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# THE B. C. MINING EXCHANGE AND INVESTOR'S GUIDE

## And Mining Tit-Bits.

VOL. II.—VANCOUVER, B. C., OCT. AND NOV., 1900—Nos. 10-11.

### MINERAL DETERMINATION AND MINERAL TERMS.

COMPILED BY T. R. HARDIMAN.

(Continued from No. 8.)

#### ZINC.

ZINC (specific gravity 6.8 to 7.2) is found in association with several other metallic elements, notably and more commonly in combination with the sulphide of lead. The galena throughout the silver camps of British Columbia carries it in larger or smaller quan-

ty, and this metal ranking as one of the most important in the Arts, should be an incentive to the prosecution of work on such properties as its ores are known to exist. When will the Government, Dominion and Provincial, become alive to the fact that they have to identify themselves with the development of our mineral lands, which are so important and necessary to our existence and our progress? The economy of this question is so obvious that to dilate further on the matter is simply waste of time. Surely we have such preeminently good examples, which are proved



WINTER WORK ON BONANZA CREEK, YUKON.

ties. The Manchester Reduction Works have shipped large quantities from the Kootenay, B. C., to their works in England, they agreeing to purchase all the zinc contained in these ores, and also to return the values of other metals which may be extracted by them.

In some of the pyritic ores of the Coast, zinc blende is also associated, though whether in sufficient quantity to yield a paying commercial percentage is not at present known, through lack of development in connection with these ore bodies. Certain it is, that when once these deposits are opened up, possibilities point in the direction of British Columbia being a large zinc pro-

ducer, and this metal ranking as one of the most important in the Arts, that we can take a leaf out of their book with advantage. The Government of both these countries have long since adopted a State policy of development, which has made these people, per capita, the most wealthy in the world. Our advantages, natural and otherwise, are not one whit inferior to theirs, and yet we are laggards in the race, because the policy of the Government is like—Jeremiah Figs.

To return to zinc, as a matter also of fact Spahlerite, zinc sulphide, from the Greek, which means deceiving, since it is a very difficult matter to recognize, occurring as it frequently does with, and often taken for, lead

ore; the miners' names being various, viz.: "black jack," "false lead," and "false galena." It is commonly known, however, as zinc blende, found mostly in masses of indistinct crystals, having smooth surfaces of cleavage, of dodecahedral form. Hardness, 3.5 to 4; specific gravity, about 4. When pure sulphide of zinc is white, in the form of powder, or nearly colorless in small cleavage pieces, showing an adamantine lustre. When associated with iron, which is common, the crystals are yellow, or take the various shades of brown to black. The lighter kinds have sometimes a greenish tinge. Lustre, resinous, which enables one to identify all the common kinds; streak, white, pale yellow or brownish, which becomes deeper the darker the color of the mass. Manganese and cadmium may also be found in association. Zinc blende is among the commonest of metallic compounds and is found generally in galena or pyrite.

Zinc in the form of metal does not occur in Nature. Its physical properties place it somewhat near the imperfect metal antimony. In the Arts it fills a most important place. Sheet iron is protected from rusting by being coated with zinc, which is termed galvanizing, and in this respect its usefulness can hardly be overestimated. Zinc is also the negative metal used in almost all forms of the chemical electric battery, the metal, in fact, at the expense of which the electric current is obtained; zinc plates are used for etching illustrations by the photo-engraving process. Zinc white (oxide) is used as a paint, with copper it makes brass, and is also used in the production of German silver. Metallic zinc which comes from the furnace in ingots is termed Spelter.

*To be continued.*

#### THE MINT.

In the palmy days of the Cariboo Goldfields, which the old Forty-niner still dreams about, and which are so rich in reminiscences that the old digger is rejuvenated when he can have his yarn with one, going back to those days when the yellow metal was only valued for the amount of fun he could knock out of it. Gold was then as plentiful in the Cariboo as it now is in the Klondike.

New Westminster was at that time the Capital of the Colony, the sappers and miners which were stationed there made the trunk roads of the mainland and did all the surveying.

A mint was also established there, which ended its career after the excitement was over. To-day conditions are different; a mint in a country which produces precious metals to the extent this country does, is just as necessary as elevators to a wheat producing district. British Columbia is a big metal producer, and the Pacific portion of the Dominion output of gold for last year was something over \$20,000,000; nearly all of which found its way to the United States, where the market is, as, like wheat or anything else, it goes to the best exchange.

The establishment of a mint is imperative, and the only way by which the producer can be protected is through an institution of this kind. The gold buying mediums, outside of a Government mint, have been making a big profit out of the miner up till now. In the future the State must protect him.

The English Mint is a State institution and charges no seignorage for coining gold, and, though supposed to coin exclusively for the Bank of England, any person can have his gold bullion coined into an equal

weight in sovereigns. The Bank of England is compelled to purchase all gold tendered to it, at the fixed price of £3 17s. 9d. an ounce.

However, on both silver and copper money a seignorage is charged, ten per cent. on silver when its price is 5s. per ounce. No less than 100 per cent. is the seignorage charged on copper coinage on the average price of copper.

The profits from the seignorage is placed to the credit of the Consolidated Fund for the Reduction of the National Debt.

Both Sydney and Melbourne, Australia, have mints for coining gold sovereigns.

In coining the Standard Gold contains 11-12ths of fine gold and 1-12th of alloy; or 22 parts pure gold alloyed with 2 parts copper or other metal.

It is obvious that all mints under the flag are established by the State, not as a source of direct profit, or for the benefit of any party, but essentially to attract and secure the metal and protect the interests of the producers, by adopting a standard which shall give the maximum advantage to bullion owners. This is a State policy and it must be ensured in its establishment in this country.

#### VOLUME OF NORTHERN FREIGHT.

*The Klondike Nugget*, of Dawson, after a review of the customs business in the North for the fiscal year just ended, wonders, in looking over the footings, what Dawson does with so much freight; why it is necessary and how it is consumed.

Since the opening of navigation last spring, there have come up the river from St. Michael, exclusive of barges and other small craft, 47 steamers laden with goods, which shows that the White Pass Railway cannot control the traffic. The freight cargoes coming up the river, which is an average of a fraction over 52 tons to the vessel. The crews registered with these vessels number 1,731, though it took a great many more hands to discharge the cargoes. The vessels coming from up the river, of course, have been much more numerous, but their carrying capacity has been much less. There have been 134 steamers down, with a total tonnage of 29,740. The movement of freight via Skagway will thus be seen to be slightly in excess of that coming by way of St. Michael, but these figures do not by any means represent the amount of goods received at Dawson up to the time of the close of navigation. How many scows have arrived, and what the total amount of their delivery has been are matters which can only be arrived at by estimate without going into an almost never ending search for figures, if it could be done at all accurately.

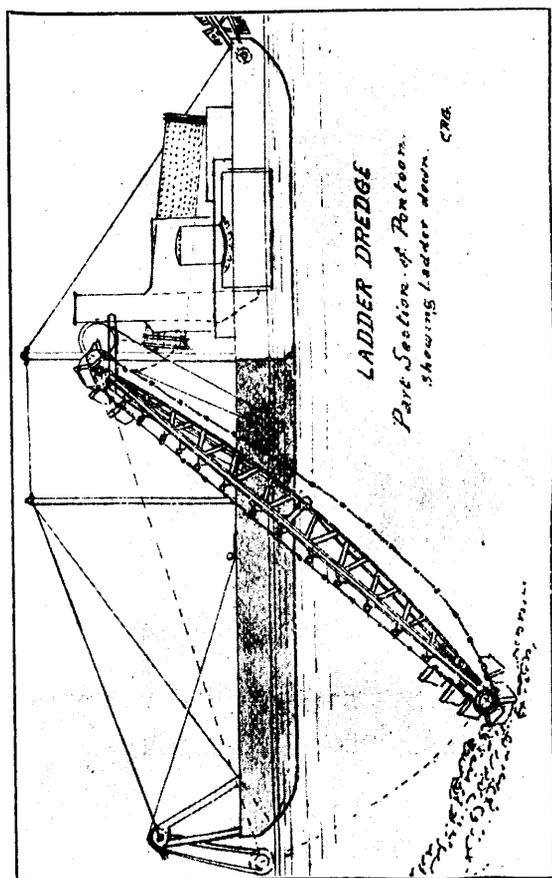
From the opening of navigation to date it can only be considered a conservative estimate to place the number of scows which have landed their cargoes in Dawson at 400. Supposing that the average load of these scows is said to be 15 tons, there is a total of 6,000 tons to be added to the movement of freight from up stream, making the total from that direction 55,740 tons, an excess of 11,194 tons over that received from the other way, and a sum total of the tons landed in Dawson during the season of 60,186.

Of course a large percentage of this freight is machinery, of which there has been the heaviest importation yet received. But even making due allowance for this, the amount represented in clothing, provisions, etc., seems very great.

## DREDGING IN BRITISH COLUMBIA.

This industry has passed through the fire of several reverses in this Province, and we believe that these reverses will work out to our advantage. The initial stage, under conditions existing in the past, must of necessity have been the most imperfect and crude, both as to the means of winning the gold from the beds and bars of our rivers, together with disadvantages (in the early days) of situation, accessibility, laws, etc., which effectually handicapped the development of such workings, by the failure to attract the necessary support, to establish the proper plants in charge of experienced dredge-masters.

The antiquated apparatus placed originally on both Fraser and Thompson rivers were either the clam-shell



or centrifugal pattern, totally unsuited to contend with the heavy wash and strong currents, which they very soon demonstrated, therefore being but indifferently successful proved discouraging to those concerned. One or two dredges of a better type were put on more recently, though not up to date machines, being of the dipper class, and would, we believe, have been fairly successful had they been in experienced hands. However, recently several New Zealand dredge-masters have been attracted by our possibilities, and, having gone over the ground, have convinced themselves that it needs only the proper machinery and the requisite capital, in capable hands, to make dredging here a prosperous industry. There are no difficulties here which have not their counterpart in New Zealand, and which are as easily overcome in our rivers.

At present the only dredge of any magnitude and capability is that established by the Cobledick Company, at Lytton, on the Fraser. This was designed

by a New Zealand dredge-master, of large experience, and we hear is now working admirably and successfully.

The Fraser River Consolidated Gold Company, Ltd., of which Mr. Wm. Rattray is manager, has also a dredge on some excellent concessions which his company has below the Yale Canyon on the Fraser. We believe the capacity of this dredge is 1,200 cubic yards per day, and, though of the dipper type, has modern improvements, such as the latest style of screens and gold saving appliances, together with a conveyor to carry away the tailings and deposit them away from the dredge.

Another company has been employing a centrifugal pump dredge, a short distance below Yale, which, we believe, has been working successfully this season.

Above North Bend, the Big Bar dredge, which is of the same type as the one at the Bend, has not been a success, although working on ground averaging 25c. per cubic yard. As we have before pointed out in previous articles on this subject, the best results cannot be expected until experienced dredge-masters are employed, and the best and most improved methods used in working the ground.

There is another point in connection with dredging here, which has as yet not been brought out, that is, the working of the numerous high lying deposits, benches and old channels, which are now being worked by shaft and tunnel and hydraulic, by what is commonly known as dry land dredging: where dredges are built on the ground and afterwards floated with sufficient water brought down for the purpose. Once floated large areas of ground can be worked over, the dredge carrying the water along with her onwards, laying the tailings away to one side with conveyors. This mode of working has almost done away with hydraulic in New Zealand, and other countries are fast following the example. Vast areas exist here which could not be worked by any other means.

We have gold in B. C., in the Fraser, Thompson and many others of our rivers, in large quantities, often showing values far above the average of New Zealand, and to all appearances exceptional ground to work; though we have in most cases a greater preponderance of boulders—another difficulty for perseverance to overcome.

## NICOLA COAL AND IRON MEASURES.

From Spence's Bridge, on the Canadian Pacific Railway, one can cycle over one of the best roads in the Province, and taking a south-easterly course along the valley of the Nicola, through one of the most fertile portions of British Columbia. The meadows are an emerald green and teem with cattle and horses of the sleekest kind. On the hills, on either side, innumerable herds range in perfect condition the year round. Fields of barley, wheat, oats, timothy, etc., delight the eye; orchards which produce apples and Bartlett pears of magnificent size and quality; cream, butter and eggs in plenty—in fact, one has the best of everything when visiting this locality, for it is a land of plenty. Grouse, blue and willow, ducks and geese galore; big game, bear, deer, and the ubiquitous coyote, jack rabbits (much like the Old Country hare) are a portion of the wild game the sportsman can always be sure of bagging during the season. In every way this is a region that will surprise the world in the richness and variety of its resources.

The belt stretching from Spence's Bridge, S. E. by E., leading through Highland Valley, Potatoe Creek,

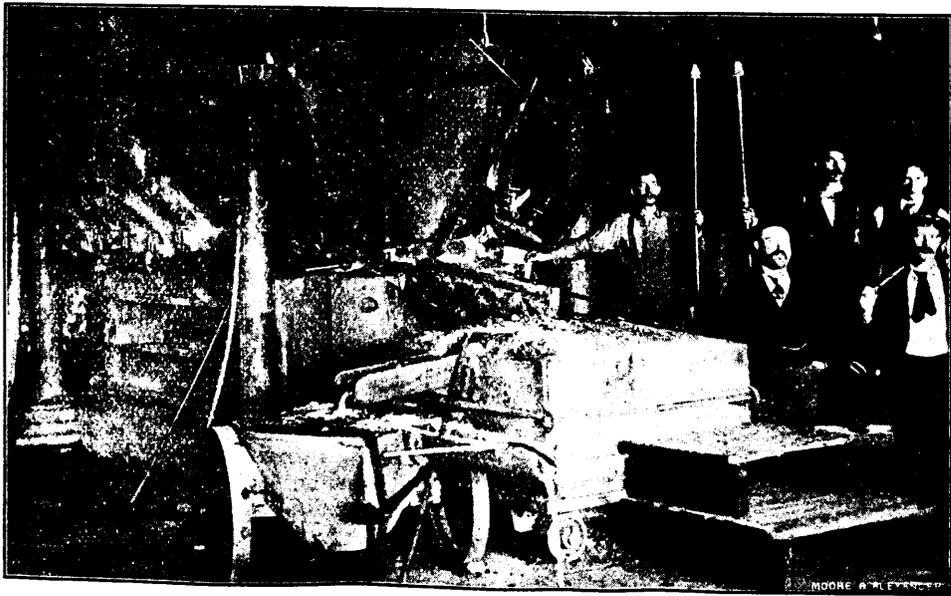
the Summit, to Mamette Lake and Ten-Mile Creek, bearing S., S.E. to Cold Water Bench and Iron Mountain, contains stores of gold, copper, iron and coal that leads one to marvel what kind of people they are who allow, through want of enterprise, to lay unfulfilled as are offered those who are in a position to develop such treasure-houses of wealth as those around and close to their doors; for these are the coal and iron measures, and at Cold Water Bench they come together.

Starting from Spence's Bridge, and crossing the Nicola River, just above the confluence of the Thompson and Nicola, we take the left to Highland Valley and follow the Nicola on the right to Cold Water. On the left we strike a diluvial formation, which presently is replaced by granite, schists, and slates; this formation is traceable over the Summit to Ten-Mile. The diabase and limestone cut it on the right and contain the coal, iron and copper. The granite belt to the left is rich in bornite and yellow copper, the sulphates and sulphides. The limestone at Cold Water Bench carries altered veins of crystalline lime, full of copper and

ance, in fact every physical advantage to both mine owner and smelter.

It is well ascertained that these hills belong to the carboniferous system; also that this formation comes in connection with a belt of iron and copper bearing matter which give good gold values.

The writer was much surprised to find such a mass of mineralized stone, of such supreme importance to the producer, with such natural advantages by the side of it; close to good highway, in a most fertile and well settled district, where cattle, horses, and the necessities of nature seem, as it were, focussed, and yet this highly favored locality, containing the concentrated essence of everything of importance, lying comparatively unknown and unappreciated. The Lion of the Victor Group has an open cut on a bluff which shows a mass of decomposed oxides, with heavy showing of copper and simply reeking with carbonates and sulphides. The owners are having some of this ore sacked for the smelter test, assays giving an average of 19 per cent. copper.



INTERIOR OF HALL MINES SMELTER.

iron, the sulphides are extremely rich, and the writer took out large masses of decomposed sulphides, which are an infallible indication of a big body of ore contained in this mountain. A vein of hematite runs in contact with the chalcocite and yields a big percentage of copper; altogether, one would say that the character of this property promises well for those interested. The writer traced the vein over six claims, and that there is a big body to be struck is pretty certain. The situation is ideal and one would think that the smelter interests would be attracted to such a favorable spot at once, on such conditions being known, which we shall endeavor to make so.

As pointed out, the coal and iron measures come together here, therefore ore can be treated at a minimum cost. We do not know of another position so excellent and where copper prospects, in a more or less advanced stage, are merely waiting treatment. Again, most all, if not all, of the ores in this district carry a self-fluxing gangue, giving them greater economic value in smelting; also, both coal, wood and water in abund-

## BRITISH COLUMBIA AS A COPPER PRODUCER.

FROM AN INTERESTING LETTER BY MR. R. R. HEDLEY, (RECENTLY MANAGER OF THE HALL MINES SMELTER), IN "THE MONETARY TIMES."

