound, and up the West Coast, where a number of promising finds have been made, the

Rich in Copper. ores generally carrying a large percentage of copper, and some gold. Many of these copper claims are situated on the seashore, and as such, owing to the increased demand for copper, will, if capable of development into mines, prove of exceptional value.

It may be here stated that the coasts of both Vancouver and the Mainland of British Columbia contain many valuable mineral deposits, including iron, quicksilver, and slate, marble and other building stones. These, with the indications of the existence of the precious metals, which recent discoveries convey, afford hopes of a future, all the conditions of which are favourable to industrial development on a large scale. The existence of great bodies of high quality of iron ore at several points, with abundance of coal, timber and structural materials, generally gives promise, when the other essential conditions are favourable, of blast furnaces, smelters, and those concomitants of industrial development which have added so much to the wealth of countries where similar resources exist in contiguity. Owing to the travel northward, the building up of the fisheries on the coast, the rage of prospecting and the general activity being displayed in opening up new districts, we may look very soon to the coast line being thoroughly explored and examined, and to a more definite knowledge of its capabilities being obtained.

Regarding Alberni, and, to some extent, the west coast, the only official reports have been made by Mr. Sutton, in 1895, and by Mr. Carlyle, Provincial Mineralogist, in the spring of 1896. The former treated it geologically and described the formations. From Mr. Carlyle's report the following excerpts are taken, and there is little to be added since the date of his Bulletin, the purport of which was that sufficient had not been accomplished to demonstrate the value of the claims visited. He says:—

"All mining or prospecting, except on the placers on China Creek, as seen by me, was in igneous rock, in most cases, I believe, in diorite or rock closely allied, rock nearly everywhere carrying more or less iron pyrites, that led some prospectors to report exposures of such rock as ledges of great width, and in many cases to call this fine grained or aphanitic rock, quartz, when, in fact little quartz was seen apart from the regular quartz veins to be described, although the feldspar that mostly constitutes this rock is very acidic or high in the percentage of silica. Prospectors find this country very difficult to explore on account of its being densely covered with heavy timber and thick underbrush, especially near the coast, so that it is only by pushing up along the streams that they have picked up the clues that have led to many of the locations now made. Where so little development work has been done, and so little of the ore really tested, it is next to impossible for any one to reach a safe conclusion as to the value and extent of the ore now exposed, and all interested in Alberni are awaiting the results to be determined by more underground work, the milling tests soon to be possible on the erection by Mr. James Dunsmuir of the prospecting stamp mill at the foot of Mineral Creek, and the first clean-up on the placers where hydraulic is being inaugurated.

"The drift of these few remarks is to the effect that in this yet untried mining district there are needed much more work to ascertain the size and the character of the ore bodies, and also many careful mill tests, prosecuted with intelligence and experience, to decide not only the value of the ore but its treatment qualities, and much can be done along these lines without an excessive outlay of capital, thorough experience indeed being almost more requisite than money.

"About a mile up the Saritas River, on the left bank, is a steep bluff of diorite, heavily covered with timber and underbrush, showing a considerable amount of rock more or less permeated with magnetite, iron and copper pyrites and pyrrhotite, which in places where a few shots had been put in showed in solid masses of basic sulphides. As to the extent of this deposit no definite idea can yet be formed until some work is done.

"On a small neck of land on the east side of Cappe Island, near a good sheltered anchorage, a shaft has been sunk fifty or sixty feet on a ledge of magnetite that carries more or less sulphides. This ledge out-crops irregularly along the shore, some parts very red or reddish-brown proving on fracture to be solid pyrites.

"On Sechart Peninsula much prospecting has been done by Mr. Anderson, who has built good trails to different points, and has disclosed by stripping several large exposures of iron ore. The first claim visited was the Lord of the Isles, altitude about 950 feet, where three men were engaged uncovering a small exposure of magnetite that lies in what appears to be diorite and next to a very extensive area of limestone, that at the point of contact with the eruptive rock is completely crystallized into large coarse crystals. On the Crown Prince, 800 to

900 feet altitude, two miles from the wharf, or about three-quarters of a mile from the nearest salt water, a large steep face on the mountain side has been stripped, disclosing much magnetite iron ore, in places in large masses separated by country rock, but no new faces exposed by blasting were seen. Mr. Anderson allowed me to copy the following analyses made on samples of ores:—

"(a.) By E. H. Cook, Cleveland Iron Works, Middlesborough, England: Iron, 66.0 per cent.; manganese, .44 per cent.; lime, 4.00 per cent.; sulphur, .02 per cent.; phosphorus, .01 per cent.; silica, 2.00 per cent.

"(b.) By Dr. O. Worth, Pittsburg, Pa., U. S., October 19th, 1893: Iron, 64.01 to 66.32 per cent.; sulphur, traces to .09 per cent.; phosphorus, .007 to .009 per cent.

"These analyses show a very small percentage of phosphorus, that would rank this ore as a fine Bessemer iron ore.

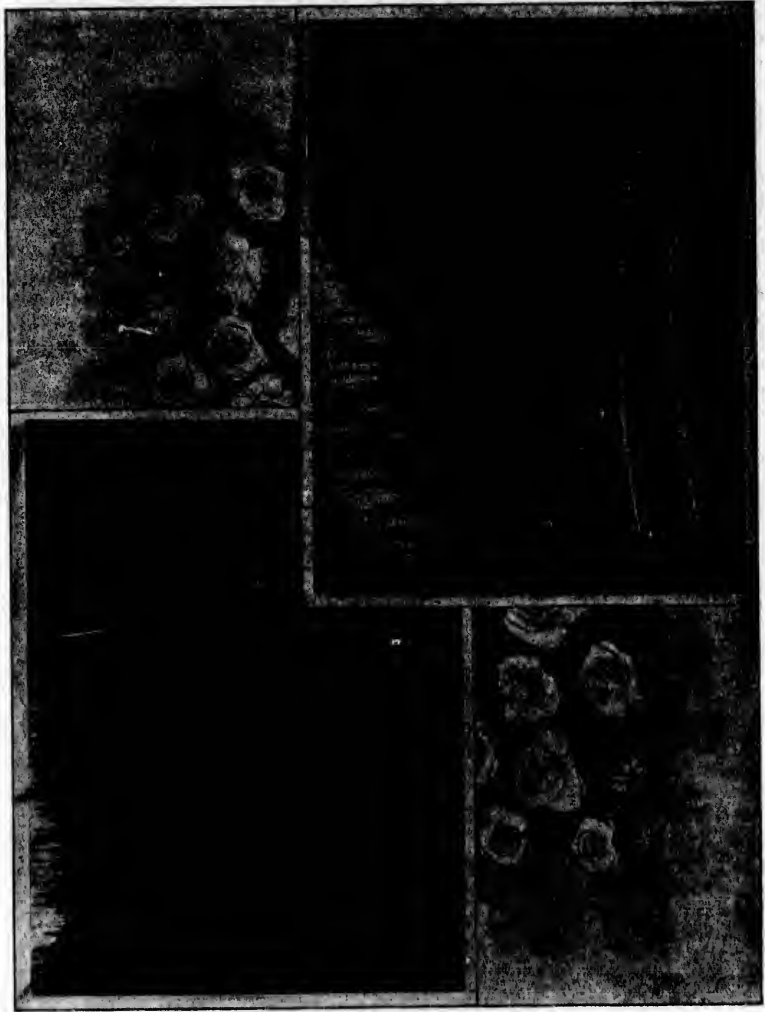
"The Sechart quicksilver claim, half a mile up Pot Hole Creek, which empties into the sea about a quarter of a mile from the wharf, has three tunnels and two shafts close to the creek in which it is reported native mercury was first found by hunters. The rock on the dump appears to be a diorite or a diabase, and some good specimens of the ore were found, which, on being broken, disclosed the cinnabar disposed along the extremely narrow invisible cracks, while decomposed rock was found carrying the metallic 'quick.'"

Along Alberni Canal a number of claims has been recorded, and some development work done on Coleman Creek, Granite Creek, China Creek and Mineral Creek. The principal claims are situated on the last two named. They include those owned by the Alberni Consolidated Mining Co. and the Golden Eagle, concerning which very good prospects are held out. Very good assays have been reported from all of these, and milling tests are awaited to determine more definitely the general value of the ore.

Two hydraulic companies, the Duke of York and Cataract, have expended a good deal of money in developing placer claims on China Creek. It was from this creek that Chinamen for years obtained gold, and the gravel on both sides is said to carry it in every part. Operations have been suspended during the present year.



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HYDRAULIC IN CARIES.

CARIBOO.

MR. H. B. HOBSON, engaged in connection with Cariboo Hydraulicing enterprises, and who has a practical knowledge of the district, contributed an article to the San Francisco "Chronicle" on the 17th of January of this year on the subject of recent development on modern lines. After describing the early working of the placer deposits, he says:—

"Since then the district has had a fitful experience. For a time there was a spurt in quartz, but it developed as a stock-jobbing affair and went through the usual experience of such movements. For thirty odd years Cariboo has consequently been regarded as a 'petered out' mining camp. The old-timers have been digging away in the old claims from which immense volumes of gold dust were taken in early days, uncovering, now and again, a spot of rich ground that had escaped notice before, and prospecting for lost leads on the various creeks heading from 'Old Baldy' or Mount Agnes.

"During the past three or four years, however—that is, since the new developments made in the Kootenay district—Cariboo has shared, in common with California, the attention of capitalists, and money for mining development in and around 'Old Baldy,' the scene of the gold supply of the Frazer valley, has been gradually flowing in. At present it is being diverted to the development of

Recent
Developments.

the deep placers in the district and the washing out of the gold which has been released in times past from its native matrix in the rocks and is lodged in the beds of the living and dead rivers. Perhaps some day capital will branch out and attempt one of the most gigantic engineering feats of the ages—the piercing of 'Old Baldy'—in search of the veins of the precious metal now concealed from the miner's gaze by the forest growth and the dense lining of moss underlying it and covering the entire face of the country, excepting in such places as the miner has removed the placer deposits in his search for gold. Such veins are supposed to be ribboning the famous peak and to have yielded, through the elemental erosion of ages, the metal which enriched the gravel deposits.

"The new era of mining development in Cariboo is manifesting itself on all sides around the base of 'Old Baldy.' It was started five years ago under the direction of Sir William Van Horne, president of the Canadian Pacific Ry., with the view of developing mining properties that would serve as valuable feeders to the

The C.P.R.
Interested.

railroad, besides paying a fair interest on whatever capital might be invested, opening up new territory for capital and industry, and thereby furnishing freight and passenger traffic for the road. The services of J. B. Hobson, a mining engineer of long experience in this State, having been associated with deep-gravel mining in the vicinity of Gold Run and Dutch Flat, were enlisted, and as a result extensive purchases and locations have been made, more particularly on the forks of the Quesnelle River and its tributaries.

"The latter developments made in Cariboo indicate strongly the presence there of the same kind of auriferous dead rivers as mark the flanks of the Sierra

in this State and extend into Southern Oregon, and to which have been applied the name of the Blue lead. The properties which Hobson secured on the Horse Fly and the South Fork of the Quesnelle for the syndicate he represented, composed largely of Canadian Pacific Railway officials, bear all the characteristics of the Blue lead of California so far as the operations already conducted show. Under Hobson's management something like \$600,000 has been spent in the development and equipment of the Horse Fly hydraulic mine and the Cariboo hydraulic mine, the former being situated on Horse Fly Creek, four miles north of the discovery claim of James Moore and his associates in 1859, and the latter four miles east of the town of Quesnelle Forks. The operations in both properties have been on a gigantic scale, establishing beyond doubt the theory which possessed every one of the early prospectors in Cariboo that only with the use of unlimited capital was it possible to develop the wealth of the district.

Horsefly
Hydraulic
Mines.

"Two thousand miners' inches of water was brought from Mussel Creek to the Horse Fly hydraulic mine, through twelve miles of ditch, six feet wide at the bottom, eleven feet at the top, and two and a half feet deep, and two and one-quarter miles of thirty inch steel pipe. The pipe line is laid on the plan of an inverted syphon, and carries this large body of water over three deep depressions.

"The giant has been introduced into these latter-day hydraulic operations in the Cariboo district, and volumes of water quite as large as any used in California in the best days of hydraulic mining here are being handled during the 'open season.' There is no anti-debris law in that Province to interfere with mining operations, nor are there any farming lands in danger of being flooded from the overflow of the rivers. The Fraser and all its tributaries flow in deep beds between high banks or benches where the level or prairie country is traversed, and in narrow, rocky gorges where the mountain ranges are pierced. The navigable waters of the Fraser are too remote from the scene of mining operations to be affected by them, and the fierce floods of spring and summer scour the river channels and keep them at their normal depth. Hydraulic mining is, therefore, possible of the highest and most perfect development in the Cariboo district, with nothing to hinder or to interrupt it except the long and severe winters, during which the snowfall is measured by feet and the thermometer drops often below the freezing point of mercury and sometimes touches a record quite as low as what any Arctic explorer has experienced in the far North.

Conditions of
Mining.

"Almost all of the 'pay dirt' in the placer deposits of Cariboo resembles the material contained in the Blue leads of California. It is a sticky, compact conglomeration of highly washed gravel, sand and clay, with which every placer miner is familiar, and from which when found he always hopes to reap that rich reward for which he is in search. In the Horse Fly hydraulic mine the dirt hitherto worked has been a free-washing gravel, but during last season it changed to a hard, compacted, cemented gravel that must be crushed before washing to win from it all the gold it contains. Since this change presented itself in the face of the pit only a small portion of the gold contained in the cemented gravel piped off has been recovered, chunks of the cemented gravel being found at the foot of the sluices, unaffected by the pipe or the grinding in transit in the sluices. A ten-stamp mill, with a capacity

Cemented
Gravel.

to crush from 100 to 120 tons per twenty-four hours, will be installed on the premises. Mr. Hobson estimates it will cost from \$1.50 to \$1.75 per ton to mine and mill the cement, which working tests show contains from \$4.82 to \$5.56 per cubic yard of gold. The mill will be operated during summer with water power and during winter with steam, as drifting can be carried on winter and summer alike.

"The vastness of the deep gravel deposits of the Cariboo district is shown in the pit of the Cariboo hydraulic mine. The company controls about three miles of the ancient river channel, which is a thousand feet wide between the rims, and the bank of auriferous gravel rises from 350 to 400 feet above the head of the sluices, while it is estimated that from 80 to 100 feet more pay dirt lies between the present workings and the bedrock. The latter cannot be touched until the upper stratum is worked off.

This is the mine that yielded during the last season \$128,000 worth of gold at a total cost of \$85,000. An early setting in of winter is said to have deprived them of the means of taking out from \$50,000 to \$70,000 additional. There were four giants in operation last summer. Two more giants will be put in operation this year.

"How puny the efforts of the hydraulic miners of Cariboo of the sixties were, when they worked with canvas hose and one-inch nozzle pipes, compared with the operations now going on in the district, is shown by the fact that the canal and reservoir capacity of this mining company amounts to 10,000 miners' inches of water delivered from the big nozzles of the largest giants manufactured, and there is nothing superior to its system of pipes, canals and reservoirs anywhere on the Coast.

"Everything has drifted into big companies in the way of mining in that district now. The Miocene Gravel Mining Company, of which R. H. Campbell is manager and whose claims cover four miles of the Horse Fly to the mouth of Beaver Lake Creek, has a paid-up capital of \$500,000, and Campbell has just left San Francisco to begin operations for opening up the property systematically.

"The Harper claim on the same creek is owned by a San Francisco syndicate, and it is to be worked by a hydraulic elevator. About \$50,000 has already been spent there in the construction of a ditch and pipe line.

"Seven miles southeast of the town of Quesnelle Forks is carried on one of the most gigantic placer mining operations ever attempted on the Coast. It is at a point where the great Quesnelle Lake empties its overflow waters into the South Fork of the Quesnelle. There the Golden River Quesnelle Company, Limited, of London, is employing now about 400 white men and 100 Chinese in excavating for an immense waste weir that is intended to divert the waters from their natural outlet. When this waste weir and the necessary gates are completed, the construction of the dam, to hold back the waters of the great Quesnelle Lake, which is 100 miles long and from one to five miles wide, will be commenced. The overflow waters which it is intended to divert cover a space 300 feet wide, and are now at the lowest stage of the river—flowing eight to ten feet deep. As the water in the lake rises six or eight feet each season, it can easily be seen what a gigantic piece of work the company has undertaken.

"It is estimated that the dam will cost \$228,000, and probably \$350,000 or more will be expended before the company completes the work and gets ready to



SLUICE BOXES AND WASTE FLUME IN WILLIAMS' CREEK—CARIBOO GOLD FIELDS COMPANY, LIMITED, BARKERVILLE.



EIGHT-FOOT QUARTZ VEIN, "BROWN BEAR"—FAIRVIEW.

clean up the gold from the bottom of the South Fork River, eight miles of which it controls. It is expected that all of this will be worked out before the lake overflows the dam erected to hold it back.

"But the attack on the auriferous deposits of Horse Fly and Quesnelle Forks represents only one side of the base of 'Old Baldy,' the supposed source of Cariboo's golden wealth. On all of the creeks taking their rise in it—Keithley, Snowshoe, Cunningham, Harvey, Willow, William, Grouse, Antler, Goose, Lightning, and other water courses equally familiar to old-timers—new efforts on a correspondingly large scale to those named are being instituted. The

Cariboo Gold
Fields Co.

Cariboo Gold Fields & Exploration Company, organized in London, with a capital of £1,000,000, have purchased nearly all the old claims on the famous William Creek at Barkerville, in the Cariboo district, and have expended several hundred thousand dollars in bringing up a bed-rock drain tunnel to relieve the deep-gravel claims of the water that caused the former owners to quit work. A large ditch is being brought from Jack of Clubs Lake that is intended to deliver the water to the hydraulic elevator under a pressure or head of 900 feet.

"The old channel of Antler Creek, for which unremitting search has been made for over thirty-five years, is claimed to have been discovered at a remote point from the present stream, and extensive operations for working the dead river channel are being made. A Canadian company, with a capital of \$2,000,000, has taken up twenty miles or more of Lightning Creek from its junction with Cottonwood, intending to hydraulic it.

"A Seattle and New York company has been organized by Colonel Fishbeck, in which the Goulds are said to be represented, with a capital of \$5,000,000, to work twenty miles of the bed of the Quesnelle River. A French syndicate and a Montreal syndicate, the latter with a capital of \$2,500,000, \$500,000 of which is to go at once into reservoir and ditch construction, are also operating at Quesnelle River. These are only a few of the big companies with large capital that have recently entered this old-time and supposed to be 'petered out' mining district. Even the beds of the Fraser and the Quesnelle, which cannot be reached by pick, shovel or hydraulic monitor, are being attacked by dredgers in hopes of winning the golden contents of their sands. The Cariboo miner of thirty years ago looks on and marvels."

More recent developments in what may yet prove to be still the richest district in British Columbia are described in the following, for the information contained in which the author is largely indebted to Mr. W. Carlyle, Provincial Mineralogist, who had, at the time of writing (October of last year), just returned from an official visit to Cariboo, and who was kind enough to anticipate in his remarks some of the material of his forthcoming annual report. Cariboo, so far as mining at present is concerned, is divided into two districts—

The
Quesnelle River.

Quesnelle and Barkerville. In the Quesnelle district work is being done on the ancient river channels. Here the Cariboo Hydraulic Company has one of the finest mining propositions in the Province and has probably in hand one of the greatest hydraulic enterprises ever undertaken in any mining country in the world, which is a large but justifiable claim. The company has a very extensive concession and in opening the mine has already obtained about \$400,000 from the upper sixty to eighty feet of gravel, which is

200 feet in depth. It is necessitating the expenditure of a very large amount of capital, but Mr. Hobson, the manager, who is a very capable and practical mining engineer of extensive experience, is doing splendid work. Under his directions \$600,000 has already been expended, water being conveyed by a ditch seventeen miles long. Next year it is proposed to construct a new ditch twelve miles long, which, with a dam across Moorehead Creek, will cost \$150,000.

At the mouth of Quesnelle Lake the Golden Rivers Quesnelle Company is building a dam to throw the river back into the lake for as long a time as possible, so as to exploit the bottom of the river, from which already a large amount of gold, by Chinamen and others, has been won. The company will expend about \$400,000 in this enterprise, which is a bold scheme, but well worth the trying.

Hydraulic
Enterprises.

On the Horsefly, the Horsefly Hydraulic Company has erected a ten-stamp mill to crush the layer of cemented gravel lying next to the bed-rock, referred to in Mr. Hobson's article in the foregoing, the bank of gravel, 100 feet high, being cemented too hard to hydraulic in the ordinary way. No results of the crushing are yet obtainable, and the merits of the proposition are yet to be determined. About \$300,000 has been expended in this enterprise, the water being brought by piping, ditching, etc., a distance of thirty miles.

On the Quesnelle at Harper's Bar the Horsefly Gold Mining Company has spent \$100,000 in putting in a steel pipe line for water and two hydraulic elevators but the lack of water has prevented any decided results being obtained as yet. Near by, Senator Campbell, of California, has been exploring the same ancient river channel exposed by the modern river at Harper's Bar, and has sunk a shaft 250 feet, 200 feet in gravel, without striking the gutter, or bed-rock, where rich gravel is expected.

Many other properties are lying idle, waiting for, and dependent for development on, the results of the enterprises referred to in the foregoing. No placer mining is carried on, except by Chinamen.

At Barkerville the old-time operations, which won so much wealth long ago have practically ceased. Only desultory placer mining is carried on in the old creeks. However, mining enterprise has taken a new direction on the line of modern methods. The Cariboo Gold Fields Co. has spent about \$300,000 in ditches, pipe lines, sluices, and hydraulic elevators to work out their leases on Williams Creek below Barkerville. Mining will be begun next spring and success will greatly depend on the supply of water. On Willow River, Mr. Laird, after sinking a shaft and driving a drift, through the bed-rock to tap the lowest point of bed-rock on Willow River, is about ready to explore the gravels. In the neighbourhood of \$40,000 has been spent in this work, which is peculiar in character, but necessary owing to the composite and unworkable nature of the ground overlying the bed of the river.

Barkerville
Division.

On Slough Creek, also, a company is preparing to reach the bottom of the channel, 280 feet deep, in a similar way. If these companies succeed it will encourage the undertaking of a great deal of mining in the district, as only parts of the famous creeks therein could be worked in the early days.

There are many quartz ledges on which considerable work has been done, but with no results, no pay shutes having yet been found, although there is little

doubt that the gold discovered in the famous placers of the district had its source in these or some other quartz leads. The theory has been advanced that the great quantities of coarse gold found within limited areas of creek and river beds were deposited there by the glaciers moving from the north, which had scraped off the rich surface exposures of quartz leads higher up and carried it with other *debris* filling up the bottoms in its course. On this assumption the "mother lode," a term used for its suggestiveness rather than as strictly scientific, might be looked for on the mountain tops or sides, to prospect for which, however, the thick mossy covering presents serious difficulties. From an exclusively hydraulic point of view there is sufficient to justify the opinion expressed by Dr. Dawson some years ago, that Cariboo would yet reinstate itself as a great wealth producing district and attract a population, dependent upon its mining and other resources, outrivalling that of its palmy days, and with this advantage, that the industry, although of a less stimulated or excited character, will be on a more substantial and permanent basis.

Barkerville
Divisions.

LILLOOET.

LILLOOËT has had its mining history as well as Cariboo, but has not heretofore been a large gold producer, although its creeks have, in a small way, been worked on a paying basis almost from the first. Of late years they have been principally exploited by Chinamen, whose returns, though uncertain, have contributed their moiety annually to swell the total output. There have been several hydraulic enterprises inaugurated, but for lack of capital or other reasons did not materialize according to expectations. Very little placer mining is now being carried on.

A new mining era for this district has apparently dawned in the way of lode mining, and during the present year considerable excitement arose out of the discovery of promising quartz veins on Bridge River, on which a good deal of work will be done this winter. Some claims have been sold at good figures to outsiders, and not a little money has been turned in to claim owners.

What, however, gave the greatest zest to mining development in Lillooet has been the discovery last year of the Golden Cache mine, which has gained a more than local fame as one of unusually good indications and has netted to the discoverers and promoters very handsome returns in consequence of the rapid advance in price of the shares of the company formed to operate it. The mine is on Cayoosh Creek, situated on the face of a perpendicular cliff. The company has erected a ten-stamp mill and a three-rail tramway 2,800 feet long up to the mine. No mill returns are yet to hand, but it may be stated that \$400,000 worth of stock was purchased by Mr. Oldroyd, an English manufacturer, after he had examined the property. Between \$35,000 and \$40,000 has been expended on it, and a tunnel 100 feet long and several lesser tunnels which have been driven in several other

properties in the vicinity of the Golden Cache are being developed, but the character of the ore is quite distinct from that in the Golden Cache, which is free milling, with gold visible in milk white quartz, while the quartz in the other properties referred to contains sulphides and arsenical ores.

The
Golden Cache.



PLATFORM ALONG VEIN IN FACE OF CLIFF, GOLDEN CACHE.



LE ROI SHAFT HOUSE—ROSSLAND.

WEST KOOTENAY.

IN regard to the geological formations and structure of the districts under discussion, we are indebted for information to the "Report on West Kootenay, of 1889," by Dr. Geo. M. Dawson, and the "Summary Reports" of 1894-95, by Mr. R. G. McConnell, of the Dominion Geological Survey.

It is of great interest, that in all of the geological series represented here, are veins or mineral deposits, especially of silver and silver-lead ores, and no longer are the prospectors limiting their researches to special formations or parts of these districts, but energetic prospecting is being done with successful results all over this part of West Kootenay. For a long time these men refused to enter the granite areas, until finally the discovery by some less skeptical of the silver-lead, and the gold-and-silver or "dry ore" veins on the water-sheds of Springer and Lemon Creeks, east of Slocan Lake, and the success of the Poorman gold mine near Nelson, led to a rush of men into the granite regions with gratifying results.

General
Geology.

The success of the rich Rossland mines has caused widespread prospecting of all the country in which occur the same geological formations, and following these up as far as Nelson, many locations have been made in the country drained by the tributary creeks of the Salmon River, and elsewhere in the area between Nelson and Rossland. In the Ainsworth District, on both sides of the lake, can be found men in search of mineral, and, in fact, there is now very little of West Kootenay that is not being over-run by them, and the wave of prospecting is extending throughout the Province, so thoroughly has interest and faith in her latent mineral resources been aroused.

There is no reason why mineral should not be found in all of these formations here present, or in any part of this region, unless it has so happened that the conditions have prevailed by which the mineral-bearing solutions have not had openings or fractures along which to ascend and deposit their burden of precious ores, either by filling up pre-existing cavities or by leaching into or impregnating the country rock with valuable minerals on one or both sides of the channel or crevice. The finding of rich veins of ore in either of the series, such as of silver-galena ore, points strongly to the fact that as depth is obtained in mining, the continuity of the pay-shutes is assured, the veins may be "in and out," as the miners term it, or have perfectly barren parts along the fissure, but more or less work will disclose other ore-shutes if this work is pushed ahead along this fracture in the rock, which has permitted the passage of ore-bearing solutions and the formation of ore-bodies along it elsewhere.—*Mr. Carlyle's Report.*

There is a very large area of granite which has been pushed up through the highly metamorphosed stratified rocks, altering them still more near the line of contact, but the boundaries and relations between these different series cannot well be given before the publication of the geological map. However, by means of extracts from the above mentioned reports, some idea may be given of the geology of each of the districts visited.

(A.) The Granites.—Dr. Geo. M. Dawson's "Report in Portion of West Kootenay, 1889," says:—

"A large part of the West Kootenay District is occupied by granites and granitoid rocks, the main area of which (so far observed) includes the whole basin of the Lower Arrow Lake, and extends thence eastward nearly to Queen's Bay on Kootenay Lake. Besides this great granite area, there are several others of smaller dimensions, as indicated on the map, as well as numerous dykes and eruptions too small to be separately shewn. It is, in fact, probable that about one-half of the entire region here reported upon is occupied by granite and granitoid rocks. The granites differ considerably in appearance and composition, and appear to be referable to at least two and probably to three distinct periods, though it is as yet impossible to define the respective areas of these. The granites which are supposed to be of the greatest age were found in some places underlying the lowest beds of the gneisses and mica-schists or Shuswap series. They appear to be closely attached to this stratified series, if not connected with it in origin, and in texture and composition, as seen in hand specimens, can often scarcely be distinguished from some of its homogeneous gneisses. They are generally rather fine-grained, and are believed to consist for the most part of muscovite-biotite granite, though much further investigation would be required before it can be asserted that this is their characteristic composition.

Formations. "The granites which, however, occupy by far the largest area, are of coarse texture, generally grey, passing to black in colour, and are characterized by black mica, with frequently much black hornblende. They may be described as a whole as hornblende granites, but occasionally pass into mica-syenite. In some localities they are not infrequently coarsely porphyritic with large twinned orthoclase feldspar crystals, while sphene is often present as an accessory mineral.

"These granites are evidently intrusive and of later date than the stratified rocks, which are altered at contacts."

Mr. McConnell, in the "Summary Report of 1894," further writes about the eruptive rocks and granites:—

"The eruptive rocks of the district occupy wide areas and belong to several periods. The oldest, as far as ascertained, consists of a series of basic dykes cutting the Shuswap group, but now in many instances so altered and foliated by pressure and other causes that they have the appearance of constituent beds. They occupy, in some localities, a considerable portion of the area assigned to the Shuswap series. They are older than the overlying formations.

"Eruptive granite rocks, much younger than those referred to above, occupy the western part of the region, from about the north end of the Lower Arrow Lake south to Trail Creek and east to within a few miles of Kootenay Lake. They cover a continuous area of fully 2,000 square miles. Numerous bosses and dykes of granite and pegmatite also occur further to the east, along the borders of Kootenay Lake.

"The granites, where examined, are usually grayish in colour, and coarse-grained as a rule, and are often porphyritic. The principal constituents are feldspar, quartz, biotite and hornblende. The granites cut all the formations from the Shuswap series up to the Slocan slates, and are consequently younger than any of the stratified rocks of the district. A series of eruptive rocks still younger than the granites, is represented by diorites and diabase and uralite porphyrites.

These rocks occupy a considerable area in the Trail Creek country, and are important, as they hold the principal lodes of that district. It is possible that some of the porphyritic rocks, so abundant in the Toad Mountain region, may belong to the same group.

"In addition to the main areas of eruptive rocks, numerous dykes, some of them connected with the main areas, others much younger, as they cut through everything, are met with in every part of the district.

(B.) "The stratified rocks bordering this granite area, are irregular, tilted at high angles, broken by numerous faults, and frequently overturned."

Dr. Dawson determined their thickness to be, taking a section at Ainsworth, 23,200 feet, and he believes the Shuswap series to be Archæan, while those series above this area, are evidently Palæozoic in age, and may yet be referred to various systems, including the Carboniferous, and extending downward to the Lower Cambrian. He also states that "the grey and greenish schistose rocks are essentially composed of altered volcanic materials, and their present schistose character may probably be regarded as in the main

Rock Series.

due to the enormous pressure to which they have been subjected during the movements of the earth's crust, which resulted in the uplift of the mountains of the region, and the extrusion of the great masses of granite here everywhere found. In these different stratified series no strong evidence of unconformability have been reported."

The series of stratified rocks may be quickly described in ascending order, i.e., by beginning at the lowest series, the Shuswap.

(a.) The Shuswap, or lowest series, probably of Archæan age, consists of gneisses, mica-schists, calcareous gneisses or calc-schists, hornblende schists, bedded diorites, crystalline limestones or marble, and nearly pure quartzites.

(b.) The Nisconlith series of dark calc-schist holding occasional bands of limestone and green schists.

(c.) The Kaslo schists comprising a series of greenish, probably mostly diabase schists, interbedded with some slates or dark argillites, and limestones.

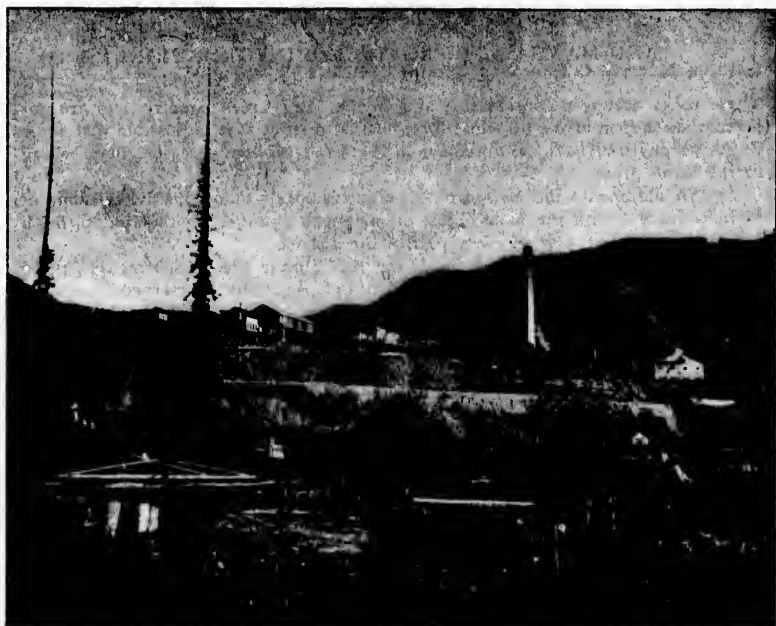
(d.) The Slocan slates or a series of dark shales and slates with limestones and calcareous quartzites.

Since the commencement of mining in this region, says Mr. Carlyle, the construction of new means of ingress and of transportation has quickly followed the discovery of ore-bearing districts, and the great material advantages of fine waterways have been utilized in gaining access to the many points where mining is now begun. West Kootenay is singularly favoured by reason

Transportation.

of (a) the Columbia River and Arrow Lakes, (b) the Slocan Lake, and (c) Kootenay Lake and its arms, and of the comparatively easy passes for railways from one to another. Otherwise this very rugged and mountainous country would have presented great difficulties that would have retarded for a much longer time prospecting and mining, but now, however, none of the mines are any great distance from these highways, and readier access is being gained by the building of trails and waggon roads.

The Provincial Government has followed a plan of assisting, as far as possible, the building of roads and trails to the various new camps, and though it has been impossible to accede to all of the many requests for aid where so many new parts are being opened up by fresh discoveries in many different directions, still the assistance given has been valuable, and has aided materially in the opening up of the country.



HALL MINES SMELTER—NELSON, B.C.



HORSEFLY MINE, CARIBOO.

West Kootenay is now easily entered from three directions, and almost any part important can now be reached with despatch and comfort, an agreeable surprise to all entering the country for the first time.

First—From the north, at Revelstoke, on the main transcontinental line of the Canadian Pacific Railway between Montreal, Winnipeg and Vancouver, on the Pacific Coast, a branch line runs down the Columbia River thirty-two miles to Arrowhead, at the north end of Upper Arrow Lake, whence (a) a small steamer runs up to the north-east arm of Evansport, the port of entrance, to the Lardeau and Trout Lake Districts; (b) the large stern-wheel steamers of the Columbia and Kootenay Navigation Company run as far south as Trail, connecting at Nakusp with a branch line of the C.P.R. into the Slovan and at Robson with another branch of the same company into Nelson, along the Kootenay River, and at Trail with the Columbia & Western to Rossland.

Lines of
Communication.

Second—From the south, from Spokane, Wash, where direct connections are made from the main trunk lines of the Great Northern and Northern Pacific Railways to all parts of the United States, the Spokane Falls and Northern Railway runs north to Northport, a few miles south of the boundary line, whence (a) this road, known as the Nelson and Fort Sheppard Road, follows up the east bank to Waneta and Sayward, in Canadian territory, and thence across to Nelson, connecting directly with the Kootenay Lake steamers at a point five miles east of Nelson, whence the road switches into the town; (b) from Northport another branch, or the Red Mountain Railway, crossing the Columbia by large ferries, runs to Rossland; (c) while daily steamers run up the river to Trail, from which point again Rossland is reached, or the steamers taken for Robson, Kakusp and Arrowhead, as detailed above.

Third—(a) The Nakusp and Slovan Railway, operated by the C.P.R., runs daily from Nakusp on Arrow Lake into the Slovan as far as Sandon. (b) The trains of the Columbia and Kootenay Railway run daily between Robson and Nelson, connecting with boats on the Columbia River. (c) The Kaslo and Slovan Railway runs trains daily from Kaslo on the Kootenay Lake into the Slovan, affording an outlet eastward from Sandon. (d) Several steamers ply on Slovan Lake stopping at Roseberry, New Denver, Silverton, Brandon, Slovan City and other points. (e) Three commodious and rapid steamers, the "Kokanee," "Alberta" and "International," run daily each way between Kaslo and Nelson, stopping at Ainsworth, Pilot Bay smelter, Balfour or other points along this route when called for. Other smaller boats traverse the lake from the upper end down as far south as Bonner's Ferry, stopping, among other places, at the terminals of the trails into East Kootenay. Generally, if required, a small steamer can be engaged to go to any point on these waters.

On all these steamboat lines every endeavour is made to assist the prospectors, miners, etc., by willingly stopping at any point where signalled or requested to land or take on board men, pack animals, supplies, ores, etc., and this accommodation is simply invaluable. On the swift waters of the Columbia River, the very clever navigation exhibited there is admired by all travellers, as great skill and steady nerve are called for at several points along this river, especially in the season of low water, when these boats have to contend, in going up stream, with a powerful current which, in the late autumn and winter seasons, compels the use of steel hawsers fastened to the bank or rocks and the steam capstan.

Large scows on the Columbia River line, which are fastened directly in front of the steamers, and capable of carrying eight loaded railway cars, are used between Arrowhead and Robson, on which loads of 370 tons of coke for the Nelson smelter, loaded from the cars at Arrowhead, have been brought down this fall, but if necessary loaded cars can be thus transported from the main line of the C.P.R. on to these branch lines running in at Nakusp and Robson.

As a direct result of the mining development, the need of greatly increased railway communication has become apparent, and capitalists have not been unmindful of their opportunities to promote lines in the directions in which natural routes and prospective traffic suggest as the most desirable. The demand for these railways is great, and the question of how best to supply the required facilities has been recently much discussed as a policy of both Dominion and Provincial statescraft. Mr. Carlyle in his report remarks:—

Projected
Railway Lines.

These new lines, while having engineering difficulties to overcome, should open up a large area of the southern part of British Columbia now lying practically dormant, and make not only possible the development of resources now almost inaccessible and valueless, but known to exist, and the easy assembling at large smelting centres of the different classes of ores and fuels, but also the fostering of a large demand for agricultural produce, for which no better market can be found than in these mining centres.

The new lines under construction are:— (a) the Crow's-Nest Pass Railway, connecting with eastern lines, thence passing close by the deposits of coal in the Crow's-Nest Pass of large extent and fine coking qualities, through East Kootenay, with branch lines to the Kootenay River and along the west shore of Kootenay Lake to Nelson;

(b) A branch of the C.P.R. from Slocan City to a point on the Robson and Nelson line:

(c) The extension of the line from Arrowhead into the Lardeau and Trout Lake districts to the head of Kootenay Lake:

(d) The extension of the Columbia and Western R.R. from Trail, up the west bank of the Columbia to a point opposite Robson, and thence west into the mining districts of the southern part of Yale:

(e) A railroad from the Columbia River west, through the southern part of the Province, to a point on the Pacific Coast.

From the foregoing it will be readily seen to what extent Nature, aided by the enterprise of combined labour and capital, has rendered available wealth which exists in lavish profusion. The conditions which exist, and as they will be improved by continued development, suggest an era of extraordinary activity within the area affected. The concentration of energy and capital in their various forms, it is needless to say, will attract a large population and create important urban centres. As a field, therefore, for exploitation for some years to come it and the Province as a whole will naturally afford opportunities which will be unequalled in any other part of the world.

AINSWORTH MINING DIVISION.

IN this, the pioneer mining district of West Kootenay, in which Dr. Dawson, in 1889, found mining being actively carried on; this industry for some time back has been quietly progressing, but not with that advance the success of the present mines and the mineral indications would seem to warrant. This is due to several facts, one of which is that many were attracted to the high-grade silver-lead veins of the Slocan, whose early prospectors of 1891-92 flocked in from the town of Ainsworth after Eli Carpenter and John Seaton, making their difficult way up Kaslo Creek, located the Payne claim September, 1891. Again, many good properties, Crown-granted, owned by men who can afford to wait, now lie dormant, like others that carried ore of such a grade that was in earlier days hardly profitable, but now, with cheaper rates and easier means of shipment, should pay well if developed. Disastrous forest fires destroyed several good mining plants on claims on which work had fairly started, but has not since been resumed, and again, many have had an unwarranted lack of faith in the probable permanence of these veins and ore bodies, especially of those in the limestones, which have been considered as merely "pockets" and local, but to one who has worked in silver ore-bodies in limestone, as in Colorado, this pocket theory is not so alarming a bug-bear, as the general experience is that when one ore-shute is found others are almost invariably discovered on prospecting further along the line of break, up and along which have come from greater depths, the ore-bearing solutions that have impregnated the country rock in favourable places and formed ore-shutes.

The fact that at Ainsworth (or Hot Springs), where most work has been done, good veins of very profitable ore are found in all the different geological horizons, and also that while many seem to be conformable to some extent to the stratification of these rocks, many cut through these formations, should strengthen one's belief in the probable persistence of these veins, and give greater confidence in beginning work on a good and liberal scale.

The tide of prospectors have spread over this district, and from the territory at the north end of Kootenay Lake, along the Lardo and Duncan Rivers and their tributaries, and from Crawford and Hooker Creeks, and White Grouse Mountain, back from the east shores of the lake, came reports of locations of veins of high-grade ore, while at Ainsworth itself new properties are being found and opened up. By the way, it will be seen that this district embraces a wide territory, and that in reality but a small part of it has become familiar to the prospector or explorer.

With large smelting plants in British Columbia, the demand will vastly increase for dry ores, or ore carrying a small or no percentage of lead to mix with the galena ores; and such dry ores as are found at Ainsworth will be in special demand and command favourable smelting rates when shipped in bulk, *i. e.*, not sacked, and there will be yet shipped large quantities of low grade ore now not very profitable,



NELSON, B.C.



LE ROI COMPRESSOR PLANT—ROSSLAND, B.C.

All the formations of the series detailed in the foregoing are found in this district, and in each formation of this series have been discovered valuable ore-bearing veins and deposits, mostly of silver or silver-lead, but also of gold-silver ores.

ORES AND ORE-DEPOSITS.

In the immediate vicinity of Ainsworth, and at the Blue Bell mine on the other side of the lake, many of the veins or ore-deposits appear to be conformable in most part with the very marked stratification of the metamorphic rocks but many others cut across the formation, and in many cases the veins present the usual characteristics of the typical cavity-filled veins, while in others, as in the Skyline and Number One, the deposits have been formed by the impregnation and replacement of the country rock by ore and quartz, and sometimes by calcite.

However, on none of the mines west of the lake has there been done more than a comparatively small amount of work by which to form positive opinions doubtful of the permanence of these ledges, and certainly not enough yet to condemn them as being likely soon to play out, for even if one shaft should be exhausted, further work on this horizon, nearly always indicated by slicken-sided walls, a narrow seam of gouge or other evidences of a fault fissure, will, in very many cases, disclose other ore-shutes.

Ores.—There is a considerable variety in the different grades of ore, there being:—

(a.) Solid galena ores carry a good silver value, as the Little Phil, Black Diamond, Highland, Tariff, in which there is not enough zinc to bring the percentage above the smelter limit, or ten per cent. In some of the properties not now being worked, can be seen a large amount of blende that concentration would remove:

(b.) In the Number One, there is little galena or blende, but the chief and important sulphide is iron-pyrites, with white quartz and calcite, a very desirable smelting ore:

(c.) The Skyline ore is again different, being a quartz and lime matrix, carrying silver compounds, but a very small amount of sulphides:

(d.) In some claims the sulphides, as galena, are not found solid, but disseminated, usually through quartz, and in the case of the Silver Glance and the Wakefield veins, with presence of gold:

(e.) From Crawford and Hooker Creeks, from samples seen and by report, the high silver-gold values are carried in tetrahedrite or grey copper in quartz with galena:

(f.) At the Blue Bell mine, these large low grade ore-bodies consist of a calcareous matrix, with a small percentage of galena, iron and copper pyrites and pyrrhotite.

BLUE BELL MINE AND PILOT BAY SMELTER.

In the Summary Report for 1895, p. 33, Mr. McConnell states:—

"At Hendryx, the Blue Bell is in active operation. This mine is situated on a band of crystalline limestone interbedded with the Shuswap schists, which has been fractured in various directions. The ore, consisting mostly of low-grade galena and pyrrhotite with some blende, iron and copper pyrites, and their decomposition products, occurs either pure or disseminated through a calcareous and occasionally a silicious matrix.

"It occupies irregular chambers in the limestone, some of which are of huge dimensions. The ore body being worked at present, including some large horses of limestone, measures approximately 70 feet in width by 200 feet in length and 150 feet in height. Forty thousand tons of pure and concentrated ores have been shipped from this mine during the year, and prodigious quantities remain in sight."

Although the Pilot Bay smelter has been closed down, on account of internal business causes, it is understood that a re-organization has been effected and the smelter will resume operations.

NELSON MINING DIVISION.

THE Hall Mines Co. owns eighteen claims, of which nine, or 196.6 acres, are Crown-granted, and the remainder, or 312.8 acres, mineral locations. Not all these claims are on the silver-copper belt, but the Silver King, Kootenay Bonanza, American Flag, and Kooh-i-noor, or 56.9 acres, constitute the group upon which the extensive mining operations are being prosecuted, while the Britannia, Eureka, Y. M. B., Daylight, Grand, Rose, Thistle, Shamrock, Bid and Jessie are locations close by on the gold belt, in the same geological formation. The main group of four being old locations, or made in 1886-7, possess apex rights, and are located on Toad Mountain, five miles from Nelson, or eight and a-half miles by wagon road.

Formation.—This copper-silver lode is situated in the greenish diabases that, in proximity to the vein, are generally massive, but also schistose, the planes of the schistose lamination being nearly vertical, and also nearly parallel with the trend of the ore zones that strike east and west, magnetic, and dip south 70 degrees.

Ore.—The ore may be graded into two classes: (a) into that carrying a high percentage of value-bearing sulphides, and (b) lower grade country rock impregnated with a much smaller amount. In the upper workings of the mine, down through a rich zinc zone in the shute, the ore consists of bornite, or "peacock copper," with some tetrahedrite, also copper and iron pyrites, and a small amount of galena and blende.

THE HALL MINES.

To the discovery of the Hall Mine in 1886 on Toad Mountain, by the Hall Brothers, is probably due a great deal of the present activity in mining in West Kootenay. It gave an impetus to prospecting, which gradually at first and afterwards extended more rapidly to the whole of the district. The local history connected with the finding and development of this important mine, which is coincident with the history of Nelson itself, has recently been the subject of much discussion, but with that phase of the subject it is not necessary here to deal. The initial stages were marked by many vicissitudes, and development was slow and unsatisfactory. For some time there were partnership disputes and litigious contention, which greatly retarded operations, in addition to which the lack of

shipping and treatment facilities was a drawback. Finally a settlement was effected, and a company formed in England with a large capital, sufficient to acquire the property, continue its development and erect a smelter for the treatment of the ore, all of which have been successfully carried out. The Silver King, which is the principal claim of the group associated with it, has now a production capacity of 200 tons a day, and 150 men are employed by the company in connection with its works. Two main tunnels on the ore shute have been worked to a depth of over 500 feet below the surface. The long Hallidie tramway, forty-four miles long and in two sections, is one of the most remarkable of its kind, and is now doing excellent work, easily handling the daily output.

THE SMELTER.

The smelter, which is part of the plant of the company owning and operating the mines and worked in connection with it, is now equipped with probably the largest copper blast furnaces in the world, being 44x144 inches at the tuyeres and having a capacity of from 200 to 250 tons per day. A refining plant of reverberatory furnaces has been added to the plant and is now in operation. The matte is refined to blister copper and sent to Swansea for final treatment and the extraction of the silver. Recently the local press record with justifiable pride, the first shipment, making a full train load of the output.

