# The Slocan District British Columbia

## Its Resources and Opportunities for Investment

By C. CLIFFE,
Editor of the Mining Review,
Sandon, B. C.

1899

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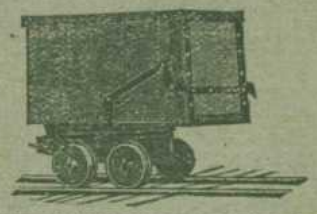

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# INTRODUCTION.

ALTHOUGH British Columbia was considered a mining country as early as 1858 on account of the finds in the placer diggings on the Fraser River, and a rush of mining men to that locality from all corners of the globe, it was not for many years after that mining operations in their present form assumed any extensive proportions. It was an easy matter for the pioneer miner to take his daily requirements up the Fraser by boat or canoe, and transport the proceeds of a few days' washing, by boat to market, and repeat his operations during the season suitable for such operations; but discovery soon disclosed the necessity for a change in mining methods. When it came to the exploration of the hills for the ledges whence the placer dust was ground and washed down by glacier and other operations of nature in the course of ages, and transporting the mineral bearing rock there found to points available to large vessels, mining became a different problem. Even though the inland waters were navigable adequately proportioned boats to remove the ore from the place of discovery, if at the water's edge, or when packed to it when distant, and the importation of supplies to the scene of operations, required wagon roads and railways. Until these were built but little progress could be made. Without going into the history of the commencement and growth of the industry in the province, even the casual reader can see from these remarks but little progress in mining could have been made before the construction of the main line of the Canadian Pacific Railway and other systems and their ramifications of branches, during the last few years.

# THE SLOCAN

## EARLY OPERATIONS.

AS our intention is not to deal with the mineral resources of the country in general, which constitutes an extensive subject, and would fill the pages of a very large volume even in outline, but with those of the Slocan country only, the principal silver lead district, so far as prospecting has yet made revelations, our observations must be restricted. The resources of the country in other features are dealt with by others from general as well as local standpoints. From what has been said of the impossibility of rock mining in the absence of railways, it will be fully understood the industry in the province is simply in its initial stages; and what is said in the following pages with local applications and present meaning, must not be considered in provincial application nor for all time to come. There are other silver-lead districts in the country; but as operations in them have not to the present been prosecuted to any great extent it would be idle to speculate on what their future may reveal. Gold is found in all sections of the province by districts, from the southern boundary to the north of the Atlin Country, and the same may yet be said of silver and lead, but at the present it is not known to be the case. Our purpose is simply to deal with the silver-lead mining as it is known at present to exist.

## BOUNDARIES OF THE DISTRICT.

The Slocan Country is bounded on the south by the west arm of Kootenay Lake and the Slocan River, and Slocan Lake; on the west by the Slocan River and Slocan Lake; on the east by Kootenay Lake, and on the north by a height of land or divide between the rivers flowing northerly and southerly. It has an average width of about 35 miles, and a length of nearly twice that distance. Within these boundaries, so far as prospecting to any great extent has been prosecuted, are situated the chief, and we might say, the only silver-lead mines of any great importance in the country. As mineral bearing areas in any country have irregular boundaries much gold and other minerals are found in some properties within these outlines, as are silver and lead in many mines without them, as for instance, the Silver King and other mines at Nelson. Locally speaking, however, the Slocan is of much smaller dimensions than the district outlined. For instructions to

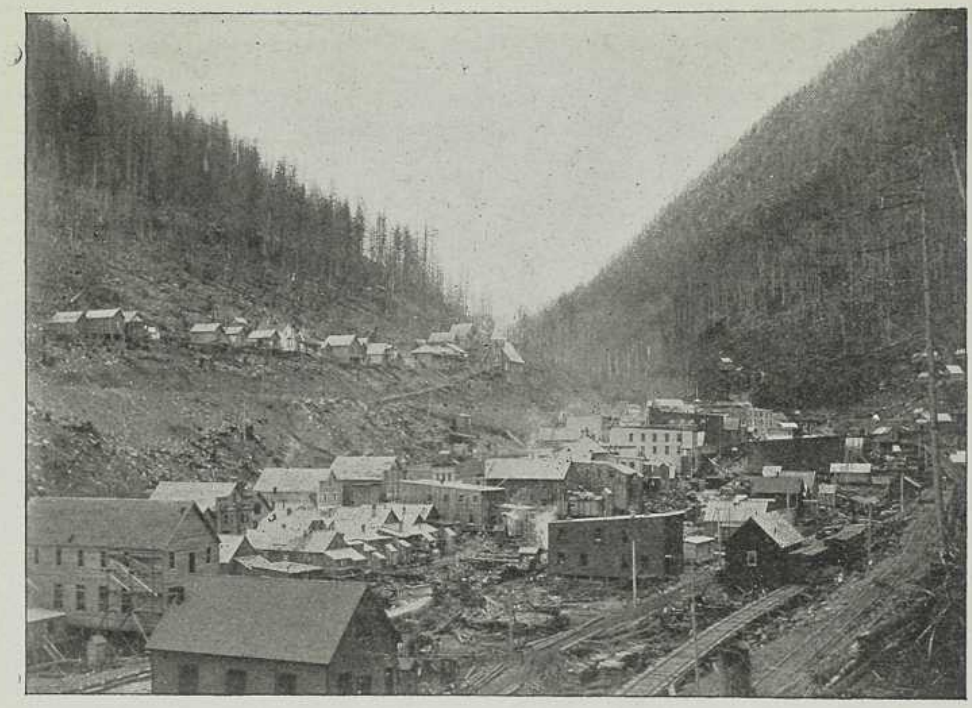
the intending purchaser, we might say the Slocan proper is limited to a width of 10 miles or so, from a straight line down from lake to lake, from Silvertown to Kaslo, important points on the east and west boundaries. Within such belt are the principal silver-lead mines of the country, if we except the Silver King, the Athabasca and one or two other mixed mines at Nelson. All the properties dealt with in these pages are within this area. Those to the north of this strip or belt, such as the Lardo properties, and the Nelson Mines to the south, are not properly speaking silver-lead mines, as they possess proportions of gold, zinc, copper and other metals. Small percentages of these metals are even found in all the mines of the Slocan, but they are relatively so small as to be left out of the calculation in any ordinary description.

## SHIPPING FACILITIES.

Though some small sections or links of railway are still required in the district to advance the handling of the ore produced and bring in the required supplies as the mines are developed from time to time, in the main the district is very well supplied with shipping facilities. The main line of the C. P. R. runs through Revelstoke, a short distance to the north; the Crow's Nest branch runs through Nelson to the south and westerly; the Kaslo and Slocan road runs from Kaslo to Sandon, with a projected extension to Slocan Lake to the west; the C. P. R. has the Nakusp and Slocan line from Nakusp to Sandon, with boat connection on Arrow Lake to the North, connecting with the main line at Revelstoke; the C. P. R. has a fine passenger and freight service on Slocan Lake, joining the rail sections, and the C. P. R. and K. and S. Co. have excellent steamer service on Kootenay Lake. There are besides two railway lines to Spokane across the boundary at the south. Short lines will yet be required to mines from these branches, as time opens up the properties, but at the present the facilities are quite complete. The two short lines of railway named have their termini at Sandon, some 10 miles inland from Slocan Lake.

## THE CITIES AND TOWNS.

A description of the country would not be complete without a brief reference to the cities and towns therein, which constitute the bases of supplies. At the southern extremity of Slocan Lake, and connected with Nelson to the south is Slocan city, a place of some 600 people, with record office, good stores, hotels, schools and churches. Coming north on the lake some 15 miles, we reach Silverton, a place of some 500



SANDON, B. C., 1897. (LOOKING EAST.)

population, with good stores and hotels, and all other conveniences for mining men. North from Silverton 4 miles by boat, is New Denver, a government town of 500 people, with stores, bank, hotels, record office, schools, churches, etc. East from New Denver 4 miles, is Alamo, with post office, store and concentrator; and Three Forks, a mile further on, with stores, hotels, schools, etc. Four miles further inland is Sandon, in the centre of the mining territory, with its 1,000 people, electric light and water systems, saw mills, hotels, stores, schools, churches, three concentrators, banks, etc., etc. A mile distant up the gulch, is Cody, with its stores, and Noble Five Concentrator. Five miles on the K. & S. R. R. from Sandon is McGuigan, with hotels and other conveniences. Four miles further on is Whitewater, with stores, hotels, concentrator, saw mill, etc. On the same road, and on its other terminus, 14 miles further, is Kaslo, with court house, government offices, ore sampling building, saw mill, stores, hotels, banks, schools, etc., etc., and two lines of steamers, connecting with Nelson, Bonner's Ferry, the Crow's Nest Railway, and all intermediate points, including Pilot Bay, with its smelter, of which more anon; Ainsworth, with several mines surrounding Balfour, etc. Nelson to the south, has a population of some 5,000 people. It is a railway centre, and has many wholesale houses, the Hall mines, with a large smelter, many banks, etc., etc. All of these places are healthy; they have the best of water from the hills surrounding, and all the other conveniences residents look for in the older cities of the eastern provinces. One is no more out of the way residing at any of these places than he is in the cities of older countries.

## THE GEOLOGY OF THE DISTRICT.

To an extent at least the geology of the district disappoints the expectations of most people who have followed mining in other silver-lead districts of the world. The lower or granite or granitoid rocks pushed up through the metamorphosed stratified mostly slate formations of later periods occupy much of the whole area. They differ considerably in appearance and color. Many of them are grey, others characterized by black mica and frequently with much black hornblende. In many localities they are not unfrequently coarsely porphyritic with large twined field-spar crystals. The granites all appear to be intrusive and of later date than the stratified rocks, much changed in contacts. The entire rocks of the district bear evidence of having been in ages past subjected to immeasurably great pressure in the movements of the earth's crust, which threw up the several mountain ranges of the entire west coast of the continent. The stratified rocks bordering the granite area are of great thickness, probably 25,000 feet, and are supposed to be archæon.

Everywhere there are evidences of eruptive agency, and perhaps volcanic in some particular localities. For the most part on Slocan Lake and for some 15 or 20 miles towards Kootenay Lake, slates or a series of dark shales with limestone everywhere abound. On Kootenay Lake, greenish diobase schists interbedded with some slates, argilites and limestone everywhere meet the eye. Generally speaking, in contacts of granite and slate, mineral is most anxiously sought after and most frequently found. The numerous faults in the slate and limestone formations, which occasion much of the impediments in the way of speedy development, are doubtless the result of the lateral and upward pressure to which the surface in the district was subjected in the cooling process of past ages.

## HOW DEPOSITED.

There are two commonly advanced theories for the formation of the mineral deposits in the rock, each having strong arguments for and against, to the practical miner. They are called respectively the "lateral secretion" and "the igneous theories." The metal is found in fissures or veins in the rocks, which run diagonally across the hills, and often to the tops and down the other sides, with more or less regularity, but following no apparent rule of uniformity. Mining so far has not investigated the circumstance; but it may be that in some instances, at least, these fissures cleave the mountains from summits to bases, and the rocks below them, and are filled with ore as on the surface. This, however, is only speculation. The direction of the fissures across the country is called the stroke, and their sides the hanging and foot walls respectively. The strokes appear to be determined to a large extent by the course of the mountain ranges. In other words, the subterranean force or forces that threw up the rocks into mountains determined the course of the fractures therein. As the veins are irregular in width in given distances, the sides in some places coming together and in other places separating to great distances, the seams of metal are irregular in thickness. In some places where the sides are close together they "pinch out" or wholly disappear, and in other places they greatly expand, forming what are technically called chutes. The explanation for this irregularity in width of seam, may be given by the sides after separation coming together unevenly, the one dropping more than the other. This pinching out of ore in fissures has often led to the abandonment of operations, when extended work by others following the abandonment resulted in the opening up of profitable properties. In many instances better ore is found where the seam is thin than where it is thick, and generally speaking where the seams of properties are thin the ore is of higher grade than where it is more abundant, quality and quantity appearing to alternate one another. Width of seam, too, appears somewhat characteristic of locality, those around Ainsworth being the widest in the district.

The mineral or "pay streak" of the fissures seldom or never occupy their full width, but is generally enclosed in a geological mixture technically called gangue, which, in this district, consists for the most part of quartz; spothic iron, blende, etc.

While the origin of the fissures cleaving the mountains from top to bottom and to an unknown depth is various, the gradual process of folding upwards in the elevation of the mountain system will account for most of them. In these lie embedded the metals for whose origin the two theories referred to above have been advanced. Some are of the opinion that the elements of which these metals are composed were originally in "the country rock" or the walls of the fissures, and that chemical agencies, or the action of heated alkaline water from below and cold water from above coursing through the veins brought it forth as a deposit in the cavities, as coal has been created from wood through the operation of ages.

Others, again, are of the opinion that the metals were in the gaseous matter occupying space before the heavenly bodies were called into existence, and that as the cooling process continued they, being heavier than the surrounding elements, dropped to a lower level when the granite surface of the earth was being formed by cooling. As the globe matter cooled and the surface shrank, breaks occurred and the underlying metallic matter was forced up through the fissures. As the veins are of uneven thickness, and as it is nothing uncommon to find bodies of metal lying against the walls worn as smooth as a plough share, and creased like one much used, this appears to be the most plausible theory. The wearing of the soft metal against the granite rock in the upward pressure fully explains the smooth worn surface. Again, one of the first surface indications of the presence of metal bearing rocks is "blow outs," or pieces of rock at least of igneous, if not of actual volcanic origin. The signs all indicate the existence of subterranean forces at work when the metals were making their appearance near the surface.

## PROSPECTING.

From what has been said in a previous section as to the origin of the minerals, an ordinary reader would be led to suppose the minerals would appear on the surface of the rock, and so they do; but on account of the long ages that have intervened, the seams are now for the most part covered with the remains of vegetation, broken rock, and the other accumulations of ages. The nearer to the top of the hill one approaches, the less of these accumulations; and as a result, the summits are the favorite fields for prospectors. Evidences of the existence of minerals are not wanting at the bases of mountains, or even in

the gulches traversed by the streams. There are assurances in many cases that seams or ledges extend from summit to summit of hills, and that in the valley traversed by the summit fed stream, broken pieces or float ore are frequently seen. In gold districts these pieces are ground to dust by glacier or other action, and constitute the placer diggings.

In the Slocan, however, there are means peculiar to itself for finding the ore bodies in the fissures. Sometimes the snow or landslides so expose the metal bearing veins, that they are readily seen by the prospector. Instances are not unknown in which the upturned roots of fallen trees lay bare the smiling metal in the crevices of the rock. The most common means, however, is this: The prospector, some distance down the hill, finds a piece of ore, changed and worn it may be by the action of the elements through ages. The prospector knows this has been broken off from a cresting or copping of a mineral lead. He considers the lie of the hill, to ascertain whether it has been brought down through an irregular or sinuous course by a slide of some kind, or rolled down of its own accord when broken from the body by some force or agency. After fully considering these surrounding circumstances, he starts up the hill pick in hand, testing the rock at intervals, until, if fortunate, he discovers the original source of his find. He marks the spot, stakes out the area allowed by law, registers, and finds he owns a prospect or claim. His next course is to test, under development, his find, to ascertain the value of his property, but of this, more in later sections.

# MINES OF THE SLOCAN

## THEIR LOCATION BY TOWNS.

### THOSE OF SANDON.

Those who have visited many of the mining centres of the west, describe Sandon as a typical mining town. It is situated in a gulch between hills, snow-capped many months of the year, 2,500 feet above the sea level. It has not room to rival in size the largest cities of the coast; but nevertheless, in its lowest level, there is plenty of room for many additions to its present list of fine stores, hotels and other business places; and its side hills with a moderate outlay, might locate many thousands of people in comfort and with modern conveniences. As its water supply is got from great heights, above possible contamination, it is as pure as any supply in the world, and affords a fine system for fire protection. Carpenter Creek through the centre, affords excellent natural drainage and sewage, all conspiring to make it healthy as it is known to be. Its present population is about 1,500, and if growth warrants it, there will be but little difficulty in building an electric car service to the lake shore, 9 miles distant, for pleasure, recreation and residential purposes if necessary. As is stated elsewhere, it has all the business, commercial and industrial institutions that are necessary for present demands. It has the western terminus of the K. & S. R. R., and the eastern end of the Nakusp and Slocan R. R. also, giving it choice of routes and easy access to all parts of the country. It has two concentrators in operation, with two more under consideration, and a fifth at Cody, a mile and a half distant, which will make it internally what it is now externally, a scene of great mining activity. At present, averaged up, there are over 800 miners working at mines that ship here, and last year the city sent out 24,750 tons of ore, worth in the gross, some $2,500,000.

SLOCAN STAR MILL, SANDON B.C.

## THE MINES.

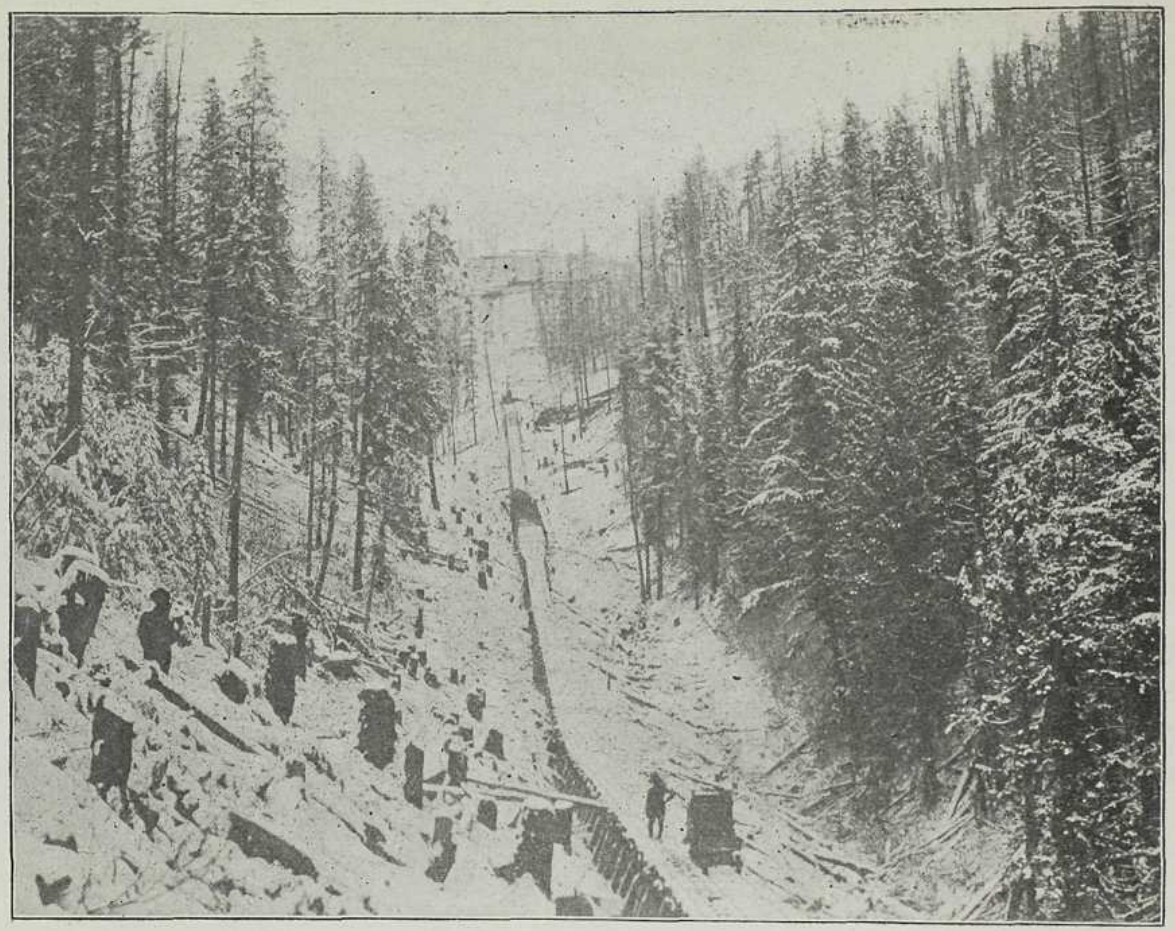
### THE PAYNE.