To try and make clear the position copper occupies in the world's trade of recent years: In ten years, ending 1890, the average yearly production of copper was 221,590 tons; in nine years, ending 1899, it was 354,000 tons. In the single year, 1898, the production was 434,329 tons, and in 1899 about 490,000. The average increase for each of the last five years has been 27,000 tons. Meantime consumption of copper is increasing at a more rapid rate, available stocks on January 1st, 1890, being about 127,000 tons, and Jan. 1st, 1900, about 50,000 tons. If, as is probable, in view of the rapidly increasing demand for copper in such work as electrical installations, etc., the consumption increases at the same or a more rapid rate, five

years hence 600,000 tons will be required to meet the yearly demand.

Analyzing the production of 435,000 tons of copper in 1898, we find that—

	Tons.
United States produced .....	239,000
Spain and Portugal .....	54,000
Japan .....	25,000
Chili .....	25,000
Germany .....	20,000
Other countries .....	72,000

Of the United States the copper producers were—

	Tons.
Montana .....	96,870
Michigan .....	69,870
Arizona .....	49,480
Other States, about .....	23,000

The four companies producing over 20,000 tons in 1898 were—

	Tons.
Anaconda, State of Montana .....	47,800
Calumet and Hecla, Michigan .....	42,000
Rio Tinto, in Spain .....	33,700

Let us stop for a moment and glance at the record of one of these big producers. It is one of more than passing interest. The Calumet and Hecla Mines have been worked continuously for 34 years, and the company has paid its fortunate shareholders \$66,850,000 in dividends. To do this it has mined and treated 16,000,000 tons of ore, producing 645,000 tons of copper. The underground workings of that mine are equivalent to an excavation 100 ft. wide, 40 ft. deep, and 12 miles long.

The life of a mine, no matter how good, must be limited. Suppose one of these big producers to become exhausted of ore, it is interesting to theorise as to how it will be replaced.

What are the possibilities of Kootenay mines producing over 40,000 tons of copper per year? Let us make a conservative estimate of the expectations of prominent British Columbia properties, and see the result:—

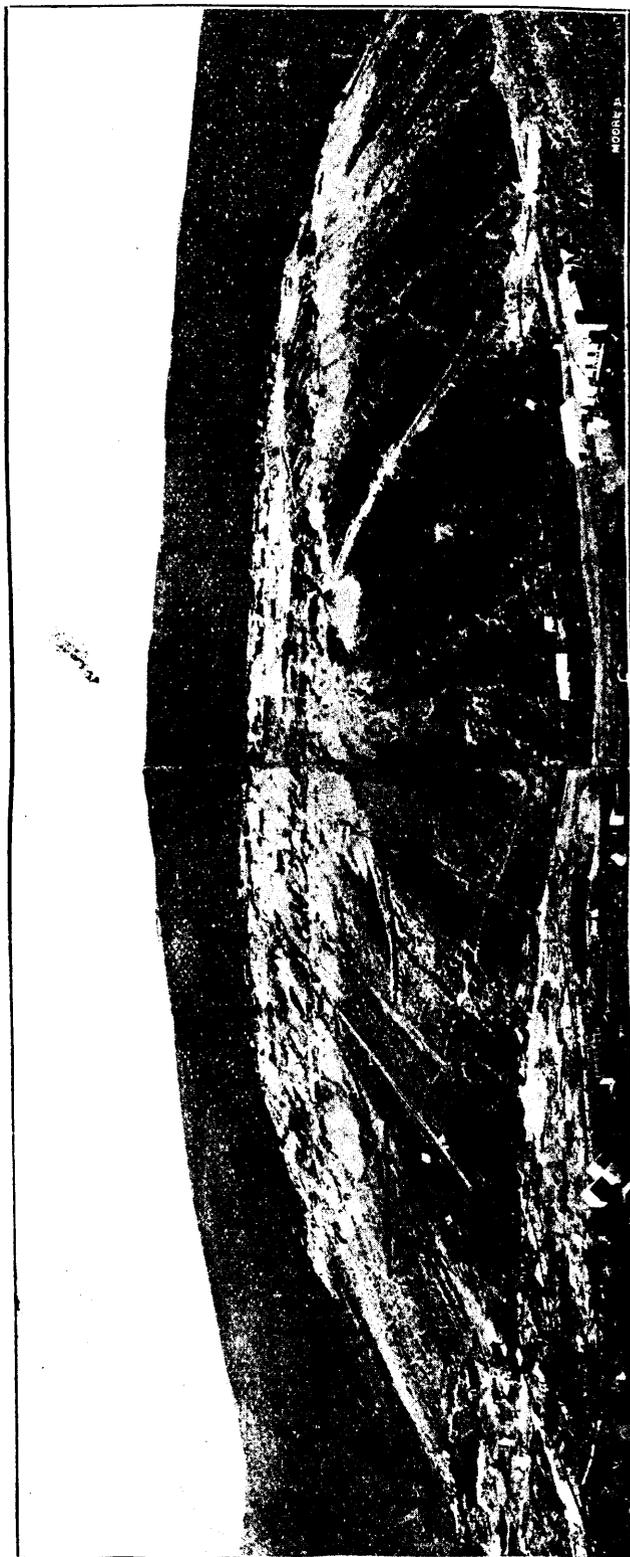
	Tons ore daily.	Per cent.	Tons copper
Mother Lode, Boundary district .....	500	3	15
Phoenix Camp, Boundary district .....	1,000	2.5	25
Summit camp .....	200	8	16
Other properties, Boundary district ..	400	4	16
Le Roi, Rossland district .....	500	1.5	7½
War Eagle and Centre Star, Rossland ..	500	1.5	7½
Other properties .....	400	1.5	6
Hall Mines, Nelson .....	300	3	9
	3,800		102

With this rate of production for 365 days in the year, Kootenay may produce about 37,000 tons of copper annually, but would not then, all told, replace either the Anaconda or the Calumet and Hecla, should either of these cease to produce.

### A GREAT COPPER MINE.

From the United Verde Copper Mine, with its income of \$11,000,000 a year, Senator Clark derives \$30,000 a day, which is \$1,200 an hour, \$20 a minute. If the expectations of Mr. Clark in regard to the output of the United Verde Mine are realised—96,000,000 lbs. of copper a year—his income from this source alone will be \$17,208,000 a year, or \$46,000 a day. At this rate Mr. Clark's copper mine is worth \$508,000,000. Other mines have produced enormously for a short time, but they have soon become exhausted. The Verde Mine, however, is the marvel of the age, and miners who have had access in any way to the ore body do not pretend to predict what the future may

show. If it lasts two years at the present rate of production Mr. Clark has yet to draw \$520,000,000 on his annual instalments. If the mine should last 50 years, his heirs will find a bank account unequalled by any in the world.



CHECHAKA HILL, WITH EL DORADO AND BONANZA CREEKS.

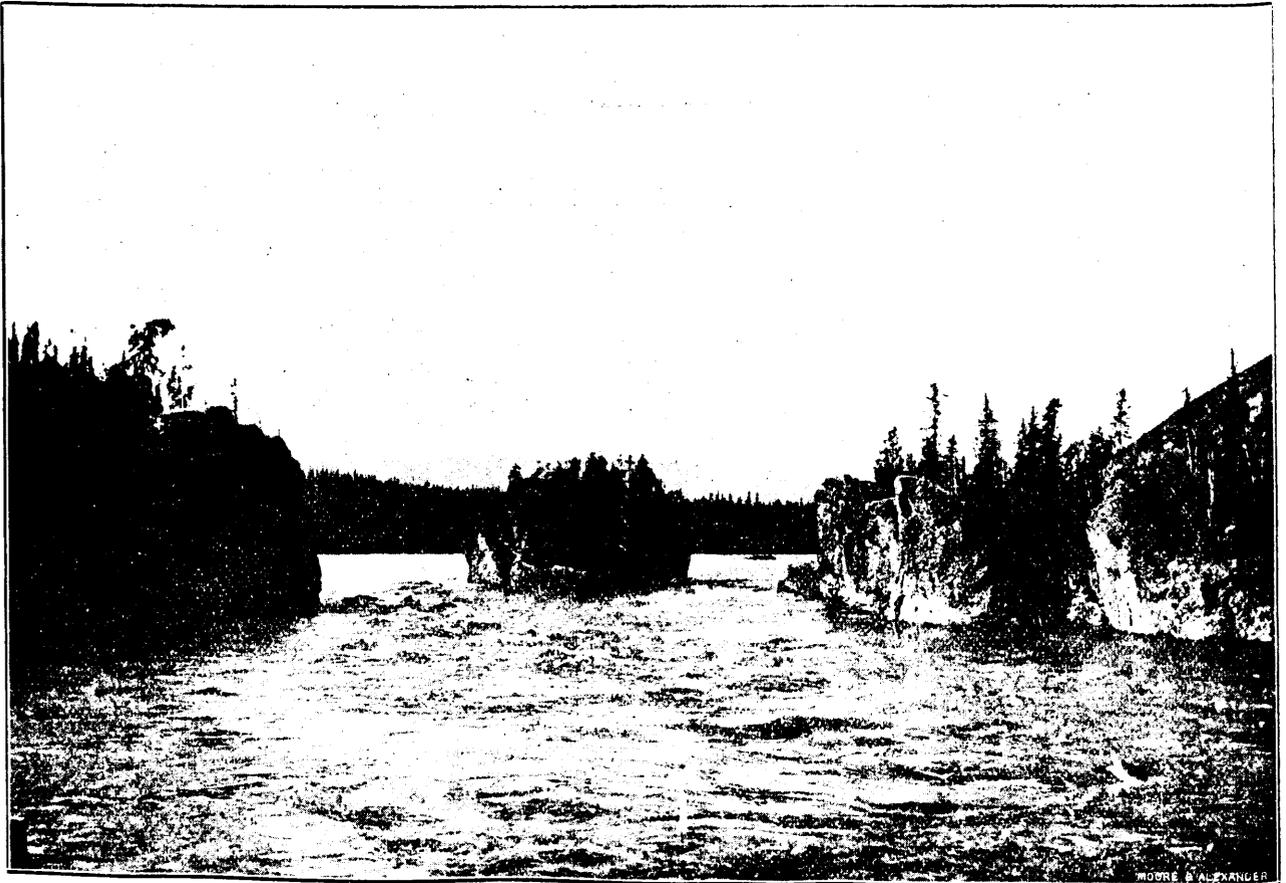
The remarkable thing about the United Verde Mine is that it is entirely owned by one man, Senator W. A. Clark, of Butte, Montana.—*B. C. Review.*

We beg to correct the statement of this London journal, which ordinarily is fairly well posted, when it says that "Senator Clark entirely owns the United

Verde." This wonderful property was originally owned by Professor Geo. E. Treadwell, who now retains an interest which brings him in a nice little dot each month. Senator Clark holds 9-10 of the stock, undoubtedly, secured, so the Professor asserts, through trickery on the part of the Senator. Prof. Treadwell has sold some of his shares as high as \$300 per share. —ED.

mines were opened up with the aid of modern pumping machinery, gold would be obtained in every one of them below the water line. No doubt this will be done in time to come.

Near the old workings are the remains of an old fort, which was evidently used for protecting the workmen from the 'native' tribes. The Pungwee River runs up to near the mines, and is navigable for



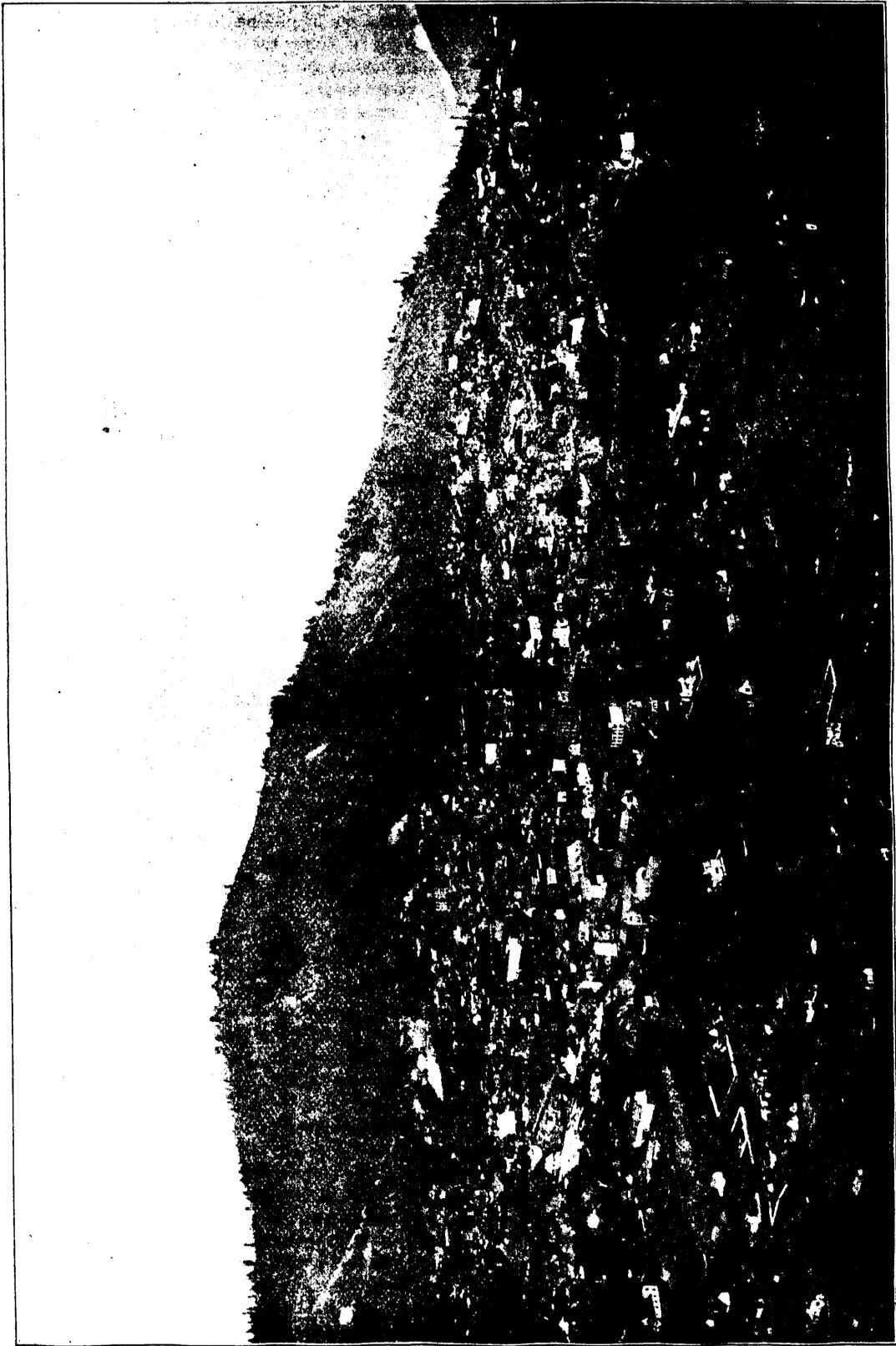
FIVE-FINGER RAPIDS.

### "THE LAND OF OPHIR."

Captain Dallimore, of the Rhodesia Field Force, writes: "While visiting in the interesting neighborhood of Umtali, Rhodesia, I was invited by a Mr. Fairbridge, a gentleman who is a pioneer of this part and a surveyor by profession, to see some old gold mines and fortifications on his land, comprising more than 10,000 acres. They must be some thousand years old. Umtali means 'The Place of Gold,' and is supposed to be the land of Ophir, where King Solomon obtained the gold: in fact everything points to this being the case. Mr. Fairbridge showed me an old stone he had found in the mine. It is a kind of hard soapstone, about 18 inches long and 6 inches wide. It has a row of holes, about the size of egg cups, on one edge, all of which are connected by little drains to allow the metal to run from one to another; along side this is a long channel for casting ingots. It shows the effect of the rain and sun, but is well preserved and a very interesting relic. He had also several stones built into his house, which have been used as mortars for crushing the quartz. The old workings all show that the people only extracted the gold down to the water level. There is no doubt that if the old

small craft. This is, no doubt, the way the ancients came to this place. There are also what are called slave pits, or large round holes, all built up inside, with an underground passage to keep in the slaves who were employed to work the mines. What is also strange is that the tribes of natives here are altogether different from others, being greatly superior and keeping very much to themselves. They have no chief or king like the others, each household being controlled by its own head—Abraham, Isaac, and Jacob all over again. Everything points to the fact that some of the ancients from the north remained, and perhaps intermarried with the blacks. It is altogether a very interesting place, more so in many ways than Pompeii (where I have been), which is more modern than it."

The Melbourne Mint seems to be much more profitable to the colony than that of Sydney to N. S. W. According to the reports of the respective Deputy Masters, there was a net profit to the Government of Victoria, on the Mint operations of 1899, of £8,145; the receipts being £25,145; whereas, by the strictest economy alone, was the Sydney Mint able to save £511 15s. 9d. out of the Colonial Government grant of £15,000.—*Journal of Commerce*, Melbourne.



ROSSLAND, B. C.

## A TRIP TO THE GOLDEN NORTH.

BY T. R. H.