During the past year, to December 31st, 47,560 tons of Silver King ore have been smelted, yielding 954, 585 ounces of silver, and 3,453,644 lbs. of copper, and a little gold. Hence, the average yield of the ore for the year, per ton, has been 20.7 ounces of silver, .04 ounces of gold, and 2.63 per cent. copper; or \$16.81 per ton. While guaranteed dividends of seven per cent. have been paid on the preference shares, the first dividend of ten per cent. upon the ordinary stock was declared, or a total dividend of \$133,750 for 1897; or \$160,000 in all to date.

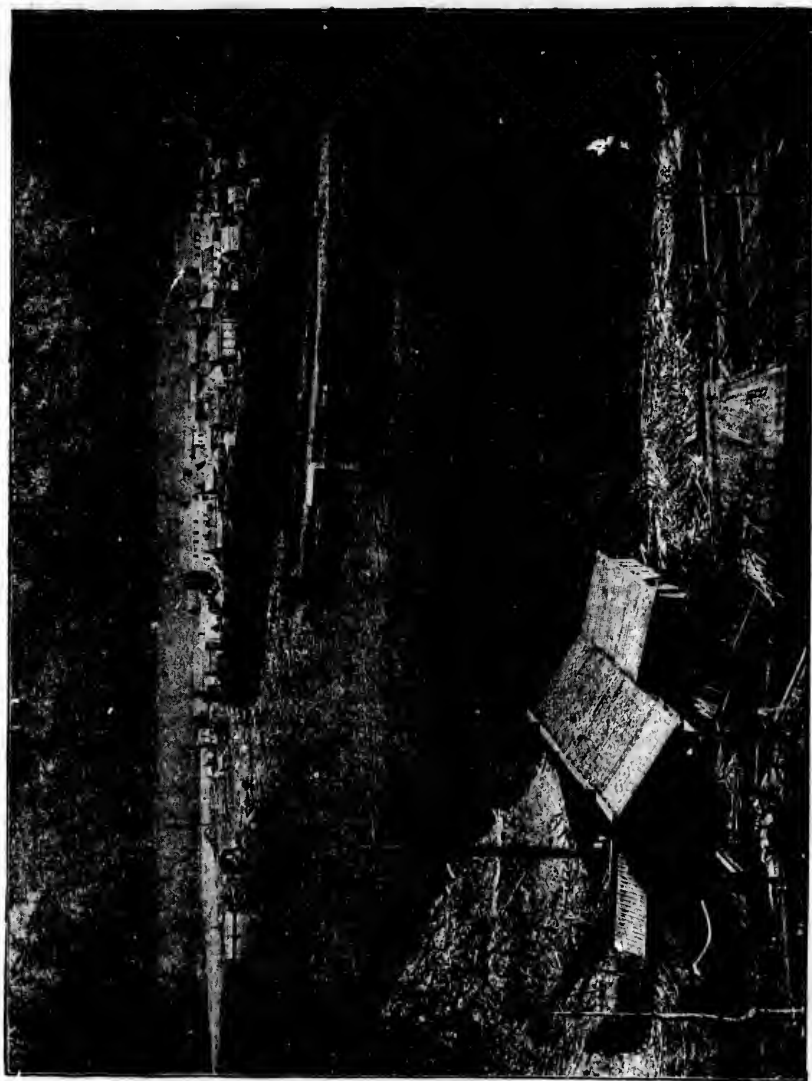
Production and
Dividends.

GOLD CLAIMS.

The Poorman group consists of six claims, in gold-bearing formation. The Poorman, Hardscrabble, White, Myemer, Hardup and Electron, of which the first is Crown-granted, the others mineral locations. Location on Eagle Creek, 6 miles westerly from Nelson, and about 2 miles south-east of the Kootenay River and the C.P.R.

The Poorman vein has the usual characteristics of quartz fissure veins in eruptive rock, being persistent, but very irregular in width, varying from a few inches to 5 and 6 feet of milky-white compact quartz, now holding a considerable amount of sulphides, or copper and iron pyrites, with, in parts, a little galena. In the upper workings the ore was found to be very free-milling, and several thousand dollars worth of magnificent gold-bearing quartz was taken from a part of the vein 5-6 feet wide, but now, as depth is attained, the ore has become less free-milling, and the value is going more into the sulphides that are saved by concentration. About \$100,000, it is reported by the owners, have been taken from the comparatively small area of vein so far worked, and now the average value of the ore saved by amalgamation, is from \$12 to \$14 per ton, while the concentrates assay from \$26 to \$30 per ton, with the proportion of concentration about 10 tons to 1, so the total yield value of the ore is about \$16 per ton of ore mined.

The Poorman has passed into the hands of a strong company, and is being actively worked. It was purchased, it is understood, for \$100,000.



KASLO, B.C.

THE SLOCAN.

THE particulars following here are extracted from Mr. Carlyle's Report contained in Bulletin No. 3, on the Slocan, Nelson and Ainsworth Mining Divisions.

The Slocan, according to the number of its shipping mines and the amount and value of the ore sold, now ranks as the most productive mining district in the Province, and in point of importance is not surpassed by any other.

In an area of fifteen by twenty-five miles, there have been discovered many veins of high grade silver-lead ore, which are being developed with great vigour and success, and among the mining men is every feeling of confidence and hopefulness. Nearly fifty of these properties are shipping high grade ore that yields very profitable returns, and a large number of other claims are being opened up.

So far but comparatively little imported capital has been expended here, as in the case of nearly every mine now established, sufficient money has been realized from ore extracted during development to pay for more extensive workings, new buildings, mills, trails, roads, and also dividends, but more or less capital will be required to properly open up many other claims on which the veins exist, but are not so easily accessible as those first discovered. But as most of these veins are found along the steep mountain sides and can be worked by tunnels, and the cost of mining is low, requiring little or no machinery, capital will be necessary mostly when tramways and concentrators are to be built, or in some cases for hoisting plants and pumps when tunnel sites may not be available.

Many of these mines are located near the summits of the high precipitous mountains at an elevation of 5,500 to 6,500 feet above sea level where erosion has cleared away nearly all debris from the veins, but lower down also on the mountain sides and in the valleys, are being found other veins or those discovered first much higher up, to the highest of which now run good trails or waggon roads or else wire rope tramways. The snow that lies deep on these summits during the winter is in nowise detrimental to mining operations, as most work is done after its fall, when the ore can be dragged down the smooth snow trails in rawhides in larger loads and at lower prices than are possible in the summer time, but the tracks of snowslides must be carefully avoided.

Many of the veins are small, varying from two or three inches in width to twenty to thirty inches of solid ore, but the high value of silver at present makes this ore very profitable together with the low cost of breaking ground.

In the "Summary Report" of 1894-95, Mr. McConnell says: "The region between Slocan Lake and River and Kootenay Lake, particularly examined during the season (1895), is covered mainly by granite fringed on the north and east by a border of slates and schists, and is everywhere of a mountainous character. The granite mass, originally dome-shaped, has been carved by the drainage system of the region into bold, craggy mountains and mountain ranges, which culminate in a rugged mass of snow-clad peaks situated between the south end of Slocan Lake and Ainsworth, the highest summits of which approximate 9,000 feet

in height above the sea. The principal streams of the district, including Lemon Creek, Ten-Mile Creek (Slocan Lake), the south fork of Kaslo Creek, Woodbury Creek, and Coffee Creek, radiate from this group and descend rapidly through deep, steep-sided valleys to the main waterways.

**Geological
Formation.**

A second range of prominent peaks, scarcely inferior in height to the central group, occurs north of the Kaslo-Slocan Railway. The Whitewater, Lyell Creek, and other tributaries of Kaslo Creek, head in glaciers which descend from this range.

"The principal geological boundary in the district between Slocan Lake and River and Kootenay Lake is the sinuous line separating the granite area from the bordering slates. Starting from Four-Mile Creek, on Slocan Lake (at Silverton), this line follows that stream in an easterly direction for ten miles, then bends to the north across the range separating Four-Mile Creek from Cody Creek, and following the latter stream in a northerly direction for a couple of miles. From Cody Creek the granite border runs almost directly east of Twelve-Mile Creek; after crossing this creek the line becomes more irregular, as several spurs leave the granite area and penetrate for varying distances the group of mountains lying between Ten-Mile Creek and the south fork of Kaslo Creek. At the latter stream the granite recedes a couple of miles, then bends around a deep embayment of slates, and continues on in an easterly direction towards Kootenay Lake. Four miles from the lake (now in the Ainsworth Division) the line of junction turns abruptly southward, and continues in this direction until near Balfour, where it bends more to the west and crosses the outlet of Kootenay Lake, about four miles below its head. Inliers of slate in the granite occur at the head of Eight-Mile Creek (Slocan Lake), on Four-Mile Creek, and at other places, while bosses of granite, separated from the main area, break through the slates at Paddy's Peak, Reco Mountain, and north-east of New Denver.

"The upper series of stratified rocks, consisting mostly of dark, evenly bedded slates, with some limestones, is largely developed in the Slocan country, and is well shown along the Kaslo waggon road from Fifteen-Mile House westward, to a point a couple of miles west of Three Forks, where this series is cut off by an area of eruptive rocks. Southward the slates of this series strike into the great granite mass which occupies the central part of the district, and are all cut off, with the exception of a narrow strip which skirts the granite on the east, as far south as the west area of Kootenay Lake."

There are four distinct kinds of veins in the Slocan:—

1. The argentiferous galena, with zinc blend, and some grey-copper in a gangue or matrix of quartz and spathic iron. These veins cut across the stratified rocks, and through the dykes of eruptive rock, where, in many cases, there is a good body of ore, and they also occur in the granite area, and with even the limited amount of prospecting, some have been traced from 3,000 to 4,000 feet along the strike, and one for nearly two miles. In the Slocan slates it has not yet been proven that as the vein cuts through shales, slates, limestones or quartzites, that any one of the series has been more favourable to the formation of ore-bodies than another, as in the different veins it will be seen that good ore shutes may have the wall of any of these rocks mentioned. The ore has been deposited along fissures, both in

**The Ore and
Ore Deposits.**

the open fissure cavities and by impregnation of the country rock, and in the cavity-filled veins can be seen the banded structure described elsewhere, or the solid, usually big-cubed galena, shows lines of foliation parallel with the walls,

but it is evident that further motion has occurred along some of these vein fissures, after ore has been deposited.

Most of the veins are narrow, varying from two and three inches to fifteen and twenty inches in width, with occasional widenings to three or four feet of solid ore, and even much more, as seen in the Slocan Star and the Alamo-Idaho veins. The ore shutes are not persistent horizontally, as is characteristic of nearly all veins, but ore is often continuous for several hundred feet, and where it then pinches, a thin streak of oxides is the index usually followed in the search for more ore, which seldom fails to re-appear with more or less work. The mistake is made sometimes of following along a slip-wall or crevice that may cross the vein crevice at a flat angle, and thus lead the miner astray. Besides the solid ore, some veins have associated with them two, three or more feet of mixed ore, gangue and country rock, or a brecciated mass, which may be of such grade as to pay well for concentration; and already there are three concentrators, the Alamo, Slocan Star and Washington, doing very satisfactory work, and the Noble Five mill almost completed, with the erection of two, at least, contemplated this year. The product or concentrates is silver-bearing galena, but any value contained in the decomposed material that may enter the mill, will in all probability not be saved, likewise that in much of the grey copper, which apparently slimes badly and escapes.

The ore is shipped as "crude," or the solid or unaltered sulphides, or as "carbonates," i.e., the decomposed ore, consisting of oxides and carbonates of iron, lead and silver, the mass having a reddish-brown colour, with more or less yellow material; those carbonates with a soft, velvety feel, assaying highest in silver. All material about these veins should be carefully assayed before being relegated to the waste-dump, where good ore, unsuspected, has already been thrown, especially soft, iron-stained, decomposed rock or vein matter.

It might be well to be on the lookout for gold, remembering the good gold values found in the galena ores of the Monitor mine, which yield from \$2 to \$14 in gold per ton; one lot of twenty tons of crude ore assaying \$20 per ton in gold, while the "carbonates" average \$13, the smelter paying for all gold above \$2, or one-tenth of an ounce. The "carbonates" seldom are as high grade in silver as the unaltered, or crude ore in the vein, but in some mines this class of ore is very valuable.

Gold.

In most of these veins the zinc blende carries a small silver value, and is sorted or concentrated out of the ore, so that very little ore sent to the smelters has over 10 per cent. zinc limit. But in the Enterprise mine, on Ten-Mile Creek,

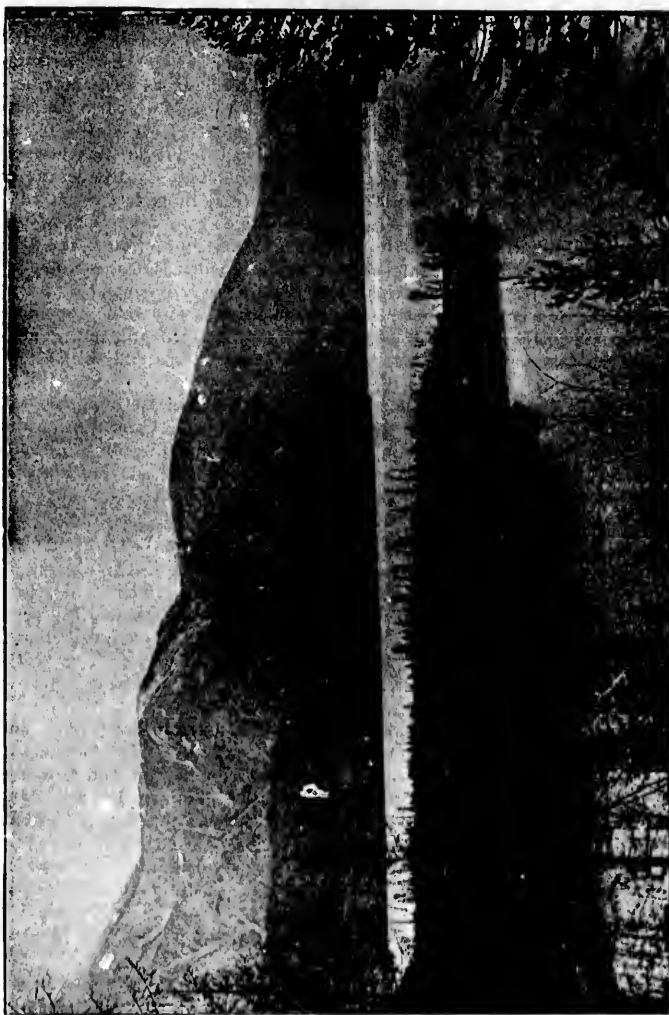
Zinc.

the best silver assays are said to be got from the zinc blende, which is more valuable than the galena. As is to be expected, small lots of very rich ore are mined, lots that will yield from 1,000 to 2,000 ounces per ton, but the average figures already given will indicate the importance of these veins that are now being mined in both the granite and stratified rocks of this district.

2. The veins of argentiferous tetrahedrite or grey copper and jamesonite and silver compounds in a quartz gangue.

These veins can be seen in the granite exposure on the Best and Rambler mines, and in the stratified rocks on the London Hill property, from which very high-grade ore has been shipped.

3. The "dry ore" veins on Springer and Lemon Creeks, in the granite, with a quartz gangue containing argenite, native silver, and gold.



NEW DENVER, B.C.

These veins are now attracting much attention, as high assay returns have been secured as per smelter returns; sorted ore of this character from the Howard fraction yielding 163 to 206 ounces of silver per ton, and \$16 to \$26 per ton in gold.

The Chapeau recently received the smelter returns on four tons of sorted ore, from which 3.6 ounces of gold and 94.7 ounces of silver per ton were returned, netting to the owners \$102 per ton after deducting freight and treatment charges.

4. The gold-quartz veins in the southern part of the granite, such as those reported to be on the Alpine group.

The values and characteristics of the last three mentioned classes of vein will be better known later on, as the work now begun yields results and information.

DESCRIPTION OF CLAIMS.

Mr. Carlyle groups the mines as follows, beginning at Sandon, on the south fork of Carpenter Creek, now the distributing and main shipping centre in the Slocan:—

(a) The mines and claims on the mountain range south of the creek are the Slocan Star, Ruth, Wonderful, Canadian, and Adam's groups, Ivanhoe, Yakima, Alamo, Idaho, Cumberland, Queen Bess, Monitor, and adjacent claims:

(b) The mines and claims on the south slope of the mountain range running east and west, north of the creek, as Lucky Jim, Payne, Slocan Boy, R. E. Lee, Last Chance, Noble Five, American Boy, Reco, Good Enough, Blue, Bird, etc., with the claims in the basins on the north slope as Northern Belle, Dardanelles, Rambler, Best, Surprise, Antoine, Washington, etc.:

(c) The mines and claims north of the K. & S. R. R., as the Whitewater, Wellington, London Hill, etc.:

(d) The mines and claims on the creeks tributary to Slocan Lake:

(e) Claims on Cariboo Creek and its tributaries:

It is not contemplated to give particulars of the various mines and claims, as being impracticable in the space available, but a brief description of the Slocan Star as the representative mine of the district is here inserted:—

SLOCAN STAR.

This property had not only paid a larger amount of dividends, or \$300,000 at the date of Mr. Carlyle's Report, than any other mine in British Columbia, apart from the coal and placer mines, but has proved itself to be the largest silver-lead mine so far developed in the Province. It was discovered October 17th, 1891, by one of the present owners, Mr. Bruce White, and others, who, following up Sandon Creek, discovered in the bed of this stream, a mile above its junction with the south fork of Carpenter Creek, the site of the town of Sandon, a vein thirteen feet wide, of quartz and spathic iron interspersed with galena, zinc blende, and angular pieces of the slate country rock. Prospecting to the west in a dense forest of heavy timber along the strike of the vein, at about 800 feet, a large exposure of the surface croppings of the large ore-shute was found, and here the Slocan Star claim has developed the ore-body to be described below.

Up to the present time this mine has paid \$400,000 in dividends.

DIVIDENDS.

The actual amount paid in dividends cannot be stated, as some of the mines never make their profits public, such as the now famous Payne, but it is known that the total amount is at least \$1,800,000, of which \$960,000 were paid in 1897. The following mines have stated publicly their dividends: Slocan Star, \$400,000; Reco, \$287,500; Idaho, \$220,000; Rambler-Cariboo, \$40,000; Goodenough, \$32,500; Last Chance, \$37,000.

The Province levies a tax of 1 per cent. on the value of the ore after deducting freight and treatment charges. Hence, the average ore for 1897 yielding 108.5 ounces silver and 45.7 per cent. lead, at the average prices for 1897, would be worth \$97.70 per ton, from which have to be deducted:

Freight and Treatment.....	\$22 00
Duty on Lead (100 p.c.).....	15 25
Government Tax.....	75
	<u>38 00</u>

Besides the cost of mining, sacking and transport to point of shipment, so that the net value or profit on average Slocan ore will be about \$50 to \$55 per ton.

 TRAIL—EARLY HISTORY.

EARLY in the sixties the placer mines on Wild Horse, Findlay and other creeks in East Kootenay having been discovered, resulting in the rush there of miners and the constant demand for supplies, as there was no means of communication between the coast and this district, except through the United States, with vexatious delays at the customs, Mr. E. Dewdney, now the Hon. the Lieutenant-Governor of British Columbia, was instructed to survey and construct a trail entirely within British territory, through the southern part of the Province, as a passage to the north had been proved to be not feasible. In 1865 this trail, since known as the Dewdney Trail, was finished, and in its course it passed about one mile south of the present town of Rossland on its way down Trail Creek to the Columbia River. Hence a means of ingress was given to this region, and indications show that early prospectors were attracted to the iron-stained cappings that have now attained such importance and value, as a five-foot hole on the Le Roi and other openings testify, but the low-grade surface rock discouraged them, while the means of getting such ores to smelting centres seemed quite out of reach. However, in 1889, Joseph Bourjouis located the first claim, the Lily May, near the Dewdney Trail, which in 1890 was recorded by J. Bordau. In this year J. Bourjouis located the Centre Star and the War Eagle, while the Virginia and Idaho were staked by J. Morris, his partner. They also discovered the Le Roi, but, forbidden by law to stake more

than one claim on the same vein, this piece of ground became the property of Mr. E. S. Topping by his simply paying the expenses of recording.

In November, 1890, Mr. Topping met at Colville two Spokane attorneys, offered to sell one-half interest in the claim for \$30,000. These gentlemen became interested in this property, went to Mr. Oliver Durant, a gentleman of long mining experience in the West, in whose judgment they had had full confidence, and he, also impressed with the ore, finally secured a working bond on sixteen-thirtieths of the property for six months, with the proviso that during that time he should spend \$3,000 on the claim. Although he knew good mining men had condemned the ore deposits of this region as of altogether too low a grade, Mr. Durant came

Le Roi
Mine.

up at once, examined the claim, taking from a shallow cut sixteen feet long across solid sulphides careful samples that returned as high as \$60 in gold, at the same time visiting the Enterprise, Centre Star, Idaho, Virginia, War Eagle, and Josie. Satisfied with the showings, E. J. Kellie was left in charge of the sinking of a shaft from which during the winter weekly samples were forwarded with great difficulty to Marcus, Wash., by trail down Trail Creek and the Columbia, samples that assayed from traces of gold up to \$472. In the spring of 1891, after many vicissitudes, ten tons of picked pure sulphide ore from the bottom of the thirty-five foot shaft, where the vein was fully nine feet wide, were packed out to the Columbia and shipped to the Colorado Smelting Works at Butte, when the excellent return of \$84.40 per ton was given as the value of the ore, or three ounces of silver per ton, 5.21 per cent. copper, and about four ounces of gold. The bond was then taken up, and in the course of time the remaining fourteen-thirtieths were sold by Mr. Topping to some of the present owners. The Le Roi Gold Mining Company was then formed and about 70,000 shares of the treasury stock sold at a small figure.

For over a year Mr. Durant had charge of the work, contending with many obstacles, insisting on the continuance of development, as he pertinaciously believed in the ultimate conversion of this prospect into a valuable mine, but finally he decided to sell out his interest to the others, and with Mr. A. Tarbet bought

Early
Development.

the Centre Star and Idaho, upon which nearly 900 feet of work had been done at a cost of \$25,000, work that was the main support of this little camp. But the need of roads was pressing, no advance could possibly be made, and again through the efforts of Mr. Durant, a trail and then a road were build up the East Fork of Sheep Creek from Northport by the business people of that place, and Captain Fitzstubby, Gold Commissioner for West Kootenay, ordering the construction of a road up Trail Creek from the Columbia, the conditions of the camp were at once made more favourable. With the coming of the financial crisis of 1893, Mr. Durant, whose unceasing and determined efforts had overcome many difficulties and disappointments, and demonstrated that the properties he had so faithfully worked at were good, was forced to suspend operations until 1895, when he resumed work on the Centre Star, now organized into a stock company.

In the winter of 1893-94, the Le Roi, that had shut down upon the expenditure of the proceeds from the sale of the treasury stock, was able to ship by sleighs over the Trail Creek road the ore that had accumulated upon the dump, and this netting a good profit, active mining operations were begun, and the fast increasing ore shipments, as detailed elsewhere, bringing handsome returns to



CHINESE PLACER MINING—ROCK CREEK, VALE.



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those who pluckily stuck to this claim, the Le Roi was fairly launched upon its successful career as a rich dividend paying mine. In the meanwhile, Mr. J. A.

Shipments
Made

Finch and Mr. P. Clark had been attracted to the camp, Mr. Finch getting a bond on the War Eagle, which he relinquished after expending several thousands of dollars prospecting; after which Mr. Clark, who had thrown up his bond on the Josie, obtained one on the War Eagle. In the work hitherto done on this property, a large shute of low-grade pyrrhotite averaging \$14 to \$16 in gold to the ton, had been more or less explored, but on going farther west a few hundred feet, by trenching, the top of a splendid body of good ore, averaging two and a-quarter ounces in gold, nearly 100 feet long and eight to twelve feet wide, was uncovered, and this mine took its place among the best in the camp, paying shortly afterwards its first dividend, February 1st, 1895, of \$32,500.

Another strong factor in the rapid progress of the camp is the connection with it of Mr. Heinze and Mr. D. C. Corbin, president of the Spokane Falls and Northern Railroad. Mr. Heinze, the head of a smelting works in Butte, Montana, sent in two men to go over the ground, with the result, after much negotiating, that he made a contract with the management of the Le Roi mine that they should supply him with 37,500 tons of ore on the dump, which he would pay for after the shipment and sampling of each lot, deducting \$11 per ton for freight and treatment charges; and also 37,500 tons on which the charges should be at the lowest rates obtainable in the open market. With this amount of ore contracted for, a land grant from the Provincial Government and a bonus of \$1 per ton smelted from the Dominion Government, Mr. Heinze erected the Trail Smelter and built the tramway from the smelter to the mine. Mr. Corbin, who has extended his road from Northport to Nelson, supplied also with a Provincial charter and land grant, has pushed his road up Sheep Creek from the south to Rossland. Thus constantly as the conditions improve whereby the cost of mining, shipping and treating the ore are materially lessened, does the limit decrease at which the ore ceases to be profitable, and much more of the lower grade ore now in sight is made available.

Railways
as a Factor.

THE ORE DEPOSITS.

Mr. R. G. McConnell of the Geological Survey of Canada, after a short visit in 1894, reported* the country about Rossland to be "an area of eruptive rock, mostly diorite and uralite porphyrite, cut by many dykes," but as no complete geological survey has yet been made, nor any reported lithological study, only a very general description can now be attempted. The main mass of all the country rock is evidently diorite, although it presents many different gradations in composition and structure, varying from a fine-grained aphanitic rock with very little hornblende at one extreme to nearly massive hornblende at the other, often showing mica and pyroxene. Much of it looks like a basic syenite, and samples have been

*Summary reports of the Geological Survey of Canada for 1894-95.

taken for microscopical examination and later report, but the main point of interest is the fact that these ore bodies or veins traverse the diorite, although cores from the hanging and foot walls of the Le Roi shute will be examined as well as samples from either side of the Centre Star ore shute so well defined in the cliff running up Centre Star Gulch, to ascertain whether these samples are all of one class of rock or two. In going over this region the variations are seen to be very marked, in some places the rock being stratified as if of sedimentary origin, but in all probability a more or less altered eruptive. Porphyry dykes from one foot up to sixty and eighty feet wide traverse the country, many with a north and south strike, but with no apparent dislocation of the veins which they cut through; indeed, at six such points of intersection the ore seemed to be concentrated, and even to follow along the dyke for some distance, but this must be made clear by further underground work. A careful geological survey will reveal very interesting facts relative to the formation of these ore deposits.

In this Rossland ore much prospect work has shown clearly that there is a large system of lines of fracture with an east by west and north-east by south-west trend, and a persistent northerly dip, along which more or less ore has concentrated, either as bodies of solid sulphides or sulphides scattered through the country rock. Some of these fissures can apparently be traced through several 1,500-foot claims, and along them are the large ore shutes now being mined or developed, the maximum width of pay ore so far being about 35 feet, and maximum length 310 feet. Many of these fissures have been or are now being prospected, and in many instances with surface indications of the most unfavourable character, the improvement has been very marked in the increase of the amount of ore and its value, and the great probability that more rich ore shutes will be found by following these fissures has made all such property valuable, and is deciding the commencement of extensive exploratory work. Again, large shutes of low-grade ore, mostly the coarse-grained magnetic iron pyrites or pyrrhotite, assaying from traces to \$6 to \$8 in gold, have been found and are being explored for better grade ore and so far with some success, but development, except on a few claims, has hardly yet begun and so far only the shutes that have been exposed at the surface are being worked, and it is yet impossible to foretell how much extensive underground mining will be rewarded.

The surface of these ore shutes is covered with the typical iron capping, or reddish brown sintery mass, and experience enables the prospector to distinguish between disintegrating sulphides, and barren diorite heavily iron stained by the oxidizing of the bisilicates or the iron pyrites nearly always present in this rock. Although it is difficult to prospect such rock which may be much iron stained but with no vein whatever in the vicinity, nearly all work is done along one wall, and the ore appears to follow along one wall, where the rock is not too full of fissures that disguise true conditions, but it is doubtful if more than one wall ever really exists, although a parallelism of lines of fracture may for a short distance seem to prove the contrary. Wherever the ore is found to consist almost of pure sulphides, it will be found lying along and parallel to such a wall, after which ore is disseminated more or less through the inclosing rock, often following along small fissures that in some cases form small veins of good ore that run for a considerable distance away from the main deposit. In all the mines the ground is faulted, thus dislocating the ore

Mr. McConnell's
Report.

Typical
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deposits and stringers and complicating the search; but these slips will be better understood as work progresses, although much development work will have to be done by driving steadily ahead along the general course of the veins and cross-cutting, for the good rule of following the ore is seldom possible for any distance by reason of these dislocations.

THE ORES.

The ores at Rossland, with the exceptional free-milling gold quartz of the O. K. mine, may be divided into three classes:—

(a.) Those large deposits of coarse-grained massive pyrrhotite, locally known as the "iron ore," in which very little or no value in gold is carried.

(b.) The ore found in many claims on the south belt, as the Lily May, Homestake, Mayflower, Curlew, Gopher, R. E. Lee, etc., in which the sulphides are not pyrrhotite but iron pyrites and marcasite (white iron), with, in some of these mines, much arsenopyrite, and also zinc blende and even galena, in which case the silver value exceeds the gold, and the percentage of copper is very small or nothing.

(c.) The typical ore of the camp as sold by the Le Roi, War Eagle, Iron Mask or Josie, is divided into first-class and second-class. The first-class consists of nearly massive fine-grained pyrrhotite and copper pyrites, sometimes with a little magnetite, or mispickel, with more or less quartz and calcite. In this class of ore, as got from the lowest workings of the Le Roi, the amount of quartz is much higher, the smelter returns giving 41 to 52.8% silica, and 20.6 to 26.8% FeO., but this is proving the best ore in the mine, the average smelter returns being on 1,200 tons, 2.6 oz. of gold, 1.8 oz. of silver, and 2.5% of copper, or \$53.05* net, per ton, while some shipments went as high as 4.06 oz. in gold.

The second-class ore, and the bulk of the ore of the camp shipped will be most probably of this character and value, is a diorite with a comparatively small percentage of these sulphides, but the value is still very good; 1,800 tons of the Le Roi, second-class, yielding by smelter returns an average of 1.34 oz. of gold, 1.4 oz. of silver, and 1.6% copper, or \$27.97* net, per ton. Mr. Bellinger, of the Trail smelter, kindly gave the average analysis of this ore to be FeO. 22%, SiO₂. 42.5% CaO. 7%, MgO. 3%, Al₂O₃ 18%; copper, 1.5%, S. 6%.

TREATMENT.

The destiny of the mining operations of this part of the Province will depend, to a very great extent, upon the means of transportation, and then upon the cost of metallurgical treatment, for a large amount of low-grade ore is promised, and the possibility of treating such ores at a low figure to leave a fair margin of profit must attract the best endeavours of the metallurgist. The ores containing a high percentage of sulphides will be very desirable, and should command the lowest smelting charges, but in all probability the great bulk of the Trail Creek ores will be of the mixed class, or diorite with a comparatively small proportion of sulphides, and hence a low percentage of copper, while again the amount of arsenic, abundant in some of the ore, will be an important element. This ore has

*Not deducting freight and treatment charges.



STAMP MILL, "CARIBOO MINE, CAMP M'KINNEY.



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now been shipped to many of the American smelters, such as at Tacoma and Everett, Washington, and Great Falls, West Helena, and Butte, Montana, and now much will be smelted at the new works at Trail, to be described. The erection of smelters at Rossland, in the immediate vicinity of the mines, is being seriously contemplated, but it is yet too early to make any definite statement. The cost of freight and treatment is now about \$10 to \$14 per ton, when 95 per cent. of the assay value of the gold and silver is paid for, and 1.3 is deducted from the percentage of copper present.

Of course the possibility of other processes being suitable to such ores is being tested, such as the cyanide and chlorination processes, and the results will be awaited with much interest as some such process may prove very successful, and all judgments should be deferred until the conclusive experiments have been completed.

LE ROI MINE.

THE area of the Le Roi claim is about twenty-one acres, and is operated by the Le Roi Gold Mining Company, of Spokane: President, W. W. Turner; General Manager, George Turner, and capitalized for \$2,500,000 in 500,000 shares at \$5.00 each. The Company own the Le Roi, the Black Bear and the Ivanhoe, or seventy-two acres in all. On this claim the large surface exposure, six to fourteen feet wide, of the rusty-red iron-stained rock, or the typical iron cap, that on fracture proved to be the covering of a large body of sulphides, mostly pyrrhotite, with some chalcopyrite, could be easily seen for 200 to 300 feet in a north-east by south-west direction, when at the west end of this ore shute the vein seems to branch into two or even three smaller veins that diverge.

The first shipment was made in 1893 of 700 tons. In the spring of 1895 a contract was made with the Trail smelter for the delivery of 75,000 tons of ore. Over 50,000 tons have been delivered under that contract. The Company paid its first dividend of \$25,000 in October, 1895, and has paid up to date over \$525,000, and is announced to pay \$50,000 a month hereafter. The main shaft has been sunk through a solid body of ore to a level of 600 feet, with extensive drifting and tunnelling. Enormous ore bodies have been opened in all the drifts. In the west drift on the 450-foot level the width of the ore body reached twenty-eight feet, the vein contracting at the 500-foot level, and again down to within twenty-five feet of the 600-foot level at the uniform width of seven feet, when it begins to expand, and on the 600-foot level the pay ore is twenty-two feet wide by actual measurement. Seven feet of it averaged \$80 per ton in gold and ten per cent. copper, and fifteen feet of it \$35. There are 200 men employed in and about the mine and 300 tons of ore are being raised every twenty-four hours. The pay-roll amounts to \$2,000 a month, transportation charges \$15,000 a month, treatment charges \$50,000 a month, and it is anticipated that the mine will ultimately produce over 1,000 tons of ore a day and give employment to 800 men.

Recently the Le Roi mine has been purchased by the A.B.C. Corporation for

\$3,000,000, and may be regarded as the greatest producing mine of British Columbia. Mr. Carlyle, resigned as Provincial mineralogist, is mining engineer of the syndicate now in control.

THE WAR EAGLE MINE.

Next to the Le Roi, the War Eagle is the largest mine in the district, and was recently sold to a Toronto Syndicate, of which Messrs. Gooderham and Blackstock are the principal shareholders, for \$700,000 cash. The claim was located in July, 1890, by two French-Canadian prospectors, and in the fall of 1894 it was bonded to Spokane parties for \$17,500 and a Company organized. Under new management the course of the tunnel was changed and a big ore chute struck ten feet wide in places, which made the mine famous at once, and early in 1895 a dividend of \$27,000 was declared. There have been 4,500 feet of tunnelling done on the mine, and since the property was first worked 30,000 tons have been shipped, returning \$900,000. Dividends to the amount of \$250,000 have been paid. There is said to be 75,000 tons of ore in sight. At the present time no shipments are being made, the management devoting itself to the work of development and blocking out ore, in which work about ninety men are employed.

THE TRAIL SMELTER.

The British Columbia Smelting and Refining Company own the smelter at Trail Creek, of which the President is F. A. Heinze, who also owns a smelter at Butte, Montana. On securing the large contracts for ore from the Le Roi mine Mr. Heinze obtained the present excellent smelter site, on the bluff overlooking the Columbia, at the mouth of Trail Creek, where has sprung up the town of Trail. This smelter was erected with great rapidity in spite of inclement winter weather and great difficulty in securing supplies of building material and importing the plant and machinery; but although work was begun October 10th, 1895, the first furnace was fired up in February, 1896, and now five furnaces are in full operation, with further extensive and important additions being rapidly pushed to completion, additions that should greatly improve present conditions and treble the capacity of the works. Besides that with the Le Roi, contracts have been made with the War Eagle, Iron Mask and Crown Point. The smelter has a capacity of 400 tons per day, and the management contemplates extending the same in order to meet the demands of the district.

SOUTH BELT.

On Lake Mountain, south of Rossland, and in the intervening valley, also on the east and south slopes of Deer Park Mountain, all of which, with Lookout Mountain farther east, may be known as the South Belt, the same system of east and west fissures obtain, and, with the comparatively little work done, the results are such as to encourage the much more extensive investigation of many of the claims. With the exception of the Crown Point and Deer Park, the ore bodies have not yet been found of large size, but the fissures are very persistent, and the average ore is of, so far, fair value, the ore on most of these properties being different from the rest of the camp in that there is very little pyrrhotite, but much iron and arseno-pyrites, with some zinc blende and galena, while the silver value is higher than the gold. But pyrrhotite ore is also found, as will be detailed below. The construction of the tramway through the centre of this belt has rendered easy the shipment of ore, and already the Crown Point and Mayflower are shipping.

GENERAL CONDITIONS AND PROSPECTS.

MR. CARLYLE, in discussing transportation and communication, says: "Four years ago only trails led into this part, the Dewdney trail having been built in 1865, but now a waggon road runs to Trail, and another down the fork of Sheep Creek to Northport, in the State of Washington, over which much ore has been and is shipped in heavy ore waggons, which return with much of the supplies for the town and the mines." Then, after referring to the lines of communication described elsewhere, including the C.P.R. and American railway lines travelling northward, adds "That the Red Mountain Railway, passing in close proximity to many of the leading mines, will connect at Spokane with the two trunk lines, the Northern Pacific Railroad and the Great Northern Railroad, whence is direct communication with all parts of the United States, as well as easy access to the smelters on Puget Sound, at Tacoma and Everett, to those at Helena and Great Falls, Mont., and to the smelters farther south in Colorado and at Kansas City. Hence the fast developing scheme of transportation will soon change the conditions of this district by giving cheaper and quicker egress for the production of the mines, or for the assembling at the most favourable points at the smelting or other reduction works, the different kinds and grades of ores, the fuels, fluxes and other supplies that should make possible the much cheaper handling and treatment of the various ores now known to exist in large quantities.

"Although much ore of high grade is being mined, large bodies of low grade, averaging \$4 to \$12 in gold, one to three ounces in silver, and up to three per cent. copper, are now exposed, and further necessary systematic and fearless development work must be done, which this widening range of transport facilities will aid most materially not only in handling the output of this one camp, but in collecting at the best points different classes of ores from the newer localities now being prospected, as well as the camps already established elsewhere in this part of the Province. The restriction to the more or less same class of ore, unless it be of a most favourable character, seldom got or maintained, is generally not at all conducive to the best smelting practice, and the localizing of the smelting industry of the Province at the most advantageous centres, where will be collected the different ores from different parts that are so necessary for the most economical treatment, one kind of ore helping to flux the others, will be greatly determined by the shipping facilities by waggon road, railroad or steamboat, that are now being supplied or projected. As the future of the mining business in Rossland and the surrounding districts will be largely dependent upon the cheapest treatment of the ores produced, and we can now announce the erection in the near future of very extensive smelting plants in the Province, communication assumes vital importance, and now it is almost promised that it will be rapidly extended as the ore bodies are found to be persistent and profitable throughout more than a limited area.

"The mountains in this Trail Creek region are for the most part rounded and covered with timber, not very high and not precipitous, so that a waggon road can usually be built anywhere without much difficulty, while a railroad can

be put through any of the different valleys with switch-backs if needs be, so that nearly any mine will not be difficult of access. The supply of timber for fuel and mining purposes on most of the claims will soon be exhausted, but much can be brought in cheaply by the railroads when the need comes. The supply of water is also small, but so far adequate for mining purposes, and a large supply cannot be got less than six miles distant."

In his report to the Minister of Mines, Mr. Carlyle says:

"Perhaps the greatest factor that will determine the progress of mining and the realization of the wealth that undoubtedly is now locked up in these mountains, is the means of communication and transport. The ores must be carried to the metallurgical centres for treatment, and if the ore deposits now known to exist, and those that may yet be discovered, are to be made available and to become a most valuable part of our resources, trails, roads and railroads must be constructed to make possible the concentration of ores, fuels and supplies at the most favourable points; and if this part of the industry is to be retained in Canada, Canada must assist in boldly advancing these means of communication to make easily accessible the coal fields and the mines from which the different classes of ore can be obtained, that separately are difficult to treat, but brought together and intermixed, can be reduced at minimum smelter charges. Favoured by the trend of the mountains and valleys, American railroads are rapidly entering from the south to transport Kootenay ores to the American smelters; but, notwithstanding much greater difficulties of construction, Canadian roads must be energetically built, and, not only will more mines be opened up, but the large reduction works, with the large employment of capital and labour, will be mostly retained within this Province. The opening up of Kootenay during the last six or seven years has been rapid, but the most marked advance has followed the building of the various lines of connection already completed, as is seen, for one instance, in the rise of the new camp at Rossland; but more rapid advance is awaiting these better facilities, which it is safe to predict will be called on to carry a heavy tonnage. Several important lines are seeking aid to be built; lines that will open country that already is proving most promising as it is further prospected, and it is hoped that this aid will be granted, so as to permit the immediate commencement of these important undertakings. Not only is the bulk of this ore being shipped to the south, but the large proportion of the fast increasing demand for mine and mercantile supplies is being satisfied by the cities on the other side of the border, with the result that a great rival in their business affairs has followed the opening up of these good markets in British Columbia, greatly due to the fact that orders can now be more promptly filled and forwarded from this source, this advantage more than counterbalancing the customs duties that are imposed upon imports. Not only this, but much of the mining machinery manufactured in Eastern Canada, and now being extensively ordered, is being brought most of the way over American railroads to the point of entry, Northport. If our own centres of trade are to benefit by this growing business, strong efforts must be made to get these facilities for rapid and prompt delivery which, with customs dues, will more than give Canadian business concerns the advantage, as the fact should be realized that new and large markets are opening up in British Columbia. American business men are making strong efforts to secure this trade, and the current once set in, it will be difficult to deflect it into that channel most beneficial to the commercial interests of this country.

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"The consensus of opinion of many mining men who have studied the conditions and surface showings in this new camp at Rosslund, is to the effect that few camps have ever shewn so many favourable indications that warrant the belief that on further extensive, systematic exploration other shutes of gold ore will be uncovered. Prospecting has disclosed these many parallel veins, varying in width, when exposed, from an inch to several feet, and it is believed that many more ore shutes will be found when these most promising surface indications are thoroughly exploited, for it is quite improbable that the large shutes of rich ore that have been shewn on the surface by denudation will be found to be the only ones.

"This district has now reached that stage when persistent, plucky development work, sustained by ample capital, must be done to prove up these many veins and surface showings, but a sufficient amount of working capital is demanded, (a) because much of the rock is very hard to mine, necessitating good machinery to make proper progress, (b) considerable or even extensive development work must be done in the search for more pay shutes, (c) while the more or less faulted nature of the ground, though not serious, will complicate this work. While the present mines were opened up with comparatively small capital by reason of the mines producing pay ore shortly after work was begun, or ore that was very profitable as soon as roads were built over which it could be sent to the smelters, still any enterprise that is now undertaken will require strong financial support, and already several powerful companies are at work."

To the above may be added that Rosslund has now five or six well determined mines, and new ore shutes are being opened up, as systematic development progresses. There is little doubt that many of the other properties on which a little work has been done, with sufficient capital, will yet reach the stage of shipping mines; but a large amount of capital is required. The camp has decidedly made great progress during the present year, although the feverish activity of some months ago has subsided. Henceforth, as the speculative element has been eliminated, mining will proceed on the basis of its merits and sound business methods.

The construction by the C.P.R. of a line from Rosslund to the Columbia River where cheap fuels will be easily obtainable and new smelting facilities afforded, will be of immense benefit.

Deducting from the values of Trail Creek ores the cost of mining, transportation, treatment and Provincial tax, or, calculating from scanty information, from Dividends. \$15 to \$18, leave a net value or profit for the production of 1897, of from \$12 to \$16 per ton. To date, February 1st, 1898, the Le Roi paid \$725,000 in dividends, of which \$400,000 were paid during 1897. The War Eagle has paid \$187,000, but none since 1896.



STRATHVYE MILL—FAIRVIEW, B.C.



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BOUNDARY CREEK REGION. 11

THIS is the name now generally given to the large and important region extending from the Fourth of July Creek to the main Kettle River, as it flows from the north, embracing all the territory drained by Boundary Creek and its tributaries. Within this area veins and deposits of great promise and diversity in kind have been discovered, on which a fair amount of work is being done, but this district is in this peculiar condition in that the claim owners, seeing that the best and cheapest facilities for transport and treatment of ores are demanded, are waiting for these facilities to be supplied or definitely promised before undertaking very serious development work.

Two companies have charters to build a railroad through this district, but the holders have carefully studied the situation, and if the mining men will prove up the existence, under these extensive surface showings, of ore bodies that will promise a good tonnage for transport to the smelting centres or warrant the establishment of smelters here, the building of a railroad will be much expedited. Mining men should not hesitate in doing extensive and all important prospecting; should not wait for the next man, as they can rest assured that they must lead the way, *i. e.*, prove up mines and deposits of pay ore, and the railroads will quickly come. Realizing this fact to a certain extent, more determined work is now being done; steam mine plants are or are about to be installed on several properties by men strong financially, and some of these large, but as yet too low grade gold-copper deposits will be thoroughly prospected, and the true significance of these surface indications wrought out.

Besides the Boundary Creek region, in which so far the most discoveries have been made, is the Grand Forks region, or the North Fork of the Kettle River and its tributaries, where many claims have been staked off, but in this report the different camps visited will be described irrespective of their location in the two recording divisions.

LOCATION.

The former Kettle River Recording Division, in the Southern Yale District, extended west from the Trail Creek Division, or West Kootenay, along the international boundary line to the Osyoos Division, thence north to the Vernon Division, embracing the valleys of Christina Lake, the North Fork of Kettle River, Boundary and Fourth of July Creeks, and the main Kettle River that leaves the Province at Midway to enter a few miles west of Grand Forks. All these waters finally merge in the Kettle River, which crosses the line south of Christina Lake and flows into the Columbia River at Marcus, in the State of Washington.

For greater convenience of recording, this Division was divided last summer into the Kettle River and Grand Forks Recording Divisions, with the Government offices at Midway in the former, and Grand Forks in the latter.

TOPOGRAPHY.

This district has not the rugged, lofty, mountainous character seen in the Kootenays—at least the southern portion within the ken of the main body of prospectors, as none of the well-timbered, rounded mountains rise much above 3,000

feet, or 3,200 feet above Grand Forks. The trend of the valleys, as seen by the course of the various rivers, is north and south, and is dependent in some way upon the geological conditions, but there are low-lying connecting valleys or passes, which, with the easy slopes, will greatly simplify the construction of a railroad that, to reach the chief points, will have to traverse a somewhat circuitous route.

Most of the country is well timbered, but some slopes are quite treeless and covered with bunch grass, while most of the valley of the Kettle River is open, and affords fine ranches when irrigated for all kinds of cereals and fruits, as the rainfall is small.

ROADS AND TRAILS.

Road building is not attended with any serious difficulties. The main Government road from Penticton, where connection is made with the C. P. R. by steamer "Aberdeen," after leaving Camp McKinney and following Rock Creek, enters the Kettle River Valley at the mouth of Rock Creek, and continues to Midway, beautifully situated in a wide valley, then up Boundary Creek four miles to Boundary Falls and six miles to Anaconda, where the road turns to the east, while a road runs 1.5 miles north to Greenwood, the largest, most central, and only incorporated town in Boundary Creek region. The enterprising founders of this town have built miles of road to the different surrounding camps, one of which, passing the hospital, traverses Greenwood and Wellington camps, and then joins the main Government road which enters the large and fruitful valley of Grand Forks, finely located at the junction of the North Fork and main Kettle Rivers. Thence the road runs to Marcus, or to Bossberg, on the Columbia, connecting with the Spokane N. R. R. to Rossland, Nelson, etc., on the north, or Spokane, etc., to the south.