This is the largest, and as far as work has gone, the most profitable mine in the Slocan, or in the whole province for that matter, not excepting the large mines of Rossland. It was the first located of any of the dividend payers of the district. It is situated on Payne Mountain, some three miles or so to the north-west of Sandon. Up to two years ago it was operated by a wagon road leading up to the property from the office and ore house on the K. & S. Railway. Since then it has been worked by a gravity tram, having stations on the K. & S. and the Nakusp and Slocan, to give it choice of outlets. About October, S. S. Bailey, till then a half owner, sold out his share to A. W. McCune, of Salt Lake City, his partner, for $87,000. It has recently passed into the hands of a Canadian Company, residing mostly in Montreal, and is stocked at $4,000,000. The property consists of four claims. It is developed by a series of tunnels and upraises, resembling to some extent a combination of ladders lying laterally on top of one another. The lowest tunnel is in about 1,500 feet, and is probably the longest one in the district. The main chute of the property has a width of three feet of high grade galena.

The carbonates of the property assay 80 to 100 oz. silver and 35 to 40% lead, while the galena often goes 175 oz. in silver, and 70% lead. The property has in assets outside of the mine, such as tram, buildings, etc., which run well up to $100,000. Up to January, 1899, the mine paid $1,000,000 in dividends, against $850,000 paid by the Le Roi, of Rossland, and is since earning some $70,000 a month over the cost of operation. In full operation it gives employment to 175 men.

### THE SLOCAN STAR.

This group of eight claims, is owned by the Byron N. White Co. It was discovered in October, 1891, by Bruce White, who is still financially interested in it. About the same time, Bruce White, Charles Chambers aud others, located the entire eight claims of the property. It is situated about 1¼ miles from Sandon, up Sandon Creek in a south-easterly direction. After discovery, the ledge was found to have a width of 13 feet in places, of quartz and spothic iron, inter-spersed with zinc, galena blende and slate. As work proceeded, the ledge was found in places to have a width of 30 feet of concentrating ore. It cuts



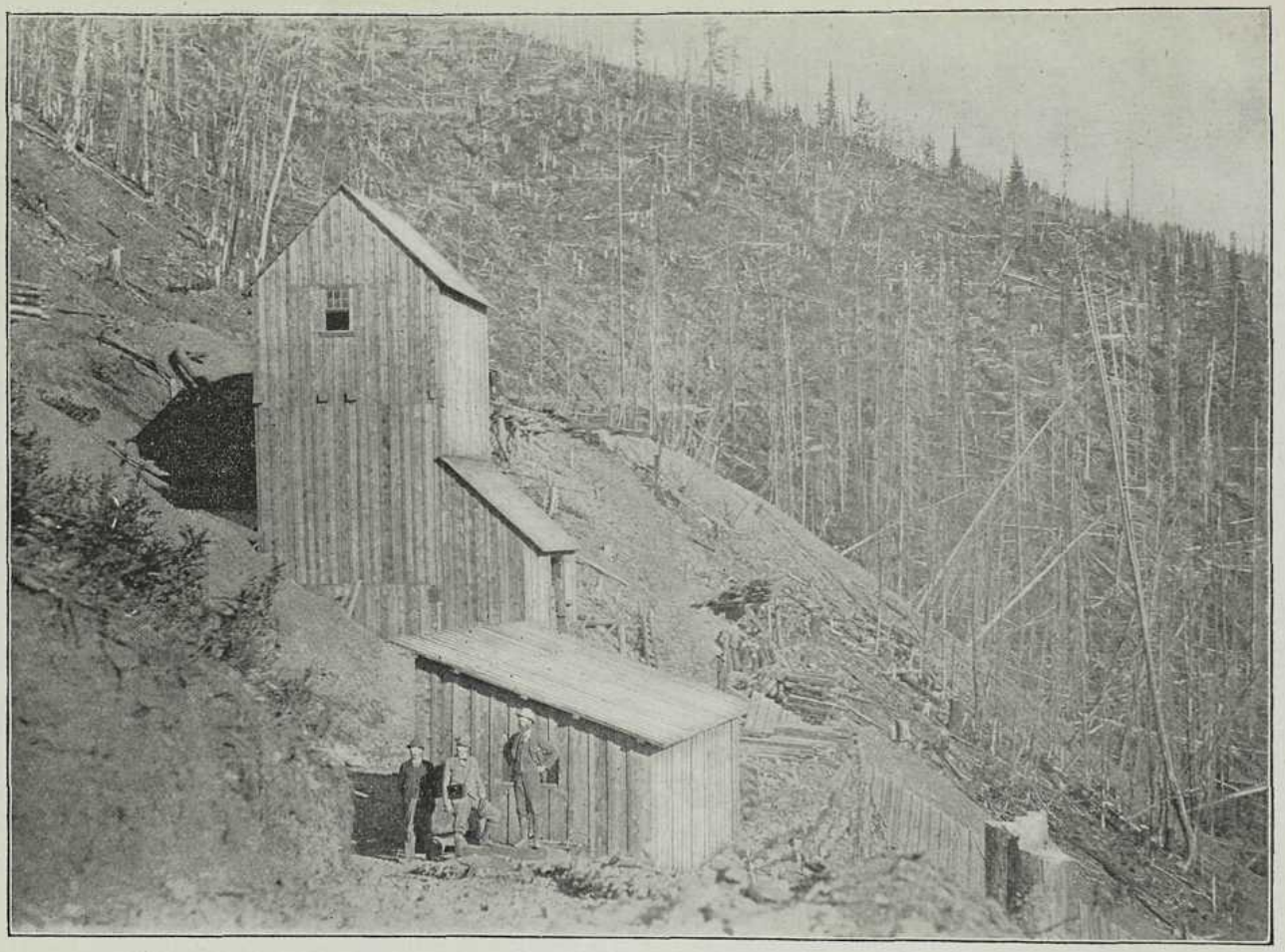
PAYNE TRAMWAY.

through the slate, quartzite and limestone formations, as do most of the ledger in the district at right angles. In this mixture of concentrations are immense bodies of pure galena have been mined, and sent to the smelter direct though the mass of the output goes through the concentrator of 150 tons a day capacity on the premises. The galena assays about 100 oz. silver and 70% of lead, while the concentrating ore runs about 20 oz. less in silver, and the same in lead. In full operation the property is worked by some 80 men. The ore is hauled from the tunnels to the concentrator by a 1,600 foot gravity tram, and wagons bring the concentrates from the mill to the railway for shipment. In mining operations a method almost peculiar to itself has been adopted, principally because of the width of the ledge At the outset, after driving tunnels stoping to the surface was done. Later, cross cutting, drifting lower down and stoping to the tunnels above, followed, which makes a large cut to the surface, entailing much protecting timbering. After about 200 feet of drift on the lead, high-grade galena was struck, which has been the rule ever since. With this system of stoping upwards to higher tunnels with unequal widths, pillars of concentrating ore have been left for protection purposes, though perhaps not absolutely required. To be more precise, we may say the deepest workings are but little more than 100 feet vertical depth. On the property there are five cross-cut tunnels with drifts on the ore body from these. No. 1 tunnel reaches the ore at 50 feet; No. 2 at 100; No. 3 at 150; No. 4 at 475; No. 5 at 500. Once depth was reached, stoping to the surface was abandoned, and internally drifting on the lead, and upraising tunnels followed in regular order, until now the interior is a network of regular mining operations. A lower tunnel near the creek shows good ore, and verifies the invariable rule in the Slocan that wealth improves as depth is reached. The ledge of the Star is one of the widest found in the Slocan.

The mill is operated by water power from a long flume, and has a crusher and all the other appliances devised by modern art. To January, 1899, the property paid over $400,000 in dividends to the shareholders.

## THE RUTH.

This mine stands across a gulch from the Star, to the west, and is 1¼ miles from Sandon, with which it is connected by a wagon road. There are eight claims on this property also, but the bulk of the work is done on the Ruth, the Ruth Fraction, and the Wyoming. In its earlier days, and when of fewer claims, it was owned by D. E. and W. H. McVey and H. M. Foster, who paid $166,000 for a two-thirds interest. Since then these and five additional claims have been acquired by the Ruth Mines Co.,

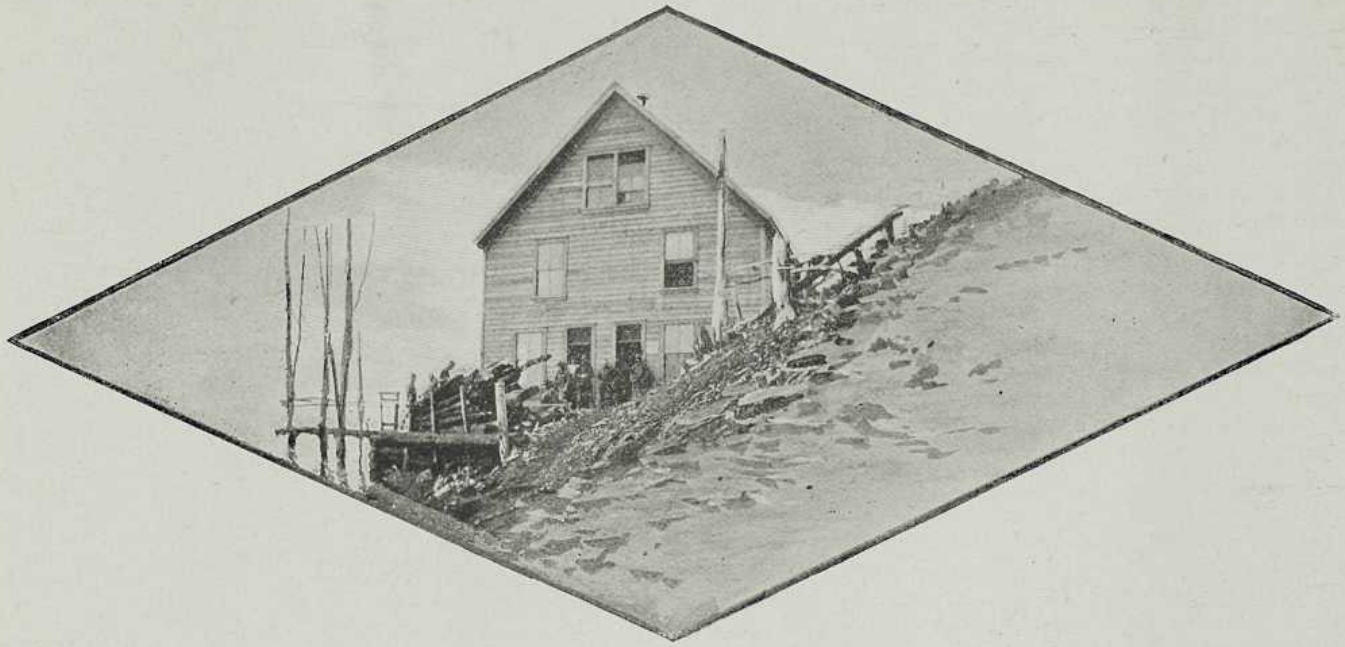


PAYNE ORE HOUSE.

Limited, of England, with Mr. Alexander, resident manager. The ledge runs from three to nine feet wide, northeast and southwest, and cuts the slate at right angles or very nearly so. The gangue in the vein carries galena, spothic iron and quartz. The galena commonly assays 110 oz. of silver and 60% lead. It runs in carbonates near the surface, which assays considerably lower in silver. In its operations and development much system has been observed. It has 4 tunnels aggregating probably 4,000 feet in length all run on the lead, which is well-defined on the surface; all are connected by upraises at considerable distances apart. The lowest tunnel is in probably 850 feet, and reaches a probable vertical depth of 375 feet. For much of last summer the mine shipped heavily and realized over $75,000 in profits or a total of over $300,000 since shipments commenced. The average thickness of the solid ore of the vein is 3½ feet, though it often runs three times that width. The machinery so far consists of a fine saw mill and an air compressor. The ore has been run from the lowest level by a gravity tram track to the dump, whence it has been taken to the cars by wagons. All this will be changed the coming summer, as the Company are erecting an improved gravity tram to a concentrator being built within the city limits. The tram will have a capacity of 150 tons per day, and the concentrator one of 100 tons. From 80 to 90 men are regularly employed on the works.

## THE LAST CHANCE.

This mine has lately become next to the Payne the largest shipper in the camp. It joins the Noble Five on the west. The mine has proved itself a "grass root" property, that is, it has paid from the start, covering the cost of development, and is now in operation paying a profit of from $15,000 to $20,000 per month. Though it was known from its earliest operations to be a valuable property, it was a strike of some 12 months ago that forced it to its present prominence. It was located in 1891 by the Hennessey brothers, and sold by them at a low figure to Hendryx and Tomlinson. Mr. A. F. Wood, the local manager, has now, however, a substantial interest in the property. It covers 120 acres and has seven claims: The Last Chance, Star Light, Blizzard, Little Widow, Blue Jay, Silver Cord, and Galena. Three of them have produced ore, but the Last Chance is the only one worked beyond a prospect. The locations cover the crescent of the hill, or the divide separating the Sandon and the McGuigan slopes of the mountain. In all about 2,200 feet of tunneling has been done, the lowest tunnel being about 800 feet, and the longest. Some 400 feet of upraises have also been stoped mostly on the lead. To the first of January, 1899, 2,500 tons of ore have been taken from the property; 700 of that from the 1st of July previous. Since January, 1899, its aerial



BOARDING HOUSE, RECO MINE.

gravity tram, one of whose spans is 2,800 feet long to escape slides, has been in operation, and its shipping has been heavy and continuous—a car a day going out. The tram has in its parts a capacity of 75 tons a day. The ore house alongside the K. and S. track is a four story structure, and carries the ore from the tram buckets to sackers in the basement who sack and empty into cars. From 50 to 60 hands are employed when the workings are in full operation.

## THE RECO.

In many respects the Reco is a remarkable property. It is situated on Reco mountain, as the trail goes nearly four miles from Sandon northeasterly, but not half that as the crow flies. It is named Reco or "Ruecan," after the original French locator of the Reco claim. This claim was purchased by the present owners, after ore was found on it, for $2,700 in July, 1892. Since then the Reco Mining and Milling Co. have added the Texas, New Denver, Clifton, and Ephraim claims close by, either by location or purchase, the property now covering 150 acres. This is also a "grass root" property and paid its way from its early workings. At the present there are accommodations on the premises for 200 miners, and has at times nearly half that number employed. There are three known leads on the property and in all seven tunnels have been driven. In all there are about 4,500 feet of workings, with ore houses at the extremities of all tunnels, for the reception of ore as mined. An aerial tram and concentrator in the city are projected, which will cost about $75,000.

From the small or Reco-good-enough vein, has come the richest galena yet found in the Slocan, consisting of argentite and ruby silver. The "big lead" on the property is at places 40 feet between walls, and runs about 175 oz. in silver and 75% lead. In 3¼ years' operations the mine turned out 2,818,055 lbs. of ore, netting $239,970 over smelter deductions, duty on lead, freight and treatment. This gave $187.500 in dividends, and during the last 9 months of 1897, and a portion of 1898, it paid $100,000 more or a total of $287,500. Much development work has since been done and a large lot of concentrating ore is awaiting shipment to further swell the profits. The entire product of the property averages 239 oz. silver and 42½% lead. The heavy cost of rawhiding in the winter and packing in the summer, to be dispensed with when the tram is built, was another obstacle in the way of larger dividends. A blend of grey copper and galena found on the property has run $400 to the ton.

## THE GOOD-ENOUGH.

Just south of the Reco lies the Good-enough, which nature apparently designed to be a portion of the same property, as it is traversed by the same small vein that has rendered the Reco so famous. In short, a cross-cut tunnel between the two properties has been converted into a common thoroughfare for the operations on both mines on this vein. The mine is owned in part by J. A. Whittier, of Kaslo, and others are interested with him. There are on the property a cross-cut tunnel 275 feet long, an upraise of 169 feet from the 5th to the 4th level. From the upper tunnels stoping to the surface has been done the same as at the Star and the Ajax. The mine has not been operated much of late for reasons known only to the owners; but in its shipping days it paid well, the ore averaging 300 oz. in silver and 55% lead, in the galena, and something less in the carbonates of which much has been found on the property. The mine has shipped in all probably 600 tons, and has paid $35,000 in dividends.

## THE R. E. LEE

Is owned by L. Alexander, of Kaslo. It is five miles from railway by trail. The ledge is galena with stroke northeast and southwest. In some parts it has developed a width of 18 inches. The property has about 800 feet of workings in two levels connected by a 95 foot upraise. It has shipped in past days, averaging 130 oz. in silver and 75% lead, though of late but little work has been done on the property.

## THE BLUE BIRD

Adjoins the Good Enough, and consists of two claims. There are found on the property a 30-foot ledge, assaying 135 oz. in silver and 75% lead, and several stringers bearing ore of like value. The workings consist of a 75-foot shaft, a drift of 200 feet on the vein some 4 wide, with about 6 inches of a pay streak. Some $50,000 worth of ore has been mined on the property, that ran 175 oz. in silver and 65% lead.

## THE AJAX

Lies just south of and alongside of the Last Chance. It is said to have been located by the Hennessey Brothers, who did much exploration of the Slocan in the earlier days of its history. They sold out for a

nominal figure to the Broden Bros. of Idaho. These people employed W. W. Warner to work the property, and under instructions he stoped from tunnel to surface to get the most out of the property at the least possible expense. Some two years since it was bought by the present owners, the Ajax Mining and Development Co. It consists of three claims—the Ajax, Crown Point and Random Shot. Mineral has been found on all three claims, but the Ajax only has been worked to any considerable extent. On the Ajax there are five tunnels, in length 210, 155, 80, 280 and 235 feet respectively; the latter is a cross-cut and from it there is a drift of 300 feet on the vein. There is but one raise of 65 feet from No. 1 tunnel to the surface. There are two veins found on the Ajax claim. On the west one all of the above work has been done. On the east vein there are three tunnels, in length, 65, 160 and 200 feet, respectively, with no raises or winzes. On Crown Point there is one tunnel 185 feet. No work has been done on Random Shot, but croppings of ore are everywhere visible. About $35,000 worth of ore has been shipped, much of which has gone into development. The ore averages 200 oz. in silver and 65% lead.