Securing a passage by the U. S. S. Company's steamer *Cutch*, advertised to sail from Vancouver, B. C., on Monday, the 20th August, 1900., at 8 p.m., I boarded the vessel with my traps, in good time, on the principle that "punctuality is the essence of business," and that it is "better to be sure than sorry."

The little arrangements of men and mice are occasionally subject to circumstances, which proved to be the difficulty in the case of our departure—on time. With a good passenger list and a heavy cargo, down to the Plimsol mark; the night ideal, in fact the weather in every way was most propitious, our only cause of complaint and annoyance was an unlooked for and it appears unexpected delay, through one of the mates not materializing. After giving him time to put in an appearance, the patience of Captain Newcombe became exhausted, and he had no alternative but to hail a cab and drive away to endeavor to locate the missing quantity, or get a substitute; the latter proved unfortunately to be the case, necessity knowing no choice and as the old saw says, "Needs must when the devil drives," would it had been otherwise, the sequel may have been more fortunate. It was considerably after 11 p.m. when the rattle of the vehicle rolling along the wharf, at a lively pace, announced the fact that the captain had returned, bringing with him some sort of sea-dog, and almost immediately orders were given and repeated, the bustle and excitement of casting off, the sharp ting and ting, ting of the engine-room bell conveying the captain's orders to the engineer, assured us that at last we were to commence our voyage to the Alaskan port which is the key to that Northern land, whither so many thousands have been attracted from all parts of the world—by the glamour of its gold. How many poor devils have already journeyed over this same route and returned, cursing the country and the day they arrived on this sublunary sphere, for it was not given that all may participate. The fickle goddess, Fortuna is both coy and fickle and her smile is not for the crowd.

Pandora's box has to be exhausted ere we can dispel the evils Fate has in store for us and arrive at Hope. Amidst thoughts such as these I bid adieu, but not good bye, to those of my friends who had accompanied me on board the northern greyhound to see the departure of the steamer; for I may say, that these sailings are always more or less of an event,—and show their solicitude for my comfort and express those good wishes which are, though stereotyped, so pleasing to both giver and receiver on occasions such as this. As the gangway was removed handkerchiefs were waved and good luck, God bless you, exchanged, and in a space of a few seconds the propeller of the record runner between Vancouver and Skagway was churning the waters into foam, developing a speed that was hoped would continue without mishap until the Northern port was reached. Above, the heavens were studded with myriads of scintillating stars, around us the harbour lights of the finest harbour in the world reflected their luminosity on the lucid waters of the Inlet, forming one of the most restful and pretty pictures possible, and which the dark background of the midnight summer sky accentuated and rendered beautifully effective. Dim and more dim until it gradually faded from our view and resolved itself into a suggestion, but which, like a transformation scene, transfixed itself upon one's memory never to be effaced. A night such as one can only experience on the Adriatic or on the waters of British Columbia, and such climatic influences tend to poetic reflections; in fact, one is magnetised, as it were, by the influences of Nature which attracts one on all sides: from the phosphorescent waters beneath us, agitated by the motion of our vessel over its surface into a brilliancy simply astounding in its variety, extent and changeability, to the bespangled firmament above us. All wonderful and mysterious. What perfect conditions for the lover, whilst reclining over the taff-

rail, to whisper sweet fancies into the ear of charming femininity.

Though the hour was somewhat advanced—it was "to-morrow" in fact, for eight bells had long since heralded the nocturnal hour—one did not feel disposed to retire below, the sight (if I may use the expression, which is of course vague, on a dark night) being especially suggestive and the mere suggestion, of course, that accounted for the fascination that seemed to rivet one to the deck.

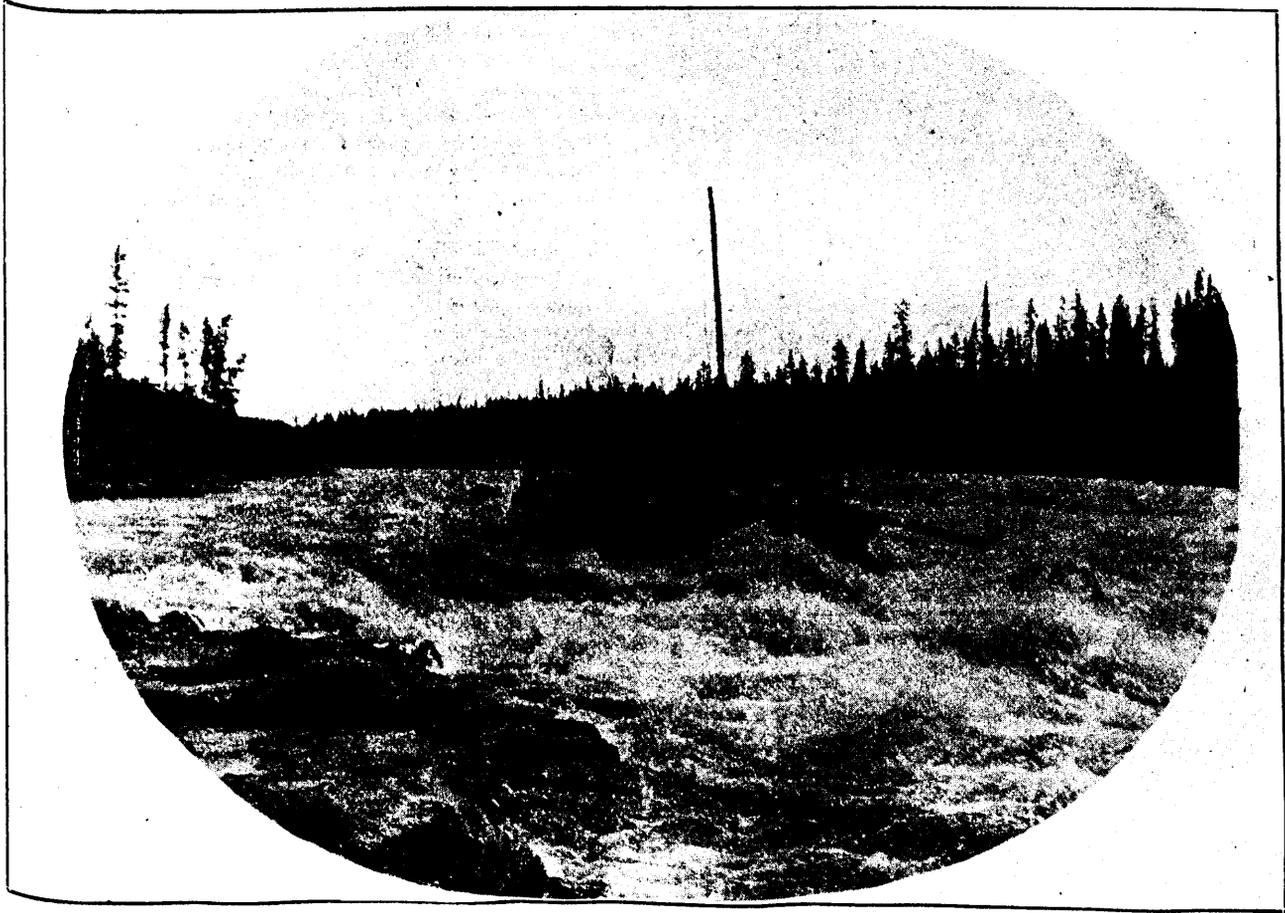
A surprise, however, was awaiting those who had not already exchanged the deck for Morpheus; I must say they were few, and, although it delayed us considerably, yet one would have been much disappointed at not seeing. The waters of the Gulf revealed to our astonished gaze, apparently innumerable, twinkling lights which covered the waters as far as the eye could see, and proved to be the mast lights of fishermen's boats. Through this maze we had to thread our way at very slow speed, the search-light of the steamer, together with the continuous shriek of the whistle, warning the boatmen that they were in the track of the liner, and to look out for their nets, boats and whole skins. Careful as the watch was kept they could not prevent one of the nets drifting into and fouling the propeller. The telegraph to the engine room immediately brought the screw to a dead stop to enable the unlucky owner to disengage the tangle, and favor us with some effective salmonological logic, which would convey the invocation of sundry blessings on the heads of everybody and everything. It was decidedly refreshing to contemplate, and one was glad to have remained on deck, for it is so seldom one is treated to anything highly original or so classical as this sermon, under the heads of Nets, Salmon, Screws, Swabs, etc., garnished with adjectives of the salt water kind. Dr. Johnson, of lexicon fame, was always on the look out for the "latest," and so were we; it was a case of being immortalized—on the scroll of fame, as the genial Doctor did the Billingsgate fisherwomen. But no; the whole-souled salt, with a voice like a foghorn and expletives to hand (or, I should say, to mouth) which he could hurl after the manner of a machine gun 'til further orders, in such circumstances — — — was missing, and in his place evidently a tame outfit of landlubbers, which were as much out of place on salt water as Hotspur's fop on a field of battle.

The net had to be cut away in several places, it being impossible to detach it otherwise; after which one more experience drifted away into the darkness of night, without even leaving us something to remember it by, other than their stupidity, which a couple of nice fresh salmon for breakfast may have obliterated.

The tangle cleared, quarter speed is the order, and on we go again, the hooter awakening the echoes of the hills on which the Britannia Copper Mines lay and the other hills pass it on. It also awoke the occupant of one of the fishing boats, who had the temerity to let his "glim" disappear and, rocked in the cradle of the deep, had evidently become oblivious to the fact that he had not got a monopoly of the waters of the ocean. That he escaped the cold embrace of old Neptune was not his fault. Awakened suddenly he doubtless realized that the cut-water of our steamer was frowning upon his carelessness and threatening to punish him by pounding him below the belt. Certain it was that we were startled by a most unearthly yell, seemingly coming from the "vasty deep." The captain on the bridge, directed by the sound, averted by his good sight and promptitude what may otherwise have been a catastrophe. The helm was put over and the steamer paid off, catching the boat at "slow," just abaft midships, swinging her round, when she glided by close to our hull, rolling from side to side till we expected each moment to see her capsize, the mast of the boat striking against our taffrail as she clung to us. It was a near squeak and a pretty bad quarter of an hour for Mr. Fisherman, who was standing up in the boat embracing the mast, looking for all the world the conventional ghost. Well,

it will possibly teach him that coal oil is cheaper than another close call for Davy Jones' locker. Experience number three. This one happening in less time than you could use the vernacular, say knife, and before I turned in, I began to think there was a "hoodoo" on board. The sea generally has something startling in store for us sooner or later, though I must admit that we had begun early and in short order style, having been at sea only some two hours. Time 1.30 a.m., and off Point Atkinson, the five thousand fishermen in the offing did not seem to get any less, but, like the Milky Way, the more you looked the more you saw. The interest began to wane in proportion to the influence the god of sleep gained over one. After the exciting episode just referred to, I retired to my cabin and laid me down to sleep, when I dreamed a dream of a huge octopus which had fastened on the vessel, the tentacles of which had

The day (Tuesday, August 21st) was delightful, so that the lovely scenery surrounding us called forth expressions of delight from every one. Through the delay in starting and our encounter with the salmon fleet, we did not fit in with the tide at Seymour Narrows, and as "time and tide wait for no man"—or woman, to be particular,—we were just about one hour and a half see-sawing the current at this particular point, so that the cameras had quite a leisurely and easy time, doubtless taking some excellent impressions away with them. It is seldom that a vessel's propeller can be forcing her along at some 14 or 15 knots and yet make no headway, but such was our position, the current being too strong for us and we could only hold our own, which we did for the time stated. The tide slackened and once more we moved forward, endeavoring to make up some of the lost time, the *Cutch* having a record to maintain.



SCOW GOING THROUGH WHITE HORSE RAPIDS,

encircled us and was dragging us down, down—and then I awoke, and the welcome tinkle, tinkle of the breakfast bell brought one back to actualities and my first meal on the steamship *Cutch*.

The salt air of the early morning and the refreshing sleep had sharpened the appetite, which the good table laid in the saloon encouraged and was appreciated by all. Quite a few ladies were amongst the passengers, as also no less than three counts: two French and one Russian. They contributed somewhat to the mirth of their fellow passengers by their endeavors to converse in English, accompanied by grotesque gestures which did not fail to excite the risibilities of all they came in contact with, and who, I am afraid, conveyed a not very appreciable idea of Anglo-Saxon good manners. "Put yourself in his place," as Charles Reade says, and the Frenchman would have had the laugh on his side. However, it was a good humored crowd and all bound, bar one, for the Golden North, hence a common bond of sympathy.

These charming salt water canals are truly wonderful, for hundreds of miles on the sea, without the least chance of a change in the shape of *mal de mer*. Queen Charlotte Sound, Dixon Entrance, and Millbank Sound are the only actual open pieces of water the whole way to Skagway, some one thousand miles, and either of these it takes but two to three hours to cross. We passed the *Ties*, one of the fast and commodious B. C. steamers, of which the least said the soonest mended; such institutions represent the "go," the "enterprise" of the Canuck. The Yank grins, and guesses the advantages are on his side and he takes them, while the bally Britisher "gets left,"—too — slow.

First day out, 11 p.m., Tuesday evening. Log not posted, no bets on, so can't say the run. After enjoying a cigarette with a descendant of Admiral Rodney, of the "Wooden walls of Old England" fame, and who, as representing this branch of the service, I was pleased to meet: for, after all, our modern "iron saucepans" are at the best only represented by *x*, and one does not care to enter into such a problematical a question.

If this should meet the eye of Mr. Rodney and he fails to remember the occasion, why, I forgive him; anyhow, the Rodney brand of cigarette was excellent and their fragrance is still a memory.

Wednesday proved a disagreeable contrast in the shape of weather to that we had been favored with, being foggy, with a real old Scotch drizzle. The smoking saloon proved the most comfortable place under such conditions, the air on deck being raw and penetrating. We were passing through Tolmie Channel, the shoreline of our port being so close that we could have tossed a biscuit onto the beach.

We passed the steamers *Seattle*, *Edith* and several others, with the usual hooters. These steam whistles are all right in their way, I suppose, but the suddenness, the spontaneity as it were, of such outbursts of joy, welcome, or whatever you like, caused sundry remarks, as "simply distracting," "horrid



TYPICAL YOUNG YUKONER—WINTER.

noise, etc. Now-a-days it were well to take the precaution of stuffing one's ears with cotton wool when taking a trip North; one meets so many friends of the strictly hilarious, hail-fellows-well-met sort, that, like Paddy, it's a case of celebrating.

I cannot say I was sorry when we turned over to Thursday and found that the weather, though foggy still, indicated a sort of "pride of the morning," promising great things when Old Sol woke up to business. The *Danube* and *Princess Louise*, steamers bound South, saluted us on entering American Alaskan waters. Ketchikan being the U. S. port of entry, the captain and purser going off to declare us; our friend Rodney also left in the same boat, on some mysterious exploratory business connected, we opined, with some rich gold finds on Prince of Wales Island, to which Ketchikan gave him easy access. We wished him luck and that he might come back loaded with the pure stuff.

Both islands and mainland on this route are a sportsman's paradise. Big game and small shooting and fishing galore, together with, of course, unknown quantities of gold, silver and precious stones. Exploring and sporting parties have an ideal locality, rich in its possibilities, as also its intricacies, which there is no telling what they may reveal; what surprises await those who are inquisitive enough to penetrate these interesting and unknown recesses which abound in these northern waters.

It would be a perfect outing with a well appointed steam launch, and where three months of the best portion of the year could be spent to advantage. Tourists will always favor this route, because it is unique: not your ordinary stereotyped, common, or garden arrangements. Nothing of the old willow pattern about this tour, all highly original, northern, and beautiful and safe. We heard that Lord and Lady Minto had preceded us some few days, having gone up on the Government steamer, *Quadra*, to Skagway, going from thence to Dawson, Y. T.

Thursday evening we tied up at the entrance of Wrangle Narrows, the night being as dark as a wolf's throat, so that the searchlight was requisitioned to locate our position, soundings taken, and the whistle sounded occasionally to gauge the distance from the land. The deep shadows of the hills, which came abruptly down to the water, clothed in a heavy growth of pine, made a complete camera obscura of the mirrored surface of our narrow strip of sea, so that it appeared impossible to inexperienced eyes to define one's position, so gloriously mixed did it seem. After a pleasant chat with Messrs. Schooley and Belliveau anent the probability of another delay and the lovely character of the scenery through which we had passed, I betook me to my berth, dotted down a few notes, falling asleep in the act, and from which I did not wake up till the weighing of the anchor aroused me from my slumbers, on the dawn of Friday morning.

We steamed slowly into the tortuous channel of Wrangle Narrows, where, unfortunately, we were again destined to delay, not having proceeded far before we ran into a bank of fog which completely enveloped us, so we had to wait until it lifted to enable the buoys which marked the channel to be distinguished. The U. S. Government have surveyed and buoyed these waters very carefully, otherwise navigation would be impossible on such an intricate course, as it is it can only be navigated during high tide and at daylight. The anchor was again let go, and the rattle and rush of the cable through the hawse-pipe told another tale of patience, and firmly convinced us that we had a "Jonah on board."