Stages run two or three times a week from Penticton to Marcus or Bossberg *via* the towns mentioned, with the following scale of distances:—

	MILES.
Penticton to Camp McKinney.....	56
Camp McKinney to Midway.....	32
Midway to Greenwood.....	8
Greenwood to Grand Forks.....	23
Grand Forks to Marcus.....	45

Much of this road is good, but very dusty in dry weather, but much yet requires great improvement. It takes three days to travel from Penticton to Marcus, stopping over night at Camp McKinney and Grand Forks, after spending one night at Penticton.

Roads branch off at Rock Creek, Midway and Carson, and cross into the United States, while roads are built from Greenwood and Grand Forks to the camps. Good pack trails run in many directions, and the prospector has easy access to much of this country.

Railroad charters are held by two companies; (a) by the Columbia & Western from Robson, on the Columbia, to Penticton; (b) the second charter recently bought by MacKenzie & Mann, of Toronto, who are buying mining properties near Greenwood, is for a line from the Coast to Penticton, thence *via* Midway, Greenwood and Grand Forks to the Columbia River. During the present year (1898) it is very probable that railroad construction through this district will see its commencement, following which a very great impulse will be given to mining work.

GEOLOGY.

No geological survey of this region has yet been made, but Mr. S. S. Fowler, M.E., has given a very succinct account in the Minister of Mines Report for 1896, as he had been over much of this ground during the two or three years he spent there studying the different mining camps. The writer, passing quickly from camp to camp, was able to form only a very general idea of the geological conditions, as all available time was devoted to the ore-deposits and their immediate environment.

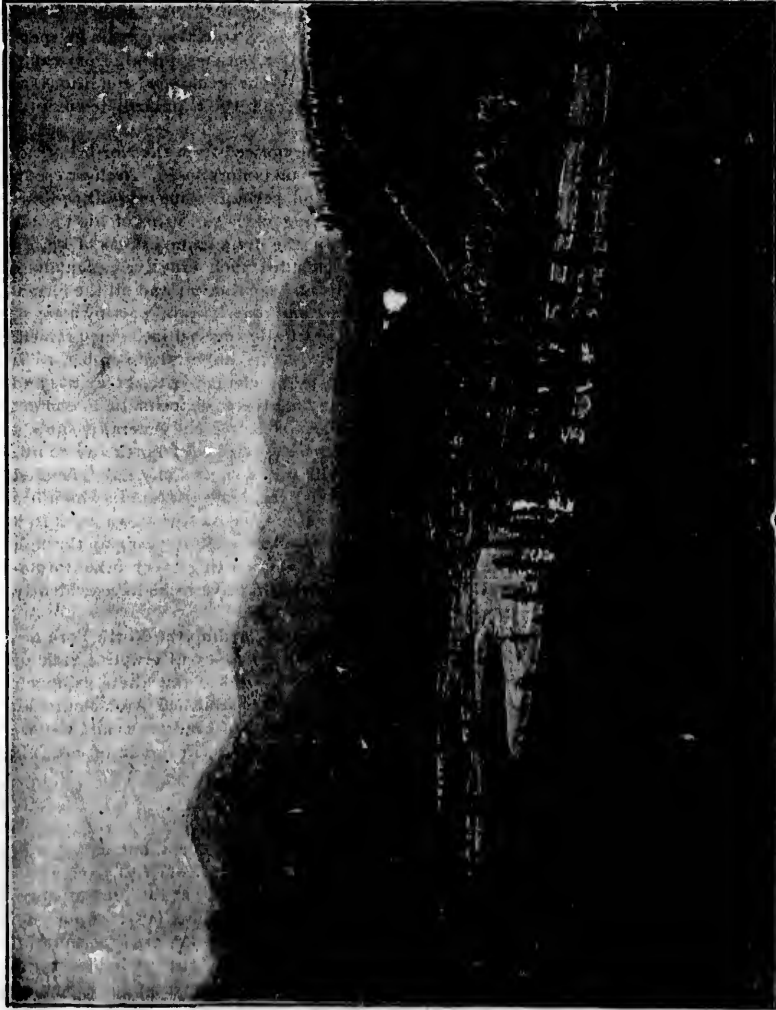
However, the preponderant rock formation noticed from the North Fork of the main Kettle River was seen to be very highly metamorphosed, Archaean sedimentaries or gneisses, schists, quartzites, slates and perhaps some crystalline limestone, in which are found almost all the gold-bearing veins and veins of high grade silver-gold ore. Overlying these rocks are seen the fragmentary areas of highly altered limestone, as this region has been subjected to much eruptive action along lines of fracture and eruption running northerly and southerly; and all the formations are traversed by dykes of various eruptives and overlain in part by areas of effusive rock, mostly light to dark green, partially crystalline, fine-grained, feldspathic rock, the miner's "diorite," which is a very important member, as in this are all the large zones impregnated with gold, chalcopyrite, haematite and sometimes pyrrhotite and iron pyrites. Many of these deposits lie in contact with or close proximity to very crystalline limestones, which generally show a nearly perpendicular plane of contact with the general strike of north and south. Up the valley of Boundary Creek for about eight miles, or to Long Lake, flanked on either side runs a narrow belt of light-coloured hornblende granite in which has been found small veins of high grade silver-gold ore, as on the "San Bernard" claim. There are also large bosses of highly crystalline rock breaking up through the other formations of syenite, diorite, etc., and dykes cutting every other formation are frequent. In Central Camp the greenish, eruptive rocks have evidently been highly altered and rendered in places quite schistose.

East of Grand Forks, along the road, are schists, and up the North Fork are well bedded quartzites, and gneisses traversed by large masses of eruptive rock of various kinds. To the north of this district prospectors claim there is much granite like that seen near Camp McKinney, and also the stratified Archaean rock.

Near Rock Creek is an area eight to ten miles long of sandstones and shales, probably of cretaceous age, and here are found deposits of a fair grade of coal, on which practically little or no work has been done in exploration.

ORE AND ORE DEPOSITS.

Some have written of this region as being rich in copper ores, but as yet this is not proved, but there are certainly large zones carrying from 1 to 3 and 4 per cent. of copper and some gold values. About all one can say at the present stage of very scanty development is that throughout this region are (apart from the quartz veins and veins of high grade ore) large ledges or mineralized portions of the greenish feldspathic rock, already described, from which good gold assays are obtained, and which offer every inducement to extensive exploration. If more concentrated parts or regular ore-shutes are found, there is every reason to believe that such ore would prove to be very profitable, as such good, but not pay, values are already got from a large amount of mineralized rock matter, and even some good pay ore has been found in the limited work done.



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It is impossible at the present time to give a definite or really satisfactory account of the ores and ore deposits of the Kettle River-Grand Forks District, as no producing mine has yet developed; no smelter or mill returns can be referred to, and much of the workings could not be seen, as work had not been resumed and water had accumulated, but the prospects of this becoming an important mining district are excellent if we can judge from surface indications and the little work done.

The "surface showings" throughout this region are certainly very flattering, although it must be admitted that very little pay ore (*i.e.*, under the best of considerations) has yet been found. The future of these camps rests greatly upon results of the development work, and at the time of going to press with this report, a much larger amount of underground work is being done or begun, with the assurance that if good bodies of pay ore are proved up, railroad and other facilities will soon follow, and that more abundant capital will flow in. Many mining districts in other countries languish because interest has never been aroused to their mining possibilities, but in British Columbia any part or region will now command instant attention if the miner by his work can show that he has discovered what may be made a mine.

SOUTHERN YALE MINING CAMPS.

THE three most important camps in Southern Yale or Boundary District are Camp McKinney, Fairview Camp and Central Camp, in which a number of claims have been recorded. Of these, on account of the development on the Cariboo-Amelia mine, Camp McKinney is at present the most important. It is situated between 3,500 and 4,000 feet above Okanagan Lake, between Okanagan and Kettle Rivers, fifty-six miles east from Penticton on the main stage road and thirty-two miles westerly from Midway. The history of the camp dates back to 1884, when the first discovery was made. It was not until 1887, however, when the Cariboo vein was found, that anything was done.

The ores of the camp are, as a rule, free milling, consisting of white quartz containing some sulphides. The principal claims are the Cariboo-Amelia, Alice and Emma, Maple Leaf, Le Roi, War Eagle, Dolphin, Fontenoy, Vernon, Victoria, Minnehaha and Old England. The quality of ore on the Cariboo-Amelia, which is the representative mine of the camp, has increased with depth, the total yield being from \$15 to \$20 per ton from the lowest works.

The mine consists of two claims owned by the Cariboo Gold Mining & Milling Co., with a capital stock of \$800,000. Three shafts have been sunk, of which the present working shaft is 175 feet deep, with tunnels and drifts. So far over 20,000 tons of ore have been mined, and dividends to the amount of \$200,000 have been declared.

Fairview Camp is located two and a half miles west of Okanagan River, and is twenty-eight miles south of Penticton by stage, twenty-nine miles west of Camp McKinney, and twelve miles north of Osoyoos. The claims lie on the

eastern side of a low range of mountains separating the Okanagan and Similkameen Valleys, along a series of foot hills 700 feet above the Okanagan Valley. The geological formation and character of ores are very much similar to those of Camp McKinney, although it is difficult at the present time with the limited

amount of development to say how far the values of the ores correspond. So far the milling value has not proved so great as that of the latter. In this camp are located a number of promising claims, such as the Morning Star, Stem Winder, Tin Horn, Smuggler, Silver Crown, those of the Strathyne Mining & Milling Co., the Joe Dandy, the claims of the Consolidated Fairview Gold Mines Co., Winchester, Comet, and Western Girl. The Tin Horn, Big Horn and Fortune are owned and operated by the firm of Dier, Davidson & Russell, of Fairview, and are being actively developed. Not much ore has been shipped, but 2,700 tons of Morning Star ore yielded about \$12 a ton.

Central Camp, also known as White's, Douglas' and Atwood's Camps, at the head of Douglas Creek, eight miles from Midway by trail and five miles from Boundary Falls, lies at an elevation of 4,000 to 5,000 feet. In this camp there is

a variety of ores, gold and silver-bearing quartz, gold-copper sulphides, and argentiferous gray copper. The principal claims here are Golden Rod, Nabel, Number Seven, Norfolk, New York, Rob Roy, St. Maurice, City of Paris and Oro. Development work has not been carried to sufficient extent to fully demonstrate the ore values or extent of the veins.

With respect to the three camps referred to, the general character of the ore is similar and largely free milling. The quartz veins seem to lie in large bodies, and are what might be called low grade ores. Hence their development as a mining district depends largely upon cheap transportation and communication being established. At the present time communication is somewhat difficult and expensive, and consequently these camps will not become shippers to any large extent until such facilities are provided.

There are limited supplies of water, and, as a rule, plenty of timber, if not on the claims themselves within easy distance of them. Sufficient is already known to justify the conclusion that this will be a very important mining district, and will be a heavy yielder in gold.



EAST KOOTENAY.

ON account of the building of the Crow's Nest Pass, or British Columbia Southern Railway, now under construction, the prospects for the great mineral wealth of East Kootenay being exploited are very good indeed, and in anticipation of this line prospecting has been very active, and several very fine properties are being developed.

During the past year the construction was begun by the C.P.R. of the Crow's Nest Pass Railway from Fort McLeod, in the North-West Territories, through the Crow's Nest Pass, in the Rocky Mountains, thence across the valley of the Kootenay River and along the valleys of the Moyie and Goat Rivers to Kootenay Lake to Nelson. The Company promises that by this autumn trains will be running over this road as far as Kootenay Lake.

Railroad
Construction.

The commencement of this railroad precipitated a great influx of prospectors, speculators, etc., last spring, a large number of whom started into the mountains to prospect, but only to encounter an unusually wet season that deterred a large majority from moving off the trails.

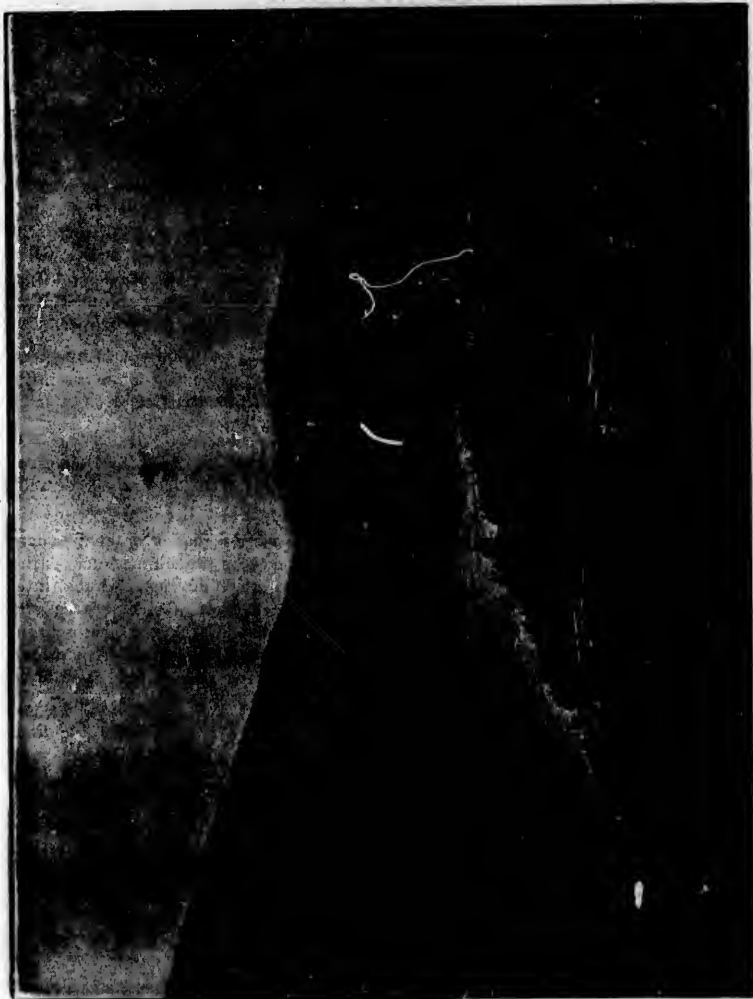
Official information respecting this district is contained in the Minister of Mines' Report of recent years, but particularly in Mr. Carlyle's report of 1896 from which the following is condensed:

A short examination was made of those parts of East Kootenay where mining was being actively carried on, but with the exception of mines such as the North Star, Moyie Lake Mines, and the placer mines on Wild Horse Creek, little work other than assessment work was being done. However in the southern part of Fort Steele District the prospectors were very busy during the past season, both in the Selkirks and Rocky Mountain Ranges, and a large number of claims were staked off in close vicinity to the North Star Mine and on the St. Mary's River, Bull River, Perry Creek, and their tributaries.

Hitherto means of communication have been such that considerable time had to be consumed in reaching any part, and prospectors and mining men have been attracted to other parts more easy of access, but with a more extended steamboat service on the rivers, new roads and trails, and with keener interest aroused by the progress of mining in other parts of Kootenay, the Division of East Kootenay is on the eve of receiving much greater interest, with every probability that her latent resources will prove very valuable.

TOPOGRAPHY.

Running north and south for over two hundred miles, flanked on the east and west by the towering ranges of the Rockies and the Selkirks, is the wide and beautiful valley through which flows the Columbia River to the north, and the Kootenay River to the south, to join waters at Robson in West Kootenay. This valley is ten to thirty miles wide, and gently rises to the foot-hills along the main ranges, which are often bold and craggy and rise in lofty peaks.



COLUMBIA RIVER AT REVELSTOKE, B.C.

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TRANSPORTATION.

STEAMERS.—From Golden, on the C.P.R., a very comfortable steamer of the Upper Columbia N. & T. Co., Capt. F. P. Armstrong, leaves for the Upper Columbia every Tuesday morning when navigation is open, and runs for most of the season as far as Mud Lake Landing, 113 miles, where passengers and freight are transferred by a horse tram, four and three-quarter miles, to the Upper Columbia Lake, where another steamer runs to Canal Flats, about fifteen miles, and thence by the stage to Fort Steele, forty-six miles, stopping over night at Hanson's, at Wasa Creek, twelve miles from Fort Steele, one of the best hostleries in Kootenay. When navigation ceases a weekly stage runs between Golden and Fort Steele, carrying the mails. To the south steamers of the same navigation company run down the Kootenay River from the North Star Landing, six miles above Fort Steele, to Jennings, and at high water these boats go as far north as Canal Flats or about four miles from the steamer landing on the Columbia. Anticipating a large influx of men and supplies from the south during the present year, Captain Armstrong intends establishing a daily steamer service, as long as the depth of water will permit, between Fort Steele and Jennings.

ROADS.—A good wagon road extends from Golden to Fort Steele, whence roads radiate to Wild Horse Creek, Perry Creek and St. Mary's River, North Star Mine, Cranbrook, and to Tobacco Plains and across the border to the south.

TRAILS.—(a.) The Dewdney or Moyie Trail runs from Cranbrook southwest past the St. Eugene Mines, on Moyie Lake, to the landing on Kootenay River, where stop once or twice a week steamers on the Kootenay Lake service. This was the trail traversed by the placer miners in the early sixties.

(b.) The Toby Creek Trail, or Well's Trail, starts a few miles north of Windermere, and crossing the Columbia runs up Toby Creek to the Divide, thence down Hamill Creek to Argenta, at the north end of Kootenay Lake.

(c.) From Carbonate, south of Golden, a road for part way and trails lead up the different branches of the Spillimacheen River and into the McMurdo District. Of course there are many other trails, such as over the Crow's Nest Pass, etc., etc.

ORE.—Shipments are made by the steamers on the Kootenay Lake south to Jennings in the United States, and thence by G.N.R.R. to the smelters. The smelter at Golden has never yet been blown in, as no ore has so far been obtainable, but the development of the northern part of the Golden and other districts may yet supply these works, which were built rather prematurely.

NORTH STAR.

The representative mine of the district is the North Star.

This valuable property comprises the North Star, O. K., Dreadnaught and Buckhorn, Crown-granted; and the Rowan, Daffodil, Cromarty, Notre Dame, Dorval, Maverick, Good Luck, Canton, Full House, Brandon, Stemwinder and Ontario, mineral locations, owned by the North Star Mining Co., Ltd., Montreal. President, D. D. Mann; Secretary, H. S. Holt, Montreal; Business Manager, N. W. Curran, Fort Steele.

These claims, 1,500 feet square, are located on a gently sloping mountain one mile south of Mark Creek, and twenty-three miles by wagon road west of the North Star landing on the Kootenay River six miles above Fort Steele, and 2,600 feet above the landing, or sixteen miles directly west of the river. This lode

was located in June, 1892, by Jos. Bourjouis, the locator of the War Eagle, Centre Star and Lily May, at Rossland, and since that time it has been so developed as to expose one of the largest bodies of silver-bearing galena ore yet uncovered in the Province.

GEOLOGY AND ORE-DEPOSIT.

The rock enclosing the ore found in these and adjoining claims is dark gray with a fine-grained, hard and tough texture, apparently of igneous origin, except for slight evidences of bedding planes on the Sullivan Group, indicating the probability of its being very highly altered stratified rock. In the mine is rock looking much like the typical miner's "porphyry," running in places as tongues into the mass of solid ore, as if a dyke were there, but this might be simply the country rock altered near the ore-shute.

THE ORE.—(a.) Is primarily a very clean, solid, argentiferous galena, rather fine-grained, with only a small amount of zinc blende, while underlying it along the foot-wall is the "iron-ore," or iron and manganese oxides assaying about twenty ounces in silver per ton.

GOLD PROPERTIES.

Considerable excitement was aroused by the discovery and location of several very large quartz ledges on the north side of Perry Creek and west of Saw Mill Creek, which flows into Perry Creek, a tributary of the St. Mary's River, and a stream much washed in the seventies for placer gold, two or three miles above which placer ground, or by roads and trails 25 to 30 miles westerly from Cranbrook, these quartz leads are now located. For five miles west and two miles east of Ellwood Creek, a small branch of Perry, the country has all been located along the course of three, if not more, quartz ledges which have proved to be auriferous, but to what value had not then been determined.

On the tributaries of the Wild Horse Creek, famous for the production in the past of its placers, many mineral locations have been made, on one of which, the Dardanelles, mining was being done. The ore is roasted in heaps at the mine, then rawhided down to a new arrastra near by an overshot wheel, the arrastra being 9 feet in diameter, 2 feet 4 inches deep, with 5 to 800 pound drags, and furnished with three copper plates and blanket sluices.

The British Columbia Placer Company, the Invicta Gold Mining (Placer) Co., Ltd., Englewood, B.C., has secured about one mile along Wild Horse Creek, from which much gravel has been washed during the last thirty years, during the 1896 season began the installation, under the superintendence of Mr. J. W. R. Young, M.E., of a requisite plant, sluices, etc, for the hydraulicizing of a large bank of gravel. About 70,000 cubic yards were moved, that yielded, according to the annual report of this company, 7 cents per yard.

The Nip-and-Tuck Gold Mining Company, a placer mining company of Vancouver, has rights over the placer ground below the Invicta ground, on the south side of Wild Horse. There is a ditch about five miles long for the water supply.

CRANBROOK.

Owing to the construction by the C.P.R. of the B.C. Southern Railway through Crow's Nest Pass, Cranbrook, which is finely situated, will become an important divisional railway point, and is the most central and suitable for smelting purposes, and smelting facilities are certain to be provided.

WINDERMERE, GOLDEN AND DONALD.

Some prospecting work was done during 1890, most of it on the Selkirks, but also some on the Rockies, and from the very fine samples of ore seen, and the reports of the characteristics of the ledges, a large and rich section of the country is awaiting easier means of access and the transport of ore to smelting centres.

The Thunder Hill Mine is now lying idle, but is supposed to be a good property. Bugaboo Creek, Toby Creek, Vermont Creek and McMurdo District are promising mining camps, and have been prospectively before the public for several years.

Some have waited long and patiently for the wave of mining interest to flow through this large territory, and it will not be long now before the hidden resources here will receive that careful examination they merit.

COAL FIELDS.

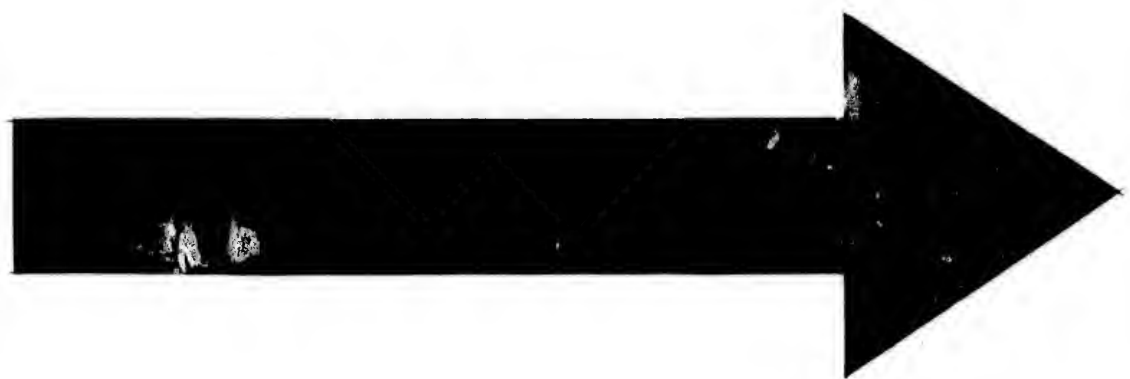
The coal fields of East Kootenay are without doubt among the most important on the North American continent. It is doubtful even if deposits to the same extent and of equal value exist elsewhere, and on account of their nearness to the mining regions and prospective railway facilities to be enjoyed, will be of immense economic importance. Dr. Selwyn, late Director of the Geological Survey, made an examination of the ground in 1891, and from his reports, which have subsequently been confirmed by other experts, the coal deposits are shown to be of extraordinary extent and value.

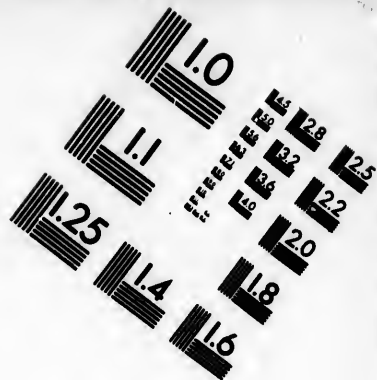
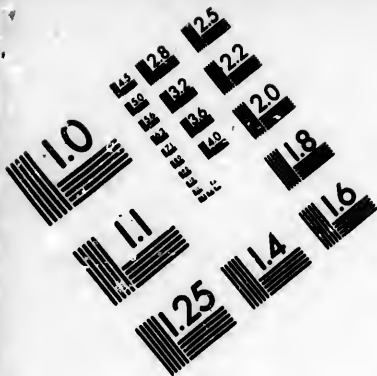
Speaking of the ridge which runs in a north-easterly direction between Martin Creek and Michel Creek, forming the west side of the valley of the west branch of Michel Creek, he says:

"From this ridge a number of spurs, with steep intervening gullies, descend abruptly to the trail; in these, and on the intervening ridges, a wonderful series of coal seams is disclosed, one above the other from near the level of the trail to the summit of the ridge. No exact measurements were taken, and it may be that some of the lower cannel seams are the upper ones, repeated by faulting. The out-crops which can be seen on the ground are as follows, twenty seams in all, showing a total thickness of 132 feet of coal. * * * * * Elsewhere Dr. Selwyn says: "On the 5th August we descended the Elk River Valley about seven miles, then turning to the left ascended the mountain, a steep climb of 1,500 feet. Here on top of a broken-down cliff of massive sandstone, about 50 feet thick, we came to the first of a series of coal seams, the dip being E. 20, N. 35, and the seam 25 to 30 feet thick, with a shale parting about two feet, barometer 24.93. Ascending 130 feet, over shales and brown thick bedded sandstone, forming a similar broken-down cliff of about 50 feet, a second seam of coal was reached, also 30 feet thick, barometer 24.80. Above this four seams were examined, averaging 14 feet in thickness. * * *

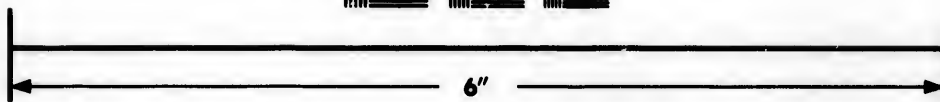
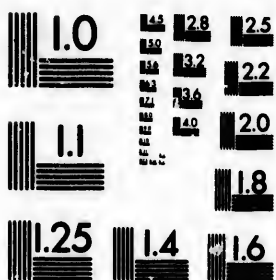
"Above No. 6 there are six more seams which were not visited, but the particulars of which, given to me by Mr. Fernie, are as follows, averaging six feet in thickness. * * *

"The above gives a total thickness of 148 feet of coal against 132 feet in Marten Creek area on the eastern side of the basin, while in other respects the seams correspond so closely as to make it almost certain that, except where cut



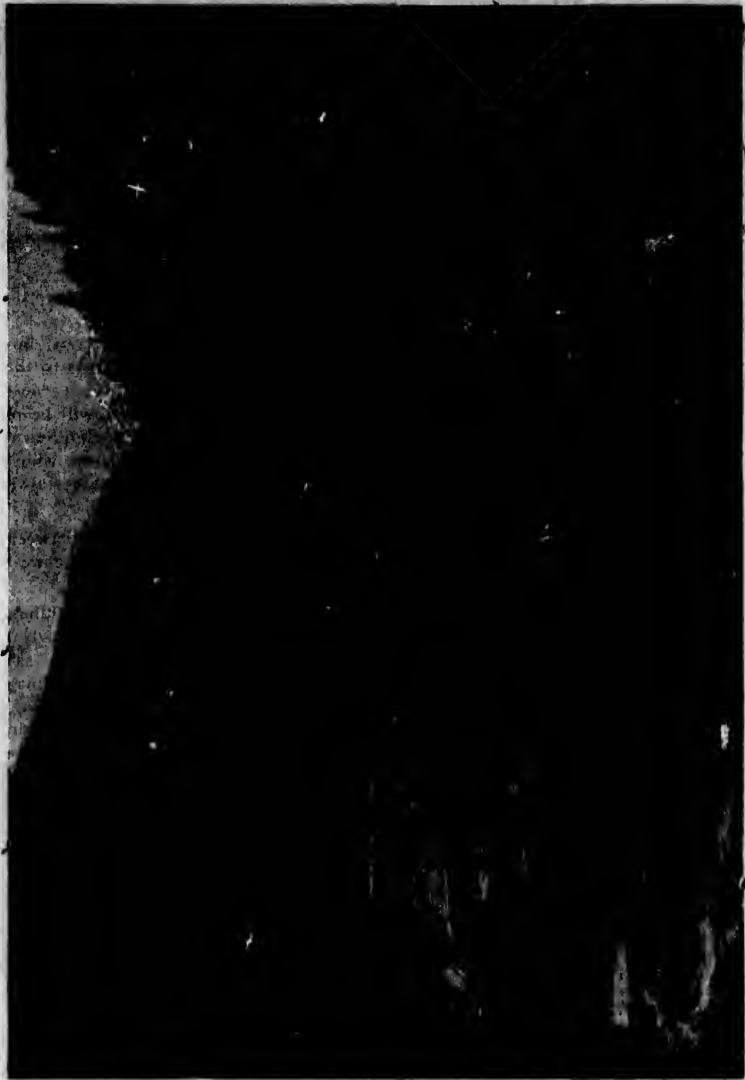


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SANDON, SLOCAN MINING DIVISION—JULY, 1896, SHOWING THE C. P. AND K. & S. RAILWAYS.

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out in the valleys, they are continuous beneath the whole intervening area. For much detailed information respecting the Crow's Nest Pass, the annual report of the Geological Survey, Volume I., Part B, 1885, already cited, and the accompanying map can be referred to.

"Many of the seams are first-class coking coals and others are good gas coals, but none of them are anthracites.

"The few hours I was able to spend on the ground, while not sufficient to enable me to affirm the absolute correctness of the details of the table, were, however, ample to enable me to see that there is in the Crow's Nest Pass, between the eastern summit, 4,330 feet above tide, and the valley of Elk River, in British Columbia, an area of not less than 144 square miles, that is destined to be one of the most valuable and most productive coal fields in Canada. A rough calculation would give about 49,952,000 tons per square mile. If one-half of this is available, there are in each square mile 24,976,000 tons. The average elevation of the field is about the same as that of Canmore and Banff, or between 4,000 and 5,000 feet."

Analyses, which are too elaborate to be given here, show the coal in these remarkable seams to be of excellent quality.

The great coal fields of the Crow's Nest Pass are now being opened up in two places where the seams of high-grade coking coal are each from six to seven feet thick. The work is in charge of Mr. Blackmore, M.E., who is opening up the properties so as to admit of a large production of coal on the completion of the railway, and is also erecting coke ovens, so that when the railway reaches the heart of West Kootenay coal and coke can be at once delivered at greatly reduced prices at the smelting centres there; the price of coke delivered to be about \$6 per ton, the present price varying from \$12 to \$14.

These fields were examined by Geo. S. Ramsay, M.E., Denver, Colo., who says: "It is my opinion that the Kootenay coal field is the greatest in the Rocky Mountain series. I must say that I know of no coal field in the west where the evidence indicating large tonnage per acre is so prominent as I find it in the Kootenay fields."

PETROLEUM DEPOSITS.

Dr. Selwyn's report on the petroleum deposits of the south-eastern section contains references to the numerous indications which he found in the field explored near the boundary. The following extracts will suffice:

"Cameron Falls Brook is a rapid mountain stream eight or ten yards wide. After following it up about a mile and a half on the left bank, I noticed a powerful odour of petroleum. Descending to the edge of the water and stirring the stones and gravel in the bed of the stream, considerable quantity of oil at once rose to the surface and floated away. Crossing to the right bank, some inches above the then level of the stream, here, skimming off the surface of a shallow pool, a wine bottle full was soon collected. * * *

"On the 24th we proceeded down the valley, and about four miles north of the 49th parallel the trail came down to the level of the brook, and here, on the edge of a beaver dam pool, there were ledges of dark blue shale dipping E. 30 degrees, N. 12 degrees. Lifting layers of this at and below the water, a quantity of dark green circular patches of oil rose to the surface, and a precisely similar result followed by stirring up the mud in the bottom of the pool. * * *

"The beaver dam oil is of a dark greenish-black, and does not apparently differ much from that of Canyon Falls Creek.

"Directly the layers of this rock are raised, the oil rises and spreads over the surface of the water in such abundance that a short time suffices, with the aid of a tin cup, to collect a bottle full. Here (12 miles farther up) also a considerable quantity of gas escapes from the cracks and joints in the rocks, and ignites freely on the application of a match.

"Less than half a mile higher up, on the right bank and on the opposite or west side of the valley, oil was again found issuing from the base of the bank or drift. No rock was exposed here, but every stone in the bed of the creek, especially on being broken or rubbed, gave out a strong odour of petroleum."

No experiments have been made to test the quantity of the oil, owing to the heretofore inaccessibility of the locality, but the oil fields will now be thoroughly prospected.

KOOTENAY AND BIG BEND.

THE Kootanic region, including under that general term the somewhat distinctly separated Big Bend country, extends from the International Boundary north-westerly to the Great Bend of the Columbia, with a length of 245 miles. It is, for purposes of description, also regarded as including the adjacent western slopes of the Rocky Mountains proper. Wild Horse, Perry, French, McCullough and Carnes Creeks may be mentioned as the most productive, though there are also many less noted localities, and a great number of streams which have as yet been little, if at all prospected, though favourable in appearance. The mines of Wild Horse Creek have proved the richest in this region, though confined to about two miles in length along the valley of that stream. They were developed early in the history of gold-mining, and have ever since produced a considerable annual yield. Nearly all the other streams which enter the Columbia-Kootanic Valley are known to hold more or less gold, and river bars have been successfully worked along the Columbia and in places on the Kootanic. The discovery within the past few years of paying ground on Porcupine, Caspary and Quartz Creeks, shows that the possibilities of this region for placer work are as yet by no means exhausted, and the resumption of work on Carnes, French and McCullough Creeks, since the opening up of the country by the railway, bears similar evidence.

With the exception of some considerable tracts of fertile and partly open country along the lower valleys, the greater part of this region is extremely mountainous. It is generally well wooded, often bearing fine timber, but it is penetrated with difficulty, and much yet remains to be done in the way of prospecting before it can be considered to have been even fairly run over in search of placer mines. There is good evidence, in several places, of the existence of rich, deep ground in the valleys of creeks partly worked in former years, and

some attention is also being paid to the initiation of hydraulic work on a considerable scale. The climate in the lower valleys enables a prolonged working season to be obtained on the placers.—*Mineral Wealth of British Columbia, Dawson, 1888.*

NORTH KOOTENAY.

Under this head is included the Revelstoke, Lardeau, Illecillewaet and Trout Lake mining divisions, in the North Riding of West Kootenay. All of this section of country, which is very rugged and mountainous, is highly mineralized and has been widely prospected. Owing, however, to its physical character and the difficulty of providing adequate facilities of communication none of the many claims recorded and partially developed have attained to the dignity of being mines, and consequently it is not easy, without going into endless details of particular claims to give a good general idea of the mining characteristics, because the district has not been minutely surveyed, geologically and there are no representative mines to establish what will ultimately constitute its distinctive conditions.

It may be stated generally that there are many claims recorded, upon which assessment work has been done aggregating large amounts, throughout the entire district, and the samples of ore and individual assays of high average reported are multitudinous. It may thus be concluded that the indications are in every instance hopeful of ultimate success; but in mining, of all industries, it may be said that only systematic and extensive development considered in connection with all the necessary conditions can demonstrate the value of ores and ore bodies and this district has not yet reached that stage.

REVELSTOKE DIVISION.

Of this division little can be said definitely in addition to what has been stated in the foregoing. The principal claims are on McCulloch Creek, Camp Creek, Goldstream, Columbia River, Smith Creek, French Creek, Downie Creek, Carnes Creek, Jordan Creek, and a few in the vicinity of Revelstoke. In the northern part, about the Big Bend of the Columbia River, a good deal of prospecting has been done, mostly in gold-bearing veins.

LARDEAU DIVISION.

In the Lardeau division the surface indications show gold, silver, copper and lead, and the prospects are regarded as good. Some work has been done on the creeks running into Fish Creek. Numbers of claims have been recorded on Sable, Boyd, Pool and Lexington Creeks, most of which give high assays, with a large body of ore exposed in some of them.

TROUT LAKE.

Trout Lake is the chief mining district north of the Slocan and a great deal of prospecting has been done, with the discovery of silver-lead veins above the timber line. The valleys are steep, densely timbered and difficult of access, but not more so than in the Slocan.

Near Ferguson the Lillooet, Fraser River and Cariboo Gold Fields Company is opening up the Silver Cup, on which the prospects of success are excellent, but the company has stopped work on the Broadview, where such large ore

bodies were reported, but found not to exist. The Silver Cup is a small vein of high grade silver-lead, with gray copper ore. A number of properties is being opened up. There are numerous claims in this district, many of them bonded.

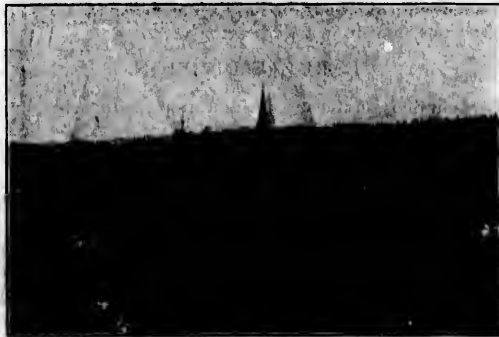
ILLECILLEWAET.

In this district also there have been much prospecting, many records and some rich showings of ore. The principal work in this division has been done on the Lanark, which was reported to have had a large amount of shipping ore in sight. An aerial tramway and a concentrator were hurriedly erected, and the ore mined out without prosecuting search for more, with the result that the ore in sight, which was less than reported, has been extracted and the mill closed down pending the result of development, which should have preceded milling. Very complete and commodious buildings have been erected.

Apart from the Lanark there is no work going on in the district of any consequence.

At Downie Creek the Grant-Govan Syndicate claim to possess a very rich property in the Waverley, which is still, however, a prospect, but one which has been declared by those who have seen it, to be a good one. There has not been sufficient development to predict the output promised. A waggon road, twenty-six miles long, has been built from the railroad, but it will require high grade ore to stand the cost of transport.

Speaking generally of the West Kootenay district, too much has been claimed for individual prospects, the value of which, as stated in the foregoing, can only be determined by systematic development. As a rule, too, prospectors hold their claims at too high a price, which seems to be the general complaint of those who have examined them with a view to purchase.



OLD MAN'S HOME—KAMLOOPS, B.C.

KAMLOOPS AND VERNON.

DURING the past year a good deal of excitement took place in the vicinity of Coal Hill near Kamloops, and there was a stampede of prospectors and numerous claims recorded. The copper prospects though good are small as yet. Mr. Cobblestick, who is largely interested there, is doing good work. Some iron from the Glen Mine is being shipped to the Tacoma smelter for fluxing.

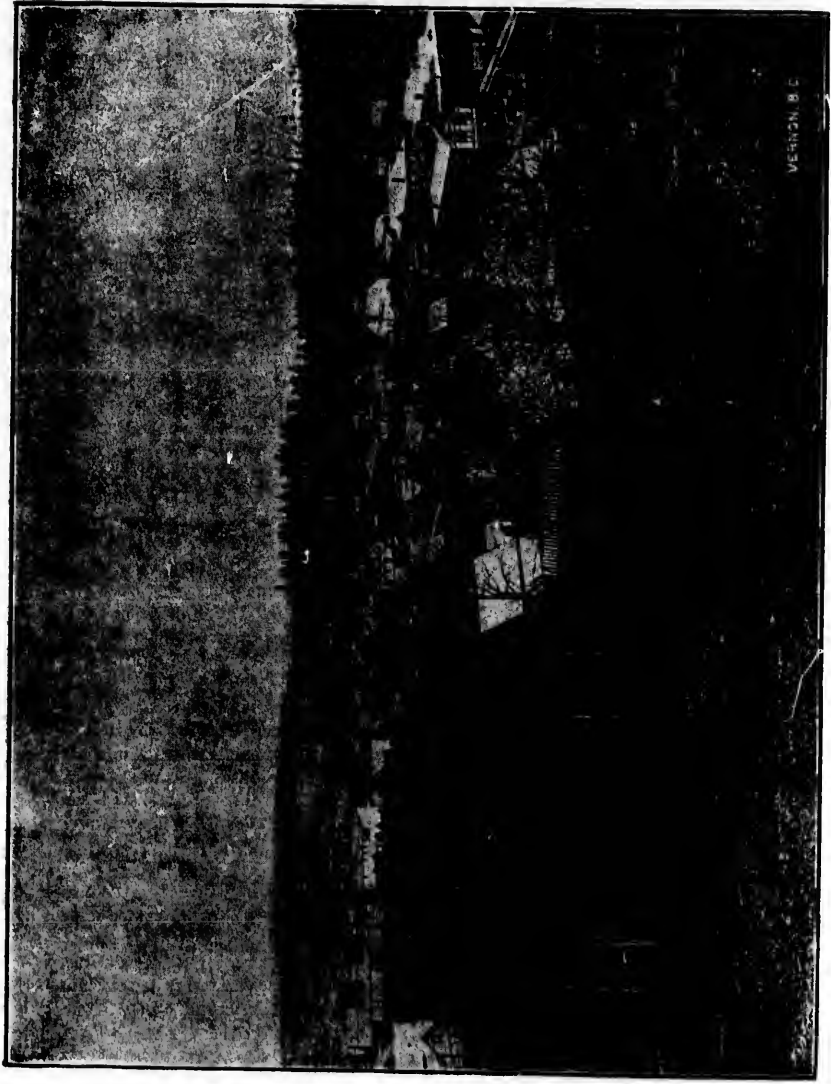
At Vernon considerable work on quartz ledges has been done, but sufficient has not yet been determined as to their value to enable any decided opinion being formed.

SIMILKAMEEN, ROCK CREEK AND OKANAGAN.

The Similkameen, Rock Creek and Okanagan region includes some of the first discoveries of gold in British Columbia, and has never since been entirely abandoned, though the amount of work carried on has fluctuated from year to year. This region stretches across the interior of the Province, and includes on one side streams rising in the inner flanks of the Coast Ranges; on the other, valleys which penetrate the western edge of the elevation of the Gold Ranges. The physical characteristics met with in this wide stretch of country are very varied, including mountains and plateau country with extensive wooded tracts penetrated with difficulty, but also some of the lowest, warmest and most arid valleys of the Province, like that of the Similkameen itself. The most notable portions of the region in respect to the occurrence of "coarse" gold, of evidently local origin, are Granite Creek and Tulameen, Rock Creek and vicinity, Cherry Creek and Mission Creek. Elsewhere the gold is generally "fine," and is chiefly obtained from river-bars and flats, or from low benches. The most interesting features in the region are, the late resumption of gold mining on a somewhat extensive scale on the Tulameen, the recent discovery (in 1885) of rich deposits of "coarse" gold on Granite Creek, an inconspicuous stream, passed by hundreds of prospectors in early years; the transference of attention from the more or less completely exhausted placers of Rock Creek and Cherry Creek to the development of veins containing the precious metals, in the same vicinity, and the occurrence in very considerable quantities throughout the Similkameen district of platinum, alloyed with other related metals. It may be added here, that no part of this region is now so remote from means of communication as to cause serious difficulty in the development of any really rich metalliferous deposits, and the adoption, where circumstances warrant, of improved methods of placer-mining on a large scale.—*Mineral Wealth of British Columbia, Dawson, 1888.*

MOUNT SICKER.

One of the newly discovered districts of the Province which has attracted some attention and afforded indication of promise is that of Mount Sicker, south of Chemainus Island, three miles from the E. & N. Railway station at Westholme, Vancouver Island. On the west side of the mountain are several very large leads of milk-white quartz on which, however, little or nothing has been done. Prospectors have confined their work to small copper-bearing quartz veins in the schists, but on the Lenora claim is a much larger body of copper ore carrying some gold and silver, now being opened up. The formation is mostly eruptive rock and schists. A trail six miles long leads to this camp.



VRENON, B.C.

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OMINECA.

OMINECA District was first entered about 1864, but scarcely developed till 1867. This district is situated near the 56th parallel of latitude and is in the drainage-basin of Peace River. The area within which the greater part of the mining has taken place is scarcely more than fifty miles in greatest diameter, and includes the upper portions of Germansen, Omineca and Manson Rivers and their tributaries. This area is described as being hilly rather than mountainous, and is nearly everywhere covered by the dense northern forest. A very high opinion was at first formed by miners of the Omineca district, but when the Cassiar discoveries occurred, it was nearly abandoned. * * * This district is practically the most remote and inaccessible in the Province, the cost of supplies has always been excessive, and the difficulties in the way of enterprise in the form of exploration thus far very great. A wide area of promising country in this region, therefore, remains untried. The head-waters of Finlay River have always been considered particularly promising, from the fact that good "prospects" of fine gold are found in all the river-bars, some of which have paid well for work on them. The sources of the Nation River have also been favourably spoken of, and the Misinchinca and other tributaries of the Parsnip, present all the appearance of gold-bearing streams, but so far as I know have never been tested. The "fine" gold which is found and has been mined along the whole upper portion of the Peace River, has doubtless been carried through the mountains by that stream, and is derived from the wide belt of dark, shaly and schistose rocks which run along the western flanks of the Rocky Mountains in this portion.

Considerable quantities of arquerite, a silver amalgam containing about eleven per cent. of mercury, have been found of the gold in scales and nuggets in Omineca, practically upon Vital and Silver Creeks. This metal is commonly referred to by the miners as "silver," with which its appearance is identical. Very promising deposits of highly argentiferous galena have been found in the vicinity of the placer mines in Omineca, but no attempt has so far been made to work them.

The miners reached Omineca by two principal routes, viz., with pack-animals, by trail from Quesnelle *via* Stuart Lake, and on foot across the Babine and Fire-pan Mountains from the Forks of the Skeena, the Forks being attained in the first place by ascending the Skeena from the coast in canoes.—*The Mineral Wealth of British Columbia, Dawson, 1888.*

Mining in Omineca has continued in a small way ever since the outset, a few miners remaining in the country after the first excitement subsided, and small quantities of gold have been taken out annually. It is difficult to ascertain approximately the amount of gold extracted, but it probably does not exceed \$1,000,000, which may be considered an outside estimate, taken almost entirely from creek bottoms.

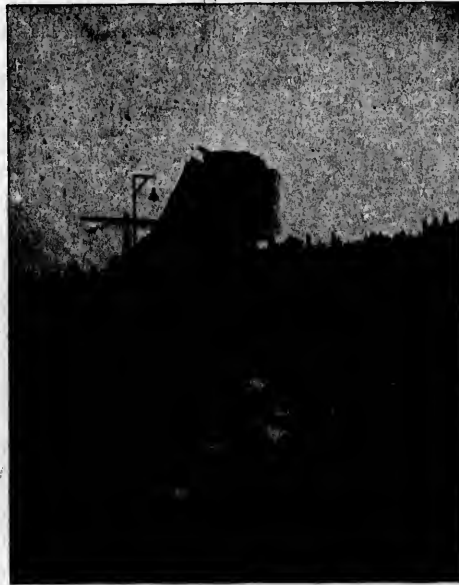
Recently, however, a good deal of attention has been paid to the district as a prospective large producer by hydraulic methods, and several large companies have been organized and have secured a number of claims. The Omineca Con-

solidated Hydraulic Mining Co., Ltd., Victoria, is one of these, having a capital of \$100,000, and commenced operations in 1886 on Manson and Slate Creeks. This company was formed for the purpose of purchasing and operating nine placer claims of 80 acres each, 4,800 inches of water, situated on Manson, Black Jack Gulch and Lost Creeks, from which in the early seventies large pay was taken.

The Caledonia General Mining Association, Victoria, with a capital of \$1,500,000, has purchased 640 acres of placer ground in Germansen Creek, and is taking in supplies and machinery.

An Ottawa company, the 43rd Mining & Milling Co., has acquired seven claims on Manson and Slate Creeks and is erecting a saw mill and taking in machinery. Timber is plentiful in places. Capt. Black, C.E., is manager.