## THE TREASURE VAULT.

This mine lies between the Last Chance and the American Boy on the Last Chance Ledge. It has three tunnels—125, 425 and 300 feet long; three upraises of 150, 125 and 125 feet, and one winze of 50 feet. It is owned by Broden Bros., of Idaho. It has shipped 10 cars of ore assaying 100 oz. of silver and 65% lead.

## RUTH No. 2.

This comparatively young property adjoins the Ruth proper on the west. It has two tunnels together about 350 feet along and a shaft some 80 feet deep. It is assumed from indications that the mineral will be the same as that of the Ruth.

## THE MINNESOTA SILVER CO.

The property of this Company is just above the Ruth and the Star, on a line nearly midway between those two, and drops quite a distance short of the summit of the mountain. From all substantial appearances this mine will prove itself yet to be one of the largest shippers in the camp, if not the equal of the best. It consists of 11 claims: The Ivanhoe, Elgin, Bendigo, Morning, Tom Bowling, Transit, Big Kanawha, Great

Eastern, Admiral Nelson, Kitchener and Valarie. The two first named are the principal ones worked, though ore has been found on the Great Eastern, Tom Bowling, Big Kanawha and the Kitchener. The first thing that strikes the eye of the visitor is several thousand tons of ore lying on the dump awaiting the construction of the tram and concentrator that are to be built the coming summer. The mass consists of galena and concentrating ore, and lies at the mouth of a 565 foot cross-cut tunnel, which strikes the ore body in No. 4 tunnel, and is the main outlet and inlet to the entire property. There are a few other short cross-cuts but they are merely testers to the higher tunnels. No. 4 tunnel is on the Elgin, and it and the Ivanhoe are the most developed of the claims. No. 4 tunnel is a drift both ways on the ledge some 1,300 feet long. About the centre of this tunnel an upraise of 100 feet on the ledge is made, landing the visitor on No. 3 tunnel, a drift of 400 feet on the vein also. This tunnel is an internal working wholly, as it does not extend to the surface. Another upraise of 180 feet from the centre of No. 3 tunnel lands on No. 2 tunnel, a drift on the vein also some 400 feet long and extending to the surface. A corresponding upraise 75 feet in height takes the visitor to No. 1 tunnel, a drift of 550 feet extending to the surface also. A cross-cut in No. 4 tunnel strikes a parallel vein some three feet in width, of high grade ore. From No. 4 tunnel a shaft on the vein is now down 150 feet, at a considerable angle, as the ledge makes a considerable dip. A gasoline engine is the motive power to raise the broken rock and metal and facilitate the operations. When double this depth is reached, a tunnel to the surface will be driven, and be called No. 5. No attempt has ever been made at realizing on the output, because of the distance to haul the ore and no stoping has been done save that which was the natural result of making the workings. The little ore marketed was simply brought down by the empty rawhides which took up supplies to the miners. It has assayed 100 oz. silver and 70% lead. Two things strike the eye of the visitor to this property forcibly—the healthy condition of the workings and the bunkhouse by perfect ventilation, under P. J. Hickey's supervision, and the excellent food supplied the miners.

We cannot leave the property without referring again to the great magnitude of the ore body, In fact its width has been ascertained but in few places by the management. In a careful observation the one wall may be seen in several places, but at no point are the two walls visible to the eye at the same time; and the mass of ore overhead smiling through the timbers of the works is ample evidence of the wealth of the property. Generally there are about 40 men employed in the works.

## THE EUREKA.

This mine is now owned by the Byron N. White Co., though some time since Bruce White, J. A. Finch and Charles Chambers were largely interested in it. It is up the mountain from the Star and may

be a continuation of the Star ledge, as the ore is of the same grade. It has not been worked much recently, though it has a 200 foot tunnel, and has shipped 300 tons of $150 ore.

## THE RICHMOND.

On the same ledge as the Eureka and the Star, but below the latter is the Richmond. On this property also, but little work has been done of late years. In its 50 foot tunnel has been found a five feet ledge of galena, blende, zinc quartz, and spothic iron, assaying 75 oz. silver and 60% lead.

## THE CANADIAN GROUP.

This lies to the west of and adjoining the Elgin claim of the Ivanhoe group, near the divide on the mountain top. It stands abont 7,250 feet above Sandon, and much more above Silverton on the Lake Shore to the South. The locating indications of the mine were solid cube galena cropping out on the surface at intervals. In fact several small galena ledges or stringers can be traced on the surface north and south for considerable distances. This is evidence that when the faulting in that district actually occurred, the underforces extended their effect to the surface. Even in the tunnels, coarse calcite and galena are often found hanging to the walls. A second ledge carrying galena in calcite and quartz crops from four to twelve inches wide with a good width as depth increases. In the earlier days of the property, W. H. Brandon, of Slocum City, was one of the principal owners; but the past winter the property has passed into the hands of a stock company, many of whom reside at Guelph, Ontario, Mr. Brandon retaining a considerable interest. The new company has ample capital to work it properly. The claims were located in 1892, and since then light but steady development has been done. From this work a couple of cars of ore have been shipped that run 120 oz. in silver and nearly 60% lead. The Ontario and Slocan Mining Company, the present owners, promise to push work the coming summer; and if so, a good report is expected. On account of the length of trail to the railway, the property cannot give its owners justice until a tram is built to facilitate marketing.

## THE ADAMS GROUP.

The veins and claims of this property are so intertwined with those of the Canadian Group, as to appear to the ordinary observer one and the same property, though they are as distinct as they well can

be. It is owned for the most part by Capt. L. C. Adams, of Montreal. It is evident that in the neighborhood, if not on the actual premises, there are two or more large parent ledges, from the number of stringers found at every turn. This is the result of the much faulting in the fissures of the locality. Some of the stringers contain ore in sufficient quantities to pay well for operations. In one open cut, some 30 inches of mixed ore with 12 inches of solid galena on the summit have been uncovered. Commencing 150 feet below the summit, several tunnels have been driven at different lengths to stop the several veins appearing on the surface or strike a parent ledge if possible. A high grade ore has been got in some of the stringers or veins, and concentrating ore in others. Still, the merits of the property cannot be fairly estimated until more work has been done, though high assays have been got from several samples tested.

## THE MADISON.

This property of four claims—the Madison, Argenta, Maroen, and Great Eastern, lies almost due north of Sandon, and south of the Last Chance and the Noble Five mines, and is crossed by the Cody branch of the K. & S. Railway. It is known to be crossed by the Argenta, Last Chance and Noble Five leads, and ore has been found in them all. A cross-cut tunnel from the K. & S. R. R. will cut all the leads. One car of ore has been shipped with gratifying returns, and some of the highest assays of the camp have been got from samples of its ore. It was owned by J. C. Eaton up to a short time ago, when he sold it to the Sovereign Mining Co., of Montreal.

## THE ARGO.

This is the nearest mine to the city, and adjoins its northern limit. It is owned in part by Sandon parties. It was located in 1896, by J. A. Whittier, Alex. McDonald and W. Snowdon. It consists of three claims. A tunnel has been run on the ledge and several inches of galena have been encountered; but for some reason or other but little work has been done on it since the year of its discovery, though it has one substantial advantage in proximity to shipping.

## THE WONDERFUL.

As its name implies, this is a wonderful property in many respects. It lies across a ravine, about two miles to the south-west of Sandon. In the property are three claims. The parent property is properly

speaking a collection of float ore, and the mineral is obtained through hydraulicing. Flumes are built from Miller and tributary creeks close by. At intervals the water is turned on, as in gold washing, and after a clean up is made, when boulders of washed galena are picked up all over the washed area. To September last, over $60,000 had been realized from ore picked up in this way, and but little work has been done on the property since, owing to disputes between the company and the management, which have resulted in a change of manager. The ore found is a fine galena, assaying 125 oz. of silver and about 75 % lead. It was the opinion of all having knowledge of mining that this collection of float ore was from a ledge higher up the hill, and come down in slides. This led to the driving of a 1,300-foot tunnel, cross cuts, drifts and upraises, until a fine ledge was recently uncovered. As other ledges are known to exist up the hill, it is apparent this must eventually become a fine property.

## THE MILLER CREEK.

On the west of the Wonderful, or rather on the west extension of the ledges of the Wonderful, is situated the Miller Creek mine of three claims, owned by Spokane parties. As yet extensive work has not been done on the property; but a couple of shipments have been made, which have turned out very satisfactorily. At the present about a dozen of men are at work driving tunnels. The first cross cut is about 70 feet in length, reaching the ledge, and about 175 feet of drifting on the ledge has been done. It is known the vein is a true fissure about six feet between walls, where explored, and cutting the formations at right angles. The mineral shipped was taken the gangue matter of the vein. As but about 50 feet of vertical depth was obtained until the tunnel passed under Miller Creek, the highest expectations could not be realized from the results. They were, however, better than anticipated. After the bed of the creek was passed, depth was obtained rapidly. A wide vein was encountered that is likely to make an excellent record for the property.

## THE NOBLE FIVE.

This is one of the oldest mines in the camp. It is situated on the north of Cody, north-east from Sandon and about 3½ miles from the latter place. The ore on the property consists of both solid galena and carbonates. It embraces eight claims, and it is known they are traversed by two distinct ledges, the one passing through five of them and the other through three. In short, development has discovered a third ledge passing through the property, but later operations will determine its value. The main ledge has surface

croppings of galena, spothic iron and blende, a characteristic of the district. These by turns are found adhering to the walls, under development. The ledges run north-east and south-west through limestone and shale, and cut porphyry dykes, the best ore being found in the contacts.

In the earlier days of the property the idea appeared to have been "a grass-root" property, as short drifts on the ledge and sloping toward the surface was the order of operations observed. Since then a different system has been pursued, but until recently not under the most satisfactory management, either. Some years ago a 70-foot tunnel and short cross cuts were driven in the neighborhood of the great slide; but that working had to be abandoned on account of the danger to operatives. Attention was then turned to another section of the property, where operations have been most satisfactory, as at present the showing of ore is most gratifying.

Up to a year ago, about 12,000 tons of ore had been shipped, netting, it is said, some $50,000 in dividends. The carbonates assayed 63 oz. of silver and 15% lead. In many instances the galena runs 255 oz. silver and 70% lead. These, of course, are not the ordinary values of the ore from week to week. The company at too early a day, however, crippled its resources by building a 6,100 foot Finlayson double rope tramway, with a capacity of 20 tons per hour, to a concentrator at Cody with a capacity of 120 tons a day. Throughout the entire workings the tunnel and upraise system so general in the Slocan is reduced to simplicity and efficiency here also. About a year ago Mr. James Dunsmuir, a wealthy man of Victoria, put a large sum of money into the property, which has been for the most part devoted to development work. In this a couple of very important strikes have been made exposing some of the largest galena bodies ever uncovered in the Slocan. No shipments have been made in the interval; but the ore mined in the improvement work is lying in the tunnels, and this with the bodies of metal uncovered, will make shipping very heavy and steady when it commences a few months later. It is generally decided the property will yet take a first rank as a shipper, and as it always has taken it in point of quality of ore, the Noble Five, notwithstanding past changes in fortune, will, everything considered, be counted a No. 1 property.

## THE SOVEREIGN

Is on the Reco Mountain, about 2½ miles easterly from Sandon—a group of three claims. It is reached by the Reco trail. The workings are about 1,500 feet above Sandon. They consist of drifts run on the vein, which dips at an angle of about 50 degrees towards the south-east, the strike being north-east. John A.

Finch, of Spokane, a familiar name in the Slocan, was one of the first owners, though it is now stocked by a strong Montreal company. Finch put in two levels 75 and 300 feet respectively, and found ore at a depth of 150 feet—a 20-inch vein of carbonates in several chutes. He shipped five cars that ran 100 oz. of silver and 60% lead. The new owners have driven a third tunnel—a cross-cut tapping the lead at a depth of 375 feet. The main tunnel, No. 2, is now about 750 feet long, and No. 1 425. They are connected by a raise of 140 feet, through ore all its length. The country rock is the agillite of the district with intrusive dykes of porphyritic quartzite. The vein averages about five feet in width and porphyry is a leading element of the gangue. Something like 150 tons of ore have been shipped from the development work alone as no stoping has been done. The hanging wall of the vein is well defined, but the foot wall is much broken and indefinite, much impregnated with the country rock, which appears to be an exception to the rule in the district. A fault occurs on the upper level forcing the vein several feet to the west; but the workings readily overtook the vein again in the usual course. Though many valuable chunks of galena have been found the body is not sold, so the value of the mine will have, for the most part, to be determined by the quantity and quality of the concentrates. From some cars 80 oz. silver and 60% lead have been realized. Mr. Riblett was long the manager, and has the property equipped in excellent form.

## THE ST. REVERNE.

This property is a group of six claims directly south of the Payne. John A. Finch is largely interested in it. It is said to have the extension of the Payne lead. Another vein crosses the property 700 feet further south of the Payne ledge, on which considerable development has been done. The vein runs from 3 to 4 feet in width, and considerable of the metal mined has run 150 oz. silver and 75% lead.

## THE AMERICAN BOY.

On the Last Chance lead and immediately below that mine stands the American Boy. In its earlier days Thos. McGuigan shipped several cars of ore from the property, and in all it has produced so far from $12,000 to $15,000 worth. It is owned in Spokane. A cross-cut tunnel of 550 feet is driven to this lead, below the upper tunnel. This gives a depth of about 1,000 feet below the Last Chance, and places the property on a good shipping basis; but for some reason or other the owners have done but little with it the past few months.

## THE SLOCAN BOY.

This mine is near by the Washington, and was formerly owned by S. K. Green. It has two ledges, one of which has three tunnels of about 350 feet of aggregate length. The second is the southern extension of the Washington ledge, and is tapped by a 200-foot shaft at a depth of 100 feet. A drift from this of 225 feet connects with a 170-foot tunnel on the ledge to the surface. Several cars of carbonates and galena have been shipped from the property. That from the small ledge gave 330 oz. silver and 75% lead; that from the large ledge 100 oz. of silver and 70% lead. It has paid $25,000 in profits and is now bonded for $50,000. Many consider it one of the best properties in the Slocan.

## THE CHAMBERS GROUP

Of four claims, south of the Goodenough, has a ledge of concentrating ore from 40 to 60 feet wide. It is traceable from Carpenter Creek up the mountain side. Some 500 feet of tunneling has been done on the group, and ore has been shipped that ran 90 oz. of silver and 70% lead. Of late but little work has been done on the property.

## THE STRANGER

Lies to the east of the Blue Bird. A couple of cars of ore have been shipped from it that gave very satisfactory returns. It is understood the property will be worked extensively the coming summet.

## THE SAPPHIRE AND JEM

Claims, beyond the Payne and the Slocan Boy, have made some shipments that ran $120 per ton in silver and lead, but the ore does not appear to be continuous in deposit. However, enough work has not been done on the property to decide the prospects for the future, and the same may be said of the Slocan Reciprocity close by.

## THE DUNEDIN.

The upper extension of one of the Reco leads, though not yet a mine, is a good prospect. There are about 150 feet of cross cuts, which so far have fallen short of the ledge. I. Brown and Jas. Marshall are the proprietors.

## THE NOONDAY.

No work of any moment has been done on this property during the last two or three years, though some $70,000 worth of work was done on it some years ago, and it was then a shipper of a good grade of galena. It is situated above Cody, and is owned for the most part by Byron N. and Bruce White.

## THE BABY FRACTION

Adjoins the Noonday above. It consists of two claims. There are on it two cross cuts of 20 feet each, and a drift of about 30 feet on the vein. There is every indication of a good pay streak in the vein, but it has not yet been reached.

## THE BOLANDER.

This property is owned by Ohio parties, and is situated still further up the hill than the Baby Fraction, on an extension of the Noonday lead. It consists of two claims and has one large and three small leads. There are on the ground a 280-foot cross cut and a lot of tunneling. It has never shipped. but has much ore ready for market, grading about 70% lead and 100 oz. silver to the ton.

## EAGLE NO. 2

Is up the hill from the Slocan Star, close to the Freddy Lee. It has done no shipping, but has considerable development, exposing a high-grade galena.

## THE DEER SLAYER

Is near Cody Creek. It has considerable development work done, and shipped 10 tons of ore over three years ago, but has made but little progress since.

## THE SUNSHINE.

This promising property is two miles due west of Sandon. It consists of seven claims—the Oregon, Yakima, Sunshine, Fraction, Santiago, Mine and Noonday. Three ledges of large proportions have been found

on the property. One runs through the Yakima and Mine claims, on which 1,500 feet of workings have been made. But little cross-cutting has been found necessary, as all of the ledges are well marked on the surface. The first is a tunnel on the vein. Higher up is a shaft on the vein, and a drift on the vein from the bottom of the shaft. The workings throughout are in good mineral, assaying 100 oz. silver and 65% lead, and some gold, in a 3 to 4-foot vein, whose gangue is quartz, calcite and spothic iron. The best lead is on the Sunshine, west side of the mountain which ridges through the property. There are on this lead two tunnels of 465 and 589 feet respectively. The latter will be continued through the mountain, and from the last extremity a tram to Sandon will be constructed to bring down the ore of the entire property. Its length will be about 1,000 feet through the ridge of the hill. The pay streak is from 6 to 18 inches of galena snd carbonates. On the east side of the ridge two tunnels of 165 and 100 feet have been driven on the vein also. On the Noonday claim a cross-cut of 150 feet has been run to the vein, from which a drift of some 30 feet each way has been made, in good ore all through. The present owners, the Sunshine Mining Co., Limited, have shipped no ore, though the previous owners, from whom the Company bought, shipped considerable before 1893. Members of the Company, especially Mr. P. J. Hickey, the local manager, have individually several properties around in that locality.

## THE VULTURE.

One of the youngest properties in the district is the Vulture, but it is not the least promising. It is situated three-quarters of a mile above Cody, and comprises two claims. There are about 180 feet of tunneling on a large sized ledge carrying from one to two feet of clean ore, assaying 130 oz. silver and 50% lead. J. H. M. E. is the resident manager, and the Financial Mining Trust of Canada, of Vancouver, who are operating largely in the Lardo Duncan country, are the owners.

## THE TRADE DOLLAR

Is generally considered a promising property, situated to the north of Sandon, and near the Blue Bird. It is owned by G. W. Hughes and W. Sudrow, and is worked by half a dozen men. It has made two or three shipments. Its ore is galena and it has about 100 feet of tunneling done. Later this mine will be an important entity in the Slocan camp.

## THE HEATHER BELLE

Is a young property adjoining the Queen Bess on the north-east. It consists of four claims, and is now being worked by 6 men. It is owned by a local company with head office at Three Forks. It has about 1,600 feet of workings, three known leads have been found, and two of them have been worked, with a drift of 60 feet on one. Continuous veins of ore have not yet been found but several pockets of high grade galena have been frequently met with assaying 200 of silver and 59 per cent. lead.

