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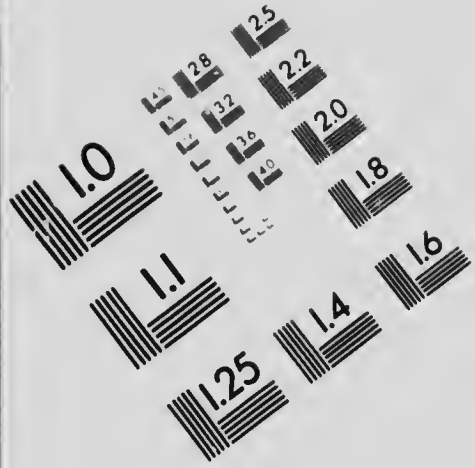

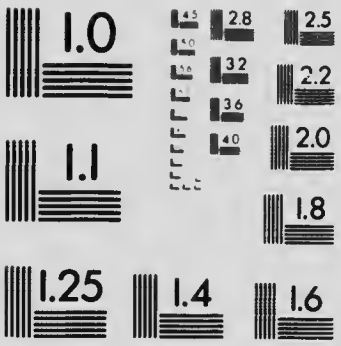

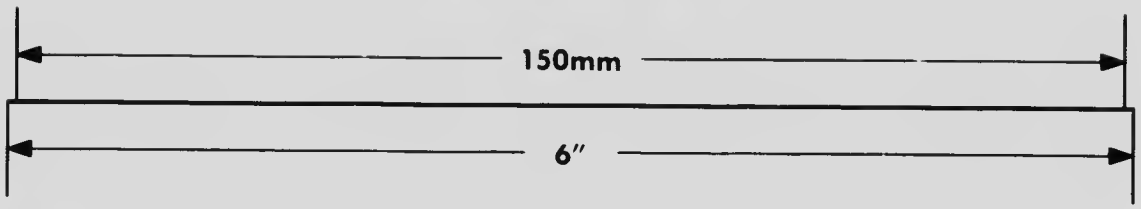

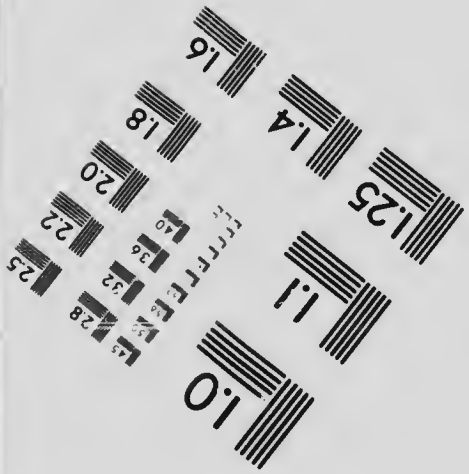

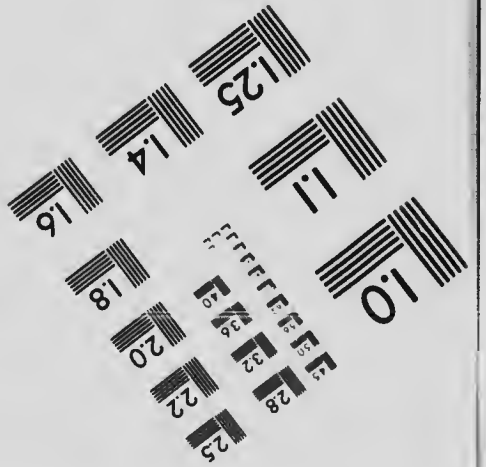

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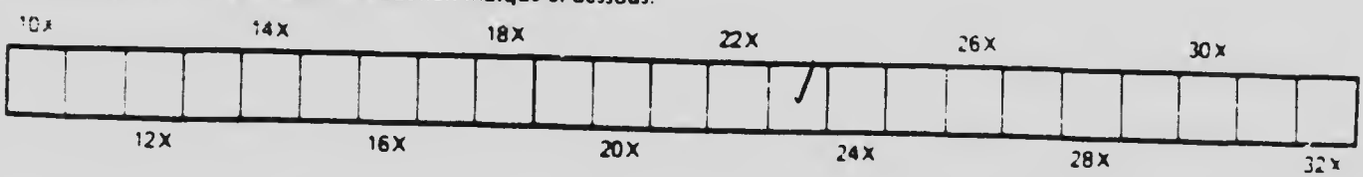

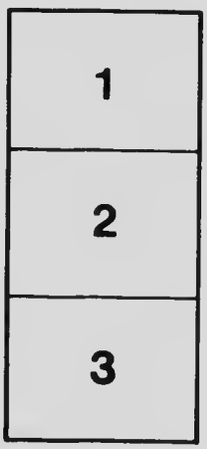

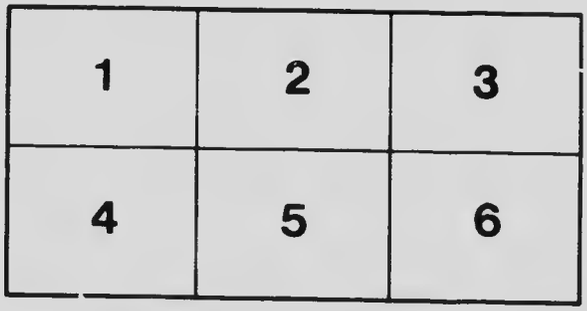

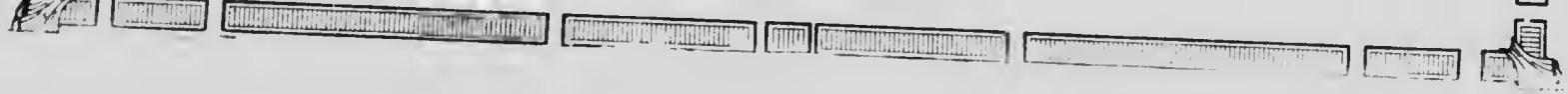

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TULAMEEN VALLEYS

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NICOLA
SIMILKAMEEN *and* TULAMEEN VALLEYS

Compiled by
FRANK BAILEY, Mining Engineer

Shipping Cattle from the Nicola Valley to Vancouver.

Shipping Cattle from the Nicola Valley to Vancouver.

INTRODUCTION

IN the compilation of a reliable pamphlet on the natural resources of a new rich mining section a great many difficulties present themselves. These are enhanced many fold when the means of transportation are uncompleted to the Pacific Coast, and the extensive mining development is of the most primitive nature.

The different reports, maps and illustrations in this pamphlet of the many mining camps and districts on their arable and mineral resources can be absolutely relied on, the mining map of Camp Hedley is the only up-to-date map published and will make this pamphlet not only an asset, but a reliable book of reference.

To successfully cope with these, a thorough acquaintance with the different sections treated of is absolutely essential.

This experience the author of this pamphlet has had, having spent much time and money in repeatedly visiting every camp referred to herein.

The outside world knows but little of this vast region lying practically at the doors of Vancouver and its rich natural resources, including gold, platinum, silver, and silver-lead deposits, gold-copper deposits and native copper, coal, gypsum, and other minerals.

It is the mission of this booklet, in connection with the illustrations and maps, to make plain to the mining and investing public just where the Similkameen, Tulameen and Nicola Valleys are, how they are reached as well as what they contain.

In the scope of this publication it is manifestly impossible to describe all of the mineral claims in detail. Great assistance has been rendered in the help of this work by M.. Charles Camsell and some of his associates and members of the Canadian Geological Survey of Canada. Mr. John Gladden, C.E., in his assistance on the Hedley Map and Mr. A. Megraw, editor "Hedley Gazette," and Mr. J. M. Wright of the "Similkameen Star," besides mining engineers.

The business people and others interested in the development of the country required an illustrated descriptive pamphlet, and asked me to get one up.

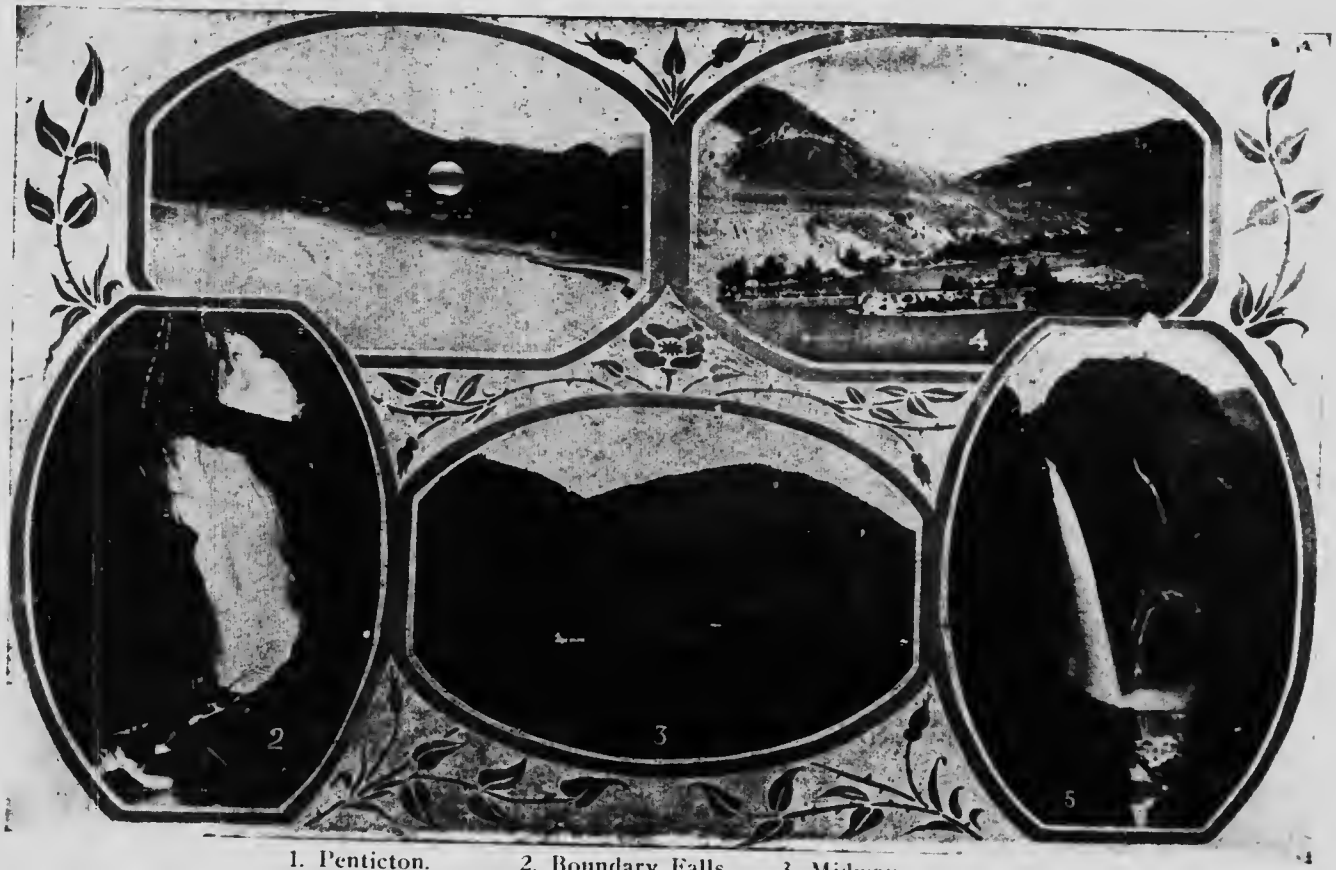
Many years before this publication is out of date the towns of the Similkameen should be prosperous cities, being backed by the rich mining industry which requires development and will in future become extensive producers of new wealth.

FRANK BAILEY, M.C.M.I.

Mining Engineer.

Box 102, Princeton.

Gateways to the Nicola and Similkameen Valleys.



1. Penticton. 2. Boundary Falls. 3. Midway.
4. Spences Bridge. 5. Quilchena Falls.

The Nicola Valley

THE Nicola Valley embraces the water-shed of the Nicola and Coldwater Rivers and Nicola Lake lying between the water-shed of the Thompson River to the west and north and the Okanagan Lake to the east and the watersheds of the Tulameen River to the south. The general direction of the Valley is in an easterly and westerly course for some seventy miles in length.

The majority of the land in the Nicola Valley is good grazing land, extending for miles over the Aspen Grove, rolling park-like prairie land. The bottom lands grow excellent hay and oats and the bench lands grow good crops when irrigated, or dry farmed. High above the benches are rolling plateaus covered with bunch grass and peavine. This is in the Kamloops plateau, as the dry belt of the interior of British Columbia is known.

In the early days when cattle ranching was all the go, most of the herds of cattle were shipped from the Okanagan, Similkameen and Nicola Valleys over the Hope Mountains and down the Fraser River to the Pacific Coast, before the advent of the Canadian Pacific railway into British Columbia.

Market gardens flourish in the Valley, and some of the hardy apples, Yellow Transparent, and all kinds of crabapples do very well.

The climate is mild and dry. Situated at an elevation from 1000 to 3000 feet, one can get any kind of a climate they wish. At Spence's Bridge in the summer time it gets very hot, and not much winter to speak of. In the city of Merritt they have a splendid climate, with summer and winter tem-

View of Merritt from the Water Tank.

1. Penticton. 2. Boundary Falls. 3. Midway.
4. Spences Bridge. 5. Quilchena Falls.

perature neither excessively hot or cold, the duration of winter seldom exceeding three months. The writer has seen it 50 degrees below zero, but not often.

The climate is unexcelled for the curing of consumptives and other lung troubles.

All kinds of soil can be obtained on the benches and bottom lands, irrigation is the sufficient application of water to ensure crop production, although not necessary in all cases, it is resorted to by the farmers to ensure their crops, hence there is never any failure of crops such as one hears of in non-irrigated sections of Canada.

The mountain streams, and Nicola Lake, could supply the demand of unlimited water supply which would bring under cultivation all the arable lands in the Nicola Valley, but the expense would be too great in the construction of this big ditch for such a small community of bona fide farmers.

The two most important towns in the Nicola Valley are Merritt and Nicola. Nicola Lake is situated about seven miles from Merritt. It is a beautiful sheet of water about twelve miles long by about a mile in width. Splendid skating can be had in the winter, and boating, fishing and bathing can be obtained in the summer time. Nicola is the present government headquarters for this district, but it is talked of being removed to Merritt, as it is the commercial town for the district.

Tennis Party at Nicola Lake.

The writer's first visit to Nicola was in 1901, before Merritt was thought of. The former place has not grown very much since then. In 1906 when the C.P.R. started to build up the Nicola Valley to Nicola Lake, the new town of Forksdale was subdivided into lots, but when the Nicola Valley coal basin was opened up by the Nicola Valley Coal & Coke Company and by the Diamond Vale Company, the town of Merritt sprang into existence. About 1908 the writer opened up the first real estate and engineering office. Since that time a number of coal mines have been opened, and the town has grown from a few hundred to between 2,000 and 3,000 souls.

The city of Merritt is now one of the largest cities between the Pacific coast and the Nicola valley, a distance of about 120 miles. It is the most prosperous, with all modern conveniences, two railways, Government telephone, city hall, sidewalks, graded streets, electric light and water power, and park—all owned by the city.

The Inland Coal and Coke Company, Ltd.

Incorporated Under the Laws of British Columbia

The Inland Coal and Coke Company's Tipple Below Their Mine

The Inland Coal and Coke Company is one of the most important producing mines in this district and is now turning out over 750 tons a day of first-class bituminous coal.

The tipple, situate on their own spur, in direct connection with the C. P. R., has a capacity of 1100 tons a day, and the present equipment is capable of handling a large tonnage.

The Company has spent a large sum of money during the last few years in development work and is at the present moment adding to their equipment with a view to increasing their output and also handling it in the most economic manner.

The produce of this mine has most excellent coking qualities and it is the intention of the Directors in the near future to erect coking ovens on their own property.

The principal officers of the Company are Mr. G. L. Wilson, President; Mr. W. L. Nicol, Vice-President; Mr. Joseph Graham, General Manager at the mine, and Mr. Andrew Bryden, Mine Superintendent. The Head Offices are at 530 Seymour Street, Vancouver. Mine Office, Merritt, B. C.

Mr. Gouichon's Beautiful Ranch situated near the head of Nicola Lake, on the Auto Road to Kamloops, B. C.

Nicola Valley Coal and Coke Company, Ltd.

Incorporated under the laws of British Columbia.

THE above Company, operating at Middlesboro, about half a mile from Merritt, was incorporated on November 27th, 1906, with a capital of $1,500,000.00, of which $1,107,700.00 has been issued and fully paid.

The property of the company consists of 2661 acres of coal bearing lands in the Coldwater and Nicola Valleys, containing six seams upon which considerable work has been done, besides other development.

The coal seams and associated strata are probably of the Tertiary age, resting upon igneous rocks of the Triassic age. Fossil specimens are seldom found, the surface being covered with volcanic ash and glacial drift and vegetation. The deposit of coal covers both the lower and upper portions of the coal basin.

The length of the Nicola coal basin is about ten miles and its average width about three miles. The best natural section of the coal strata can

"Middlesboro," N. V. C. & C. Co. Mines. About One Mile South of Merritt, B. C.

be seen in what is known as "Coal Gully," a rugged ravine which cuts the formation near the boundary line between the Nicola Valley Coal & Coke Co.'s property and The Pacific Coast Colliery Co. Four seams are

Nicola Lake—The headwaters of Nicola River (famous for its trout fishing) adjoining the Old Town of Nicola

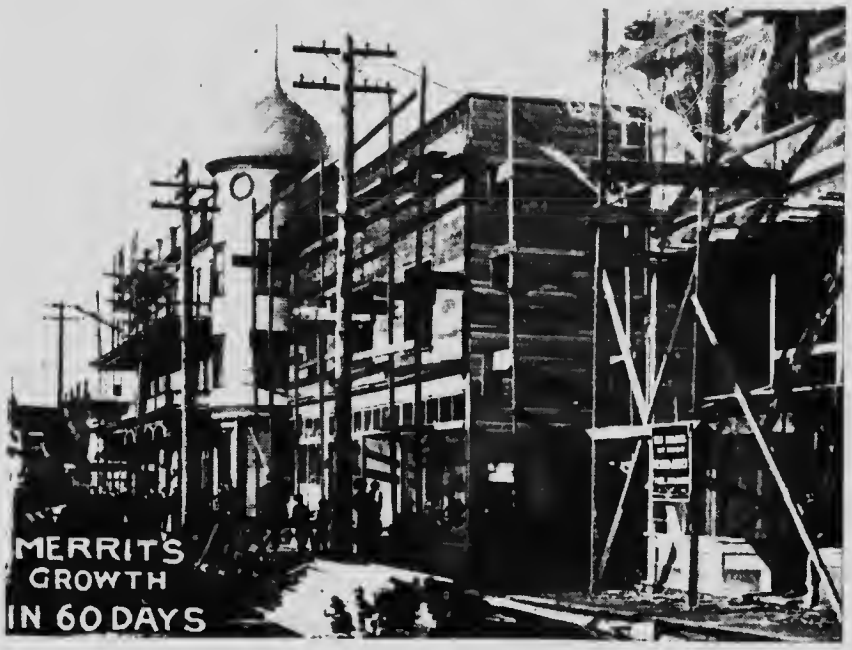
The City Hall, Merritt, B. C.

