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THE CANADIAN MINER

Vol. I.

TORONTO, ONT., APRIL 24, 1897.

No. 15.

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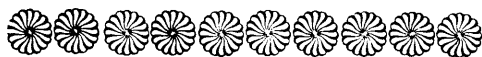
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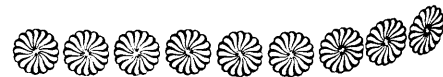
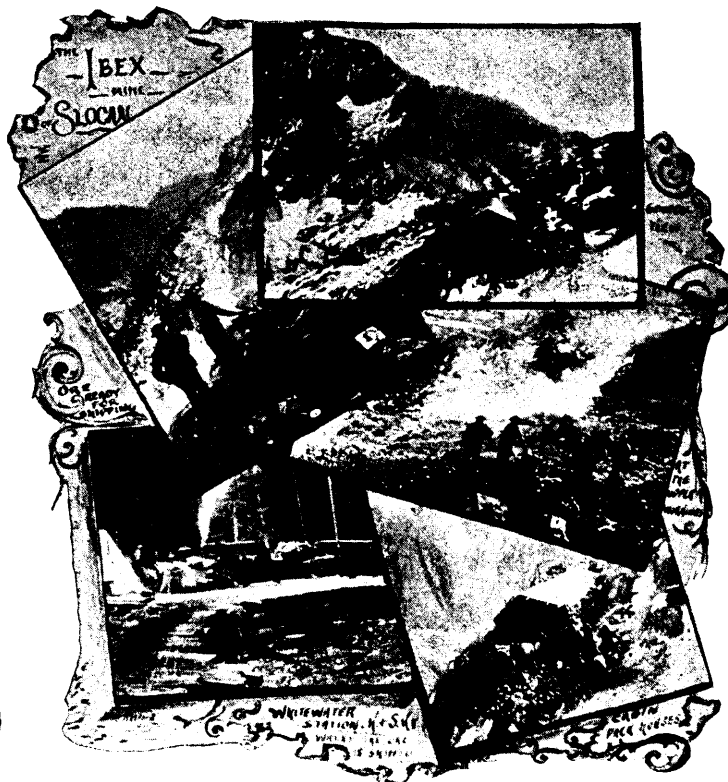
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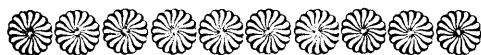
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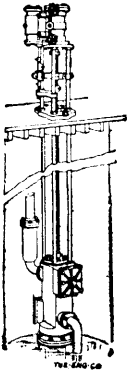
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The Canadian Miner.

VOL. I.

TORONTO, APRIL 24, 1897.

No. 15.

A LESSON IN GEOLOGY.

VOLCANIC ERUPTIONS AND THEIR RELATION TO ORE DEPOSITS.

BY PROFESSOR ARTHUR LAKES.

MOST of us in our western regions live near to or within sight of some kind of old volcanic eruptions.

All along the borders of our Rocky Mountains we have lava-capped table lands. In the heart of the mountains vast areas are occupied by lava sheets, and evidences of past igneous activity are on every side. These eruptions are of two classes: one where the molten lava came up through fissures in the earth and poured in streams over the then surface of the country, or over the bottom of the sea or inland lake. These eruptions were through fissures or openings that may have been surmounted by craters long since washed away by erosion. Another class or form of eruption was where the igneous forces below, not having power to overcome the great heavy mass of overlying sedimentary strata, found partial relief for their energies by intruding wedge-like sheets of molten matter between the bedding planes of the strata, or by raising them up into an arch and filling the vacuum so caused by a huge body of molten rock. Such intrusive sheets and thick masses of buried intrusive lava, are called laccolites, i. e., stone cisterns. When some of these great buried masses of lava have been uncovered by enormous erosion they may constitute considerable mountains like the Spanish Peaks, Elk Mountains, La Plata Mountains and others in Colorado.