## THE SILVERITE

Is supposed to be on the Queen Bess lead, on the Sandon side of Three Forks. It consists of three claims and is owned by Cory & Foster. A cross cut has struck the lead which has the enormous width of 90 feet. A drift both ways shows a pay streak three feet in width one half galena and the other concentrating ore, lime rock and talc fill up the balance of the lead. The lead has been traced down the hill 1,000 feet exposing a 600 feet chute of ore. At the foot of the exposure a second tunnel is driven in on a good showing of ore.

## THE COIN

Near Cody very much resembles the Wonderful. Large boulders are got by hydraulicing, Mr. C. M. Wilson in charge hopes by continued operations in the rock to strike the parent lead. The property is owned by Spokane people, and the ore boulders found are very rich.

## THE SELKIRK

Owned by Sandon parties, is a new property, near the summit of Ruth Hill. A 30 foot shaft has been sunk on the lead in shipping ore most of the distance, and from the foot of the shaft a tunnel for the surface has been driven in good ore. It is confidently predicted by competent parties this will yet be one of the largest mines in the district. M. L. Grimmett, Sandon, is the secretary.

## THE OCEAN

Is to the east of the Payne. A 120 foot tunnel has been driven, part a cross cut and part another lead in good ore.

## OTHER PROPERTIES.

Besides the foregoing there are the Ajax Fraction, the Great Western, the Wisconsin and perhaps 100 others on which more or less work has been done and many of them promising prospects; but it would take a work much larger than the size assigned to this to give an outline of their workings and promise, suffice it then to say many of them, as well as many in the list described before are awaiting capital to work them. Many of the number are held by the prospectors who located them, who are for the most part men without means. In every case here as well as elsewhere in the district, there are many openings for most satisfactory investments. Any of the substantial residents of any of the places will take pleasure in putting enquirers on the proper way to get full information as to any of the properties named, and unnamed, in the whole district.

# KASLO AND DISTRICT

This town is situated on the west side of Kootenay Lake on a beautiful side hill, and presents an imposing appearance when approached by steamer. It is well situated for trade with the surrounding country and the Lardo-Duncan country, which is now the scene of much activity, two railways being built and many mines being opened up. The town was visited in 1894 by fire and by flood and suffered very heavy loss, but the enterprising citizens "stood by the ship," and have to-day a neatly built place of about 2,000 inhabitants for their trouble. The place has excellent electric light and water systems, good stores, hotels, schools, churches, a saw mill that supplies the whole country around with lumber, and one of the most complete ore sampling works in the country, of 100 tons per day capacity. The city has the head offices and eastern terminus of the Kaslo and Slocan Railway, and also the head office of a system of lake service.

Although the place has, from its locality, the head offices of many of the mines of the interior it is not a typical mining town in the sense that Sandon and Whitewater are, but has more the airs of a commercial and shipping centre. However, as development proceeds it is found the place is not without its mineral resources, and very important ones at that.

## THE TRUE BLUE.

In May, 1897, Mr. Stevenson located the True Blue and Peacock claims, about three miles from the city in a southeasterly direction. But little work was done on the property, however, for a year after, when No. 1 tunnel was driven on a strong body of copper and gold—15% of the former and about $6.50 of the latter. The hanging wall was struck at a distance of 25 feet when a drift on the lead was commenced and continued with gratifying results. Later a second tunnel lower down was commenced, and in February last ore was struck in this, also carrying in addition to the values in tunnel No. 1 a quantity of silver. The country rock is serpentine and slate, and the ledge shows plainly on the surface in the two claims of the property. The Hall Mines Co. have bonded the property at $65,000, and are putting in a tram to the lake and a flume to secure water power to drive a compressor and improved working machinery. This is the only copper mine of the camp as far as discovery is made. It may be added a number of other claims have been located in the locality, but enough is not yet known of their value to give them a space in this report.

## THE LEVIATHAN GROUP.

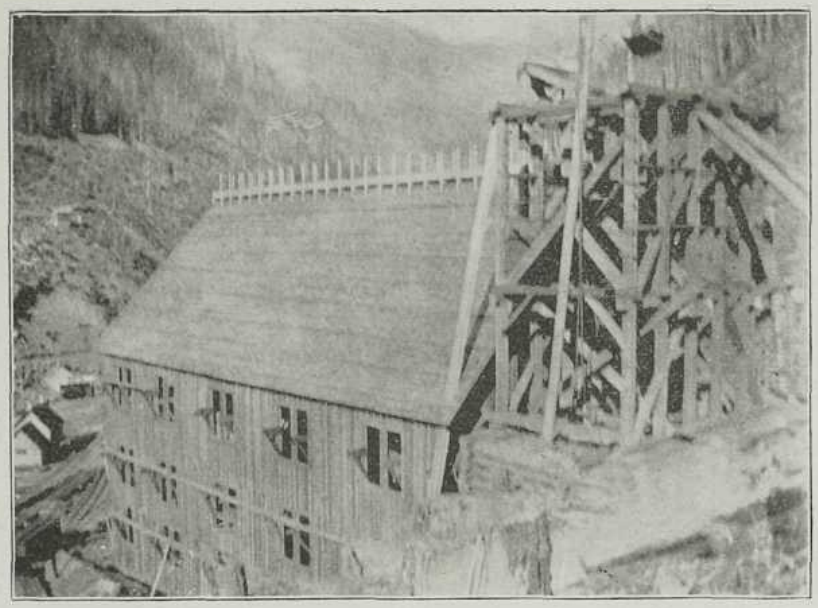
Across the lake and about two miles from the city is located the Leviathan group. It is owned by a Kaslo company, and consists of eight claims—Mayflower, Tecumseh, Tiger, Vanderbilt, Sunflower, Nancy Hanks, Consolidated and Mollie Marsh. Some 20 men worked on the property much of last fall (that of 1898) and at length were rewarded by an excellent showing of copper with a moderate value in gold, the whole resembling very strongly the output of the Rossland camp.

## THE MONTEZUMA AND MEXICO.

This property in point of age, development and improvement, is the most important one on the south fork of Kaslo Creek, which is, from a mining point of view, the principal feeder of the city. It is about six miles distant. It is best reached by rail to the South Fork Hotel—four miles distant, then by wagon road two miles. A wagon road all the way from the mine to the city is projected, and when completed will be of much importance to the place. This property was located in 1891 by Edward Becker, J. McLeod, C. Rossiter and John Sandon, after whom the City of Sandon has been called. It is now, however, owned by a Seattle company, having been purchased by them. Some time ago considerable shipping was done by the mine, though but little of late, awaiting the construction of less expensive transport. In No. 2 tunnel at a depth of 100 feet from the surface is an ore chute of 20 feet width. The third tunnel is in 800 feet, and has run about 75 feet on the ledge at a depth of 400 feet vertically. A 100-ton mill has been completed, with a double cable tram from the mine to the mill some distance below. An air compressor is also in working order, and drills are operated by air power, the whole institution being lit by electricity. The ore is consoncentrating and the concentrates yield about 70% lead and 70 oz. silver. It is one of the best equipped mines in the country The mill cost $50.000.

## SLOCAN LIBERTY GROUP.

A short distance further up this branch of the stream, and on the same side, is the Briggs group, or Slocan-Liberty, a bunch of nineteen claims. It is now owned by the Slocan-Liberty Hill Mining Co., of Spokane. About 1,200 feet of workings are on the property. Although a small amount of average ore has



RUTH CONCENTRATOR.

been shipped in past years none has been shipped lately, the company preferring to have the claims properly developed and got ready for improved working machinery, a compressor plant being the only machinery so far at work on the property.

## THE BLACK FOX.

This mine is further up the creek again on the opposite side. It is owned by Victoria people. No shipments have been made, but the property is known to have a large body of concentrating ore that will be turned to good account by the concentrator the Company are talking of building.

## THE BISMARCK.

This is a property of several claims, seven miles from the railway at South Fork. E. P. Sherwood, of Spokane, has it under bond. Some 800 feet of tunnelling is in on three sections, all nearly equal in length. The ore chute shows a width in most places of about 6 feet. About 70 tons of ore have been shipped that ran 150 oz. silver and 25% lead, though samples have been found that assay nearly double that value.

## THE GIBSON

Is a group of two claims on which have been located three important leads. The property is owned by the Gibson Mining Company, and is 11 miles from Kaslo. The three leads have been struck by one cross cut, they being parallel, the first at 35 feet, the second at 50, and the third at 250. A tunnel of considerable length has been driven on the third ledge, which shows it to have over four feet of pay ore at 125 per cent. silver, and 75 per cent. lead, in places the whole ledge matter assaying 50 per cent. silver, and 60 per cent. lead. Some shipments have been made.

## THE SILVER BELL AND B. N. A.

Are two properties close to one another that bid fair to be the "flowers of the camp." One lead known to have a length of well on to 4,500 feet, crosses both locations. A great deal of work has not been

done partly for the reason the claims are of late location. The ore found in the workings is native silver in iron, generally found with the sulphides, galena, zinc blend, and pyrites. The product so far has brought about $1,445 per car.

## THE JENNIE

Has been opened by a forty foot shaft and a ledge from four to seven feet of concentrating ore which averages 100 ounces of silver and a small quantity of lead and gold.

## THE SILVER BEAR

Was bought by the Reddin Jackson Co., of Rossland, some two years ago for $25,000. It has three ledges exposed by two cross cuts. The first ledge has a width of 15 feet carrying some 7 inches of high grade carbonates, and five or more feet of talc carrying kidneys of galena that assay very high. The second ledge carries three feet of pyritic iron, galena and spar and a further quantity of talc somewhat mineralized. The third lead carries three feet of spar and some inches of carbonates that run 100 per cent. silver and some lead. The second cross cut is 40 feet long, cutting the first ledge which shows 18 inches of 200 ounce carbonates. A 20 ft. shaft on this ledge shows 18 inches of high grade carbonates also. The property has made some shipments.

In the Kaslo district are the mines on White Grouse Mountain, those of Duncan River and Midge Creek, but they are beyond the limits assigned to this pamphlet.

# AINSWORTH DIVISION

For recording and other such purposes, the Slocan country is divided into four districts—Slocan, embracing New Denver, Silverton, Three Forks, Sandon and McGuigan; Slocan City, embracing Springer and Lemon Creek properties, and all the country tributary to Slocan City; Nelson, taking in all the south country, and Ainsworth, embracing all the country surrounding Kootenay Lake and Whitewater inland. Ainsworth Division includes a superficial area of 2,500 square miles, and includes some of the oldest properties in the country. In so far as work actually done, the ores are found to be, generally speaking, low grade, though many of them take an average rank. As the bodies are, however, large, quantity makes up for deficiency in quality, and with the improved shipping facilities, improved facilities for working operations and lowered smelter charges, they are sure to come to the front as satisfactory investments.

## THE BLUE BELL.

All authorities agree the Blue Bell, near Pilot Bay, was the first mine discovered in the Slocan. Some credit David Douglas, a celebrated botanist, with the discovery in the early twenties, while scouring the hills in that neighborhood in search of botanical curiosities. Others say it was known to the Indians still earlier, who used the lead they found therein in making bullets, and that they in turn communicated the secret of their find to the Hudson Bay Co. All, however, though unsettled on the original discoverer, acknowledge it was the first known to the white man. In a short time after other claims were located in the neighborhood, and though passing through two or three ownerships, finally came into the hands of the Kootenay Mining and Smelting Co., who erected a capacious concentrator and smelter at Pilot Bay, for the handling of the ore they expected to speedily mine on their property. But there were elements working against the successful operation of the smelter, the cost of fuel, the low grade of the ores and the difficulty of obtaining fluxes. These, however, are largely overcome by the opening of the Crow's Nest Pass railway, delivering a plentiful supply of cheap fuel from Fernie. Dry ores are expected in plenty from the Duncan River district to the north-west, and also lime rock, iron ores, etc., the chief essentials in the successful

operation of the smelter. Though the ores of the district are low in silver, they are high in lead, and when those of the numerous prospects staked out on both sides of the lake, in easy reach of the smelter, develop their usual quota of mines, there is no reason why the long idle smelter should not be turned to useful account. In a word all that it wants is capital to open up the adjacent properties, to make smelting here a successful venture.

## THE EUREKA GROUP

Has had eight or nine men employed the past year, mostly on development work. As the locality is subject to dangerous snow slides work is confined for the most part to the summer season and the early winter. During the past year about 125 tons of ore, argentiferous galena of more than average grade, have been taken from the property. There are six claims on the property, the principal work being done so far on three—the Eureka, Homestake and Yosemite. About 1,500 feet of workings are on the property, consisting of tunnels in cross-cuts, drifts on the veins, winzes, shafts and upraises.

## HOT SPRINGS.

Excepting the Blue Bell, this is the oldest camp in the whole Slocan country, many of the claims dating back as far as 1883. As has been said elsewhere of low-grade ores, the high smelter rates and defective shipping have to a considerable degree retarded progress. In the old order, too, operations were very expensive—hand drilling, manual windlass and mule packing. These are giving way in this camp, as well as elsewhere, to air compressed drills, tramways, steam hoists and concentrators, much reducing the cost of production and transport. In the camp are the following mines:

## SILVER GLANCE.

This property is but recently on the shipping list, and promises well. It is located two miles up Woodbury Creek, and was discovered in 1896 by W. Franklin, A. McLeod and F. L. Fitch. Usually from five to ten men are employed. A tunnel has been driven on the ledge, which carries an average of one foot of galena, iron pyrites aud marcosite in quartz gangue, with considerable mineralized rock. It carries some $18 in gold and a good range in silver. So far about 250 tons of ore have been mined.

## THE TARIFF

Is one mile south of the Town of Ainsworth, and is owned by Braden Bros., of Helena, Montana. The ledge runs north and south between schists and quartzites, characteristic rocks of the locality. It is a long one and has very distinct surface workings. Some 50 tons of ore, yielding 30 oz. silver, 55% lead and a small quantity of gold, were taken from the surface cuttings in 1897, and but little work has been done on the property since. From the principal cut made, an incline of 100 feet was made, which ran 80 feet in 12 to 30 inches of good galena. A very large bed of quartzite, probably 30 feet thick, forms the footwall and is supposed to carry enough ore for concentration.

## THE RAND.

About 15 men are employed on this property as an average and several shipments have been made. One of its peculiar characteristics is surface showings, a wide ledge, showing itself in one instance for upward of 80 feet.

## TWIN.

There are five tunnels on the ledge of this mine varying in length from 200 to 400 feet and upwards. Argentiferous galena is the output of the property.

## THE TAMARAC

Is bonded to American parties who have driven a tunnel striking the vein at about 150 feet vertical depth which will be used by the *Surprise* property close by. A small quantity of fairly good ore has been shipped. Usually a dozen men are at work on the property.

## THE NUMBER ONE

Was early worked by Windsor, N.S. parties. It consists of two claims and part interests in others and a mill site. It is 4½ miles by road from the town. The ore body is developed by stopes nearly 400 feet long and from 4 to 12 feet wide, is enclosed by limestones sholes and slates, its dip is changed by faults. A cross cut tops the ore body in 375 feet, and from it a drift follows a fault wall 160 feet with a 35 foot winze

to the stopes above. The property has a mill of 20 tons a day capacity, is run by water and steam, and concentrates 4 to 1; these concentrates have given from $300 to $600 to the ton. The bulk of the output goes through the mill, but some shipments of galena have been made direct. About 35 men are usually employed.

## THE SKY LINE

Is a group of three claims, 6 miles by road from Nelson, and is owned by A. W. McCune, of Salt Lake. The ledge is in a slate and limestone formation, running north and south and occupies fractured zones impregnated with ore. The ore bodies are considerably flattened and ten to twelve feet thick often crossing horizontally from wall to wall. An incline 87 feet has been sunk on the ledge and a shaft 200 feet, the two connecting with 120 feet of drift and an upraise of 40 feet to the incline. The ore is argentite native silver and galena, with some gray copper and iron pyrites, and averages 50 per cent. silver. All told the shaft is to be extended to 450 feet depth, in dry ore principally. The mine has turned out in former years from 15 to 20 tons a day, over 2,500 tons altogether. About 18 men are usually employed.

## THE NEW JERUSALEM.

Of late unusual activity has characterized the management of this property on Cedar Creek, and a good wagon road is built from the old government road. About 1,800 feet of tunnelling has been done, giving a depth of 500 feet. A flume has been constructed to operate an air compressor and a concentrator of 100 tons a day capacity, now nearly completed. Some 25 men are usually employed, and the ore is about an average of the camp.

## THE ALBION.

Is on Woodbury Creek and is worked by a Spokane company. A cross cut tunnel has exposed three veins on the property, and drifting on the third has recently been extensively prosecuted, exposing a high grade silver lead ore, with values in gold and copper. Some twenty assays have given as an average $10 in gold, 40 oz. silver, $4 in copper and 60% lead, or a total of $80 to the ton. The property is equipped with ore bins down the mountain side, connected with the mine by tram. Regular shipments are made to the American smelters.

## THE HIGHLANDER

Is owned by Maxwell Stevenson, of Philadelphia, and is situated one and one-quarter miles south-east of the town, 1,000 feet above the lake. It has two ledges between schist and quartzite walls. An 80-foot cross cut taps one of these, and drifts on the ledge both ways follow, showing from 4 to 18 inches of galena and zinc blende with a small mixture of arseno pyrite. The main ledge is tapped at 120 feet, and a long drift shows the metal named. From a 60-foot winze, 27 feet from the tunnel, a cross cut strikes the first ledge in 50 feet, showing a low body of low concentrating ore. An upraise of 90 feet from other drift to the surface shows a better ore. Several shipments have returned about 70 oz. silver with but little mixture. The property has an aerial tram and concentrator, but for some reason the mine has not been worked much of late.

## THE LITTLE PHIL FRACTION

Is close to the town. It has been bonded to Clarke Wallace, of Toronto, by the owners, J. McGovern and Captain Hayward, of Ainsworth. The ledge cuts the schists north-west and south-east, and is cut at 70 by a 442-foot cross cut. A drift on the ledge shows from 6 to 24 inches of galena and carbonates averaging 30 oz. of silver, and a short upraise shows 3 feet of solid ore. The cross cut tops another ledge 280 feet further in, which carries much mixed galena and concentrating ore, which goes through the Highlander concentrator.

## THE BLACK DIAMOND AND THE LITTLE DONALD

Are close to the Highlander, and have their products shipped over the tram and through the concentrator of the latter. They are virtually the south extension of the Little Phil property and are owned by St. Paul parties. They have about 900 feet of tunnels with the ordinary raises and winzes, the tunnels consisting of cross cuts and drifts on the vein. Their product runs about 35 per cent. silver and 70 per cent. lead. Stevenson & Son have leased the properties and put the ore through their concentrator. Quite a force of men are constantly employed in the mines.

## THE DELHI, THE LILY MAY, THE KRAO AND THE NEOSHA,

Are claims that were worked with more or less success in 1895, 1896, and 1897. But little, however, has been done on them since owing partly to the better results from operations in other portions of the district. With changed conditions, operations on them will no doubt be resumed at later dates.