Merritt Hotel, the First Hotel in Merritt.

here exposed, with interstratified beds of grey sandstone, clays and shale. Between this gully and the igneous rocks that form the edge of the basin is about 1000 feet. Other workings have been made by the Pacific Coast Colliery on the flats below, but no attempt has been made to connect them with the outcroppings in Coal Gully.

Nicola Valley Coal & Coke Co.'s Tripple No. 1 Mine. Capacity about 1,000 Tons Per Day.

The aggregated seams opened up on this property contain between 40 and 50 feet of high class bituminous and semi-bituminous coal. Four of these seams outcrop in Coal Gully and two in what is known as Cold-water Hill, about half a mile to the west, where the Inland Coal & Coke



The Building Boom in Merritt, 1912-1913.

The First Postoffice in Nicola Valley.

Company have their mines. The dip of the seams in Coal Gully is south, while the dip of the seams in the Coldwater Hill is almost due east.

Steady development has been pursued from the commencement of operations, so that the output of the mines has increased regularly each year, shipments for 1911 amounting to 210,000 tons, which was greatly increased in 1912 and 1913, and undoubtedly this company will soon be paying dividends on their present rate of production. As the coal is not only good for steam and domestic use, but it is also specially adapted for coking, a large market will be available upon completion of the Copper Mountain smelter with the Kettle Valley Railway giving direct access to the Similkameen and Boundary smelters. The company intends to enter this business when the Great Northern Railway can give direct transportation facilities, and will install a battery of most modern by-product retort ovens, which will supply a coke of quality not hitherto produced in Western America. This will mean the establishment of a considerable industry, as large quantities of power gas will be produced as well as tar, pitch and creosote oil.

Looking Down Quilchana Avenue.

The company have lately acquired an up-to-date "Draeger" plant. A Draeger tralning station is maintained at the mine, where instruction is given both to officials and miners in the use of the apparatus. An interesting feature in connection with these collieries is the "Draeger class" for 1913, organized for the purpose of rendering first aid and rescue work in the mine, and may the good work go on.

The company has already provided for all the business now offering to them, having installed a tipple equipment modern in every respect, having a capacity of 1,000 tons of cleaned coal every ten hours. This tipple, which is shown in the accompanying illustration, is fitted with a Stewart jig washer, and a Cristy Box Car Loader receives the coal at the chutes.

This company is the pioneer coal mining concern of Yale District, British Columbia. Its position today is the result of well directed foresight on the part of those in charge. The property is in charge of Mr. Charles Graham, a man of considerable coal experience and ability.

The head office and sales department of the company is in Vancouver, B. C., and most of the directors are business men of that city.

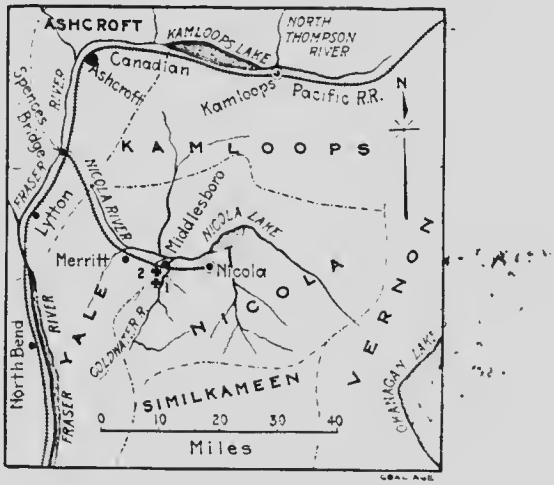
Mr. John Hendry is President, Mr. Alexander Maclaren vice-president, Mr. W. H. Armstrong is managing director, and Mr. J. J. Plommer is the secretary-treasurer.

A Nicola Coal Mine

By Charles Graham
Supt. of the Nicola Valley Coal and Coke Co.
(From "Coal Age.")

THE Nicola Valley Coal & Coke Company's mines are situated at Middlesboro, near Merritt, B. C., Canada, in the Nicola Valley. The Nicola Valley lies south and east of the main line of the Canadian Pacific Railway, which goes west, makes a sharp bent to the south, at Ashcroft. As shown on the accompanying map, Fig. 1, a branch line of the railroad extends from Spences Bridge, up the Nicola Valley, 47 miles to Nicola Lake.

The coal basin lies in the Nicola and Coldwater valleys. The coal



Map of Nicola District.

seams and associated strata are of the Tertiary age and rest upon volcanics of the Triassic age. Fossil specimens are rare. The surface of the country is heavily covered with a drift, consisting chiefly of clay, with areas of sand and gravel in many places. The deposit of coal covers not only the level portion of the basin, but reaches well up to the higher elevations on the surrounding hills. The denudation in the valleys and on the slopes has been heavy.

The junction of the Nicola and Coldwater valleys is a broad, fertile plain. The length of the Nicola coal basin is about 10 miles and its average width about 3 miles. As previously stated, the sedimentary rocks composing the coal basin rest directly upon the volcanics and present no indication of overflow. The best natural section of the coal-bearing

strata is seen in what is known as Coal Gully—a rugged ravine that cuts the face of the hills to the west of Coldwater Valley, and about 1 mile south of the forks of the Nicola and Coldwater rivers. Four coal seams are here exposed, with interstratified beds of gray sandstone, clays and shale. Between this gully and the contact with the volcanoes mentioned

Fig. 3.—Tipple and Camp in Coldwater Valley.

a distance of about 1200 ft., other outcroppings have been discovered; but no attempt has been made to correlate them with the outcroppings in the gully.

The Nicola Valley Coal & Coke Company, Ltd., owns 2660 acres of coal land, extending south, from Nicola Valley, up Coldwater Valley. With

Fig. 4.—Near View of No. 1 Tipple.

the present knowledge of the country, there are six seams of coal on the property, four of which outcrop in Coal Gully and two in what is known as Coldwater Hill, about half a mile east of Coal Gully. The dip of the seams in Coal Gully is south, while the dip of the seams in the Coldwater Hill is almost east.

On the Coal Gully side the seam being worked at present is the top seam. This seam is about 1 ft. in thickness, with a soft shale roof and a sandstone floor, and has an average dip of about 25 deg. to the south.

Nicola Valley Hospital, Merritt, B. C.

There are several dirt bands in this seam. The other seams in this hill are 12, 5 , and 5 ft. thick respectively. Development work is being confined to one seam only, in order to thoroughly prove the ground before any extensive operations are undertaken in any of the other seams.

In Coldwater Hill, the seam that is being worked is about 5½ ft. thick and has a hard-shale roof and a shale floor. This seam is pitching about 22 deg., into the hill to the west. The other seam in this hill is but 30 in. thick and is not being worked. Several diamond-drill holes have been put down which prove the continuity of the seams.

In Figs. 3 and 4, are shown two views of the main No. 1 tipple, located in Coldwater Valley. The output of the company, at the present time, is about 500 tons a day, about 300 tons being taken from mine No. 1, on Coldwater Hill, and 200 tons from mine No. 2, in Coal Gully Hill. An extensive scheme of development is being carried out, which, in time, will make this property a heavy producer. The seams are all coking coals and yield a firm, coherent coke. No coking is being done, at the present time, owing to the distance of the plant from the markets. With the building of the Kettle Valley Railway, which is now under construction, access will be given to the smelters of the Boundary country, which will make the manufacture of coke worthy of consideration.

CHARLES GRAHAM.
Supt. N. V. C. & C. Co., Ltd.

Mining is done on the room-and-pillar system. Haulage inside the mines is performed by mules, on the level roads, and by compressed air hoists, on the dips. At No. 2 mine, the coal, after being hoisted up the slope, is hauled to the No. 1 tipple, by a steam dinky. The tracks from both mines join at the tipple approach.

The plant at No. 1 mine, which consists of four 150-h. p. return-tubular boilers, 6x18 ft.; one Canadian Rand cross compound air compressor having a capacity of 2000 cu. ft. of free air per minute and one 27½ kw. generator, which is used for lighting purposes. At No. 2 mine there is one 150-h.p. boiler of the same size and type as those at No. 1 mine, and one Canadian Rand, straight-line air compressor, simple steam and compound air, having a capacity of 600 cu. ft. of free air per minute.

Water is supplied by a Canada Foundry Company pump stationed alongside the river, at No. 2 mine. This pump has a capacity of 750 gal. per min., and pumps water into storage tanks, which have a capacity of 60,000 gal. and from which water is distributed to the entire plant and houses.

No. 1 tipple (Fig. 5) was erected by Roberts & Schaefer Co., Chicago, during the summer of 1911. The tipple has a capacity of 100 tons per hour and is of wood construction. It is equipped with a Philips cr. ss-over dump; a pair of shaking screens; a picking table; a Stewart coal washer, with settling tank and elevators for elevating fine coals; a revolving screen on top of the coal bunkers, for separating fine coals; and a conveyor line extending along the top of the bunkers, for conveying coal to the bunkers.

Fig 6.—Middlesboro Draeger Class 1912.

Four grades of coal can be made, and the conveyor is so arranged that the coal from the picking table and revolving screen can be put either directly into the bunkers or carried by the conveyor, to the loading chutes. Any grade of coal can be loaded separately, or any desired mixture of the various grades can be loaded. A portable Christy box-car loader is used for loading. The capacity of the bunkers is 350 tons.

A Draeger-training station is maintained at the mine, where instruction is given both to officials and miners, in the use of the apparatus. An interesting feature in connection with these collieries is the Draeger class, Fig. 6, organized for the purpose of rendering first-aid or rescue work, in the mine.

Since its organization the team has done much good work in becoming acquainted with the use of the apparatus required and have maintained a regular drill, whereby their efficiency has been increased. Our constant aim is to bring the equipment of the collieries up to date in every respect.

On The Way to The Similkameen

THE coal mining industry is the direct cause of Merritt's growth, combined with its transportation facilities, and development of Nicola Valley arable lands.

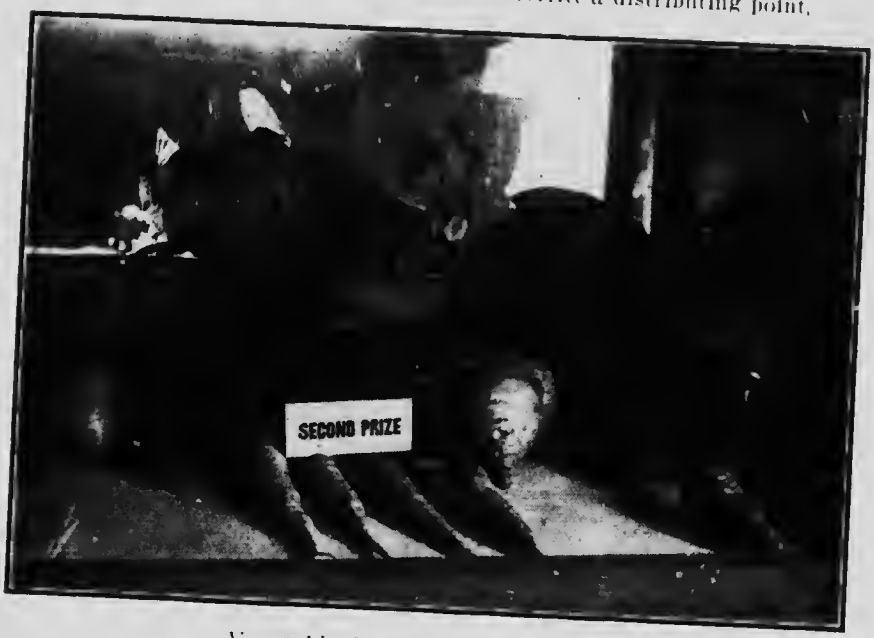
There are five coal mining companies organized in the Nicola Valley within two or three miles of Merritt, as follows:

The Nicola Valley Coal & Coke Company, Ltd., The Diamond Vale Collieries, Ltd., The Inland Coal & Coke Company, Ltd., The Pacific Coast Collieries, Ltd., and the South Nicola Coal Company, Ltd.

The combined pay-roll amounts to about $50,000 per month. The coal basin has as yet hardly been scratched and the life of this coal basin is for a great many generations to come.

At the present time Merritt has two railways, the Canadian Pacific Railway, and the Kettle Valley Railway. The C.P.R. run daily trains from Nicola to Vancouver, and the K. V. Ry. run trains up the Coldwater river towards Princeton. The Great Northern Railway are completing their construction from the Tulameen down the Coquihallah river to Hope, thence down the Fraser Valley to Vancouver. Spences Bridge is the present C.P.R. junction where the Nicola, Kamloops & Similkameen Railway meets the main line of the C.P.R., which is double tracked nearly all the way to the coast from Spences Bridge. The Kettle Valley line branches near the head of the Coldwater river and runs down the Great Northern tracks to Hope, from whence they have a steel bridge over the Fraser river to the main line of the C. P. R. into Vancouver.

There is considerable talk of either the Grand Trunk Pacific Ry. or the Canadian Northern Ry. building into the Nicola Valley from Kamloops. The G.T.P. Ry. have already made a survey, but the C.N.R. is expected to be the first to build into Merritt, which will make Merritt a distributing point.



Vegetable Display, Nicola Valley.
Annual Fair, Merritt, B. C.

Besides coal mining, there is some good copper and gypsum deposits in and around the Nicola Valley. The best copper camps are situated in Aspen Grove and Ten Mile Creek. The cuperiferous ores of Ten Mile Creek are mostly chalcocite. The I.X.L. group and the Aberdeen Claim have good indications.

While Aspen Grove Copper Camp is a much larger camp with more development work done, and has an ideal copper formation, similar to the copper deposits of Michigan and Lake Superior, a large amount of the copper being in its native state, with some chalcocite and copper glance, the mines are still lying idle for development companies to prove them up to be producers. The present development works on the different groups of mineral claims show that considerable copper ores are opened up, some of the principal copper claims being the "Big Sioux," "The Portland Group," "The Tom Cat Group," "The Blue Bell Group," "The Queen of Hearts and Parrot Group," and several other promising claims. "The Golden Sovereign" some years ago shipped several hundred pounds of native copper to the East and the author shipped a collection of ores to the A. Y. P. Exhibition in 1909 to Seattle, Washington.

In 1910 the writer got up a collection of ores from around the Nicola Valley and shipped same to the Nelson Fall Fair, where it took first prize of $50.00. The Nicola Valley Board of Trade subscribed $20.00 and took the prize.

There are several gypsum deposits located in the Nicola Valley. The writer got up a collection from the different gypsum, which also took the silver medal at the Spokane Interstate Fair in 1910.

The trip from Merritt through Aspen Grove to Princeton is one of the most beautiful trips to be taken in an automobile in the summertime.

Mr. N. Peterson's auto-stage leaves Merritt every Monday, Wednesday and Friday about seven a.m. You soon start to climb the Hamilton Hill to the east. This section has been for years known as the Commonage, where numbers of cattle range, sometimes the year round. From the top of the hill the road leads over an excellent rolling farming district to Crowders ranch, which is the present stopping place in Aspen Grove. It is here that the horse stages stop for noon, and where the passengers can see many of the Aspen Grove copper specimens.

Clark's Ranch, Nicola Valley.

From an agricultural point of view, the Aspen Grove district is essentially a stock-raising country, although Mr. Crowder and many other farmers in this district have been successful in raising vegetables, oats, etc. All kinds of hay do well. The Aspen Grove post office is kept by Captain Turner, who purchased the old Dodds ranch in the center of Aspen Grove Copper Camp. Owing to the lack of transportation facilities these extensive copper deposits have not yet been developed by capital. The different prospectors interested have stayed with their prospects for years. Many of the claims located are now crown granted, and many have been abandoned. With the necessary transportation facilities and legitimate capital for development, producing copper mines would undoubtedly be established.

On leaving the Aspen Grove country for the Otter Valley, which is very beautiful, the road descends into the Otter Canyon and comes to the "Canyon House," another stopping place, formerly known as Dan McKay's ranch, but now owned by Joe Collett of Merritt. Here farmers successfully

grow grain and all kinds of garden truck. Nine miles further down the Otter Valley is Jack Thynne's extensive ranch. The road passes alongside their market garden, and it is in this garden that a number of healthy young apple trees loaded with fruit can be seen in the fall of the year.

The farm is an extensive mixed farming ranch, where several hundred tons of hay is put up in season.

Not far from here and near Boulder Creek the "Cousin Jack" mines are located. E. Todd, the locater of the "Cousin Jack," has been Mr. Thynne's partner for a number of years, and they are both interested in Bear Creek and Eagle Creek up the Tulameen river. Jack Thynne is one of the oldest and most successful ranchers in this district. His place was once the popular stopping place for travellers before autos became general in the summer time.

It is nine miles from Thynne's ranch to Tulameen City, a Government townsite formerly known as Otter Flats.

Short Horns.

Located on the south end of the beautiful Otter Lake, which is about eight miles long by about one mile in width, the townsite extends from the foot of the lake to the Tulameen river and junction of the Otter river, and comprising some 300 acres. Most of the lots were sold to the public by Government auction sale, but a number of them were sold by private sale. Many new buildings have gone up in the last year or so, and the Great Northern Railway run trains through Coalmont and Tulameen en route to the Pacific Coast. Agreements have been entered into between the Kettle Valley Railway and the Great Northern Railway, whereby they both use the one road bed from Canyon House down the Coquhallah river to Hope, from whence they take separate lines to the Coast.

From the Tulameen or Otter Flats to the west is a very rich mineral country, extending to the headwaters of the Tulameen river, at the summit of the Hope range of mountains. Between Railroad Creek and Sutter Creek is the famous silver-lead camp formerly called Summit Camp, but now known as "Leadville," called by some Spokane mining men who bonded some of the old crown-granted mineral claims.