Patience, however, is a virtue; everything comes to those who wait. It was a case of "hare, too," in any event, so we resigned ourselves to circumstances and kept our glasses level, in hope of penetrating the fog around us. Certainly some most amusing discoveries were made by some glasses, which had the owners been in command of the vessel, would have wound up the voyage on the mud banks of Wrangle's mazy channel. Amidst divers speculations as to our probable stay, cooped up in this narrow space, the orb of day had been gradually ascending, working out his daily course, gaining power with altitude; the very strength and character of his rubicund face dissolving the depressing atmosphere around us, revealing a picture, reflecting the mysteries of such phenomena. Heat chasing the dense and foul vapour before it and warming into life inanimate Nature. The nebulous matter, lifting in thin, fleecy folds, melting away into nothingness, exposing to our gaze a most charming effect of light, shade and colors. The bright greens and yellows of the alders, the various shades of scarlet of the maples, together with the warm browns of the bracken, blending in perfect harmony with the atmospheric greens of the grasses and mosses which spread, carpet like, down to the very limit of the tide, the boulder-spread beach forming a rich and strong contrast as a foreground. Such was the picture Old Sol presented to us, when again we weighed anchor and continued our way through these picturesque waters.

The day was a perfect one and well rewarded us for any inconvenience, the surroundings proving very interesting. These waters being some of the best fishing grounds, salmon canneries are extensive here, and large quantities of canned fish are shipped from these parts to the States and thence to Europe.

Passed the U. S. steamer *Humboldt*, amongst others. At dinner there were mutual congratulations at the prospect of arriving at Skagway during the early morning (Saturday), and we all

hoped that we had laid the spook that accounted for our many delays; each of us drinking confusion to hcodods in general over our wine. After dinner I sought out the steward to "wipe something off the slate," which being done, I could step across the gangway at any time with an easy conscience. The trip had been a surprise to many and so far enjoyable to all, by reason of the charming variety and ever changing scenes of the way. As we cleared the Narrows the mountains of the mainland soon came in sight, the tops of which were mostly covered with perpetual snow, with some very large glaciers on others, reaching to the sea level. Frederick Sound, which, by the way, is protected by Admiralty Island, Baranof Island and

with my pipe for a companion; the night was dark and the stars brilliant, we were making good speed, some 14 or 15 knots, and apparently everything clear ahead; meeting the popular purser, I accompanied him to the saloon where a few of us met for a parting supper: Mr. Beleveau, Mr. and Mrs. McConnel, the Purser, and myself. The champagne was Pomery Sec. '84. Nothing small about that. It would be superfluous to say other than the time passed quickly and most pleasantly. Compliments were in order, and the ladies were the principal recipients and received the greatest praise for their sailor-like qualities, the steady, graceful manner they walked the deck, and the celerity with which they found their sea-legs—to use a nautical



THE "CUTCH."—DOUGLAS ISLAND.

others, treated us to a few miniature icebergs; these were dotted here and there and, though apparently small, are not to be treated with impunity.—No danger of running short of ice in these waters. The lovely lapis lazuli tint of the fractured portions were a wonder to many, though, of course, one has to see the bergs of the Atlantic to fully appreciate size and color of them. The sunset had been quite an Alpine effect, the lovely rose tints shedding the warmth of its color over the snow-clad peaks and bluffs, and glinting the glaciers. These sunsets are peculiar to the latitude and conditions of the climate, and are certainly of themselves worth the trip to see.

Night was drawing on and we were nearing Juneau and Douglas Island. I sought the warmth and comfort of the smoking saloon, where of course, being the last night, everybody was celebrating the event, everybody must drink to everybody's luck, at everybody's expense; songs were sung, from "The Soldiers of the Queen," to "Clementine," the crowd was hilarious, which was certainly excusable. After several yarns with sundry of my fellow passengers, who all felt happy at the prospect of *terra firma* in the morning, I took a stroll on deck

phrase. Generally we were having a very pleasant time and shaking hands with ourselves that the end of the chapter was almost reached, when suddenly—"Swish!"—"Crash!"—"Scrunch!"—"Grind!"—then a dead stop. The screw revolved furiously for a few minutes and then all was still, save the patter of feet overhead.

Something had hit us, and we wondered "what in the water it could be!" Mrs. McConnel exclaimed, "Whatever is it?" To which I replied, "Evidently a blade or two off the propeller." Being naturally of an inquisitive turn of mind, I made for the companion way to reach the deck and ascertain whether we had gone ice hunting or not. Meeting Captain Newcombe, he said he was afraid it was a serious matter, as the new mate, whom he had left in charge only some fifteen minutes since, after giving him the course, had run the vessel on a reef. Told him I had said that we had knocked a blade or so out of the propeller, as I thought it best not to create anything like a panic; asking him at the same time if he thought danger imminent. The order to lower a boat, tell off a quarter-master to see that the ladies were first got off in safety, was given im-

mediately, and carried out without the least confusion. Most of the passengers had retired to their cabins and soundly sleeping when the accident happened; one of the ladies, a Miss McGregor, from Winnipeg, was thrown out of her berth by the impact. Crockery was smashed everywhere. In some instances doors were wrenched off by the sudden strain.

After the ladies had been taken off the captain gave me permission to lower one of the boats from the hurricane deck, which, with the help of Mr. Povah and another, was done. We then made for our cabins for our coats and handbags. The *Cutch* was evidently settling fast. Meeting the steward, he advised me to hurry up and get off, as the vessel might slip off at any moment. Returning again to the saloon for my cap, I then realized that she was filling fast, the water being up to the saloon floor, and the steamer apparently settling by the stern, also heeling over considerably. Taking this in at a glance, I made my way back to the hurricane deck, threw my traps into the boat, shinned the falls and landed in about a foot of

The fire proved a splendid beacon to guide the other boats to us, and also imparting a glow of most necessary heat, which was most comfortable, the night being anything but warm. This being done, we brought up blankets and pillows and all the passengers' light baggage. The shore was soon a hotch-potch of matter from the unfortunate *Cutch*, which was strewed about in all directions and in the utmost confusion.

There are two kinds of shipwreck: first, when the vessel sinks or is dashed to pieces; second, when she is stranded, *i. e.*, grounds and fills with water.

Our beacon fire illuminated the shore, reflecting its warmth and color on the smooth surface of the water and bringing out in strong relief the background of the dark, plume-like foliage of the pines, and lending a fairy-like effect to the whole surroundings. Boat after boat landed its living freight, lighted by the glare of our huge bonfire, which welcomed the shipwrecked to the shores of our island and imparted fresh life and warmth to them, after such an exciting experience of possible catastro-



GRAND FORKS, YUKON.

water, the boat leaking like a sieve. We had the boat crowded with men and their belongings, and others shouting to let them in, which, however, we could not do with safety to themselves or the occupants; we, however, did squeeze another in, he being already on his way down the falls, when we cast off, telling the others we would be back immediately we had landed our load. We were making for Douglas Island, when the captain shouted us to pull to the left, or the opposite shore, as it was nearer. Placing a man in the bow of the boat to keep a good look out, we pulled for the shore as directed, shouting to locate the boat with the ladies, so as to head off and find a good landing place for them. We soon had an answering "coo-oo-ey," which guided us to their whereabouts, when we told them to let us take the lead and find them a suitable place to land.

Following close to us, in a short time we made Colt Island, the distance being only about a mile from the wreck, and located a reef of slate, which made a nice, clean, dry approach to the shore. After getting the ladies out and their wraps, valises, etc., and placing them in safety on the island, the writer and one of the stewards—after seeing our boat return to the vessel,—knowing the first and most requisite thing in camping out to be a good fire, we soon had one started, which assumed considerable proportions, just above high water and close to the timber, of which, fortunately, there was plenty.

phe; which, however, had been most happily averted by the vessel striking the reef in the right place and with sufficient force to fasten herself in such a manner as to prevent her slipping off. This was, of course, unknown at the time, therefore the precaution of at once securing the safety of the passengers was a justifiable proceeding, and rendered necessary in the interests of life, which would certainly have been sacrificed had the boat not held on the rocks, there being 18 fathoms of water on one side and 15 fathoms on the other. So that matters, after all, were not so bad but they might have been worse.

We struck about 11.25 p.m., and by 12.30 to 1.00 a.m., all the passengers were safely deposited on Colt Island, without accident or confusion; a very creditable performance, considering that it was expected the vessel would heel over and go down stern first at a moment's notice, and thus precipitate the extreme horrors of shipwreck, which the darkness of the night intensified. Happily, however, it was otherwise.

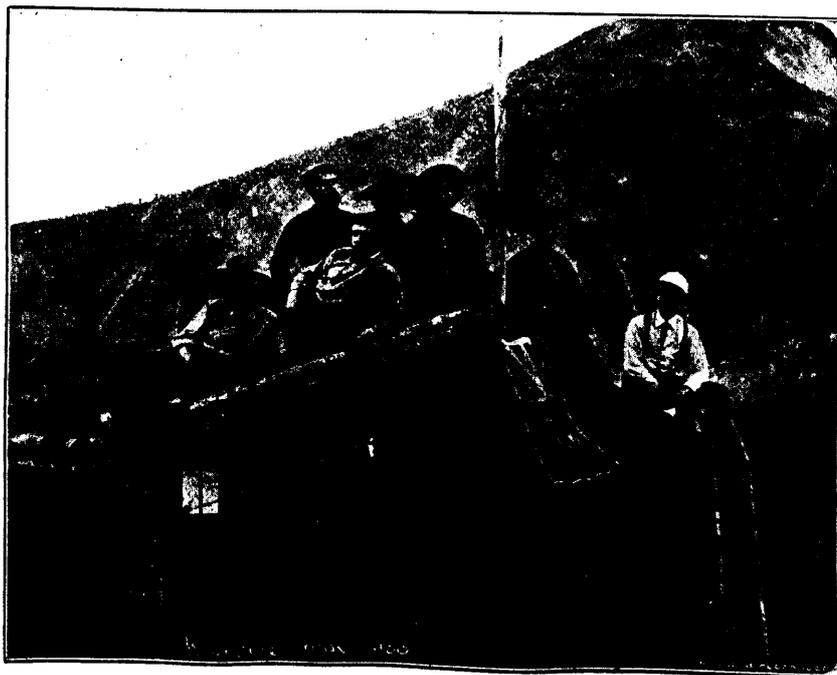
We had plenty of fun and exercise assisting in bringing up sundry requisites from the boats, for the comfort of the ladies, whose position we, naturally, made as agreeable as possible. Blankets were spread, with pillows for them, so that their sleep which had been broken might be renewed under Arcadian conditions, which, though certainly unexpected, were not so uncomfortable as sometimes usual in the case of "cast aways."

In fact, such an experience, with such a fortunate issue, numbers would have given a small fortune to have been able to identify themselves with. Most all of us assisted in unloading the boats, which were now engaged in victualling the island; and considerable care was shown in the handling of one or two cases, which were destined never to pay Uncle Sam any duty for the privilege of landing on U. S. soil.

These boxes may have contained eau de Cologne, or eau de vie, anyhow we lifted them with care, handling them tenderly, lest accident may happen, which would deprive us of revivers for the weaker sex, in case of hysteria, fainting, or other contingencies which occasion may demand. Yes, we laid them down with extreme care and, as we thought, safely, so that they may be sampled further on, after the burden of the day—night, I should say; but thereby hangs a tale.

Others (loafers, of course) had spotted these unique looking packages and, attracted by the fragrance which exuded—or by the hieroglyphical marks upon them—laid base designs to

Tired we undoubtedly were. So, wrapping ourselves in our blankets, we lay down with our feet to the fire; my vision attracted by the merry twinkle of the little stars, splashed all over the magnificent canopy of Nature's dome, which, after all, is away ahead of your 12 x 18 x 8, with its vulgar whitewashed ceiling and four walls to match. No, the air one breathed was pure and unadulterated; none of your vitiated coal-stove atmospheres; but a palace, the floor of which was softer and richer by far than the product of Persian or Wilton looms, our walls decorated by Nature in designs of highest art, on which the playful tongues of flame from our watch fire traced the outlines with heightened effect. The dome above frescoed by luminosities—each representing a world itself and, perhaps, peopled by humans, as our own planet—which, softly blending with the whole ensemble, produced at once an incomparable mansion, and led to a train of thought extremely favorable and open to those impressions Nature's school can alone supply, placing one, as it were, superior to kings and princes.



GROUP OF MINING ENGINEERS AND SURVEYORS, YUKON.

sneak them, presuming on our innocence of their contents. And we certainly were; as, on trying to locate the articles, they had disappeared, but accounted for numerous little pleasantries which developed during our enforced stay on the island. *Sic es vita.*

The various paraphernalia of both sexes, who had been in too much of a hurry to dress, when scared out of their berths by the accident and had hurriedly escaped, had been collected. Trunks, saratogas, bonnet boxes, and other things, which are matters of detail and shall be unmentioned, were scattered over the beach, exciting sundry jocular, and in some instances inelegant, remarks. It was a part, however, of wrecking experience, this jostling with 'high, low, Jack and the game.'

We, with some difficulty, got sufficient men to "string up" from the boats to above high water, passing effects along in this way and thus lightening the labor. The mail-bags were both heavy and awkward to handle; but every sack was passed up out of reach of the tide and covered over with tarpaulin. This was a nasty job, and I suggested that, as we had rescued this mail intact from the maw of father Neptune, we in future should expect all our mail franked. Carried nem. con.

Well, we had got everything we could safely ashore and considered that so far we had done all that could be expected.

I had already formed the opinion that Nature is not studied sufficiently. More fresh air and exercise. More of that elixir which Nature alone can impart to her votaries. More out-door life and sympathy with the wonders all around us. A closer contact would make us more natural, unaffected, robust, manly and womanly. These deductions I drew when reposing gently on Nature's couch, with myriads of worlds above and around me, the whole wonderful and mysterious to profundity!

The calmness and quiet of the night, everybody—even to the Chinamen, who had a camp fire of their own further up the beach—asleep, after the exciting escape and work of a few hours previous, and, with the exception of the occasional murmur of the sea, all was hushed in stillness, when—I slept.

The morning (Saturday) broke in splendor, the sun bathing everything in purple and gold. A lovely scene! Douglas Island and the entrance to Lynn Canal were wrapped in a glorious sheen. Looking in the direction of Horse Reef I saw the *Cutch* balanced on the rock; the sea had, however, flooded her, with the exception of a small portion of the forward hold, the bow of the vessel being high out of the water, her deck being at an angle of 35 or 40 degrees. My glasses revealed the fact that certain of the cargo was being thrown overboard; trusses

of pressed hay, worth a Jew's eye in Dawson, were gaily floating up towards the canal.

The mate, who just by way of diversion had run us on the reef, had been laying off the wreck during the night, it being anticipated that if the vessel held on during the fall of the tide, she would stay there long enough to enable an examination to be made, as to the extent of the damage and the necessary repairs or patching sufficient, on pumping out, to float her off at high tide and get her to Juneau, which would be only eighteen miles distant. Everything, however, would be subject to the behaviour of old Boreas. Should his conduct be favorable, she could be raised without a doubt. On the other hand, if Boreas got the upper hand of fair Amphitrite, it would mean another offering to father Neptune, whose victims are scattered over the beds of all the oceans and seas, and whose appetite seems insatiable.

After a dip in the sea, which is the most refreshing of all ablutions, I betook me to our commissariat, the ozone having sharpened the edge of hunger, and looked about for a breakfast. Two Chinese cooks were flourishing huge knives over a side of beef, as if acting the part of sacrificial priests. They were dealing out, it appeared, our rations in the shape of beefsteak—raw. I received my portion with thanks. You may be sure my knowledge of camp life had taught me how to cook as well as eat it, washing it down with a cup of tea, minus milk: not even having any of the brand generally known in Vancouver as C. P. R. This is where the beauty of our condition came it. None of your finicking fastidiousness; none of your *pate de fois gras*, cavaire sort of appetites; sweetbreads and devilled kidneys and luscious tenderloins were good enough for us—in our mind. Fancy goes a long way, and one's appetite helps conditions, when ozone is the tonic. Sea biscuits and crackers are devoured with avidity and relish; your milk loaves and Vienne bread we looked upon as *infra dig*, and fit only for those whose appetites were of the pampered kind—your town and city people. How nice it is to philosophize under such circumstances! Oh! those Athenian groves! Solon & Co. must surely have been shipwrecked at some time or other.

The ladies were well looked after, living on the fat of the land (island), and enjoyed themselves immensely.

Both Captain Newcombe and Purser James were exceedingly cut up over the accident. The Captain had made a name for himself and the boat, and naturally felt the position acutely, and we sympathized with him. It does not comfort a man much to tell him the pitcher went to the well ninety-nine times, etc., because if somebody had not been careless enough to break it, it would have kept on going as long as there had been use for it.

To kill time, I started out on a prospecting tour over a portion of the island, fully appreciating the fact that most of the good things had been stumbled upon; therefore it was within the range of possibility that another Treadwell may exist in this locality. The island is of the transition period. A huge ledge of sandy slate ran up from the water, which was traceable for some distance, until it buried itself in the wash. This slate was cut through the centre with a vein of white quartz, which was perfectly barren. I did not locate the contact, for Colt Island appeared to be wholly a slate formation.