## THE HIGHLAND.

This is a group of four claims that was also worked considerably two or three years ago. It is about 1½ miles from town, has a 700 foot tunnel on a well defined fissure ledge of 10 feet of concentrating galena ore. Considerable other work in tunnelling and up raises has been done. A mill at the mouth of Cedar Creek and a tram are projected, and if built may be able to turn the low grade ore—40 per cent. silver and 75 per cent. lead to profitable account. Without them, however, the mine cannot be made to pay.

## THE AMAZON GROUP.

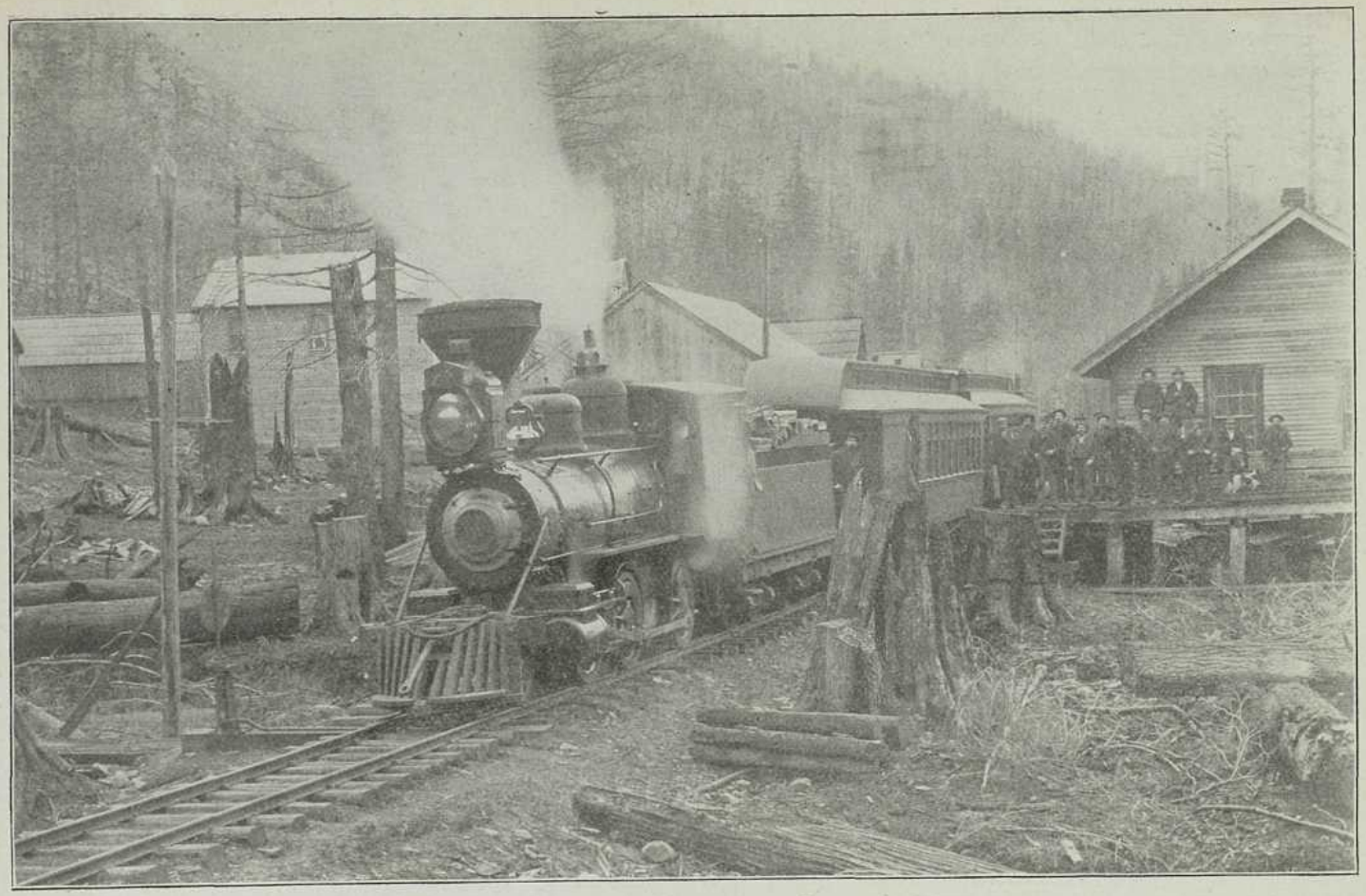
As the name implies, everything about this property is large, barring the quality of the ore. The property is near the mouth of Woodbury Creek. Two or three years ago, much rock cutting and tunnelling were done. A large concentrator was erected and a twelve drill compressor was furnished by a long flume from the creek. Considerable bodies of low grade concentrating ore were found, carrying small values in gold and other minerals. A tram from the concentrators to the lake brings down the extracted metal to the lake. Of late again, renewed energy has been put into the operations of the property and work is said to uncover a better grade of mineral. The geological formation is much the same as that of other districts of the Slocan, with the exception that in places much schist is found. In some cases the ledges run with the stratification and in others they cut across it in true fissures, while others again are formed by the impregnation and replacement of the country rock by ore, quartz or calcite. The ores vary from solid galena to zinc blende; quartz and calcites carrying sulphides with a quantity of galena; quartz and lime carrying silver and other compounds; galena with gold disseminated through the quartz; tetrahedrite in quartz with galena, down to a low grade ore carrying galena, iron and copper pyrites and pyrrhatite.

# WHITEWATER

About midway between Kaslo and Sandon on the K. & S. R. R., stands the little town of Whitewater. It is not large as yet, and never will be but what the surrounding mines make it; but as its mines are as far as developed among the best in the country, and likely to be numerous, Whitewater must become a place of considerable importance. It now has two or three stores, as many good hotels. and other necessary accommodations for residents and visitors. The most important mine at present is

## THE WHITEWATER.

This property is about one and a-half miles from the town by a good wagon road. For years Mr. J C. Eaton (the locator in 1891), struggled with it as a prospect, believing there was wealth in his holding, and he was not disappointed. Associating with him two or three Kaslo parties, they made of it one of the most celebrated properties in the country. One of its advantages was a yield of ore at every step in development. lessening the drain on the purses of the original owners. As the country rock on both sides of the fissure for several feet is much shattered, but little blasting is required in operations. This saving is, however, offset to some extent by the heavy timbering required. This mine made some of the first shipments from the Slocan, when the total charges were $100 per ton. The property has seven tunnels, all on the ore body, of various lengths with the usual winzes and upraises. About a a year ago the original Company sold out to the Whitewater Mines Co., an English syndicate, for a sum running well up to half a million dollars. Up to that date it had paid about $200,000 in dividends, and has improved on its record ever since. The vein has been exposed on the surface for well on to 850 feet. In the seam and along the foot wall, there is usually spothic iron of varying thickness, sided with galena and followed by carbonates or oxidized ore. The property has a concentrator of 120 tons a day capacity, and shortly will drive more tunnels lower down near the mill, and through which all of the ore will be handled. So far but little has been done in the way of stoping, nearly all of the product coming from development work alone. The ore is high grade argentiferous galena. The mine employs about 120 men. The property to date has paid well on to $300,000 in dividends. An account of its shipments appears in later pages. Its output averages 114 oz. silver and 30% lead.



K. & S. Train at Whitewater.

## THE WHITEWATER DEEP.

This property embraces the Whitewater Deep, the Whitewater Deep Fraction, Nancy Hanks, Wedge Fraction, the Fresno on the Whitewater lead and other claims, eight in all. They have all been purchased by R. E. L. Brown, who is besides the principal owner of the townsite, including about 150 acres of land all told. The development work consists of an adit tunnel of some 600 feet that has cross-cut the lead 1,000 feet below the apex of the Whitewater mine. This level is said to be deepest in the Slocan, and is another proof wealth is got with depth in this country. A second level is in 75 feet above the first and an upraise between them connecting. In this latter some four feet of solid galena was encountered. Directly opposite the concentrator site a cross-cut tunnel has been driven, cutting the vein 500 feet below the chief workings. The country rock of the locality consists of clayslates, across which the vein runs in an easterly and westerly direction, the strike being 80 degrees north and the dip south-west about 40 degrees. But little blasting is required as the gangue is soft and easily broken. The concentrator of the property is close to the R. R. track and has a capacity of 125 tons daily, and at the mouth of the long tunnel, alongside the concentrator, is an air compressor driven by a water wheel at high pressure. One of the latest discoveries on the property is the tapping of the Whitewater lead in the upper tunnel, which produces the same values as the upper mine. The mine employs usually 80 or 90 men.

## THE CHARLESTON.

Above the Whitewater half a mile is located the Charleston mine, owned by the Mitchell Bros., of Winnipeg, for the most part. The workings on this are 1,200 feet of tunnel cross-cut with a drift on the vein. Some seven or eight cars of ore have been shipped averaging about $100 a ton net, although from the drift samples assaying over 700 oz. silver have been taken, giving assurance the property is a very desirable one. A tunnel is being driven on the Keystone, the second claim, which is calculated to tap the vein at considerable depth.

## THE WELLINGTON.

On the same mountain, westerly one and one-half miles from the Whitewater, lies the Wellington group of seven claims. There are two ledges in the slate formation of the district, one running north-east and south-west, the other a wide crushed zone carrying stringers and pockets of quartz, spothic iron and calspor, running east and west. A 170-foot cross-cut taps one ledge at a depth of 40 feet, and an 800-foot

cross-cut taps the other ledge at 550 feet depth. All the workings are through this level. The ore is carbonates and galena with gray copper and zinc blende. Some 400 tons have been taken from the mine a couple of years ago, averaging 170 oz. silver and 30% lead, but of late years but little work has been done.

## THE JACKSON MINES

Consist of five claims, five miles south of Whitewater town, and are reached by a wagon road. Several months ago the property changed hands, but they are known to have been a paying property to both companies. The ledge cuts through the carboniferous shales, slates and limestones. The characteristics are: from the footwall a layer of zinc blende, then about 18 inches of solid ore followed by several feet of milling ore to the other wall. The first or highest tunnel ran into a large mass of decomposed matter and blende, the next is 60 feet below on the ledge, the next is a cross-cut the fourth on the ledge, the fifth is from a string cropping of black Jack and eruptive rock followed by a foot of galena. The ore averages some $90 a ton at 60c. for silver. It is estimated the mine so far has netted over $50,000 in profits.

## THE DARDANELLES.

This group of four claims lies between the mines tributary to Whitewater and those belonging to McGuigan. It is owned chiefly by Vancouver parties. The first work on the property was a 220-foot cross-cut and 1,300-foot drift on the ledge which cut the slate and porphyry dikes at right angles. From this shipments averaging 265 oz. silver and 25% lead were freely made a couple of years ago. There are on the property a steam hoist and pumps, and much development has been done on parallel ledges. It is known the mine has made considerable money for the owners, but the amount cannot well be ascertained. In the neighborhood are the Corean, the Lone Star, the Sunset, the Colorado, the Eldon, the Crown Point, Alameda, Sir Charles—prospects from many of which ore has been taken; but we must forego a description of them as they are not mines within the meaning of this review.

## THE HILLSIDE

Is another property rapidly coming into prominence. Under development rapidly pushed it is showing up well, and will shortly be a steady shipper.

# McGUIGAN

This is a station on the K. and S. R. R., five miles east of Sandon, and the mines tributary to it are described as follows:

At a great height and some 1,300 feet south of the R. R. lies the Lucky Jim, with its ore house on the track and ground tram from the mine. The ledge is given as in a foulted contact between slate and limestone, and galena, large proportions of zinc blende, iron pyrites and carbonates occur in large pockets and side fissures. The ore bodies are large but low grade for the locality. Its highest grade assays about 75 oz. silver and 50% lead, while its second grade is much lower. It has a concentrator, through which most of the ore produced has been passed. It was recently bought by an English Company for the zinc the ore carries. The property is worked by power drills.

## THE RED FOX

Consists of two claims, the Red Fox and Central claims. The property adjoins the Antoine on the north. On the Red Fox there are three tunnels—85, 165 and 110 feet respectively, the latter a cross-cut. About $5,000 worth of ore has been shipped, assaying 200 oz. silver and 60% lead.

## THE WASHINGTON.

This is an old property close to the summit of Payne Mountain, on the north side. It consists of two claims wholly, and a major interest in three others. It has the first concentrator built in the Slocan, one of 50 tons a day capacity. It is 1,450 feet from the mine and the distance is covered by a gravity tram of ample proportions. The concentrator is in turn three miles distant from the K. and S. R. R. at McGuigan. The concentrates are hauled that distance down a "switchbock" wagon road. The property has but one well-defined ledge, and that averages six feet in width with a stroke north-east by south-west. Its gangue matter is spothic iron and decomposed ore. In the vein are found large bodies of clean galena and but

little carbonates. There are three tunnels on the ledge, giving a depth of 330 feet. The workings, including upraises, aggregate 1,550 feet in length. Some 20,000 tons of ore, concentrated to one-third, have been shipped. Some 60 cars of crude ore shipped in early days yielded 96 oz. silver and 60% lead. In all $400,000 worth of ore has been shipped yielding dividends of some $25,000.

## THE TOM MOOR.

J. C. Ryan owns the Tom Moor, a property of one claim adjoining the Antoine. It has a ledge of quite the average width, and a fair-sized paystreak that assays 190 oz. silver and 78% lead. No shipping has yet been done. A drift 150 feet on the tunnel has been made, giving a vertical depth of 150 feet. It has every indication of turning out a profitable mine.

## THE SOHO AND RED CROSS

Are well-developed prospects between the Antoine mine and McGuigan. In an experimental tunnel on the ledge large boulders of high-grade galena have been found.

## THE RAMBLER-CARIBOO.

This property of four claims and a fraction, of late is the heaviest shipper in the locality. It has two distinct series of ledges, some of them in granite carrying tetrahedrite and Jamesonite with galena, a little blende and copper pyrites and a small seam of galena running through the slate and porphyry close to the granite contact in places, three feet and more in the tunnels. In sections in the tunnels gray copper has been found in quantities. As high as 400 oz. silver, $7.50 in gold and 2% copper has been got from smelter returns. The dry ore vein of the Best has been found on this property also, aassaying 600 oz. silver. Considerable carbonates have also been found, running 175 oz. silver and 22% lead. The mine is said to have paid $125,000 in dividends. Its workings consist of cross-cuts, drifts on the veins, raises, etc. The company has been re constructed lately, and the great wealth of the mine is to be given considerable attention the coming year.

## THE BEST.

This mine is about four miles from McGuigan, by wagon road. It consists of two claims and is owned by A. W. McCune, of Salt Lake, G. W. Hughes, Scott McDonald and others. It is on the granite ridge separating the Best and Dardanelles basins, and which is seamed with quartz ledges from a few inches to 6 feet in width, running north-east and south-west. Its ores are for the most part the same as those of the preceding property. The property has an incline shaft, 75 feet, with drifts therefrom in three feet of ore. A lower tunnel struck equally good ore at a moderate depth. Some years ago considerable shipping was done from the mine, though it has been at a comparative standstill for the last two years.

## THE ANTOINE.

A group of three claims, has been worked considerably the past two years. The ledge worked carries three feet of excellent ore. The property has paid several dividends, and experts say it is capable of paying many more.

## THE SURPRISE.

The large basin south of McGuigan, in which so many promising mines and prospects are located, has given its name to this property, owned by Alex. Smith, of Kaslo, and J. C. Ryan, an extensive operator in that district. A couple of years ago this mine made regular shipments, paying its way from the start, on account of the facility with which its high-grade ore is stoped. All told it is said to have paid its owners over $35,000.

## THE RUBY SILVER.

So named from the high-grade ore found in its workings. Though usually classed as a McGuigan property, it usually ships via Sandon, being located directly north of the Noble Five on the great divide. It has never been a heavy shipper, because its ore bodies are small, but its high grade makes up to an extent for its lack of quantity. It has been known to make shipments assaying 256 oz. silver and 66% lead. On

account of its altitude, being snow-covered most of the year, it cannot be worked many months at a time, but it is none the less a desirable property.

## THE SILVER BELL

Is owned by the Silver Bell Co., of Spokane, and is located just below the Red Fox. It usually employs from five to eight men, Mike Sweeney being one of its last foremen. Like most other properties in that district its ore bodies are small, but of a very high grade.

# SLOCAN CITY

This little town at the foot of Slocan Lake is one of the prettiest townsites in the whole country. It nestles within tiers of gradually ascending hills covered with beautiful evergreen trees, and has plenty of room for a city of large proportions. The first settlers located 1891, though but little building was done until the following year. The river outlet as well as the lake are well filled with fish and afford an excellent scope for the sportman. Like all other towns in the Slocan the town has excellent hotels, stores, schools, a record office and all other conveniences for miners and mining men. It is connected by rail with Nelson, and by boat on the lake with all northern points. Springer Creek running through the place furnishes plenty of head for considerable water power and a supply for an ample water system.

As early as 1885 prospecting was done in the locality and then followed in rapid succession many of the locations that must yet make the place an important mining centre. The formations of the district are of themselves ample evidence of mineral wealth—granite predominating. While most of the properties are galena with gold values, some of them are gold propositions throughout, indicating as it were the dividing line between the gold district to the south and the galena in slate of the Slocan district proper. For a number of easily explained reasons the district has not in the past made the progress its wealth fully warrants, yet much development has been done with such satisfactory results that it is now coming to the front very rapidly. Assays have shown as high as 2,000 ounces of silver in some of the properties and considerably over $100 in gold in others. As a rule the original settlers of this district were possessed of no more means than those of other localities, and as they have for the most part conducted the major part of the mining operations so far amongst themselves, it is an assurance capital could accomplish wonders in the district.

## THE ARLINGTON.

In many respects, so far as work has gone, this is one of the most important mines in the camp. The mine consists of two claims, the Arlington and Burlington. It is on the northern slope of Springer Creek and has a ledge of mineralized granite from four to six feet wide, striking north-east and south-west

across both claims. The ledge is full of stringers of fine-grained galena and zinc blende, with large values in native silver. A 75-foot shaft has been sunk in ore, with considerable drifts at 35 and 70 feet respectively. In assays taken 154 ounces of silver and 22½% lead have been found. An 18-horse-power boiler and hoist are the machinery. The property had been in litigation for some time, and only recently emerged from it.

## THE TWO FRIENDS.

This property is some seven miles from town on the divide between Springer and Lemon Creeks. It has a ledge of high-grade galena, striking north-east and south-west. A 25-foot cross-cut taps one ledge at a depth of 20 feet, and shows it four feet wide with a 12 to 15-inch pay streak. A long eastern drift shows galena next the foot wall and zinc blende on the hanging wall. A 200-foot cross-cut then tapped the ledge at a depth of 100 feet, here three feet wide with several inches of hign-grade zinc blende, changing to galena in some of the workings. A drift east shows a pinch out and another important ore chute. Two years ago it shipped considerable ore that realized from $150 to $250 to the ton net. On the eastern vein a shaft and cross cut reached a considerable body of excellent ore also.

## THE HOWARD GROUP.

This property consists of four claims and two fractions and is on the divide referred to in last property. It is owned by local parties. The ledge runs east and west through granite, dipping about 15 degrees north. An incline follows it down over 100 feet, except where faults occur, and shows about a foot and a-half of honey-comb of argentite quartz. The mine has shipped considerable ore averaging about 190 ounces of silver and $20 in gold. It is a very promising property. It is owned by a Toronto Company.