Columbia Coal & Coke Co's Stables.

The writer's first trip to this camp was in 1899. The Star Company of Indiana were crown-granting their group of claims. The author took an option on one of the best prospects up there at that time, called the Idaho, owned by Pete Gunderson. There was about two feet of solid galena ore carrying very high values in gold and silver, with a little copper. However, owing to the lack of transportation, nothing was done in the way of development work until quite recently. Now, however, there is a mining boom in this rich camp. The Golden Treasure Mountain Mining Company have driven a tunnel for over 400 feet, and made an upraise to the surface for ventilation, and have some very rich ore in sight. The company is composed of Spokane business men.

The Indiana company have been very active in developing their holding and also have shipping ores in sight, and trial shipments have been made with satisfactory results. They have now sold out to another Spokane company. Patsy Clark has a number of properties under bond.

Tulameen City, Formerly Known as Otter Flats—Dominion Hotel to the left and Otter Flat Hotel on right.

The new Leadville will undoubtedly make a good producing camp as soon as road conditions make possible the transportation of machinery and materials. A railway will be built up the Tulameen river alongside the Government wagon road for the shipping and treatment of these silver-lead ores.

Many strong companies are now interested in Leadville, and Mr. J. C. Edwards, a mining man of Spokane, has made arrangements to continue the workig of the Treasure Mine. "The Blue Bell," "North Star," "Summit No. Three" and "David Western" mining claims have the ear marks of mines.

The claims on Kelley, Siawash, Eagle and Bear Creeks are all turning out well, increasing in values and quantity, and there will be a number of new mines opened up in the "Platinum Belt" of British Columbia. This is the district lying from about two miles above Champion Creek to below Granite Creek is considered by everyone to be the richest plathum belt on the North American continent, and has been examined by Mr. Charles Camsell, Professor James Fullum Kemp and several other engineers and geologists.

A View of Columbia Coal and Coke Company Townsite
Columbia Coal & Coke Company, Ltd., Offices at Winnipeg, Man., Vancouver, B. C. Mines at Coalmont, B. C

The B. C. Platinum Company of Vancouver, under Mr. Charles F. Law, have also pushed developments on their Slate Creek property, where they have been drifting for the old channel of Slate Creek, which is very rich in both gold and platinum. My report on the alluvial deposits of the Similkameen and Tulameen valleys appear on another page.

Between Bear and Eagle Creeks there are some large quartz deposits, with some deposits of Chromite iron which carry small deposits of diamonds and platinum. This group of claims was located some years ago by the writer and will shortly be developed when the necessary capital is available.

Young Apple Orchard on Mr. Thynne's Ranch.

Just to the west of Tulameen City is Rabbit Mountain, where there are large deposits of gold-copper ores. Many of the claims are crown-granted, and a number of them are being kept up with assessments. Messrs. Flager and Armstrong own a number of promising properties, and Mr. W. H. Armstrong also owns controlling interest in the Similkameen Mining & Smelting Company, who own a group of claims on Bear Creek, close to the Independence Group, located at the head waters of Bear Creek, which are large deposits of low grade gold-copper ores.

Cutting Hay on Thynne's Ranch.

Four miles below Tulameen City is the prosperous town of Coalmont, put on the market by the Columbia Coal & Coke Company, Ltd. A large number of lots have been sold and a great many good buildings have been

Air Compressor and Power House at Mine of Columbia Coal & Coke Company's property near Coalmont, B. C

erected. The townsite is a pretty one, being located on the banks of the Tulameen river, about one mile west of the old town of Granite Creek, which is the old placer town of Southern British Columbia. The town of Coalmont is on the Vancouver, Victoria & Eastern Railway (The Great Northern Railway), thirteen miles from Princeton, and being located in the mineral belt of the Tulameen district.

The Columbia Coal & Coke Company own the majority of the Tulameen coal basin. Their principal claims and showings are located on the west bank of Granite Creek, where they have several tunnels in the solid semi-bituminous coal, the seams that dip into the basin aggregating eighty feet of coal. The rim of this coal basin was traced round to the Tulameen slope of the mountain and close to the new town of Coalmont a long double tunnel was driven into the mountain for over two thousand feet through solid

Coalmont Townsite Office

rocks to tap the coal basin at a depth, but where the coal was struck it was too disturbed by the adjoining igneous rocks to be of commercial value. However, better coal was struck in different places of the company's properties.

Large tipples and gravity trams are under construction, and they will probably also work their good coal showings on Granite Creek.

The company is composed mostly of Winnipeg capital, a large amount of which has been expended. The company have their own saw mill and timber limits, besides some good land on the Tulameen river, over which they have built their own bridge.

Mr. George Fraser is the superintendent and general manager, and Mr. T. J. Johnson is the managing director for the company.

No. 2 Tunnel Columbia Coal & Coke Co.

Platinum in South B. C.

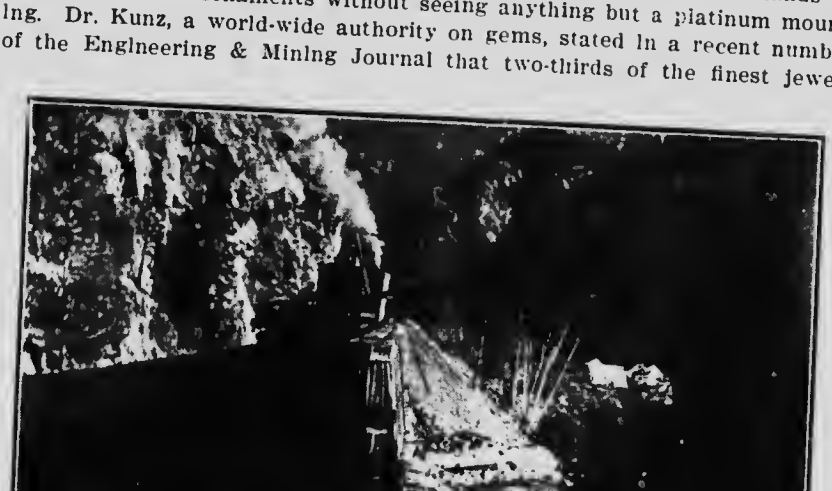
From the London Mining Journal, March 1st, 1913

By FRANK BAILEY, M.E.

CONSIDERABLE attention is now being paid to the alluvial deposits of the Similkameen and Tulameen rivers in Southern British Columbia, owing to the fact that the Tulameen district has the richest platinum deposits on the North American continent, and partly in view of the high price which platinum has attained and the scarcity of the metal. The rise in the price of the metal is probably due to its extended uses in the setting of precious jewels, for which purpose it is better adapted than gold.*

*B. C. Mining & Engineering Record (June, 1912).

To such an extent has platinum invaded the jewellery field that it has largely displaced gold as a mounting for precious stones. In the Fifth Avenue shops in New York one can look over hundreds of thousands of dollars' worth of ornaments without seeing anything but a platinum mounting. Dr. Kunz, a world-wide authority on gems, stated in a recent number of the Engineering & Mining Journal that two-thirds of the finest jewels



Railway Building up the Tulameen River.

are now set in platinum, which holds its setting without any danger of loss, as in the case of gold. It is an ideal setting for stones, especially for diamonds, as the color harmonizes better than the yellow color of gold, and also has the faculty of making a gem set in it look larger than it really is. A leading jeweller remarks: "Everything is platinum now, and it seems to have a great future ahead of it."

In addition to its value for jewellery, platinum is in so much demand in the arts, as for electric, chemical and scientific apparatus and other uses, that scientific men say it must be found, as there is nothing else known to take its place.

Office of Columbia Coal & Coke Co., Ltd., Coalmount, B. C.

That platinum exists in economic quantity in British Columbia placers is evident from the returns officially recorded. The Geological Survey gives the production in earlier years as follows:—

Year.	Value.	Year.	Value.
1887	$5,600	1895	$3,800
1888	6,000	1896	750
1889	3,500	1897	1,600
1890	4,500	1898	1,500
1891	10,000	1899	825
1892	3,500	1900	Nil.
1893	1,800	1901	457
1894	950	1902	190

This gives a total estimated value of $44,972.

The records available are, however, very imperfect. In those days, too, nobody paid any attention to platinum, regarding it as worthless, and the prices ranged from 50c to $3.50 per oz.*

The Similkameen country has for years been known as a rich mineral district, and the Tulameen river is its main west fork. The rapidly growing town of Princeton is situated in the forks of the two rivers, which in former days were known as the South Similkameen and Vermillion rivers—today the Tulameen.

My first visit to the Tulameen was in 1899. I have, however, repeatedly visited this district of great possibilities every year.

Whilst the Similkameen river was found rich only in spots, the early placer miners in the 'sixties got richer and larger returns from the Tulameen. The largest gold nugget found during the Granite Creek excitement was reported to me to be worth about $350.00, whilst several nuggets, ranging in value from $85.00 to $150.00, were picked up from the beds of the Tulameen river and its tributaries. Several conflicting reports are made on the estimated output of gold from the Granite Creek and Tulameen diggings during and long after the rush of miners from the California goldfields to the Tulameen. They evidently all made good, and spent their gold dust as fast as they made their daily clean-ups. This has been corroborated by the few old timers who returned to this district at the close of the Cariboo excitement, which was the direct cause of the general exodus of miners from the Tulameen district into the far north.

The Tulameen river heads in the Hope range of mountains, near the International boundary line, and flows north to Summit Camp, thence in an easterly direction to the mouth of Bear Creek, thence in a south-easterly direction to Granite Creek, keeping a general south-easterly course through the main canyon of the Tulameen to the Princeton coal basin, whence it flows northeasterly to its confluence with the Similkameen river at the town of Princeton.

At the present time there are many different ways of reaching Princeton and the Tulameen district. The quickest route from the cities on the Pacific coast is via the Canadian Pacific Railway to Merritt in the Nicola Valley (nine hours), thence by automobile stage to Coalmont (four hours), thence by the V. V. & E. Railway (Great Northern Railway) to Princeton (one hour), the total distance from Vancouver being about 290 miles. Another route is by all rail from Vancouver to Princeton and Coalmont via Spokane, Washington, U.S.A., on the Great Northern Railway.

Both the V. V. & E. Railway and the Kettle Valley Railway (C.P.R.) are building their lines up the Tulameen valley as far as the headwaters of the Coldwater river on the divide between the watersheds of the Okanagan and Fraser valleys, but from this summit they both go down the Coquihalla valley on the one line to Hope, where they again build separate lines to Vancouver. The Provincial Government have constructed a wagon road up the Tulameen river to Summit Camp from Otter Flats (now known as Tulameen City).

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The Similkameen and Tulameen rivers have been for many years famous for the remarkable quality of black sands contained in their gravels, which all, more or less, contain gold and platinum. Mr. C. F. Law, who knows the district, places the production of platinum from the Tulameen and its tributaries at 20,000 ozs. Whilst this amount was saved and marketed, how much more was probably lost? The black platiniferous sands held in the riffles and sluice boxes were regarded as of no value in those days, and were thrown away. For instance, according to the "Mineral Industry," platinum was selling in Russia in 1898 at $7.75 to $8.75 per oz. Today it is quoted in New York at $45.50 per oz. for refined metal and $48.00 per oz. for hard metal. This represents an average increase in price of over 50 per cent. per annum, or 600 per cent in ten years. The Tulameen platinums are classed as hard metals.

Many papers and articles have from time to time been published in different journals on the platinum deposits of the Tulameen by prominent mining engineers and scientists, quotations from which are as follows:—

The late Dr. G. M. Dawson said of the platinum in the Tulameen, in his work on the "Mineral Wealth of British Columbia": "The metal occurs in

Tulameen River above Princeton, B. C.

notable quantity in the region of the Upper Similkameen in minute scales where the gold is fine, but increasing in coarseness to small pellets and nuggets in places where coarse gold is found. Coarse grains and pellets have so far been found only on Granite, Cedar and Slate Creeks, all entering the Tulameen, on the south side. In certain claims in these creeks the platinum has been found to equal half the weight of gold obtained. . . . Though above referred to as platinum, the metal so named is alloyed with several other metals of the same class, of which osmiridium is the most abundant."

Professor James Fullum Kemp was probably one of the first to make a study of the Tulameen platinum deposits in 1900. He states that platinum has been detected in pyroxenites, and even in crushed and chloritised granite in the Tulameen region; also that the richest platinum [illegible] yet assayed and recorded gave 86.50 per cent. platinum, and [illegible] of the metal found runs down to 68.8 per cent., and adds [illegible] has been obtained in commercial quantities in connection with the gold washings of Southwestern British Columbia, and this source has proved to be

the most productive of all thus far developed on the North American continent. As regards platinum, the area of chief interest is in the valley of Slate Creek and along the Tulameen river."

In the summary report of the Geological Survey of Canada for 1905, R. W. Brock, director, remarks: "Mr. Chas. Camsell completed his study of the Hedley mining camp, and began a survey of the Tulameen district. The latter is unique in that it is the only district in Canada where platinum gravels have been worked on a commercial scale. Railway facilities for this section are projected, and with the solution of the transportation problem it is expected that this portion of the country will be actively developed. The present work is in anticipation of this."

Mr. Charles Camsell, of the Geological Survey of Canada, gives some very interesting information regarding the Tulameen alluvial deposits in the different Blue Books lately published by the Department of Mines at Ottawa. Mr. Camsell is now known by his colleagues as the "Diamond

The Old Placer Town of Granite Creek, Frenchy's Cabin across the Bridge.

King," as he was one of the first to discover diamonds in place in the platinum belt of the Tulameen, and the Department of Mines have recently published Mr. Camsell's bulletin on the Tulameen diamond deposits, which is very interesting, and this last summer the investigations made by Mr. Charles W. Thompson, the diamond expert from South Africa, confirms the writer's belief that the gravel bars and benches of the Tulameen and its tributaries from the Tulameen Canyon, about six miles below Granite Creek to about half a mile above Champion Creek, could be profitably worked on a large scale by the many different companies and individuals now owning and holding leases in the above-mentioned area.

Whilst nearly all these extensive gravel bars and benches carry gold averaging from 30 cents to $1.50 per cubic yard, they are rich only in spots, and many of these rich spots were worked in early days near and on bedrock, which was exposed in the bed of the Tulameen river and Granite

Creek, but the majority of the larger gravel benches have great possibilities, more especially so in the old river channels, which can be traced in different parts of this district.

The search for platinum veins or deposits has not as yet been a commercial success, the platinum being very unevenly distributed in the chromite and magnetite irons, as well as the olivines, serpentines (Tulameen dunite), pyroxenites and peridotites, besides the other rocks in this "platinum belt," but both the gold and platinum nuggets found in the alluvial deposits show that they are of local origin. The largest nugget of gold and platinum the writer has handled from this district weighed about 5 ozs., which was owned by one of the old timers of Granite Creek.

In early days the placer miners were greatly hampered with what they called "white gold" in their sluice boxes, which was then worth practically nothing, many hundreds of pounds of valuable platinum were dumped out and covered up by their tailings, and Messrs. Cook, Blair & Rabbit bought a lot of it for 50 cents per pound, whilst today it is worth over $45.00 per ounce. When it became a little more valuable many sacks of platinum were packed out and shipped to the Californian markets, New York and

Railway Bridge across the Similkameen River near Princeton.

Hatton Garden, London. A sample of this Tulameen platinum was also sent by Mr. Gilbert Blair (now of Vancouver, B.C.) in 1897 to England for analysis, the percentage of which is as follows: Sheffield Smelting Company, Sheffield, England, June 18, 1897—Platinum (Pt) 78 per cent., gold (Au) .45 per cent., silver (Ag) .28 per cent., iron (Fe) 9.80 per cent., nickel (Ni) .10 per cent., iridium (Ir) 4.02 per cent., palladium (Pal) 50 per cent., copper (Cu) .85 per cent., osmi-iridium, 6.00 per cent.

A recent assay by the Government Assay Office of some of the black sands taken from a bench on Granite Creek gave the following returns: Black sand—Gold, 3.6 ozs. per ton; platinum, 7.06 ozs.

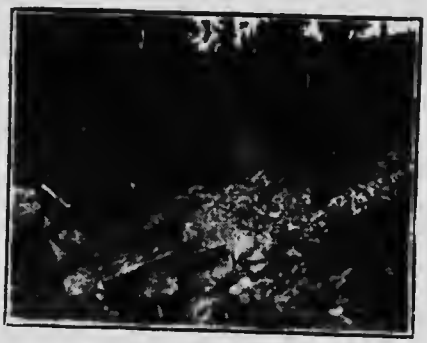
Another sample of black sand taken from the Roany hydraulic leases, situated about five miles below Granite Creek, near the Tulameen river, which was assayed in Victoria, B. C., gave the following results: Gold, 2 ozs. 4 dwts.; platinum, 1 oz. 3 dwts.

In December last Mr. Blair sent to the Department of Mines at Ottawa for examination a sample of 4 ozs. of black sand concentrate from 1½ to 2 cubic yards of river sand and gravel. The report, dated December 28, 1911, is: "On assay this material was found to contain: Platinum at the rate of 521.57 ozs. per ton of 2,000 lbs. of concentrate; osmiridium at the rate of 58.82 ozs.; gold at the rate of 75.82 ozs.; silver, very small quantity, undetermined." This represents $1.15 to the cubic yard of gravel.

One of the best deposits of alluvial platinum is between the mouth of Bear Creek and Eagle Creek, on the leases now held by Messrs. Ford & McConnell, a large amount of both gold and platinum was washed up in rockers and suice boxes in the early days on the shallow bars in the bed of the Tulameen river and near bedrock, where it was exposed to the surface at iow water, but the deeper bars and gravel benches of the old Tulameen channel have not as yet been prospected, and should become very rich near bedrock.

It was on this property that the writer met his friends, Mr. Charles W. Thompson and his wife, who were camped in one of the old placer cabins on the north bank of the Tulameen river below the old Grasshopper mountain trail, and it was near this spot that Mr. Thompson showed me his pannings; in the bottom of his "gold pan" I could see several small nuggets of gold and platinum, probably worth about 25 cents each. I could also see several garnets without the aid of a mineral glass. However, when I adjusted my glass to the bottom of the pan I could detect several brilliant rubies, and by moving the pan in different shades of light, I had no difficulty in detecting two diamonds, which distinctly radiated their characteristic lights from their facets. I have not heard where one can obtain gold, platinum, iron, garnet, rubies and diamonds from any alluvial deposit in the same pan in any other district.