All of these companies anticipate large returns. At present the district suffers for lack of communication and the facilities for taking in supplies, and especially heavy machinery, are limited. At present it costs about 17 cents per lb. from Victoria for taking in supplies. However, this condition of affairs is likely to be speedily altered, on account of the attention being paid to the Northern Districts generally, and the prospects of improved communication by means of roads and a railway are most favourable.



HYDRAULIC ELEVATOR—VIEW ON HORSEFLY RIVER, CARIBOO.

CASSIAR.

THE Cassiar District includes the most northern region of gold-mining in British Columbia, and some of the creeks which have been worked lie to the north of the 60th parallel, or northern boundary of the Province. Dease Lake, latitude $50^{\circ} 30'$, longitude 130° may be considered as the central point of the district. This lake is the source of the river of the same name, which is a tributary of the Liard, itself a branch of the Mackenzie. Gold had already been found and worked on the river-bars of the Stikine for eleven years, when Thibert and McCullough, coming from the East, reached and discovered the richer deposits of the Liard drainage-basin in 1872.

**Chief Localities
of Mining.**

The miners, who soon flocked into the district, came by the way of the Stikine River, though a route for cattle and pack animals was also opened overland from Fraser Lake. Dease, Thibert and McDame Creeks and their tributaries have proved the richest, and a large quantity of gold has been obtained from them; though the yield has, of late years, become comparatively inconsiderable. The region presenting identical or analogous characters with that portion of it which has proved to contain these rich deposits, is very extensive, and much the same marks which have been made in regard to the exploration of the Omineca District apply here also, though the cost of living in Cassiar has usually been somewhat more moderate. The country is generally wooded and mountainous, and

**Regions to be
Prospected.**

difficult to traverse, but a waggon road or even a railway, might without difficulty be constructed from the head of navigation on the Stikine to Dease Lake, and this will no doubt eventually be accomplished, as discoveries of veins containing the precious metals are confidently to be anticipated. Argentiferous galena has already been found, and the rough, unworn character of the gold on some of the creeks leads to the belief that its source might be ascertained without great difficulty. "Coarse" gold is found locally on that part of the Stikine above Telegraph Creek, and the circumstances appear to indicate the existence there of an old channel, above the present river-bed, but covered by massive flows of basalt of Tertiary age.

Difficulty has been encountered in this district from permanently frozen soil met with in mining, but when once the covering of forest and moss has been cleared off by fire these disappeared.—*Mineral Wealth of British Columbia, Dawson.*

The gold yield of the Cassiar District, from the commencement of mining to the present date, is about \$5,000,000.

HARRISON LAKE DISTRICT.

HARRISON LAKE District, as it is erroneously called, comprises a portion of both Yale and New Westminster Districts, and extends from the southern end of Harrison Lake to the Fire Mountain country, some fifteen miles inland from the northwestern end of the lake.

The country rock at the southern end of Harrison Lake consists principally of ferruginous slates, often containing highly mineralized quartz seams, syenite, and some diorite, and, strange to say, in nearly every case these slates show a fair assay value in gold. In a belt of volcanic rock lying south-east of the lake some four miles away are found deposits of copper pyrites, carrying with a good percentage of copper, some silver values. The development work in this portion of the district has been hardly sufficient to prove the existence of ore in paying quantities—though indications are, however, very promising.

In the early sixties there was quite an excitement on Harrison Lake, caused by the discovery of silver ore south of Silver Creek about midway up the lake, and a Victoria company expended several thousand dollars in running a number of tunnels at the point of discovery. As these tunnels, three in number, were put in quite close to each other and were cross-cutting the same formation—shale—it is hard to understand why more than one was driven. After a lapse of nearly forty years, however, a Vancouver man has re-located this property and claims that he has had very fair assays from the rock. In any case he has the good fortune to find a developed prospect if not a mine.

At Silver Creek and vicinity, several local companies are developing some very promising properties, but so far on this, the east side of the lake, there are at present no shipping mines.

The formation at and above Silver Creek, while similar in many respects to that south of it, gradually changes into the serpentine formation, with the same belts of slate traversing the country. From this ore there is a far greater percentage of copper in the veins discovered. Silver Creek is over thirty miles long and runs through a most promising mineral country, while gold is to be found in the benches and bars near the creek. The country however, is here rough and precipitous.

Crossing the lake above Silver Creek and about twenty-eight miles above the hot springs, we find the Providence mine from which such high assays and smelting tests have come. The surface showings of this property have been most favourable. So far the development work has proved that there seems to be lots

of ore similar in character and value to that first discovered, but whether in a regular vein—hardened deposit of glacial mud, carrying values, or the existence of a number of veins running parallel with the mountain—is, at this writing, I fancy, an unsolved question. I am, however, inclined to think from what little I have seen of this property, that several veins will be found. There seems to be an abundance of ore which is largely a matrix of calcide, and would probably yield greater profits to the owners if it is found to be a good concentrating proposition.

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Near the Providence mine the lake, which has been running in a northerly direction, takes a turn to the west and by this change in its course appears better to cut the different formations, an advantage which seems to be appreciated, judging by the many locations to be found between this point and the townsite of Tipella at the head of the lake. These locations are of too recent date for any positive determination of their value.

In no part of this Province no greater or more favourable indications of a future great mining country can be found than on Fire Mountain. This mountain appears to be an intrusion of volcanic rocks (trachyte and porphyry) between the granite and the great slate belt of this upper country gold in a quartz matrix, either free or in combination with azurite and bornite, often as telluride of gold, can be found on all sides. Some of the ledges are very strong and large, others appearing on the surface as small stringers, quickly developing into large and strong veins, easily traced for thousands of feet—a second Cripple Creek Camp, if not a better one. On the old Cariboo Road from Ft. Douglas to Lillooet Lake many valuable discoveries have been made within the last year and while principally a copper country with high values in gold and silver in the sulphurets, some very good galena propositions have been located. Silver sulphides are also present.

The benches on the banks of the Lillooet River offer to the placer and hydraulic miner a fine field, the gravel being rich in gold, with few large boulders. The gold is, however, very fine.

The Indians in the different settlements on this route all own a few sluice boxes and on approach of hard times do a little placer mining. If they, in their desultory way, can make it pay, the more earnest white miner would reap a very good harvest out of these golden sands.

JOHN R. BROWN.

MINERALS IN THE E. & N. RY. BELT.

Regarding the mineral rights in the E. & N. Railway belt, concerning which there has been a good deal of local political discussion, the following official notice, published by the Land Commissioner of the E. & N. Railway Company will indicate the terms upon which these may be obtained:—

“To prospectors, miners, and holders of mineral claims on unoccupied land within the Esquimalt & Nanaimo Railway Company land grant for one year only from the date of this notice, the Railway Company will sell their rights to all minerals (excepting coal and iron) and the surface rights of mineral claims, at the price of \$5.00 per acre. Such sales will be subject to all other reservations contained in conveyances from the Company prior to this date. One-half of the purchase money to be paid ten days after recording the claim with the Government, and a duplicate of the record to be filed in the Company's Land Office, Victoria, on payment of the first instalment. The balance of the purchase money to be paid in two equal instalments, at the expiration of six and twelve months, without interest. Present holders of mineral claims who have not previously made other arrangements with the Company for acquiring surface and mineral rights, are hereby notified to at once make the first payment on their claims, as otherwise they will be deemed and treated as trespassers.”

THE COAST DISTRICTS.

MR. D. ROBSON, Gold Commissioner, New Westminster District, in his report for 1897, states that: "In 1896 the Province Mine, on Harrison Lake, attracted the greatest attention of any mine in the division. In 1897 the Fire Mountain group of mines has been dividing public interest with the Harrison Lake group, and Pitt Lake has also attracted a good deal of attention. In these three groups the largest amount of development work has been done.

"On the Province Mine there has been spent about \$10,000. There are three distinct lodes on the surface which have been worked. Assays range all the way from \$1 to \$2,000 to the ton, but assays of small samples are never reliable as a basis of value. About three cars of ore were shipped to the smelter last summer, and gave an average return of \$27 per ton in gold and silver. The ore is partly free milling, about 40 per cent. of the gold being free. There are now about 800 tons of ore on the dump.

"In the Fire Mountain camp, about sixteen miles north-west of the head of Harrison Lake, a large number of claims have been recorded. A great many of these claims were staked before the snow left the ground last spring, and in some cases, I am informed, the stakes were planted in five or six feet of snow. The Fire Mountain and Fire Lake Gold Mining Companies have expended about \$50,000 in connection with their properties in this region during the year. The Companies have built wharves at the townsite of Tipella, at the head of Harrison Lake, and constructed a pack trail from that point to the mining camp—about sixteen miles. A sawmill has been erected, having a capacity of 10,000 feet per day, and also a mill for the treatment of ore, having a capacity of thirty tons per day. The ore of Fire Mountain is generally free milling. On the Money Spinner, one of the claims of this group, there has been considerable development work done, and the Company expresses itself very well satisfied with its prospects. A tunnel 175 feet in length has been cut on the vein, and a 75-foot shaft sunk. The vein is about eight feet in thickness, and has been exposed for a distance of 1,000 feet. A trial shipment of 200 pounds of ore from this mine, sent to San Francisco, gave \$74.13 in gold per ton. There are now 1,500 tons of ore on the dump, and thousands of tons in sight.

"On Pitt Lake a large number of claims have been located, and on three of these (the Cromwell, Champion and Rocket), considerable development work has been done. These are copper propositions, showing gold and silver as well. Assays have given from \$70 to \$72 per ton. Three tons sent to Swansea realized about \$45 to the ton. This is the actual cash value received by the Company, and shows beyond question that the claim is a valuable property if the lodes are of such extent as the appearances seem to indicate. The Company expects to continue development work during the coming season.

"On Bowen Island development work has been done on the mining properties of Mr. Fraser to the value of about \$7,000, and the indications are said to be most encouraging. On Jervis Inlet, Princess Royal Reach, and elsewhere on the coast, there are several properties which have made a good showing."

For many years exploratory and even mining work has been carried on at irregular intervals on Texada Island, but during the past two years interest has been greatly revived and several properties are now being actively prospected. Prospecting has been, as far as the interior of the island is concerned, confined to the northern portion, probably because to the south no discovery has yet been reported and the underbrush is much denser; hence, the upper ten miles of the island has been pretty well located.

The island, lying in the Straits of Georgia, between Vancouver Island and the Mainland, about 90 miles north from Victoria and 40 miles from Vancouver, has a length of about 27 miles, and an extreme width of 5.5 miles. Topographically it is very rocky and mountainous, and the bold and rocky shores are such that no good harbours are afforded except some shallow bays exposed to certain winds that prevent, when blowing hard, landing from the steamer. In this northern part the timber is good, but not thick, and the underbrush is comparatively light, the ground being very rocky from the very large angular boulders and the jagged, cliffy character of the rock formations.

Nearly all mining and prospecting are practically confined to a strip across the island about three miles wide, or north of a line from the Iron Mine to Spratt's Bay, but there is no reason why, from geological conditions, that prospectors should not find veins in other parts of the island, as hitherto they have kept close to the trail that runs from the Iron Mine to Van Anda Bay.

Within this strip the formation consists mostly of highly altered, fine-grained, dark green amygdaloidal rock of the volcanic series, but the crystalline limestone appears frequently and bears an important relation at the Van Anda, Raven and Iron Mines.

In the revival of interest that has led to the amount of prospecting done during the past two years on the island, there have been three factors, (a) the discovery of gold values in sulphides similar to those at Rossland; (b) the extraction of gold in small quantities from these quartz veins by crushing in a small mortar, and panning rich decomposed surface material, by which one or two men have made a living for years; (c) the discovery of the Van Anda ore-shute.

Mr. Marshall Bray, Gold Commissioner, Nanaimo, B.C., in his report, speaking of the claims along the coast, says: "The facility with which these mines can be operated and worked along the coast, owing to the cheapness of freight and supplies, the nearness of same to coal, coke, wood, flux, and, in many places, good paying investments, and capitalists are just beginning to awaken to the possibilities of our coast mines, and quite a number of mineral claims have been purchased or bonded by them, and no doubt they will push development work on their holdings this coming season.

"The only mine that has shipped any ore of any amount from this district in 1897, is the Van Anda Mine on Texada Island. They shipped 131 tons of rock to Swansen, and the same netted them \$1,625, on which they paid the mineral tax, this being the only mineral tax paid for 1897."

In his remarks on the mining prospects of Vancouver Island, Minister of Mines Report, 1897, Mr. Carlyle says: "During the past year a large amount of prospecting has been in progress at different points on the Island, more especially on the West Coast. Here the mountains contiguous to Barclay and Clayoquot Sounds and Sidney Inlet have been attracting much attention by the discovery of

copper-bearing ore, upon some of which deposits considerable work is now progress. A number of properties were sold in the proximity of Uchucklesit Harbour and Anderson Lake, where a company is beginning extensive explorations.

"On the Sarita claims, little or no work has been done during the past year. On China Creek, work has ceased on the Duke of York placer claims, but prospecting is being done on the Cataract leases. Considerable work was done on the Alberni Consolidated quartz leads, and these claims have recently passed under the control of an English company. During the year several lots of ore, aggregating thirty tons, were shipped out to be tested, that yielded values of \$18.60 to \$39 in gold per ton, or an average of 1.57 ounces per ton. It is now very likely that vigorous work will soon be begun. The Golden Eagle is now being developed under the management of Mr. McQuillan.

The copper properties on the West Coast will now be, in many cases, carefully explored. Near Goldstream, locations have recently been made on deposits of copper ore, from which is got massive chalcopyrite, carrying low values in gold and silver. In November a short visit was made to Mount Sicker.

During the past autumn attention has been drawn to Mount Skirt, near Goldstream, eleven miles from Victoria, where work has been in progress on the claims of the Ralph Mining Company, registered. Considerable work will be done here but it is yet too early to determine what these surface showings may lead to in depth.



THREE-RAIL TRAMWAY—GOLDEN CACHE MINING CO., LILLOORT, B.C.

COAL BEARING AREAS.

IN British Columbia the formations containing coals and lignites are the cretaceous and the tertiary. Rocks of cretaceous age are developed over a considerable area often in great thickness, and fuels occur in them in important quantities in two distinct stages, of which the lower and older include the coal measures of Queen Charlotte Islands and those of Quatsino Sound on Vancouver Island, with those of Crow's Nest Pass in the Rocky Mountains; the upper coal measures of Nanaimo and Comox, and probably also those of Suquash and other localities. The lower rocks hold both anthracite and bituminous coal in Queen Charlotte Islands, but elsewhere contain bituminous coal only. The fuels of the tertiary rocks are generally speaking lignites. Coal is found in large quantities at points widely apart. The most northern cretaceous coal field is that of Queen Charlotte Island which extends over parts of Graham and Moresby Islands, on both sides of Skidegate Inlet. At Cowgitz in Skidegate Inlet, the coal seams are anthracite in character, though somewhat broken. The best seam found has a maximum thickness of over six feet and in composition compares favourably with the coals of Pennsylvania. There are also coal areas on the Ya-Koun River between Skidegate and the head of Massett Inlet.

A considerable area of cretaceous coal-bearing rocks exists in the northern part of Vancouver Island. These are at Forward Inlet, Kokrino and Koskeemo on the northeast coast of the Island. At Koskeemo the total length of the cretaceous area is about seven miles and its approximate area is 5,630 acres. At Kokrino it extends along Quatsino Sound for seven or eight miles, and has considerable wealth. The Suquash area extends along the northeast coast of Vancouver Island from Port McNeill to Beaver Harbour, a distance of fourteen miles. The Comox and Nanaimo coal fields are, however, the most important in the Province. The cretaceous rocks constituting these form a belt of comparatively low rolling or hilly country between the mountainous region of the Interior and the Coast reaching to within about eighteen miles of Victoria southwestward and to the vicinity of Cape Mudge in the opposite direction, with a length on the shore of about 130 miles.

The Comox measures are probably greater in extent and the coals somewhat superior to those of Nanaimo. The former is estimated at 300 square miles and the latter at 200 square miles. From both of these, especially the latter, large quantities of coal have been extracted.

Reference has already been made to the vast valuable deposits of coal which exist in Crow's Nest Pass and which economically will be a very important factor in the development of the mining interior. Coal-bearing formations have also been found on the Upper Skeena, in the Peace River country, in the Westminister District, in the Nicola Valley, near Kamloops, and on the North Thompson. None of the latter have been extensively prospected, but the indications are in each case promising, and would probably justify exploratory work being carried on sufficient to determine the value of the deposits.

BUREAU OF MINES.

FOR facilitating the acquirement of an accurate knowledge of the mining industry, for assisting in the work of development, and as a means of disseminating reliable information with respect to the mineral resources of the country provision was made for the organization of a Bureau of Mines by the passing of the "Bureau of Mines Act, 1895," and in accordance therewith W. A. Carlyle, Esq., M. A., was appointed Provincial Mineralogist, and work began in January, 1896. Mr. Herbert Carmichael, Provincial Assayer and Chemist, was retained as an associate, and pending the removal of the office and appurtenances to permanent quarters, the preliminaries were vigorously entered upon and a system established, which is being developed towards a complete and comprehensive Bureau, by which it is proposed to:—

- (a.) Ascertain the name and progress of every mine or mining company, keeping a comprehensive directory of their locality, ownership, kind of ore mined and conditions of property.
- (b.) To visit and examine, from time to time, the different mining districts, and to issue reports to the Hon. the Minister of Mines, descriptive of them, and their progress in mining affairs.
- (c.) To collect full and accurate statistics of the mine, output, number of men employed, etc.
- (d.) To maintain a laboratory for assay and chemical analysis, for which will be charged the customary fees, and to determine free of cost, specimens of rock, mineral or ore that may be sent in, and give all possible information concerning the best mode of treatment, etc., etc.
- (e.) To maintain student laboratories for instruction in assaying, blow-pipe, mineralogy, geology, etc., etc.
- (f.) To assemble and systematically arrange in a public museum specimens of mineral, ore, country rock, building and other economical mineral materials from the mines; and also for comparative study, specimens of the same from other mining countries, models, maps, etc.
- (g.) To assemble, for the use of the Bureau and also the public, a library of the best reference books and papers relating to the art and industry of mining and metallurgy, mining magazines, reports, tables of statistics, etc.
- (h.) To establish and equip a plant for testing metallurgically the different kinds of ore, coal, coke, etc., etc.

A comprehensive system of obtaining mining statistics has been incorporated, with excellent results so far.

One of the features of the Bureau when fully in order will be a large and representative collection of minerals.

The Assay Office, in charge of Mr. Carmichael, will be thoroughly equipped with the best appliances.



FAC-SIMILE OF 10 PENCE COINED IN THE OLD B.C. MINT, NEW WESTMINSTER.
(By kind permission of Hon. J. S. Helmcken.)

INSPECTION OF METALLIFEROUS MINES ACT, 1897.

THIS Act was passed May 8th, 1897, and provides for the safety and health of men engaged in mines (other than coal mines) in this Province by the appointment of an Inspector by the Lieutenant-Governor-in-Council. The said Inspector shall be a man of at least seven years' practical experience in mining. He shall not act as manager, agent or lessee for any mining or other corporation during the term of his office, but shall give his whole time and attention to the duties of the office to which he has been appointed; neither shall he make a report on any mine or mining property for any person interested in mines. The Minister of Mines shall at such times as he may deem necessary instruct the Inspector to report on the safety and working of mines in general or into the cause of any accident pertaining thereto, and in case of differences arising between owners or agents of mines and the Inspector, the former may appeal to the Minister of Mines. The Inspector must be admitted to mines on presentation of his certificate of appointment. This Act prohibits the employment of women, girls, Chinese and Japanese underground and boys under twelve years of age; and no boy under sixteen shall be employed underground for more than fifty-four hours in any one week, or more than ten hours in any one day. Persons in charge of machinery must be eighteen years of age, but in no case Chinese or Japanese. Owners shall send to the Bureau of Mines in Victoria by the 15th of January in each year a correct return of the workings of the mine for the preceding year, and the number of persons employed. Notice of accidents in mines, or subsequent death caused by such accidents must be sent to the Inspector within twenty-four hours after accident or death. Abandoned mines must be fenced round top and plan of such sent to the Minister of Mines. Plans of workings must be kept at the office of the mines and submitted to Inspector for examination on his request.

TEXADA ISLAND.

On the east of this island the Van Anda mine is now being slowly developed, and shipments of gold-silver-copper ore, averaging \$40 per ton by report, are now being made to Swansea, the copper being in the form of bornite, or "peacock" copper ore. To the south of this, at the Raven, a deposit of chalcopyrite and pyrrhotite is being prospected, while inland, near Kirk Lake and on the west shore, gold-bearing quartz veins, at present small in size, and some copper deposits, are being tested. A deposit of iron ore is also being mined on a small scale for flux for smelters. In the past a large amount of money has been spent in exploratory work, mostly by inexperienced men, and hence very wastefully; but more careful work is now in progress to prove up many of the claims that have been located during the past year.

MINING STATISTICS TO DATE.

REFERENCE has been made to the conditions governing the production of minerals in British Columbia from the outset to the present time. The statistics given here, taken from the report of the Minister of Mines, illustrate these more forcibly than can be done otherwise, and show at a glance the rapid rise and steady decline of the old-fashioned placer mining, and the result of the recent awakening in another direction—the development just recently of lode mining. With the introduction of improved hydraulic mining methods we may expect to see the returns from placer deposits, which took an upward turn again in 1894, steadily, if indeed they do not rapidly, increase from now onward. In former years the statistics of gold production, though probably approximately correct, were obtained by indirect methods which for the earlier years were somewhat imperfect, but by the systematic efforts of the Bureau of Mines recently organized returns have been made as complete as possible and henceforth will afford an exact record.

The tables given here are taken *en bloc* from the report of the Minister of Mines for 1896, and are consequently authentic and as complete as can be given:—

TABLE I.
Total Production for all Years.

Kinds.	Amount.
Gold, Placer.....	\$ 39,317,473
Gold, Lode.....	4,300,689
Silver.....	7,301,660
Lead.....	2,971,518
Copper.....	521,960
Coal and Coke.....	36,626,588
Building Stone, Bricks, etc.....	1,350,000
Other Metals.....	23,000
Total.....	\$112,413,488

TABLE II.
Production for each year from 1890 to 1897 (incl.)

Year.	Amount.
1890.....	\$ 2,608,608
1891.....	3,545,702
1892.....	3,017,971
1893.....	3,538,413
1894.....	4,228,717
1895.....	5,555,302
1896.....	7,146,425
1897.....	10,455,268
Total.....	\$40,244,406

With 1890 practically begins the new era of mining in the Province, and future comparisons will naturally be based on the output of that year. The report adds: "The increase for 1891 over 1890 being due to the larger export of coal, the output of which for that year of 1,000,000 tons, being the largest ever reached by our collieries. In the year 1892 the influence of the production of the lode mines began to be felt, and since then the very marked increase in production has been carried on by the quickly growing value of the gold, silver, lead and copper produced."

The New Era.

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" Silver
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Other

TABLE III.
Amount and Value of Materials Produced 1895 and 1896.

	Customary Measures.	1897.		1896.	
		Quantity.	Value.	Quantity.	Value.
Gold, Placer.....	Oz.	25,676	\$ 513,520.	27,201	\$ 544,026
“ Quartz.....	“	106,141	2,122,820	62,259	1,244,186
Silver.....	“	5,472,971	3,272,836	3,135,343	2,100,689
Copper.....	Lbs.	5,325,180	266,258	3,818,556	190,926
Lead.....	“	38,841,135	1,390,517	24,199,977	721,384
Coal.....	Tons.	882,854	2,648,562	846,235	2,327,145
Coke.....	“	17,832	89,155	615	3,075
Other Material ..	.....	.....	151,600	.....	15,000
			\$10,455,268		\$ 7,146,425

TABLE IV.
Production of Metals per District.

NAME.	DIVISIONS.		DISTRICTS.	
	1897.	1896.	1897.	1896.
Cariboo.....			\$ 325,000	\$ 384,050
Barkerville Division..	\$ 65,000	\$ 82,900		
Lightning Creek “	25,000	53,000		
Queanelle Mouth “	35,000	51,100		
Keithley Creek “	200,000	197,050		
Cassiar.....			37,060	21,000
Kootenay, East.....			163,796	154,427
“ West.....			6,765,703	4,002,735
Ainsworth Division.....	440,545	189,589		
Nelson “.....	789,215	545,529		
Slocan “.....	3,280,686	2,010,048		
Trail Creek “.....	2,097,280	1,243,360		
Other Parts.....	157,977	14,209		
Lillooet.....			39,840	33,665
Yale.....			226,762	206,078
Osoyoos Division....	142,982	131,220		
Similkameen “.....	25,100	9,000		
Yale “.....	58,680	65,108		
Other Districts.....			9,390	15,000
		\$4,592,115	\$7,567,551	\$4,816,955

TABLE V.
Yield of Placer Gold per Year to Date.

YEAR.	Value.	YEAR.	Value.
1858	\$ 705,000	1879	\$ 1,390,058
1859	1,615,070	1880	1,013,827
1860	2,328,543	1881	1,046,737
1861	2,666,718	1882	954,085
1862	2,656,903	1883	794,252
1863	3,973,563	1884	736,165
1864	3,735,850	1885	713,738
1865	3,491,205	1886	903,651
1866	2,652,105	1887	653,709
1867	2,480,868	1888	616,731
1868	3,373,972	1889	588,923
1869	1,774,978	1890	490,435
1870	1,336,956	1891	429,811
1871	1,799,440	1892	399,526
1872	1,670,972	1893	356,731
1873	1,825,749	1894	405,516
1874	1,844,618	1895	481,588
1875	2,474,004	1896	544,020
1876	1,786,648	1897	513,326
1877	1,608,182		
1878	1,275,204	Total	\$59,317,473

This gives the yearly production of placer gold as determined by the returns sent in by the banks and express companies of gold sold 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, and from then to 1895, one-fifth, which proportion was considered to represent approximately the amount of gold sold of which there was no record.

This placer gold contains from 10 to 25 per cent. silver, but the silver value has not been separated from the totals.

TABLE VI.
Production of Lode Mines.

YEAR	GOLD.		SILVER.		LEAD.		COPPER.		Total Values.
	Oz.	Value.	Oz.	Value.	Pounds.	Value.	Pounds.	Value.	
		\$		\$		\$		\$	
1887			17,690	17,331	204,800	9,316			25,547
1888			79,780	75,000	674,800	29,813			104,813
1889			53,192	47,873	165,100	6,498			54,371
1890			70,427	73,948					73,948
1891			4,500	4,000					4,000
1892			77,160	66,935	808,420	33,064			99,999
1893	1,170	23,404	227,000	195,000	2,135,023	78,996			297,400
1894	6,252	125,614	746,379	470,219	5,662,523	169,875	324,680	16,234	781,342
1895	39,264	785,271	1,496,522	977,229	16,475,464	559,255	935,849	47,642	2,344,327
1896	62,259	1,244,180	3,135,343	2,100,689	24,199,977	721,384	3,818,556	190,926	4,857,179
1897	106,141	2,122,820	5,472,971	3,272,836	38,841,135	1,390,517	5,325,180	266,258	7,053,431
Totals	215,086	4,300,689	11,380,964	7,301,060	89,166,948	2,971,618	10,421,256	521,060	15,094,427

Some silver ore is known to have been sold prior to 1887, but no record has been obtained regarding these small sales.

The production of coal has increased from 14,250 tons (2,240 lbs.) in 1860 to 892,296 tons in 1897. The biggest product of any one year was in 1891, when it reached 1,029,097 tons. The average production for thirty-six years has been 340,000 tons.

The production of coke is small, but will be now rapidly increased when the coke ovens, now being perfected at the Union Mines at Comox, and the coking coal of the Crow's Nest Pass, will have begun the regular supply of this fuel to the smelting centres. For the last two years the output of coal has been declining by reason of the increasing competition of British and American coal in the Pacific Coast markets of the United States, where most of the coal exported from British Columbia is sold.

COAL MINING OPERATIONS, 1897.

The collieries in operation during the past year of 1896 were:—

The Nanaimo Colliery, of the New Vancouver Coal Mining & Land Company, Limited.

The Wellington Colliery, owned by Messrs. R. Dunsmuir & Sons.

The Union Colliery, owned by the Union Colliery Company; and

The West Wellington Company, owned by the West Wellington Coal Company, Limited Liability.

The output and export of coal for 1897 were as follows:—

OUTPUT.	TONS.	EXPORT.	TONS.
Nanaimo.....	319,344	Nanaimo.....	231,986
Wellington.....	297,612	Wellington.....	211,662
Union Colliery.....	265,642	Union.....	176,212
West Wellington.....	9,998		
Total output.....	892,296	Total.....	619,860
On hand 1st January.....	48,111	Home Consumption.....	290,309
		On hand 1st January, 1898.....	30,227
Total for disposal.....	940,407	Total.....	940,396

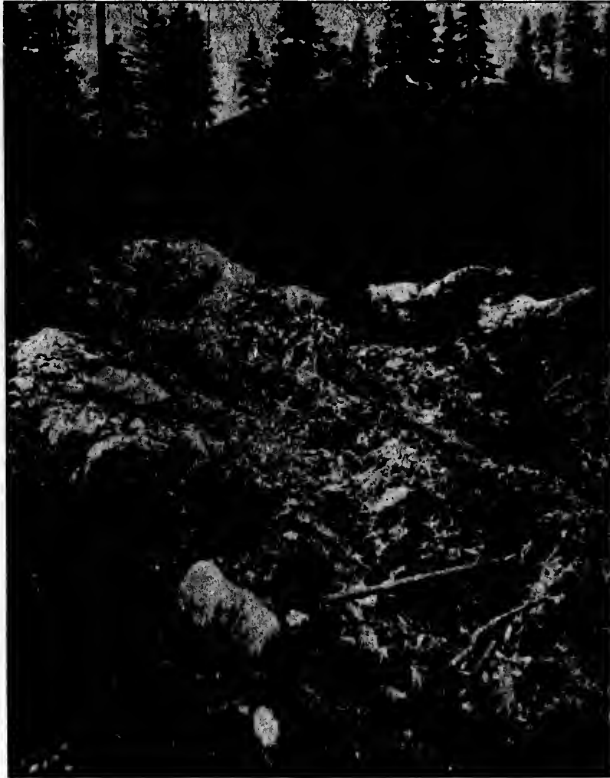
The following shows the relative standing of British Columbia coal in the California market for 1897:—

WHERE FROM.	TONS.
British Columbia.....	558,372
Australia.....	281,666
English and Welsh.....	107,969
Scotch.....	4,081
Eastern (Cumberland and Anthracite).....	21,335
Seattle, Franklin and Green River.....	220,175
Carbon Hill and South Prairie.....	286,205
Mount Diablo and Coos Bay.....	115,150
Japan, Alaska, etc.....	6,587
Total.....	1,601,540

Shipments were made in California to San Francisco, San Pedro and San Diego, and also to Oregon, Washington, Alaska, Petropavloski and the Hawaiian Islands.

Mr. Dick, Inspector of Mines, in his annual report says: "The total deliveries of coke in San Francisco this year amounted to 30,320 tons, of which the Union Colliery Company, British Columbia, gave 2,573 tons, and 1,889 tons came from Australia. Now that we have made our first year's shipments of coke—a first-class article, all those who have used it being well satisfied with its quality, and the coke being in great demand by those who have used it—doubtless the Union Colliery Company will be making regular shipments to the California market henceforth.

A market for a limited quantity will also be found in Vancouver and Victoria.



THIRTY-FOOT QUARTZ VEIN—"MORNING STAR," FAIRVIEW, B.C.

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MINING LAWS.

THREE leading divisions exist in the law relating to mining, the classes of statutes dealing respectively with coal mining, placer mining, and vein or lode mining. The scope of this article will be confined to an endeavour to afford the reader such information as will enable him to ascertain the rights accorded by the statutes of this Province to persons desiring to engage in either of these classes of mining, and the procedure to be followed in order to render those rights available.

The provisions of the "Coal Mines Act," and Amending Acts (Con. Acts, 1888, Cap. 83; 1890, Cap. 32; 1892, Cap. 31; and 1895, Cap. 38) confer and regulate the right to enter Crown lands and lands containing minerals reserved to the Crown, and prospect for and mine coal and petroleum. Persons desiring a license to prospect upon any tract of Crown lands or lands held under lease from the Crown in which the minerals are reserved to the Crown, must select the land in one block, in rectangular form, and in areas not exceeding 640 acres for each license, mark the selected tract by a post (four inches square and four feet high at the least) placed at one corner or angle of the tract and having inscribed thereon the names of the licensees and the angle of the tract at which it stands. A notice must also be posted in a conspicuous place on the land and in the Government Office of the District, of intention to apply for a prospecting license over the land. This notice must be placed thirty clear days before the formal application for a license is made, and a similar notice must be published for the same time in the "British Columbia Gazette" and in one newspaper. At the expiration of the thirty days a formal application for a license may be made to the Assistant Commissioner resident in the district. This application has to be made in duplicate and accompanied by plans of the tract applied for, and a fee of \$50 for each application. The application and documents in connection therewith are forwarded to the Chief Commissioner, by whom the license is issued, for a term not exceeding one year. Upon proof that the license has been *bona fide* worked under, a renewal may be obtained for a second and for a third year, upon the payment of a fee of \$50 for each license on each renewal.

Upon the discovery of coal or petroleum under lands comprised in the license, the licensees may obtain, after survey of the lands, a lease for five years at an annual rental of ten cents per acre; and during that term or within three months after its expiration, the licensees, upon proof to the satisfaction of the Chief Commissioner of the continuous and *bona fide* carrying on of the mining, will be entitled to purchase the lands at the price of \$5 per acre, payable in full at the time of sale. In addition to the rental and purchase price, there is payable to the Crown, a royalty of five cents per ton on coal, and one cent per barrel on petroleum. Any number of licensees, not exceeding ten, may unite in a mining partnership and carry on joint operation, as well under licenses as under leases; and, if under leases, it is not necessary for each leasehold to be worked separately provided work is carried on in any one of them to the satisfaction of the Chief Commissioner. Licensees may use the timber and stone on the lands for the purpose of prospecting and mining operations, and for buildings to be occupied in connection therewith, but for no other purposes.

Price
Per Acre.

Coal
Mining.

The "Coal Mines Regulation Act" (Con. Acts, 1888, Cap. 84) and amending Acts, contain complete provisions regulating the conduct and management of coal mines, and providing especially for the safeguarding of the lives of the employees.

Before proceeding with the consideration of vein or lode mining and placer mining it will be expedient to deal as succinctly as may be with the mode of obtaining a Free Miner's Certificate and the effect of that certificate when obtained, as the continuous holding of such certificate is an essential to the carrying on of either of the above classes of mining. This certificate is issued

**Free Miner's
Certificate.**

by any Gold Commissioner or Mining Recorder to any applicant therefor upon payment of the prescribed fees, without reference to the residence or nationality of the applicant, the only required qualification being that the applicant, if an individual, be over eighteen years of age, and, if a joint stock company, be by law entitled to carry on business in this Province and to engage in mining operations. To an individual it is issued upon payment in advance of an annual fee of \$5; to a company, if the nominal capital does not exceed \$100,000, upon payment in advance of an annual fee of \$50, and, if the capital exceeds \$100,000, of an annual fee of \$100. The obtaining of this certificate (which is not transferable) constitutes the individual or company obtaining the same, a free miner, entitled to have and exercise all the privileges and rights by the mining laws of the Province conferred upon and restricted to free miners. The taking out of such a certificate is obligatory as well upon owners of mines and interests in mines (except shareholders in companies, who may acquire, hold, and transfer shares without taking out a certificate) as upon miners and employees working in mines for wages; and to render this obligation effective it is provided in the first place that any person or company owning any mine or claim or interest therein, or working in any mine or claim, without holding a certificate shall be liable to a penalty not exceeding \$25; in the second, that no person or company shall be recognized (*i.e.*, shall be allowed to claim, obtain and enforce rights of property) as having any right or interest in or to any mine or claim, or any mining water right, unless such person or company shall be the holder of a certificate; and, in the third, that the expiration and non-renewal of a certificate shall work an absolute forfeiture of all the mining property and interests of the non-renewing holder. This provision as to forfeiture

Forfeiture.

does not apply to mines held under Crown grant. If a co-owner in a mine or claim allows his certificate to lapse, his interest does not revert to the Crown, but falls in for the benefit, *pro rata*, of his co-owners. In order to prevent the provision as to forfeiture working any injury to purchasers for value, without notice, it is provided that if any person or company shall purchase any claim, mine, or interest, and it shall appear that the vendor had neglected to obtain or renew a certificate, the purchaser may avert a forfeiture by paying the fees which ought to have been paid by the vendor, within one month from the time of discovering the default. Owners of mines and contractors are obliged, under liability upon default to a penalty not exceeding \$100, to pay for a certificate for every person in their employment, for whom a certificate is by law requisite, and may deduct the amount paid therefor from the wages of such employee. Throughout the remainder of this article, the expression free miner will be understood to mean and include every person and company holding a Free Miner's Certificate.

The Province is divided into Mining Divisions, the officers of each Division and their addresses being given elsewhere.

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The Lieutenant-Governor-in-Council has power to appoint a Chief Gold Commissioner, and Gold Commissioners either for the whole Province or for particular districts to be created and fixed from time to time by Order-in-Council. The Gold Commissioner of a district is the officer whose duty it is, and who is for that purpose invested with full power, to do and at his discretion to permit the doing of all acts and things necessary or expedient for the carrying out of the mining laws and the exercise and enjoyment of the rights and privileges thereby granted

**Gold
Commissioners.**

to and conferred upon free miners. A full enumeration of his powers in regard to each branch of mining will be found in the Acts relating respectively to placer mining and vein or lode mining. In addition to his other powers and duties the Gold Commissioner is charged with the duty of taking possession of and protecting the mining property of a deceased free miner, and of administering the estate and effects of such miner until his representatives obtain from the Courts the proper authority to deal with his estate and effects.

The Mining Recorder in each division is the officer charged with the duty of keeping complete records of all mining locations in his division, and of all transactions and documents affecting such mining locations and requiring by law to be recorded. All books of record and documents filed with the Recorder are, during office hours, open to public inspection free of charge.

**Mining
Recorder.**

The Mining Recorder also issues Free Miners Certificates and Certificates of Work. In the event of a discovery being made in an outlying portion of the Province, it is lawful for the free miners of the locality, by a two-thirds vote, to elect one of their number to act as Recorder and issue Free Miners Certificates until such time as a regularly appointed official can be stationed in the locality.

In addition to the jurisdiction of the Supreme Court the County Courts are invested with a special mining jurisdiction, in respect of the matters following:—

- (1.) In all personal actions, where the debt or damages claimed arise directly out of the business of mining (other than coal mining), or from the exercise of or interference with any right, power, or privilege given, or claimed to be given, by this Act or any other Act relating to mining (other than coal mining):
- (2.) In all actions between employers and employees, where the employment is directly connected with the business of mining (other than coal mining):
- (3.) In all actions for supplies to persons engaged in mining, where such supplies were bought, contracted for, or supplied, or were alleged to have been bought, contracted for, or supplied for mining purposes, or for consumption by persons engaged in mining or prospecting:
- (4.) In all actions of trespass on or in respect of mineral claims or other mining property, or upon or in respect of lands entered or trespassed on, or claimed to have been entered or trespassed on, in searching for, mining, or working minerals (other than coal), or for any other purpose directly connected with the business of mining (other than coal mining), or in the exercise of any power or privilege given, or claimed to be given, by this Act, or any other act relating to mining (other than coal mining):
- (5.) In all actions of ejectment from mineral claims or other mining property, or from lands entered, or claimed to have been entered, in searching for, mining, or working minerals (other than coal), or for any purpose directly connected with the business of mining, or entered, or claimed to have been entered, under some power, right or authority given or obtained under the provisions of this Act, or any other Act relating to mining (other than coal mining):

- (6.) In all suits for foreclosure or redemption, or for enforcing any charge or lien, where the mortgage, charge or lien shall be on mineral claims, mines, or other mining property:
- (7.) In all suits for specific performance of, or for reforming, or delivering up, or cancelling any agreement for sale, purchase or lease of any mineral claim, mine, or other mining property:
- (8.) In all suits for the dissolution or winding up of any mining partnership, whether registered or not, under the provisions of this Act:
- (9.) In all suits relative to water rights claimed under this Act, or any other Act relating to mining (other than coal mining):
- (10.) In all proceedings for orders in the nature of injunctions, where the same are requisite for the granting of relief in any matter in which jurisdiction is given to the County Court by this Act.

A method of procedure is provided whereby transfer to the Supreme Court may be obtained of any litigation which it is expedient should be tried and determined by the Supreme Court.

The Lieutenant-Governor-in-Council has power to establish by Order-in-Council, general rules and regulations necessary to insure the due carrying out of the mining laws.

TABLE OF CHARGES.

For every free miner's certificate issued to an individual.....	\$ 5 00
For every free miner's certificate issued to a joint stock company:—	
(a) Having a nominal capital of \$100,000.00 or less.....	50 00
(b) Having a nominal capital exceeding \$100,000.00.....	100 00
[1897, c. 28, s. 22.]	
Every substituted certificate.....	1 00
Recording any claim.....	2 50
Recording every certificate of work.....	2 50
Recording any "lay over," or every other record required to be made in the "Record Book".....	2 50
Recording every abandonment, including the memorandum to be written on the record.....	2 50
For any other record made in the "Record of Abandonments".....	2 50
For recording every affidavit, where the same does not exceed three folios of 100 words.....	2 50
For every folio over three, per folio.....	30
The above rate shall be charged for all records made in the "Record of affidavits".....	
For all Records made in the "Record of Conveyances," where the same do not exceed three folios.....	2 50
For every folio over three, a further charge per folio of.....	30
For all copies or extracts from any record in any of the above-named books, where such copy or extract shall not exceed three folios, per copy.....	2 50
Where such copies or extracts exceed three folios, per folio for every folio over three.....	30
For filing any document.....	25
For a Crown Grant.....	5 00

VEIN OR LODGE MINING.

IN this class of mining the term "mine" means and includes any land in which any vein or lode, or rock in place, is mined for gold or other minerals, precious or base, except coal; "mineral" meaning all valuable deposits of gold, silver, platinum, iridium, or any of the platinum group of metals, mercury, lead, copper, iron, tin, zinc, nickel, aluminum, antimony, arsenic, barium, bismuth, boron, bromine, cadmium, chromium, cobalt, iodine, magnesium, manganese, molybdenum, phosphorus, plumbago, potassium, sodium, strontium, sulphur (or any combination of the aforementioned elements with themselves or with any other elements), asbestos, emery, mica, and mineral pigments; and the term "rock in place" being deemed to mean and include mineral, not necessarily in a vein or lode; that is, when discovered in the same place or position in which it was originally formed or deposited, as distinguished from loose fragmentary or broken rock or float which, by decomposition or erosion of the rocks, is found in wash, loose earth, gravel or sand:

Every free miner shall, during the continuance of his certificate, have the right to enter, locate, prospect, and mine upon any waste lands of the Crown for all minerals other than coal, and upon all lands the right whereon to so enter upon, prospect, and mine all minerals other than coal shall have been, or hereafter shall be, reserved to the Crown and its licensees, and also to enter, locate, prospect, and mine for gold and silver upon any lands the right whereon to so enter and mine such gold and silver shall have been, or shall be, reserved to the Crown and its licensees. Excepting out of all the above descriptions of lands any land occupied by any building, and any land falling within the curtilage of any dwelling house, and any orchard, and any land for the time being actually under cultivation, and any land lawfully occupied for mining purposes other than placer mining, and also Indian reservations and military or naval reservations: Provided, that where any hydraulic mining works, established in accordance with the "Placer Mining Act, 1891," have been in operation, the land which may have been uncovered by the operation of such works shall not be located or mined upon by any free miner other than the person or persons carrying on such hydraulic works for a space of six months next after the same shall have been so uncovered: Provided, that in the event of such entry being made upon lands already lawfully occupied for other than mining purposes, and not being a portion of lands granted to and held by or for a railway company under any railway subsidy Act heretofore or to be hereafter passed, such free miner shall give adequate security to the satisfaction of the Gold Commissioner or Mining Recorder for any loss or damages which may be caused by such entry if requested by the owner or owners of such land, and should he refuse to give such security when so requested his right to such claim or mine shall cease and determine: Provided, that after such entry he shall make full compensation to the occupant or owner of such lands for any loss or damages which may be caused by reason of such entry; such compensation, in case of dispute, to be determined by the Court having jurisdiction in mining disputes, with or without a jury.

Free Miner's
Rights.

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When a lode is supposed to cross a valley or under an alluvial deposit, and where such lode is indicated by its appearance on the side of the mountain leading into such valley, any free miner upon making a sworn statement before the Mining Recorder or Gold Commissioner of the district that there is a lode which has indications of running through and under such alluvial deposit shall be entitled to a permit for three months to search for such lode over the area of a mineral claim, with the privilege of having such permit extended on his proving to the satisfaction of the Gold Commissioner that he has *bona fide* searched for such lode and has expended, either in cash or labour, or both, not less than \$100 in such search. During the existence of such permit the ground covered by the same shall not be open to record by any other miner. The fee for such permit, and each renewal of the same, shall be the same as the fee for a record.

A mineral claim shall be marked by two legal posts, placed as near as possible on the line of the ledge or vein, and the posts shall be numbered 1 and 2, and the distance between posts 1 and 2 shall not exceed fifteen hundred feet, the line between posts Nos. 1 and 2 to be known as the location line, and upon posts

**Staking Out
Claims.**

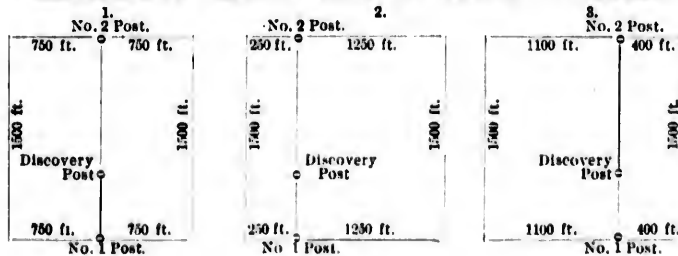
Nos. 1 and 2 shall be written the name given to the mineral claim, the name of the locator, and the date of the location. Upon No. 1 post there shall be written, in addition to the foregoing, "Initial Post," the approximate compass bearing of No. 2 post, and a statement of the number of feet lying to right and to the left of the line from No. 1 to No. 2 post, thus: "Initial post. Direction of post No. 2. ——— feet of this claim lie on the right, and ——— feet on the left of the line from No. 1 to No. 2 post."

All the particulars required to be put on No. 1 and No. 2 posts shall be furnished by the locator to the Mining Recorder, in writing, at the time the claim is recorded, and shall form a part of the record of such claim.

When a claim has been located, the holder shall immediately mark the line between posts Nos. 1 and 2 so that it can be distinctly seen; in a timbered locality, by blazing trees and cutting underbrush, and in a locality where there is neither timber nor underbrush he shall set legal posts or erect monuments of earth or rock not less than two feet high and two feet in diameter at base, so that such line can be distinctly seen.

The locator shall also place a legal post at the point where he has found rock in place, on which shall be written "Discovery Post": Provided, that when the claim is surveyed the surveyor shall be guided by the records of the claim, the sketch plan on the back of the declaration made by the owner when the claim was recorded, posts 1 and 2, and the notice on No. 1, the initial post.

EXAMPLES OF VARIOUS MODES OF LAYING OUT CLAIMS.



It shall not be lawful to move No. 1 post, but No. 2 post may be moved by the Provincial Land Surveyor when the distance between Nos. 1 and 2 posts exceeds 1,500 feet in order to place No. 2 post 1,500 feet from No. 1 post on the line of location. When the distance between posts Nos. 1 and 2 is less than 1,500 feet, the Provincial Land Surveyor has no authority to extend the claim beyond No. 2. Provision is made for the imposition of penalties for tampering with posts. The "location line" shall govern the direction of one side of the claim, upon which the survey shall be extended according to this Act. The holder of a mineral claim shall be entitled to all minerals which may lie within his claim, but he shall not be entitled to mine outside the boundary lines of his claim continued vertically downwards.