## THE CAMERONION

Is owned principally by Sandon parties. It is a gold proposition in granite. It has an immense ledge of quartz, and from the two cars of ore shipped, the returns were the same as the LeRoi at Rossland. On the principle that value increases as depth is reached, under development this property is certain to prove very valuable to the owners.

## GOLDEN WEDGE.

This mine is on the north fork of Lemon Creek. It is reached by pack trail from the town. It is also reached from Nelson by sleigh road. It is owned by the British Canadian Gold Fields. There is an upper cross-cut of 50 feet and a 300 to 400-foot drift on the vein. The vein is tapped lower down by a 175 foot cross-cut. A drift of 150 feet is made on the vein at this point. The ore is free milling quartz in the common granite country rock. The mine is connected by a two-mile wagon road with a 10-stamp mill at Oro. Altogether about 50 men are employed at the mine and the mill.

## THE CRUSADER

Is near by, has a shaft of some 60 or 80 feet, and has mined several tons of ore very similar in grade to that of the Golden Wedge. It is a group of three claims. It is owned by W. H. Hellyar, of Brandon, Manitoba, and bought for $24,000.

## THE BANK OF ENGLAND.

Is worked to some extent through the first workings of the Two Friends mine. It shows a high-grade body of galena and zinc blende. Lately under better development it is showing up to excellent advantage in the size of its ore body and grade of production. Outside parties are now considerably interested in it.

## THE METEOR

Was originally owned by John A. Finch and John Sheran. On surface work, at first a 20-inch ledge of dry ore was encountered. It is owned by John A. Finch, of Spokane.

## THE CHAPLEAU

Is situated near Dayton Creek. A tunnel has been run about 125 to 150 feet on the quartz vein, carrying high values of gold and silver in pyrites of iron. The latest report is the property is being examined by Toronto parties with a view to purchasing.

## THE ENTERPRISE.

This property, eight miles up 10-mile Creek, or nearly midway between Slocan City and Silverton, is a group of two claims and is one of the largest properties on Slocan Lake. John A. Finch, of Spokane, owned it years ago and sold it to D. M. Hyman, of Colorado, for $300,000. The ledge is in granite and strikes north-east and south-west. The ore is galena with much zinc blende in quartz gangue and generally hugs the foot wall. Four tunnels have been driven in the ore, leaving the ledge on one side. The lowest opened a 7-inch chute continuous a great length, probably 400 feet. The second tunnel is 175 feet above, and at 300 feet has an upraise to the surface. At 330 feet a fault was struck, but the ledge was picked up again and carried over a foot of solid ore. The third tunnel is 25 feet above the second. The fourth tunnel is 90 feet above the third. All these tunnels have exposed the longest ore chutes, it is said, in the Slocan. It has shipped the most ore of any mine in the district. It has over 3,500 feet of workings all told. The ore runs high in silver and carries some zinc blende, gray copper and steel galena. It has a wharf of its own on the lake, on which it often has from 500 to 1,000 tons of ore awaiting shipment. The property is now owned by the London & B. C. Gold Fields Co., and is valued at $1,000,000. The shipments have gone 179 ounces of silver and 30% lead.

## THE BONDHOLDER.

Up the hill from the Enterprise, and presumably on the same ledge, is the Bondholder. It is so located that much development work can be done at a merely nominal cost. It consists of four claims. The ledge has been traced for 4,000 feet by cuts and croppings. In the ledge are found quartz iron oxides and galena near the surface. The workings on the 4-foot ledge are cross-cuts, drifts and shafts. Usually about 20 inches of high-grade ore, carrying argentite galena, antimonial silver, assaying from 60 to 315 ounces.

## THE KALISPEL

Is a mile from the lake up Ten Mile Creek. It has a north and south ledge in quartzite, and is owned by one Lardner, of South Dakota. A tunnel on the ledge shows galena, ruby silver and other silver minerals. It shipped some in 1897 showing over 200 ounces of silver.

## THE EVENING STAR AND COLUMBIA.

One of the youngest and at the same time the most lusty properties in the district is the Evening Star No. 8, on Dayton Creek, and this probably because capital has been put into it and it has been worked. Hugh Sutherland and associates, of Winnipeg, have recently got hold of it and are putting life into its operations. Last year a trail was built to connect it with Springer Creek wagon road, and a 15-horse-power boiler and hoist were put in. This is the second hoist in the division. The main shaft has been driven about 125 feet on the vein with gratifying results. The nature of the ore body is quartz with silver sulphides and pyrites, with small but varying values in gold. The Columbia is under the same management and on it is a 200-foot cross-cut tunnel, with drifts on the vein of dry silver. Shipments have been made from both properties.

## THE NEEPAWA AND DALHOUSIE

Are close to the Enterprise. The first mentioned has been worked considerable this season, and so promising are the showings that they are attracting the attention of Toronto parties, who are likely to purchase at a round figure.

## THE JOKER GROUP

Is at the head of Ten Mile Creek The Excelsior Mining Co. have it under bond. The ore body is quartz, carrying good values in gold. Some fifteen men are working on the property lately and a 100-foot tunnel under contract is likely to show the property a valuable one.

## THE TAMARACK

Is a new property. About 125 feet of workings are on the property, mostly a drift on the lead. The ore is galena, zinc blende and silver sulphide. It shipped some cars this spring with satisfactory returns.

## THE REPUBLIC GROUP

Of three claims was bonded in 1897, for $25,000, to Porrish and Lindsay, of Brandon, Man. It has a ledge from 18 to 30 inches wide, carrying galena, iron pyrites and gold, on which a shaft has been sunk to

considerable depth, showing a quantity of ruby and native silver. As depth is reached the property is growing more satisfactory.

## THE CALUMET AND HECLA.

The owners have driven a cross-cut 220 feet which has cut the ledge at a vertical depth of 170 feet, where they found it 30 feet wide. A drift of considerable length on the ledge, with granite and dark slate contact, shows a dry ore body carrying gold and silver.

## THE BLACK PRINCE

Is a group of three claims. It has a 4-foot ledge of rose quartz traced through it, carrying high-grade galena, with a substantial gold value. From a 20-foot shaft and a drift from a 50-foot cross-cut, ore has been stoped assaying from $75 to $230 in gold, silver and lead, 82% of the value being free milling. Lately again, after a long rest, a few men are working the property and shipping.

## THE RAINBOW.

Some 75 feet of a drift on the vein has produced a quantity of the predominating ore of the camp which brought satisfactory returns from the smelter.

## THE OHIO GROUP

Are an extension of the Enterprise to the south. The Enterprise and Arlington leads are supposed to pass through the group. Considerable work has been done in cross cuts and tunnels, and the owners hope to soon reach their reward.

## THE WHITE SPARROW

Is on the first north fork of Lemon Creek. A cross cut tunnel has been driven 150 feet striking the ledge carrying a large body of pyrrhotite.

## THE IRON HORSE, UNITED EMPIRE AND ALEXANDRIA

Are all supposed to be crossed by the Enterprise lead from their locality. Three hundred feet from the Enterprise line a large body of ore was struck in an open cut on the Iron Horse. A quantity of galena ore has been encountered in an 80 foot shaft on the Alexandria from which a cross cut has been put through to the surface.

## THE ALPINE

Is a group of four claims on the mountain above Summit Creek. It has a strong gold bearing ledge from 2 to 3 feet wide. It is very flat and tracable through three basins. A considerable amount of work has been done on it but little or no shipping.

## MONUMENT GROUP.

On the divide west of Kootenay Pass, and on the line between the Slocan City and Nelson mining divisions as well stands the Monument group of several claims. It is bounded by the Hall Mines Co. A great deal of development work was done last year and considerable ore has been exposed. The product is a mixture of copper pyrites, pyrrhotite and quartz.

## THE ALPINE.

During 1897 considerable development was done on this property on Lemon Creek. A free milling quartz has been discovered in large quantities in the workings.

## OTHER PROPERTIES.

Among the other properties sufficiently developed to show ore in considerable quantities are :— ***The Silver Nuggett*** on Eight Mile Creek over the summit. A rich silver ore carrying nuggets and wire. Shipments were made in 1897 though little has been done on the property since.— ***The Alberta*** and ***Kilo*** and ***Saddle Back*** had a few men working in 1897 and 1898, and shipped some each year, but for some reason or other they are not handled with energy.— ***The Highland Light*** shipped also in 1897 of high grade dry silver and ruby silver, but little work has been done since. The same is true of the ***Victor***. During 1898 some work was done on the ***Aztec*** south of the ***Two Friends, Lily B, Medina, Erin Fraction, Standard***

***Fraction, Jubilee, Climax, Barnett Grant, St. Lawrence, Lone Dutchman, Hoodoo, Sail Holt, Creole, Hope*** and several other properties. It will be neticed that while there is a variety of ores in the camp, the dry predominates. It is confidently asserted that with sufficient capital available (and it is coming fast) many of the properties on which but little work has been done will blossom into large shippers and verify the prediction of Dr. Dawson that the district would yet be a hive of mining industry. When it is said that not more than 150 men have in any year been distributed over all these properties it will be fully understood much progress could not have been expected. With development work in strong hands they could at once give employment to three or four times that number and thus at once bring many very profitable mines to the front.

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# NELSON

Although properly speaking a description of Nelson and its surroundings is not within the task assigned this little book, the work would scarcely be complete without a reference to them because of the business relations between Nelson and the Slocan country. The city is situated at the foot of navigation of the west arm of Kootenay Lake. It is well situated as a supply centre for the surrounding country. It is an important point on the Crow's Nest branch of the C.P.R. Has a good boat service with Kaslo and the Lardo-Duncan country at the head of Kootenay lake and connections; is connected with Spokane by the Fort Sheppard Railway and with Rossland and Slocan City by branches of the C.P.R. It is the judicial centre for West Kootenay; has several wholesale and jobbing houses, a large ore sampler recently erected and has the Hall Mines smelter, one of the largest institutions of the kind in the country. Business has been very active in the place of late and as a consequence it has grown in population from 1,500 to 7,000 in a little over two years. In size it rivals Rossland, and as a business centre it is considerably more important.

The sampling works are the most extensive in the country and have a capacity of 200 tons a day. It is the intention of the owners to purchase and handle the ores of the surrounding country as far as possible. The premises are most capacious and the machinery the newest in the market.

## THE SILVER KING.

This is one of the oldest mines in the country, and as far as discovery has shown the most important mine in the camp. It is some eight miles south of Nelson by wagon road on Good Mountain. It is now owned by the Hall Mines Co. of London, England, who also own the smelter in connection with the property. There are some 18 claims in the property of which 4 are in the silver-copper belt, and the remainder in the gold belt of which Rossland is a centre. The silver-copper lode strikes east and west through the diabases, and has the peculiarity of having no distinct walls, the country rock on both sides of the fissure being highly impregnated with the ore-bearing solutions. The ledge has been traced continuously for over 3,000 feet, and has branched on the east. On account of the age of the property (discovered some 10 years ago) a great deal of work has been done on it, con-

sisting of cross-cuts, winzes, drifts on ore, upraises, diamond drill holes, shafts, etc. The ore varies in quality perhaps more than in any other mine in the country. Its first 20 tons netted the owners over $8,000. Since then much valuable as well as much ordinary ore has been mined. For convenience we may say it carries a high percentage of value, bearing sulphides and lower grade country rock impregnated more lightly. It is now said to be paying 15 per cent. dividend on the ordinary stock, and for a long time has paid 7 per cent. on the preferred shares. It is well equipped with improved machinery, good accommodation for the employees and usually employs 100 men. The mine is equipped with a steam engine, twelve power drills and two compressors, a saw mill and planer. From the bins below the sorting floor, the ore is carried some 700 feet down a three-rail gravity tram to a cable tram which makes a vertical descent of 3,750 feet in a distance of a little over four miles, to the smelter in Nelson. This latter tram has a capacity of over 300 tons a day.

## THE SMELTER.

I am indebted to Robert R. Hedley, Superintendent, for the following description of his smelting practice:—

"These works were established originally to treat *Silver King* ore. This ore, in the past few years, has varied but litte in composition. Generally speaking, this may be figured as 37 per cent. silica, 8 per cent. lime, 6 per cent. magnesia, 10 per cent. ferrous-oxide, 10 per cent. manganous-oxide, 3 per cent. copper. and 3 3 per cent. sulphur. This may be taken as an average of the output of the *Silver King* mine for the year, though it has varied all the way between 2 per cent. and 5 per cent. copper; and latterly the sulphur has slightly increased in proportion to the copper. Starting with such an ore, which might be considered self-fluxing, it is obvious that no preliminary roasting is required; we have to do with the straight ore. We have found it economical to use about 10 per cent. limestone as flux, though we have demonstrated that it is possible to reduce this considerably. Originally, with the inception of smelting at Nelson, a furnace was built, with dimensions at the tuyeres of 40 inches by 100 inches, giving a capacity of, roughly, 150 tons of charge per day. During the summer of '97 a larger furnace was built, with dimensions of 44 inches by 144 inches at the tuyeres, giving a normal capacity of 280 to 300 tons of charge. The practice has been, when dealing with *Silver King* ore solely, to smelt the ore as it comes from the mine, concentrating from 16 to 30 parts into one, with a consumption of 15 per cent. coke, of quality such as supplied by the Coast collieries. This first smelting, until recently, has produced a matte carrying on an average about 50 per cent. copper.

Latterly, however, a matte produced from *Silver King* ore solely, will carry but 44 per cent. copper, owing to the increased proportionate sulphur contents. During the past spring and summer, we have departed from our rule of producing a high grade first matte, owing to the handling of a considerable quantity of custom ores, notably *War Eagle*. *War Eagle* ore in its raw state has frequently formed 20 per cent. of the charge, and the grade of matte under such conditions falls to about 25 per cent. copper. This matte has been roasted, and after grouting with quick-lime, re-charged to produce a matte of 50 per cent. copper, which is the minimum desirable for reverberatory work. The charge as stated, *Silver King* ore and limestone, or *Silver King* ore, *War Eagle* ore and limestone, with, occasionally, a small proportion of other custom ores, produces a slag, the composition of which, while it varies slightly in its silica, iron and lime contents, invariably carries extremely low values, varying from 0.26 to 0.4 per cent. copper and from 1 to 2 ounces of silver, according to the grade of matte produced.

"With the installation of a reverberatory plant, consisting of two hand-work calciners, with a hearth 14 by 44 feet and two reverberatories, the shipment of matte ceased, and the practice has been to calcine about one-half of the matter produced, and charge to the first reverberatory about 8,000 pounds of calcined and 8,000 pounds of raw matte, and 1,200 to 1,500 pounds of quartz or silicious material. This, in 12 hours, will tap a good bed of white metal (about 75 per cent. copper) and forms a slag, varying between 1 and 1½ per cent. copper, which returns to the blast furnace. This white metal is then crushed and a portion of it calcined, the second reverberatory taking a charge of about 32,000 pounds calcined and 8,000 pounds of raw white metal, with 600 to 800 pounds of silicious material. With the furnace in good condition and all things favorable, this will produce in the neighborhood of 15 tons of copper in anode form in 24 hours. This anode copper averages between 97 and 98 per cent. copper, and carries values from 300 to 800 oz. of silver and from 5 to 30 oz. of gold to the ton, according to the ore treated. The slag from this second reverberatory, carrying from 12 to 16 per cent. copper and its quota of silver and gold, is charged either to the first reverberatory or to the blast furnace, being particularly desirable in the latter under certain conditions. The copper, up to the present, has been refined by the Balbach Smelting and Refining Company, of Newark, N. J.

"To return to the blast furnace: A little further detail will no doubt prove interesting. The plant is provided with ample dust chambers, and a periodical cleaning out of these chambers is made, the dust grouted with lime and charged wet into the furnace. The slag is run to waste through the granulating flume, and carried to the flats below, making excellent yards for the C. P. R.

"Last year I gave a few statistics, showing capacity of the big furnace. Unfortunately, we have rarely been in the position where we could push smelting, but during the week ending 18th of February, 1898, the tonnage smelted per day was as follows for seven days:—277, 288, 297, 301, 310, 312, 246—a total during the week of 2,030.65 tons, made up as follows:—

| | | |
|---|---|---|
| Silver King ore | 1,677.83 | tons |
| Custom ore, etc | 170.22 | " |
| Limestone | 182.60 | " |
| | 2,030.65 | " |

"In two days, the 16th and 17th, we smelted 622 tons, made up as follows:—

| | | |
|---|---|---|
| Silver King ore | 513.94 | tons. |
| Custom ore | 52.08 | " |
| Limestone | 55.98 | " |

"This, I think, demonstrates what this furnace is capable of doing, and does away with the suggestion that a tonnage of over 300 may be charged into the furnace and not actually smelted.

"It will probably be of interest to state that we have made a test of coke from the Crow's Nest Pass ovens. I find that 135 pounds of this coke will, apparently, go as far as 150 pounds of that from the Coast ovens. A sample of this carload carried 8 per cent. ash. The coke is well made, and promises to aid very materially the smelting industries of this part of the Province.

"During the months of March and April of this year, we made an experimental run on a lead charge. We attempted to purchase selected ores, carrying below 40 per cent. lead, and preferably of an oxidized nature. We found, however, such ores were difficult to procure, and finally began operations with a calcined mixture, made up of mixed galena, War Eagle ores, and gold concentrates, 403 tons; of bedded ore, 176 tons; and dry ore, gold quartz carrying a little galena, zinc blende and pyrites, 75 tons, with 12 tons of low grade lead bullion bought from the Pilot Bay Smelter. This was fluxed with 245 tons of limestone and 30 tons of scrap iron, and the whole 940 tons carried: silver, 75,800 ounces; gold, 432 ounces; copper, 11,054 pounds; lead, 310,000 pounds. The bullion shipped averaged 600 ounces of silver and 4 ounces of gold per ton.

"We are now slowly accumulating, as before, lead ores of suitable character and grade, to make another similar run, and, I may say, are in the market at all times and willing to make bids as favorable as possible on ores of any description carrying copper, or on "dry ores," ores carrying a low percentage of lead. We are of the opinion that it is not economical to handle ores with a high percentage of lead, for the reason that the bullion shipped, having a higher railroad classification, pays a heavier freight than ore, and there is an additional duty of $\frac{5}{8}$ of a cent per pound."

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Other mines in the vicinity are the Molly Gibson, the Dandy, the Iroquois, the Athabasca, the Fern, which has declared $10,000 dividends, Porto Rico, Dundee, the Last Chance, California, Venus, Exchequer, Poor Man, and many others, but a description of them, as we have before stated, is not within the range we set out to cover at the outset.

## THE KOOTENAY POWER AND LIGHT COMPANY.

Though not necessarily connected with a work like this, an outline of this industry is not out of place, as it is a factor in the mining development of the district. The works are situated at Bonnington Falls, Kootenay River, about 10 miles below Nelson.