Mr. Thompson also showed me several other diamonds which he had extracted from the dunite (serpentine) rocks found in the immediate neighborhood, and he kindly gave me the following statement regarding his



Roany Hydraulic Leases.

researches for diamonds in the Tulameen: "Last year, when I came into the Tulameen with a view to diamond prospecting, I expected to find the conditions of the occurrance of the precious stone paralleling those of South Africa, but I cannot now hold that opinion. Here the matrix of the diamond is without any doubt the dunite, which in the Tulameen is in portion of the peridotitic intrusion which is rougly in the shape of a triangle with its vertix just south of the summit of Mount Olivine, and its base running in a north-easterly direction for about two miles, beginning at Eagle Creek, some two miles above its confluence with the Tulameen. The area of this peridotite stock would comprise, say, some 150 precious stone leases of ten acres each.

"In South Africa the diamonds are found in a breeciated shale—'the blue ground' of Kimberley—which was forced up by volcanic action through vents made in the carboniferous shale, known as the 'Karoo' shales of the district. It is true that considerable quantities of Kimberlite—i.e., eclogite —containing much red garnet, and of the serpentine order, exists in the Kimberley mine, but it is a most significant fact that Gardner-Williams, as an experiment, crushed 20 tons of the Kimberlite and failed to discover a single diamond therein. Whence the 'blue' obtained its load of diamonds is a question; whereas here, in the Tulameen, we have the stones in their matrix, a terribly hard and difficult matrix to deal with it is, too. Last season I collected about 12 lbs. of samples containing a large percentage

of chromite from the northern slope of Olivine Mount. By means of repeated fusion with bicarbonate of soda, I obtained fourteen minute diamonds of good lustre. Two of them were large enough to exhibit facets under a pocket lens. Doubtless in the process I destroyed and carbonized many crystals. Up to the present I believe that no gem approaching even ⅛ carat in weight has been produced from the Tulameen peridotite; but in view of what they have done in Arkansas, with a comparatively small area of diamondiferous dunite (where, I understand, upwards of a thousand diamonds, large enough to be classed as 'close goods' by the trade, have been mined), we are justified in hoping that on our larger intrusion of peridotite we shall, when more work has been done, find payable ground.

"This season, I am devoting to the possibilities of placer diamonds which may exist in the Tulameen river, where it drains the peridotite stock and also further down, as far as Slate Creek Bridge, to which the diamonds would undoubtedly be carried down under the existing condition of a heavy river grade, rapid current, and excessively hard bedrock. The bar, half a mile above the bridge and at the lower end of the gorge through which the river flows, proved, in former days, excessively rich in gold and platinum, and as the diamond with its specific gravity of 3.55, hangs behind with the

Washing for Gold and Platinum on the Streets of Princeton.

black sand if it gets the chance, I consider that portion of the Tulameen river worthy of being thoroughly prospected. About forty or fifty men in one season, prospecting with screens and gravitating sieves, would demonstrate whether we have a payable placer diamond field, or whether the occurrence of the stones is merely of geological interest.

"Last week I was prospecting at the confluence of Eagle Creek and the Tulameen. In a crevice there I found gravel which filled twelve pans, yielding three very small diamonds, 48 carats gold, ¼ grain platinum, sundry garnets, and a few light red crystals, too small to identify, but which were probably rubies. The water in the river was then too high for favorable 'fossicking' in the crevices.

"In prospecting for diamonds sufficiently large to be cut into gems one should use a gravitating sieve. This is 18 ins. in diameter, the side 3 ins. high, the wire-gauge No. 20 .003 ins., and the mesh No. 8. Two pairs of parallel steel wires (the pairs set at right angles to each other) partially support the wire-cloth, so that in the middle of the sieve there is a place 7 ins. square, which, under the weight of the load of wash-gravel, sags to

a slight extent. The sieve is nearly filled with the diamondiferous gravel, screened to, say, ¼ in., and is then immersed in a tub of water and pulsated. This sends all the diamonds through the lighter gravel to the bottom of the sieve and then at once work into the middle of the 7-in. 'sag.' About a dozen shakes or pulisations suffice. The sieve is then thrown, inverted, onto the sorting heap and lifted up. The diamonds will then be found on the top, and in the very centre of the 'throw.' The method is sure and expeditious. Any miner can learn to operate the sieve and to 'gravitate' infallibly in an hour. However, this method will not save minute diamonds or diamond dust, so for prospecting on the Tulameen I recommend a modification of the gold-rocker, the perforations in the hopper iron being made small, and the usual blanket-covered ladder replaced by finely corrugated glass or iron plates covered with a mixture of lard and tallow. When the plates are set at the proper grade all the diamonds will be caught on the grease, while most of the black sand, quartz sand, etc., will be carried off by the flow of water.

"In the trade diamonds are classified as follows: Blue-white, first Cape, second Cape, 1st bye, 2nd bye, off color, light-yellow, yellow (the foregoing are called 'close goods'); then come: Spotted, cleavage, light-brown

Birdseye View of Princeton, B. C. from Princeton Heights

cleavage, flats, maccles (trimmed), rubbish, and boart. The International carat is 205 milligrams—3.164 grains—and the value of an average 1 carat stone of 'close goods' is about $10.00. 'Dust' is worth about $92.00 per oz. troy, say, 30c per carat."

Both Mr. and Mrs. Thompson are delightful peopl to meet, and I sincerely hope that their hopes of finding stones of a commercial value may be fulfilled.

In a letter to the Similkameen Star last year Mr. Camsell is quoted as saying that "the sample of chromite from which the diamonds were obtained also yielded platinum and gold. This is the first time I have seen platinum in the solid rock. . . . . Practically all the diamonds obtained are clear and white, apparently excellent gem stones, if we can only find them big enough, and there is no reason why we should not." This further note by Mr. Camsell suggests an added value to the platinum-bearing peridotites of the section: "In the course of the mapping and examination of the body of peridotite, which extends from Olivine mountain across the Tulameen valley to Grasshopper mountain, masses of chromite were observed in

several places in the peridotite. Hand specimens of this chromite imbedded in serpentinised peridotite were brought in and handed to Mr. R. A. A. Johnston, Mineralogist to the Survey, to determine the nature of the chromite. In the course of his analysis Mr. Johnston obtained a residual product from fusion, which proved, on examination, to be diamonds, yielding positive re-actions in all the tests for that mineral. Further tests were made in New York by Dr. G. F. Kunz, who confirmed the discovery. So far as our knowledge of the occurrence yet goes, the diamonds are associated with the chromite, and are not found in other parts of the rock mass, so that their distribution depends on that of the chromite. The cromite itself does not occur here in large bodies, and its distribution is very erratic." The diamonds obtained from the sample analysed are small, though their quality is excellent. They have proved very difficult to extract from the rock without being broken, and even after extraction they often break up in the course of a few hours or days into much smaller fragments. The matrix for the diamond is a peridotite of the variety dunite. It occurs as an intrusive igneous stock about three miles long and a mile wide, bordered on all sides by pyroxenite, into which the peridotite passes by gradual change in composition. The two rocks are of the same age, and have been thrust through rocks of apparently Triassic age, consisting of volcanic minerals, and a few thin beds of argillite and limestones.

Whilst the present development and prospecting on the Tulameen river and its tributaries, by placer miners, Chinamen and companies, is nothing to speak about, the former operators made wages by the gold-pan, rocker and sluice-boxes. I doubt if the latter have so far made expenses, but if these companies interested were to extend their operations in a business-like manner and handle the gravels and benches on the Tulameen on a fairly large scale with modern appliances, they would undoubtedly get very good returns for their expenditure. Small portions of the Tulameen gravel beds could be profitably worked by suitable dredgers, but the majority of the auriferous benches and terraces would have to be worked by steam shovels or hydraulicing, as there is ample of water power going to waste from the larger creeks that flow into the Tulameen river in this platinum belt.

The present best paying methods used by individuals is 'fossicking' at low water, and in the fall of the year successful "fossicking" can be done on a commercial scale.

A number of Vancouver people are now interested in these alluvial deposits of the Tulameen, and the following companies have been organized: The British Columbia Platinum Company. This is the pioneer company in this field, and was organized by Mr. C. F. Law, with a capitalization of $200,000 in $1.00 shares, with the following directors: William Henderson (president), Gilbert Blair, R. P. McLennan, Charles F. Law and D. von Cramer, all of Vancouver. They have several good bench leases. More recent companies are: The Platinum Goldfields, Limited, and the Tulameen Gold & Platinum, Limited, both of Vancouver, B. C. The Roany Hydraulic Syndicate own several good leases below Granite Creek, and the Coalmont Syndicate own several good leases on Granite Creek, and many individuals own half-mile leases on the Tulameen and its tributaries. Messrs. Johnson, Matthey & Co., of Hatton Garden, had their expert, Mr. A. B. Coussmaker, from Siberia, for several months in the summer of 1912, making a survey of the extensive gravel benches of the Tulameen and examining their probable platinum and gold contents.

Gypsum Deposits of The Tulameen

By FRANK BAILEY, M.E.

THESE deposits are located from three to four miles below Granite Creek on the north slope of the Tulameen river, adjoining and above what is known as the "Porphyry Dykes" of the Tulameen, which are an old crown-granted group of mineral claims, and the gypsum claims are recorded in the Similkameen Mining Division of Yale District in the Government office in the town of Princeton, B. C.

The Gypsum, Hilda, Portland and Riverside claims are the most important ones as regards gypsum in Southern British Columbia.

The Nicola-Princeton Stage road runs across these properties. The distance to Princeton is about nine miles in an easterly direction and the city of Merritt is about 62 miles in a northwesterly direction, and the town of Coalmont about three and a half miles west.

The "Roany" group of mineral claims located further down the Tulameen River, besides carrying valuable mineral springs, they also carry a little gypsum in association with its different iron ores. Some very beautiful gypsum crystals from two to six inches in length, containing almost pure gypsum were found in a pocket in one of their shafts a few years ago.

There are also other gypsum locations made west of the above-mentioned claims close to Coalmont. These are similar to the "Riverside" and "Portland" claims, being recently sedimentary deposits and have been opened up close to the stage road, where it was taken out and used for plastering some of the houses in Coalmont.

While the mountains in this locality are not all rugged, and are open and covered with bunch grass, timber grass, pine and fir trees of a milling size, prospecting has not been easy on account of the glacial drift and on account of the complex geological structure of this district.

The climate is such that mining can be continued the year round, the Tulameen River rarely freezing up in winter.

The transportation facilities are good, the Victoria, Vancouver & Eastern Ry., (Great Northern Ry.) run their trains up the Tulameen to Coalmont and Tulameen City, and the Kettle Valley Ry. are building their line across the Aspen Grove Copper Camp from Penticton to connect with Great Northern Railway.

Considering the size of the Tulameen district, it is remarkable what a variety of deposits of economic importance are found within its limit. Not all of these deposits, however, have as yet been exploited or even prospected. The following list contains all those known to have any present or prospective value:

Gold and platinum placers.
Diamonds and other stones.
Silver and silver-lead veins.
Gypsum deposits.
Chromite deposits.
Ochre (yellow and vermilion) deposits.
Gold quartz veins.
Copper and gold-copper deposits.
Hematite and magnetite deposits.
Molybdenite deposits.
Asbestos veins.
Semi-bituminous and sub-bituminous coal.

Table of Formations in the Tulameen District

Quaternary: Stream deposits, glacial deposits.
Post-Oilgocene: Otter granite, volcanic rocks.
Pre-Oligocene to Post-Triassic: Augite syenite, pyroxenite, peridotite, boulder granite and Eagle granite.
Triassic: Volcanic rocks with some argillites and limestones.

Rocks of the oligocene age cover a considerable area in the southeast portion of the district, in the angle between the Tulameen River and Granite Creek. These rocks have been divided into two series: a lower, which is almost wholly volcanic in origin, and an upper, which is sedimentary and coal-bearing.

To the east and below these gypsum deposits are the "Roany" mineral springs, where three or four mineral springs are located, the situation and surroundings being well adapted for a sanitarium.

M. E. McEwen, M.D., of Hedley, B. C., says that they are well adapted for cleaning out the system and purifying the blood, for all kinds of rheumatic complaints, etc.

The property consists of 150 acres, more or less, in the following mineral claims: "Roany," "Fairmont," "Harrison," and "Gladys Fraction," besides the accepted contracts from the G. N. Ry. to Mr. J. O. Coulthard, the owner to supply stations and sidings whenever needed.

The copy of the analysis made for the Great Northern Railway is as follows:

St. Paul, Minn., March 13, 1912.

Mr. A. E. Hogland,
Chief Engineer, St. Paul, Minn.

Dear Sir:

Referring to attached, about sample of water taken from spring from mountain side and near no town. Water is on G. N. Railway about 8 miles up the Tulameen River from the town of Princeton and is called the "Roany Mineral Springs."

The sanitary examination of this water gives the following results, expressed in parts per 1,000,000:

Nitrogen as free ammonia	Trace
Nitrogen as albuminoid ammonia	.058
Nitrogen as nitrates	None
Chlorine	Trace
Total dissolved solids	1733.1

The mineral analysis of this water is as follows, results expressed in grains per U. S. gallon:

Silica and insoluble	1.10
Iron and aluminum oxides	.04
Sodium sulphates	5.77
Calcium surphate	69.57
Magnesium sulphate	13.26
Magnesium carbonate	10.24

As far as the sanitary analysis goes the water is suitable for drinking purposes, but the large amount of dissolved solids, especially sodium sulphates, magnesium sulphate would make the water act as a laxative.

Yours truly,
(Signed) J. O. MEYER, Chemist.

A local syndicate is being organized to incorporate a company to place these springs in a suitable hotel building for the use of the public.

The Princeton Coal Basin

By Frank Bailey, Mining Engineer, Princeton, B. C.

THE Princeton or Similkameen coal basin is situated at the foot of the eastern slope of the Hope Range of mountains in Southern British Columbia, the center of this basin being about two miles southwest of the town of Princeton, between the Similkameen and Tulameen Rivers, the town being located in the junction of these two rivers, where most of the coal is at present being mined.

Mr. D. B. Dowling in his paper on the "Undeveloped Coal Resources of Canada," says: The tertiary coal-bearing rocks in this district are masked on each side of the valley by later volcanic rocks.

It is thought that the extension of the coal-bearing beds in a lateral direction may importantly increase the area in which coal may be mined.

The United Empire Mine, East Princeton, B. C.

Seams up to 1 ft. in thickness are known to occur, the minimum thickness found by boring over the area, namely 8 ft. seam, may be taken as a basis for estimating purposes.

Length of field 13 miles, width 4 miles, with possibility of the extension under volcanics to a maximum of 7 miles. Area 52 square miles at 5 feet of coal, "166 millions of tons of coal."

In early days, some time before the year 1899 when there was little or no coal mining going on in the valley, but several locations were made in the following years, and at the present date there are four mining companies operating in the Princeton coal basis, and one up the Tulameen River, namely: "The Princeton Coal & Land Co., Ltd., of London, Eng.," "The Princeton Collieries, Ltd.," "The United Empire Co.," of Spokane, Wash., and "The Princeton-Chilliwack Coal Co. Besides there are several private owners of coal lands and leases, but the Princeton Collieries, Ltd., hold the largest area of coal lands, the most of it being held by Government leases, and they have the least development work done.

The Princeton Coal & Land Co. are now in first class shape and have been shipping regularly for a number of years, their present production is

about 100 to 400 tons per day, but owing to the delay in through transportation facilities to the Coast, at the present time they do not get extensive orders.

The United Empire Co. have also commenced to ship a few cars of coal per week, and will soon be classed as a shipping commercial mine.

The Princeton-Chilliwack Coal Co. is still in its prospective stage, but has several good showings of coal in their different pits. However, there is at present a deal pending and their properties may shortly be sold to British capital. Coal on these properties was first opened up by the writer in a tunnel on the north bank of the Tulameen in 1907 then the property was transferred to the above company.

The Columbia Coal & Coke Company of Winnipeg, who own a group of ten coal claims in the Granite Creek coal basin and Tulameen Valley. Large exposures of coal of very good quality have been opened up and developed on the north slope of Granite Creek, but their present main workings are on the south slope of the Tulameen River at their town of Coalmont, where a long crosscut tunnel which is now in about 2600 feet and two seams of coal were met but were too badly crushed to be of commercial use, and from the face a drill hole has been put in for a further distance of 900 feet, but so far

No. 1 Tipple—Princeton Coal & Land Co., Ltd., at Princeton, B. C.

no shipments have been made. The character of the coal encountered on Granite is similar to the coals being produced from the Nicola Valley at Merritt, B. C., being a bituminous coal with good coking qualities and with a higher percentage of fixed carbon than the Princeton coals.

The Princeton coals, whilst being very lignitic on the rim of the basin and where the croppings are exposed on the surface are not lignite (brown coals) but may be called lignite—coal, or sub-bituminous if classified by the United States Geological Standard, and the quality greatly improves as depth and pressure is gained, which makes a first class domestic coal.

Whilst different geologists have different opinions as regard to the age of the Similkameen coal basin, the writer is of the opinion of Mr. Charles Camsell of the Geological Survey of Canada, who remarks:

"The coal formation of the Princeton basin covers an area of about 50 square miles and includes a considerable thongh yet unknown quantity of coal. The rocks are inclined at low angles and are not much disturbed. A drill hole near the mouth of the Tulameen River, sunk to a depth of 280 feet, passed through a total of 34 ft. 5 inches of coal.

"In this depth three workable seams of respectively 1 ft. 6 in., 6 ft. 7 in. and 18 ft. 6 in. thick were encountered. The depth of this basin is at least 1000 feet, and it is probable that it may contain other seams besides those encountered.

Oligocene rocks occur in several small isolated basins throughout this region. The rocks in these basins consist of sandstones, shales, conglomerates and coal. Such basins are situated at Princeton, Granite Creek, Nicola, Quilchena, Kamloops, Enderby, Okanagan Lake and White Lake. Each of these oligocene basins contains some coal, and most of them several workable seams. The coal is generally a lignite of high grade, an excellent fuel for domestic purposes or for gas.

The most important coal mine in this district is Pit No. 1, owned by the Princeton Coal & Land Co., Ltd., and a short history and description of the property may be of interest.

"The Princeton Coal & Land Company, Limited."