Douglas Island, which, by reason of its great mineral wealth, is known the world over, lay opposite us,—which is shown in the accompanying sketch, also Horse Reef, showing the position of the *Cutch* from the Island. Some of the most important mining industries in the world, which have paid millions in dividends to the lucky shareholders and seem comparatively inexhaustible, are situated on this Island. Between 600 to 700 stamps are pounding away on the Treadwell property alone, the din is deafening and worthy of Vulcan and his Cyclopean workmen. These properties are some of the wonders of the world, and will repay a visit.

Juneau is the port, and a lively, up-to-date town it is, with its electric lights and other modern advantages; first-class

hotels, having every comfort and convenience; also dance halls, where one can get a glimpse of life in the wild and woolly West. Juneau has also a large fleet of steamers, fitted up very nicely, powerfully engined and electric lighted. The United States liners from San Francisco, Portland, and Seattle all call at this port both on their up and down trips. An undoubtedly large mineral belt is the whole of this region, comparatively unprospected to date, but en evidence all around.

As the day dragged on, more or less anxiety was felt as to the length of our detention. The *Amur* had been expected any time, having left Vancouver about the same time as the *Cutch*, and we were hoping to sight her during the day. Glasses were continually levelled in the hopes of sighting a steamer during the morning, without realization. The passengers who had their baggage in the forward hold were apprised that the Captain had ordered some of the crew to get them out, when the tide was low enough to admit of their being got at. This was done, and the saturated saratogas, boxes, etc., brought to the island. It was most amusing, in fact comical, to watch the various facial expression of the owners. Most of them opened their trunks, and soon the shore was kaleidoscopic in effect, the various contents being spread out on the sunny beach to dry. Those not having saturated saratogas to bother them explored the island, and others, bent on sport, shouldered their guns and made for the woods in the interior, in the expectation of finding grouse, or bear—so they said. One party returned triumphant with an old, primitive looking wheel-barrow. This machine was converted into a wheel-of-fortune, the disc which served for the wheel being numbered from 1 to 20, at five cents each, so that the lucky number took the dollar. The camp had quite a diversion and a rushing business was done for some time, which tended to break the monotony, now growing tedious. The pastime unquestionably brought out the ruling passion to perfection.

Another surprise, however, was in store for us which the Fates had sent us.

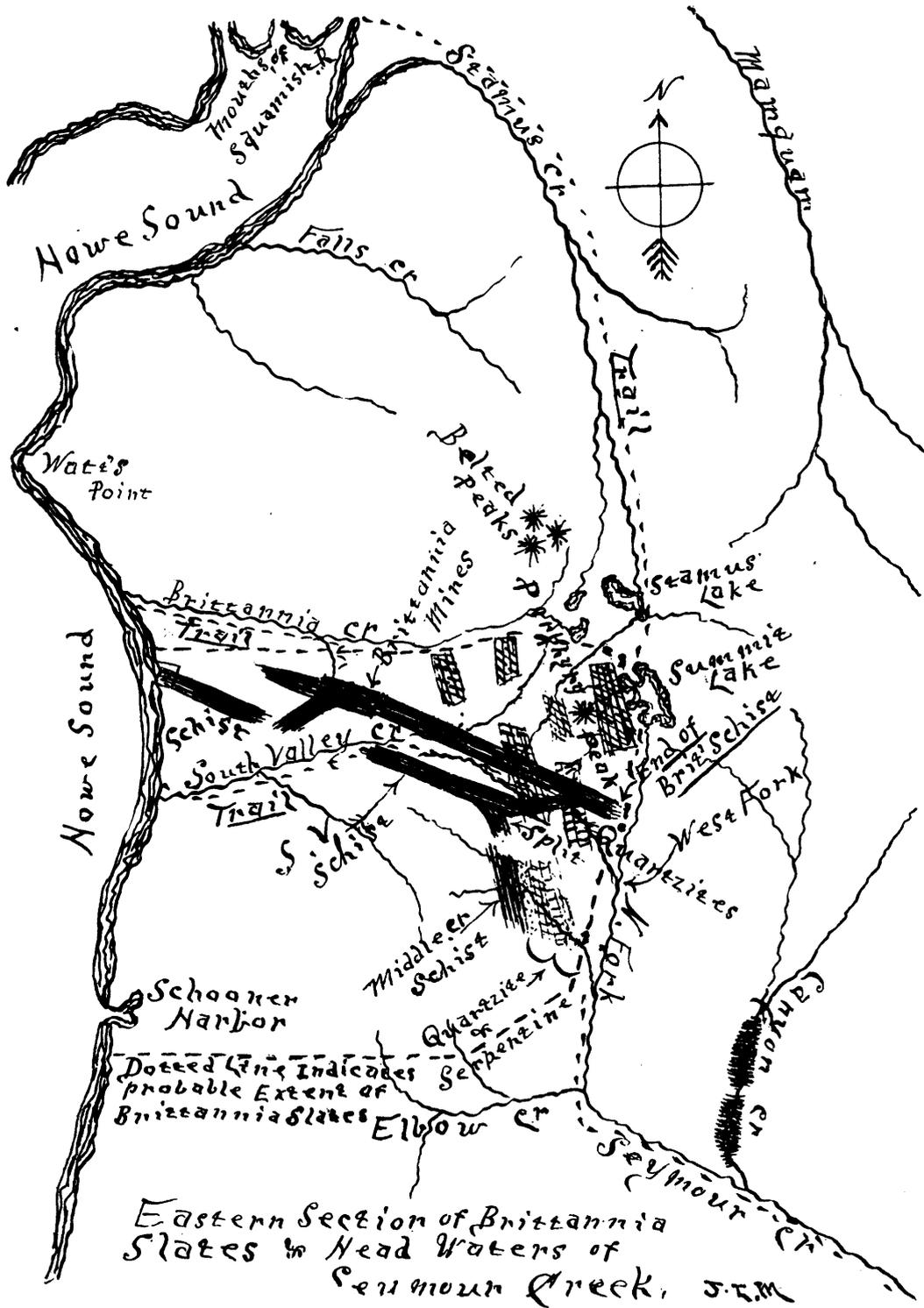
*To be continued.*

#### NOTES ON EASTERN SECTION OF BRITANNIA SLATES.

WRITTEN FOR B. C. M. E. & I. G., BY J. L. M.

The strike of the Britannia lead, the distance located along the true or supposed line, and the locality of its termination are points much talked about but little known. Being unable to gather reliable information in regard to the features in question, the writer decided to make personal investigations and incidentally explore the head waters of Seymour Creek and adjacent territory. The route chosen was by way of Stamus Creek, whose confluence is near the mouth of Squamish, at the head of Howe Sound. The old Moodyville trail follows the course of this stream its entire length, a distance of about 10 miles, most of this distance the trail is completely overgrown and can be followed only by the old blazes now healed over and appearing only as dark spots on the trees. Around steep hillsides traces of grading are still visible.

An occasional bridge in the last stages or decay spans mountain, stream, or gorge. Many giants of the forest have disputed the way of the pioneer trail makers, who with axe and saw cut a section out of their huge trunks to make a passage way. The trail is now unused, seldom an animal's track is seen on it, and one feels like he is wandering over some primeval by-way, with a feeling akin to that in boking about an old ruin, yet only twenty years ago these woods resounded with the ring of the woodman's axe and rasp of the crosscut saw. In regions of heavy rainfall like this the work



FIELD NOTES OF BRITANNIA SCHISTS AND SLATES.—Copyright applied for.

of man is soon obliterated by a dense growth of bush, rocks, logs, and even the ground is in a short time carpeted with moss, while mountain torrents tear away the results of his labours. Some 3 miles from mouth of Stamus a broad zone of quartzite with chlorite base, highly impregnated with iron sulphides was met, next, on the east, is a formation of greenstone (probably true gabbro) followed by another zone of iron sulphides, all with N. W. trend.

The country from here to head of Stamus Creek is characterized by granite and allied rocks, and intrusive and highly metamorphic rocks. The head of Stamus is a small shallow lake, lying at the edge of a beautiful park. As we passed through this park we strained our eyes in vain for the graceful form of a deer, and a scent of savory venison to eat came to us as we contemplated the evening camp meal.

Disappointment was ours. The whole country traversed on this trip is poor in game. Over a low divide, half a mile to southward of Stamus Lake, lies another lake, three-fourths of a mile long and very deep, it is the north fork of Seymour Creek, we named it Summit Lake.

Elevation 3000 feet, from its east and west shores rise high mountains, on the west side the first side the first slate is met (see map). This slate is massive and highly fractured which is readily accounted for in the presence of an immense porphyry intrusion marked on the map "Porphyry Peak." It graduates into an underlying quartzite, and is the N. E. corner of the Britannia slates. We made camp on the west shore of Summit Lake, in a nook among the bush, secure from the night breezes that blow through these passes. Our first work was to the west, a smart climb around the northern side of Porphyry Peak and we are in a high saddle at its western base, broad patches of the beautiful lie gleaming in the sun. We confess to a boyish desire to be at this moment in the possession of a coaster, to speed away down that glistening incline at whose base a broad basin affords ample room for turning, just this side of a forbidding looking gorge. What a striking contrast is a little basin lying a few hundred feet below, where we passed through: a luxuriant growth of the cleanest, greenest, most succulent grass I ever saw.

Flanking Porphyry Peak on the north is a remnant of slate, which has stood rain, frost, and the mighty grind of the ice-flow which has passed through this gap. Countless tons of glacial debris lie in low places and along the slope of hills. Huge rounded boulders are poised on high, ice-worn hummocks of granite. These boulders, like most of the drift mentioned, are from formations foreign to the locality.

Among this drift we found specimens rich in copper sulphides. It is worthy of note to prospectors that float, found in glacial drift, may be traced as least so far as the directions of its trend is concerned and the locality and possibly the ore discovered. The directions of the ice-flow may be determined by the rounded hummocks and boulders, whose rounded surfaces, as stated, are always on the up stream side.

*To be continued.*

#### BRITANNIA GROUP, HOWE SOUND.

The mineral lands comprising this group are the property of the Britannia Copper Syndicate, of Vancouver, B. C., who may in all fairness be said to possess the largest and most extensive mineral showings of any property in the Province. Experts have pronounced the ore in sight to be worth all the way from \$4,000,000 to \$10,000,000, and it is generally acknow-

ledged to be the basis of one of the largest copper mining and smelting operations in the world. Active work throughout the year has fully confirmed this belief.

The principal outcropping occurs in the form of a perpendicular bluff, in the shape of the letter Z, 600 feet long and 300 feet wide, with an average length or thickness above the base of 200 feet. This bluff continues some 2,300 feet, in the form of a hog's back, increasing to over 400 feet wide. Tunneling along the entire length, at intervals of 20 feet, has proved this immense body of ore to be continuous, and the actual ore in sight has been valued at \$10,000,000. The cost of mining will be a minimum one, as it can be worked as an open quarry and carried by gravity to tide water. Therefore one can see at a glance how naturally favored this situation is for working generally, that is, mining, smelting and refining.

The formation is schist, lying between belts of igneous rock (granite), extending Easterly and Westerly an unknown distance. These schists are highly mineralized and give an average value in gold, silver and copper of over \$10.00 per ton.

The *Engineering and Mining Journal* says as follows:—

"The mouth of the Mammoth Bluff tunnel is 3,300 ft. above the sea level. From the survey the measurement of the ore in sight in this Mammoth Bluff above the level of the tunnel would give approximately the following figures: 650 ft. in length by 150 ft. in thickness, by 313 ft. in height, equals 30,517,500 cubic feet, which would represent 3,051,750 tons of ore, allowing 10 cubic feet in place to the ton, and after making all due allowance for the operations carried on by erosion, it would be a safe estimate to place the quantity of ore actually in sight in this bluff at 2,000,000 above the adit level. The results obtained from the assay of average samples taken from the 88-foot tunnel are about as noted above."

We understand the property is bonded for a large figure to an English syndicate, and should, when operating, prove a great boon to Vancouver.

The development of our mineral industries are the essential quantity which will give backbone to the Province generally.

We have given our readers an idea of the Mammoth Bluff on the Britannia property in the accompanying illustration, as also an illustration of a field sketch of the Britannia Schists, by a mining expert who has kindly allowed us to use it. This sketch will be the first published covering this grand locality.

An immense nugget of gold, weighing about 1,150 ounces, was recently found in the gold washings of M. Bameieff, at Orsk, in the Government of Orenburg, in Ural, a journal devoted to Siberian gold mining. The Urals have hitherto been looked upon as the only gold bearing regions in Russia, but a discovery made about the beginning of August at Schemacha, in the Caucasus, would appear to indicate that that magnificent province, so inexhaustibly rich in petroliferous deposits, and in many kinds of valuable minerals, is also wealthy in the precious metal. The discovery of extraordinarily rich auriferous sands in the neighborhood of Schemacha was made by two poor Persians, who will probably soon become millionaires. Further researches have led to more surprising discoveries in the same immediate neighborhood, and there is now a great rush of miners and prospectors to the newly found goldfield from all parts of the Caucasus, and more especially from the petroleum wells at Baku and Grozri.



BRITANNIA GROUP, HOWE SOUND.

General view of Mammoth Ore Outcrop, 600 feet long, 300 feet high, and 150 feet wide, containing over 1,500,000 tons of visible copper-gold ore. Britannia Group of Mines is  $3\frac{1}{8}$  miles from deep salt water. Howe Sound, 28 miles from Vancouver, B. C. August, 1900. Will be worked as an open quarry for many years.

## MINERAL FORMATION OF BRITISH COLUMBIA.

BY C. R. G., M.E.

The quartz mining regions of the interior of British Columbia, in which any great extent of development has been done, are the East and West Kootenays and the South Eastern portion of the Yale District. The minerals in these districts are contained in three distinct belts, that round Rossland, Trail and a portion of the Eastern Boundary of Yale District, being contained in an eruptive series of dioritic rocks. From these points toward the westward, passing outwards, northward on the Rossland side and westward on the Yale side, the valuable mineral belts are contained in a series of crystalline metamorphic formation and are many miles in thickness, consisting of layers of schists (mostly talcose and graphitic), limes, carbonaceous slates and siliceous shales overlaid again with a belt of lime of great thickness interlaid with belts of quartzites and dioritic and porphyritic intrusive rock and some dykes of the same nature, that in a northerly direction passes through the Slocan and bending to the westward runs on through the Lardeau district and on, always trending more to the westward, through the Revelstoke division, and on to Shushwap Lake in the Kamloops division of the Yale District, where it becomes almost lost, being broken up by a series of intrusions of trap, which form a mineral belt apart. The same series of crystalline rocks are encountered again on the south side of the district and occur in the Okanagan district and connect with those mentioned as passing westward from the border of the Yale and Trail Creek districts. It will be seen from this that they form a circle, irregular in outline, which is broken through at two nearly opposite points by two very extensive intrusions; *i. e.*, that at Rossland and Kamloops, the centre of this irregular circle is composed of intrusive granitoid and syanic rocks, these again have in places, such as in the Slocan and at Revelstoke, broken through the crystalline rocks but have not displaced them for any very extensive areas. The centre of this circle will be at a point not far west from the head of the Upper Arrow Lake. The dip of the crystalline rocks is, generally speaking, away from the centre of the circle, and the reason for this can be very simply demonstrated by closing one's fist and passing the knuckles through a sheet of newspaper allowing the paper to hang down, the knuckle representing the intrusion of the granites and the paper the crystalline formation. The East Kootenay mineral belt lies in the same formations but, is mostly due to more recent disturbances, which show themselves in the manner of porphyritic and felsic dykes, of great extent. A series of these run at almost straight lines, slightly diverging in a southeasterly direction, and forming the ranges of mountains lying between the Columbia and Kootenay Rivers, and West Kootenay dividing line, the most northerly of them, cutting over into the Rockies, for some distance beyond the Windermere Lakes, these dykes occur mostly through Fort Steele, Golden and Donald division. The formations being much folded and tilted by the intrusions and carried up by dykes with great alterations in their structure and consequent fissuring. It has been found also that in the Rocky Mountains, running nearly through the centre of the range, there is another series of similar dykes of about the same age and apparently creating another mineral belt, but there has not been sufficient exploration as yet to fully

determine this. The other mineral belts throughout B. C. are consequent on distinct and separate volcanic waves which apparently occurred at the same period but only in places found their way through the earth's crust. This description will clearly demonstrate that the ores of the country have their origin from the mineral charged gases emanating from the interior below the earth's crust, filling the fissures consequent on the cooling of the rocks heated by intrusion, and that, therefore, they are of necessity primarily and essentially of a composite nature.

## Notes.



MAJOR-GENERAL. BADEN-POWELL.

We publish the following acknowledgment from General Baden-Powell. Needless to say it gives us great pleasure to make known to those who, like ourselves, expressed confidence in and appreciation of the heroes who fought, bled and were victors at Mafeking under their brave leader, General Baden-Powell. The whole campaign is an object lesson, and conclusively proves that Britons are Britons ever; which is synonymous with indomitable pluck and endurance, that has made heroes of them all—Australians, Canadians, Africans, Cingalese, New Zealanders, Hindoos, all with such leaders as Buller, Baden-Powell, Kitchener, White and the glorious "Bobs," whose examples made brave men superlatively so. Honor to them!

WARM BATHS, S. A.,  
August, 1900.

To the Editor of the B. C. MINING EXCHANGE  
AND INVESTOR'S GUIDE.