In Colorado there are few visible remains of actual craters, though volcanic dykes, flows and laccolitic sheets and intrusive lava abound. These volcanic emanations, both effusive and intrusive, both those poured out on the surface and those which originally never saw the light of day, have, in many cases, an important relation to our metalliferous ore deposits, as well as to certain portions of our coal beds, changing part of our lignite coal into one of a bituminous and coking character, and even, in limited areas, into anthracite.

What is a volcano? In boyish days we might have answered "a burning mountain, vomiting forth fire, smoke and brimstone." A volcano need not be a mountain at all to start with. In its early days it began as a hole in the ground, which might be in the middle of a plain, perhaps the site of a lake or pond. For it is not until it has erupted for some time that it builds around its hole or throat materials enough to form a conical hill or mountain. Again it is not a "burning" mountain, as we ordinarily understand combustion. Neither flame nor smoke are common characteristics of an eruption. The fiery appearance seen at night is but the reflection on the cloud of ascending steam from the molten mirror of lava in the glowing crater below. And the "smoke" is of wreaths of steam mingled with volcanic stones and dust.

Volcanoes are more properly steam vents than fire vents. Even the fiery looking molten lava is so highly charged with contained mois-

ture that it is more like hot porridge than molten slag from an iron furnace. Once more, sulphur or brimstone is not peculiar to volcanoes, nor vomited directly from them like lava, but is a secondary result of eruption caused by the influence of acid gases upon certain kinds of rock and from chemical precipitation.

The phenomena explanatory of an ordinary eruption have been graphically described by Professor Judd in the case of Stromboli. Stromboli rises 3,000 feet above the sea level. Its base is 3,000 feet below that level. The mountain mass is thus 6,000 feet high. The island is a heap of cinders and slaggy material like the dump of an iron furnace. At night a mysterious glow of light is seen above the mountain, going and coming like the flashlight of a lighthouse at sea. The crater is a circular depression 100 feet below the summit. Before an outburst, wreaths of vapor ascend from fissures on the sides and bottom. Within the walls of the fissures lava is seen slowly heaving up and down. The agitation increases gradually, till a gigantic lava bubble or blister is formed, which bursts and a rush of steam follows, carrying fragments of the lava scum high into the air. Every time a bubble bursts a fresh glowing surface of incandescent material is exposed. So the mysterious flashlight is explained. The great masses of vapor above the pit are lit up by a ruddy glow, as when we open the door of the furnace of a locomotive and the vapor from the engine is lit up. Each bubble of lava as it bursts sends up a round cloud or bubble of steam; these collecting form the great vapor-cloud of so-called "smoke" overhanging the mountain.

The conditions for a volcano appear to be: Cracks communicating with the earth's interior, highly heated matter beneath the surface, great quantities of imprisoned water, which escaping as steam give rise to the principal phenomena of this steam mountain. The boiling lava is agitated by a whirling up and down movement impelling it upwards till it approaches the lips of the crater, when vast bubbles are formed, the sudden bursting of which produces the eruption. Under the prodigious pressure of thousands of feet of rock, water is retained in its liquid form in the molten lava. On relief of pressure by the opening of a fissure or other cause this flashes into steam and an eruption takes place. Similarly the water charged lava on reaching the surface, gives off its imprisoned moisture in the form of steam, hence the lava flow is at first like steaming porridge, and later, when it has cooled, the surface scum is full of little steam holes, like a sponge—the so-called scoria or pumice. It is the lava froth floating on top of a lava stream.

How a volcano begins and grows up is shown by one born, built up and finished in less than a week before the eyes of numerous spectators. On the border of the Bay of Naples is a conical hill 440 feet high. In ancient times there was a lake here instead of the Monte Nuovo, or New Mountain, as it is now called. During one week in 1538 A. D., this hill was built up by materials ejected from a volcanic vent. For two years previous the country was affected by earthquakes, increasing in violence and frequency, till the 29th of September, 1538, when

a depression was noticed on the site of the future hill, from which hot water issued. Four hours later the ground swelled up like an earth bubble and opened, forming a gaping fissure full of molten matter. From this large masses of rock, mingled with mud and pumice, were thrown to a great height, and falling on the sides of the vent, formed a great mound. This ejection of materials continued two days and nights; on the third day a large hill was seen have been formed around the orifice by the falling fragments; the ejections gradually ceased and this great hill was built up by the materials ejected in two days and nights.