Head office, 15 Great St. Helens, London, E. C. Colliery office, Princeton, B. C., Capitalization, $200,000 in one pound shares. Ernest Waterman, Res. Mgr.; Frances Glover, Mine Supt.

One of the Shifts of No. 1 Pit, Princeton Coal & Land Co., Ltd.

The property of the above-named Company (which until last year had traded under the name of the Vermilion Forks Mining & Development Co., Ltd.), is situated in and around Princeton, B. C., and consists of the town of Princeton and underlying coal rights embracing some 332 acres besides Lot 1822 comprising 312 acres adjoining the town on the east bank of the Similkameen river, and Lot 2016, consisting of 626 acres to the south and adjoining Lot 1822. This including the coal rights under the town, gives a block of approximately two square miles.

The coal company also hold a one square mile of coal land under Government lease, situated on Nine Mile Creek, about ten miles southwest of Princeton.

Besides coal property the company also own four crown-granted mineral claims on Copper Mountain, and three crown-granted mineral claims on Kennedy Mountain, a power site of 62 acres situated near the mouth of Whipsaw Creek, a timber lease on the Similkameen River, together with water rights and the controlling interest in the "Princeton Water Works Co., Ltd.

This property was originally located in 1897 and the town of Princeton laid out, but owing to the lack of transportation facilities little headway was made in the development of the property for the subsequent ten years.

The town of Princeton, situated on the Main line of the Victoria, Vancouver & Eastern Railway (Great Northern Ry.), some 120 miles west of Vanconver, is beautifully located at the junction of the Similkameen and Tulameen Rivers, is the government headquarters for the Similkameen district, has a population of 500 inhabitants, and is furnished with an ample supply of water by the Princeton Water Works Co. It is anticipated that early this year an electric lighting plant will be installed to furnish light for the town.

Coal has been known to exist at Princeton for many years, a seam twenty feet thick outcropping on the east bank of the Similkameen river some 1500 feet above the Forks. This seam was used over 40 years ago by the cattle ranchers located in the valley.

During the years preceeding the advent of the Railway (which did not reach Princeton until December, 1909) little active development work could be done on this company's coal property, but it was thoroughly exploited by

Prospecting for Coal in Similkameen Coal Basin.

bore-holes and the continuity of the large seam above mentioned was established and other and smaller seams were discovered in a prospecting tunnel, consisting of an adit level driven easterly into the bank from the outcrop near the river, a distance of 660 feet, where it was connected with an 8x8' air shaft 64 feet deep situated on the higher bench above. The air shaft is now one of the intakes, furnishing the present mine with air and the level is used to carry off the water from the present workings.

This company in 1907, acting on the advice of Mr. James McEvoy, at that time Chief Engineer for the Crows Nest Pass Coal Company, laid out a definite plan for the future development of the mine and a slope 7x10 was driven down from the bench on an 18 degree pitch till the coal seam was encountered, when it was continued on the dip of the seam, 11 degrees.

In the summer of 1909, when the railway was building up the Similkameen valley from Spokane, active development work was begun, a tipple structure was erected, and a 50 h.p. boiler and hoist was installed. Underground development work was speedily prosecuted and has been continued to this date.

The slope is driven in the dip of the seam and the levels run off at right angles to it. Headings at right angles to the levels (and parallel with the slope) are turned off every 400 feet and rooms will be turned off these headings every 30 feet. The width of the rooms are 18 feet. They will be driven for 200 feet.

The method adopted in working the coal is the pillar and stall system

The original plant, which was only capable of handling about 100 tons per day, and which did not afford any facilities for proper preparation of the coal, was found inadequate to meet the requirements so an up-to-date plant was installed with a capacity of 500 tons per day.

This plant which was supplied by the Link Belt Company of Chicago, consists of rotary dump, shaker screens for lump, egg and nut coal, two picking belts and a Victor box-car loader. The method adopted of handling the coal is as follows: The mine cars are first elevated on to the tipple, which they pass into the rotary dump, which deposits the coal into a reciprocating hopper, from whence it passes on to a shaker screen, having a ⅝ths diameter perforations, eliminating the slack; it then passes shaker screens having 1½ perforations, thus taking out the nut coal which drops on to a picking belt, where it is sorted and afterwards carried into a 80-ton bunker, the lump and egg passing on to a second belt and after sorting is

Princeton, looking north from Princeton Heights.

carried to the bunkers where it again passes over a 4" bar screen separating the lump coal from the egg size, which grades are then deposited into separate bunkers having a capacity of 80 tons each. After being bunkered the coal is carried by a conveyer belt to the box car loader, which loads it into the box-cars.

A compressor having a capacity of 744 cubic feet per minute of air has also been installed and three Hardy coal cutting machines are now used in cutting the coal with very satisfactory results.

The number of coal cutters will be increased to eight.

The other equipment consists of: two 75-h.p. boilers, machine shop fully equipped, 80-ton railroad track scales, bath house for miners, blacksmith shop, store house and stables.

The ventilation of the mine is supplied by a fan operating from the air shaft.

Together the cost of the new equipment amounted to about $100,000, and was in full running order by the end of February, 1912.

The coal seam, as mentioned before, is 24 feet thick, with a 3-foot clay parting 8 feet from the roof.

An average analysis will read as follows:

Moisture	10%
Fixed Carbon	50%
Volotile	34%
Ash	6%
Calorific value	11,640 B.T.U.

The Kettle Valley Railway (C.P.R.) are actively building into Princeton and are expected to reach Vancouver in about two years.

When these two railways run through trains to the Pacific coast, and the B. C. Copper Co. and other development companies start operations on the mineral wealth of the Similkameen, good times are predicted for this country, with unrivalled opportunities for mining capital.

Princeton

The beautiful town of Princeton is situated in the junction of the Similkameen and Tulameen Rivers, near the centre of the Similkameen Valley. It is the distributing point for Southern, B. C. Being surrounded by rich mineral and arable lands, its future is assured. Bounded on the north by the coalfields of the Nicola Valley, on the south by the State of

B. C. Copper Co. sinking a shaft on the "Silver Dollar" M. C. on Copper Mountain.

Washington, on the east by the Okanagan Valley, and on the west by the Hope Mountains. The Tulameen River is considered a very rich mineral country. Near the head of this river there are a number of mining companies digging out rich silver-lead ores. About 12 miles up from Princeton the semi-bituminous coal basin is being operated by the Columbia Coal & Coke Co. North and adjoining the old town of Princeton is the beautiful new townsite of Princeton Heights, surrounded by rich agricultural lands; and up the one-mile creek there are many farmers tilling the soil with satisfactory results, and beyond the farming district are the rich copper camps of Aspen Grove, with their extensive cattle ranges. It is through this district that the Kettle Valley Railway build their main line from the Okan-

GENERAL VIEW OF CAMP HEDLEY

1. Central Station Gravity Tramway, Nickel Plate Mine. 2, Metropolitan M. C. of Kingston Gold-Copper Mining Co. 3. Florence Group. 4. Mouth of Twenty-Mile Canyon and Wellington Group. 5. Forty S[illegible] Mill of Hedley Gold Mining Co.

agan. This railway has a branch to Copper Mountain to the south, coming in by the way of Five Mile Creek, and their Princeton line comes in by the north opposite to the V. V. & E. Ry. (Great Northern Railway). To the south of Princeton are some rich copper camps. Copper Mt. is about 11 miles, where the B. C. Copper Company are now opening several good copper mines. Kennedy Mountain, on the opposite side of Similkameen River, where American capital is rapidly proving up the properties to be producers. Whipsaw Creek Camp is very rich in silver and gold. Messrs. Knight & Day have some very rich showings, and higher up in the mountains Hugh Campbell and Sam Spencer have excellent rich mineral showings. Further south, some Chicago capital is developing the "Red Star" group; on the Roach River rich copper ores are encountered. Then there are other silver-lead camps situated near the summit of the Hope Mountains.

The Trans-Provincial Auto Highway passes over these mountains, and near the old Dewdney trail, and comes through the old town of Princeton.

About 22 miles to the south-east of here is the rich gold camp of Camp Hedley, which is described later on, and further down the Similkameen

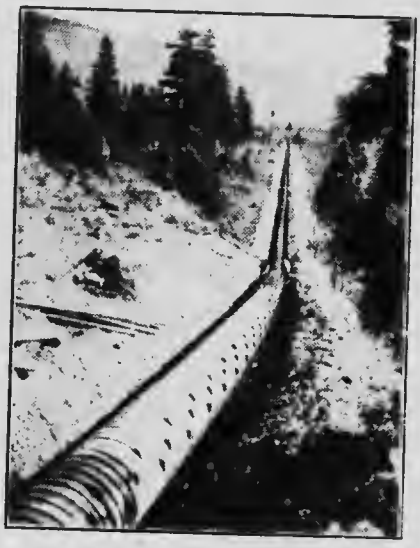
B. C. Copper Co. proving up their bonds on Copper Mountain by Diamond Drills.

River are the fertile fruit lands around Keremeos, which is the best fruit-growing district in the Dominion of Canada. The Keremeos Land Company have a good irrigation system; the water is brought down from the Ashnola River below Hedley.

The original settler in this valley was Mr. Allison, who owned all the land around the forks of the two rivers. He located the Princeton land in the early 60's as a pre-emption, and called it Princeton, but later gave it up to Mr. J. Sands, who in turn later on sold to W. J. Waterman, who organized with his brother and formed the first company to operate in the district in London, England, and known as the Vermilion Forks Mining and Development Company, Ltd., who had the land subdivided into lots and blocks in 1896-1897. The first hotel was erected in the early 90's by Jim Wallace, an old Granite Creek timer. Although Jamison had a saloon in the valley and Coutlee had the first hotel on the Tulameen, the first white store erected at Princeton was owned by Charlie Thomas, and the second by F. P. Cook. Although nearly all the old-timers have stayed with the district, a number have crossed the big divide.

Princeton now has three chartered Banks—the Bank of Montreal, Canadian Bank of Commerce and the Royal Bank of Canada—all doing

business on Bridge Street. Four general stores—Thomas Bros., F. P. Cook, A. E. Howse Company, Ltd., and Alex. Bell, who also runs the P. O. and



The Keremeos Land Co.'s Pipe Line.

Government Telephone Office. There are seven other stores of different kinds, besides pool rooms and barber shops. P. Burns has also established a shop here. There are three large hotels with licenses. The best hotel in Southern B. C. and first brick building in the town is the Hotel Princeton, owned by Messrs. Swanson and Broomfield, with hot and cold water in the

Hamburg Grapes grown at Keremeos.

bedrooms. Both this hotel and the Tulameen Hotel are situated on Bridge Street. The Similkameen Hotel is located on Vermilion Avenue. The Great Northern Railway Depot is situated at the head of Vermilion Avenue. The immediate district around Princeton is underlaid with good domestic coal. The climate is mild and dry the year round, and very healthy, and the Similkameen is a sportsman's paradise for both fish and game.

B. C. Portland Cement Co.'s Plant at East Princeton which is about one mile east of the old town.

Bridge Street, the main street of Princeton, looking south from Princeton Heights. Tulameen River in foreground.

Princeton Heights

Distant view of Tulameen Avenue and Princeton Heights from the top of "Knob Hill" addition. Princeton Heights have just been placed on the market. It is on these beautiful flat bench lands that the Princeton Athletic and Racing Association have purchased and built their splendid half-mile

oval Race Track, Base-ball and Park Grounds. The continuation of Bridge Street takes you to the Park and beautiful residential sites.

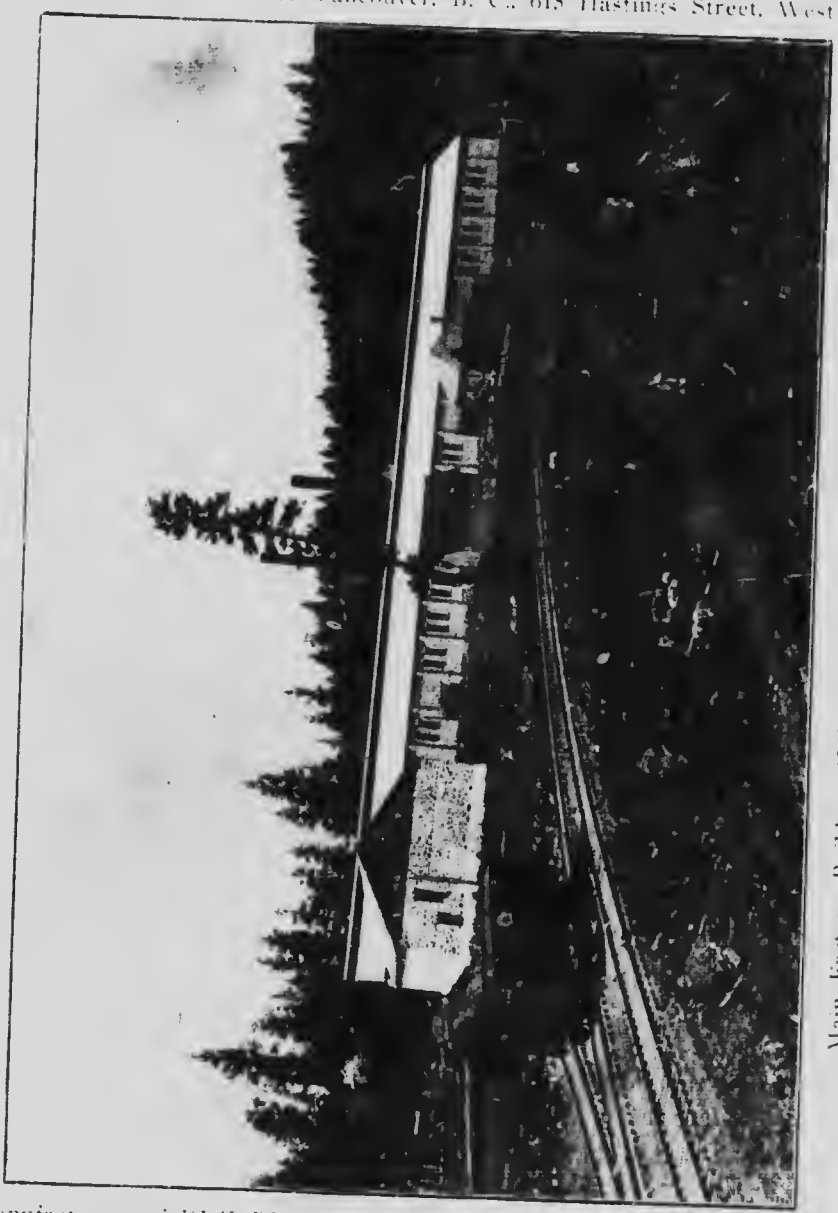
For sale by Frank Bailey on easy terms; 20 per cent. discount off for all cash.

Apply to Frank Bailey & Co., Similkameen Lands and Mines, Princeton, B. C.

View of Princeton Heights from Billiter Ave. at the back of Bridge Street. The white dump is the dump of Chilliwack-Princeton Coal Co. The Race Track is on top of Bench Land.

B. C. PORTLAND CEMENT COMPANY'S
New $500,000. Portland Canal Plant
EAST PRINCETON, B.C.

Head and Sales Office Vancouver, B. C., 615 Hastings Street, West



Main Factory Building 434'x60'. Stock House 200' x60'. 2000 Barrels Daily Capacity. Storage, 50,000 Barrels.

Manufacturers of ELK BRAND Portland Cement, Lime and Bricks. All raw material of the best quality, including coal for burning, are obtained within a few hundred feet of the works. The plant is now taxed to capacity to supply the demand for its products. This important industry furnishes a large pay roll for this district.

Camp Hedley

BY THE HEDLEY GAZETTE AND FRANK BAILEY, M.E.

Taken from "The London Mining Journal," May, 1911.

IN the spring of 1899 when the writer came over the mountain trail from Keremos over the divide to the head waters of Twenty Mile Creek, the camps of Mr. M. K. Rodger's outfit could plainly be seen from Independence Mountain to the Nickel Plate Mountain, when they were working on their bond of the "Nickel Plate" group of claims. This bond was paid for long before it came due, on account of the large amount of gold in sight.

The history of Camp Hedley dates from the time when Mr. Peter Scott came in from the Slocan country and located the "Rollo" mineral claim, in August, 1897. He was grub-staked by Mr. Robert Hedley, M.E., of the

Offices of Daly Reduction Co. and Hedley Gold Mines Co.

Hall Mines near Nelson, and Paul Johnson, of the Greenwood smelter. He shortly afterwards located the King, Princeton, Kingston and War Horse mineral claims.

Mr. Albert Jacobson and C. Johnson, two Swedes who had been grub-staked by William Yolen Williams, the superintendent of the Granby mines, located the Mound and Copper Cliff claims, which were later purchased by the Yale Minine Company.

In August, 1898, Messrs. Wollaston and Arundel located the Horsefly, Bulldog, Sunnyside, Nickel Plate and Copperfield. The ore from these properties attracted the attention of Mr. M. K. Rodgers, who was then commissioned by the late Marcus Daly to the Similkameen country, and a

bond was taken on these properties in 1898 and development work was started in January, 1899. The other claims already located had all shown up well in value and soon the hillside was located in all directions by enterprising prospectors.

The writer made the first map of the lower Similkameen, including Camp Hedley, which was named by the writer and Pete Scott, and published same in 1900. In the fall of 1899 the author located the Wellington, Cracker-Jack and Cannon-Ball mineral claims on Red Mountain, and both sides of Twenty Mile Creek, blazing the first trail up this creek. These claims are now crown-granted, awaiting the necessary capital to prove them to be producing mines.

The successful development of the Nickel Plate mine and the results are ancient history. The work done to make possible this success would have bankrupted many a small company, as roads, bridges and trails had to be built before the property could be reached by machinery to prove the worth of the property. In 1904, when the forty stamps began to drop $759,000 had been expended. Reports today show a production of about $4,000,000.00 with about $500,000 being wasted in the sands. The acquiring of this property made Mr. M. K. Rodgers a successful mining man, as he was given a fifth interest in one of the great gold mines of the world. He engaged the services of Mr. Gomer P. Jones from Australia in 1899, at the

Electric Ore Train at Nickel Plate Mine.

early stages of development, then the Daly interests, combined with New York capital, organized the Yale Mining Company to purchase and operate the Hedley properties, and the Daly Reduction Company, to operate the forty stamp mill and large cyanide plant and extensive power house.