Dear Sir,—I beg to thank you for your kind thought in sending me the very interesting number of your paper which describes the kindly sympathy expressed by your country at the news of our relief in Mafeking.

I have also received a very large number of letters and cables from well wishers in the colony which I am endeavoring to answer, but, as many mails for me as well from me have been captured by the enemy, I fear that a number of kind sympathisers will have thought me wanting in courtesy and gratitude in not writing to them, I trust that you may be inclined therefore to help me make known to them the reason for my apparent neglect, as I have been most anxious to express my heartfelt gratitude and that of the Garrison of Mafeking for all the generous good feeling displayed towards us.

I remain, yours very truly,

BADEN-POWELL,  
Major-General.



Mr. J. Schroeder, formerly with the Van Anda Co., has taken the position of secretary-treasurer of the Marble Bay Mine, Texada Island.



Australia has three branches of the Imperial Mint, one having been established at Perth, W. A., within the last two years.



Bank rate (London, Eng.), four per cent. Silver much firmer; bar silver, 29 $\frac{7}{8}$ . It is said that the Indian Government has been purchasing at 30d.



Cariboo Camp McKinney has sent another gold brick to the reduction works at New York. The brick is valued at \$5,800.00.



GENERAL, SIR REDVERS BULLER,  
Who relieved Ladysmith.



In the ten months, ending October 31st, the metal mining companies of the United States, reporting to the *Engineer and Mining Journal*, paid in dividends a total of \$42,568,671.



The chairman of the Bank of Africa states that, owing to the stoppage of the Transvaal gold mines, the world's supply of raw gold has diminished by £15,000,000 during the past year.



We hear that the Mansfield Manufacturing Company are figuring to supply the Hall Mines Smelter with 10,000 tons of lime rock and 1,000 tons of lime annually.



Revenue of Western Australia, for the year ending June 30th, was £2,875,390. Expenditure £2,615,975. The colony has minted and exported gold to the total value of £20,000,000=\$105,000,000.



The Van Anda new smelter furnace has been blown in. The old 50-ton stack will be run as an adjunct. The smelter is now running at its full capacity, treating Copper Queen, Cornell, Marble Bay, and other ores. The Copper Queen is shipping 30 tons and the Marble Bay 20 tons of ore per day to the smelter.

We hear that the Van Anda property has been bonded for a large figure.

So far as the mechanical question of pumping and hoisting goes, there is no insuperable difficulty in contemplation of successful mining at a depth of 10,000 ft., but it is believed that must be considered the limit of deep mining. The suggestion that mining may be possible "at a depth of 20,000 ft." seems unaccompanied by the reflection that the air at such depths would have such compression by reason of its own weight that a temperature of 60° F. at the mouth of the shaft would approximate 300° F. at the bottom.—*Mining and Scientific Press*, San Francisco.



"Then another Locust came." This time in the shape of the Kootenay and Yale Chamber of Mines. Head-quarters, Rossland. The originators intend shortly to launch this infliction on an already long-suffering people. Incalculable mischief has been worked here by organizations of this kind in the past. We have from the first denounced these institutions as a curse to the country, and valueless entirely as an unbiassed authority on mining matters. The selfish interests of those composing such cliques have damned some of the best propositions in the country in the past, and will do so in the future, should any business clash with their schemes. We again strongly advocate the establishment of a State Mining Bureau, and hope the electors will strenuously urge it upon the Government as indispensable to our progress, and the only proper and responsible medium for dealing with our mining development. Such a chamber is the only one that will satisfy honest men or the investing public, and just so long as it is wanting so long will it be ere any solid progress is made or any confidence inspired. It must, however, be a thoroughly constructed and well equipped Department of the State, and its officers capable and well paid, so that the best results may be guaranteed, and home and foreign representatives kept well informed as to data generally. In other words, this Department should be the most important in connection with our Government; as, from an economic point of view, it means revenue from a source that at present is rich only in possibilities; but should give—as the most valuable industry of the Province, which it undoubtedly must become, when conditions help the prospector and owners,—by far the largest recompense to the State.

The common sense State policy of both New Zealand and Australia, has placed these people as far superior to the conditions of similar matters here as light is to dark. It is time we recognized the difference between bunkum and matters of fact. We could a tale unfold, but space at present prevents us.

## Finance.

LONDON, ENG.

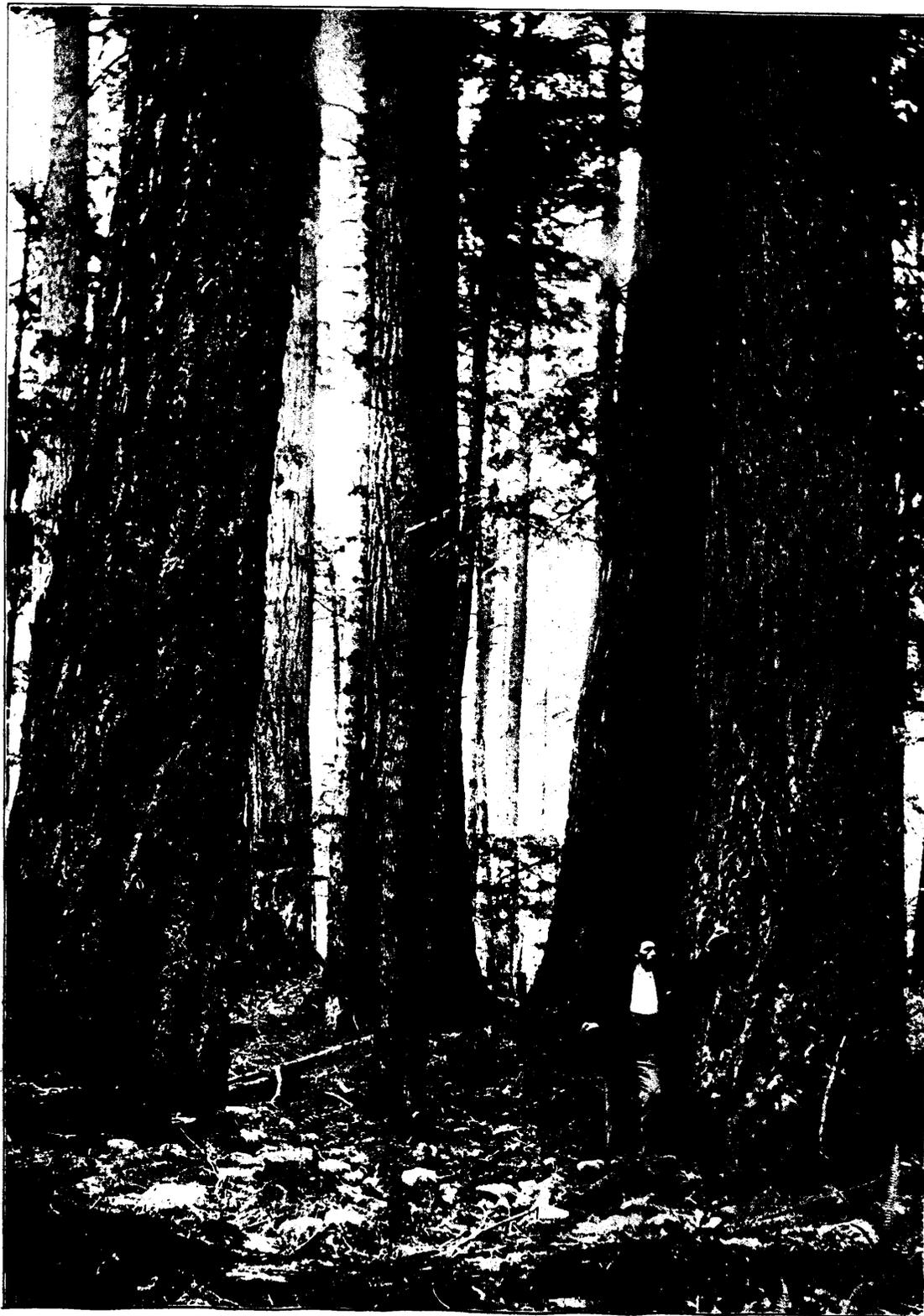
The German loan has been floated in America.

...\*\*\*...

The bears have been endeavoring to work up a scare in South American securities, so as to make a big pot, as they did out of Chilean stock during the Chili-Peru war.

...\*\*\*...

Two companies were floated the first week in October: The Vera Cruz (Mexican) Railway Company, Limited, and Williamsons, Limited, wholesale watch-makers.



FOREST OF DOUGLAS FIR, VANCOUVER ISLAND, B. C.

Business generally is brighter, particularly in the shipbuilding and iron and steel companies. The outlook is favorable.

...✿...

The bears have had a high old time with one of the best Westralian mining company's stock, viz. : Han-non's Brownhill Gold Mining Company, which has been a big producer, its £5 shares being as high as £60. The bears have knocked them down to £30 ; a decrease entirely due to ursine manipulation. Of course nasty rumors were circulated that it had run out of ore and that was enough, taken on trust.

...✿...

A pretty bit of play has been going on between the cornerers of cotton and the manufacturers. The latter, rather than be cornered, closed their mills for a fortnight. This trouble is due to the shortage of the Americal crop, which has doubled the price and is likely to cause disaster throughout this particular branch of industry. Meanwhile the cotton men are looking about to find a way out of such dilemas. India, Egypt, and other countries which are favorable to the growth of cotton, are to be encouraged to produce this indispensable article to a larger extent, and thus counteract the troubles which the cotton trade has experienced in the past in the matter of supply and demand.

...✿...

Another combine is announced : the Lace Dressers and Dyers' Association, with a capital of \$5,000,000 ; and the Lace Curtain Manufacturers' Association, with a capital of \$10,000,000. The high price of American spot cotton, however, will necessitate many of the lace factories closing for half time during November, many in fact are running only half time now.

...✿...

Kaffirs and Kangaroos are at the mercy of rumor mongers, and both brokers and jobbers are gloriously mixed. Such times are unknown even to the "oldest manipulator."

...✿...

Horatio Bottomley, the prince of Westralian schemers, through whom more money has been lost than any other Stock Exchange man, has just issued a glittering report, foreshadowing the most remarkable results in connection with his latest, the Associated Financial Corporation, which welded the Westralian Market Trust and the Westralian Joint Stock Loan Corporation together, the shares of which can be bought with a packet of tea, so to speak.

...✿...

The Cheadle Collieries, Limited, is being floated at a heavy capitalization, a million dollars being asked for a mine producing less than a thousand tons per week.

...✿...

It is a well known fact, that though the British are slow to adopt new ideas, they do not fail, once they take hold, to do so thoroughly. London has surpassed all in her electric railways, and the "Two-penny Tube" has proved this most conclusively, to the depressing of the ordinary railway stocks. It is now proposed to extend this tube from Charing Cross, across the present tube, up North to Hampstead Heath.

Mining matters are most erratic, though Kaffirs seem to be picking up. Westralians are weak from the causes before mentioned.

...✿...

The Kootenay Exploration Syndicate I hear is *non est*. This concern included the Arizona Copper Syndicate and a batch of other sucker catchers, which are now either in the receivers' hands or have disappeared altogether.

...✿...

The better tone of African and Chinese affairs have caused a revival in Stock Exchange business and matters are turning out as I predicted, better than the croakers anticipated.

## KLONDIKE NOTES.

DAWSON, Y. T.

Many new houses are being built, going up in all directions, and as all realize that it will not be many days until the Arctic winter prevails, no one is dilatory in his building. It is a noteworthy fact that in the beginning all the residences in Dawson were log cabins, but now the greater number under course of construction are of sawed lumber. The lumber is cut by local mills, and, although there are two or three in operation, some are running day and night.

Some of the cottages in course of erection are modern in every particular, and are being elegantly fitted inside. Electric lights are common. Furniture of the finest quality is also in general use in the city. Dawson has passed the frontier stage, so far as possibilities in the home are concerned. The wealth of the Klondike overcame the deficiencies of the earlier days, and those who are staying to face the rigors of the winter are determined to make themselves comfortable.

Immense sheet-iron warehouses, hundreds of feet in length, belonging to four or five big trading companies, and some the property of smaller concerns, are situated through the suburbs and along the water front of the town, filled with supplies that are expected to be sufficient to keep the district well supplied all winter. As soon as the snow falls, freighting to the Creeks on extensive scale will begin, and then the warehouses in town will be relieved of their large stocks.

The Alaska Commercial Company alone, together with its plants and equipment, has \$1,500,000 worth of goods in its down town department, distributing store and warehouses, and in the warehouses just across the street on the Dawson waterfront. This is the largest concern in the city.

The Canadian Development Company's wharves and warehouses are immense, and the amount of freight handled surprising.

The stores and shops on Front and other business streets are equal to any on the Coast, and where anything, from a needle to an anchor, can be purchased.

Dawson has three daily newspapers, all of which have good circulation ; and the cry of the newsboy, as he yells, "Nugget, Sir," "News, or Sun, Sir," seems to be fully appreciated by the casual customer, if we may gauge it by the way the youngsters take in the quarters—for a single copy is 25 cents. One month, \$4.00 ; six months, \$20.00 ; twelve months, \$35.00. Weekly, single copy, 25 cents ; six months, \$5.00 ; one year, \$10.00.

Dawson is two-thirds American.

It is understood that cattle will in the future, be driven the entire way to Dawson, a splendid valley having been explored 25 miles back of the Yukon, with good feed the entire way.

The following is a novel and amusing sign to be seen in Dawson:—

MRS. G. LOVE  
Laundry.  
Fortunes told Past, Present  
and Future \$1.00  
MENDING.

VISIT OF THE GOVERNOR-GENERAL TO DAWSON.

The Bank of Commerce, Dawson, had their floor entirely packed with bricks of gold, with sacks of gold arranged all round, and bars on the counter, on the occasion of the visit of Lord and Lady Minto to the Metropolis of the Golden North. To say that they were pleased with the sensation of walking in halls paved with gold, and valued at \$496,124.20 per ton, which measures only just over a cubic foot, would be superfluous. One can forgive Clive when in the palaces of the Hindoo potentates, under similar conditions of tangible wealth all round, expressing himself to the effect that, in accepting presents, each of which represented fortunes in themselves, he was not dimin-

ishing the stores of gold, silver, etc., which were en evidence around him, other than may be illustrated by taking a grain of wheat from a granary. Lady Minto had one of the bars given her to carry away, unfortunately, however, it proved much too heavy for her Ladyship to move.

A Dawson florist made \$700 by supplying flowers for the Governor-General and Lady Minto reception.

Through some delay in the mails, some valuable Klondike articles are not to hand in time for this issue, and will therefore be published in our next.

The Yukon Goldfields have some of the best ground in Bonanza Creek, Chechaka Hill.

Mr. T. A. Purchas, representing the Klondike Development, McDonald's Bonanza, Consolidated Mines Concession, Limited, London and Dawson Agency, &c., informed us that he was now in the Klondike to stay by the interests he represented, they being some of the most important London companies operating in the Klondike.

In the past business has been very carelessly managed, which has proved to him and the company he represented

that more economical methods would have to be employed and the properties worked for results in the shape of dividends; hence, Mr. Purchas intends to remain on the spot to direct the development of their several properties for the best interests of the shareholders.

Mr. Purchas thinks that the price of claims are still too high, but thinks they will find their level presently, as soon as they do, the diggings will get all the help necessary, under present conditions, however, the risk is too great. The royalty he stamps as a most "immoral tax," being levied on the gross and not on the net returns; to say the least, it was a most unjust and unwise infliction. Mr. Purchas was most emphatic in denouncing this tax, and we must say he formed one of a large majority, all of them like himself representing a large amount of capital. They do not object to be taxed reasonably on their profits, but on their work in the gross, their vocabulary is not sufficiently expressive to denounce such a policy of retardation, as also a premium on dishonesty as this tax encourages. Mr. Purchas emphatically believes in the future of the Yukon, if given a fair chance and not handicapped.



CHECHAKA HILL, THE RICHEST SPOT IN THE WORLD.

On Mr. Northrop's (nephew of Jay Gould) claim, on Chechaka Hill, they cleaned up \$1,000 per day to 15th July, and since \$34,000. Expenses, \$16,000.

14 below Bonanza, D. McGillivray cleared up \$200,000 this season.

It was reported that the A. E. Company had the ground prospected, at the mouth of the Klondike river, after which they are said to have made the owners an offer of \$60,000; an English syndicate, we hear, has through their agent in Dawson offered more.

Davis claim, on Chechaka Hill, is an example of what can be done, when property is worked for results. Mr. Davis bought his claim for \$20,000, paying \$5,000 cash, not being interested in any \$500 company scheme, but as a business man went to work to make it pay, or otherwise. It paid, as most these propositions do in the hands of the right men, and within 30 days he took out \$15,000 in dust and nuggets, long ere this he has doubtless paid for the property and has a nice hill of nuggets to the good.

El Dorado and the Forks are as busy as ants, and the gold being produced is simply astounding. The workings are beyond

description, sluices by the mile, thousands of tons of machinery working night and day, and gold nuggets and dust galore. You can take a pan of dirt anywhere here on benches or creeks and get from 25 cents out of the gravel. It's a wonder.

It is estimated that at least \$20,000,000 in gold dust has been sent out of the Yukon this season; \$14,000,000 of which went to Seattle.