No mineral claim of the full size shall be recorded without the application being accompanied by an affidavit or solemn declaration in the Form S, made by the applicant or some person on his behalf cognizant of the facts: That the legal notices and posts have been put up; that mineral has been found in place on the claim proposed to be recorded; that the ground applied for is unoccupied by any other person as a mineral claim, and is not occupied by any building

or any land falling within the curtilage of any dwelling-house, or any orchard, or any land under cultivation, or any Indian Reservation.

In the said declaration shall be set out the name of the applicant, the number and date of his Free Miner's Certificate, and the name of the place where the said certificate was issued, and the date of the location of the claim. The words written on the No. 1 and No. 2 posts shall be set out in full, and as accurate a description as possible of the position of the claim given, having special reference to any prior locations it may join.

No mineral claim which at the date of its record is known by the locator to be less than a full-sized mineral claim, shall be recorded without the word "fraction" being added to the name of the claim, and the application being accompanied by an affidavit or solemn declaration in the Form T, made by the applicant or some person on his behalf cognizant of the facts: That the legal posts and notices have been put up; that mineral has been found in place on the fractional claim proposed to be recorded; that the ground applied for is unoccupied by any other person as a mineral claim, and is not occupied by any building, or any land falling within the curtilage of any dwelling-house or any orchard, or any land under cultivation, or any Indian Reservation. In the said declaration shall be set out the name of the applicant, the number and date of his Free Miner's Certificate, and the name of the place where the said certificate was issued, and the date of the location of the claim. The words written on the No. 1 and No. 2 posts shall be set out in full, and as accurate a description as possible of the position of the claim given. A description of the land bounding the fractional claim on all sides shall state whether it is vacant Crown land or land occupied by mineral claims, with the names of the claims. A sketch plan shall be drawn by the applicant on the back of declaration, showing as near as may be the position of the adjoining mineral claims, and the shape and size, expressed in feet, of the fraction desired to be recorded:

Provided, that the failure on the part of the locator of a mineral claim to comply with any of the foregoing provisions of this section shall not be deemed to invalidate such location, if upon the facts it shall appear that such locator has actually discovered mineral in place on said location, and that there has been on his part a *bona fide* attempt to comply with the provisions of this Act, and that the

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non-observance of the formalities hereinbefore referred to is not of a character calculated to mislead other persons desiring to locate claims in the vicinity.

Any free miner having duly located and recorded a mineral claim shall be entitled to hold the same for the period of one year from the recording of the same, and thence from year to year without the necessity of re-recording: Provided, however, that during each year, and each succeeding year, such free miner shall do, or cause to be done, work on the claim itself to the value of one hundred dollars, and shall satisfy the Gold Commissioner or Mining Recorder that such work has been done, by an affidavit of the free miner or his agent, setting out a detailed statement of such work, and shall obtain from such Gold Commissioner or Mining Recorder, and shall record, a certificate of such work having been done: Provided, also, that all work done outside of a mineral claim with intent

Conditions of Holding.

to work the same shall, if such work have direct relation and be in direct proximity to the claim, be deemed, if to the satisfaction of the Gold Commissioner or Mining Recorder, for the purposes of this section, to be work done on the claim: Provided, further, that any free miner, or company of free miners holding adjoining mineral claims, or any two or more free miners who locate and record adjoining mineral claims, not exceeding eight in number, to be worked by them in partnership under the provisions of any Act for the time being in force, shall, subject to filing a notice of their intention with the Gold Commissioner or Mining Recorder, be allowed to perform on any one or more of such claims all the work required to entitle him or them to a certificate for work for each claim so held by him or them. If such work shall not be done, or if such certificate shall not be so obtained and recorded in each and every year the claim shall be deemed vacant and abandoned, any rule of law to the contrary notwithstanding. A miner performing assessment work to the value of \$100 in excess for each year is entitled to credit for same. The holder of a claim may, instead of doing the annual assessment work, pay the sum of \$100 to the Crown, and the recording of the Mining Recorder's receipt for this payment will relieve the claim holder from doing assessment work for the year covered by the receipt.

A location may be made upon Sunday or any public holiday, and in cases where, from the nature or shape of the ground, it is impossible to mark the location line of the claim, then the claim may be marked by placing legal posts as nearly as possible to the location line, and noting the distance and direction such posts may be from such location line, which distance and direction shall be set out in the record of the claim.

Every free miner locating a mineral claim shall record the same with the Mining Recorder of the district within which the same is situate, within fifteen days after the location thereof, if located within ten miles of the office of the said Mining Recorder. One additional day shall be allowed for such record for every additional ten miles, or fraction thereof.

The surface rights acquired by a claim-holder are limited to the right to the use and possession of the surface of his claim, including the use of all the timber thereon, for the purpose of winning and getting from and out of such claim the minerals contained therein, including all operations connected therewith or with the business of mining, and all remaining surface rights shall be deemed to be vested in the Crown, and may be granted and disposed of as is provided by the Land Laws for the time being in force, but subject always to the rights of free miners as aforesaid.

Surface Rights.

In case of any dispute as to the location of a mineral claim the title to the claim shall be recognized according to the priority of such location, subject to any question as to the validity of the record itself, and subject, further, to the free miner having complied with all the terms and conditions of the Act.

Upon any dispute as to the title to any mineral claim no irregularity happening previous to the date of the record of the last certificate of work shall affect the title thereto, and it shall be assumed that up to that date the title to such claim was perfect, except upon suit by the Attorney-General based upon fraud.

If any person shall in any suit or matter claim an adverse right of any kind to the mineral claim comprised in any record, or to any part thereof, or shall claim that any record is invalid or has been improperly obtained, or that the holder thereof has not complied with the provisions of the Act under which the location and record were made, or has not prior to the obtaining of such record made a good and valid location of such mineral claim according to law, the onus of proof thereof shall be on the person so claiming an adverse right, or so claiming that such record is invalid and has been improperly obtained as aforesaid, and in default of such proof judgment shall be given for the holder of such prior record in so far as such action, suit or matter relates to any of the matters aforesaid.

No free miner is entitled to hold in his own name, or in the name of any other person, more than one mineral claim on the same vein or lode, except by purchase, but such free miner may hold by location a claim upon any separate vein or lode.

A free miner may at any time abandon any mineral claim by giving notice in writing of such intention to abandon to the Mining Recorder, and from the date of the record of such notice all interest of such free miner in such claim shall cease.

When a free miner abandons a mineral claim he shall have the right to take from the same any machinery and any personal property which he may have placed on the claim, and any ore which he may have extracted therefrom within such time as shall be fixed by the Gold Commissioner or Mining Recorder.

No free miner shall be entitled to relocate any mineral claim, or any portion thereof which he shall have failed to record within the prescribed period, or which he shall have abandoned or forfeited, unless he shall have obtained the written permission of the Gold Commissioner to make such relocation; and he shall hold no interest in any portion of such mineral claim, by location, without such permission.

Where a tunnel is run for the development of a vein or lode the owner of such tunnel shall, in addition to any mineral claim legally held by him, have the right to all veins or lodes discovered in such tunnel: Provided, that the ground containing such veins or lodes be marked out by him as a mineral claim, and be duly recorded within fifteen days after such discovery; and provided further, that such veins or lodes are not included in any existing mineral claim. Any money or labour expended in constructing a tunnel to develop a vein or lode shall be deemed to have been expended on such vein or lode.

Any lawful holder of a mineral claim is entitled to a Crown grant thereof on payment to the Government of the sum of \$500 in lieu of expenditure on the claim. The intending purchaser must comply with all the requirements for obtaining a Certificate of Improvements, except such as have respect solely to the work required to be done on claims.

Whenever the lawful holder of a mineral claim shall have complied with the following requirements, to the satisfaction of the Gold Commissioner, he shall be entitled to receive from the Gold Commissioner a Certificate of Improvements in respect of such claim, unless proceedings by any person claiming an adverse right have been taken:

- (a.) Done or cause to be done work on the claim itself in developing a mine, and paid money, together amounting to the value of five hundred dollars, exclusive of all houses, buildings, and other like improvements. For the purpose of this section, work done on the claim by a predecessor or predecessors in title shall be deemed to have been done by the applicant who receives a transfer of such claim.
- (b.) Found a vein or lode within the limits of such claim.
- (c.) Had the claim surveyed by an authorized Provincial Land Surveyor, who shall have made three plats of the claim. The owner of a mineral claim who has had his claim surveyed within one year from the record of the claim, and has filed in the office of the Mining Recorder a declaration by a Provincial Land Surveyor, stating that he has surveyed the claim, and that he has delivered two plats of the claim and a copy of the original field-notes to the owner of such claim, shall be entitled to have the cost of such survey, not to exceed \$100, counted as work done on the claim.
- (d.) Shall have posted on some conspicuous part of the land embraced in the survey a copy of the plat of the claim, and a legible notice in writing of his intention to apply for a Certificate of Improvements, and shall also have posted a similar notice in the Mining Recorder's office, and such notice shall contain—
- (e.) Inserted a copy of such notice in the "British Columbia Gazette" and in a newspaper published and circulating in the division in which the claim is situated, or, in the absence of such local paper, in the one nearest thereto, for at least sixty days prior to such application, which insertion can be made at any time after the posting of the notice on the claim.
- (f.) Filed with the Mining Recorder an affidavit of due compliance with and carrying out of the foregoing requirements.

A Certificate of Improvements, when issued as aforesaid, shall not be impeached in any court on any ground except that of fraud.

In case any person shall claim an adverse right of any kind, either to possession of the mineral claim referred to in the application for Certificate of Improvements, or any part thereof, or to the minerals contained therein, he shall, within sixty days after the publication in the "British Columbia Gazette" of the notice above referred to (unless such time shall be extended by special order of the Court upon cause being shewn), commence an action in the Supreme Court of British Columbia to determine the question of the right of possession or otherwise enforce his said claim, and shall file an affidavit, to be made by the person asserting the adverse claim, and setting forth the nature, boundaries and extent of such adverse claim, together with a map or plan thereof, made and signed by a Provincial Land Surveyor, and a copy of the writ in said action with the Mining Recorder of the district or mining division in which the said claim

is situate within twenty days from the commencement of said action, and shall prosecute the said suit with reasonable diligence to final judgment, and a failure to so commence or so to prosecute shall be deemed to be a waiver of the plaintiff's claim. After final judgment shall have been rendered in the said action the person or any one

Adverse
Claims.

of the persons entitled to the possession of the claim or any part thereof, may file a certified copy of the same in the office of the Mining Recorder. After the filing of the said judgment, and upon compliance with all the requirements of the next preceding section, such person or persons shall be entitled to the issue to him or to them of a Certificate of Improvements in respect of the claim, or the portion thereof, which he or they shall appear from the decision of the Court rightly to possess: Provided, that this section shall not apply to any adverse claim filed or action to enforce the same commenced prior to the date of this Act coming into force, but the same shall be continued in the same manner as if this Act had not been passed.

In any adverse proceedings hereafter brought before the Court under the "Mineral Act," each party to such proceedings shall give affirmative evidence of title to the ground in controversy, and if such title shall not be established by either party, the Judge shall so find, and judgment shall be entered according to such finding without costs to either party.

If an adverse claim shall only affect a portion of the ground for which a Certificate of Improvements is applied, the applicant shall nevertheless be entitled to a Certificate of Improvements for the undisputed remainder of his claim, upon complying with the requirements of this Act.

The holder must make an application for a Crown Grant within three months after receiving his Certificate of Improvements, otherwise the Certificate will lapse.

On the granting and recording of such Certificate of Improvements in respect to a mineral claim situate outside of the Railway Belt, the holder thereof shall be entitled to a Crown Grant of such claim without the payment of the \$500, and in respect of a mineral claim situate inside the Railway Belt, the holder shall be entitled to a Crown Grant of such claim on the payment of \$5 per acre to the Mining Recorder.

Between the time of application for and the granting of the Certificate, the holder may transfer the claim; but after the issue of the Certificate, no transfer can be recorded until after a Crown Grant is obtained. Crown Grants, in addition to the mineral rights, convey the right to the use and possession of the surface of such claim, including the use of all the timber thereon, for the purpose of winning and getting from and out of such claim the minerals contained therein, including all operations connected therewith or with the business of mining, and all remaining surface rights shall be deemed to be vested in the Crown, and may be granted and disposed of as is provided by the Land Laws for the time being in force, but subject always to the rights of free miners as aforesaid.

The owner of a mineral claim (located on waste lands of the Crown, or on lands not already lawfully occupied for other than mining purposes) for which a Crown grant has issued or may hereafter issue, shall, so long as the surface rights hereof remain in the Crown unencumbered and unreserved, be entitled to receive a Crown grant of such surface rights, on payment to the Government of British Columbia of the sum of five dollars per acre for such land, and a fee of five dollars for the Crown grant.

No transfer of any mineral claim, or of any interest therein, shall be enforceable unless the same shall be in writing, signed by the transferer or by his agent

authorized in writing, and recorded by the Mining Recorder; and if signed by an agent, the authority of such agent shall be recorded before the record of such transfer. All mineral claims derived under Crown grant, and every transfer thereof, or any interest therein, shall be registered under the provisions of the "Land Registry Act."

No free miner shall be entitled to any interest in any mineral claim which has been located and recorded by any other free miner unless such interest is specified and set forth in some writing signed by the party so locating such claim.

No mineral claim shall be open to location by any other person during the last illness, nor, unless with the permission in writing of the Gold Commissioner, for twelve months after the death of the lawful holder.

A free miner may locate any unoccupied and unreserved Crown land not known to contain mineral, and not exceeding five acres, as a mill-site. No free miner shall be entitled to obtain and hold under this section more than one mill-site for each mineral claim lawfully held by him. Such mill-site shall be as nearly as possible in the form of a square. The Act prescribes the procedure to be followed to perfect the location, and also to obtain a Crown Grant. A free miner holding a claim may obtain a license to run a drain or tunnel; and may acquire water rights for mining or milling purposes. This latter matter is now dealt with by the Water Clause Consolidation Act, 1897, a reference to which will be found on a subsequent page herein. Mining partnerships may be formed in the same manner as under the provisions of the Placer Act, set out above, and the provisions of the Acts are in this respect so far alike as to render it unnecessary for the purposes of this article to again deal with the subject in detail.

Duplicate field notes of the surveys of all mineral claims to which Crown grants have been issued, or may hereafter be issued, to be filed for reference, in the office of the Mining Recorder in the mining division within which the mining claims are situated.



HEAD OF SKAGWAY BAY.

PLACER MINING.

PLACER mining is defined as the mining of any natural stratum or bed of earth, gravel or cement for gold or other precious minerals or stones. Placer claims are divided into four classes; and, as the size and location of claims vary, according as they fall within one or other of these classes, it will be advisable, as a preparatory measure, to become familiar with the mode and effect of the classification. The following table contains a compilation of the legislation relating to this matter; the claims being measured horizontally, irrespective of inequalities on the surface of the ground.

"Creek diggings" shall mean any mine in the bed of any river, stream, or ravine, excepting bar diggings; and a "creek claim" shall be 100 feet long, measured in the direction of the general course of the stream, and shall extend in width from base to base of the hill or bench on each side, but when the hills or benches are less than 100 feet apart the claim shall be 100 feet square.

"Bar diggings" shall mean any mine over which a river extends when in its flooded state; and in "bar diggings" a claim shall be a strip of land 100 feet long at high water mark, and in width extending from high water mark into the river to its lowest water level.

"Dry diggings" shall mean any mine over which a river never extends, and in "dry diggings" a claim shall be 100 feet square.

"Bench diggings" shall mean any mine on a bench, and shall, for the purpose of defining the size of a claim in bench diggings, be excepted from "dry diggings"; and in "bench diggings" a claim shall be 100 feet square: Provided, that the Gold Commissioner shall have authority, where a bench is narrow, to extend the limits of the claim beyond the limits of the bench, but not to exceed 100 feet square.

"Hill diggings" shall mean any mine on the surface of a hill, and fronting on any natural stream or ravine; and in "hill diggings" a claim shall have a base line or frontage of 100 feet, drawn parallel to the main direction of the stream or ravine on which it fronts. Parallel lines drawn from each end of the base line, at right angles thereto, and running to the summit of the hill, shall constitute the side lines thereof. Legal posts shall be placed 100 feet apart, on both the base line and side lines, and no claim shall extend beyond the posts so placed.

In addition to these classes there is a subsidiary class relating to precious stones alone, a further reference to which will be made when dealing with the granting of leases. The definition "Precious stone diggings" shall mean "deposit of precious stones, whether in veins, beds, or gravel deposits."

A special right is given to discoverers of new diggings, this being as follows:—

If any free miner, or party of free miners, discover a new mine, and such discovery be established to the satisfaction of the Gold Commissioner, placer claims of the following size, in dry, bar, bench, creek or hill diggings shall be allowed, viz.:—

To one discoverer, one claim 300 feet in length.

To a party of two discoverers, two claims, amounting together to 600 feet in length.

To a party of three discoverers, three claims, amounting together to 800 feet in length.

To a party of four discoverers, four claims, amounting together to 1,000 feet in length.

And to each member of a party beyond four in number, a claim of the ordinary size only.

A creek discovery claim shall extend on each side of the centre of the creek as far as the summit of the hill, but not exceeding 1,000 feet. A new stratum of auriferous earth, gravel, or cement, situated in a locality where all placer claims are abandoned, shall be deemed a new mine, although mines in the same locality shall have been previously worked; and dry diggings discovered in the vicinity of bar diggings shall be deemed a new mine, and *vice versa*. A discoverer's claim shall be considered as one ordinary claim, in respect to recording, working, and representing.

Every free miner has the right to enter, locate, prospect, and mine for gold and other precious metals upon any land in British Columbia, whether vested in the Crown or otherwise, except Government reservations for townsites, land occupied by any building, any land falling within the curtilage of any dwelling house, and any orchard, any land lawfully occupied for placer mining purposes, and also Indian reservations. Previous to entry upon lands already lawfully occupied, security must be given for any loss or damage to be occasioned by the miner, and the amount due for such loss or damage if not paid by the miner, may be collected by process of law. A free miner has also the right to kill game for his own use at any time of the year.

A placer claim must be as nearly as possible rectangular in form, and marked by four legal posts at the corners thereof, firmly fixed in the ground. One of such posts shall be marked as the "initial post," and on that post shall be placed a legible notice in writing, stating the name of the claim, its length in feet and general direction, with the date of the notice and name of each locator. If any side line of any claim shall exceed 100 feet in length, legal posts shall be placed along such side line, at distances not exceeding 100 feet. A "legal post" means a stake standing not less than four feet above the ground, and squared or faced on four sides for at least one foot from the top, and each side so squared or faced shall measure at least four inches on its face so far as squared or faced, or any stump or tree cut off and squared or faced to the above height and size.

A location may be made upon Sunday or any public holiday. In case of any dispute as to the title of a placer claim, the title to the claim shall be recognized according to the priority of the location, subject to any question as to the validity of the record itself, and subject further to the free miner having complied with all the terms and conditions of the Act.

Every free miner recording a placer claim shall record the same with the Mining Recorder of the district or division within which the same is situate, within three days after the location thereof, if located within ten miles of the office of the said Mining Recorder. One additional day shall be allowed for making such record for every additional ten miles or fraction thereof. If by inadvertance a claim be recorded in the wrong office, the record may be transferred to the proper office; but such transfer must be made within fifteen days after the discovery of the error.

After the recording of a placer claim, the removal of any post by the holder thereof, or by any person acting in his behalf, made for the purpose of changing the limits of his claim, shall act as a forfeiture of the claim.

A placer claim may be recorded for one or more years, a recording fee of \$2.50 being payable for each year. These records may, before expiration, be renewed from time to time upon payment of the same fee per year, the interest of the free miner in a claim being a chattel interest equivalent to a lease for the period covered by the record, renewable by re-recording. The holder of a placer claim has no right to any vein or lode within the limits of his claim unless he shall have located and recorded the ground as a mineral claim under the Act regulating the location and record of claims for vein or lode mining; and until he shall so locate and record such ground, any free miner discovering the vein or lode may locate and record the ground as a mineral claim, and become thereby entitled to mine the vein or lode only.

Every placer claim must be represented and *bona fide* worked by the holder, or by some person on his behalf, continuously, as nearly as practicable, during working hours, and shall be deemed to be abandoned and absolutely forfeited when the same shall have remained unworked on working days by the holder thereof, or some person on his behalf, for the period of seventy-two hours, except during the close season, some lay-over, or leave of absence, or during sickness, or for some other reasonable cause which shall be shown to the satisfaction of the Gold Commissioner.

Every free miner, or company of free miners, shall be entitled to a leave of absence for one year from his or their placer claim or set of claims upon proving to the Gold Commissioner that he or they has or have expended on such claim or on any portion of the set of claims, in cash, labour, or machinery, an amount equal to one thousand dollars on each full interest, without any return of gold or other minerals in reasonable quantities from such expenditure; and upon the application for such leave being signed by all the holders of the claim or set of claims.

A miner holding a claim, the working of which requires the use of water, is entitled to a lay-over during any time the water supply falls below the quantity necessary for the working of the claim.

No transfer of any placer claim, or interest therein, shall be enforceable unless the same or some memorandum thereof shall be in writing, signed by the transferer, or by his agent authorized in writing, and recorded in the Record of Conveyances.

Every bill of sale, conveyance, or mortgage of a placer claim, or of any fraction thereof, shall be recorded within the time prescribed for recording placer claims.

Provision is made for relief of purchasers of claims in cases where previous owners have neglected to take out licenses.

A free miner desiring, for the proper working of his claim, to construct a tunnel or drain through any occupied or unoccupied land, whether mineral or not, may obtain from the Gold Commissioner a license for that purpose subject to the giving of such security and upon such terms and conditions as the Gold Commissioner may fix, and a tunnel or drain so constructed shall be considered as part of the claim.

A free miner desiring to engage in the enterprise of constructing a tunnel or drain for the public drainage of claims and mines may apply to the Gold Commissioner for a grant of right of way and entry through and upon any mining ground in the district. The application for every such grant shall be in writing, and shall set out the name of each applicant, the nature and extent of the proposed drain, the amount of toll to be charged, the term of years for which such grant is to be made, and all other privileges sought to be acquired. The application shall be left at the Mining Recorder's office addressed to the Gold Commissioner. A notice of such application, setting out the above particulars, shall be posted on the office of the Mining Recorder and on the ground for thirty clear days before such grant shall be made. The applicant for every such grant shall deposit with the Mining Recorder at the time of the leaving of his application as aforesaid, twenty-five dollars, which shall be refunded in case the application shall be refused. Such grants shall be in writing and signed by the Gold Commissioner, and shall not be given for a longer period than twenty years, and shall give such rights of way and entry and such powers to assess, levy, and collect tolls from all persons using such drain, or benefitted thereby, as the Gold Commissioner shall think fit, but not in any case to exceed the term, rights or powers set out in the application.

**General
Drainage Works.**

Every such grant shall be recorded in the Record Book, and the deposited sum of twenty-five dollars shall be retained as a recording fee. A rent of twenty-five dollars for each quarter of a mile and each fraction thereof shall be paid annually to the Mining Recorder by the grantee; such rent to commence from the date of the grant.

Certain statutory conditions form part of every such grant, imposing upon the grantee the duty of constructing and maintaining works of sufficient capacity to carry out the objects for which the license has been granted; to provide, without discrimination or preference, proper connections or tap-drains for all claims adjacent to the works; to avoid injury to property, and to make good any damage caused by the construction of the works.

The right to obtain grants of water for mining purposes, and the procedure therefor, is now contained in the Water Clauses Consolidation Act, 1897, a reference to which will be found in another part of this work.

Mining partnerships for the carrying on of the business of mining and such other matters as pertain solely thereto may be formed by free miners, and shall be governed by the provisions of the Act and by their written articles of partnership (if any). A mining partnership shall, unless otherwise agreed upon, be deemed to be a yearly partnership, renewable from year to year by tacit consent. Mining partnerships can locate and record in the partnership name a placer claim for each partner who is a free miner. Such partnership claims may be located and recorded as a set of claims, and each such claim shall be staked as an ordinary placer claim. One stake on each such claim shall be marked as an initial stake, by writing thereon the words "Initial post." It shall not be requisite to post more than one location notice on each set of claims, which notice shall be on the first initial post. A set of claims may be recorded in one record. The name of every partner, and the number of every partner's free miner's certificate, shall be on the record of every such set of claims. The partnership name shall appear on every such record, and all claims so taken up shall be the property of the partnership. A partner in any mining partnership, or his agent authorized in writing, shall, at

**Mining
Partnerships.**

any meeting thereof, be entitled to vote upon any interest or fraction of an interest which he may hold therein: but the result of the votes given shall be determined by the number of the full interests voted upon, and not by the number of partners voting at such meeting.

A majority of such votes may decide when, how long, and in what manner to work the partnership claim, or set of claims, the number of men to be employed, which number shall not be less than one man to each claim, and the extent and manner of levying the assessments to defray the expenses incurred by the partnership. Such majority may also choose a foreman or manager, who shall represent the partnership and sue and be sued in the name of the partnership for assessments and otherwise; and he shall have power to bind them by his contracts. Every partner, or his duly authorized agent, shall be entitled to represent his interest in the partnership property by work and labour, so long as such work and labour be satisfactory to the foreman or manager. In the event of such partner or agent being discharged by the foreman or manager, the Court having jurisdiction in mining disputes may, if requested, summon the foreman or manager before it, and upon hearing the facts make such order as it shall deem just.

All assessments shall be payable within five days after being made. Any partner making default in payment, after receiving a notice certifying the amount due by him, shall, if such amount be correct, be personally liable therefor to the partnership, and his interest in the partnership property may be sold by the partnership for the payment of the debt, and any further assessment which may have accrued thereon up to the day of sale, together with all costs and charges occasioned by such default; and if the proceeds of the sale be insufficient to pay off the several sums mentioned, the Court having jurisdiction in mining disputes, upon being applied to, shall issue an order directed to the sheriff to seize and sell any other personal property of the debtor. Notices of sale shall, in either of the above cases, be conspicuously posted ten clear days prior to the day of sale, in the vicinity of such mining or other property, and on the Court House or Mining Recorder's office nearest thereto. But if such partner be absent from the district, such notices shall be posted as aforesaid thirty clear days before the day of sale, and a copy of such notice shall be published in some newspaper, circulating in the district wherein such mining or other property is situate, for the same period. Such sale shall be by public auction to the highest bidder. The purchaser shall be entitled to possession of the property sold, and to a bill of sale therefor signed by the auctioneer; such bill of sale shall confer such title upon the purchaser as the owner had.

Any partner may abandon his interest and after a notice of abandonment, in writing, shall have been served on the foreman or manager of a partnership by any member thereof, and duly recorded. such member shall not be liable for any debts or other liabilities of the partnership incurred after service and record of such notice, and no member shall be deemed to have abandoned an interest until service and record of such notice.

Any partner shall be entitled to sell, or contract for the sale of his interest in the partnership property, but such interest shall continue liable for all the debts of the partnership. No partner shall, after a bill of sale conveying his interest has been recorded, be liable for any indebtedness of the partnership incurred thereafter.

Any mining partnership, composed of two or more free miners, and being free from all debts in respect of the partnership property, may limit the liability of its members, upon complying with the requirements following, that is to say: Upon filing with the Mining Recorder a declaratory statement, containing the name of the partnership, the location and size of every partnership claim, and the particular interest of each partner; and also placing upon a conspicuous part of every such claim, or set of claims, in large letters, the name of the partnership, followed by the words "Limited Liability." The words "Limited Liability" shall be part of the partnership name. After such conditions shall have been complied with, no member of such partnership shall be liable for any indebtedness incurred thereafter beyond an amount proportionate to his interest in the partnership. Every such partnership shall keep a correct account of its assets and liabilities, together with the names of the partners, and the interest held by each, and shall make out a monthly balance sheet showing the names of the creditors, and the amounts due to each, and file the same among the papers of the partnership; and such balance sheet and all the books of the partnership shall be open to the inspection of creditors at all reasonable hours. Every partner in such partnership shall be at liberty to sell or dispose of his interest therein, or of any part thereof, to any other free miner; but such partner shall be liable for the indebtedness on the said interest in proportion to his interest in the partnership.

No member of such partnership, after a bill of sale conveying his interest has been duly recorded, or after he has served a notice of abandonment of his interest on the foreman, and left a copy thereof with the Mining Recorder, shall be liable for any indebtedness of the partnership incurred thereafter. No such partnership shall declare any dividend until all its liabilities have been paid. Every such partnership shall appoint a foreman or manager, who shall represent the partnership, and who shall sue and be sued in the name of the partnership; and his contracts in relation to the business of the partnership shall be deemed to be the contracts of the partnership. No such partnership shall be liable for any other indebtedness than that contracted by its foreman or manager, or by its agent duly authorized in writing.

One or more free miners may apply to the Gold Commissioner for a grant of exclusive rights of way through and entry upon any mining ground in his district, for the purpose of constructing, laying and maintaining a bed-rock flume. Every such application shall be in writing, and shall be left at the Mining Recorder's office, addressed to the Gold Commissioner, and shall state the name of the applicant and the nature and extent of the privileges sought to be acquired. Thirty days' notice of such application shall be given, by affixing the same to some conspicuous part of the ground through which the rights of way are asked, and a copy thereof upon the walls of the Court House or of the office of the Mining Recorder of the district. Prior to such application, such ground shall be marked out by legal posts, placed at intervals of one hundred and fifty feet along the proposed main line or course of the flume, with a notice of such application affixed to one of such posts. And it shall be competent for any free miner to protest before the Gold Commissioner within such thirty days against such application being granted, but not afterwards. Every application for a grant shall be accompanied by a deposit of one hundred and twenty-five dollars, to be left with the Mining Recorder, which shall be refunded if the application be refused, but not otherwise. A grant may be for any

**Bedrock
Flumes.**

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term not exceeding five years, and the grantee shall be entitled to the following rights and privileges, that is to say:—

- (a.) The right of way through and entry upon any new and unworked river, creek, gulch, or ravine, and the exclusive right to locate and work a strip of ground one hundred feet wide and two hundred feet long in the bed thereof to each grantee named in such grant:
- (b.) The right of way through and entry upon any river, creek, gulch, or ravine, worked by miners for any period longer than two years prior to such entry, and already wholly or partially abandoned, and the exclusive right to stake out and work both the unworked and abandoned portions thereof, one hundred feet in width, and one-quarter mile in length, for each grantee named in such grant:
- (c.) Such right of way through and entry upon any river, creek, or ravine discovered within two years next preceding the date of his application before mentioned, and upon any portions of which any free miner is legally holding and *bona fide* working a claim, as to the Gold Commissioner may seem advisable:
- (d.) The right of way through and entry upon all placer claims which are at the time of the notice of application before mentioned *bona fide* being worked by any free miner, for the purpose of cutting a channel and laying his flume therein, with such reasonable space for constructing, maintaining, and repairing the flume as may be necessary: Provided, that the owner of such last-mentioned placer claim shall be entitled to take and receive the gold or other minerals found in the cut so made:
- (e.) The use of so much of the unappropriated water of the stream on which the flumes may be located, and of other adjacent streams, as may be necessary for the use of the grantee's flumes, hydraulic power, and machinery to carry on his mining operations, and the right of way for ditches and flumes to convey the necessary water to his works, subject to the payment of any damage which may be done to other parties by running such ditches or flumes through or over their ground:
- (f.) The right to all the gold or other minerals in his flumes:
- (g.) No person locating new and unworked or abandoned ground within the limits of such grant, after the notice above mentioned has been given, shall have any right or title as against such grantee to the ground so located.

The holder of a claim through which the line of the grantee's flume is to be run may put in a bed-rock flume to connect with the grantee's flume, but must maintain a like grade, and construct a flume of like strength, and must maintain his flume and keep it free from obstruction. Such claim holder shall have the right to become a partner of the grantee by uniting his claim and flume with the ground and flume of the grantee and taking in the whole an interest proportionate to that which he shall cede to the grantee; or he may abandon his claim and flume, and such abandonment shall enure to the use and benefit of the grantee.

The grant must be recorded within three days after its issue; and the grantee must pay an annual rental of \$12.50 for each quarter of a mile of right of way granted, and must lay one hundred feet of flume during the first year of the grant, and three hundred feet annually thereafter until completion of the flume. Any free miner working a claim where a bed-rock flume exists is entitled to tail his sluices, hydraulics and ground sluices into the flume, but must not obstruct the free running of the flume.

A free miner may apply for and subject to compliance with the statutory requirements relating to the mode of application, the marking of the ground by legal posts, and the giving notice of intended application, obtain from the Gold Commissioner (with the sanction of the Lieutenant-Governor-in-Council) a lease of any unoccupied and unreserved Crown land for placer mining purposes or for precious stone diggings for any term not exceeding twenty years on such terms and conditions as the Gold Commissioner may fix.

Leases.

Applications shall not be for greater than the following areas or distances: In creek diggings on abandoned or unworked creeks, half a mile in length; any other placer mining ground, eighty acres; but in no case shall any lease extend along any creek or river more than five hundred yards; creek diggings excepted; precious stone diggings, ten acres; but the right to mine for precious stones shall not include the right to mine for gold or other precious metals, unless the ground be held also for that purpose separately, under the provisions of the Act.

Every lease shall provide for securing to the public reasonable rights of way and water, and shall contain a covenant by the lessee to mine the ground in a miner-like manner, and shall contain such covenants for the continuous working of such ground as the Gold Commissioner shall think reasonable, and shall reserve the right to free miners to enter on such ground and mine for veins or lodes. A lease shall not be granted for any mining ground any portion of which is actually occupied by free miners, unless with the consent of such occupiers; and no lease shall be granted for any mining ground which is, in the opinion of the Gold Commissioner, available for agricultural purposes.

Adjoining leaseholds of creek claims may, to an extent not exceeding ten and leases of placer mining ground not exceeding 640 acres, be consolidated into one holding, and the lessees are allowed to do all the required annual work on one holding; or may commute the annual work by paying an amount equal to twenty-five per cent. of the required annual expenditure for works to the Crown by way of rental. Dredging leases may also be obtained, which grant only the bed of the river below low water mark for dredging purposes. These leases are restricted to a distance not exceeding five miles of the river's course, and the term is not to exceed twenty years, and such leases are made subject to the rights of free miners working claims fronting on or adjacent to the river.

MAINLAND COAST LINE.

Much prospecting is now being done and considerable work along the different arms of the sea that extend inland along this coast, and on Phillips Arm and other places large deposits of low grade gold ores are found in extensive reefs of milky white quartz with coarse iron pyrites, or in zones of eruptive rock mineralized with iron and copper pyrites. So far, work has not sufficiently advanced to afford more definite information, but much attention is now being paid to this part of the Province, and several companies are spending a good deal of money in development. No official reports have yet been made on Texada or these Mainland deposits.

SOCIOLOGICAL.

NOTWITHSTANDING that sociology is a very comprehensive science and may be said to include almost every condition of living, it is not intended here to deal with the sociological aspects of the Province in the wider sense. It is the intention to limit the scope of the chapter to the consideration of three subjects dealing with and affecting the social organization. These may be broadly defined as the conditions and laws governing labour; the moral and religious life; and professional, fraternal and benevolent organizations. These in a general way determine the status of a community in regard to its inner life and character. In all three respects British Columbia

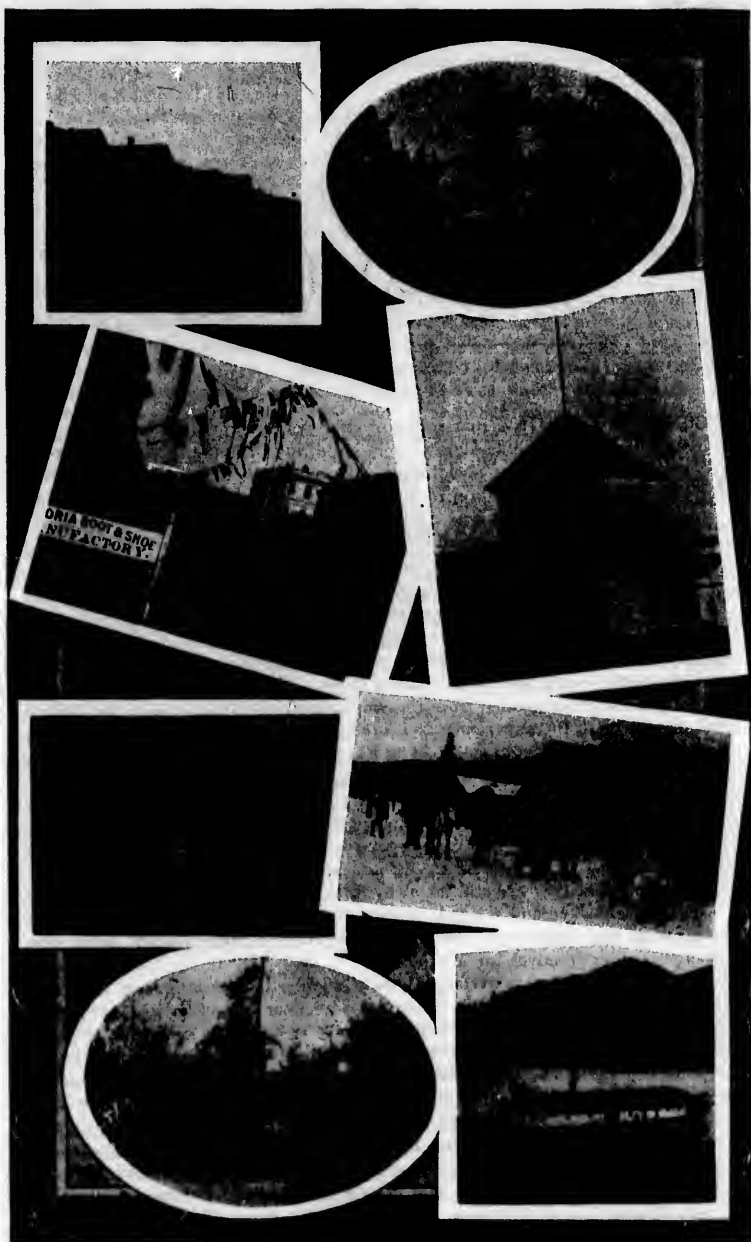
Social Conditions.

may be said to have a standard comparable, at least in essential features, with the most highly developed social organization elsewhere. Its communal characteristics are not, it is needless to say, evolved from local and primitive conditions, but transplanted from the most highly civilized parts of the British Empire. Hence, with the experience and intelligence acquired elsewhere, the component parts readily adjusted themselves to a system, applicable to their new abode, retaining at the same time all the characteristic and familiar features of their former home-life. With population came churches, schools, lodges, social forms,

Western Ways.

old-time recreations—all re-established on former lines. It is often a surprise to newcomers, who have associated life in the "wild and woolly West" with bears, cow-boys, Indians, bowie-knives and desperadoes, to find that they are still far away from the danger of being eaten up by wild beasts, tomahawked and scalped, or shot at sight. They find a state of society almost identical with that which they left, except that the environments, being new and strange, render it novel for a time.

Social usages are less conventional than in older communities and there is a freedom and an agreeable abandon which has a peculiar attraction to most people coming from the East; and only a brief residence is necessary to enable them to adapt themselves thoroughly and comfortably to life as it is on the Coast. It has been frequently remarked that there is an indefinable something in the social atmosphere of the West, or it may be in the air itself, that weds people to it after establishing themselves, and extinguishes the desire to return to their old homes. Western people become characteristically open-hearted, liberal in the expenditure of money, and hospitable. Ten cent pieces soon come to have the same value to them as coppers, quarters as dimes, and dollars as quarters. Differences in value, or the purchasing power of money, may account for that. The man who in the East "grubbed" for a livelihood soon begins to deal in "big propositions," and



HISTORICAL VIEWS.

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|---------------------------------------|--|
| 1. Government Street, Victoria. | 2. Mr. A. C. Anderson's Farm House. |
| 3. Procession, Lord Dufferin's Visit. | 4. Bastion, H. B. Co.'s Fort, Nanaimo. |
| 5. Washing Goin, Cariboo. | 6. Prospectors starting for the hills. |
| 7. Glimpse of San Juan Island. | 8. Steamer "Reliance" at Yale. |

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contemplates thousands and hundreds of thousands in the same way that he thought of hundreds formerly. Millions, even, do not disturb his equanimity. When our representatives go to the House of Commons they startle the eastern

mind by the ease and nonchalance with which figures containing six and more ciphers roll off their tongues. Demands for appropriations for development works create genuine alarm for the safety of the Federal coffers. The western idea is a new condition imported into Canadian politics, which is not yet thoroughly comprehended east of the Great Lakes. It is a product of Pacific Coast climate, and will have to be reckoned with.

Although the liquor traffic is subject to much fewer restrictions than in Eastern Canada and the regulations respecting the same less rigidly enforced, drunkenness is not more prevalent. Public opinion, however, exerts a strong influence and no one can with impunity violate the proprieties in regard to sobriety in British Columbia more than elsewhere, and in this respect sentiment is

Drinking
and Gambling.

daily growing stronger. Card-playing, which is a general recreation of the Pacific Coast, is carried on openly everywhere and compared with its extent develops but little serious gambling. It is part of the social life of, especially, the old-time element of the people, and is nowhere regarded as a crying evil. The peculiar conditions of the country, the product of mining life, account for this. There is always a good deal of gaming in mining countries, and perhaps British Columbia is not specially exempt from this evil, but few of its results are seen on the surface, and it is carried on quietly and orderly. This is not stated in palliation or defence of the system, but as an explanation of conditions as they are. In fact, notwithstanding what might appear in some respects as a laxity in outer morals from an eastern standpoint, in few countries are the communities more orderly and law-abiding than in British Columbia. Considering the extent of sea coast, the influx of population, from all quarters, the number of the native population, the many mining and logging camps and the other conditions favourable to lawlessness, there is a remarkable freedom from crime and viciousness. Miners, loggers, seamen and others are as a rule respectable and intelligent, and honourable in their dealings. Perhaps no more superior class of men, of the same number, than the miners can be found anywhere. The law is administered fairly and firmly and is respected thoroughly. In fact, it may be briefly stated

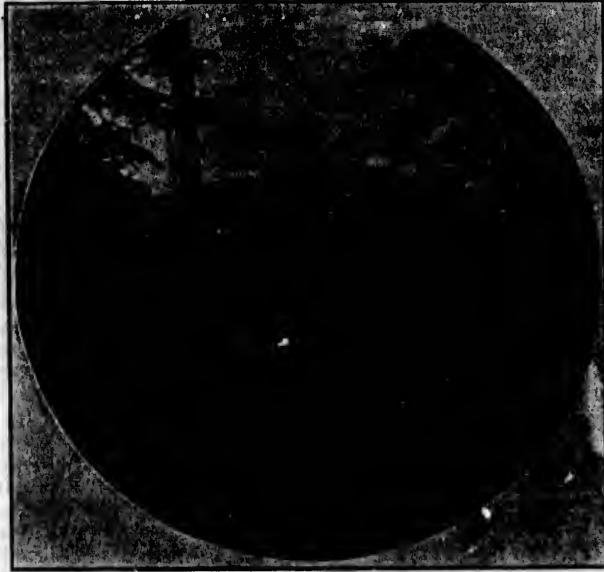
A Character
Estimate.

in summarizing the general conditions that the amenities of private and public life are generally well observed, law and order are thoroughly maintained, political ethics will compare favourably with any state or country in the world, education is thoroughly disseminated, intelligence and literacy are conspicuous features of every community, and the moral and religious elements are largely represented. This estimate of the character of the people as a whole is from a comparative standpoint. All British and English speaking communities are as a matter of fact more or less alike; but these remarks are intended to convey the impression, which is a truthful one, that notwithstanding the pre-conceived ideas of persons living in, or coming from, older settled communities, the plane of advancement in British Columbia is above rather than below the average.

A word may be added here in reference to church and fraternal and benevolent organizations. A special chapter, containing a very great deal of data respecting these had been prepared at the expense of considerable labour, but owing to the limitations

of space, the greater part has been omitted for the present. However, it may be stated that one of the most remarkable features of the development of the Province has been the way in which social, fraternal and religious organizations have kept pace with material advancement. Missionaries came early in the history of the Coast and soon obtained a strong foothold with the native and imported populations. Regular churches soon followed and to-day the spiritual wants of the cities and towns are adequately supplied, all the leading denominations being well represented.

What may be referred to as the home life of the people is for a new country not less worthy of note. The mildness of the climate and the profuse vegetation, coupled with the natural picturesqueness of the scenery, render residence conditions peculiarly favourable; and it is not long before attractive and cosy houses grow up to dot the landscape. It may not be unreasonable, therefore, under such happy auspices, to anticipate that the residences of British Columbia may, before very long, aspire to be ranked with those of "Merrie England," which is proverbial for the beauty and comfort of its homes.



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CONDITIONS OF LABOUR.

IN considering the question of labour, which is always an important economic factor, both to the capitalist in determining the profit value of an industry and to the labourer as affecting his general welfare, it would be unsafe to apply standards of living elsewhere or accept the comparatively higher rates paid as indicative of greater demand. Necessarily the cost of living in a new country is greater than in old and well-settled communities. Rates of wages to some extent correspond, but it may be stated here that in nearly every avenue of employment the supply is equal to and in most instances in excess of the demand. This is particularly true of all "office" workers—employment is difficult to obtain. For several years it was true of

Supply Equal
to Demand.

all but a few of the trades, but increased activity in mining and the widespread interest in prospecting has relieved the labour market of late to some extent. It is probably safe to say that there is a fair demand for miners in Kootenay and that in the interior there is generally a better chance of employment; and that altogether the conditions are favourable to improvement, but, except for female domestics, the almost invariable reply to a large number of enquiries was that the supply is equal to, or exceeds the demand. A general want exists for good domestic servants. Therefore, no one is encouraged by what may appear to be higher rates of wages than obtain in the eastern provinces of Canada or in other countries, to come to British Columbia in search of employment in any line except a few in which special knowledge or skill is required. Of course, there are always a few fortunate, who by favour, good luck, or superior management, succeed in obtaining employment, even in a congested market, but these are the exception. Once obtained a situation in British Columbia is probably better, if properly husbanded, than a similar one elsewhere, and the opportunities for individual efforts and promotion are greater. There is an element of speculation in everything in a new country—possibilities for the future—which do not exist outside, and that fact accounts for so many of all classes being attracted to new countries in the hope of bettering their condition; and thus without any advertising the labour market is apt to become crowded. Apart from the individual chances of success referred to there

No
Royal Road.

is no royal road to wealth or even moderate competence here any more than in older countries. In fact, when the labour market becomes crowded the number of unemployed is usually considerable and much suffering and privation of which the world never knows are experienced. By the increased cost of living, and the fact that all are strangers to each other greatly accentuates any want that may exist.

THE WAGE RATE.

THERE are labour organizations in Victoria, Vancouver and Nanaimo; and it may be unnecessary to state, the railway operatives on the various lines are allied with some of the several unions peculiar to carrying corporations. In the three cities named there are Trades and Labour Councils representing the various unions of each. In Nanaimo the principal labour controlled by such organizations is that employed in the mining industry. Owing to the unsatisfactory condition of the coal trade neither the demand nor the remuneration for labour is satisfactory to the unions, although the situation is accepted as the best under the circumstances, and the relations between employer and employee may be stated as fairly harmonious. Labour statistics for the coal mining districts, as contained in the report of the Minister of Mines for 1896, are given as follows:—

COAL MINING.

PLACE.	No. of Employees.			Wages Per Day.		
	Whites	Boys.	Mongolian.	Whites.	Boys.	Mongolian.
West Wellington.....	12	..	1	\$2 50		\$1 25
Nanaimo.....	803	53	125	\$ 37 to \$3 50	\$1 00 to \$2 00	1 00 to \$1 25
Wellington.....	796	72	91	\$ 25 to 3 50	1 00 to 2 00	1 00 to 1 50
Union.....	365	18	415	\$ 25 to 3 50	1 00 to 2 00	1 00 to 1 25
Total.....	1,976	143	632			

VEIN MINING.

The rate of wages for miners in the interior districts is given below from returns received direct from a number of mines, and is referred to incidentally in the chapter on mining.