When a change of management was made by the Daly interests, Mr. Rodgers was engaged by the Guggenheims to develop their interests in Alska. Later he returned and organized a company composed of men in the steel trust. This new company is now known as the Hedley Gold Mining Company. To illustrate their methods, $10,000.00 was spent in diamond drilling, aside from 500 samples from the different ores blocked out. On this showing a bonus of $500,000.00 was given the Daly interests. Mr. G. P. Jones was made general manager, and the diamond drill work was proved by drifting, crosscuts and upraises in 1910, with the result that in twelve months time more ore was blocked than had been treated in the previous history of the mines.

In the spring of 1911 Mr. G. P. Jones, the general manager, submitted the following report to the president and stockholders of the Hedley Gold Mining Company, concerning the operations during 1910:

Working on "Cannon-Ball" M.C., in the Canyon of Twenty-Mile Creek.

"I beg to report progress for the year 1910, as follows: Mining on the company's claims has been carried on continuously, and 46,828 tons of ore mined and milled. For the first four months practically no development work was done, owing to shortage of power. During the last eight months the development work that has been done was mostly confined to extending the present ore-bodies and testing the ground adjacent. The ore for the mill has been stoped from several sections of the mine, and proves the estimate of ore reserves of August 13th, 1910, to be a very conservative, both as to tonnage and values. The ore broken for the year is about 16,000 tons in excess of the ore shipped to the mill, and is lying in the stopes. This broken ore will average $13.00 per ton.

The Hedley Gazette of January 2nd, 1913, publishes the following:

"It will not be necessary to remind our readers that in the fourteen years' history of the mine, of which only about eight and a half years covered the producing period, the Christmas season did not always find the situation affording the same sense of buoyancy and contentment. Yet the mine was really richer than it is now by the amount of value which has

PROSPECTOR'S CAMP.

been extracted since then. The difference lay in the fact that the 30 per cent in annual dividends, and for the year that has just closed, the owners are moreover free to admit that the outlook of their mines in this camp based upon actual development.

As might be expected from the fact that the dividends have been greater during the past year than any previous year, 1912 has been a year of smashing records and all former achievements have had to take second place. The tonnage of ore mined and milled has been greater; the bullion produced has been greater; the mill has accomplished a higher duty per stamp; the extraction has been higher; and, more important than all of them, the development done during the year has shown up foot for foot a vastly greater amount of ore than ever before, with the result that the ore reserves have reached a point which puts the whole concern on easy street for years to come, so far as the necessity for looking for new ore-bodies is concerned. No wonder the ore reserves have increased so enormously during the year, when it is known that every bit of the development done on the Nickel Plate during the year has been all in ore.

Mine Development.

On the "Nickel Plate," the development work consisted of 400 ft. of

sinking of an incline shaft, with four levels, opened out from it, and 300 ft. of drifting in them. This incline is known as the No. 5 incline from No. 4 tunnel. There is also an incline raise here to connect No. 4 tunnel with the workings above.

Another important feature connected with the development from the underground workings of the Nickel Plate was the commencement made, on what is known as the Dickson incline. This will be a very important undertaking and will play a very prominent part in the future working of the mine.

The incline is planned for 3000 ft., and is pointed in the direction best calculated to serve in the mining of the large ore reserves already known to exist and when carried on will pierce the territory where it is known that new ore bodies will be opened. The incline is to be a double-compartment with man-hole ways. The work already done is that of cutting the station for it and providing ore-pockets. The present intention is to equip for sinking the incline to 1000 ft. and a hoist capable of doing so will be installed at once. As before stated, every part of the development work on the Nickel Plate underground workings has been in ore.

Other development work has been the 140-ft. tunnel under the bunkhouse into the "Silver Plate" Property, and sinking 150 ft. in the Sunnyside No. 4 incline, but as the power which could be spared for development was limited the work was concentrated on the Nickel Plate.

Exploration by diamond-drill was prosecuted extensively during the year and a total of 3,447 ft. was drilled of which 2066 ft. was by contractors' drills and 1381 by the company's own drills.

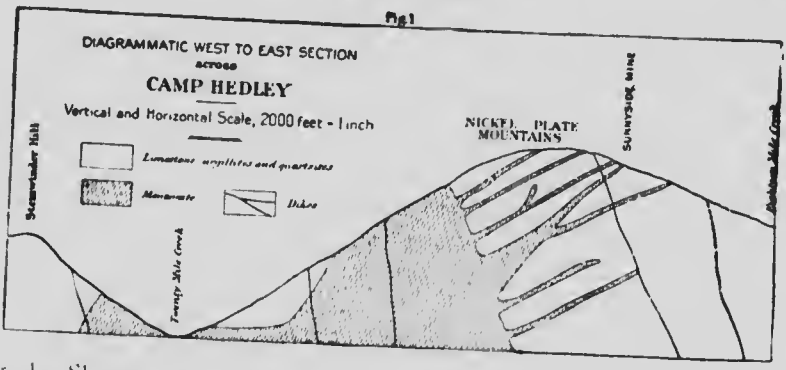


Fig. 1.—Shows monzonite making plunging contact with sediments, with off-shoots of monozonite penetrating sediments along bedding planes, which are lines of least resistance. Scale should read 4000 feet=1 inch.

By Charles Camsell—Geological Survey of Canada, 1907-08.

There was mined and milled during 1912 a little over 70,000 tons, which is nearly 13,000 tons more than last year, while last year (1911) was about 10,000 tons more than the year preceding.

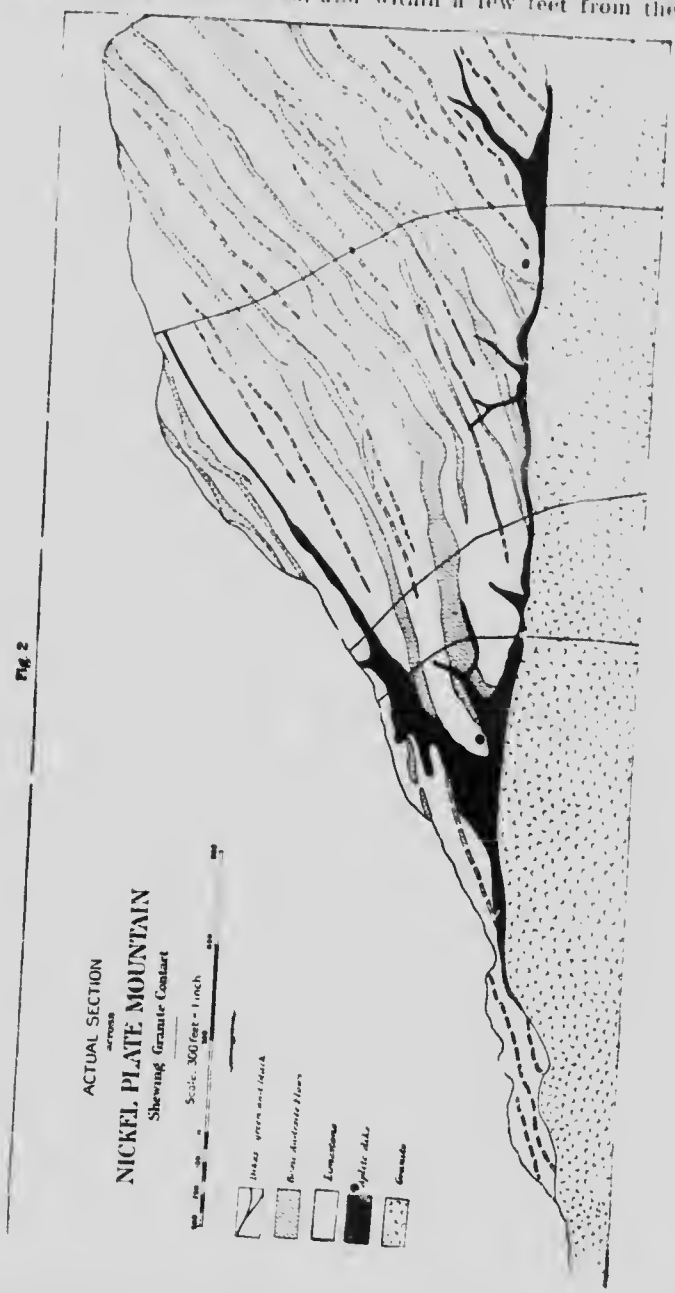
The tonnage month by month for 1912 was as follows:

	Tons.	Assay value.		Tons.	Assay value.
January	5701	$10.70	July	6110	$ 9.97
February	5014	9.49	August	5900	12.11
March	6263	11.60	September	6108	16.38
April	5326	10.55	October	6104	11.69
May	5666	10.64	November	6003	11.57
June	6027	10.13	December	6050 (estimated)	

The Windfall Purchase.

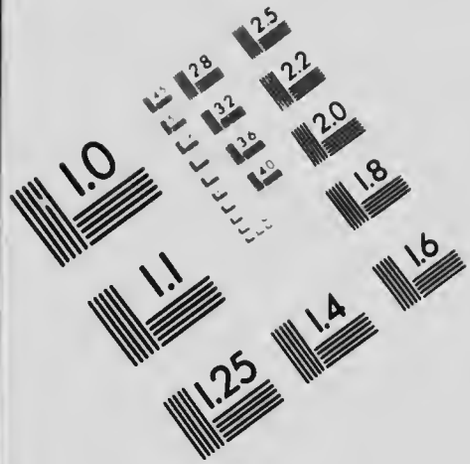
As a part of the development may also be mentioned the exploratory work done in connection with the purchase of the Windfall group of claims, consisting of the Windfall, Morning, Bighorn, Winchester, Fraction and Czar Fractional mineral claims, on which the company took a bond from

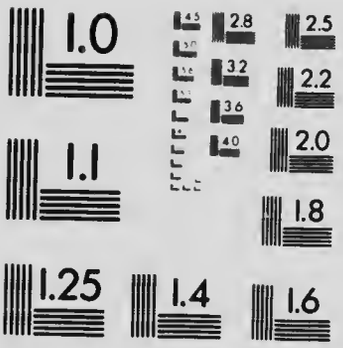
the owners in the early part of the summer and began diamond-drilling. This drilling was not done on the properties under bond but on the company's own property in unexplored ground lying between the Nickel Plate workings and the ground bonded, and within a few feet from the Windfall

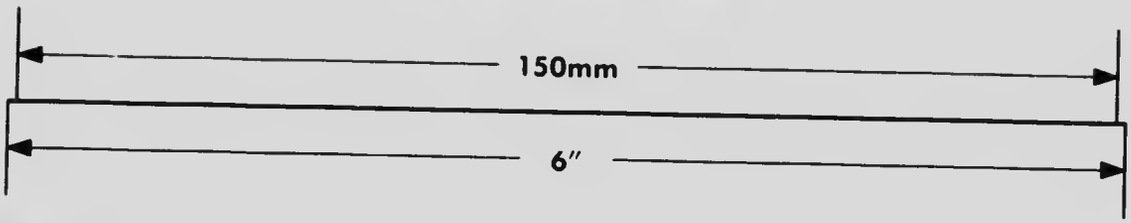


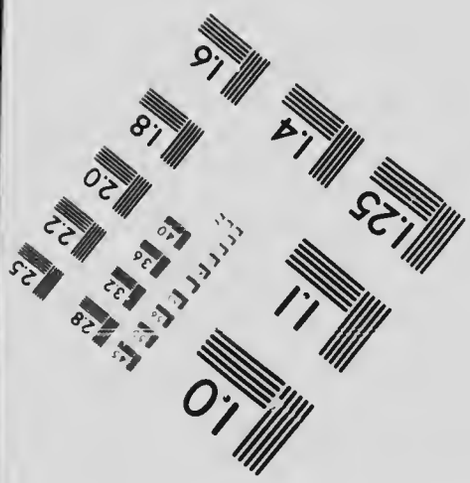
line. The bond was for a long term and the consideration was for $150,000, but it was taken up at the end of four months and the full consideration was paid, less the discount for cash before completion as provided for in the

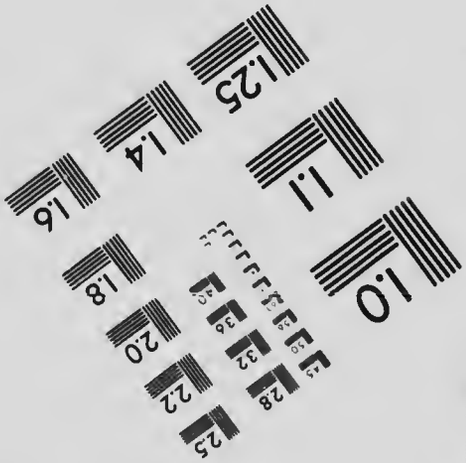
IMAGE EVALUATION
TEST TARGET (MT-3)











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bond. The spot where the last drilling was done was very precipitous, which rendered the work a trifle hazardous after the snow came on, as it does very early at that point. The company have provided themselves with drilling equipment capable of going the depth necessary to reach the ore bearing strata at that point, and doubtless will resume the drilling and put down a few more holes to obtain further information than that upon which the bond was taken up.

Extracts from Mr. Charles Camsell's report on the Geology of Camp Hedley:

There is only one series of sedimentary rocks, and these are the oldest rocks in the camp. No determinable fossils have yet been found in them but from their lithological characters they have been referred to the Cache Creek group of Dawson's classification, and are therefore presumably

Natural Cave at Princeton.

Carboniferous. The series in ascending order, as exposed within the limits of the camp, gives the following succession: (1) red, grey and black siliceous and argillaceous beds interstratified in thin bands; (2) blue and white limestone becoming impure at the top, and breccia; (3) siliceous and argillaceous beds like the lower ones with probably some tuffs.

The limestones of the middle division hold the ore bodies that have so far proved to be of economic importance. These sediments dip to the westward at an angle which increases in that direction from 12 to 90 degrees. They are cut by a mass of monzonite lying in the central part of the camp, and also by a granite which is later than the monoznite. Dikes and sheets emanating from these two igneous masses, and particularly from the monzonite, penetrate the sediments in every part of the camp and alter them to such a degree as to make them difficult to recognize in the field.

Monzonite is the next rock in age to the sediments. This occurs in two distinct varieties in different parts of the same mass with all stages of transition between them. The more basic variety covers the widest area and occupies the central and western portions of the mass, while the acid variety lies along the eastern side and sometimes also occurs intrusive in the basic variety. The constituent minerals of the normal phase are

View showing Nickel Plate Groupe of Mines where nearly one million dollars have been dispursed to the shareholders of the Hedley Gold Mining Co in dividends since 1909.

orthoclase and plagioclase in about equal quantities, with hornblende, augite, quartz and biotite in varying proportions. All stages of transition from the basic to the acid variety can be found. Well marked contacts are common, and these always show the acid variety as cutting the basic. From this core a great number of sheets and dikes of what is called, andesite have been given off, and the same gradual transition in composition is noted in them as in the mass from which they emanated.

As arsenopyrite is the most prominent sulphide with which the gold is commonly associated, these deposits are somewhat unique in so far as arsenopyrite has never yet been found in such proportion to the other sulphides in contact deposits of this character.

Arsenopyrite is found to a certain extent in a great many contact metamorphic deposits, but in this case it frequently occurs to the exclusion of the other sulphides. As a rule it is found as secondary in importance to such minerals as chalcopyrite, magnetite or pyrrhotite but in these deposits it occurs so abundantly that Weed in a classification of ore deposits assigns them to a distinct type, of which this is the only representative

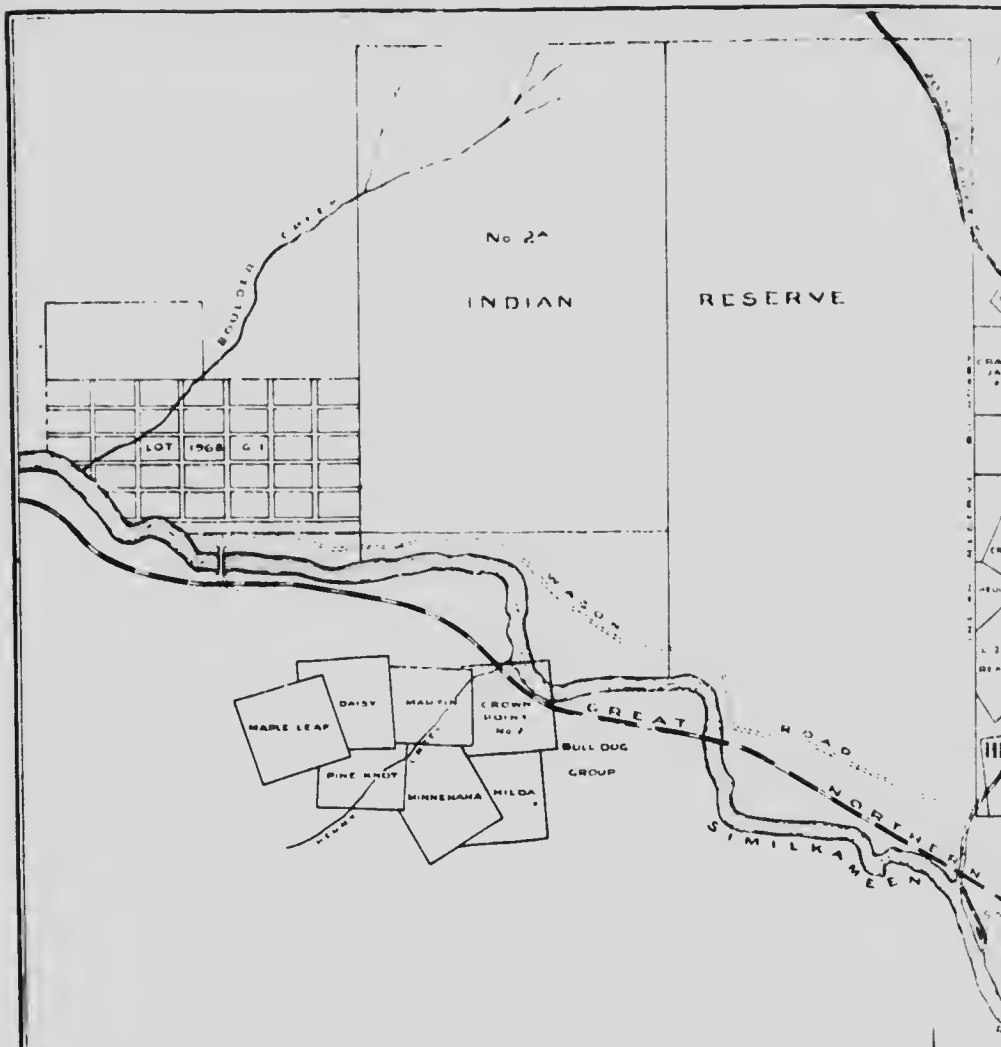
The arsenopyrite is often disseminated through the gangue rock in crystallized individuals, in which case it would probably be of primary origin.