Bonanza Creek and its gulches, are a revelation, and the plants established on these claims, would open the eyes of so called miners in British Columbia, and should shame us into action.

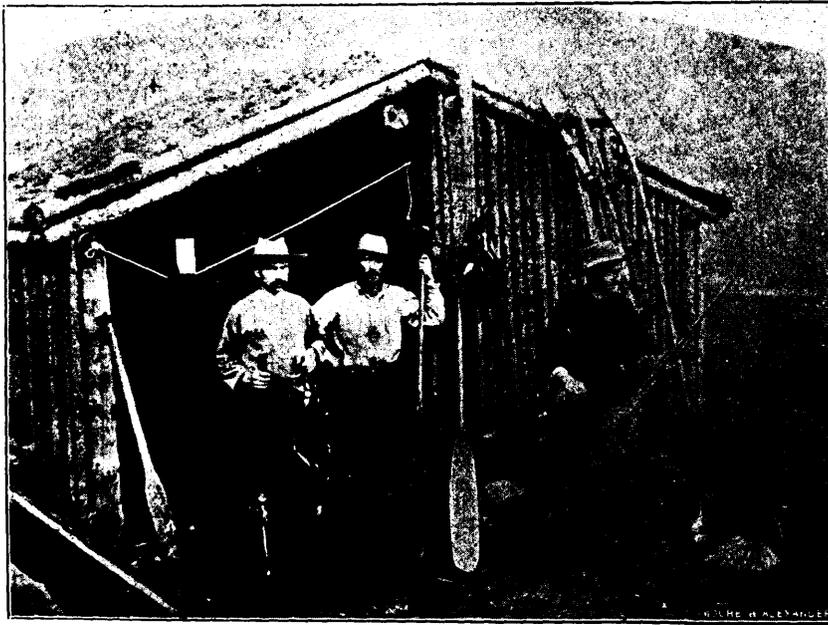
#### PRINCIPAL SHIPPING MINES IN B. C.

Quite a few of which are dividend payers.

**EAST KOOTENAY.**—North Star; Sullivan Group; Moyie; Lakeshore.

**NORTH WEST KOOTENAY.**—Silver Cup; Nellie Ho.

**THE SILVER SLOCAN.**—American Boy, Anglo-Saxon, Antome, Bosun, California, Capella, Coin, Condor, Emily Edith, Hartney, Hewitt L. H., Lost Tiger, Madison, Marion, Miller Creek, Minnesota Silver Company, Mollie Hughes, Monitor, Native, Silver Bell, Neglected, Noonday, Queen, Traction, Reco, Ruth, Sapphire, Slocan Star, Sovereign, Vancouver, Vulture



YUKON MINERS.

#### REPORT ON THE CREEKS.

Discovery, on Hunker, is the second richest claim in the Klondike. Have cleaned up 60 to 160 ozs. per day. 4 above to 14 below, no blanks, below spotted.

Bonanza, above discovery, all good claims. 13 to 14 below good.

El Dorado good, from 45 down. Benches good.

Gold Hill, Chechaka Hill, are benches of the Forks and are all prizes.

Dominion Creek, benches rich.

Sulphur Creek good above discovery, also 21 and 23 below.

Magnet Gulch (hillside) laymen cleared up \$60,000 and paid \$1.00 per hour wages last winter.

Big Skookum, first three claims belong to McDonald, also 6, 7 and 8 very good.

Little Skookum, No. 1 good. Others not yet properly prospected.

Quartz Creek. Hon. Tollemache, Humboldt Gates and others have large plants established on this creek.

35 below will be worked this winter, gravel goes 3 cents to the pan from the surface. Linke took out \$5,000 on 36 last winter, this creek has not been worked so persistingly as others, which are much nearer Dawson. The miners have the impression that there is a double bed-rock to this creek.

Standard Oil Company have 60,000 acres copper concession below Pink Rapids.

The Louis Aste and Australian Creek combination have done infinite damage to capital.

No. 5 below on Hunker cleaned up 400 ozs. in one shift of 10 hours summer sluicing.

Queen Bess, Rockland, Payne, Last Chance, Ajax, Treasure Vault, Red Fox, Trade Dollar, Noble Five, Idaho, Jackson, Dardanelles, Wakefield, Comstock, Black Prince, Chapleau, Whitewater, Ivanhoe.

**NELSON.**—Athabasca, Dundee, Granite, Hall Mines, Porto Rico, Ymir.

**AINSWORTH DIVISION.**—Highlander, Little Phil, Tariff, No. 1 Woodburry Creek Mines, Silver Bell.

**ROSSLAND (TRAIL CREEK)**—Le Roi, Le Roi No. 2, War Eagle, Centre Star, Iron Mask, Evening Star, Monte Christo, Columbia and Kootenay, Virginia, I. X. L., Spitzee, Iron Colt, Giant, Nickel Plate, Cliff, Velvet, Deer Pack, Victory, Triumph, Jumbo, St. Elmo.

**BOUNDARY DISTRICT.**—Three Smelters: Trail, Grand Forks and Greenwood. Mines: City of Paris group, Lexington group, Pathfinder, Ruth Mullen, B. C. Mine, Oro Denars, Golden Crown, Winnipeg, Jewell Group, Mother Lode, Morrison Mine, Sunset, King Solomon, Knob Hill, Old Ironsides, Gold Drop Mining Co., Grey Eagle, Majestic, Brooklyn, Victoria.

**CAMP MCKINNEY.**—Sailor Consolidated, Minnehaha, Waterloo, Cariboo, Fontenoy, Lemon I. M. Company.

**NANAIMO DISTRICT.**—Van Anda Copper and Gold Company, Marble Bay, Iron Mine. Smelter on Texada Island, belonging to Van Anda company.

**VICTORIA DISTRICT.**—Leonora, Tyhee.

**WESTMINSTER DISTRICT.**—Britannia Copper Mines.

**LILLOOET.**—Ben d'Or, Lorne group, Woodchuck, Cobledick Dredge Company.

Total dividends, approximate, to date, \$6,250,000. Which, considering that most of the mines are producers of very recent date, is very encouraging. The youngest industry of the Province is Metal Mining.

## The B. C. Mining Exchange and Investor's Guide.

is published monthly as a Guide to Investors generally, to whose interests it devotes itself.

MANAGING EDITOR . . . T. R. HARDIMAN.

**CORRESPONDENTS.**—All correspondence should be addressed to the Editor, B. C. Mining Exchange, and any correspondents desiring advice or information in reference to investments, we will reply to, free of charge, provided they are annual Subscribers.

**REMITTANCES** should be made by P.O. Order or certified check—and addressed, British Columbia Mining Exchange and Investors' Guide, 612 Cordova Street, Vancouver, B. C.

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THE B. C. MINING EXCHANGE AND INVESTORS' Guide circulates throughout the Empire and the U. S. We shall always be happy to give the fullest information in our power to those correspondents who are subscribers. Lately, however, we have had so many enquiries from non-subscribers on matters British Columbian, that to reply to all takes both time and money, and, while always ready to oblige correspondents as far as possible, we shall in future expect non-subscribers to remit sufficient to cover postage.

The subscription is \$2.00 yearly, postage free.

Further, we would say that our office is at the disposal of subscribers, for the use of books, maps, and general reference in connection with British Columbia industries, mining or otherwise.

We extend a cordial welcome to all strangers who may seek to investigate our possibilities. We extend to all Mining men the freedom of our office when visiting Vancouver, and request them to make it their headquarters. 612 Cordova Street West.

### Mining News.

#### ATLIN, B. C.

There is a hydraulic plant working on the following creeks: one on Wright, one on Boulder, two on Pine, two on Birch, and a small plant on Spruce. McKee also had one on McKee creek. Average depth of gravel about five feet. Size of claims 100 feet square, which are ridiculously small, as the pay runs in streaks.

Rate of wage ordinary miner \$3.50 and board, pipemen \$6.00 per day. Board can be obtained for \$7.00 per week.

This season the district could have employed a far larger number of men than could be got. The men who were there made big money as they could work all the time they cared to put in.

#### BOUNDARY.

The Granby smelter to date has shipped 16 carloads of matte.

It has decided to sink the main working shaft of the B. C. mine, Summit camp, an additional 100 feet. The workings have now reached a depth of 150 feet, from which level extensive drifting and crosscutting is now in progress. The mine is shipping 150 tons daily to the Trail smelter. New bunk houses are being erected.

The two furnaces of the Granby smelter, which has a guaranteed joint capacity of 500 tons per day, broke all records yesterday, when they treated 616 tons of ore, an excess of 116 tons above their capacity. This feat is due to the fact that the ores of the Knob Hill and Old Ironsides are self-fluxing, not requiring the addition of iron or lime rock.

Eighteen steel bridges, with masonry piers, have been completed by the Northern Pacific, on their main line during the past year. Two hundred and sixty-two timber bridges, measur-

ing four and three-quarters miles in length, have been replaced by steel trusses, plate girders and I-beams or embankments.

A stamp paper will be issued in Winnipeg some time next month. An energetic man has taken hold of the scheme, and is determined to make it a success.

One day's ore shipments from Phoenix camp established what is believed to be a record for British Columbia mining camps. Nearly 1,000 tons of ore was shipped to the Granby smelter by the Miner-Graves syndicate, operating several of the big mines



Washing Out Some Spending Money—Klondike.

located here. It is not intended to ship this amount of ore every day, as the syndicate's smelter at Grand Forks could not handle it, having a capacity of only 600 tons daily.

The Granby smelter, which blew in just two months ago, has thus far shipped 22 carloads or 660 tons of matte to a New York refinery. This matte is estimated to be worth \$160 per ton. This would give the value of the total shipments to date as \$105,000. The showing is considered good, especially as the second furnace blew in only two weeks ago. The nominal capacity of the smelter is 500 tons per day, but the fact that no



Taking Gold from Sluice Boxes—Klondike.

fluxes are required enables the plant to handle 600 tons per day. A few days ago the run for 24 hours amounted to 624 tons, a record-breaking figure. A matte converting plant which will enable the smelter to ship metallic copper will be installed within the next few months.

## CARIBOO.

The second gold brick of the season has been brought down to Ashcroft from the gold gravel mine of the Cariboo consolidated Hydraulic Company. It is valued at nearly \$160,000, making with the former gold brick an output for the season so far almost \$300,000. A third and smaller clean-up, due almost immediately, will close the season's work, and it is hoped, add to the yield a further value of at least \$40,000.

## BARKERVILLE.

(FROM OUR OWN CORRESPONDENT.)

Andrew and James Smith, Ed. Moore, and James Pettry, began a tunnel on Stewart Creek, about a year ago, to tap the deep ground on their leases, situated above the Province lease. The tunnel is now in more than 1,000 feet, where the deep channel has been found, and 5 oz. to the 10 ft. set, is being taken out. The gold is coarse and all of it lies on or in the bedrock. This is the best strike of the season.

The Sutherland Hydraulic Gold Mining Co. completed the ditch and reservoir in time to give a few weeks fall piping at 8-Mile Lake.

Mr. Hamshaw failed to raise money to keep the Colonial Mines Development Co. property going, and the enterprise is regarded as defunct.



SLUICE AND ELEVATOR, CARIBOO.

Mr. Hamshaw is in charge of Laird's Willow River deep gravel property. Air-tight bulk-heads have been built in the tunnel near the face to which air at a pressure of 35 lbs will be supplied. This plan is expected to check the rush of water and gravel while the tunnel is being driven ahead to the channel.

¶ The Premier Cariboo Company's tunnel on Peter's Creek is making good progress with three shifts working.

Peter McGregor, Peter Ross and J. J. Thompson have begun a long job on their Cunningham creek ground. They will put in a sluice to carry all the water of the creek and run the whole of their ground through it.

Fred. C. Laird has closed down at Willow river on account of lack of certain necessary supplies.

¶ After a shut down owing to shortage of funds work has been resumed with three shifts on the property of the Lightning Creek Gold Gravels and Drainage Company.

The White Star Mining Company has been organized to develop the deep channel on Peter's Creek below the Premier Cariboo ground.

## KAMLOOPS.

We hear that the vein on the Tenderfoot has been recovered, by means of a drift and crosscut. The Iron Mask shaft is being enlarged to a double compartment shaft.

The Kimberley is also working steadily.

## EAST KOOTENAY.

Regular shipments of ore from the St. Eugene and Moyie (North Star), will be made at the rate of about 1,000 tons per month, via C. P. R. and Pacific Coast Steamship Company to Chile. These ores are purchased by the Smelters in Chile for their lead values, as a fusing agent, and it is possible that a large business will be done in shipping this class of ore to Chili.

The Centre Star and Canadian Goldfields syndicate have announced that a dividend of three per cent will be paid on January first.

War Eagle reports discovery of ore on the eight level (1,050). Le Roi shipments on the completion of the additional plant etc., will be largely increased, and about the middle of January, production, will, it is anticipated not less than 500 tons per day over present output.

## LARDEAU.

It is learned in Nelson that the C. P. R. have engaged E. F. Hannington, C. E., of Fort Steele, to begin at once a survey of a proposed route through the Windermere and Fort Steele district, connecting a point on the Crow's Nest road with Golden on the main line. It is further said that the work of building the road will begin early in the spring. With the construction of this line the coal fields of the Crow's Nest district will have

direct connection with the coast cities. It is said that when cheaper shipping facilities are secured a very large amount of Crow's Nest coal will be used at Esquimalt for the purposes of the navy.

S. Daney is working three shifts these days. He will have the Silver Cup and Triune ore down at the Landing in a very few weeks, unless the Cup order is enlarged.

Craig and Hillman's outfit for hauling Nettie L. ore struck town quite recently. Everything is now in full swing for the winter's output.

Manager W. Innes is down from the Towser. They are making good progress, and expect to find the objective ore body before many weeks. The working force will gradually be increased as there is room for the men to work to advantage.

## MOUNT BAKER.

It is reported that the Lady of the Lake claims in this district, have been sold to I. D. Chase, of Tacoma, for \$10,000, \$1,000 cash.

## NELSON.

Nelson is introducing the Street Car system thus keeping up with the times.

## SLOCAN.

We hear a Spokane Company has bonded the Iron Horse on Ten Mile creek.

The principal shippers, during October, were the Whitewater,

with 753 tons; Last Chance, 485 tons; the Payne, 319 tons. sent to San Francisco; Slokan Star, 120 tons; Rambler Cariboo, 139 tons; Ruth, 100 tons; Noble Five, 32 tons; Cork, 20 tons; Bismarck, 17 tons; Trade Dollar, 40 tons; Mountain Con, 21 tons. The Cork Shipment was there first.

The rumour is that the Mountain Con will be acquired by a London Company.

The Marble quarry opposite Kaslo has been sold.



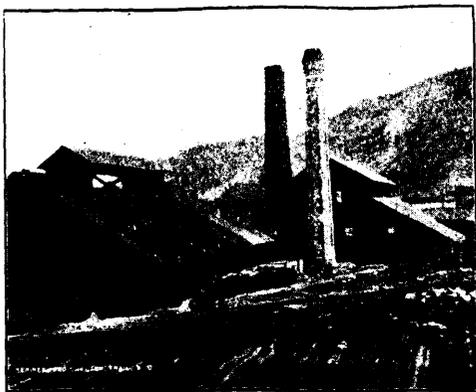
TRAIL SMELTER.

The Ymir mine has fallen in line and accepted the standard rate of wages, which it refused to accept when the Slokan compromise was adopted some months since. Notices to this effect have been posted by the company. The London Consolidated and Richelieu are packing some 1,000 tons of ore, to haul out in the first sleighing.

The Bird's Eye is developing steadily.

The ore shipments over the Kaslo and Slokan Railway for the year to date, as reported by the *Kaslo Kootenian*, are as follows:—

	Pounds.
January .....	1,498,000
February .....	794,000
March .....	1,717,000
April .....	1,550,000
May .....	3,036,000
June .....	4,573,000
July .....	3,331,000
August .....	2,488,265
October .....	4,011,000
<b>Total .....</b>	<b>24,888,405</b>



TRAIL REFINERY.