The Falls, under a 40-foot head, are capable of developing 267,000 h.p., at low water mark. To secure the necessary water supply, a canal 650 feet long and 26 feet wide has been cut through country rock. Turbine wheels are used—two pairs, 39-inch horizontal, having a joint capacity of 2,900 horse power. Connected with each pair is a dynamo making 180 revolutions per minute, generating a current with voltage of 1,040.

The electricity generated is carried to Rossland, 32 miles away, with a branch to Trail, supplying power and light for the smelter there. At Rossland, the head office of the Company, power and light are distributed to the mines as desired by them. Several of the mines are already using them, and it is said others of them, and many in the Slocan, will adopt them later on. The power at Rossland and Trail is 20,100 volts, but is transformed down to meet the requirements.

# THREE FORKS

This was a town before Sandon had its birth, and was a place of considerable importance before the railways were built, when all the traffic between the lakes was by wagon or mule train. It is still a mining centre of more than ordinary note, because of the celebrated mines in its vicinity. It has good hotels and accommodation for mining men.

## THE MONITOR.

This property of two claims, owned by Geo. Petty, is on a north-east and south west ledge cutting the slate at right angles near a porphyry dyke. The ledge is of galena and carbonates, and is of varying width. The newest working is a cross-cut to the ledge. Fifteen feet above is a tunnel on the ledge, with a valuable pay streak. Another cross-cut to the west reaches the ledge beyond a fault. A 50-foot cross-cut 100 feet higher up struck the ledge again. Another cross-cut higher, both ways, struck the ledge, and from it drifts were run, extending to the surface and in on the ledge. The mine carries perhaps more gold than any other property in the Slocan proper, shipments returning from $2 to $14, from 30 to 150 ounces of silver and from 37 to 55 per cent. lead. Carbonates have given $13 in gold, 125 to 325 ounces of silver and 30 per cent. lead. It shipped two or three years ago, though but little the last two years. We understand it has paid $15,000 profits, and a price up in the thousands has been offered for it.

## THE IDLER.

But little work has been done on this property of late, though in its surface showings and earlier workings it promised exceedingly well. It stands over 500 feet above the railway. A tunnel cut the ledge 12 feet below the surface, and showed it to be 20 inches wide, with nearly a foot of good galena. It assayed very high, the rest of the vein matter being impregnated carbonates of silver and lead. It has another cross-cut 125 feet lower and over 200 feet long. A second large ledge, down the hill, has had considerable development work done on it also.

## THE PALMITA.

Adjoining the Queen Bess on the north stands the Palmita, a galena property of one claim. On it are four tunnels of 120, 85, 500 and 380 feet respectively, the third and fourth being cross-cuts, ending on an extensive ledge with all the discoveries characteristic of the locality. The other tunnels are drifts on the ledge. There is but one upraise so far, of 67 feet, No. 3 cross-cut to the ledge above. There has been no stoping done as yet, but considerable ore assaying 175 oz. of silver and 70 per cent. lead has been taken out in the workings. The property is owned by the Palmita Gold Mining Co., with Mr. A. W. Wright, manager.

## THE ALAMO.

This property was at the outset a group of eight claims, and is believed by many to have one of the largest and most productive ore chutes in the Slocan. It strikes east and west across a deep spur from the main ridge in the Alamo basin, some three or four miles up Howson Creek. From the vein at times as many as eight or nine feet of solid galena have been stoped, with a slight mixture of grey copper and carbonates. In the earlier operations a fault of considerable length had been encountered, but a drift of about 125 feet struck the ledge again, beyond the fault the property has four tunnels of quite average length, the highest being 240 feet below the summit, with stoping extended a considerable distance towards the summit. Compressed air drills are installed and working the property, especially in the lower levels. Independent of the large ledge there are several others that are being developed with excellent results. There is a concentrator at the railway of 50 tons a day capacity, operated by water power and having improved machinery. A 3-rail tram 340 feet long transports the ore to bins whence it is hauled by teams a distance of 300 miles to the head of another tram 7,000 feet long, which transports it to the concentrator, though much of the ore of late has been sent to the smelter direct.

## THE IDAHO.

This property, the Cumberland and the Alamo at one time had separate managements, but, as intimated above, all three and other smaller interests are now under the one management, in which the Scottish Colonial Gold Fields Company have a two-thirds interest and Mr. G. W. Hughes the remainder. The mine is worked to a considerable extent by extensions of the Alamo tunnels, some of the ledges of both properties being the same. The upper tunnel is stoped some 30 feet to the surface on perhaps an average of 20 inches of good galena. From this a 60-foot upraise to the surface is on some 15 inches of solid galena, while on the

face of the tunnel is a much larger body of concentrating ore. Another ledge runs north-east and south-west across the Idaho basin, and from the upper cuts and tunnels of this much excellent ore has been stoped. The combined property is said to be a very valuable one, and is worked by the management on most economic and effective principles.

## THE QUEEN BESS.

This property was recently bought by the Queen Bess Proprietary Co., of London, England, from J. A. Finch, P. Larsen, W. Glynn and J. H. Morgan. It is a group of seven claims on the east slope of Howson Creek. On the property there are four ledges within a width of 500 feet, but most of the work so far done is on the Queen Boss claim. A 300-foot tunnel showed the last vein where struck to be a small one of decomposed matter that carried 96 oz. silver and 74% lead. At 300 feet in this tunnel the ledge was cross-cut, 25 feet between walls showing a fine body of solid galena on the hanging wall. Another tunnel 350 feet tops the ledge 150 feet lower encountering a good grade of ore. The west ledge runs north-east and south-west. The third vein has been stripped a long distance carrying a small value in gold with the other minerals. The shipments generally run 143 ounces of silver and 75% lead. For the last two years a large force of men has been employed and heavy shipments have been made, the proceeds of which have gone into development work, an excellent bunk-house and boarding apartments and other improvements. The company are laying the foundation for an extensive property, and the indications are they will shortly have a large dividend payer.

## OTHER PROPERTIES.

***The Hustler*** has had considerable development work done and has made a couple of shipments the past year that show the property to be one of much promise. It is supposed the Cumberland, Idaho and Alamo ledges extend through the property.

***The Wild Goose*** has also had considerable work done on it the past couple of years, and a couple of satisfactory shipments have been made.

***The Cumberland*** is a property of five claims in the Idaho ledge. It has three tunnels and has stoped some very good ore, though but little shipping or work has been done on it of late. Its ore goes through the Alamo mill and comes down the Alamo road and tram. As it is owned by the Scottish Colonial Gold Fields Co., Limited, its future history will be embodied in the success of this enterprising company, who also have a controlling interest in the Alamo and Idaho mines and concentrator, Mr. G. W. Hughes owning one-third of all the properties named.

# NEW DENVER

This town, on a promontory extending into Slocan Lake, is the oldest place in the Slocan country As a result it is a government town, and has a Record office and Court House. Besides, it has a large hospital, fine stores and hotels, good schools and church buildings, and a branch of the Bank of Montreal. It is very prettily as well as healthily situated. As a result it has many fine residences, and many people doing business at Three Forks, Sandon and other inland places, have summer residences here. As yet it has not many developed mines, but it has many prospects under development that promise well. They are all within a semi-circle whose termini rest on the lake at the Bosun and Mollie Hughes mines, some four miles apart, with the heart of the town about midway between them.

## THE BOSUN,

On the Silverton, or south side of the town, two miles distant, and half a mile inland from the lake shore, is the principal mine of the locality. A little over a year ago it was a mere prospect, and sold to Mr. J. C. Harris for a trifle. He in turn sold it to Mr. Sandiford, representing an English Co., for some $7,000, we are informed. Mr. Harris has set diligently to work and with shaft and tunnel has caught the Fidelity vein and developed a mine of large proportions. In the few months it has been running as a mine it has made heavy shipments [see table on another page], and will very shortly be classed with our dividend payers. Indeed, but for the large amount sunk in buildings and improvements from the receipts of the property, it would now be on the dividend paying list.

## THE MOLLIE HUGHES.

This mine is a mile or more to the north of the town, and but a few feet from either lake or railway is the oldest property in the camp. Its original owner, Hughes by name, used to work it in his own inimitable way years ago, and sell the proceeds as he needed funds to live on. About a year and a-half ago local parties bought it from him for a fraction of what he was at one time offered for it. They, a little over a year ago, bonded it to Mr. Sandiford for his English Co. Through a system of open cuts, shafts and tunnels, he exposed three parallel ledges, carrying moderate sized pay-streaks of good galena. A couple of

cars of ore were shipped by Mr. Sandiford from surface work, from which about $100 a ton was realized. Some differences, however, arose between the owners and himself and he threw up the bond, and but little work has been done on the property since. While it is generally conceded the ore is of a good quality, it has never been shown the mine will turn out to be an extensive one.

## THE CALIFORNIA.

Nelson people own this property about four miles up the hill from town. Operations began on the property about a year ago. The property has two tunnels. The upper one is in some 75 feet and from it ore of good value has been shipped. The second tunnel is in over 200 feet, with a drift and a winze. The ore is galena with zinc blend and copper pyrites showing in assay about 160 ounces of silver and 60 per cent. lead. A shipment has netted about $70 per ton clear.

## THE MOUNTAIN CHIEF

Is near by. In years past G. W. Hughes, who then owned it, shipped considerable ore averaging 130 oz. silver and 70 per cent. lead. The ledge was then lost in a fault, and considerable was spent in locating it again. When discovered again it was worked as before and with satisfactory results. The last two years considerable development has been done on it though but little stoping.

## THE ADIRONDACK, THE NEGLECTED, AND MARION

Are three other mines recently developed from prospects that bid fair to be very profitable holdings. Mr. A. Sproat is owner of the latter property and Mr. Baker, of the Neglected. All three have made ship ments very satisfactory to the owners, and doubtless will, with extended workings, turn out in results the usual showings of the camp.

Besides the foregoing mines there are a great many prospects of whom the owners expect good reports under reasonable working and a moderate expenditure of capital. Among the number listed are Sandow, Turris, Lone Star, Eclipse, Merrimac, Denver, Lake View, Convention, Chieftain, Queen City, Lost Tiger, Estella and Silver Bell. They are nearly all owned by local parties, and have had more or less experimental work done on them from the dates of their location.

# SILVERTON

This snug little town on the lake shore four miles below New Denver, has several very fine buildings including well kept hotels and stores, Wm. Hunter carrying one of the largest stocks in the country. In point of number of shippers and volume of shipment, the town ranks next to Sandon in the Slocan. The Matheson Bros. publish *The Silvertonian* here, a paper very instructive on the mines of the locality.

## THE FISHER MAIDEN.

Some seven miles from town up Four Mile Creek is the Fisher Maiden, a group of two claims. The ledge running north-east and south-west crops in syenitic granite on both sides of a gulch. The mine is connected with the town by a wagon road. The ore is zinc blende and galena with some native silver along the seams. It has four tunnels on the ledge aggregating 1100 feet. In 1894 its output assayed 180 ounces of silver and 24 per cent. lead constituting it a near approach to dry ore. Later smelter returns give from 220 to 330 ounces of silver per ton. Last fall a valuable strike was made in the tunnel at the 250 foot level and 300 feet from the mouth. A winze was started on the top of an ore chute, exposing a pay streak from 2 to 3 inches, widening as depth was obtained to a foot, with continuity as far as work has gone. A. A. Webb and J. Pophorn, local men, are principal owners.

## THE NOONDAY.

This group of two claims, the Noonday and the Curley, on the Galena Farm, one and a half miles from Silverton is showing up remarkably well under development by the 7 men now in the workings. A cross cut of 40 feet towards the ledge was first made out of which 5 tons of float ore were extracted. (It may here be remarked that float ore is a characteristic of the whole galena farm, similar to that on the Wonderful near Sandon, showing there is either a massive ledge in the neighborhood, or one has been broken to pieces in ages after the formation.) The cross cut was abandoned and a tunnel of 100 feet has been driven on a stringer of the parent ledge which gives a pay streak of from 6 to 18 inches of galena assaying from 100 to

400 per cent. silver and 60 per cent. lead. T. Duffy, C. McNicol, G. Spencer, and J. Rockliffe are the owners and they recently bonded it for $35,000. The parent ledge was recently struck and now there are 40 men at work on the mine making it one of the heaviest shippers on the lake, and shipments yielding gratifying returns.

## THE GALENA MINES.

It requires a reporter with the ways of a detective to get anything like satisfactory information about this property the management being very guarded, if not actually non-communicative. The mine is about two miles from the town. It is known, however, the property has a 200-foot double compartment shaft, and has run drifts from the 100 and 200-foot levels. The property is equipped with a splendid hoisting plant. It was originally called The Galena Farm because of the immense amount of float ore found over the surface of the five claims in the property — a sure indication there was a large ledge higher up. The ledge runs east and west and is traceable a long distance by croppings of quartz and spothic iron carrying galena and zinc blende. Because of its being managed from England heretofore — too long a distance for success — the mine has not heretofore made the figure in the camp it is believed its resources should command. This is being understood of late, and more power is given to local management, which will doubtless be more fortunate.

## THE L. H.

This is a gold proposition some two miles past the Galena mine on Red Mountain. It was located in May, 1895, by A. Harrison. The ore body is from 20 to 30 feet in width, and samples of it have assayed $108. The ore of this property is readily concentrated, and afterwards cheaply treated by the Cyanide process. The ore appears in iron pyrites. The lead is an immense one, and has been traced on the surface a long distance. Although the vein matter is not of uniform richness, most of it carries a high enough value in the poorest portions for satisfactory operations. Although considerable work has been done on it, it ranks but small on a property of this magnitude, and with the aid of proper machinery will be certain to turn out a great property. Silverton parties own it for the most part.

## THE LITTLE DAISY.

Close to the L. H. is the Little Daisy group, with its 150-foot cross-cut tunnel and several open cuts. It lies on the same ledge as the A. E. and Willa. The Little Daisy has been worked for two years and

shipped a small quantity of ore. On the A. E. the ledge matter assays $30 in gold in many places, with a large percentage of copper. Depth will doubtless increase the value. The Little Daisy has an 8-foot ledge. Trial shipments have brought in $125 a ton. As yet Red Mountain has been but little worked, and the assurances are, as far as ascertained, it will yet be pierced by innumerable tunnels yielding up their treasure in great abundance.

## THE WAKEFIELD.

This property is a group of six claims on the Wakefield Mountain and six miles north-east of Silverton. Like the managers of the Galena, those of this are also very reticent. It is, however, known that last winter they sent out 740 tons of a high-grade galena, and the shipments for the year are recorded on another page. In the earlier days of the property, and when in but 85 feet, the company had 20 inches of solid galena with calcite lying flat beyond. All surmises are that it is a very extensive property.

## THE VANCOUVER.

Six miles up Four-mile Creek is the Vancouver. It is one of the best developed properties in the camp, and is several months since a shipper, giving 263 ounces of silver and 56% lead. Work of any extent has been done on but two of the claims so far. In the steel and cube galena of the property considerable grey copper, some sulphide of copper and ruby silver are found. Up to the spring of this year (1899) the mine shipped 775 tons of ore, averaging well on to $150 a ton over all charges for freight, treatment and duty. This, of course, was at great profit to the owners.

## THE COMSTOCK.

On Fennel Creek, 10 miles east of Silverton, is the Comstock mine, with a wagon road to town. Nine tunnels have been driven on the vein, and all in ore. The tunnels, with upraises, etc., give 2,900 feet of workings, something large for the camp. The ore bodies are more or less pockety in the vein, but in no place do they wholly disappear, generally increasing in size and value with depth. About 350 feet of raises and winzes have been driven, all of them in ore. About 370 tons of ore have been shipped, with much

concentrating ore, to pass through the mill now in course of completion, which will have a capacity of 60 tons. The clean ore is mostly steel galena, and runs from 100 to 300 oz. in silver and 50 to 80% lead. The concentrating ore goes 5 to 1.

## THE EMILY EDITH.

This mine of several claims has recently come into the hands of an English Company. It is two miles up Four Mile Creek, on Alpha Mountain. Over 700 feet of underground workings have been cut in three tunnels and their belongings. The upper tunnel is in over 300 feet, following the hanging wall of the ledge, which is from 50 to 60 feet in width in slate formation. The ore is a high grade steel galena, carrying some copper, of which some 80 tons have already been shipped. A 200-ton concentrator and tram attachment are contemplated, and will doubtless be completed within a few months. From the upper tunnel two winzes have been sunk 25 and 35 feet respectively. The owners feel they have one of the largest properties in the country.

## THE ALPHA.

About two and a-half miles from Silverton, north-easterly, is the Alpha, on a mountain of the same name. It is one of the best developed and best equipped properties on the lake district. It is reached by a wagon road and a 1,600-foot gravity tramway. The property has over 2,200 feet of development work, with immense ore bodies in sight in all the tunnels. The formation is slate, and the ore steel galena. In years past the property shipped 1,200 tons of ore running 115 oz. silver and 65% lead. Of late years owing to differences between the owners but little shipping or other work has been done. It is, however, a very large property, and when internal differences in the management are adjusted it will take a high rank among the shippers of the Slocan.

## THE CONGO.

Is a group of several claims on Red Mountain. A Mr. Byron, of the town, is the owner. The property is a gold and copper proposition, with an 8 to 10-foot vein. It is but a young property with but little work done on it except surface cuts and strippings to ascertain the character of the ledge. From the bottom of one 10-foot winge a metal giving $24 in gold and 7½% copper was obtained. Assays from an iron exposure gave $71 in gold, while one particular specimen of gold reached the extraordinary value of $11,160.

## THE LOS VEGAS

Adjoins the L. H., and is a good proposition. It is owned by Silverton parties, and is stocked. But little work beyond that of an experimental character has been done on it. It is known to have a 3 or 4-foot ledge that carries very high values in the hands of the assayer.

## THE SURPRISE GROUP

Of four claims is crossed by the Alpha ledge on Alpha mountain. The property has all told well on to 300 feet of workings, exposing large bodies of clean and concentrating ore. The ledge is in slate formation and at places reaches 20 feet in witdth. The ore is a steel galena carrying grey copper and traces of ruby silver and other metals. It has not yet shipped, but has a large body of ore on the dump that assays from 200 to 700 oz. in silver and an average of 70 % lead.

## THE ESSEX GROUP.

This property on Wakefield mountain comprises six claims, which were a year ago acquired by G. H. Dawson, as mere prospects. On them there are now four tunnels all on the vein and in ore aggregating, with their connections, some 500 feet in length. The ore is a cube galena, from 4 to 12 inches in width, and assaying 200 oz. in silver and 50 % lead to the ton. It is supposed from the character of the ore to have the Wakefield vein. From the lie of the mine great depth of tunnel can be got and cross-cutting be wholly avoided, saving much expenditure. It has not yet shipped, but as it has ore stoped may enter the list of shippers any day.