OCCUPATION.	Per Day.	OCCUPATION.	Per Day.
Shift Bosses.....	\$3 50 to \$5 50	Engineers.....	4 00 to \$5 00
Blacksmiths.....	3 00 to 4 00	Miners.....	3 00 to 3 50
Timbermen.....	3 50 to 4 00	Trammers.....	2 50 to 3 00
Pullmen.....	3 00 to 4 00	Chinese and Japs.....	1 00 to 1 25
Roustabouts.....	2 50 to 3 50	Indians.....	3 00 to 3 00

VICTORIA TRADES AND LABOUR.

The secretary of the Victoria Trades and Labour Council, Victoria, reports the state of trade and labour in that city as in a very depressed condition, and states that for some time the market has been overstocked in all lines. His report is as follows:—

Stone Cutters' Association of North America—\$4.50 per day of eight hours. Trade dull.

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Victoria Typographical Union, No. 201—Day work: foremen \$23 per week; time work, \$20 per week of fifty-three hours; piece work: books, 42½c., news, 40c. per 1,000 ems; linotype operators, \$3.50 per day of eight hours. Night work: foremen \$26 per week; piece work, 42½c. per 1,000 ems; linotype operators \$4.25 per night of eight hours. Trade fair.

International Iron Moulders' Union, No. 144—\$3.25 and \$3.50 per day of ten hours. Trade very bad.

Local Union of Shipwrights and Caulkers—\$4.00 per day of nine hours. Trade dull.

No. 492, Amalgamated Society of Carpenters and Joiners—\$2.50 to \$3.00 per day of nine hours. Trade very bad.

VANCOUVER TRADES.

A report on labour in Vancouver from an official source, received early in the summer, contained some interesting particulars. It is fair to state that conditions have improved somewhat in that city since that time, especially in the building trades; but the rates of wages have not materially altered. The following extract is made from the report in question:—

OCCUPATION.	Hours.	Wages Paid.
Machinists.....	10	\$ 2 75 to \$ 3 00
Moulders.....	10	3 00
Boilermakers.....	9	3 25
Cabinetmakers (no union).....	9	2 50
Upholsterers (no union).....	9	2 50
Carpenters.....	9	2 25 to 3 75
(C.P.R. shops).....	10	2 50
Bricklayers.....	9	3 00 " 3 35
Stonemasons and Cutters, same as Victoria.....		
Builders' Labourers.....	9	2 00 " 2 25
Painters.....	9	3 00
Bakers.....	per month	20 00 " 35 00
Deck Hands (including board).....	12 to 18	" " 40 00
Mates.....	" "	50 00
S.S. Firemen.....	" "	40 00
Tailors.....	9	2 75 " 3 00
Job Printers.....	9	3 50
Operators—Printers:		
Evening Papers.....	8	3 60
Morning Papers.....	8	3 75
Motormen and Conductors on Tram Cars.....	per hour	20

"Of course you are aware that the building trades have been demoralized during the past winter, and some branches have become almost extinct, notably the bricklayers and stonemasons and cutters.

"It is almost a matter of impossibility to keep wages in Vancouver much higher than at Toronto because all workmen coming to these parts from the East land here first and as a rule are willing to take work at any rate so long as it is a little above the eastern rate and when they find they cannot live on the wages paid manage to leave for other parts. As for the mills, they are principally worked by Indians, half-breeds, Chinese and Japs, who are paid 75c. to \$1.00 a day. One or two head sawyers get \$75 a month. Pacific navvies and labourers receive \$2.00 a day. Clerks and the like get from \$1.00 a day to \$50 a month. I know of three smart, well-educated dry goods clerks (aged 20 and 21) who receive \$8 a week. Every one

Conditions of Labour.

nearly who is idle and working for low wages is going to the upper country. If business improves the old rates of a few years ago are bound to be restored."

Enquiries are frequently made by foreign investors as to the price of unskilled, or what is generally designated as "common" labour. From careful enquiries it is ascertained that although the civic rate of pay is \$2.00 per day, as a standard, this class of labour may be obtained from \$1.25 to

\$1.75 per day or from \$30 to \$50 per month, \$40 being a fair average. Of course, unskilled labour varies and is subject to fluctuations according to demand. Taking the last three or four years during dull times the above rates were fairly representative with supply greater than demand. An improvement in demand has been noticeable this season.

From the large number of reports, covering nearly every part of the Province, received from industrial and commercial establishments, the table given below has been compiled showing the weekly wage, for in most instances ten hours a day. Most of the wholesale establishments close at one on Saturday. The rate of wages to managers is not included, as that varies very much according to particular conditions governing each establishment. As frequently happens, the manager is part proprietor or managing director, and in such cases the salary is usually high. Reports range all the way from \$25 to \$100 per week. Apprentices vary from \$4.00 to \$10, \$5.00 and \$6.00 being an average. Labourers vary from \$9.00 to \$15, \$10 and 12 being the average. Chinese get from \$6.00 to \$8.00, and Japanese from \$7.00 to \$9.00. Indians who work in logging camps, sawmills, on board boats, etc., being strong and active, obtain about the same wages as white men.

WEEKLY WAGES.

BUSINESS.	Foremen.	Bookkeepers.	Clerks.	Journeymen.
Lumber Mills.....	\$25 00 to \$35 00	\$20 00 to \$30 00	\$10 00 to \$20 00	\$15 00 to \$21 00
Flour Mills.....	25 00 " 30 00	20 00 " 25 00	18 00	15 00 " 18 00
Breweries.....	18 00 " 20 00	18 00 " 25 00	12 00 " 18 00	15 00 " 18 00
Iron Works.....	25 00	20 00	12 00 " 18 00	15 00 " 18 00
Blacksmiths and carriage Builders.....	.....	.....	.....	15 00 " 18 00
Furniture.....	21 00	.....	15 00 " 18 00	.....
Boot and Shoe Factory.....	28 00	23 00	.....	18 00
Cooperage Works.....	20 00	15 00	.....	12 00 " 18 00
Sugar Refinery.....	25 00	25 00	15 00 " 20 00	15 00 " 20 00
Shipyards.....	25 00	15 00 " 18 00	.....	16 00 " 18 00
Building and Contracting.....	25 00	20 00	.....	15 00 " 20 00
Soap Works.....	25 00	15 00 " 20 00	.....	15 00 " 20 00
Candy Factories.....	30 00	15 00	.....	15 00 " 20 00
Tinmiths.....	.....	.....	.....	18 00 " 21 00
Cigar Factories.....	20 00 " 25 00	.....	.....	18 00
Fruit and Spice.....	.....	.....	.....	.....
Factories.....	.....	15 00 " 18 00	.....	15 00 " 18 00
Printers.....	25 00 " 30 00	15 00 " 20 00	12 00 " 15 00	18 00 " 21 00
Dry Goods.....	15 00 " 20 00	15 00 " 25 00	15 00 " 20 00
General Stores.....	15 00 " 20 00	12 00 " 15 00	10 00 " 15 00

Millers
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SPECIAL TRADES.

OCCUPATION.	Wages Paid.	OCCUPATION.	Wages Paid.
Millers (flour) per day	\$ 2 50 to \$ 4 50	Engineers..... per day	\$ 3 00 to \$ 3 50
Firemen " "	2 50	Blacksmiths..... " "	2 75 " 3 00
Horseshoers..... " "	3 25	Wheelwrights..... " "	" " 3 00
Carriage Painters..... " "	3 00	Cabinetmakers..... " "	2 50 " 3 00
Carpenters..... " "	3 00	Filers (saw mill)..... weekly	36 00
Sawyers (saw mill)..... weekly	27 00	Engineers (saw mill), "	15 00
Machinists (saw mill)..... weekly	15 00	Tally men " "..... "	15 00
Stable Men (saw mill) mon'ly	50 00	Captains..... monthly	100 00 " 175 00
Mates..... " "	85 00 to 125 00	Waiters..... " "	35 00 " 50 00

Of course, it must be understood that in a new country, with a variety of employment under a variety of conditions, it is very difficult indeed to classify labour under various heads uniformly. Nearly every locality presents conditions different from any other. While the social organization is not nearly so complex and the division of labour much less minute than in older countries, there is nevertheless greater diversity in the character of employment, and individualism counts for more. Consequently anything like exact classification is out of the question and information in regard to particular trades will not apply strictly to any extended area. However, the figures given above may be accepted as fairly representative of wages under average conditions. It may be stated to those seeking employment as clerks, book-keepers, and in secretarial and general office capacities there is a surplus and emoluments are proportionately limited.

A Variety of Conditions

RAILWAY EMPLOYEES.

Salaries vary very much, and it is difficult to obtain accurate returns in every instance. However, the following will be found approximately correct:—

OCCUPATION.	Per Month.
Station Agents.....	\$ 60 00 to \$125 00
Train Despatchers.....	85 00 " 125 00
Operators.....	40 00 " 60 00
Conductors.....	90 00 " 110 00
Drivers.....	100 00 " 135 00
Firemen.....	65 00 " 90 00
Brakemen.....	50 00 " 85 00
Baggagemen.....	50 00 " 75 00
Clerks.....	25 00 " 65 00
Section Men.....	50 00 " 65 00

The above does not include, of course, first class clerks and specialists in various departments who receive emolument according to responsibility and work attached to office, usually on a liberal scale.

DOMESTIC HELP.

OCCUPATION, Etc.	Per Month.
Chinamen	\$10 00 to \$25 00
Gardeners (and board).....	25 00 " 35 00
Housemaids	15 00
Nurse Girls	9 00
Stable Men, etc	20 00 " 30 00
Female	15 00 " 25 00

Teachers' salaries range from \$60 to \$100 per month, according to qualification.

BOARD.

Exclusive of regular board at high class hotels which is about \$60 per month, first class board is about \$8.00 to \$9.00 per week, second class, \$5.00 to \$6.00; third class, \$3.50 to \$4.50. Transient rates in hotels vary according to class from first, \$3.00 to \$5.00 per day; second, \$2.00 to \$2.50; third, \$1.00 to \$1.50.

COMPARATIVE TABLE OF POPULATION.

DISTRICT.	Whites.		Chinese.		Indians.		Total.		
	1881.	1891.	1881.	1891.	1881.	1891.	1871.	1881.	1891.
	New Westminster.....	4,479	28,048	870	3,591	10,068	10,151	1,356	5,417	42,226
Cariboo	1,403	1,550	1,344	1,151	4,803	3,037	1,955	7,550	5,519
Yale.....	2,901	7,459	1,156	1,353	5,143	4,629	1,316	9,200	13,661
Victoria.....	6,359	17,267	690	2,470	252	2,021	4,540	7,301	18,538
Vancouver.....	4,306	11,203	290	821	5,395	3,419	1,419	9,991	18,229
	19,448	65,527	4,350	9,386	25,661	23,257	10,568	49,459	298,173

It will be observed that for the individual districts in the above the aggregate of whites, Chinese and Indians in each case for 1891 does not agree with the final total as taken from the census returns. This is due from the fact that the political divisions do not agree exactly with the census divisions, the former being to some extent an apportionment by the author; but this does not affect the accuracy of the table, as the final totals all agree. It may be

By Political Divisions. necessary here to state that in the census-taking of 1891 no account was taken of nationalities, only as to nativity, hence it was impossible to distinguish in the returns between Indians, Chinese, etc. It was only after a revision of the returns that a separation was possible. The following table was adapted from the revised returns not without a great deal of labour, and is the only time such a statement has been made or published. As nearly as possible the Dominion political divisions are made to contain evenly Provincial divisions. They do not, however, exactly correspond, but are sufficiently approximate for material purposes.

Kootenay at the time the census was taken was but sparsely settled, and it is therefore impossible to divide the population except as Upper and Lower Kootenay. At the present time it is, in the absence of a census, impossible to estimate accurately the population. Conditions have greatly changed.

Present
Population.

After careful computation, however, the total population of the Province may be placed at, in round figures, 100,000 whites and

Chinese and 25,000 Indians. Were a census taken now it would be found that the Coast cities have, in the aggregate, increased little in population since 1801, the natural increase being distributed over the new mining districts. In no part of New Westminster District or in Vancouver Island has there been an appreciable increase, except in the mountains north from Pitt River, in the former to the Harrison, and, in the latter in Alberni and along the West Coast.

The principal increases have been in West Kootenay, in the Boundary Division of Yale, while the southern part of East Kootenay, the vicinity of Kamloops, the Quesnelle and Barkerville Divisions of Cariboo, and Lillooet, have been influenced in growth by mining activity. Claims of a much greater population are made, as high as 125,000 for whites, but it will be difficult

Prospective
Increase.

to make it up, allowing a fair proportion of increase in each of the localities referred to. However, it is safe to assume that the

total population at the end of 1898 will be 150,000 and may possibly reach 175,000. The increase until 1901 will be very rapid, when we may anticipate another lull in activity following out the experience of previous decades.

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WHIPSAWING LUMBER AT LAKE BENNETT.

EXPORTS THE PRODUCE OF CANADA, FROM THE PROVINCE OF BRITISH COLUMBIA—For twenty-six years, ending June 30th, 1897.

Year.	The Mine.	Fisheries.	Forest.	Animals and their Produce,	Agricultural Products.	Miscellaneous.	Total.
1872.....	\$1,389,385	\$ 37,707	\$214,377	\$214,700	\$ 142	\$ 1,540	\$ 1,858,050
1873.....	1,224,362	43,351	211,060	259,992	2,885	1,197	1,742,123
1874.....	1,351,145	174,118	260,116	320,625	5,290	443	2,051,743
1875.....	1,929,994	133,986	292,468	411,810	9,727	.....	2,777,885
1876.....	2,032,339	71,338	273,430	329,027	3,080	68	2,709,082
1877.....	1,708,848	105,603	287,042	230,893	3,083	1,500	2,346,969
1878.....	1,759,171	423,840	327,360	237,314	462	.....	2,768,147
1879.....	1,530,812	633,493	203,366	268,671	2,505	57	2,708,848
1880.....	1,664,626	317,410	238,804	339,218	3,843	100	2,584,001
1881.....	1,317,079	400,984	172,647	350,474	248	22	2,231,354
1882.....	1,437,072	676,993	362,873	300,429	946	2,616	3,080,541
1883.....	1,309,646	1,332,385	407,624	287,394	6,791	443	3,345,263
1884.....	1,441,052	899,371	458,365	271,790	1,745	1,413	3,100,404
1885.....	1,759,512	727,072	262,071	414,364	2,324	5,948	3,172,391
1886.....	1,720,335	643,052	194,488	329,248	1,907	2,811	2,891,811
1887.....	1,832,827	910,559	235,913	386,126	10,205	1,911	3,371,601
1888.....	1,889,806	1,164,019	441,937	318,839	27,621	85,826	3,926,077
1889.....	2,377,052	993,623	449,026	397,663	14,831	102,089	4,334,305
1890.....	2,375,770	2,374,717	325,881	346,159	9,323	113,271	5,545,221
1891.....	2,030,229	2,274,686	374,996	394,646	5,017	20,434	6,237,158
1892.....	2,979,470	2,351,083	425,278	390,384	25,018	31,976	6,374,989
1893.....	2,898,947	1,501,831	454,994	310,621	30,173	446,231	5,642,797
1894.....	3,521,543	3,521,395	411,623	149,269	23,323	196,895	7,843,958
1895.....	4,015,452	3,264,501	300,080	457,373	21,774	261,918	9,121,098
1896.....	5,765,253	3,288,776	686,746	430,864	61,414	338,471	10,576,524
1897.....	6,909,592	3,567,815	742,173	307,845	104,744	352,339	12,184,708

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1,512 16



LANDING AT SKAGWAY.

IMPORTS FOR THE FISCAL YEAR ENDING JUNE 30TH, 1897.

PORT OF	TOTAL IMPORTS.						Duty Received.	Chinese.	Minor Revenue.	Total Revenue, 1897.	Total, 1896.
	Dutiable.	Free Goods.	Tea & Tobacco.	Coin Bullion.	Total Imports.						
					Gold	Silver					
Victoria	\$1,271,126 00	\$ 866,697 00	\$13,254 00	.....	\$2,754,079 00	\$ 661,867 03	\$ 59,963 00	\$10,676 49	\$ 731,506 53	\$ 699,669 45
Nanaimo	141,321 00	54,278 00	4,065 00	.....	200,294 00	46,462 77	50 00	3,650 26	50,163 03	56,549 37
Vancouver	1,422,079 00	570,113 00	2,177 00	.....	1,994,909 00	390,981 81	62,004 00	4,022 66	457,608 41	352,238 91
New Westminster	397,985 00	189,466 00	27,430 00	.....	594,881 00	110,577 94	1 50	1,577 16	112,156 60	113,533 81
Nelson	1,246,208 00	344,909 00	5,897 00	.....	1,596,918 00	349,600 00	.....	1,977 93	350,478 00	187,666 32
Total, 1897	\$5,048,725 00	\$2,028,653 00	\$52,973 00	.....	\$7,130,351 00	\$1,559,889 20	\$121,618 90	\$21,004 46	\$1,701,512 16	.....
Total, 1896	\$3,998,650 00	\$1,532,840 00	\$36,001 00	\$604	\$5,563,095 00	\$1,306,604 25	\$ 86,800 50	\$13,577 16	.....	\$1,406,931 91

EXPORTS FOR THE FISCAL YEAR ENDING JUNE 30TH, 1897.

PORT OF	The Mine.	The Fisheries.	The Forest.	And other Products.	Agricultural Products.	Manufactures.	Miscellaneous.	Coin Bullion.	Total, 1897.	Total, 1896.
Victoria	\$ 337,308 00	\$1,600,577 00	\$ 31,124 00	\$43,615 00	\$43,615 00	\$ 80,240 00	\$51,944 00	\$166,767 00	\$2,610,704 00	\$2,409,201 00
Nanaimo	2,448,297 00	669 00	135,272 00	.....	.....	6,077 00	.....	.....	2,630,257 00	2,530,534 00
Vancouver	248,785 00	322,248 00	49,880 00	80,814 00	80,814 00	111,527 00	52 00	76,931 00	1,488,138 00	1,048,402 00
New Westminster	348,785 00	1,584,240 00	31,818 00	.....	.....	12,262 00	.....	.....	2,954,128 00	2,610,029 00
Nelson	4,811,460 00	.....	.....	13,038 00	.....	37,523 00	.....	.....	4,899,021 00	1,897,168 00
Total, 1897	\$5,090,592 00	\$3,507,815 00	\$74,173 00	\$97,845 00	\$104,744 00	\$247,725 00	\$61,996 00	\$242,818 00	\$14,184,708 00	.....
Total, 1896	\$5,763,453 00	\$3,488,776 00	\$885,746 00	\$438,864 00	\$61,414 00	\$159,985 00	\$71,765 00	\$106,721 00	\$10,576,524 00

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NUMBER OF BUSINESS ESTABLISHMENTS IN THE PROVINCE.

CLASSIFICATION OF TRADE.

Classification of Trade	MAINLAND.										VANCOUVER ISL'D.									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. General Hardware, House Furnishing, Tin Snova, Agricultural Implements, Pumps, Windmills, Guns, Hurdles and Sporting Goods, Pottery, Steam, Forges, Machinery, Engines, Boilers, Carriages, Waggon Makers, Wheelwrights, Blacksmiths and Livery.	20	8	3	2	2	4	1	1	2	1	1	1	1	1	1	1	1	1	1	1
2. Carriages, Clothing, Tailors, Men's Furnishings, Hats and Caps.	6	4	8	5	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1
3. Dry Goods, Carpets, Small Wares and Notions and Millinery.	5	3	7	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4. Furniture, Undertaking and Upholstery.	11	5	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5. Leather Dealers and Boot Makers.	9	3	3	1	2	3	3	4	1	1	1	1	1	1	1	1	1	1	1	1
6. Leather Workers and Saddle Makers.	12	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7. Boots and Shoes, Tanners, Hides, Leather and Findings.	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8. Saddlery, Hardware, Harness and Trunks.	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9. Groceries, Confectioners, Provisioners, Ship Chandlers, Tea and Spices.	64	15	5	4	1	17	6	5	1	1	1	1	1	1	1	1	1	1	1	1
10. Jewellers, Watchmakers and Opticians.	13	4	2	2	1	6	3	3	1	1	1	1	1	1	1	1	1	1	1	1
11. Brewers, Distillers and Retail Dealers in Beer and Wine.	14	4	2	2	4	1	3	3	5	2	2	3	2	1	1	1	1	1	1	1
12. Druggists, Apothecaries and Retail Dealers in Drugs and Chemicals.	10	2	2	2	4	1	3	3	5	2	2	3	2	1	1	1	1	1	1	1
13. Millers and Grain Mills, Hays, Grains, Flour and Seed Dealers and Bakers.	4	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14. Cleaners and Tobacco.	17	6	3	3	3	11	1	4	2	1	1	1	1	1	1	1	1	1	1	1
15. Books, Paper, Stationers, Printers, Publishers, Lithographers, Paper Boxes and Bookbinders.	16	7	4	3	2	7	1	4	1	2	3	2	1	1	1	1	1	1	1	1
16. Nurserymen, Florists, Perfumers and Beech.	5	14	7	20	6	29	20	7	5	9	17	4	3	16	1	1	1	1	1	1
17. Wine & Liquor Dealers, Hotels & Saloons.	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18. Stockery, China and Hardware Dealers.	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19. Fancy Goods, Varieties and Toys.	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20. Painters, Paint and Oil Dealers, Varnishes and Paper Hangings.	11	2	4	4	5	6	10	3	3	6	5	1	5	19	1	1	1	1	1	1
21. General Stores.	2	4	4	4	5	6	10	3	3	6	5	1	5	19	1	1	1	1	1	1
22. Carpenters, Contractors, Koofers builders, Planing Mills and Sash and Moulds.	26	8	1	3	2	3	3	1	1	2	2	1	1	1	1	1	1	1	1	1

Classification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
on \$25 to \$50	390	131	56	36	35	146	74	70	24	20	33	44	15	43	300	422	37	125	26	92
on \$50 to \$75	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$75 to \$100	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$100 to \$125	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$125 to \$150	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$150 to \$200	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$200 to \$250	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$250 to \$300	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$300 to \$350	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$350 to \$400	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$400 to \$450	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$450 to \$500	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$500 to \$550	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$550 to \$600	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$600 to \$650	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$650 to \$700	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$700 to \$750	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$750 to \$800	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$800 to \$850	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$850 to \$900	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$900 to \$950	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
on \$950 to \$1000	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL	697	166	76	50	49	260	123	121	42	55	60	21	53	300	422	37	125	26	92	26

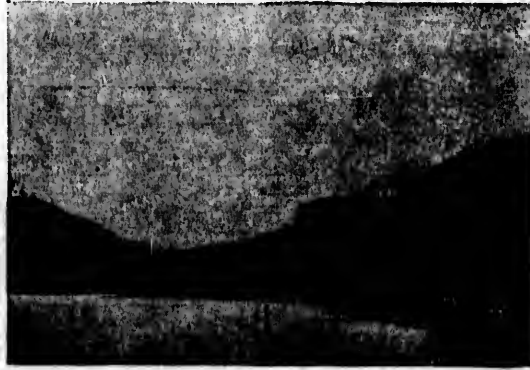
The customs revenues of British Columbia in 1872 was \$342,400.48 as compared with \$13,045,493.50 for the whole of Canada. In 1896 the amounts were \$1,306,738.56 and \$20,388,984.87, respectively.

The ratio of customs revenue derived from British Columbia and the whole of Canada has risen in twenty-five years from 1:44 to 1:15.

The total trade of British Columbia in 1872 amounted to \$3,702,459 and that of Canada in the same year was \$194,070,190. In 1896 the amounts were, respectively, \$16,142,789 and \$239,025,360.

Compared with the whole of Canada it will be seen that in twenty-five years the trade of British Columbia has risen from 1:53 in 1872 to 1:15 in 1896—a most remarkable relative increase.

British Columbia with one-fiftieth of the population does one fifteenth of the trade of Canada; or covering the whole period of twenty-five years with an average of one-seventy-fifth of the population has done one-twenty-fifth of the trade.



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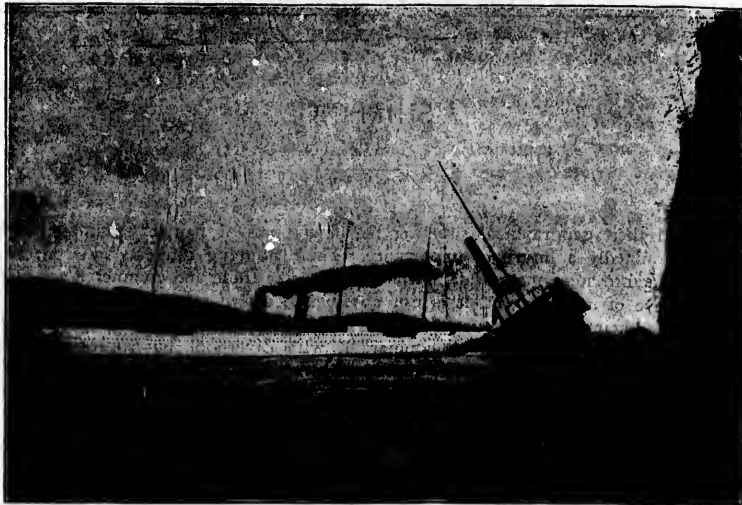
FROM their geographical situation the chief ports of British Columbia have undoubtedly a future of importance. Their shipping interests have already attained to some magnitude, but as trans-Pacific trade and commerce are only on the eve of development, it is not possible to arrive at any safe conclusions regarding their ultimate proportions. We might with some justification speculate on the creation of seaports comparable with Liverpool, but routes of traffic are subject to conditions which are mutable and uncertain, concerning which it is not possible to predict with any degree of confidence. What, for instance, would be the ultimate effect of the successful completion of the Panama or Nicaraguan Canal, is not easy to determine. At the present time, and probably for

Unsafe
to Predict.

some time to come, a canal across the Isthmus would not to any important degree constitute a competitor with the Suez Canal; but in case of a large development of trans-Pacific traffic, by which the trade of the Orient would be divided and a considerable portion brought this way, the route *via* Central America, though it would beneficially affect our export trade with Europe, might have the result of diverting trade, of which otherwise our seaports would be the natural *entrepôts*. Nor is it possible to anticipate what will be the relative advantages of sea and land travel in the future under conditions which are being so continuously and materially modified by the inventive genius of the age. In a period of rapid transitions and transformations, such as the one through which we are passing, no forecast, except in a very limited way, can be a true one. So far, however, everything points to an important commercial status for our Coast cities. The present trend of events is decidedly favourable to such reasonable expectations as may have been formed respecting the possibilities of the new Canadian route of travel. Political considerations of vast Colonial and Imperial concern are even precipitating that union of material interests which is necessary to permanent organic cohesion. The recent tariff overtures made by Canada, the completion of arrangements for a Canadian fast Atlantic service, the negotiations looking to an all British

Creating
New Conditions.

cable communication by way of the Pacific Ocean, the several Pan-British Trade Congresses, the spirit of hostility—sometimes covertly, sometimes openly—of late displayed by the United States towards Canada and Great Britain, and, above all, perhaps, the momentous demonstration of affectionate loyalty to Her Majesty and to British institutions just witnessed at the Heart of the Empire—have together had such an effect in impelling and consolidating sentiment in the one direction, that the consummation of what was long visionary and considered outside the pale of practical politics seems suddenly come within easy reach, and unless something untoward should intervene to turn back the tide, now almost irresistible, the hopes of many of our greatest statesmen will be speedily realized. In such a solution of a problem of territorial and political consolidation—the greatest of modern times—



"Empress of India."

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"Beaver."

THE OLD AND THE NEW.



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the relations of Canada with the other parts of the confederal structure are obvious, and the material advantages which would accrue from a commercial standpoint to her western seaports are so conspicuous as to render comment superfluous. In any event, the commercial significance of our situation is notable; but it is upon considerations such as have been referred to that the greatest ultimate importance must depend.

The growth of Canadian Pacific shipping has not been rapid any one year compared with any immediately preceding it, but progress from small beginnings has been remarkably steady, and comparison by periods shows marked advance.

Prior to Confederation, and, in fact, for some subsequent, communication practically was limited to a regular line of steamers to San Francisco and occasional ships to and from England. The coasting trade was of small proportions. In very early days, when Victoria was a free port and the chief point of the coast business of the Hudson's Bay Company, trade was carried on not only with England, but with San Francisco, the Hawaiian Islands, the Mainland of British Columbia, China, and Russian America, or Alaska. There was at that time a considerable export of furs, timber and agricultural products, as well as of British imported goods. The

Growth of
Shipping.

returns of those days, owing to changed conditions, are not a basis of comparison with those of the present time, and are interesting only as side lights in dealing with the pioneer history of our country. Elsewhere are given some statistics of trade of the Colonies of Vancouver Island and British Columbia. The instructive feature contained in such information is the relative importance maintained by Victoria, then the only *entrepot* of any consequence on the North Pacific Coast north of San Francisco.

Comparison for our purpose begins with Confederation, and for practical purposes really with 1876. The figures at the end of the three periods, viz.: 1876, 1886, and 1896 will best illustrate the progress that has been made. From 1866, the time of the union of the two Colonies, was, viewed as a whole, a period of stagnation—of waiting for the larger developments anticipated as a result of communication overland by means of a railway. Ship-building and ship-owning, important adjuncts of shipping, have never assumed large proportions for obvious reasons. Ship-building on a large scale, though an industry for which naturally the coast cities are well adapted, owing to altered and well-understood conditions, cannot be carried on until, by increase of population, the development of the iron

Future of
Ship-Building.

industry, etc., competition is possible with the great shipyards; and as local demand for the smaller craft is necessarily restricted to local requirements, no great expansion can be expected for some time yet. There has, however, been steady and noticeable progress throughout the whole period, though statistics are too irregular from year to year to be valuable for comparison.



PROGRESS OF SHIPPING.

DESCRIPTION.	1876.		1886.		1896.	
	No.	Ton.	No.	Ton.	No.	Ton.
Coasting Steamers	IN 273	59,950	1,872	726,879	5,731	1,375,381
" "	CUT 246	54,111	1,876	728,961	5,823	1,382,864
Coasting Vessels (Sail)	IN 141	6,835	217	10,261	390	50,285
" "	OUT 1,511	7,112	215	10,232	401	59,260
Canadian Cargoes	IN 21	5,250	3	1,460	127	7,434
" "	OUT 7	1,242	2	1,084	30	3,064
British Cargoes	IN 23	18,124	33	33,907	98	186,076
" "	OUT 31	18,350	58	62,538	103	191,632
Foreign Cargoes	IN 301	160,811	505	313,021	1,202	759,791
" "	OUT 146	121,977	344	309,085	1,236	1,019,800
Foreign	Ballast IN 154	109,681	262	221,051	705	63,594
" "	OUT 284	140,775	508	224,082	682	342,490
British	IN 15	6,408	31	36,957	64	129,202
" "	OUT 6	3,709	6	5,274	50	107,817
Canadian	IN 10	1,925	7	896	69	17,458
" "	OUT 19	4,677	14	973	182	16,910



VIEW FROM DYKE TRAIL.

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CAPITAL INVESTED.

1896.

Ton.
 1,375,381
 1,382,864
 50,285
 59,260
 7,434
 3,064
 186,076
 191,632
 759,791
 1,019,800
 63,594
 342,490
 129,202
 107,817
 17,458
 16,910

UNDER this head an estimate has been based on most comprehensive and generally speaking very complete data contained in the numerous returns from all over the Province and from information obtained from a variety of sources. These have been carefully compiled and the results arrived at, after taking into account every business interest in the Province—involving labour of some magnitude—will be surprising to even those familiar with the affairs of the Province. It is not claimed that the figures are absolutely correct, as in some instances, where actual returns were not available, they are based on estimates, which, however, are approximately correct, and a complete return would probably modify the total to some extent. Nor do they include by any means all that has been invested in the Province in various ways, but only what may be regarded as in the main live and productive capital. The figures are:—

DESCRIPTION.	Amount.
Miscellaneous Industrial Establishments.....	\$16,260,000 00
Electric Light and Railways	2,000,000 00
Telephone	200,000 00
Waterworks	2,100,000 00
Railways and Telegraphs	47,500,000 00
Steamships and Navigation	3,000,000 00
Mining Plant and Smelters	10,500,000 00
Coal Mining	3,000,000 00
Sealing, Salmon Canning and Fish Curing	3,250,000 00
Churches and Schools	1,850,000 00
Bank Deposits	6,500,000 00
Municipal Assessments	45,000,000 00
Municipal Public Works and Buildings	925,000 00
Provincial Public Works and Buildings	5,500,000 00
Provincial Assessments	51,500,000 00
Dominion Public Works and Buildings	2,800,000 00
All Commercial Establishments	5,500,000 00
Timber, leases and privately owned (value estimated).....	100,000,000 00
	\$307,385,000 00
Private wealth, less public assets and values, assessed in above	\$280,000,000 00

By the census of 1881 it was shown that there was \$2,952,835 invested in industries and in 1891 that amount had increased to \$7,246,662. The wages paid was \$929,213 and \$5,119,258 respectively, and of the hands employed 2,871 and 11,507 respectively.

PROVINCIAL TAXATION.

THE rate of taxation is as follows: On real estate, four-fifths of one per cent.; on assessed value personal property, three quarters of one per cent.; on wild land, three per cent; income exceeding \$1,000 is subject to the following tax: Upon excess not above \$10,000, one and one-quarter of one per cent.; over \$10,000 and not more than \$20,000, one and one-half of one per cent.; when excess is over \$20,000, one and three-quarters of one per cent.

Higher Rate.

If taxes are paid by the 30th of June in each year as under, the rate is as follows: Three-fifths of one per cent. on assessed value of real estate; one-half of one per cent. on personal property and two and one-half per cent. on assessed value of wild land; on excess of income when the same is not more than \$10,000, one per cent; between \$10,000 and \$20,000, one and one-quarter of one per cent.; and over \$20,000 one and one-half of one per cent.

Lower Rate.

Cattle and sheep depastured on Crown Lands are taxed twenty-five cents per head on all cattle and five cents per head on sheep. This tax entitles owners to depasture them for six months; if tax is not paid on demand it may be collected by distress and sale.

Residents in the cities of Victoria, Vancouver, Nanaimo and New Westminster are taxed annually \$3 per head due after the 2nd of January in each year for municipal purposes, said tax to be paid to municipal collectors; and in all places outside of the limits of the above named municipalities to be collected by Provincial Assessors. The employers of labour may pay the tax for employees and deduct the amount from wages due. Employers must also furnish lists of employees to collectors. Clergymen and militiamen are exempt.

Revenue
Tax.

Mines and minerals are regarded as a separate class of property and are taxed in the following manner: One per cent. on assessed value of all ore or minerals, the said value to be based on market price at the mine. No ore shall be taxed which is not sold or removed from the mining premises. 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 of output, etc., within seven days from the end of the quarter.

Tax
on Mines.

The following property is exempt from taxation: All property belonging to Her Majesty the Queen; Indian Lands unoccupied or occupied officially; all places of public worship and every burying ground (not exceeding five acres) and public cemeteries; public school houses, court houses, gaols, public hospitals, asylums and reformatories, etc., with the land attached thereto and the personal property belonging to each of them; literary societies and mechanics' institutes; public roads and squares; municipal property occupied for municipal purposes, or unoccupied; the property of public libraries,

Exemptions.

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mechanics' institutes and all scientific institutions, and of agricultural or horticultural societies, if actually occupied by such societies; the personal property of the Governor-General and the Lieutenant-Governor of the Province; the property of fire companies; naval or military officers on full pay, and the pay of persons in the Imperial, Naval or Military Service; public funds, pensions and all incomes up to \$1,000; income derived from interest on bonds or stocks, or from farm and assessed capital; all property out of the Province, the unpaid purchase money of land and all personal property equal to debts due, and the net personal property under \$300; ministers' salaries; all household effects, books, etc.; mineral and other lands on which a royalty is reserved, to the extent of such royalty; all the land within the limits of a municipality; homesteads to the value of \$500.



ON THE DYEA TRAIL.—AT THE CUT-OFF.



KLONDIKERS NEARING LAKE BENNETT, B.C.

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RAILWAY ENTERPRISES.

WE have in British Columbia entered upon a distinctively railway era. No other Province of Canada, or country in the world depends more thoroughly upon railway communication for a realization of its latent wealth. On account of distances and physical irregularities no other mode of communication will answer the requirements. There are many objective points of great importance to reach, and, while physical conformation has lent itself strangely to the creating of a perfect system of railway network, modern methods and modern conditions demand in order that these points may be reached and tapped that the means of travel and transportation must be cheap and rapid. Trails and waggon roads are, to use an expressive vulgarism, no longer "in it." If British Columbia alone were concerned, stage coaches, like sailing vessels, would serve a purpose; but competition embraces so wide an area of the earth's surface that the main rivalry is no longer between individuals and corporations, but between countries. It has assumed that vast proportion that individuals in a state cannot succeed where the State itself is behind in the race.

**Railways
Demanded.**

The policy of railway building in British Columbia in the past has followed and has been one with the general policy adopted throughout Canada. The necessity of railways has always been apparent and their promotion has been secured by land grants or guarantee of interest on bonds although, heretofore, in no instance has there been a cash subsidy per mile extended as in other parts of Canada. At the last session of Parliament an Act was passed authorizing the Government to borrow the sum of \$2,500,000 for the purpose of assisting in the construction of three lines of railway to the extent of \$4,000 per mile, particulars of which are given elsewhere. This Act does not contemplate assistance by land subsidy or guarantee of bonds, and in this respect is a departure from former policy. It does not, however, preclude such assistance by special enactment in

**Provincial
Policy.**

addition if deemed necessary. The short line from the Coast into the interior by way of Hope and Similkameen Valley was projected by a company which obtained a charter for the purpose, and the inception of the enterprise in this preliminary way was received at first with a good deal of enthusiasm, especially in the Lower Mainland, and generally met with approval. The object to be achieved from a railway point of view was the shortening of the distance to the mines, affording more direct communication with the towns of Southern Yale and Kootenay and with the eastern markets *via*

Crow's Nest Pass. It would also avoid the snow sheds and expensive maintenance of the present main line of the C.P.R. This enterprise, however, is one which the management of the C.P.R. has had in view for some years, and towards which end thorough surveys had been made extending all the way from Lethbridge through the Crow's Nest Pass as far as the main line at Hope. Depressed times and to some extent the difficulty of finding easy passes delayed the project so far as the Company was concerned. The very rapid development of the mines in Southern Kootenay forced the issue somewhat sooner than was anticipated, and the construction of the direct line from Lethbridge through the Crow's Nest

**A New,
Short Line.**

Pass was undertaken by the C.P.R. as the initial step in carrying out a long-planned project. With the attention being directed to British Columbia and the easing of the financial situation the C.P.R. Company will be enabled to undertake a very considerable extension of their system in British Columbia and it is not improbable that it has plans for a wider field of operations than have yet been wholly revealed. The building of the line from Trail to Robson through the Boundary country to Penticton and another from Penticton to the Coast direct will be the logical completion of the Crow's Nest Pass Railway, and arrangements have been made for their immediate undertaking.

Another objective point in British Columbia for a railway is the gold mines of Cariboo at Williams Creek and Quesnelle. There are strong advocates for each of two routes, one leading from Ashcroft or Kamloops on the C.P.R., and the other from the sea up Bute Inlet. As the arguments in favour of the construction of a line of railway along either route involve considerations of a political and sectional character it is not proposed to deal with their respective merits. Both have been on the *tapis* for a number of years and have had charters granted and renewed from time to time. One would in all probability form a part of the C.P.R. system, and the other is practically what has been known as the Canada Western or British Pacific scheme. More especially in view of the trend of recent northern development, both or some other lines attaining similar objects, are likely to be built. They are both ultimate links in the natural arterial system of railways in this Province.

No reference has been made to the main line of the C.P.R. through British Columbia which was built and completed some time ago as a consummation of the national idea of a transcontinental railway, linking all the Provinces together, and none at this late date is necessary to elucidate its magnitude, importance or results. It is its own living witness. Leaving it out of the question, however, in so far as it answers the purpose for which it was constructed, the main problem of railway construction is yet to be dealt with, and the exploitation of the Canadian

**Railway of the
Future.**

Yukon gold fields is helping in the solution in a most wonderful way. The railway of the future is neither the Penticton line nor the British Pacific, nor any one yet built or projected, but one of which all these would become tributaries and essential links. Reference is made to a railway from the South to the North extending through the great Interior Plateau of British Columbia and as far north as the mineral belt is accessible and having its outlet it may be in Alaska at the mouth of the Yukon and connecting ultimately with the Siberian Railway now pushing eastward to a Pacific port. It has long been talked of as a possibility, but has never until the present entered the pale of practical politics. The recent live issues respecting routes to the

Yukon have brought it prominently to the front, not only as a possibility but as a probability as soon as the financial resources of the country will permit or capital is available. The maps accompanying this book will show the various routes that have been advocated and it will be observed that they all, somewhere, culminate in this line which marks itself out as the undertaking in chief. With the resources of the various sections south to north developed there is not necessarily any rivalry in the conception of the different routes, not even of the one from Edmonton; because taking the Boundary country as a start and following up the Okanagan Lakes to and by way of Vernon to Kamloops from Donald and Golden, from Revelstoke and from Kamloops, through to Canoe River Valley; from Ashcroft through Cariboo; from Bute Inlet to Quesnelle; from Edmonton *via* Tété Jeune Cache; from Kitimat to the proposed Stickine and Teslin line; or from any of the ports at present in Alaska—there is a *raison d'être* for the existence of each. They would all form feeders to the central line, which in turn as a main artery of the system would afford them traffic and incidentally develop a series of very rich districts, through which smaller networks of vein communication would be distributed. Instead of acting as rivals they would materially assist in the success of each other and altogether would constitute the most complete exemplification of the benefit of an all-Canadian and British Columbian route to the Klondyke.

Not Rival
Routes.

RAILWAYS ASSISTED, SUBSIDIES, ETC.

The greater portion of the main line of the C.P.R. was built by the Dominion Government and subsequently transferred to the C.P.R. syndicate. Total length in British Columbia, 502 miles.

The Esquimalt & Nanaimo Railway, Vancouver Island, received \$750,000 in cash as a bonus from the Dominion and 1,900,000 acres from the Province, the lands to be free of taxation forever and the land exempt for ten years.

The Columbia & Kootenay, Kaslo & Slocan, Nelson & Fort Sheppard, and Columbia & Western—all in operation—were granted 10,240 acres per mile by the Provincial Legislature and received \$3,200 per mile from the Dominion Government. For the particulars respecting the aid to the Nakusp & Slocan, Shuswap & Okanagan, and Victoria & Sidney and other particulars, see tables of "Loans" and "Railways." They also received the Dominion bonus of \$3,200 a mile. The latter was in each instance as a return for the guarantee of bonds, hypothecated to the Province. One-half of the guarantee of interest of four per cent. on the bonds of the Victoria & Sidney Railway was assumed by the City of Victoria.

Method of
Assistance.

The New Westminster Southern Railway from Blaine, in Washington State, to New Westminster, a distance of twenty-two miles, was built in 1889 without aid. It subsequently passed into the control of the Great Northern Railway and became part of its system.

By Act of 1893 provision was made for assistance similar to that extended to the Nakusp & Slocan to a railway through Nicola Valley and another through the Lower Fraser valley to Chilliwack from Vancouver, but these lines were not proceeded with.

In 1889 the Canada Western, better known as the British Pacific, was granted a charter and provision made for a land grant of 10,000 acres per mile of its extent through the Province to the eastern boundary, not yet undertaken.

During the session of 1897, under the provisions of the "Loan (B.C. Public Works) Act," authority was obtained by the Government to assist lines of railway (a) from Penticton to Boundary Creek, 100 miles; (b) from Bute Inlet to Quesnelle, 230 miles; (c) from English Bluff near Point Roberts *via* Chilliwack to Penticton, 230 miles; to the extent of \$4,000 per ^{\$4,000 a Mile.} mile under certain conditions. Land subsidies to the extent of 5,200 acres per mile were also granted to lines of railway in Cassiar District as follows: (a) Head of Taku Inlet to Teslin Lake, 140 miles; (b) head of Lynn Canal *via* White Pass to northern boundary of Province; (c) Glenora on Stickine River to Teslin Lake (about 150 miles). During 1898 the Government was authorized to extend assistance under the Public Works Loan Act for a line from a point on the North-West Coast to Teslin Lake *via* Glenora, on the Stickine River.

THE CASSIAR CENTRAL.

A concession to the Cassiar Central Ry. Co. from a point on the Stickine River to Dease Lake, 70 miles, aroused considerable interest and gave rise to a good deal of political discussion. Under the provisions of the "Cassiar Central Aid Act, 1897," the Company, of which Mr. Warburton Pike, the well-known traveller, was the promoter, receives a lease for thirty-five years of an area not exceeding 700,000 acres between the 58th and 60th parallels and 131st and 128th meridians of longitude. In the mineral claims located within this area the Company pays one-half of one per cent. royalty on ore extracted in addition to all other taxes imposed; \$50 per annum on each claim so long as held; \$100 for each transfer of claim; usual royalties on timber cut or used. Lands are to be selected in blocks of four miles square not exceeding 10,240 acres per mile of railway. In respect to free miners, whose rights have been much discussed, they may enter and locate on lands demised by the Company according to the mining laws of the Province and within six months are to offer terms to the Company for the undivided half of their claims, which the Company may accept or refuse within sixty days. In the event of the Company declining, the miner has two years within which to sell his claim, the Company having the right to purchase at the price offered after paying to the miner the value of development work. At the end of two years the Company may assume control, paying the miner the value of development work and one-half the amount realized for the sale of the claim or from the sale of ores. The miner is entitled to six months' previous notice of the intention of the Company, but if the latter at the end of the two years declines to proceed with development, the location becomes the property of the free miner. There are other provisions and conditions, but the foregoing form the crux of the Act. Active exploratory work has already been undertaken by the promoters of the railway, and the actual construction of the line is announced as having been begun.

THE B. C. SOUTHERN.

Under the charter of the B. C. Southern Railway Company, the control of which has been secured by the C.P.R., construction is now proceeding from Lethbridge *via* the Crow's Nest Pass into Kootenay. The former Company

obtained a land subsidy of 10,240 acres applicable to sections (a) and (b) of the Act extending aid for a distance of 173 miles from the eastern boundary of the

Under
Conditions.

Province westward through Southern Kootenay. To assist in the construction of this line, which was strongly urged from all quarters of the Dominion, the Government at Ottawa granted \$10,000 per mile subject to certain conditions as to traffic arrangements, the price of coal, and the reversion of 50,000 acres of coal lands, etc. The work of construction is proceeding rapidly. Among early results anticipated are the delivery of coal and coke to the smelters in Kootenay and the erection of smelters in East Kootenay.

OTHER LINES.

During the past year the Red Mountain Railway from Northport to Rossland, six miles, has been built and is in operation and a branch of the Columbia & Western from Robson to Rossland, sixteen miles, was commenced and completed and traffic arrangements have been entered into with the C.P.R. in connection with its operation. A charter has been in existence for some time, several times renewed, for a railway from Ashcroft or Kamloops to Barkerville, about 100 miles, and the early construction of this line by the C.P.R. is considered to be fairly probable.

The line of railway attracting the greatest immediate attention is one from Telegraph Creek to Teslin Lake to afford an all-British route to the Yukon. The proposal contemplated utilizing the Stikine River for this purpose, but more

recently there has been a proposal to start the railway to Teslin into the Yukon.

Lake from the head of Kitimat Inlet by way of the Kitimat route, so as to avoid the navigation of the Stikine and an exploratory survey has already been made.