Above the Clouds in Winter at Nickel Plate Mine

in the same specimen it will also be found as filling small, narrow lines of fissuring, showing that some secondary action has taken place. The latter feature is often a good indication of high grade ore.

Gold values appear to be always associated with arsenopyrite, yet much arsenopyrite occurs throughout in which little, if any, gold can be obtained. An assay of the sample is the only means of acquiring the slightest information as to its gold contents, as free gold is rarely visible. In many cases it is impossible to distingnish a sample which will give twenty dollars to the ton from one that will assay two dollars per ton. Again in the oxidized rock of the surface one can often wash a crushed sample in a great number of very fine colors of gold will appear in the bottom of the pan. In another sample no colors will be obtained, yet the one will give as good results on an assay as the other. As a rule, however, some assay values in gold will be obtained when arsenopyrite occurs in that altered sediments where they are cut by the acid variety of monzonite or its dike equivalent.

As to the original source of the arsenopyrite, one does not have to look farther than the monzonite itself. It occurs in small quantities as an accessory mineral in the monzonite mass, but in the dikes and sheets of andesite it is so plentiful as to appear almost as an essential constituent. It does not appear in the sediments on the granite contact, but always at or near the monzonite and andesite contacts.



— PLAN OF —

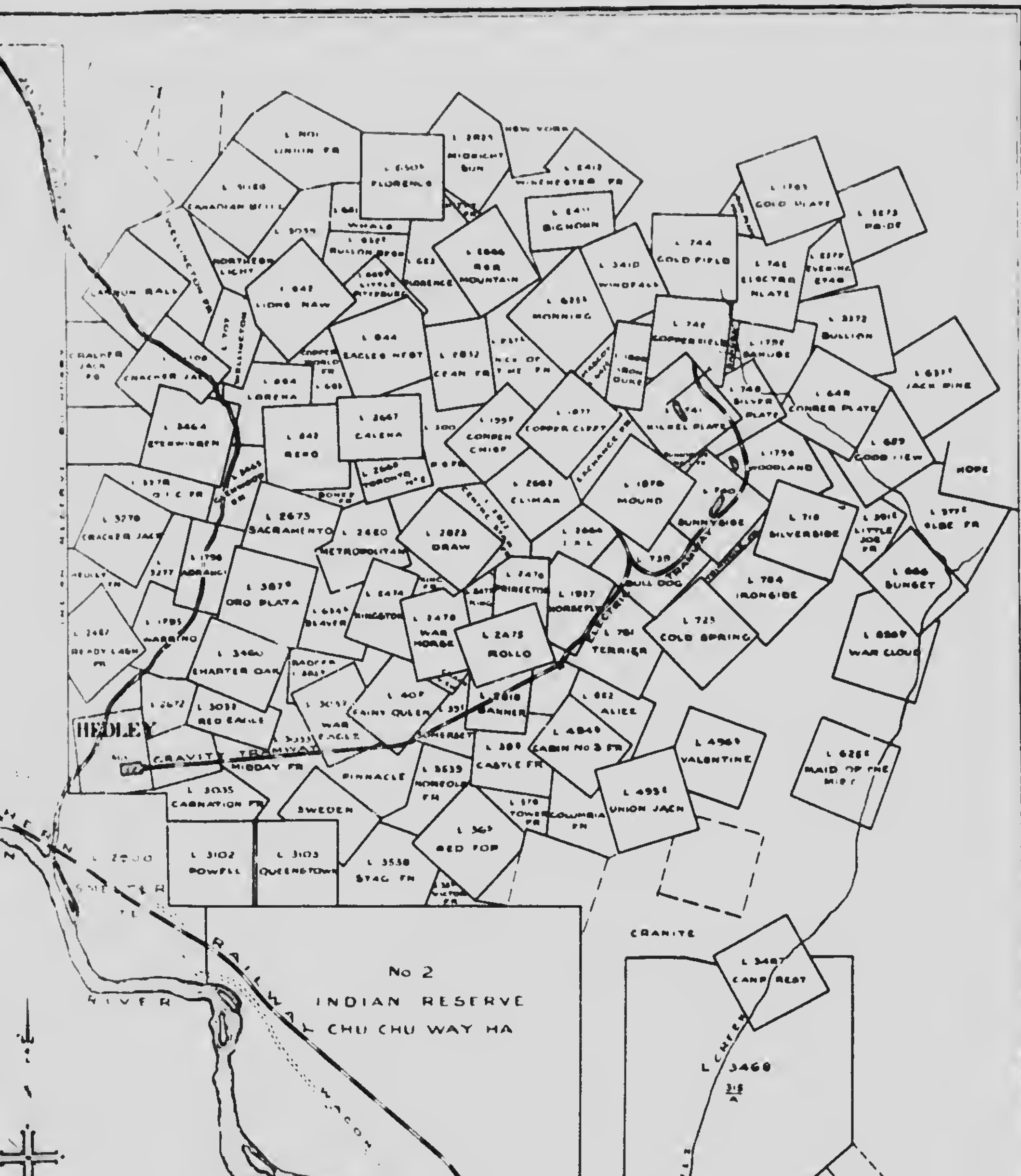
HEDLEY CAMP

shewing Surveyed Claims.

— FRANK BAILEY, M.C.M.I

Scale - 1500 feet to 1 inch

SCALE SHOULD READ



ULD READ 2800 FT TO 1 INCH

An interesting point developed in connection with the treatment of these ores is the finding at the end of a month's run of the mill of some platinum along with the gold.

Mr. Charles Camsell also states that Hedley is the most important mining camp in the Osoyoos Mining Division of Yale District, and is the **largest producer of gold alone of any camp in British Columbia."**

1913 opens up with another large deal for Camp Hedley, when Mr. Beam obtained options on many important properties in the camp. Mr. Beam is also interested in the Hedley Gold Mining Company and has interested in this bond a large amount of mining capital, who are locally known as the New York Syndicate No. 2, and while some of the former syndicate that took up the bond on the Nickel Plate about three years ago are in this new syndicate, which other capitalists have joined, the day is not far distant before Camp Hedley will become one of the most important facts in the production of gold on the North American continent.

Similkameen Hotel, the Finest Hotel in Hedley, B. C.

The properties under option are the "Florence" group of seven claims owned by Thomas Bradshaw, and comprising the Florence, Florence Fraction, Eagle's Nest No. 2, Zernst, Little Pittsburg, Whale and Bullion Beck; the Duffy group, owned by H. J. Duffe of Spokane, and comprising the Reno, Lorena, Copper World Fraction, Lion's Paw, Northern Light Fraction, Canadian Belle, Union Fraction and Midnight Sun; the Paris, owned by Wm. Arnott, the Red Mountain by Chas. de Bois Green and his partners. There are also some other claims taken in but those mentioned will give a fair idea of the far reaching character of the transaction.

Extensive diamond drilling will be employed and should the ground stand the test it will mean a great thing indeed for Hedley, for the actual mining of all the Hedley ores will be by long, deep tunnels from very little above the bed of Twenty Mile Creek, and will bring mining operations almost in to the town itself as the town is located in the bed of the creek. The most of the properties under bond lie right in the Canyon closely adjoining the town.

The Cracker-Jack, Wellington, Cannon-Ball, and the three adjoining fractions have splendid surface showings, and the earmarks of mines and are still open for a working bond, the characters explained by Mr. Camsell of the Hedley ore deposits are noticeable on this group of crown-granted mineral claims.

The Kingston Group

THE Kingston group consists of four claims, the Kingston, War Horse, Metropolitan and Grand View. They are situated quite close to the town, on the steep mountain side about 2,000 feet above the valley, and when developed to the producing point, they may be easily and cheaply equipped for shipping purposes by tramway (either aerial or gravity).

The First Pack Load of Ore taken out of Hedley by Mr. M. K. Rodgers in 1898.

The group is owned by the Kingston Gold and Copper Mining Co., Ltd., and most of the stock is held in Quebec, although Mr. A. B. Clabon of Vancouver and Mr. F. M. Wells hold a lot of it and were the promoters of the company. The president of the company is Mr. W. A. Marsh of Quebec. H. C. Polock has been the superintendent for a number of years and they now have some high grade ore in sight. The property has been bonded

several times since then, but is still controlled by the Kingston Company of Quebec.

Mr. Charles Camsell of the Canadian Geological Survey, says of the Kingston group in his report

"The War Horse ore body lies on a contact of massive blue limestone with an andesite sheet, and not far from the central core of monzonite. The limestone dips 30 degrees to the west, and carries irregular masses of chert rock. It is cut by irregular dikes of andesite, which alter the limestone to an epidote-garnet-calcite rock. This constitutes the gangue of the ores, and the ore minerals are pyrrhotite, chalcopyrite, arsenopyrite and galena. These are scattered through the gangue in varying proportions, pyrrhotite forming with chalcopyrite the largest percentage. The chief values are in copper, but this is supplemented by some gold and silver.

On the Kingston claim farther down the hill the workings are in the sediments within a few feet of the edge of the monzonite core. Injection from the monzonite have penetrated the bedding planes of the sediments, altering and mineralizing them as in the case of the Nickel Plate mine.

The chief values are in gold, which is associated with arsenopyrite

Chas. Camsell's Camp at Coalmont, B. C.

Some latter dikes cut both the sediments and igneous rocks, forming favorable localities for the concentration of the gold by circulating waters. The Kingston group of claims is very favorably situated for the occurrence of ore bodies, and more extensive development may prove their existence."

THE APEX GROUP

Next to the Kingston in point of development done, and values obtained is the Apex Group, part of which was first located by the writer in 1899 and 1900; they were afterwards restaked and acquired by W. D. McMillan and associates, who bonded them to the Colonial Gold Mining Co. of Manchester, N. H., who in 1912 sold them to M. K. Rodgers, W. T. Shatford, M.P.P., F. H. French, N. T. Pickhard and associates, who have undoubtedly opened up some more producing mines.

The Apex group consists of five claims and two fractions, known as the Acacia, Apex, Acadia, Australia, Australian Fraction, Alpha and Utopia, and are situated about 6,000 feet above sea level and 4,500 ft. above the Similkameen valley, on the summit between the headwaters of Keremeos

Creek, Twenty Mile Creek and Sixteen Mile Creek, and lying midway between Independence, Dividend and Red Mountains in the Osoyoos Mining Division of Yale District and about five miles east of the Nickel Plate mine.

Assay and analysis by J. O'Sullivan, F.C.S., gave:

Iron	19.20%	Alumina	1.54%
Lime	6.50%	Arsenic	6.00%
Silica	29.10%	Sulphur	15.61%
Copper	5.30%	Gold	$24.00 per ton
Silver	2.15 "	"	

"I may mention that, judging from the results of the analysis, this is a good self-fluxing ore."—J. O'Sullivan, F.C.S., Provincial Assayer.

Bridges Across the Similkameen River.

THE GOLDEN ZONE

Situated near the head waters of the north fork of Twenty Mile Creek about twelve miles from Hedley up the Twenty Mile Creek Road is the Golden Zone Group of four claims, the Golden Zone, B. C., Irish Boy, and Silver Bell.

These claims were first located by J. J. Marks, Paul Broadhaggen and James Murphy, old-time prospectors, who organized the first company known as the Golden Zone Mining Co., Limited, with a capital of $500,000, having 2,000,000 shares at 25 cents each, par value. The property was then equipped with steam hoist, a No. 5 Cameron pump and a five stamp mill.

It was soon afterwards bonded by C. H. Brooks and the company was re-organized in Victoria, B. C., as the Gold Plate Mining Co., although the ore deposits are good and carry high values, the property has not been worked steadily, probably on account of lack of the necessary capital, but it has the earmarks of a producing mine.

THE POLLOCK MINES

THE Pollock Group is situated about two miles up the Similkameen river from Hedley, on the opposite of the river, on the watershed between Sterling creek and Henry Creek

The Group consists of five claims, Martin, Maple Leaf, Daisy Fraction, Pine Knot and Minnehaha

The ownership is vested in the Pollock Mines, Limited, a company which was formed in 1905. The capitalization is 1,000,000 shares at $1 00 each, and of this 500,000 shares were set aside for treasury, and there are 410,000 shares of the treasury stock still unsold. The company also own the Copper Cliff, on Nickel Plate Mountain. The officers of the company were: President, H. C. Pollock; Vice-President, John Gladden, C.E.; Secretary, Chas. E Oliver, M.E.; Managing Director, E. A. C Studd, Esq. The claims were all located by H. C. Pollock, in 1900.

The ore bodies are true fissure veins running approximately northeast and southwest.

The most development is done on the Martin claim. There are many openings, all proving the existence of a good, strong-looking lead with a strike of about northeast. On this vein two shafts heve been sunk, one 60 feet deep, and the other 35 feet deep, out of which two good dumps of ore have been taken out. There are also a number of tunnels cross-cutting the vein, which was found in places to be 22 feet wide, some of which carries free gold which can always be found in panning and is often visible in hand specimens. The ore is a white quartz very friable and slightly mineralized with pyrite, arsenopyrite and zinc-blende, the arsenopyrite predominating On both foot and hanging walls is marked cleavage or gouge of the true fissure, which in this case seems to be cutting the monzonite eruptive so well known in Camp Hedley from its frequent occurrence. As for values, they have been found on extensive assaying both from tunnels and shafts to be very satisfactory, going more often above $50.00 per ton than below $20.00, and what is more encouraging still in the case of a free-milling property, it pans well all over.

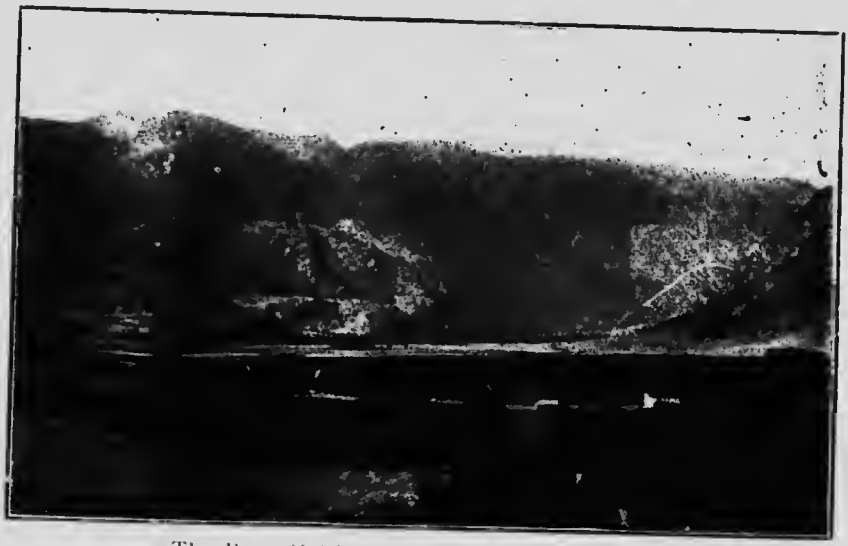
When a special claim is made for the Pollock Group in the matter of advantageous operation, it will be only necessary to enumerate a few to show how great these advantages are. The steep hillside lends itself admirably to tunnelling; the ground is easily worked, making it possible to prosecute development work and ore extraction with hand steel without the necessity of power-drills until harder ground is encountered at lower levels, by which time the property should turn out bullion far over enough to equip itself.

At the foot of the mountain the Victoria, Vancouver & Eastern Railway (Great Northern Ry.) are running trains through the "Crown Point No. 2" mineral claim, and an aerial tram of not over half a mile could land the ore into a mill alongside the Similkameen river on the railway track. In Henry creek there is water enough the year round to supply the batteries without any expensive fluming or pumping from the river; and for fuel, coal could be dumped into a bin at the mill from the railway cars. All expenses for haulage of machinery to install a mill or to ship off concentrates would be cut out, for it would be simply a matter of putting off and on the cars. Then in operation of a mill the friable character of the ore should increase the duty per stamp of a mill to a high point.

THE CROWN POINT GROUP

THESE claims are known as the Crown Point No. 2, and the Hilda, situated east of the Martin and the Hilda is the south extension of the Crown Point, adjoining the Minnehaha on the north and east.

The Crown Point No. 2 is one of the prior claims after the Pollock group and the Bulldog group adjoins these claims on the east, the northeast corner of the Crown Point claim is just across the Similkameen river. The V. V. & E. Ry. runs through the north portion of the property. Just above the track there is one hundred foot of a tunnel driven in towards a rich vein of galena, carrying high values in zinc, silver and gold, which are exposed on the steep cliffs above the railway tracks. There are a number of contact veins running parallel to each other, on which there are several open cuts, some of which are in ten or twelve feet. In some of these cuts good values can be obtained. The rich vein, which is about two feet in width, has not yet been reached. It will take about twelve or fifteen feet from the present face of the lower tunnel.



The Beautiful Townsite of Keremoes, B. C.