For the first seven months of last year the total shipments reached 21,482,105 pounds, as shown below:—

January .....	2,646,700
February .....	3,268,000
March .....	3,819,000
April .....	4,933,000
May .....	2,514,000
June .....	1,665,290
July .....	955,920
August .....	1,680,195
<b>Total .....</b>	<b>21,482,105</b>

This record is not only being kept up as the season advances, but a steady increase is shown. For example, the shipments for the five days ending October 18, were:—

Ruth .....	42,000
Last Chance .....	83,000
Whitewater .....	435,000
R. E. Lee .....	44,000
American Boy .....	79,000
<b>Total .....</b>	<b>683,000</b>

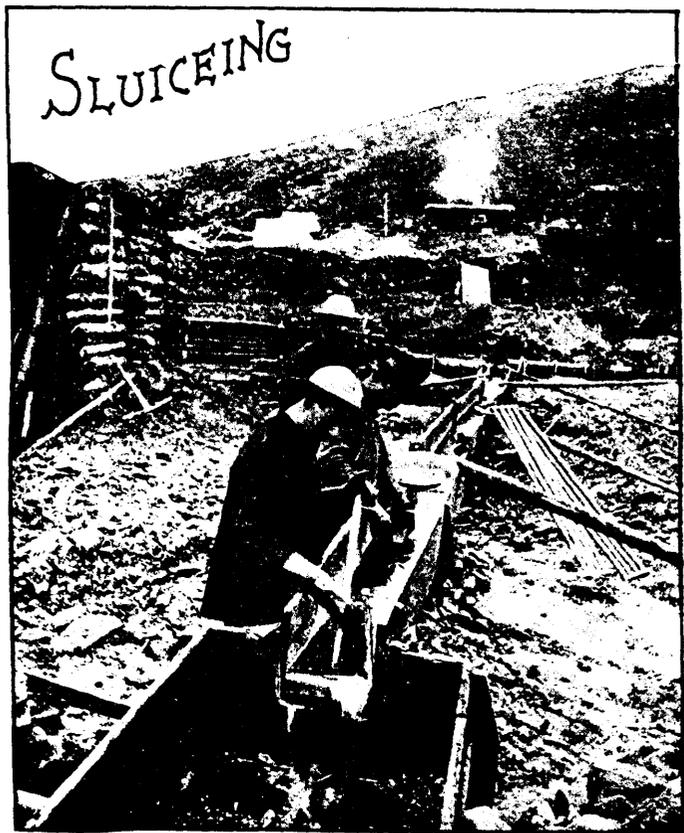
TEXADA ISLAND.

Copper Queen is producing about 100 tons of high grade ore each week, values improving.

Cornell mine shaft is now down 235 feet. Two new stopes have been started, one from the 80 ft. level, and another from the 160 ft. level in the machine drift, the winze stope from the 160 ft. level continues in an abundance of good ore.

Marble Bay is shipping regularly to the Van Anda smelter. Work is going on steadily.

All who are in any way interested in the Puget Sound Iron mine are in a ferment of anticipation. Mr. Lee, the manager,



SLUICING—YUKON.

has gone to Irondale, Washington, in the interests of the company but as yet nothing definite is settled. The situation, however, seems to have settled down to one of two plans, viz., either the purchaser of the Irondale smelter will work the Texada property, taking about 300 tons daily, or else the Puget Sound company will open up the mines on a basis of 80 tons production; whichever way it goes there will probably be long desired activity on one of the finest iron properties of the coast within a month.

The copper ledge on the property of the Iron company is being worked by the company. They have about 150 tons hauled to the bunkers at the wharf ready for shipment to Van Anda Smelter.

Victoria Reek Lake property is likely to be taken up by some New York capitalist, who will expend some \$100,000 in equipment.

TRAIL SMELTER.

Mr. Aldrige, the new manager, is having a new stack built. Business, which is getting so extensive, demanded the addition and the capacity of the smelter will be something like 1500 tons daily.

## ROSSLAND.

The ore shipments to the 17th of November are as follow:—

Le Roi .....	143,295
Centre Star .....	29,531
War Eagle .....	10,663
Le Roi No. 2 .....	2,267
Iron Mask .....	2,143
I. X. L. ....	530
Giant .....	414
Evening Star .....	351
Monte Christo .....	273
Iron Colt .....	30
Spitzee .....	66

Total tons ..... 189,614

Elkins, \$7,000,000, coal and iron mining; Senator McConnell, \$20,000,000, from coal mining.

According to Mr. E. W. Parker, Statistician, of the United States Geological Survey, Washington, D. C., the world's production of Gold and Silver, for 1898, was as under:—

	GOLD.	SILVER.
United States .....	\$64,500,000	\$70,400,000
All other North America .....	22,300,000	79,100,000
Australia .....	64,860,000	15,500,000
Europe .....	27,600,000	21,500,000
South and Central-America .....	11,170,000	25,000,000
Asia .....	16,450,000	18,600,000

In copper the United States leads, with \$527,000,000.



WASHING GOLD ON THE KLONDIKE.

The Slocan Star has declared a dividend of 2½ per cent.

Five hundred and ninety-two tons of ore have been shipped to the Tacoma Smelter from the Mount Sicker Mines, via Ladysmith.

The total value of all minerals produced in Canada during last year was \$876,008,046, or an increase of something like 40 per cent. over 1898.

Copper increased some 60,000,000 lbs. in quantity and over \$42,000,000 in value.

The enormous increase of pig-iron production was due to large demands and consequent high prices. The value was \$245,172,654, or about 110 per cent. over 1898.

The increase in gold production was about 10 per cent., or from \$64,463,000 in 1898, to \$71,053,400 in 1899.

Some people forecast the ultimate cost of the South African war at 140 millions. The mine owners are not happy in the prospect of being asked to contribute largely to this amount, as they expect to be kept out of dividends for two years from the commencement of the war. The shares in most of the South African mines have fallen considerably of late.

Since the beginning of the mining industry in Westralia, in 1886, to July 1st, 1899 (fourteen and a half years), the production of gold has amounted in value to \$96,804,715; of copper to \$536,325; and of tin to \$527,310. The gold output of 1899 was \$31,233,655. In this colony is the famous mining camp Kalgoolie, where most of the production of gold has occurred. The metal is largely associated with tellurium.

Some Americans, who have made their fortunes in mines, and are in the U. S. Senate: Senator Clark, who may be said to be worth at least \$100,000,000, which he derived from copper mining; Senator Hanna \$12,000,000, mostly from iron mining; Senator Jones, \$10,000,000, in gold and silver mines; Senator

### Publications Received,

- “New Zealand Mines Record.” Wellington, N. Z.
- “Mining.” Spokane, Wash.
- “Journal of Electricity.” San Francisco, Cal.
- “Power and Gas.”
- “North-West Magazine.” St. Paul, Minn.
- “Denver Investor.” Denver, Col.
- “Bonds and Mortgages.” Chicago, Ill.
- “The Chronicle.” Montreal, Que.
- “Chihuahua Enterprise.” Mexico.
- “The Coming Land.”—We have to hand a copy of this excellent journal, which is well written and illustrated. Mediums of this character we are glad to welcome as a requisite factor in the promotion of the welfare of the Province. The publishers are the Clarion Co., of Vancouver.

### Answers to Correspondents.

H. M.—(1) We shall be happy to do as you wish and will send you the information by mail. (2) All Klondike matter will have our best attention, and anything we state will be strictly reliable.

FIFTH AVE.—Want of funds, we presume.

HY.—(1) Will make enquiries for you. (2) Stock market of no consideration.

OSCAR.—Thanks, for your encouraging remarks.

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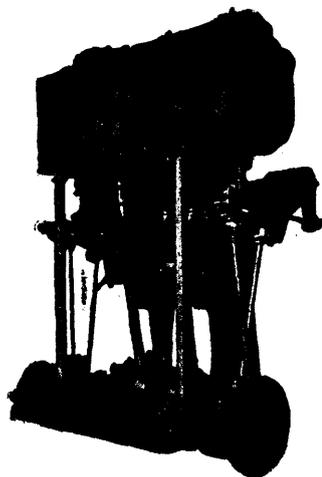
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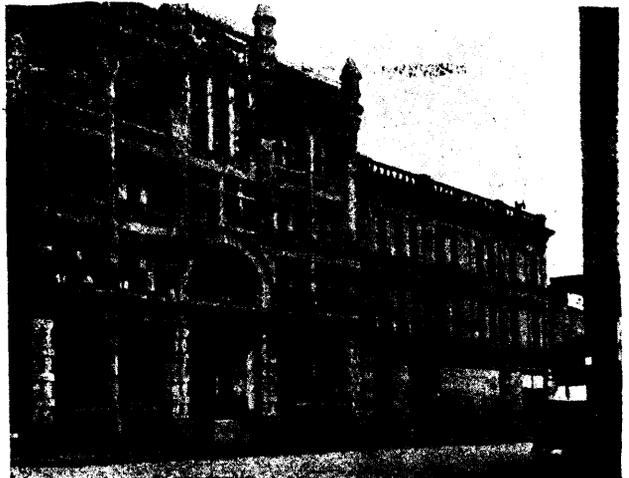


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# THE AGE OF PROGRESS.

AT LAST THE PROSPECTOR HAS A PRACTICAL HANDY SMELTER MADE FOR HIM.

The Mexicans have long commanded the admiration of mining and scientific men by their ability to smelter refractory ores in furnaces of their own building, called "adobe smelters," as they are made of sun-dried brick. While their work is thorough enough and the results satisfactory—to themselves at least—the process is slow and laborious, as the furnace must be rebuilt with each charge of ore. It is thought this furnace originated with the ancient tribes who inhabited the southern portion of the continent.

It has often been remarked that the American prospector was not as resourceful as his Mexican cousin in dealing with the problem of successful ore treatment on a small scale. The American has been taught to rely entirely upon the immense smelting plants that have been erected at central points throughout the mining regions of the country, sometimes hundreds of miles distant from the mine, and reached only after long and expensive transportation, which is often sufficient to render ore of good grade practically worthless.

There are many localities in the Rocky Mountains and particularly in Colorado, where flourishing gold and silver camps would exist to-day could the prospector have been able to treat his own and his neighbour's ores upon the spot. Until recently there has been no way by which the prospector or miner of small capital, in these isolated localities, could reap the reward of his experience and toil.

We believe the Prospector's Furnace, to be the greatest gift that science has given to the American prospector. Here are a few facts regarding it: Constructed by a prospector for prospectors who require a serviceable smelting furnace, which can be carried over a mountain trail on burros. It is complete in itself, and can be set up anywhere with a few hours labor, and unlike the Mexican "adobe" contrivance, can be run continuously for years. It is made of steel plate, in sections, with cast-iron slag and metal spouts, wind supply pipe and knock-down bottom. It is of a cupola type; capacity 5 tons per day, and weighs 1,250 pounds. A smaller size is also made, with a capacity of one ton. Printed directions as to getting up, fluxes, fuel, smelting operation, etc., furnished with each smelter.

## TESTIMONIAL LETTER.

BUTTE MONTANA, U. S. A.

Gentlemen:—Yours of the 15th inst. is before me and contents carefully noted. I have a small gold lead that carries from \$18 to \$24 per ton. It is a heavy sulphide ore, that concentrates nicely about three tons into one. Since receiving your printed matter I have investigated the references given. Two of them are personal friends and acquaintances of mine, and the report I have from them induces me to give you this order for a 5-ton daily capacity PROSPECTOR'S FURNACE, for which I herewith enclose you N. Y. Draft for the price asked. I hope it will be shipped before the 10th, as you stated in your telegram. I have queried whether or not I could put in one of your Handy Prospectors's Smelters, and by making an iron matte, work the mine to better advantage than to put in a small concentrator.

## A SIMPLE AND EFFECTIVE PROSPECTOR'S SMELTER.

*From page 898, British Columbia Investment Record.*

"We had the pleasure of an admirable opportunity of witnessing the working of one of the best metal saving machines that has come into the Kootenay mining district. It was in operation when we visited the premises, and it at once struck us that it was just the thing required by men of small means who proposed working on their own hook. It is very simple, and easily driven, even by hand, similar to that of a blacksmith's forge. The metal when tapped flowed out freely, and we were assured by the attending smelter that the National Prospector's Smelter did all that was claimed for it.

## A HANDY PROSPECTOR'S FURNACE.

The attention of Prospectors and Miners is called to the merits of a new improved apparatus for testing and smelting various kinds of ores and minerals, such as gold, copper, nickel, silver and lead ores, refractory and compound ores.

This furnace is designed and constructed by and for a prospector, who requires a serviceable furnace, easily transported over a mountainous country by a pack animal; that is complete and ready, and can be set up at any dump of low grade ores, that otherwise will not pay to ship with profit and make a good day's pay out of one to two tons of ore every day.

To judge the value of such an outfit—of a **Cupola Smelter, knock-down bottom type**, with extension when smelting ores, made of No. 10 steel plates with slag and metal spouts, rotary steel blower, countershaft with geared pulley for blast supply by either water, steam or hand power; with three graphite crucibles, three steel ladles, six furnace steel bars and tools, only weighing complete 1,285 pounds—when the prospector can determine the value of one ton of the ore in a five-hour heat by the output of the bullion.

With a little ordinary intelligence of the average prospector, this five feet by three feet inside diameter little smelter, run on low grade ores, will not only pay for itself every week, but it will convince the skeptic beyond redemption who does not believe with us that the little smelter must come to the ore.

The fact that a great many of these **cupola type** smelters are now being adopted throughout the Western mining districts, and all giving entire satisfaction, is sufficient recommendation for the sudden demand as an absolute necessity to every prospector, mine owner, millman, sampling works or mining company.

Full and complete instructions go with the outfit, which give mode of treatment of different ores, directions as to setting up and starting smelter, fuel, fluxing material, and general smelting operation for silver, lead, copper, matte and pyritic smelting.

This smelter has met with such universal satisfaction, and our confidence in it to ship the above outfit complete to responsible representatives on 30 days' trial for thorough demonstration (where low grade gold, silver and complex ores on the dump will now not bear shipment to other smelters.)

If I concentrate the ores I will of course lose both in handling the concentrates and in selling them. Why by your smelter process I should be able to save all the value in the ore.

I have shipped 500 tons that paid a little more than expenses, but there is not enough in it to justify working it in that way. This mine is in a strictly iron camp; the veins are large and all carry more or less gold and are heavy in iron. The camp is dead, but all it needs to make it productive is to successfully and economically matte and concentrate the ores, of which I am now convinced beyond a reasonable doubt, and as a practical metallurgist can prove it, the most successful method to treat that class of ores. I would like to represent you in this district and am confident I can place a large number of them.

Very respectfully,

B. H. IRVING.

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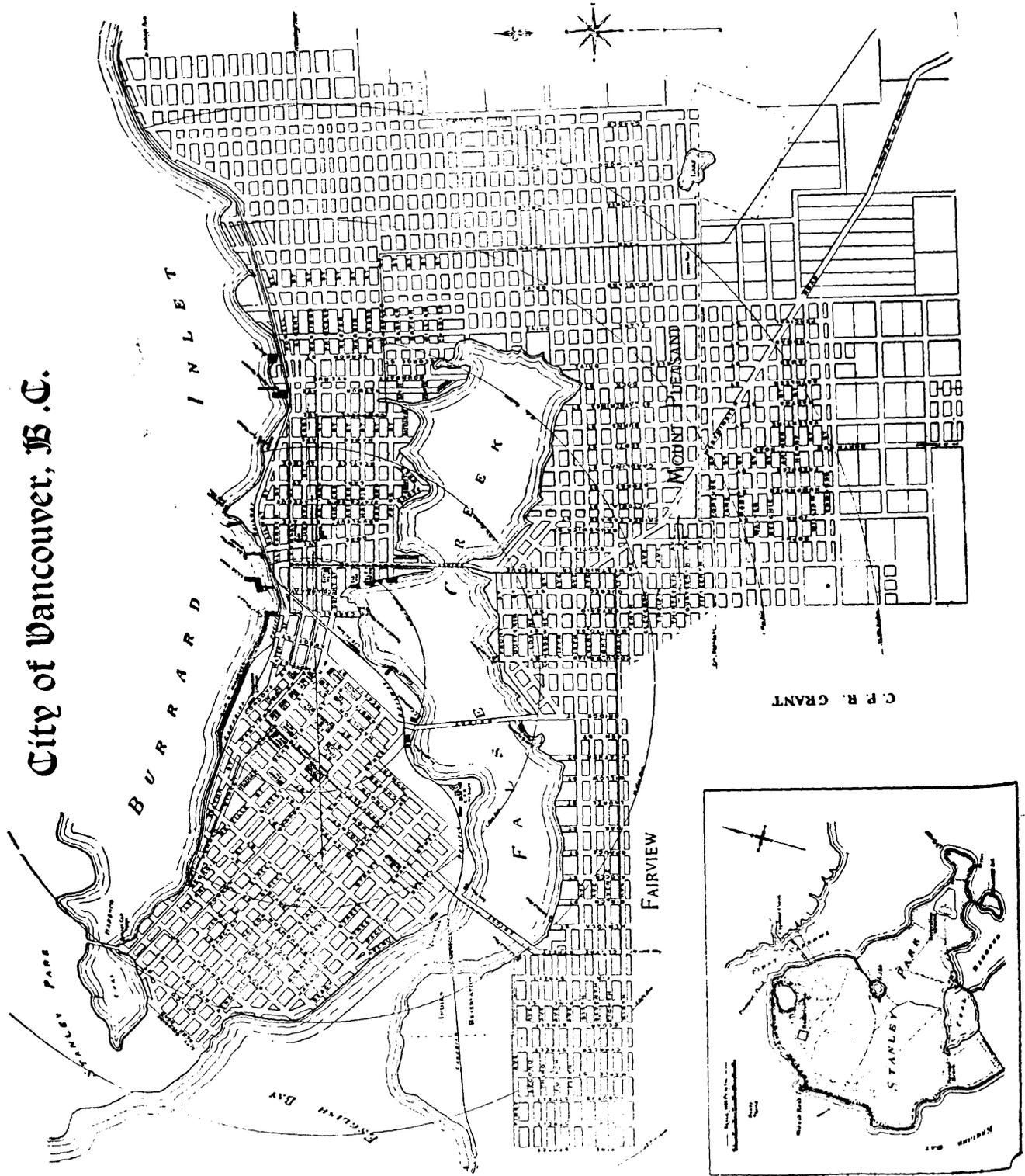
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