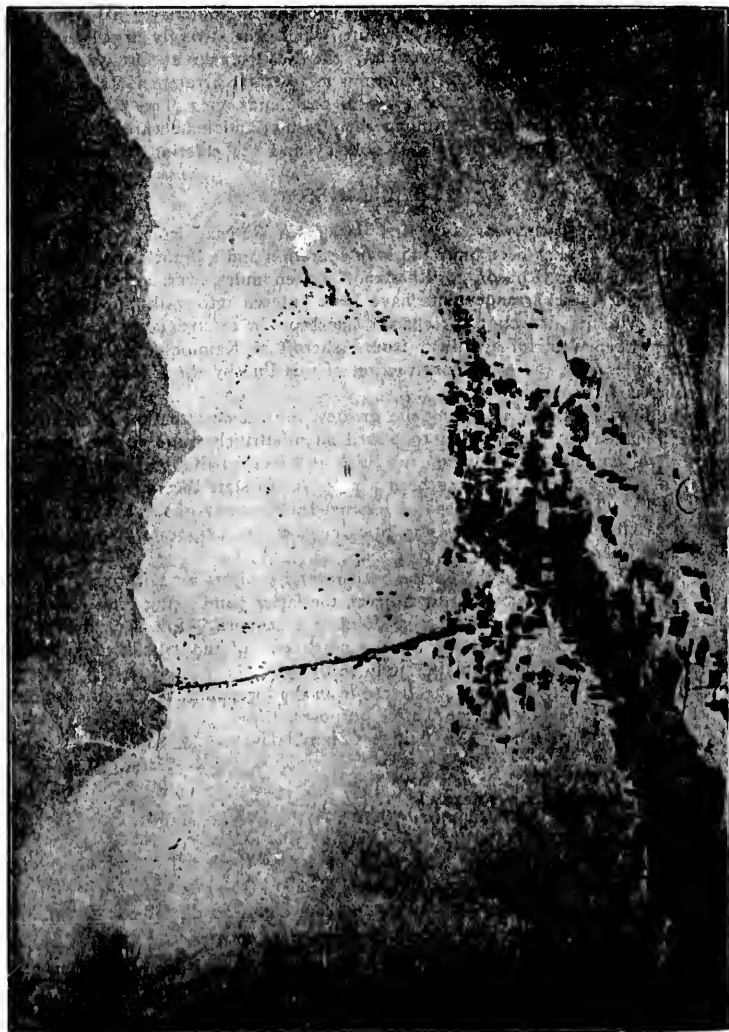
On Vancouver Island there have been several projects for railways. One of these is a railway from Nanaimo to Alberni, the latter point being long regarded by many as a very important objective point as a seaport. Hon. Dr. Helmcken has for years advocated a railway to the north end of the Island, and doubtless its importance will be ultimately fully recognized.

Numerous local charters not referred to in the foregoing have been obtained from time to time, mainly for speculative purposes.

The mileage of railways in British Columbia is:—

	Miles.
C.P.R. main line and branches	505.3
Columbia & Kootenay	28.50
Esquimalt & Nanaimo	78.01
Kaslo & Slocan	31.80
Nakusp & Slocan	36.90
Nelson & Fort Sheppard	59.40
Shuswap & Okanagan	51.00
Victoria & Sidney	16.26
Red Mountain	6
Columbia & Western	21.
New Westminster Southern	22
New Westminster-Vancouver Tramway	12
Total	868.17

The bonded debt of lines outside of the main line is, roundly, \$5,500,000; and the total cost of railways in the Province, about \$48,000,000 inclusive of rolling stock and all other plant.



EN ROUTE TO THE GOLD FIELDS—SCENE ON THE DYKA PASS.

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THE CANADIAN YUKON.

PERHAPS no other event or combination of events occurring outside of the arena of the battlefield has during the present century so profoundly affected the English-speaking people, and generally has had so wide an influence in so short a space of time as the gold discoveries in the Yukon. The mining excitements of Australia, California or South Africa were similar in character, but they did not move the world as the Klondyke has moved it.

It is unnecessary for practical information to readers to review the history of mining and prospecting in the Yukon District. The country has been prospected by numbers of men ever since 1887 and the scene of the present mining operations has been several times gone over. Prior to 1896 the operations were confined mainly to the Alaska side of the 141st meridian and in the diggings there good results had been obtained. In 1896, however, Bonanza and other creeks were discovered on the Canadian side and coarse gold exposed equal to the richest finds of Cariboo.

Then began the rush, which has become memorable, from Circle City and other points on the American side. Mr. Ogilvie, in his reports to the Dominion Government, gave the first intimation of these discoveries, and although great interest was awakened and a subsequent rush to the Yukon anticipated, it was not until the steamer "Excelsior" to San Francisco brought the first consignment of miners and gold dust that the real excitement began. It spread immediately to all the cities on the Pacific Coast and throughout America, and to Great Britain. Thousands started for the Yukon by way of San Francisco, Seattle, Tacoma, Victoria and Vancouver, but the lateness of the season prevented many from getting through to Klondyke this year. About 10,000 people from all points started northward, the main objective points by which to reach Dawson City being Skagway and Dyea Pass. These routes, totally unprepared for the traffic suddenly thrust upon them, soon became congested and hardships, suffering, and much loss resulted.

At the time Mr. Ogilvie left Dawson City in midsummer there were between three and four thousand people there. Of the 10,000 who started in after the excitement began, probably five thousand reached their destination. Mr. Ogilvie considers that during 1897 about \$3,500,000 was taken out of the various creeks in the vicinity of Dawson City. It has been said that every dollar in gold lifted by the ordinary process of mining costs a dollar to produce it. This will be found particularly true of the wealth of the Yukon. Of the 10,000 people who started this year, \$500 each by way of expenditure would be a moderate estimate indeed. That represents in itself \$5,000,000 as against the \$3,500,000 mined, and in reality

Gold to Get Gold.

\$10,000,000 would be nearer the total of the expenditure in reaching the Yukon alone. Again, if we accept the estimate that at least 100,000 persons will start for the mines in 1898, at an average of \$500, the amount expended would be \$50,000,000 in one year. Mr. Ogilvie's estimate of the gold in the creeks in the Klondyke to be taken out during the next decade is between \$65,000,000 and \$75,000,000.

It will be unnecessary to refer to the rich character of the diggings or the many individual finds and clean-ups which have made some rich and others millionaires. These range from \$5,000 up to \$150,000. Pans of gold averaged all the way from \$1.50 up to \$500. In the rich diggings, however, \$10 and \$12 a pan was a fair average. From the evidence of Mr. Ogilvie, Dr. Dawson, and many others more or less competent to form an opinion, it is undoubted that the whole Yukon territory is rich in precious and other minerals, and that it will take many years before development has reached its height. This country, however, is simply a continuation, and practically the same in character as the whole northern portion of British Columbia, included in Cariboo and Cassiar, the riches of which have been demonstrated many years ago, and which will be exploited more thoroughly as a result of gold mining in the far North.

The question of routes to this country is fully discussed elsewhere and all available particulars given. As to what extent a country like the Yukon can support and successfully accommodate the thousands of people who are about to rush in is a question which cannot easily be determined, but a note of warning is necessary as to the capabilities of a country wholly undeveloped to maintain for any length of time from 100,000 to 200,000 persons, whose livelihood must depend upon mining and in the absence of success in that, upon the resources which they carry with them. There is a danger of the situation being overdone and prospective gold-seekers should weigh carefully the risks that may be involved as against the chances of making wealth. There is a danger, too, of speculation being over-stimulated by the excitement, and the over-investment of capital in the hundred and one schemes which are evolved by such circumstances. Already the business community has been besieged by hosts of enterprising promoters, some of them the purest fakirs, for the purpose of interesting them in all kinds of schemes from advertising to balloon projects. Over-speculation and over-investment are bound to be followed by reaction and the loss of much capital.

It is doubtful also to what extent the Yukon may become permanently colonized. Dr. Dawson speaks hopefully of it from an agricultural and industrial point of view. Mr. Ogilvie, on the other hand, sees little in the country upon which to found hopes of agriculture being carried on to any extent or in fact any other industry, except that of mining. It is possible, however, that with the rush of people many openings for enterprises will occur which may induce permanent settlement, especially by people from the northern countries of Europe to whom the conditions are not unusual or forbidding.

[This was written in the fall of 1897 when the excitement was at its height. The anticipated rush was very small compared with predictions, and the dangers referred to are not likely to become serious. A lull has occurred in the Yukon trade, which, however, may be resuscitated by new finds, or the news of a large output of gold.—Ed.]

A Necessary
Caution.

Prospects of
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THE YUKON DESCRIBED.

THE Yukon District comprises an area of approximately 192,000 square miles, within Canadian territory, over 150,000 square miles of which is included in the watershed of the Yukon River. In other words, its area is almost equal to that of France, and greater than that of the United Kingdom by over 70,000 square miles. The northern portion of British Columbia is included strictly within the Yukon Basin, which, with the southern part of the Yukon, is drained by three great river systems. Its waters reach the Pacific by the Stickine, to the Mackenzie, and eventually the Arctic Ocean by the Liard, and Behring Sea by the Yukon. The Stickine makes its way through the Coast Range in a south-westerly direction, while the Liard in a south-easterly direction cuts across the Rocky Mountains into the Mackenzie Valley. The watershed separating these rises to a height of 2,730 feet. The whole northern country may be said to be in a general way a continuation of the more pronounced physical features of British Columbia. The mountain ranges, however, which are more sharply defined in the northern part of British Columbia, gradually converge towards the north until they merge into each other and broaden out into one more or less composite area. The region as a whole, being a portion of the Cordillera belt of the West Coast, is naturally mountainous in general character, but it comprises as well important areas of merely hilly or gently rolling country, besides many wide, flat river valleys. It is more mountainous and higher in the south-eastern part, and subsides gradually and apparently uniformly to the north-westward, the mountains becoming more isolated and more separated by broader tracts of low land. The general base level or height of the main valley within the Coast Ranges declines from a height of about 2,500 feet to 1,500 feet at the confluence of the Lewis and Pelly Rivers, and the average base level of the entire region may be stated as being a little over 2,000 feet. Disregarding minor irregularities, the trend of the main mountain ridges and ranges throughout the entire region has a general parallelism to the outline of the coast. The Coast Ranges having an average width of about eighty miles, and closely set with high, rounded or rugged mountains, reproduce geographically and geologically the features characteristic of it in the southern portion of British Columbia.

The mountain axis next in importance to the Coast Ranges is that forming the water-parting between the Upper Liard and Yukon on one side, and the feeders of the main Mackenzie River on the other. This represents the north-western continuation of the Rocky Mountains proper. This forms, so far as has been ascertained, the culminating range of a number of more or less exactly parallel ridges, and summits in it attain heights of from 7,000 to 9,000 feet.

A third notable mountain axis, designated as the Cassiar Range by Dr. Dawson, is cut through by the Dease River in its upper course, and further to the north-westward appears to form the line of water-parting between the tributaries of the Upper Liard and those of the branches of the Yukon. Peaks near

Mountain
Ranges.

Upper Liard.

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the Dease range between 7,000 and 8,000 feet. In the north-western portion of the region the mountain ranges and ridges are in general lower and become discontinuous and irregular. Scarcely anything is known of the character of the country drained by the McMillan, Stuart, and White Rivers. The topographical features of the entire region have been considerably modified by the events of the glacial period, and the changes produced at that time have more particularly affected drainage basins and the courses of various streams. The valleys and lower tracts of country are now more or less completely filled or covered by extensive deposits of boulder-clay, gravel, sand and silt, laid down during that period. To these deposits are due the flat floors of the larger valleys, and also to a great extent the appearance which the more irregular mountain ranges present of being partly merged in level or rolling plains.

In regard to the sources of the Yukon, Dr. Dawson says whether reckoned by size or distance from its mouth, the source of the Lewis must be placed at the head-waters of the Hootalinqua, in approximate latitude $59^{\circ} 10'$ and longitude $132^{\circ} 40'$. In regard to the Pelly, it is not absolutely certain that the Pelly proper rises farther from the common point at Fort Selkirk than its great branches, the McMillan and the Ross Rivers. The volume of water in the Yukon River is small compared with many of the large rivers of the American Continent, and is about half of that of the Mackenzie.

The large rivers by which the Yukon District and the northern portion of British Columbia are intersected constitute the natural and principal routes of travel, and during the summer months render inter-communication comparatively easy. The first of these to be considered is the Stickine. In size and general character the Stickine closely resembles the Skeena, which enters the coast in a parallel direction about 200 miles farther south. The former is navigable for stern-wheeled steamers of light draft to Glenora, 126 miles from Rothsay Point, and under favourable circumstances to Telegraph Creek and the Great Canyon, which extends for many miles, and is quite passable for either steamers or boats, though traversed by the Indians in winter on the ice. The head-waters of the Stickine are unknown, but lie for the most part to the south of the 58th parallel of north latitude, in a country said to be very mountainous, interlocking

**Tributaries
of Yukon.**

there with the northern branches of the Naas or western feeders of the Black, a tributary of the Liard. From Telegraph Creek, the head of navigation, a pack trail, sixty-two and one-half miles in length, constructed by the British Columbia Government, follows the valley of the Stickine close to the river to the head of Dease Lake, which is the centre of the whole Cassiar mining district. This route Dr. Dawson says has long been known to the Indians, the Stickine having been to them from time immemorial an important avenue of trade, by which, as by the Skeena, the coast tribes penetrated a considerable distance inland. Stern-wheel steamers for the navigation of this river require good engine power, and should draw not more than four feet of water when loaded. According to Mr. J. C. Calbreath, a man of very long experience in the district, who is at the present time engaged in opening a route from Telegraph Creek to Teslin Lake for the British Columbia Government, the Stickine generally opens for navigation between April 20th and May 1st. Ice or sludge usually begins to run in the river about the 1st of November. The river generally freezes over about the end of November. The highest water occurs in the early summer, generally in June.

A trail was at one time opened from Fraser Lake overland to Dease Lake, over which cattle were driven, but has not latterly been used. The Dease River can scarcely be considered navigable for steamers, though constituting a fairly good boat route. The Upper Liard and Frances Rivers are navigable

Lower Liard. for large boats, with occasional portages, but not so for steamers. The difficulties of the Lower Liard, however, are such as to render it an undesirable route even for boats, and scarcely suited as an avenue of trade between Cassiar and the Mackenzie.

Little is known of the Taku River, but Indians ascend it in canoes to a distance of about eighty miles. From Taku Inlet an Indian trail leads south-eastward to the Tahltan, eastward to Teslin Lake, and north-eastward to the lakes near the head of the Lewis. From what has been ascertained of these it is probable it would not be difficult to construct a trail suitable for pack

Taku Inlet. animals, if not a waggon road, from the vicinity of the head of navigation on the Stickine, on these lakes, connected with the navigable waters of the Lewis. The rivers draining the Upper Yukon Basin have in general low grades, and afford better navigable water, and are likely to prove of greater importance in connection with the exploration and development of the country.

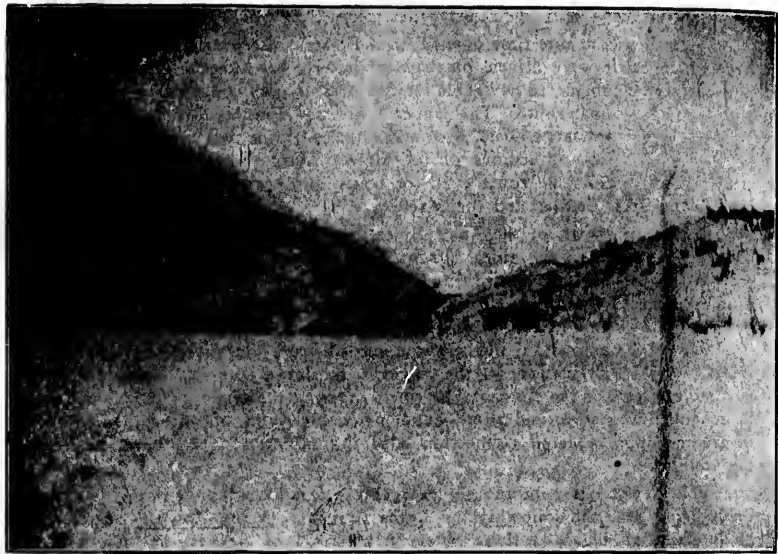
The Yukon is continuously navigable for small steamers from its mouth, on Behring Sea, and following the Lewis Branch to Miles Canyon; thence, after an interruption of about three miles, to the head of Bennett Lake, and to an additional considerable distance by the waters extending south-westward from Tagish Lake.

The Teslintoo is probably navigable for stern-wheel steamers for 150 miles or more from its mouth, while the Tahk-keena and Big Salmon Rivers may probably both be ascended by steamers of the same class for some distance. From the site of the old Fort Selkirk again the Pelly might be navigable by small steamers of good power to within about fifty miles of the site of old Fort Pelly banks, and the McMillan branch is also navigable for a considerable distance. The same may be said of the Stuart River, but White River, so far as known, is very swift and shoal.

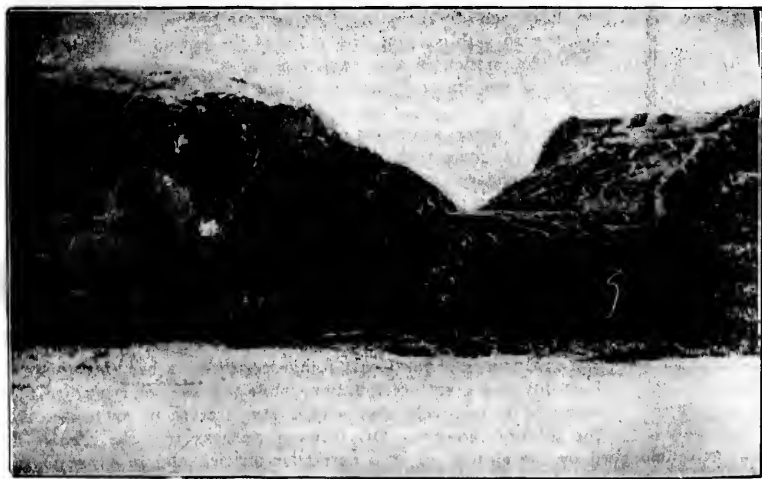
The total length of water which may be utilized for navigation for light stern-wheel steamers on the main river and its branches to the east of the 141st meridian, or Alaskan boundary, measured in straight lengths of fifty miles, is estimated by Dr. Dawson at 1,000 miles, and, following the sinuosities of the various streams would be very much greater. This does not include the Porcupine River, and, with the exception of a single break, namely, Miles Canyon on the Lewis, forms a connected system, all parts of which lie to the east of the above meridian.

In regard to the climate of the Yukon District, there is little available information obtained by experience, but its general features are fairly well known. The coast and coastward slopes of the Coast Range constitute a belt of excessive humidity and great precipitation, while the interior region to the eastward is relatively dry, with a temperature of extremes. In the interior, however, Dr. Dawson remarks that the climate is largely influenced by the altitude of each particular district, and in consequence of the general lowering of the country beyond the 60 parallel it is certain that the climatic conditions there are much more favourable than in the Cassiar District.

Climate.



ON THE STICKINE—THE BIG CANYON.



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ON account of the depth of the snowfall and the clouded character of the skies, the Coast Ranges support numerous glaciers, which are absent in the Cascade Mountains and the other ranges in the interior. This retards the progress of spring on the Coast mountains. The depth of snow in winter is moderate as far down the Pelly (and Yukon) as the mouth of the Stuart River and Forty-Mile Creek, while at Nutato, on the lower river in a similar latitude, but 500 miles farther west, the depth of snow from April to November is said to average eight feet and often to reach twelve feet. Mr. Dall says that the valley of the Lower Yukon is sometimes foggy in the latter part of summer, but as we ascend the river the climate improves, and the short season at Fort Yukon is dry but pleasant, only varied by an occasional shower. As in the more southern part of British Columbia, the driest country is found to be bordering the east side of the Coast Ranges, and this phenomenon occurs, though in a less marked degree, with each of the well-defined mountain ranges of the interior.

A change in the direction, as between the summer and winter winds, is noted in connection with the passes leading from the head of Lynn Canal, and, doubtless, in all the lower gaps in the Coast Ranges. In the summer strong winds blow up the valley, and are of very frequent occurrence. In the winter months the conditions are reversed, the strong winds blowing seaward. The temperatures of Wrangel and Fort Yukon are given in the following table, taken from the United States Coast Pilot, these two points being taken as fairly representative of coast and interior climates, respectively:—

Wrangel. Fort Yukon.

Spring	40.4	14.6
Summer	57.1	56.7
Autumn	43.0	17.4
Winter	28.3	-23.8
Year	42.2	16.8

The mean seasonal temperature for these two stations is given for both places.

Dr. Dawson says: "In the central Provinces of European Russia the thermometer descends to -22 and -31, and occasionally even to -54 in the winter months, but rises at times to 104 and even to 109 in summer. The rainfall is small, varying from sixteen to twenty-eight inches, the maximum precipitation taking place during the summer months, and not, as in Western Europe, in the winter, while the months of advanced spring are warmer than the corresponding months of autumn. So far as our information goes, the above statement might also be adopted as characterizing the climate of the southern half of the Yukon District."

In referring to the bearings of climate on mining, Dr. Dawson, writing generally of the whole Northern District, says:—

"In the Northern Districts here reported on, it is true that the winter climate is a severe one, rendering the working season for ordinary placer mines short, and likely also to present some special difficulties in the way of 'quartz

Climatic
Changes.

mining.' There is, however, on the other hand, an abundance of wood and water, matters of great importance in connection with mining, and, means of communication once provided, mining operations should be carried on here at less cost than in dry and woodless regions, such as are great portions of Arizona."

The winter climate of all of this region is known to be a severe one, the northern part lying within the Arctic circle, but it must be remembered that the climatic conditions on the eastern and western sides of the continent are by no means comparable, and that the isothermal lines representing the mean annual temperature trends not westward, but northward from the Manitoba region.

At Telegraph Creek and in its vicinity, on the Stickine, wheat, barley and potatoes are successfully grown with the aid of irrigation, although their cultivation has only been attempted on a limited scale on account of the want of a market. None of these can be successfully grown or ripened on the coastward side of the mountains. At Fort Yukon Mr. Dall states he was informed that barley had once or twice been tried in small patches, and they had succeeded in maturing the grain, though the straw was very short. A few cattle had been kept here at one time. Dr. Dawson confirms this statement, and adds: "I feel no hesitation in stating my belief that such hardy crops as barley, rye, turnips, and flax can be cultivated in the Yukon District as far north as

Agricultural
Land.

Fort Selkirk, near the 63rd parallel." His conclusion is that there exists an area of about 60,000 square miles, of which a large proportion may and doubtless in the future will be utilized for the cultivation of such crops, and in which cattle and horses might be maintained in sufficient number for local purposes without undue labour, as excellent summer grazing is usually to be found along the river, and natural hay meadows are frequent. "I do not maintain," he says, "that the country is suitable for occupation by a large self-supporting agricultural community, but hold that agriculture may before many years be successfully prosecuted in conjunction with the natural development of the other resources of this great country, of which by far the most valuable portion lies to the east of the line of the Alaskan boundary."

In general economic importance and conditions Dr. Dawson compares it with the Province of Vologda, in European Russia, which is, by the way, very much similar in regard to area, and is situated between the 58th and 65th degrees of latitude, and adds: "The climate in both cases is a continental one, in which severe winters alternate with warm summers, and the actual degrees of cold and heat, so far as our information goes, are not dissimilar. There is no very heavy rainfall in either region, such as we find near the western coasts bordering on the Atlantic and on the Pacific, respectively. The agricultural products from the province of Vologda are oats, rye, barley, hemp, flax, and pulse. The mineral products comprise salt, copper, iron, and marble, but the precious metals do not appear to be important, as in the Yukon District. Horses and cattle are reared, and the skins of various wild animals, as well as pitch and turpentine, are among the exports. The population of the province is stated at 1,161,000."

Compared with
Vologda.

"While the Yukon District and the northern portion of British Columbia are at present far beyond the limits of ordinary settlement, we may be prepared at any time to hear of the discovery of important mineral deposits, which will afford the necessary impetus, and may result in the course of a few years, in the introduction of a considerable population into even its most distant fastnesses.

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To-day it may well be characterized by the term which has been employed in connection with the Mackenzie basin, a portion of Canada's 'Great Reserve.' It appears meanwhile eminently desirable that we should encourage and facilitate, in so far as may be possible, the efforts of the miners and others who constitute our true pioneers in the region, and to whom, in conjunction with the fur companies and traders, the peaceful conquest of the whole of our Great West has been due. In the future there is every reason to look forward to the time when this country will support a large and hardy population, attached to the soil and making the utmost of its resources."

The latter part of this quotation, which was written in 1887, with reference to the ultimate development of the Yukon District, taken in conjunction with the recent events of this year, looks remarkably like prophecy. He says also the information now obtained is sufficient to warrant a confident belief in its great value. Very much yet remains to be learned respecting it, but it is known to be rich in furs, well-supplied with timber, and is traversed in great length by navigable rivers. In each of these particulars and climate it is greatly superior to the inland portion of Alaska. It may in fact be affirmed with little room for doubt that the region here spoken of as the Yukon District surpasses in material resources the whole remaining northern interior portion of the Continent in the same parallels of latitude.

In regard to the trees of the interior country treated as a whole, Douglas fir, Engelmann's spruce, hemlock and the red cedar, all common and characteristic trees, a few degrees of latitude to the south, are nowhere found. The white and black spruce, balsam fir, aspen and cottonwood, are found in suitable localities over the whole region east of the coast mountains, the two first mentioned trees constituting probably one-half of the entire forest of the country. The black pine is pretty widely distributed in this northern region.

The larch is found westward on the Dease River to a point twenty-two miles above its mouth and along the Liard and Frances. Birch is also found on the Dease River and the Liard head waters to Frances Lake. The juniper was observed as a small tree in the dry country in the lee of the coast mountains at Telegraph Creek on the Stickine. The alder and several species of willow become small trees in the interior. The timber line or upper limit of the growth of forest on the mountains of the interior in the vicinity of the watershed between the Liard headwaters and those of the Pelly in latitude 61.30 is found to be at a height of 4,200 feet. The red cedar is not now in any abundance north of the latitude of the mouth of the Stickine River. It is confined to the mouth of the Stickine and does not follow up the valley any distance inland. The yellow cedar generally reaches Sitka and is not found anywhere among the inner islands near the entrance to Lynn Canal. The alder forms groves as far north as latitude 59. Broad leaf maple may reach latitude 55 on the Alaska coast, but is rare north of the Prince of Wales Archipelago. Eight-tenths of the entire forest of the coast region consists of the single species of Menzies spruce. *Pinus contorta*, a species of black pine, is found along the Lynn Canal and elsewhere along the coast. Here also *Tsuga pationa* grows to a fair size.

Summarizing his remarks on timber, Dr. Dawson says: "It may suffice here to say that the country is generally wooded and that in all portions of it, in valley and low land, there is an abundance of white spruce of fair to good quality,

well suited to purposes of construction. The other species of trees present are of inferior economic importance."

The fauna of the region does not notably differ from other parts of the northern country. The smaller black-tail deer occurs on the islands. In the southern portion of Alaska and adjacent Mainland the mountain goat is moderately abundant in the Coast Ranges and is found in the mountain inland region.

The big horn, or mountain sheep, occurs on the mountains about the head of the Lewes and other parts of inland spurs of the Coast Ranges. It is also found in the mountains of the interior.

The moose is more or less abundant throughout the entire region, and together with the caribou, which is also abundant, constitutes the greater part of the food of the Indians. Black and grizzly bears roam over the entire region and are often seen on banks of rivers when dead or dying salmon are to be obtained. The smaller fur-bearing animals are generally distributed throughout the northern interior. The salmon ascend the Lewes River as far as the lower end of Lake Marsh and run up the Pelly for considerable distance above the mouth of the Lewes. The lakes and rivers throughout the country generally are well supplied with fish, the principal of which are white fish, lake trout, grayling, pike and sucker. The annual value of furs obtained in this region amounts to between \$75,000 and \$100,000, and consists of the skins of the beaver, cross black and red fox, bear, marten, otter, mink, lynx, wolverine and wolf. Foxes, as may be inferred, are exceedingly numerous.

THE YUKON AND ITS AFFLUENTS.

IN the following is contained a compilation of Mr. Ogilvie's report, describing the extent and character of navigation from the sources of the Yukon within Canadian territory.

For the purpose of navigation a description of the Lewes River begins at the head of Lake Bennett. Above that point, and between it and Lake Lindeman, there is only about three-quarters of a mile of river, which is not more than fifty or sixty yards wide, and two or three feet deep, and is so swift and rough that navigation is out of the question.

Lake Lindeman is about five miles long and half a mile wide. It is deep enough for all ordinary purposes. Lake Bennett* is twenty-six and a quarter miles long, for the upper fourteen of which it is about half a mile wide.

* A small saw-mill has been erected at the head of Lake Bennett; lumber for boat building sells at \$100 per M. Boats 25 feet long and 5 feet beam are \$60 each. Last year the ice broke up in the lake on the 12th June, but this season is earlier, and the boats are expected to go down the lake about the 1st of June.

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The waters of the lake empty at the extreme north-east angle through a channel not more than one hundred yards wide, which soon expands into what Schwatka called Lake Nares.† Through this narrow channel there is quite a current, and more than seven feet of water, as a six-foot paddle and a foot of arm added to its length did not reach the bottom.

Lake Nares is only two and a half miles long, and its greatest width is about a mile; it is not deep, but is navigable for boats drawing five or six feet of water; it is separated from Lake Bennett by a shallow sandy point of not more than 200 yards in length.

Lake Nares flows through a narrow curved channel into Bove Lake (Schwatka). This channel is not more than 600 or 700 yards long, and the water in it appears to be sufficiently deep for boats that could navigate the lake.

Bove Lake (called Tagish Lake by Dr. Dawson) is about a mile wide for the first two miles of its length, when it is joined by what the miners have called the Windy Arm.

Ten miles from the head of the lake it is joined by the Taku Arm from the south.

Dr. Dawson includes Bove Lake and these two arms under the common name of Tagish Lake.

From the junction with the Taku Arm to the north end of the lake the distance is about six miles, the greater part being over two miles wide. The west side is very flat and shallow.

Where the river debouches from it, it is about 150 yards wide, and for a short distance not more than five or six feet deep. The depth is, however, soon increased to ten feet or more, and so continues down to what Schwatka calls Marsh Lake. The miners call it Mud Lake.

Marsh Lake is a little over nineteen miles long, and averages two miles in width. The piece of river connecting Tagish and Marsh Lakes is about five miles long, and averages 150 to 200 yards in width, and as already mentioned, is deep, except for a short distance at the head. The Lewes River, where it leaves Marsh Lake, is about 200 yards wide, and averages this width as far as the cañon.

From the head of Lake Bennett to the cañon the corrected distance is ninety-five miles, all of which is navigable for boats drawing five feet or more. Add to this the westerly arm of Lake Bennett, and the Takone or Windy Arm of Tagish Lake, each about fifteen miles in length, and the Taku Arm of the latter lake, of unknown length, but probably not less than thirty miles, and we have a stretch of water of upwards of one hundred miles in length, all easily navigable; and, as has been pointed out, easily connected with Talya Inlet through the White Pass.

No streams of any importance enter any of these lakes so far as I know. The Taku Arm of Tagish Lake is, so far, with the exception of reports from Indians, unknown. The cañon is five-eighths of a mile long, about 100 feet wide, with perpendicular banks of basaltic rock from sixty to 100 feet high. Below the cañon proper there is a stretch of rapids for about a mile; then about half a mile of smooth water, following which are the White Horse Rapids, which are three-eighths of a mile long, and unsafe for boats. The total fall in the cañon and succeeding rapids was measured and found to be thirty-two feet. Were it ever

† The connecting waters between Lake Bennett and Tagish Lake constitute what is now called Caribou Crossing.

necessary to make this part of the river navigable it will be no easy task to overcome the obstacles at this point; but a tram or railway could, with very little difficulty, be constructed along the east side of the river past the cañon.

For some distance below the White Horse Rapids the current is swift and the river wide, with many gravel bars. The reach between these rapids and Lake Labarge, a distance of twenty-seven and a-half miles, is all smooth water, with a strong current. The average width is about 150 yards. There is no impediment to navigation other than the swift current, and this is no stronger than on the lower part of the river, which is already navigated.

About midway in this stretch the Tahkeena River* joins the Lewes. This river is, apparently, about half the size of the latter.

Lake Labarge is thirty-one miles long. At the lower end of the lake there is a large valley extending northwards, which has evidently at one time been the outlet of the lake. The width of the Lewes River as it leaves the lake is the same as at its entrance, about 200 yards. The wind blows almost constantly down this lake, and in a high wind it gets very rough. The miners complain of much detention owing to this cause.

After leaving Lake Labarge the river, for a distance of about five miles, preserves a generally uniform width and an easy current of about four miles per hour. It then makes a short turn round a low gravel point, and flows in exactly the opposite of its general course for a mile when it again turns sharply to its general direction. The current around this curve and for some distance below it—in all four or five miles—is very swift. I timed it in several places, and found it from six to seven miles an hour. It then moderated to four or five, and continues so until the Teslintoo River is reached, thirty-two and seven-tenths miles from Lake Labarge. The average width of this part of the river is about 150 yards, and the depth is sufficient to afford passage for boats drawing at least five feet. It is, as a rule, crooked, and consequently a little difficult to navigate.

The Teslintoo† was so called by Dr. Dawson. It is called by the miners "Hootalinkwa" or Hootalinqua. The water of the Teslintoo is of a dark brown colour.

Assuming this (the Teslintoo) as the main river, and adding its length to the Lewes-Yukon below the junction, gives upwards of 2,200 miles of river, fully two-thirds of which runs through a very mountainous country, without an impediment to navigation.

Some indefinite information was obtained as to the position of this river in the neighbourhood of Marsh Lake tending to show that the distance between them was only about thirty or forty miles.

Between the Teslintoo and the Big Salmon the distance is thirty-three and a-half miles, in which the Lewes preserves a generally uniform width and current.

* The Tahkeena was formerly much used by the Chilkat Indians as a means of reaching the interior, but never by the miners, owing to the distance from the sea to its head.

† The limited amount of prospecting that has been done on this river is said to be very satisfactory, fine gold having been found in all parts of the river. The lack of supplies is the great drawback to its development, and this will not be overcome to any extent until by some means heavy freight can be brought over the coast range to the head of the river. Indeed, owing to the difficulties attending access and transportation, the great drawback to the entire Yukon District at present is the want of heavy mining machinery and the scarcity of supplies. The Government being aware of the requirements and possibilities of the country, has undertaken the task of making preliminary surveys for trails and railroads, and no doubt in the near future the avenue for better and quicker transportation facilities will be opened up.

The Big Salmon I found to be about one hundred yards wide near the mouth, the depth not more than four or five feet, and the current, so far as could be seen, sluggish. None of the miners I met could give me any information concerning this stream; Dr. Dawson met a man who had spent most of the summer of 1887 prospecting on it. His opinion was that it might be navigable for small stern-wheel steamers for many miles.

Thirty-six and a quarter miles below the Big Salmon, the Little Salmon—the Daly of Schwatka—enters the Lewes. This river is about sixty yards wide at the mouth, and not more than two or three feet in depth.

Eight miles below Little Salmon River, a large rock called the Eagle's Nest, stands up in a gravel slope on the easterly bank of the river.

Thirty-two miles below Eagle's Nest Rock, Nordenskiöld River enters from the west. It is an unimportant stream.

The Lewes, between the Little Salmon and the Nordenskiöld, maintains a width of from 200 to 300 yards, with an occasional expansion where there are islands. It is serpentine in its course most of the way.

Below this to Five-Finger Rapids, so called from the fact that five large masses of rock stand in mid-channel, the river assumes its ordinary straightness and width.

Six miles below this, as already noticed, Rink Rapids are situated. They are of no great importance, the westerly half of the stream only being obstructed.

Below Five Finger Rapids about two miles a small stream enters from the east. It is called by Dr. Dawson Tatshun River.

Between Five Finger Rapids and Pelly River, fifty-eight and a half miles, no streams of any importance enter the Lewes.

About a mile below Rink Rapids the river spreads out into a lake-like expanse, with many islands; this continues for about three miles, when it contracts to something like the usual width; but bars and small islands are very numerous all the way to Pelly River. About five miles above Pelly River there is another lake-like expanse filled with islands.

About a mile below the Pelly, just at the ruins of Fort Selkirk, the Yukon was found to be 565 yards wide; about two-thirds being ten feet deep, with a current of about four and three-quarter miles per hour.

Fort Selkirk is now a winter port for steamboats of the North American Transportation & Trading Company, plying the Yukon and its tributaries, which has established a number of posts on the river. There is also a trading post here owned by Harper, who was at one time of the firm of Harper & McQuestion, traders.

Below Fort Selkirk, the Yukon River is from 500 to 600 yards broad, and maintains this width down to White River, a distance of ninety-six miles.

White River enters the main River from the west. The White River very probably flows over volcanic deposits, as its sediments would indicate; no doubt this would account for the discoloration of its waters. The volcanic ash appears to cover a great extent of the Upper Yukon basin drained by the Lewes and Pelly Rivers.

Mr. Harper, of the firm of Harper, McQuestion & Co., went up this river with sleds in the fall of 1872 a distance of fifty or sixty miles. He describes it as possessing the same general features all the way up, with much clay soil along its banks.



A STEEP DESCENT—LAYING DOWN BRUSH FOR A Foothold.



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Stewart River enters from the east in the middle of a wide valley, with low hills on both sides. The river half a mile or so above the mouth is 200 yards in width. The current is slack and the water shallow and clear, but dark coloured.

From Stewart River to the site of Fort Reliance, seventy-three and a quarter miles, the Yukon is broad and full of islands.

About thirteen miles below Stewart River a large valley joins that of the river, but the stream occupying it is only a large creek.

Twenty-two and a half miles from Stewart River another and larger creek enters from the same side; it agrees with the descriptions of Sixty-mile Creek. This stream is of no importance, except for what mineral wealth may be found on it.†

Six and a half miles above Fort Reliance the Thron-Diuck† River of the Indians (Deer River of Schwatka) enters from the east. It is a small river, about forty yards wide at the mouth, and shallow; the water is clear and transparent, and of beautiful blue colour. The Indians catch great numbers of salmon here. They had been fishing shortly before my arrival, and the river, for some distance up, was full of salmon traps.

A miner had prospected up this river for an estimated distance of forty miles, in the season of 1887.

Twelve and a half miles below Fort Reliance, the Chandindu River, as named by Schwatka, enters from the east.

Between Fort Reliance and Forty Mile River (called Cone Hill River by Schwatka) the Yukon assumes its normal appearance, having fewer islands and being narrower, averaging 400 to 600 yards wide, and the current being more regular. This stretch is forty-six miles long, but was estimated by the traders at forty, from which the Forty Mile River took its name.

Forty Mile River joins the main River from the west. It is as far up as the International Boundary, a distance of twenty-three miles. It is only a short distance across to the Tanana River—a large tributary of the Yukon—which is here described as an important stream. However, only about twenty-three miles of Forty Mile River are in Canada.

Between Forty Mile River and the boundary line no stream of any size joins the Yukon. Coal Creek is five miles below Forty Mile, and comes in from the east. On it some extensive coal seams were seen.

† Sixty Mile Creek is about one hundred miles long, very crooked, with a swift current and many rapids, and is therefore not easy to ascend.

Miller, Glacier, Gold, Little Gold and Bedrock Creeks are all tributaries of Sixty Mile. Some of the richest discoveries in gold so far made in the interior since 1894 have been upon these creeks, especially has this been the case upon the two first mentioned. There is a claim upon Miller Creek owned by Joseph Boudreau from which over \$100,000 worth of gold is said to have been taken out. Freight for the mines is taken up Forty Mile Creek in summer for a distance of 30 miles then portaged across to the heads of Miller and Glacier Creeks. In the winter it is hauled in by dogs. The trip from Cudahly to the post at the mouth of Sixty Mile River is made by ascending Forty Mile River a small distance, making a short portage to Sixty Mile River and running down with its swift current. Coming back on the Yukon nearly the whole of the round trip is made down stream. Indian Creek enters the Yukon from the east about 30 miles below Sixty Mile. It is reported to be rich in gold, but owing to the scarcity of supplies its development has been retarded.

At the mouth of Sixty Mile Creek a townsite of that name is located; it is the head quarters for upwards of 100 miners, and where they more or less assemble in the winter months.

Messrs. Harper & Co. have a trading post and a saw-mill on an island at the mouth of the creek, both of which are in charge of Mr. J. Leduc, one of the partners of the firm, and who was at one time in the employ of the Alaska Commercial Company.

‡ Dawson City is situated at the mouth of the Thron-Diuck, and although it was located only a few months ago, it is the scene of great activity. Very rich deposits of gold have been lately found on Bonanza Creek and other affluents of the Thron-Diuck.

The agricultural capabilities of the country along the river are not great, nor is the land which can be seen from the river of good quality.

When we consider further the unsuitable climatic conditions which prevail in the region, it may be said that as an agricultural district this portion of the country will never be of value.

It is difficult to form an estimate of the total area of agricultural land seen, but it certainly bears a very small proportion to the remainder of the country. I think ten townships, or 360 square miles, would be a very liberal estimate for all the places mentioned. This gives us 230,400 acres, or, say 1,000 farms. The available land on the affluents of the river would probably double this, or give 2,000 farms in that part of our territory, but on most of these the returns would be meagre.

Without the discovery and development of large mineral wealth it is not likely that the slender agricultural resources of the region will ever attract attention, at least until the better parts of our territories are crowded. * * *

The amount of timber for use in building and manufacturing in the district along the river is not at all important. There is a large extent of forest which would yield firewood, and timber for use in mines, but for the manufacture of lumber there is very little.

MR. OGILVIE'S DESCRIPTION.

MR. WM. OGILVIE, whose name in connection with the Yukon is now a household word, delivered a lecture in Victoria on Friday evening, November 6th (1897), in Institute Hall, which was of special interest and value. As his statements on that occasion afford the very latest and most authentic information available, the author has utilized the report by condensation and making extracts therefrom, discarding other matter previously prepared, feeling sure that readers will recognize the greater value of information directly imparted by a gentleman whose knowledge of the country and whose probity and unselfish devotion to the interests of Canada in connection therewith, entitle his observations to every respect and consideration. Much of his lecture, dealing with the history of the Yukon discoveries, and other matters, though extremely interesting has been omitted for want of space. The question of routes is dealt with elsewhere, but his remarks in regard to several of them are inserted on account of the interest attaching to his statements.

THE ROUTES IN.

The route from Victoria and Vancouver to Alaska on an ocean steamer has been fully described elsewhere in the chapter entitled "The Coast Trip." From Victoria to Port Simpson is 635 miles and Port Simpson to the mouth of the Stickine *via* Wrangel is about 170 miles. From the mouth of the Stickine up the river to Telegraph Creek is 150 miles. The distance occupying about sixty hours. Mr. Ogilvie said:—

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ber for boats, the process being somewhat difficult and tedious. The boats built, the trip down Teslin Lake, which is eighty miles long, begins, and we enter the

The Hootalinqua River. This river is marked on the map as being **Hootalinqua River**, the Teslin, which is the Indian name for a fish caught in the lake. The Hootalinqua is about 125 miles long, making a distance of 1,160 miles from Victoria, or 1,600 miles in all to Dawson City. At two points, one near the head of the river and one quite a distance below, there are obstacles in the way of steamboat navigation at certain times of the year, during certain stages of the river. A few miles below the river broadens out into innumerable channels, until at last, at the lower end, it widens to two and a-half miles. If one of these channels were deepened out, a sufficient depth of water could be obtained to allow of a free passage for a steamer drawing three or four feet without difficulty.

Speaking of the cañon and White Horse Rapids, Mr. Ogilvie says:—Twenty-five miles from Marsh Lake we come to the cañon, where the river is very swift and passes between almost perpendicular walls. Running the cañon is easily practicable, provided the boat is kept in the very centre of the stream. Do this and the boat rides through safely. If not, she will be dashed against the side walls of basaltic rock and pounded to pieces. Below the cañon there is another rapid, which, however, offers no special obstacle to a man wanting to go through. Below that is what is known as the White Horse Rapids. Now, you can run the White Horse Rapids if you want to—at least, you can try. I don't. I traced up thirteen men who lost their lives in running this rapid in a single season. Below, at the Five Fingers, the river is partially dammed by a conglomerate rock standing like a pillar in the stream. Avoiding it, let the boat go easy and all will be well. Below this there is another rapid, and then the smooth and unhampered river, from which on everything is all right.

The navigation of the Yukon River in the upper part is open from May till the middle of October, while at the mouth it is not open before the 1st of July, and navigation does not last longer than the 1st of October—that is, from two and a half to three months—and it takes river steamers fourteen, fifteen and sixteen days to get up the river to Dawson. St. Michaels, the headquarters of the river boats, is eighty miles from the mouth of the river, and only in calm weather can the steamers cross that bit of open sea.

PROBABLE YIELD.

Bonanza and El Dorado Creeks afford between them 278 claims; the several affluences will yield as many more, and all of these claims are good. I have no hesitation in saying that about a hundred of those on Bonanza will yield upwards of \$30,000,000. Claim 30 below, on El Dorado, will yield a million in itself, and ten others will yield from \$100,000 up. These two creeks will, I am quite confident, turn out from \$60,000,000 to \$75,000,000, and I can safely say that there is no other region in the world of the same extent that has afforded in the same length of time so many homestakes—fortunes enabling the owners to go home and enjoy the remainder of their days—considering the work that has to be done with very limited facilities, the scarcity of provisions and of labour, and that the crudest appliances only are as yet available.

On Bear Creek, about seven or eight miles above that, good claims have

been found, and on Gold Bottom, Hunker, Last Chance and Cripple Creeks. On Gold Bottom as high as \$15 to the pan has been taken, and on Hunker Creek the same, and although we cannot say that they are as rich as El

Other Creeks. Dorado or Bonanza, they are richer than any other creeks known in that country. Then, thirty-five miles higher up the Klondyke, Too-Much-Gold Creek was found.

A fact I am now going to state to you, and one that is easily demonstrated, is that from Telegraph Creek northward to the boundary line, we have in the Dominion of Canada and in this Province an area of from 550 to 600 miles in length, and from ten to 150 miles in width, over the whole of which rich prospects have been found. We must have from 90,000 to 100,000 square miles, which, with proper care, judicious handling and better facilities for the transportation of food and utensils, will be the largest, as it is the richest, gold field the world has ever known.

Stewart and Pelly, in the gold bearing zone, also give promising indications. Everywhere good pay has been found on the bars and there is no reason why when good pay has been found on the bars, the results should not be richer in the creeks. The Klondyke was prospected for forty miles up in 1887 without anything being found, and again in 1893 with a similar lack of result, but the difference is seen when the right course is taken and this was led up to by Robert Henderson.

QUARTZ LEDGES.

In regard to quartz claims, seven have already been located in the vicinity of Forty Mile and Dawson, and there is also a mountain of gold in the neighbourhood bearing ore yielding \$5.00 to \$7.00 a ton. The question to be considered is whether with that return it will pay to work it under the peculiar conditions which exist, and the enormous freight rates charged for the transportation of anything of that kind. About forty miles up the river two claims

A Big Proposition. have been located by an expert miner from the United States, one who has had considerable experience in Montana and other mineral States, and he assured me that the extent of the lode is such that these two claims are greater than any proposition in the world, going from \$3.00 to \$11 a ton. On Bear Creek a quartz claim was located last winter.

On Gold Bottom another claim has been located, and I have made a test of the ore. I had no sieve and had to employ a hand mortar, which you who know anything of the work will understand would not give the best results. The poorest result obtained, however, was \$100 to the ton, while the richest was \$1,000. Of course I do not know what the extent of the claim is, but the man who found it said that from the rock exposed, the deposit must be considerable in extent.

About thirty miles up the Klondyke another claim was located, and the man swore that it was rich.

On El Dorado and Bonanza the gold obtained on the different benches has about the same value, that is, it has about the same degree of fineness, and is worth about \$16 per ounce, and as you go down the creek this value decreases to about \$15.25. From that point, however, it increases again, and from this the inference appears to be plain that the same lode runs right across the region that these creeks cut through, which is proved still more surely by the fact that the value increases as you strike Hunker, and in the other direction Miller and Glacier. The nuggets found in El

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Dorado show no evidence of having travelled any great distance, and some I have are as rough as though they had been hammered out of the mother lode.