# Ore Shipments and Men Employed in the Slocan.

## SANDON.

| MINE. | NO. OF MEN | SHIPMENT IN TONS |
|---|---|---|
| Payne | 130 | 14,000 |
| Slocan Star | 110 | 2,933 |
| Ruth | 45 | 3,606 |
| Last Chance | 45 | 1,700 |
| Reco | 28 | 519 |
| Sovereign | 10 | 160 |
| Blue Bird | 8 | 60 |
| Treasure Vault | 25 | 40 |
| Miller Creek | 6 | 40 |
| Ajax | 14 | 33 |
| Canadian Group | 6 | 22 |
| Noble Five | 35 | 21 |
| Goodenough | 6 | 20 |
| Madison | 4 | 20 |
| Sapphire | 5 | 19 |
| Trade Dollar | 6 | |
| R. E. Lee | 8 | |
| Coin | 4 | 9 |
| Ivanhoe | 20 | |
| Others | 40 | 23 |
| Total | 555 | 23,225 |

## THREE FORKS

Four miles west of Sandon.

| MINE | NO. OF MEN | SHIPMENT IN TONS |
|---|---|---|
| Idaho | 45 | 4,000 |
| Queen Bess | 65 | 1,700 |
| Alamo | 20 | 582 |
| Monitor | 5 | 40 |
| Hustler | 3 | 19 |
| Total | 138 | 6,341 |

## McGUIGAN.

Four miles east of Sandon.

| | | |
|---|---|---|
| Rambler | 25 | 580 |
| Antoine | 30 | 350 |
| Dardanelles | 14 | 75 |
| Washington, Slocan Boy | 12 | |
| Great Western | 6 | |
| Minnehaha | 7 | |
| Red Fox | 6 | |
| Total | 100 | 1,005 |

## SILVERTON

| | | |
|---|---|---|
| Wakefield | 45 | 160 |
| Comstock | 60 | 225 |
| Vancouver | 35 | 420 |

| NAME | NO. OF MEN | SHIPMENT IN TONS |
|---|---|---|
| Galena Mines | 12 | |
| Condor | 8 | |
| Essex | 5 | |
| Enterprise | 35 | 460 |
| Emily Edith | 5 | 20 |
| Fidelity | 25 | 130 |
| Fisher Maiden | 15 | 107 |
| Silver Nuggett | 3 | 5 |
| Total | 248 | 1,527 |

## NEW DENVER.

| | | |
|---|---|---|
| California | 5 | 60 |
| Bosun | 27 | 420 |
| Marion | 11 | |
| Total | 43 | 480 |

## WHITEWATER.

| | | |
|---|---|---|
| Whitewater | 65 | 1,957 |
| Jackson | 15 | 66 |
| Whitewater Deep | 16 | 39 |
| Charleston | 8 | 31 |
| North Bell | 5 | 16 |
| Total | 109 | 2,109 |

In some cases great disparity appears between the number of men employed and the product of the mine but this is explained in differences in quality of ore. Again, some mines may have shipped close up to output, while others may have produced and left unshipped for different reasons. Other mines again may have stoped up to development work, while others again may have developed and mined but little. As the total production was 34,687 and the number of men employed 1,193, the average was a little over 28 tons per man, at a gross value of $100 per ton, which the values fully average $2,800 per man. Of course in the earlier years of a mine, as is the case in the Slocan at present, much money is expended on labor getting the property into producing and shipping form. This is shown from the circumstance many of the mines enumerated spent much on labor and shipped nothing, while the developed mine, the Payne, shipped nearly 108 tons per man employed.

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# DIVIDENDS

We give the dividends declared by the Slocan properties to date herewith, as fully as they can be ascertained. Many of the properties are owned by close corporations, who are not compelled by law to make their profits public, and as a consequence the profits of these can only be approximated, and we give them, therefore, in bulk. It is believed by those in the best position to form opinions on these matters, in the aggregate they will not fall short of half a million dollars, and we total them accordingly. In this connection it may not be out of place to say the dividends represent profits over and above all running expenses, improvements, buildings, etc.—the actual cash the owners have taken out of the operations for investments in other channels; also that they have accrued from properties that cost but a nominal sum. Hence they represent enormous sums on actual investments, as dividends are usually calculated. For instance, the Payne cost the company that owned it up to January, 1899, but $160,000. On this capital one million dollars had been declared in dividends up to that time. The Reco cost the present owners, when bought five or six years ago, $2,700, and the mine to the present has made $350,000 over all expenses to date. The Slocan Star is owned by the locators for the most part, and has paid $400,000 on a cost of not more than a few hundred dollars, and so on of all the other mines in the district. Let us for a moment compare this condition of things with the gold properties of Rossland. The LeRoi has cost the present owners in the neighborhood of six million dollars, and whenever dividends are declared they have to be spread over that enormous amount of money on a rate. The War Eagle also cost its owners many millions, and the profits can be but a small percentage on that amount and so on of the rest of the properties in that locality. The holdings declaring dividends in the Slocan originally cost but little, while the dividends in every case declare enormous percentages of profit. As is intimated in other sections, there is yet an indefinite number of young mines and prospects in the Slocan that can be bought for mere nominal sums, that under development will become as large dividend payers as those cited in the list below. It is to these opportunities we especially call the attention of eastern capitalists.

| MINES. | DIVIDENDS. |
|---|---|
| Payne | $1,250,000 |
| Slocan Star | 400,000 |
| Reco | 350,000 |
| Ruth | 300,000 |
| Idaho | 275,000 |
| Last Chance | 250,000 |
| Whitewater | 240,000 |
| Rambler | 75,000 |
| Noble Five | 50,000 |
| The Best | 50,000 |
| Dardanelles | 50,000 |
| Jackson | 40,000 |
| Slocan Boy | 35,000 |
| Goodenough | 32,000 |
| Washington | 30,000 |
| Monitor | 25,000 |
| Antoine | 20,000 |
| Total of other Dividends | 500,000 |
| Grand Total | $3,972,000 |

# FAILURES IN MINING

## THE CAUSES.

That there have been failures in mining as well as in other branches of business goes without saying, and the causes generally are not hard to find. As is the case in most other pursuits failures can be traced most generally to lack of capital and experience. Some say mining is a gamble, and it is in the sense that most other callings are a gamble. The farmer ventures with his crop of wheat not knowing whether he is going to have 8 bushels of wheat to the acre or 30 at $1.00 until the harvest is over. The real estate man buys town and farm property, pays taxes on it for years, and often sells below cost, and a careful estimate of the mercantile line shows that not more than 10% of those who enter it succeed, and so on of all other callings.

If there should happen to be more failures in mining than in farming, for instance, it can be explained on the ground that the larger the profit when a success is made, the larger is the number who make the venture regardless of the means and the experience of those who venture.

Mining, like most other industrial pursuits, requires capital and experience. When a company engages in it, it is not necessary—although it is more satisfactory all around if it is the case—that all the members thereof should possess both, if only both are united in the management.

Many a man goes prospecting who hardly knows the difference between slate and granite, and spends one or more seasons in it before he is even moderately acquainted with the appearances of the metals for which he is prospecting, to say nothing at all of his ignorance of the formations of the country in which he is operating. It is true, inexperienced men have been known to stumble into success in this country, but it is a case of the unexpected turning up. It is also a fact that men possessed of all the essentials for success in both prospecting and mining do not succeed, but the percentage in failures of such is not greater than that in other callings where the qualifications for the business were known to prevail.

In this connection it may be added it is not enough for the prospector to know that coal is never associated with granite, the first rock formed, nor to be aware that the precious metals are never found among the unaltered sedimentary rocks of the prairie. It is always necessary for him to have a knowledge of the geology of his locality, such as the different kinds of minerals, their values, the kinds of places in which they are found, and the peculiar rocks with which they are associated, their appearance on the surface after ages of exposure and the chemical operations to which they have been in consequence subjected. When the prospector is a man who has worked in the mines of the district for a time and made himself familiar with all these circumstances and conditions he should be qualified to expect the largest share of success in that particular branch of the business.

The causes of failure in mining are much the same as those in any other industrial enterprise. The investor may have bought "stock in a mine" on the representation of some silver-tongued interested party, that was never known to have even the ordinary indications of the presence of mineral, he may have invested in a producing mine much beyond the actual value of his purchase, or he may have bought from indications that were not characteristic of the entire property. Mistakes like these, which will be more fully dealt with in the next section, would bring failure in any industry, and mining is no exception.

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# Silver vs. Gold Mines.

That the preponderating preference is in favor of gold properties will be readily admitted, but why it is so is most difficult to understand. The whole principle of commerce is based on profits on investments. The Trail Creek or Rossland Camp of West Kootenay is quite as old as the Slocan; and because of the booming of the former from the first discovery of gold, by interested parties, it is reasonable to say two or three times the capital has been invested in gold properties that is sunk in the silver-lead mines of the Slocan, and yet our table shows more than three times the dividends have been declared by Slocan properties than are coming to the owners of Rossland mines in the same period. We will illustrate for better proof. In two years in the West Kootenay division, the gold or sulphide division of the district produced 57,768 tons of ore at an average price of $34.17 per ton. In the same period the Slocan produced with less men, 27,864 tons at an average of $110.04 per ton. A computation explains the rest. Of course operations have not been continued long enough in either camp to make comparisons as to permanency, but Mr. Carlyle, the late provincial mineralogist says "the finding of rich veins of ore in either of the series, (geological areas of granite and slate) points strongly to the fact that as depth is obtained in the Slocan the continuity of the pay chutes is assured. Almost invariably as depth of tunnel and extension on the veins is obtained, richness of ore is the result. Geology then and actual discovery as far as gone go to prove the permanency in the Slocan that capital is in search of.

# HOW TO INVEST

Advice under this head may be considered by some as walking on dangerous ground; but experience and observation, the great educators in business undertakings, teach lessons in mining purchases as well. We believe it is a statement no one acquainted with the circumstances will attempt to deny, that for money and labor expended, there have been fewer failures and more successes in lode mining in the Slocan than in any other portion of the world. With this fact assured one strong ground is taken in the way of advice and recommendation. To put the matter in better business form, it may be stated more dividends have been declared by Slocan properties than by any other lode mines in the world, investments made and labor expended duly considered. The men or companies having unlimited capital may purchase as they like—they may purchase their LeRois and their Paynes at will—at $6,000,000 and $4,500,000 respectively; but it is a question after all if such large purchases are the best investments from a business point of view. They will, of course, declare their dividends for many years; but it takes a lot of successful mining to make substantial dividends on these amounts and pay the original purchase prices besides. A mine is not like a farm—it cannot when its veins are once exhausted be made productive again by artificial means. Once the metals are all extracted from its seams it becomes valueless for all time. Nor may it be the best to invest in shares or stocks of established mines, after they are run above reasonable figures by important strikes on the property, as the latter may not be a permanency. For obvious reasons it is not wisdom to invest in stocks of new companies, of whose properties there are not substantial certificates, something more genuine than the representations of interested irresponsible owners and the representations of curb-stone brokers. Before buying stocks the value of the mine should be ascertained by indisputable evidence, the assurances of responsible disinterested parties, smelter returns, evidences of shipment, or other such reliable information.

Generally speaking, the softest investments, or those from which the largest margin of profits may be expected, are young properties on which ore has just been reached, and before extensive development work has been done, when the first tunnel or shaft has disclosed the ore body. The property can then be bought at a low price. It is known to have mineral, an estimate of whose value can be considered, and

whole value of the property is in the hands of the purchaser. Every such prospect is not sure to turn out a wealthy mine, even though they be on the leads of well-known wealthy mines, as mineral is not always continuous in seams—nature often confines its wealth to localities. Properties like these in the Slocan can always be got at moderate prices, from a few hundred dollars and upwards. To men of means purchasing properties is always cheaper than prospecting for them. Where men or companies have means enough to purchase and develop prospects on which mineral has been found, under careful management failure is absolutely out of the question in the Slocan. Each prospect on which an ore body has been discovered may not turn out a valuable mine, for the reasons the ore body may not be continuous, it may be small in quantity or it may be low in values; but where a number have been purchased under reasonable development some of them are sure to realize the desired results.

It might not be the safest thing for any one to invest his all even in a prospect of much promise, in the initial stages of operation, as it is still placing "all the eggs in one basket," which is condemned by general consent.

There is always a large number of such promising prospects for sale in every portion of the district, for the reason there are so many prospectors and others without the necessary means to work properties after they secure them. It is at this point the prospector and the capitalist may join hands in making wealth for both.

It is in such cases always better for the capitalist before purchasing to have the properties examined by competent mining engineers, or other capable experienced men, of whom there are several in every town and village in the district. As there is at the present no boom in the district, owing for the most part to the fact the mining districts of the country are very extensive, and mining interests are, therefore, considerably distracted. This makes the present a most opportune season for investing.

# DOMINION LANDS

**Coal Lands, if Surveyed,** can be purchased by one individual up to 320 acres, price $10 per acre for soft coal, $20 per acre for anthracite. No royalty, nor compulsion to work.

## RIGHT TO EXPLORE FOR COAL.

On staking out, boundaries N. and S., E. and W. lines, marking on each post the name of individual staking same and date; then apply to Minister of Interior, who for a fee of $10 will grant right to explore for 60 days, on expenditure of at least $2 per day. At expiration of 60 days a further extension may be obtained.

## QUARTZ CLAIMS.

Persons of 18 years and over, and joint stock companies holding a Free Miner's Certificate, may obtain entry for a mining location.

A Free Miner's Certificate (non-transferable) is granted for one year. The fee for an individual is $10, and to a joint stock company $50 to $100, according to capital.

The holder of a Free Miner's Certificate who has discovered mineral in place, may locate a claim 1500 ft. x 1500 ft., by marking it with two legal posts, one at each end, on the line of the lode or vein, and marking out the line between. Upon each post shall be marked the name of the claim, the person locating and date, and the number of feet lying to the right and left of line.

The claim shall be recorded with the Mining Recorder of the District within 15 days, if located within 10 miles of the office; one additional day allowed for every additional 10 miles or fraction. If a claim is more than 100 miles from a Recorder's Office and situated where other claims are being located, 5 free Miners may appoint a Free Miner's Recorder; but if the latter fails within 3 months to notify the nearest Government Mining Recorder of his appointment, the claims will not hold good. Fee for recording a claim is $5.

At least $100 per year must be expended on the claim, or paid to the Mining Recorder in lieu. When $500 has been expended or paid, the locator may upon having a survey made and upon complying with certain other requirements, purchase the land at $5 per acre cash, but if the surface rights have already been disposed of at $2 an acre.

A location for mining iron and mica not exceeding 160 acres may be granted, but if therein other valuable mineral is discovered the miner's right to be limited to the area prescribed for other minerals, the remainder reverting to the Crown.

The Minister of the Interior may grant locations for the mining of copper in the Yukon District; each location to consist of an area not exceeding 160 acres in a square block. The boundary lines of each location shall be due North and South and due East and West, and not more than one area shall be granted to any one person within a district of 10 miles. The grant of such location for the mining of copper shall not give to the grantee any rights to any other minerals, except minerals that are combined or mixed with copper or copper ore, and in no case shall include free milling gold or silver.

There shall be paid to the Government on the gross output of copper from any such location a royalty to be fixed by the Minister of the Interior, not exceeding five per cent. on such gross output.

The Minister of the Interior may make such rules and regulations and impose such conditions for ensuring the development of any such area, and securing the payment of the royalty as he may consider necessary in that behalf.

The fee to be paid to the Gold Commissioner or a Mining Recorder for an entry for a copper mining location of 160 acres shall be $20, and the same fee shall be charged for each renewal of an entry.

The patent for a mining location reserves forever whatever royalty may hereafter be imposed on the sales, such royalty shall be collected on sales made prior to issue of patent.

### Placer Mining, Manitoba and N. W. T., except Yukon District.

Placer Claims generally are 100 feet square, entry fee $5 renewable yearly. On the North Saskatchewan River claims are either Bar or Bench, the former being 100 feet long and extending from high to low water mark. The latter includes bar diggings, but extends back from high water mark to the base of the hill or bank, but not exceeding 1,000 feet. Where steam power is used, claims 200 feet wide may be obtained.

## Leases to Dredge for Minerals in Rivers in Manitoba and N. W. T. (Excepting Yukon District).

A Free Miner can only obtain two leases of five miles each for a term of 20 years, renewable in the discretion of the Minister of Interior.

The lessee's right is confined to the submerged beds or bars of the river below low water mark, and subject to the rights of all persons who have or may receive entries for bar diggings or bench claims.

The lessee shall have a dredge in operation within one year from the date of the lease for each 5 miles. If a lessee has more than one lease, one dredge for each 15 miles or portion thereof will be accepted. Rental $50 per annum for each dredge used. The Crown requires a royalty of 2½ per cent. on the output after it exceeds $10,000.

The lessee not to interfere with navigation of the river or with roads, ways, bridges, drains and other public works and improvements now existing or to be made.

## Leases to Dredge for Minerals in the Beds of Rivers in the District of Yukon.

A Free Miner may obtain a lease of an unbroken extent of five miles of a river limited to six leases in favor of an individual or Company. Yearly rental $100 each mile.

Term of lease 20 years, renewable in the discretion of the Minister of the Interior. The lessee's right of mining and dredging confined to the submerged bed, or bars in the river below low water mark, as fixed on the 1st day of August in the year of the date of lease. Royalty 10 per cent. on output over $15,000 for each five miles.

Leases subject to Placer Mining entries, existing or to be made.

## Placer Mining, Yukon District.

Claims are Creek, Gulch, River and Hill claims. 250 feet in length in the general direction of the Creek or River, and from 100 to 2,000 feet wide according to ground.

Claims are marked by two legal posts, one at each end. Entry must be obtained within ten days if within ten miles of Mining Recorder's office. One additional day allowed for every additional ten or

fraction. If the claim exceeds 100 miles from a Recorder's Office, the same rule applies as in Quartz Mining.

The person or company must hold a Free Miner's Certificate.

Every alternate 10 claims is reserved to the Crown.

The discoverer of a claim is entitled to 500 feet in length. If the party consists of two, 1,000 feet, the rest ordinary claims only.

Entry fee $15. A royalty of 10 per cent. on the gross output of the gold mined. The sum of $5,000 will be deducted from the gross annual output of the claim. The holder of a Creek, Gulch or River claim may within 60 days after staking, obtain entry for a hill claim adjoining it for the sum of $100. This permission is also given to the holder of a Creek, Gulch or River claim who prior to January, 1898, obtained an entry therefor, provided the hill claim is available when an application is made. No miner shall receive a grant of more than one mining claim in a mining district, the boundaries of which shall be defined by the Mining Recorder; but the same miner may also hold a hill claim and any number of claims by purchase, and miners may unite to work their claims in common.

A claim shall be deemed to be abandoned when the same shall have remained unworked for three consecutive working days of 24 hours each, unless sickness or other reasonable cause be shown to the satisfaction of the Mining Recorder.

It shall not only be necessary for a person or company working a quartz or placer claim to hold a Free Miner's Certificate, but every person in his, or its employment, shall have a Free Miner's Certificate unexpired.

JAMES A. SMART,

*Deputy of the Minister of the Interior.*

OTTAWA, April 26th, 1899.

# The Mining Review

## IS PUBLISHED AT SANDON,

In the center of the silver-lead district of British Columbia. It is regarded as an authority on all mining matters in that district, and is always replete with information on the industry. Subscription price $2.00 a year in advance.

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The editor is ever ready to answer correspondence relating to all mining operations in the district.

**C. CLIFFE, Editor.**

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