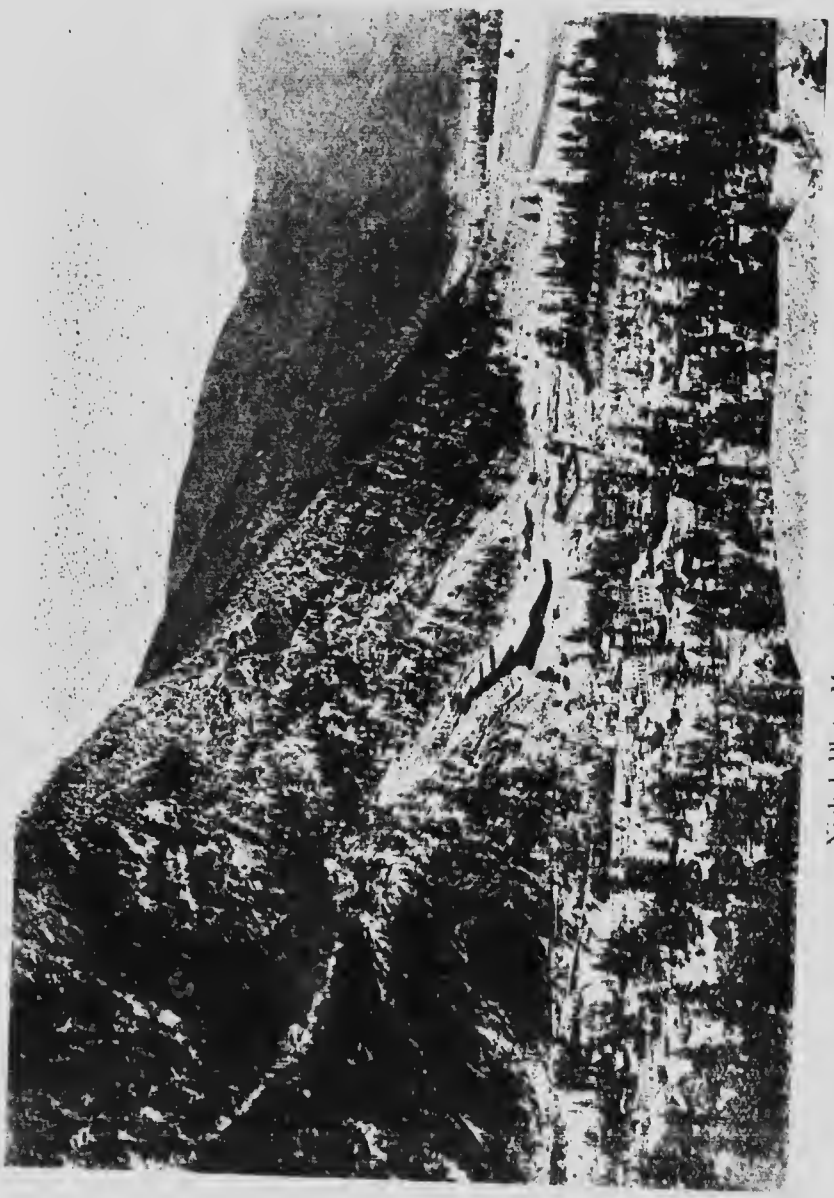
The Hilda claim is a relocation of the Tip-Top and Similkameen mineral claims, and is located directly above the Crown Point No. 2, and these silver contact leads run through the Hilda and Minnehaha. A little prospecting work shows some promising lime contacts with the argillisous rocks, and dikes of monzonite which evidently carry and distribute the economic minerals, through these contacts.

The Crown Point No. 2 is well situated for handling and shipping its ores, being right on the V. V. & E. Ry. This tunnel could be carried on into the mountain for several hundreds of feet, which would give it thousands of feet in depth, when the mountain could then be cross-cutted at great depth and the Pollock veins would also be encountered, as their strike is through the Crown Point property. This group of claims is open for bonding on easy terms, and it would be an easy matter to prove the property, to be a commercial mine with a little ready capital.

There are some very promising properties on 15 and 16 Mile Creeks, besides some new gold discoveries have been made near Old Tom Creek, which are now being developed by coast capital.

About twenty miles down the Similkameen is the beautiful townsite of Keremos. In 1899, when the writer came to this country from the Boundary,

Keremeos and Princeton were the only two townsites in the Similkameen valley, and the writer secured by purchase from the Provincial Government a large track of land in Camp Hedley being protected from any possible opposition townsite in Hedley by the Chuchuwayha Indian Reserve, and



Nickel Plate Mountain and Similkameen Valley.

Indian Reserve No. 2, and when he was assured by both the Dominion and Provincial Governments that these Reserves would not be thrown open for townsite purposes. So the Similkameen City was started, and at a great expense put on the market. However, shortly after this subdivision of Lot 1968 was completed into lots and blocks, the Indian Reserve lines were

reservoyed and two fractions were thrown out of the Indian Reserve on the bed of Twenty Mile Creek, near the mouth of the Twenty Mile Creek canyon, which was located by R. H. Parkinson and his associates, as fractional mineral claims. Soon after he completed the survey on Similkameen City he started to survey Hedley City on the old bed of Twenty Mile Creek. The following year Mr. M. K. Rodgers commenced his flume and reduction works near by, and by the expenditure of a large amount of money and employment of an army of workers, Hedley City was an established fact, and for many years the former and natural place for a townsite has been taken off the market. However, it will all make excellent fruit lnds, and the climate is well adapted for the successful growing of all kinds of fruits with a little irrigation.

A new power scheme is now under way to harness the Similkameen river a few miles above Lot 1968, G. 1, and bring a large ditch across the same for irrigation and Hedley mining purposes, and abandon the old, broken-down flume on Twenty Mile Creek. This will be a great improvement to the Camp, and will be able to supply unlimited power for the different mines now being operated.

School House.

About two miles north of Keremeos is the old mining camp of Olalla. The best fruit lands are located in the beautiful Keremeos Valley, where the best fruit is grown in British Columbia. The Ritcher Estate has taken many prizes for their Hamburg grapes, and the Keremeos Land Co. have some splendid orchards. Most of the large estates that were in early days held as large winter ranges for cattle, have now been subdivided into fruit acreage and sold to the fruit growers. Three or four crops of alfalfa can be grown on the Keremeos lands in one season with irrigation. The Keremeos Land Co. have a large ditch and a pipe line running from the Ashola river about midway between Keremeos and Twenty Mile Creek.

A lot of new ranches have been taken up on the Ashnola river, which heads in the State of Washington, U. S. A., and flows north, emptying into the Similkameen river on the south side. There are also a number of high grade tungsten and other valuable mineral claims recently located on the Ashnola river, which has no relation to the Ashnola townsite located near the foot of Kennedy Mountain, some nine miles south of the prosperous town of Princeton.

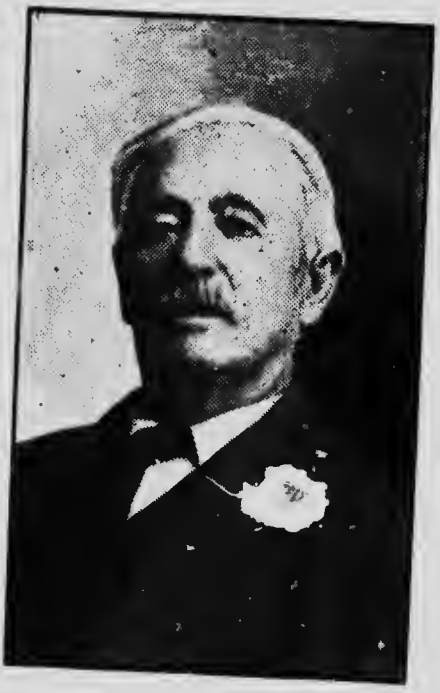
Hotel Penticton, Starting Point for the Similkameen.

Peach Trees in Bloom, Keremeos, B. C.

Old Timers

The oldest Chinaman in the Similkameen was on Granite Creek all through the big placer excitement in the early '60's, and built himself a home at the junction of Granite Creek with the Tulameen, making a living out of placer mining and market gardening. He died last year. They say he was over 90 years old.

Frenchy.



THE LATE WILLIAM VOIGHT.

The late William Voight, one of the first white men in the Nicola Valley, the Father of Merritt, B. C., who will always be fondly remembered by all who have met him.

HUGH CAMPBELL

Born May 18th, 1835, at sea, coming to Halifax. Left Halifax March, 1862, went to New York, from thence to San Francisco via Panama Isthmus, thence to Victoria, B. C., thence to New Westminster, thence up the Fraser River by boat to Yale, the gateway to the Cariboo. The only town at that time in the Cariboo was called Richfield. Went to Barkerville in 1863; went to Montana (Helena) in 1865. Came into the Similkameen with Capt. Scott's Golden Creek Mining Company on South Fork of Similkameen, and stayed with the country ever since; owner of some rich mineral claims near headwaters of Whip Saw Creek, a well respected old-timer, who will yet be rich.

Hugh Campbell.

A Prospector and His Two Faithful Companions.

Col. Robert Stevenson of Glengarry, Vankleek's Hill, Canada, came to British Columbia in May, 1859, came to Rock Creek and Similkameen Mines in June, 1860. He was appointed Custom House Officer under Sir James Douglas, then governor of B. C., with a salary of $250.00 per month, but the rich gold discoveries of Cariboo attracted his attention and he left for there in 1861. Leaving Cariboo for good in June, 1877, he came back to the Similkameen to continue his explorations made many years ago and was one of the first to draw the attention of the outside world to the

Col. Robert Stevenson.

Similkameen country. In 1888 Stevenson and James Jannson discovered Copper Mountain. Mr. Stevenson still owns large interests on Copper Mt., Nickel Plate Mountain, Kelly Creek and Leadville, and next to E. F. Voight is the largest mine owner in the Similkameen. He is now almost 75 years of age, and still quite active in the hills. The Indians used to speak of him as "HaloQuasch Copa Icta" (the man without fear).

We all hope he may live long enough to enjoy the fruits of his toils He has his family on a splendid ranch at Chilliwack, B. C., and is well known throughout Southern B. C.

The most successful business man in Southern B. C.

Born in Nova Scotia in 1873; came to Fairview, B. C., in the spring of 1893, joining his brother, W. T. Shatford of Vernon, in running their general stores at Vernon, Fairview, Camp McKinney and Hedley, B. C. This firm was known for 20 years as W. T. Shalford & Company, but after they organized the Southern Okanagan Land Co., their commercial business was reorganized as Shatfords, Ltd. The Southern Okanagan Land Company, Ltd. was organized in 1905, which was the starting point of the fruit boom of Southern B. C., and was the direct means of opening up the Okanagan Valley. Both brothers are the Managing Directors since the inception of the company to date.

The Hon. L. W. Shatford, M. P. P.

Became member for the Similkameen in 1903, and has been elected to represent this riding three times, the last time by acclamation.

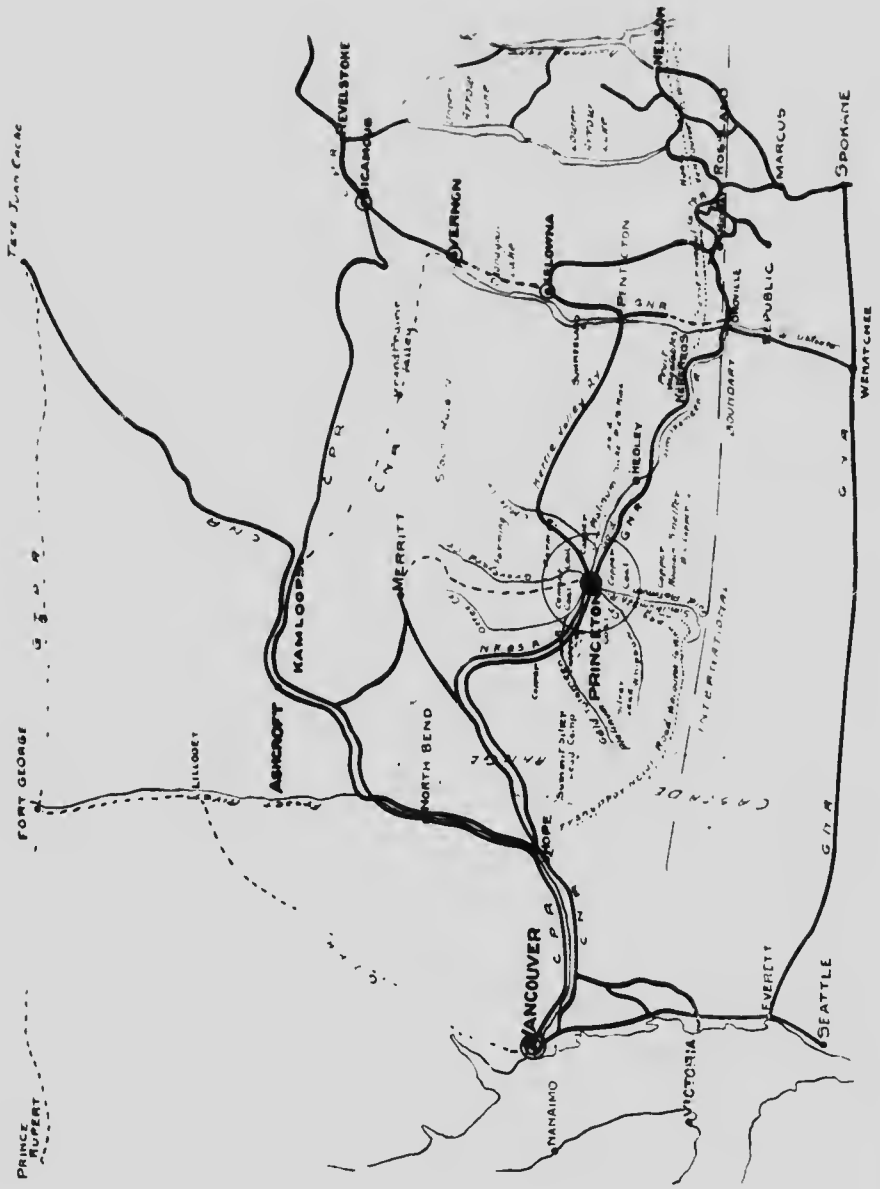
Mr. Shatford Is the Vice-President of the Bank of Vancouver, and in addition was General Manager from 1912 to March, 1913. He is the President for the B. C. Life Assurance Company, Ltd., Vice-President for the B. C. Portland Cement Company, President for the B. C. Financial and Investment Co., Ltd.

Mr. Shatford has a number of valuable mining interests throughout the Similkameen, which will make him a very rich man and since he has been the representative for the Similkameen has worked hard in getting us good roads, together with the Trans-Provincial Highway which runs from Hope over the divide to Princeton, thence right through the Similkameen country to the Boundary, which is a splendid auto run from Vancouver. His home is now in Vancouver, but he still has many interests in the Similkameen and long may he live to enjoy the same.

The HON. ALEX. LUCAS, M.P.P.

The Hon. Alexander Lucas, M.P.P.—Second term for Yale Electorial District of B. C., member of the Royal Agricultural Commission to Australia. Owner of a large property at Agassiz, B. C.

Birdseye View of B. C. Portland Cement Company's Plant.



RAILWAY MAP OF PRINCETON AND DISTRICT.

	Miles
Princeton north by Auto Road to Summers Creek	3
Princeton north to Race Track on Princeton Heights	4
Princeton north to Hagermanus Ranch	6
Princeton north to Aspen Grove via One Mile Creek	32
Princeton Northwest to Granite Creek	12
Princeton northwest to Coalmont	13
Princeton northwest to Tulameen City	17
Princeton northwest to Otter Lake	18
Princeton northwest to Jack Thynne's Ranch	27
Princeton northwest to Canyon House	35
Princeton northwest to Aspen Grove	47
Princeton northwest to Merritt	72
Princeton south by Auto Road to Copper Mountain	11
Princeton south by (Whip-saw Cr.) Ashnola	8
Princeton south to top of Kennedy Mountain	12
Princeton south to Friday Creek	14
Princeton south to Copper Creek	16

The Author

Princeton south to Roceh River	20
Princeton south to International Boundary Line	30
Princeton south to Hope Summit	30
Princeton south to Hope	50
Princeton northeast to East Princeton	11½
Princeton northeast to United Empire Mines	20½
Princeton southeast to Five-Mile Creek	51½
Princeton southeast to Similkameen City	22
Princeton southeast to Crown Point Mines	23
Princeton southeast to Hedley	24
Princeton southeast to Nickel Plate Mines (via Tramway)	26
Princeton southeast to Fifteen-Mile Creek, Bradshaw's	30
Princeton southeast to Ashnola River	35
Princeton southeast to Keremeos	45
Princeton southeast to Olalla	47
Princeton southeast to Penticton (foot of Okanagan Lake)	75

By the end of August, 1913, the Hedley Gold Mining Company of New York will have paid out to their shareholders over one million dollars in dividends taken out of their Hedley mines.

VANCOUVER, B. C.
The Coming Central Market
BY ING. D. CARSON
Assistant to the Commissioner, Progress Club

VANCOUVER, chief city of the British Pacific, and financial, commercial and industrial centre of British Columbia, is rapidly developing channels of intra-provincial trade along established lines of transportation. Because of the facility with which merchandise can be forwarded eastward by rail and northward and westward by steamer, Vancouver is assuming a position of importance as the coming central market of the province.

Agriculturists, fishermen, settlers, ranchers, fruitgrowers, lumbermen, railway contractors and mining operators buyers of food clothing, machinery and equipment in wholesale quantities are making of Vancouver their chief source of supply. Vancouver is acquiring the facilities for collecting and forwarding the necessary merchandise, and with the development of railroad and steamship transportation the volume of intra-provincial trade is rapidly expanding.

During the past year the bank clearings of Vancouver amounted to $645,118,870, an increase of nearly six hundred millions in the past ten years. Customs receipts for the year ending March 31, 1913, totalled $9,278,826,04, and exports and imports for the same period were in excess of fifty-five million dollars, divided as follows: Exports, $11,077,421; imports, $44,361,962. The business of the Port of Vancouver during 1912 aggregated 10,712,345 tons. 10,657 vessels inward bound and 10,928 vessels outward bound, of which 8,237 and 8,623 respectively were coasting vessels engaged in west-bound and north-bound trade and transportation. During the past year the wholesale trade of the city amounted to about $75,000,000, and $16,000,000 worth of merchandise manufactured in Vancouver was placed upon the market during the same period.

With the completion of the Victoria, Vancouver and Eastern and the Kettle Valley railways, the near-by Nicola, Similkameen and Tulameen districts will be placed in direct communication with the Vancouver markets. Vast stores of highly mineralized ores, coal, coke, gypsum and cement and the fertile agricultural and horticultural areas of these valleys will be directly available for development. Vancouver is situated due west of the heart of this district, about 120 miles distant as compared with Spokane, the present distributing point, which is 180 miles distant as the crow flies.

Geographically, Vancouver occupies a strategic position as seaport, supply base and financial centre for the rapidly developing districts of the interior. The great supply houses are adding to their importance as trade centres by the encouragement of a closer commercial union between city and country; the completion of the Panama Canal in a few months will solve for all time the problem of freight transportation from the manufacturing centres of Great Britain and Europe, and harbor and warehouse improvements soon to be completed will place Vancouver among the great storage and forwarding seaports of the world, and constitutes this city's chief source of supply for British Columbia and the western prairies.

For Statistics regarding financial, commercial, industrial, agricultural and mining conditions in any part of British Columbia, the information bureaus conducted by the Progress Club (437 Hastings Street West, Vancouver, Canada) may be consulted with profit. Valuable information, data and statistics have been compiled in booklet form for free distribution upon request. If you are interested in Vancouver as the Coming Central Market for British Columbia, you will be interested in Bulletin K. Write for it today.

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COALMONT
PRINCETON
TULAMEEN, B.C.

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