The mother lode is yet to be found in the ridges between the creeks, and when it is found it may be found to consist of several large lodes or a succession of small ones that may not pay to work.

On Stewart and Pelly Rivers some prospecting has been done and gold found, and on the Hootalinqua in 1895 good pay was discovered and the richness of the gold increases as work is continued farther down. Some men, working fifteen feet down, found coarse gold, when the water drove them out and they had to abandon the work and come out determined to return; but they did not go back, as in the meantime the Klondyke excitement knocked that place out.

Gold has been found at the head of Lake LaBarge on the stream flowing into the lake at this point; in fact there is gold everywhere in this zone, which is 500 miles long by 150 wide. Prospects, too, are to be found on the Dalton Trail on the other side of the river. It may be assumed that in all this country there is gold, while in this particular zone it is especially abundant. This zone lies outside of the Rocky Mountains and distant from them about 150 miles.

COAL AND COPPER.

Another product of the country that demands attention is copper. It is doubtless to be found somewhere in that district in great abundance, although the location of the main deposit has yet to be discovered. It comes from the vicinity of White River somewhere—just where has yet to be discovered. Silver

Native Copper. has also been found, and lead, while to work our precious metals we have coal in abundance. It is to be found in the Rocky Mountains or, rather, the ridge of high mountain running parallel to them in the interior. A deposit of coal in this range runs right through our territory. At two points near Forty Mile it also crops out, in one place only about forty feet from the River Yukon. Farther up the Yukon on one of its many smaller feeders, at Fifteen Mile Creek and on the head of the Thronda, there are also outcroppings of coal. On the branches of the Stewart and on some of the five fingers of the Yukon, coal is also exposed. In fact there is any amount of coal in the country with which to work our minerals when we can get in the necessary facilities.

TIMBER.

Regarding the surface of the country and the difficulties of prospecting: Passing down the river in a boat one sees a succession of trees, ten, twelve, fourteen and sixteen inches in diameter, and he naturally comes to the conclusion that it is a well-timbered country. And so it is, along the margin of the river.

But let him land and go inland and he will find the ground covered with what is locally known as nigger grass. This is a coarse grass which each year is killed and falls, tangling in such a way as to make pedestrian progress all but impossible, tripping one up every few feet. It is, as might be imagined, a most difficult thing to walk through this grass, great areas of which are found all through the district. And where these areas are found the miners avoid them as they would a plague.

Net Much
Timber.



THE VILLAGE OF GLENORA.



MANN, MACKENZIE & CO.'S TEAMS ON THE ICE.

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For the rest of the country the rocks are covered with one or two feet of moss—and underneath, the everlasting ice. On this a scrubby growth of trees is found, extending up to the mountains. It is this which appears to those passing

Should be
Conserved.

down the river in boats to be a continuation of the good timber seen along the banks. Timber that is fit for anything is scarce, and we should husband it carefully. Our timber has built Circle City. Our timber has served all the purposes of the upper Yukon country. A large amount of timber is required, and what we have we should keep for our own use, particularly as the ground has to be burned to be worked.

Above the timber line you come to the bare rocks—the crests bare save where clothed with a growth of lichen on which the Caribou feed. There is no timber in the way here—no moss and no brush. The miners, in travelling, consequently keep as close to the top of the ridge as possible.

PROSPECTING.

Prospecting necessarily has to be reserved for the winter. First the moss has to be cleared away, and then the muck—or decayed rubbish and vegetable matter. The fire is applied to burn down to bed-rock. The frost in the ground gives way before the fire, ten, twelve, or perhaps sixteen inches a day. The next day the fire has to be applied again, and so the work proceeds until the bed-rock is reached. It may be twenty feet or so below the surface, in which case it is usually reached in about twenty days. Through this trees have been found in every position, as they have fallen and been preserved as sound as ever in the everlasting ice. Having burned down to bed-rock and found the paystreak, you start drifting.

Burning
Down.

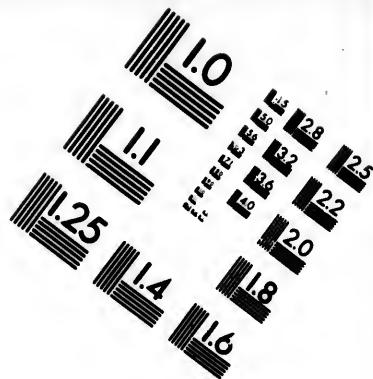
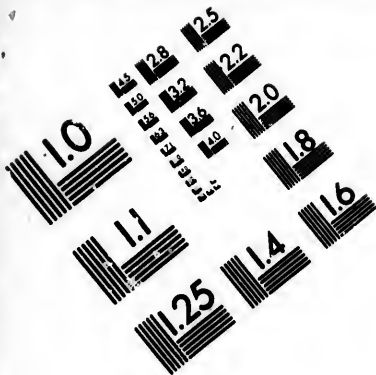
If you have a depth of twenty feet you may be able to go down two feet and no further, and must put down another drift. Very few people have the good fortune to succeed with one shaft; prospecting holes as many as twenty or thirty must be dug until you cut the whole valley across before you find pay. The next man may strike it at the first hole.

To give an instance: One man put down eleven holes and didn't find anything, and yet other men had confidence enough in the claim to pay \$2,500 for a half interest in it, knowing that the owner had put in eleven holes and found nothing, a fact which will go to prove the character of the country. After you have worked until April or May the water begins to run, and the trouble is that the water accumulates and you cannot work, as it puts out the fires which have been used to thaw out and soften the ground. Then the timber is prepared and the sluice boxes put in.

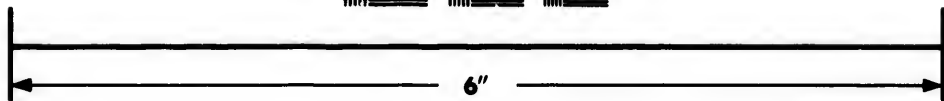
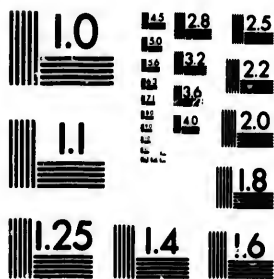
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ROUTES INTO KLONDYKE.

ABOUT fifty years ago in England there was started what was known as the "Battle of the Gauges," being a struggle between Stephenson and Brunell, rival railway engineers, as to the width of gauge to be established as a standard. The strife waxed so warm as to excite widespread, even national, interest, and the expression to which it gave rise has become historical. The rivalry as to routes to the Klondyke from the keenness with which the issues are contested, is likely to be known to posterity as "The War of the Ways," and will rank in importance with the "Battle of the Gauges," or even the more absorbing topic as to the best point for outfitting for the Yukon, also likely, under some euphonious catch-title, to have no mean place in history. The literature to which the consideration of these subjects is contributing will in all probability be voluminous enough, and the dispute sufficiently protracted, to influence the minds of several generations to come.

A War of
Ways.

In the chapter on "Railways" the matter of routes through the interior of British Columbia has been discussed from a railway point of view, not for the purposes of recommending them for immediate use, involving as they do a thousand miles or more of land travel by pack trail; and any person familiar with the country and the requirements in the way of supplies will understand what that means. To those who have had no experience it would take too long to explain the situation fully and satisfactorily. The best advice to them is, briefly, "Don't." If they do, they will know much better later on why this advice is tendered. Until railways are built, so as to compete successfully as to time and comfort, it will be found to be wisdom to take one of the established routes, preferably through Canadian territory, the greater part of which will be by water. Transportation companies will concentrate their efforts to develop these to the greatest possible extent, within the time available, and therefore the best possible facilities will be provided at the cheapest rate.

In what follows, all the present and prospective routes are discussed as a matter of public interest and to afford information; but it must be remembered that the prospective routes have yet to be surveyed and to some extent explored in order to obtain the definite and detailed knowledge necessary to decide as to their respective merits. There are many conditions and circumstances to take into account, and ultimately the routes of travel will shape themselves, following the lines of the greatest development. In the meantime, no matter how excellent the routes may be naturally, land travel can offer but few inducements.

While on the subject of interior travel it may be pointed out that there are two main routes, at an average distance of about 100 miles apart, through parallel

valleys which extend practically throughout British Columbia in the general direction of the Coast line. One is the continuation of the Canoe River Valley, following the Parsnip and Fraser Rivers and on through the Peace River country to Fort Pelly. The other is indicated in the line of travel from Kamloops *via* the Clearwater and Quesnelle, following the old Telegraph Trail, and including in its extent the Stickine-Teslin route. Or the same may be

Two Lines of
Travel.

reached by starting from Ashcroft. The routes in question may be made interchangeable at Giscombe Portage, where all the lines from the south converge, and where there will be a place of importance in the future railway economy of the Province. It may be added that a line from Edmonton through Yellow Head Pass would contribute to the importance of these natural great highways, and render unnecessary the independent northern roads projected from that point. A glance at the map will show how remarkably all the natural southern ways lead to Giscombe Portage; and further it would appear that Nature had set great store by the Yukon from the fact that in a still more comprehensive sense all roads lead to it.

A number of other possible routes could be indicated. One from Fort Steele northward to Canoe River, and another through West Kootenay *via* Revelstoke following the Columbia River, are both natural highways. Then, again, on the Mainland Coast, there are several good passes into the Interior not referred to, notably the one through the Bella Coola Valley; and several more routes are talked about as being feasible from points through or leading from Alaska territory. One of these is near Mount St. Elias, and another from the head of Alice Arm. For practical purposes, however, the routes that will be utilized next season will be the ones that have already been in use, to which will be added, perhaps, the most important of all, *viz.*, the Stickine River and Teslin Lake route.

Those who propose going into the Yukon should not be deceived by the advertised advantages of prospective routes, which though ever so good for the
Don't be purposes of building railways in the future are not and have not
Deceived. been used for regular traffic. At most they have been used as miners' trails by slow stages, and would be extremely disappointing to those who expected and were anxious to reach the Klondyke quickly.

STICKINE-TESLIN ROUTE.

The mouth of the Stickine River is seven miles from Fort Wrangell and is navigable for flat-bottomed steamers as far as Telegraph Creek, 150 miles. From Telegraph Creek to Teslin Lake overland is between 135 and 150 miles. The route is then continued by Teslin Lake and the Hootalinqua River.

Distances. The Teslin Lake is eighty miles long and the Hootalinqua 125 miles long. Mr. Ogilvie states that the natural food supply for horses or cattle, from information received by him, was not more than sufficient to feed a couple of hundred head, so that for any considerable number it would be necessary to carry sufficient food to obviate risk.

As little information has been published regarding the proposed route by way of the Stickine and Teslin route the following particulars may be of interest. The old route follows the Dease Lake Trail to the mouth of the Tahl-tan River,

then up the Tahl-tan Valley to Agnell's Mountain, then by an easy grade for three miles up the mountain to the Great Basin that extends to Teslin Lake. As the result of recent exploration it is proposed to make a cut-off which begins at a point in the Tahl-tan Valley about twenty-three miles from Telegraph Creek running in a southeasterly direction over the divide striking Telegraph Creek at its source, then following that stream

A Cut-off.

to the settlement at its mouth. The first seven and a-half miles of the trail from Telegraph Creek follows on a fairly easy grade through thick brush and smaller timber, with considerable side hill, where a good deal of grading will be necessary. A fairly good pack trail has also been opened up by the Provincial Government and an endeavour is being made to complete a sleigh road to the top of the hill, from where the present trail runs along a steep side hill for five miles, then runs down the north side to the divide for eight miles to the west branch of the Tahl-tan River which is fordable all the year except during spring freshets. From the west branch the trail runs over a low divide three and a-half miles to the main Tahl-tan. None of the foregoing sections present any serious difficulties and the trail has been put in good condition for temporary purposes to the foot of Agnell's Mountain, a distance of about forty miles. From the point where the trail strikes the main Tahl-tan it runs through a valley averaging half a mile in width for twenty miles to the foot of Agnell's. This section of the trail requires little work to put it in first-class condition. About three miles from this point the trail begins the ascent to Agnell's Mountain to the point where it reaches the summit at an altitude of 4,200

**Agnell's
Mountain.**

feet, the altitude of the base being 1,800 feet, with possibilities of a fair grade to the top. It is possible, however, that this mountain can be avoided by leaving the Tahl-tan Valley at a point about twelve miles back from the foot of the hills and running in a northerly direction, striking the present trail thirty miles beyond the top of the mountain, cutting off twelve miles and securing a good grade. The distance from the Nahlin River to the top of Agnell's Mountain is about sixty miles. The trail runs along a wide valley, no serious obstacles being encountered. There is considerable moss along the trail which has a depth of from two to three feet in places, and patches of it holding water, but in most cases there is good bottom of apparently glacial moraines. These patches may be easily corduroyed as there is plenty of timber along the trail, or in many cases may be avoided altogether. It would be necessary to bridge the Nahlin River as it is not fordable during high water. Leaving this river it is necessary to climb a high bluff, there being, however, an easy and cheap grade. From the top

**Towards
Teslin Lake.**

of the bluff there is good ground for eight miles, after which is encountered a swampy stretch of about three-quarters of a mile. This and another similar stretch of one and three-quarter miles, two miles farther on, require corduroying. Beyond the bad ground the trail strikes Spruce Mountain and gradually winds along to the top of it, which, however, it is possible may also be avoided by making a detour. The distance from the northern extremity of Spruce Mountain to Lake Teslin is about thirty miles, which can be covered without serious obstacles. It is understood that a very good sleighing road can be obtained from Agnell's Mountain to Lake Teslin by one of two available routes.

It is understood from reliable sources, confirming what has already been stated, that a cut-off from fifteen to twenty miles can be made by leaving the old trail on the watershed between the Tahl-tan and Takou and bearing to the east-

ward and passing over the divide between the Tahl-tan and Dudedonta, a branch of the Takou, into the great bunch-grass valley lying between Level, Kowkitzie, Haits and Spruce Mountains over an elevation something less than the route now followed, which passes over Kowkitzie into the same valley; and also that a route avoiding Spruce Mountain can be found by following up the Nahlin after crossing to its right bank to a point where the foothills of Level Mountain will be struck, and thence along these foothills over a good, dry road bed to Teslin Lake. This route is somewhat longer than over Spruce Mountain, but avoids the great elevation and the many swamps and morasses to be drained and corduroyed by the present route. It would be much cheaper as a consequence than the present route, which, however, could be utilized as the ground thaws out in June. Grass will be fairly good by May.

For the improvement of the Stickine for navigation some expenditure will be necessary on the part of the Dominion.

The links in the Stickine route about which information has been wanting are the Hootalinqua River and the Teslin Lake. Regarding the first, the Provincial Government dispatched Engineer Hamlin to report on its navigability.

From information recently received of an official character it has been ascertained that the Hootalinqua is a beautiful sheet of water 180 feet wide at its narrowest point and four feet deep at lowest water with no rapids. This information is of the most important character, as it sets at rest a doubt and renders the whole water course from the head of the proposed waggon road or railway to Dawson City easily navigable. There can be but little doubt about the navigability of Teslin Lake.

TAKU PASS.

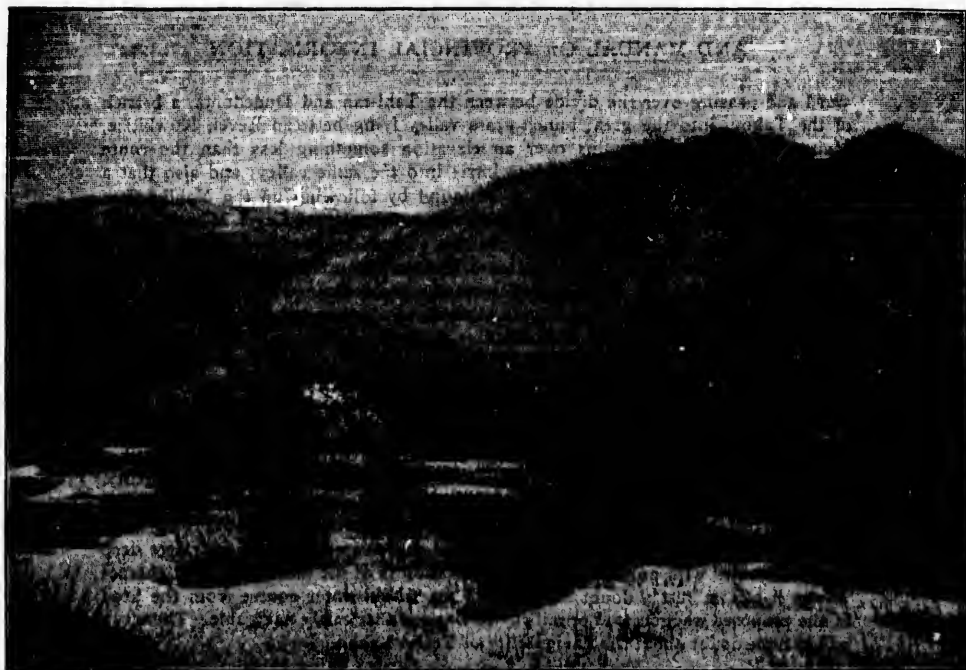
This route leads from the head of Taku Inlet twenty-eight miles from Juneau to Teslin Lake, and is estimated to be 140 miles overland, the rest of the route being the same as that *via* the Stickine River. Prof. King

Distances. estimates the altitude of Taku Pass as between 3,000 and 4,000 feet. At the last session of Parliament a charter was obtained for a railway over this route and a land grant of 5,200 acres per mile in aid of the same.

Taku Inlet is about eighteen miles long and heads in a glacier of the same name, which keeps the Inlet almost full of ice. The icebergs acted upon by winds and tides render the Inlet almost useless as a harbour. Taku River which empties into the Inlet about two miles below the glacier runs over a wide valley and is full of sand bars, rendering it doubtful for steamboat navigation. During June and July a steamer might make her way to the first forks, some sixty miles. From the Forks the route follows the left hand, or Nakinah branch, past the mouth of the Slocoh branch, joining from the west, up which there is a route over which the Indians travel to Tagish Lake. The Indians report it as an easy route with low summits to cross. About eleven miles above the mouth of the Slocoh the route leaves the Nakinah and goes up the valley of a small stream

which flows through a rocky defile. This, followed about four miles, turns sharp to the right and ascends the valley of another small stream four miles to the summit. There would be difficulty in constructing a railway up to this point, but from here to Teslin Lake, between fifty and sixty miles, it would be a favourable route. This route follows to the head of Teslin Lake, from which point it is one with the Stickine-Teslin line.

**A Railway
Route.**



THE INDIAN VILLAGE OF KITWANGAT—ON THE SKRENA RIVER.



A HOUSE AT WRANGEL—TEPER POLES IN FOREGROUND.

WHITE PASS.

The White Pass commences at Skagway Bay at the head of Lynn Canal, at which point ocean steamers may call and where a wharf has been built for the accommodation of shipping. Although this route was badly blocked during the present year and was overcome with great hardship it presents no real difficulties

A Practicable Route.

for the construction of a permanent waggon road or a railway. A first-class waggon road, it is said, can be built for from \$150,000 to \$250,000 following the bed of the Skagway River itself, and it is understood that an American company intend taking the matter in hand at once. As the Skagway route has been much discussed, a few particulars will not be amiss. The first four miles is an easy water grade to Four-Mile Flat, to Porcupine Creek, up and down the side hill, is five miles; from there it is three miles to the first bridge on the Skagway River; it is swampy for a mile and a-half to two miles to the second bridge; from there to the third bridge, one and a-half miles, there are some hills and swamp land; to the Crossing by the Skagway is three-quarters of a mile on foot, but by the trail for pack animals it is three miles along what is known as "Bad Hill." From the Crossing to the Summit is three-quarters of a mile, and from the Summit to Lake Bennett twenty-two miles. The trail leads along the southern side of Summit Lake, five miles, and Middle Lake, five miles, crossing between Middle Lake and Shallow Lakes to Government House, and from there touching Lake Lindeman to Lake Bennett. It is an easy grade from the Summit, but a good deal of swamp and meadow land intervenes, and the trail is rough. From Government House it is one mile to Shallow Lake and six miles to Too-chi Lake, but the river from Too-chi and Taku

Railway Charter.

Lake is not navigable for laden boats. A charter was obtained in the 1897 session of the Provincial Parliament by the British Columbia Yukon Railway Company for a railway over the White Pass to the northern boundary of the Province, and a land grant of 5,200 acres per mile. A charter was obtained from the Dominion Parliament in 1897 also for a line of railway from the northern boundary of the Province to Fort Selkirk. The Company in question built the wharf at Skagway and the trail *via* the White Pass over the proposed route of railway. During the past year it was the principal route of travel into the Yukon, but owing to the sudden rush became badly blocked, and soon became almost impassable.

DYEA OR CHILKOOT.

From Dyea landing to the Cañon is eleven miles, practically on the level of the Dyea River flats; from the Cañon to Sheep Camp is a hilly trail five miles long, reasonably passable. Up to the Scales, three miles, is steep and rough and the trail bad. From the Scales to the Summit, which is at an altitude of 3,700 feet, is a distance of three-quarters of a mile, very steep and impassable for pack animals. The distances, with bad trails all the way, with the exception of the last mile, upon which waggons are used from the Summit are as follows: To Crater Lake, three-quarters of a mile; Crater Lake, two miles; to Portage, two and a-half miles; to Lake Lindeman, five miles; to Lake Bennett, one mile. This is an old Indian route, and Indians at present do the greater part of the packing; but a wire tramway has been erected to haul goods to the Summit.

An Indian Route.

DALTON TRAIL OR CHILCAT ROUTE.

The Chilcat route is otherwise known as Dalton's Trail, being the route first used by Mr. Dalton in going into the Yukon. There are two ways of utilizing it, one from Haines' Mission on the east side of Chilcat Inlet, and the other from Pyramid Harbour on the west side, the latter way being generally chosen as being the more convenient. Not much has heretofore been known of this trail, but from information recently obtained it is ascertained to be a favourable route. It goes in a straight line to the Pelly River *via* Dalton's house, a distance of three hundred miles. The altitude is about 3,000 feet at the highest point, which is seventy-five miles from the coast. Dalton's trading post is twenty-five miles farther on. From there to the Pelly is two hundred miles. Mr. Dalton took in a number of bands of cattle this way, feed being supplied by bunch-grass obtained in places along the way. Mr. Ogilvie says this route passes over a nice undulating plain, well-timbered in the valleys and with grass on the slopes. It has recently been used by the miners going in and coming out of the Yukon. There is also what is known as the Indian Trail in a parallel direction, but about which little, if anything, is known to white men.

Straight
Overland.



A CLAIM ON ELDORADO CREEK.

VIA YUKON RIVER.

	Miles.
Victoria to Dawson City (Klondyke)	
via St. Michael, about.....	4,425

VIA DYEA.

	Miles.
Victoria to Dyea.....	1,000
Dyea to Tagish Lake.....	72.25
To Head of March Lake.....	4.90
Foot of March Lake.....	19.06
Head of Miles Canon.....	25.73
Foot of Miles Canon.....	.62
Head of White Horse Rapids.....	1.39
Foot of White Horse Rapids.....	.38
Tahkeena River.....	14.59
Head of Lake La Barge.....	13.15
Foot of Lake La Barge.....	31.15
Teslintoo River.....	31.66
Big Salmon River.....	33.45
Little Salmon River.....	35.21
Five Finger Rapids.....	59.29
Pelly River.....	58.46
White River.....	95.82
Stewart River.....	9.80
Sixty Mile Creek.....	21.50
Dawson City.....	45.29
Total.....	1,575.70

DALTON TRAIL.

	Miles.
Victoria to head of Chilcat Inlet... 1,000	
Head of Chilcat Inlet to Fort Selkirk.....	300
Fort Selkirk to Dawson City.....	140
Total.....	1,440

VIA SKAGWAY.

	Miles.
Victoria to Skagway.....	995
Skagway to Tagish Lake.....	70
Tagish Lake to Dawson City.....	502
Total.....	1,567

VIA STICKINE RIVER.

	Miles.
Victoria to Wrangel (Ocean Steamship).....	750
Wrangel to Telegraph Creek (river steamers).....	150
Telegraph Creek to Teslin Lake (Trail).....	150
Teslin Lake to Dawson City, (Klondyke), (boat).....	584
Total.....	1,634

VIA KITIMAT INLET.

	Miles.
Victoria to Kitimat Inlet.....	450
Kitimat Inlet to Skeena River Crossing.....	37
Skeena Crossing to West Fork Naas River.....	85
West Fork Naas River to Forks Iscoot River.....	90
Forks of Iscoot to Telegraph Creek.....	110
Telegraph Creek to Teslin Lake.....	150
Teslin Lake to Dawson City.....	584
Total.....	1,506

TAKU INLET.

	Miles.
Victoria to head of Taku Inlet.....	1,050
Taku Inlet to Teslin Lake.....	100
Teslin Lake to Dawson City.....	584
Total.....	1,734

ALICE ARM ROUTE.

	Miles.
Victoria to head of Alice Arm.....	750
Alice Arm to Forks of Naas River.....	20
Naas River to Forks of Iscoot River.....	90
Forks of Iscoot River to Dawson City.....	846
Total.....	1,706

VIA BUTE INLET.

	Miles.
Victoria to Waddington Harbour... 130	
Waddington Harbour to Telegraph Trail.....	215
Telegraph Trail to Fort Fraser.....	90
Fort Fraser to Hazelton.....	170
Hazelton to Naas.....	80
Naas River to Forks Iscoot River.....	90
Forks Iscoot River to Dawson City.....	846
Total.....	1,621

VIA ASHCROFT.

	Miles.
Ashcroft to Quesnelle.....	200
Quesnelle to Fort Fraser.....	120
Fort Fraser to Dawson.....	1,186
Total.....	1,506

KAMLOOPS (VIA QUESNELLE).

	Miles.
Kamloops to Mouth of Clearwater.....	65
Clearwater to Mahood Lake.....	30
Mahood Lake to Bridge Creek.....	55
Bridge Creek to Quesnelle.....	112
Quesnelle to Dawson City.....	1,306
Total.....	1,568

KAMLOOPS (VIA TETE JEUNE CACHE).

	Miles.
Kamloops to Tete Jeune Cache.....	170
Tete Jeune Cache to Summit Lake (Giscombe Portage).....	170
Summit Lake to Findley Rapids....	135
Findley Rapids to Liard River.....	340
Liard River to Junction Dease and Frances Rivers.....	60
Junction Dease and Frances Rivers to Frances Lake.....	120
Frances Lake to Fort Pelly.....	120
Fort Pelly to Dawson City.....	340
Total	1,455

REVELSTOKE (VIA CANOE RIVER).

	Miles.
Revelstoke to Canoe River (via Col- umbia).....	75
Canoe River to Tete Jeune Cache..	80
Tete Jeune Cache to Dawson City..	1,285
Total	1,440

GOLDEN AND DONALD.

	Miles.
Golden to Beaver (on C.P.R.).....	30
Beaver to Canoe River Mouth.....	60
Canoe River Mouth to Dawson City	1,365
Total	1,455

OSOYOOS (VIA KAMLOOPS).

	Miles.
Osoyoos to Kamloops (via Vernon)	155
Kamloops to Dawson City (via Tete Jeune Cache).....	1,455
Total.....	1,610
Or Kamloops via Quesnelle.....	1,723

EDMONTON (VIA TETE JEUNE CACHE).

	Miles.
Edmonton to Pembina River.....	60
Pembina River to McLeod River...	110
McLeod River to Jasper House	210
Jasper House to Yellow Head Pass.	3
Yellow Head Pass to Tete Jeune Cache.....	42
Tete Jeune Cache to Dawson City..	1,285
Total.....	1,710



FIRST STORE AT SKAGWAY.

EDMONTON VIA MACKENZIE RIVER.

The Mackenzie route to the Yukon is almost entirely by water. Starting from Edmonton there is a waggon road to the Athabasca River and from that point to Smith's Landing there is navigation for boats with no portaging. At Smith's Landing a sixteen-mile portage has to be made to Fort Smith, on account of the rapids. From Fort Smith to the confluence of the Peel and Mackenzie Rivers (1,200 miles) there are no difficulties to be encountered, but from this point there is a portage sixty miles long over the divide to the head waters of the Porcupine River. Once on the Porcupine there is a good water way to any part of the Yukon. Be it remembered, however, that the Porcupine joins the Yukon about 300 miles below the Klondyke gold fields and this distance would be up stream.

The Mackenzie route is the old Hudson's Bay Company's trunk line that has been in use for over a century, and the Company has small freight steamers which ply back and forwards between the portage points but do not carry passengers. The distances are given below:—

	Miles.
Edmonton to Athabasca Landing.....	90
Athabasca Landing to Grand Rapids.....	167
Grand Rapids to Fort McMurray.....	87
Fort McMurray to Smith's Landing.....	287
Smith's Landing to Fort Smith.....	16
Fort Smith to Fort Resolution.....	194
Fort Resolution to Fort Providence.....	168
Fort Providence to Fort Simpson.....	161
Fort Simpson to Fort Wrigley.....	136
Fort Wrigley to Fort Norman.....	184
Fort Norman to Fort Good Hope.....	174
Fort Good Hope to Fort Macpherson.....	250
Fort Macpherson to Lapierre's House.....	60
Lapierre's House to the Porcupine.....	30
Porcupine to the Yukon.....	400
Total.....	2,394

EDMONTON VIA LIARD.

On the Liard Route there are no high or dangerous mountains to cross. The country for the most part is open with good grass and a portion of the way is by water which is navigable. Starting from Calgary the 200 miles between that point and Edmonton is travelled by rail, thence to Peace River Crossing (260 miles) by pack trail and waggon road. Crossing the Peace River by boat a good trail leads to Pine River (100 miles), and for the next 140 miles to Nelson River the country is said to be practicable for horses. Thence to Liard River there is good navigation and supplies can be rafted down. Ascending the Liard, and passing through a country with good grass and timber the mouth of the Dease River is reached (160 miles). From Dease River to the Pelly is a distance of 170 miles, including a long portage over the watershed between the Pelly and the Liard. This distance was traversed by Professor Dawson in 1887 and is described as a rolling country with good grass.

The Pelly River is one of the main branches of the Yukon and when this point is reached the remainder of the journey is all down stream to the gold fields. The distance to the Klondyke is 420 miles and with the exception of two short rapids affords good navigation. Distances:—

	Miles.
Edmonton to Peace River Crossing	260
Peace River to Nelson Forks	240
Nelson to Junction of Liard	120
Up Liard to Dease River	160
Dease River to Pelly River	170
Pelly River to Junction of Lewes	220
Lewes River to Klondyke	200
	1,370

The Liard way is a practicable railway route, and could be utilized for driving in cattle in easy stages, but under present circumstances for reaching the gold fields quickly could not be recommended. The Upper Liard is described by Dr. Dawson as a shallow, treacherous river and unsuitable for navigation, even in small boats.

YUKON AT THE PRESENT TIME.

ALL the foregoing was written at a time when the Yukon fever was at its full height, near the end of 1897, and the events subsequent to that time have materially affected the situation as it then appeared. Two things have been mainly instrumental in bringing about the state of affairs which now exist. One was the action of the Senate in refusing to ratify the agreement entered into by the Dominion Government with Messrs. Mackenzie & Mann for the building of the proposed line of railway from the Stickine River at Glenora to Teslin Lake, as a consequence of which the construction was not proceeded with. The other was that the sober second thought of the thousands who threatened an invasion of the region in search of fortune prevented a rush of anything like the dimensions anticipated. For several months of this year the Coast cities were very busy in outfitting the northern prospectors, who arrived from all parts of the world, but, although large numbers still go, there is a decided lull, which, as already stated, may be broken into at any time by news of fresh discoveries or of an unusually large output of gold having been shipped. It is highly probable that the trade up into the Yukon and the northern district of British Columbia, though not assuming that magnitude all at once that was expected, will become permanent and will expand from year to year into proportions of great importance to this Province and to the Dominion of Canada—a condition of affairs much more to be desired than a rush and a boomed excitement, which invariably result in unhealthy speculation and ruinous collapse.

Owing to the attitude of the Dominion Government as the result of the Senate's action referred to, and the strong sentiment created in favour of a route wholly through British Columbia territory, by which the complications and delay of

the United States customs regulations would be avoided, the Provincial Legislature passed an Act authorizing aid to a railway from a point on the northern coast, probably *via* Kitimat Arm and Glenora to Teslin Lake, to be undertaken by Messrs. Mackenzie & Mann. It was anticipated that the Dominion Government would assist in some way in this, but no action having been taken at the late session of the Dominion Parliament, it has been decided for the present to go on with the waggon road from Glenora to Teslin Lake with a view to permanently opening up the route and proceeding with the railway at as early a date as satisfactory arrangements can be made. In the meantime the British Yukon Railway Company, having joined with American capitalists, is going on with the railway over White Pass, and it is stated that that line will be completed during the present year.

It is not known at the present date of writing what the 1897-98 output of the Klondyke has been, and to some extent that will determine the activity of the summer and fall travel, but it may be fairly estimated at between \$10,000,000 and \$12,000,000. On the whole, the Yukon trade of this year has been a large and satisfactory one, although some of the merchants' stocks will have to be carried over. The policing and general administration of the Yukon have been greatly perfected by the Dominion Government, and with the time at its disposal for more careful consideration of the requirements of that country, it is probable a general policy of development adapted to more stable conditions of things will be evolved. It may be safely stated that the flurry occasioned by the first excitement has subsided, and business is being reduced to a basis of substantiality.

ATLIN LAKE DISCOVERIES.

JUST recently important finds have been made this side of the Yukon boundary line in British Columbia, which have attracted a good deal of attention.

News of the finding of rich placer diggings on Pine Creek, a little stream emptying into Atlin Lake, in the northern portion of British Columbia, reached Skagway on August 5th, and on the 13th the first reports reached Victoria by steamer. The discoverer was a man named Miller, who struck gold there a couple of years ago, but kept the secret until recently, when he, his brother and some friends made a location, and in two days are reported to have taken out \$800. The news spread rapidly, and in a few days hundreds of prospectors had gathered on the creek and staked claims. E. E. Tennant, who was among the first to go in with the rush, reported that on Discovery claim the owners, with two sluice boxes of twenty feet each, took out from \$1,400 to \$2,000 in three days as the result of three men's work. Other reports have been received, stating that the dirt panned from 10 cents to \$7.50, and that this had been found on the six miles of Pine Creek prospected. The diggings are easy of access from Bennett, and the country is of a rolling, open

nature, with good timber available. The pay dirt begins at a foot from the surface, and bed rock is struck at five feet depth. The gold taken out is remarkably pure, and is reported to be worth nearly \$18 an ounce. The new diggings can be reached in less than four days from the Coast, going in by way of Skagway. Pine Creek is in the extreme north of British Columbia and just south of Atlin Lake, into which it flows. From Lake Bennett the distance is 120 miles to the mouth of Atlin River, where it empties into Taku Arm; then there is a mile and a half portage over a level country, where a tram is already being built. From here the distance to Discovery is fifteen miles, the first seven by water and the remaining eight by trail.

PERSONNEL OF THE EXECUTIVE.

Since the foregoing pages have been put into print, the administration led by the Hon. J. H. Turner, Premier, as the result of the late general elections, has resigned, and has been succeeded by an administration composed of the following:

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.

ACKNOWLEDGMENT.

An acknowledgment is due for the use of a number of cuts used in this publication to the Editor of the Mining Record, Victoria (a valuable and reliable representative of mining interests), whose kindness in this respect is worthy of special recognition.



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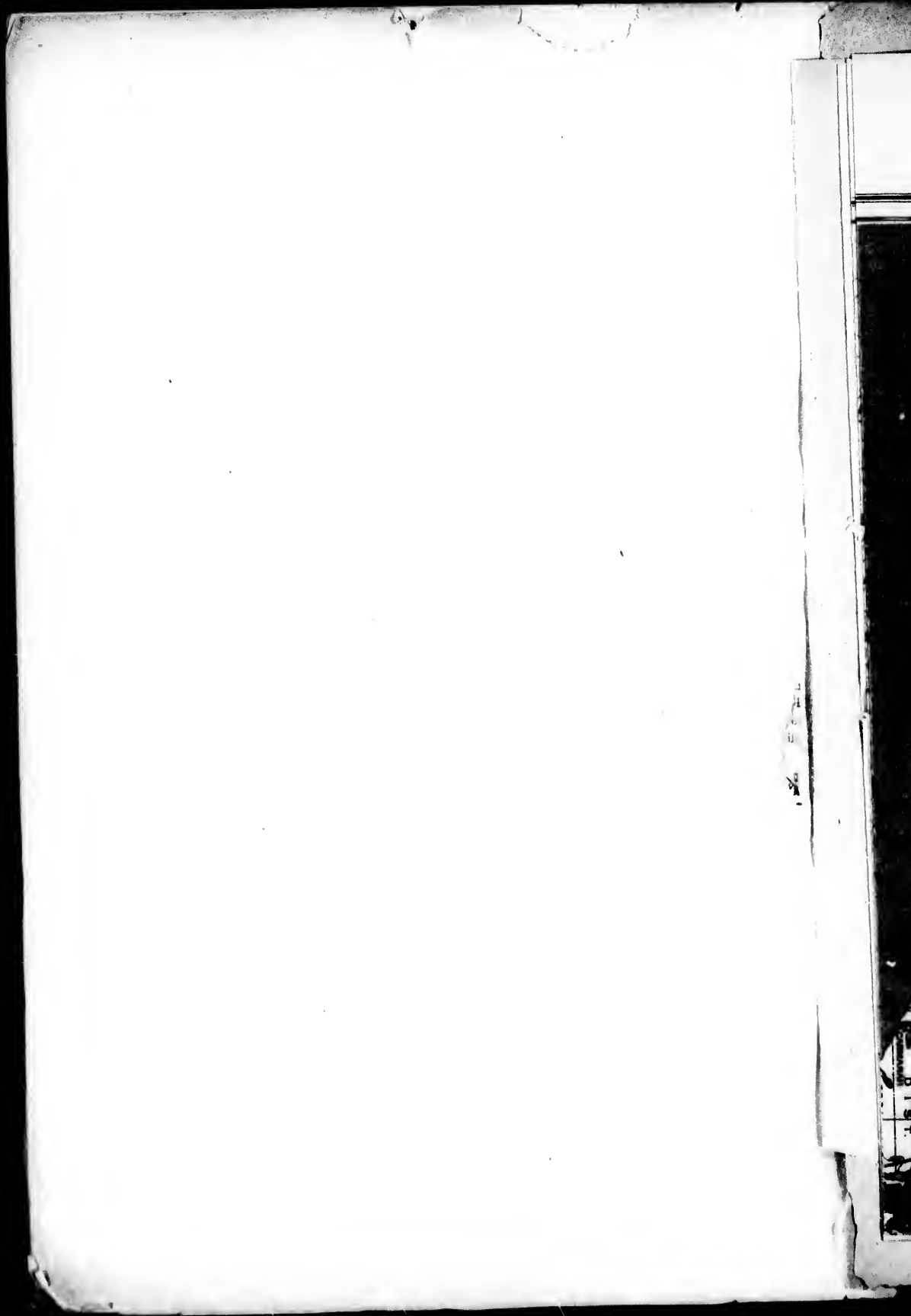
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176°W 172° 168° 164° 160° 156° 152° 148° 144° 140° 136° 132° 128°



TABLE OF DISTANCES
(APPROXIMATE)
FROM VICTORIA TO

Klondyke Gold Fields

(YUKON.)



KADAKA

Klondyke Gold Fields

(YUKON.)

ROUTES FROM VICTORIA, B. C.
and VANCOUVER, B. C. to
YUKON, CASSIAR, Omineca and CARIBOO MINES.

COLONIST LITHO. VICTORIA.

N O R T H P A C I F I C O

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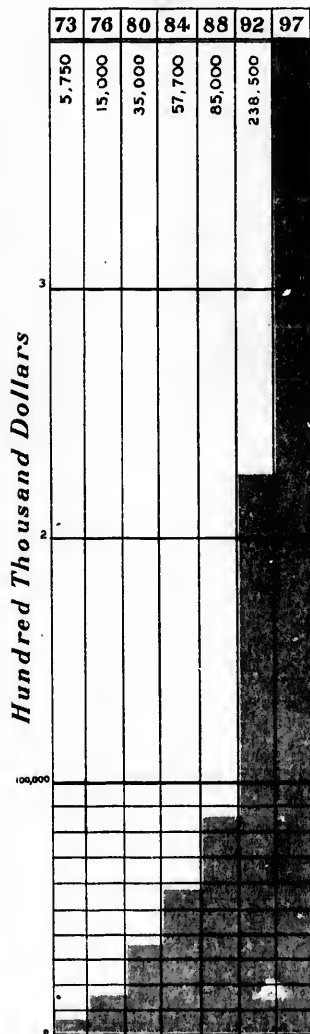
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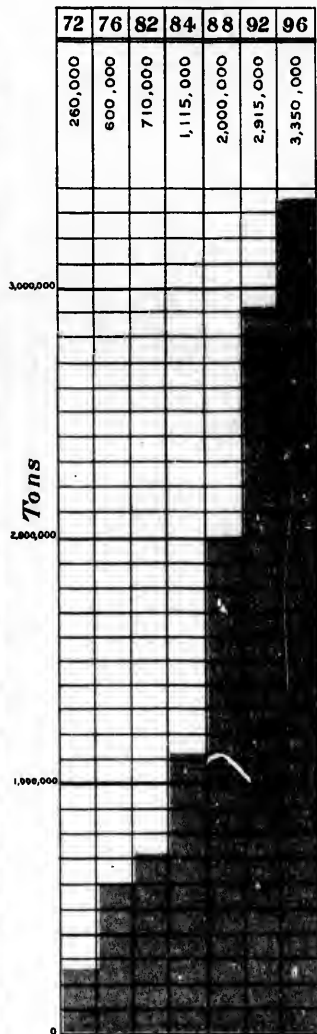
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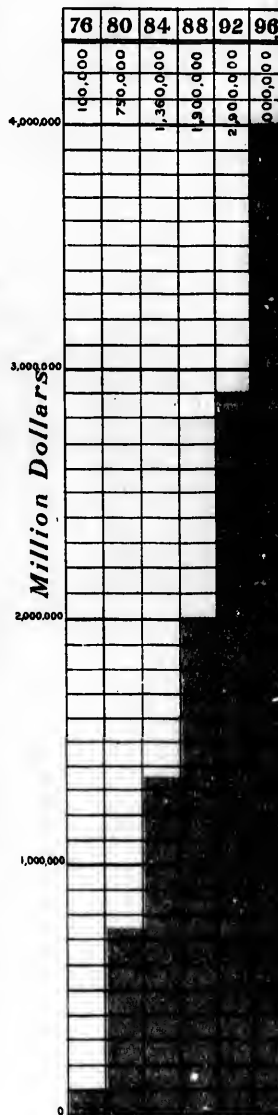
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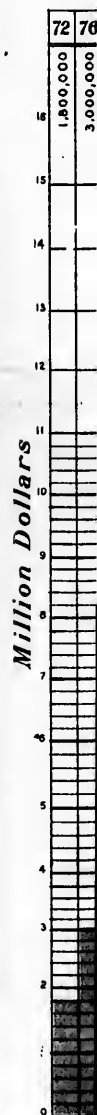
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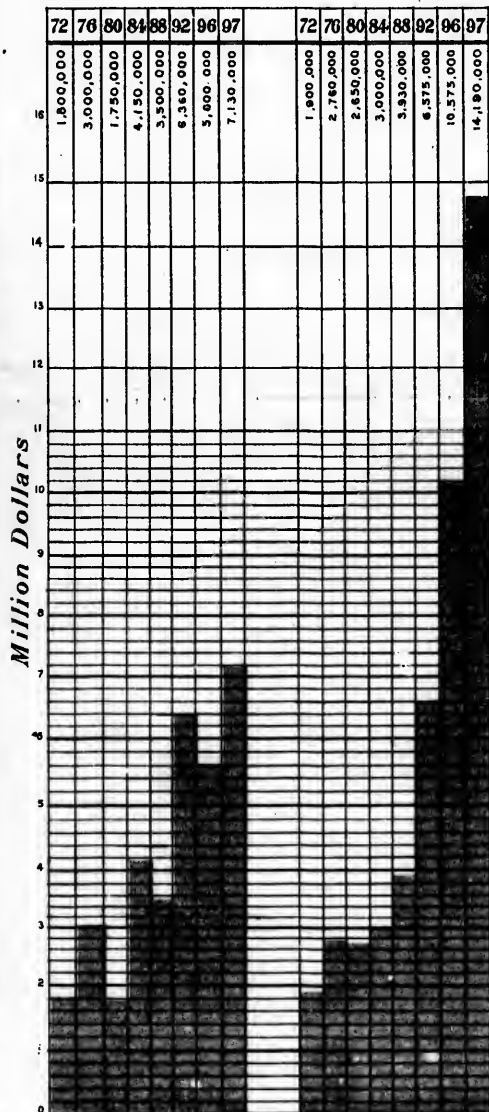
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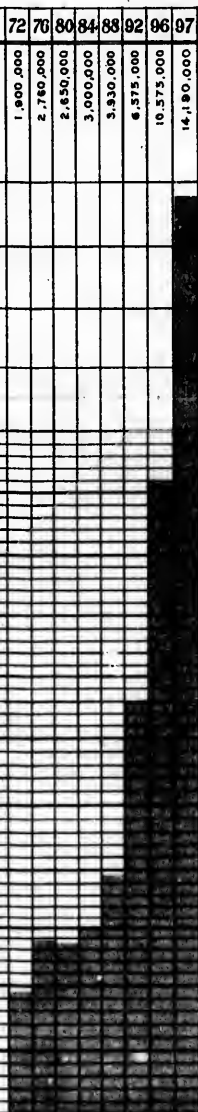
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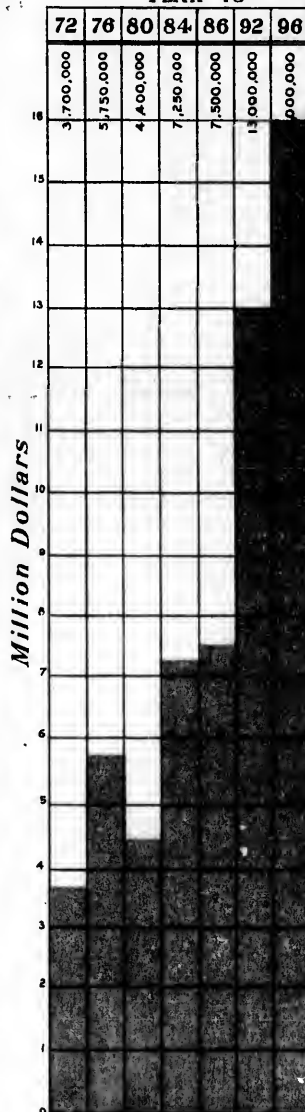
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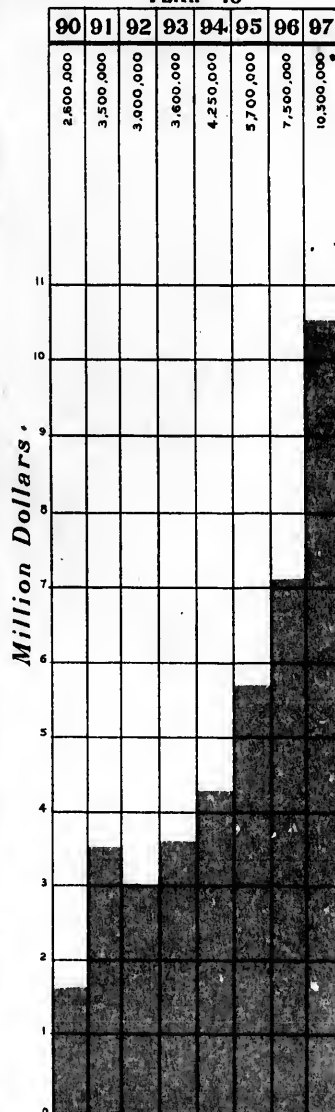
EXPORTS
VALUE YEAR 18 VALUE



TOTAL TRADE
VALUE YEAR 18



MINERAL PRODUCTION
VALUE YEAR 18



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