Volcanoes change their shape after different eruptions. After a period of long quiet, steam finding the lava stopper hard to move, may blow off the whole top of the mountain and greatly enlarge the original size of the crater. Within this amphitheatre a smaller cone grows, and by successive eruptions the structure of the mountain becomes one of cone within cone. Lava in a crater by night appears white hot, but rapidly chills to a dull red, and by day is black. By day a lava stream is like a mass of rough cinders rolling along with a rattling sound. At night the red incandescent material appears beneath the lava scum. It flows rapidly or very slowly according to temperature; a slow flowing stream rolls itself up in curious shapes like coils of rope, whilst in a rapid flow full of steam the surface is covered with rough cindery honeycombed masses, piled up in chaotic confusion. Lava being a bad conductor of heat, when buried by other lavas may retain its heat for a very long time. Of other ejections besides lava, steam is the most abundant, and with this are hydrochloric and boracic acid, sulphuretted hydrogen, carbonic acid and other volatile metals as arsenic, antimony and mercury. These latter are mostly deposited in the period of solfataric action that follows in the wake of the expiring efforts of volcanic activity. Such a history as is given us by Professor Judd may give us an idea of the modern volcano. Have we anything at all like it in Colorado?

Yes, but there are few visible examples as we have said of ancient or more recent craters. At Dotsero, near the junction of the Eagle and Grand rivers, between Leadville and Glenwood, close to the track of the Rio Grande Railway, is a genuine and comparatively recent volcanic crater, whose flow of rugged pumice-like lava spreading out on the modern meadow was arrested in its progress and frozen by the waters of the modern stream of Eagle river. The lava stream is easily traceable to a narrow gulch descending from a conical hill formed of ejected materials from a distinct crater, into which we look from the summit of the cone. The crater is about 300 yards wide by about 300 feet deep, with the bottom covered by sage brush. There is no visible outlet. At the south end we can see where the heavy lava broke through the friable material forming the cone, and rushed down through a narrow ravine and spread out in a sheet on the river meadow below, like the emptying of slag from a slag pot.

The history of the eruption briefly is: At a time probably within the memory of the human race, commotions of steam took place below this area; the steam forced or found for itself a

vent, up through the granite, into and through the sedimentary rocks of paleozoic and mesozoic age. Repeated explosions carried volumes of the material of the rocks through which the steam came up into the air, which, descending like that we have described, in showers around the orifice, built up the crater cone. After the explosions ceased, lava began to rise up in the crater and broke through portions of the closely compacted wall and poured, as we have seen, down into the meadow. Whether this eruption was succeeded by great solfateric action afterwards we have at present no evidence. A shaft in search of mineral has been put down in the bottom of the crater, but so far, we believe, without encountering mineral of importance. The lava is basalt, and very honeycomby or scoriaceous, showing the steamy character of the eruption. We have heard of a crater near Salida, and one at Trapper's Lake, and one or two in the San Luis Park. Over the border in New Mexico and Arizona comparatively recent craters and lava flows are not uncommon. In none of these, however, have we as yet heard of any notable discoveries of ore. As these craters are mostly of basaltic lava, it appears to illustrate what we mentioned in our previous address, viz: the observed general barrenness of the basalt as an ore-bearing form of lava.

These few crater occurrences are of little consequence compared with the vast bodies of eruptive rock we find from one end of Colorado to the other, either spread out over the surface of the rocks like the basaltic flows of Table Mountain, Golden, and the Raton Peaks, Trinidad, or flooding the region of southwestern Colorado, from the San Luis Park to the La Plata Mountains and the boundaries of Utah and Arizona, or the deluges of andesite lava covering the region of the San Juan and from Cripple Creek west to the Arkansas canon and north to the confines of South Park; and again patches and dikes of lava eruption occur in North and Middle Parks, to the boundary line of Wyoming. These surface eruptions are mostly of basalt and andesite, the latter being sometimes a gold-bearing lava; with these are also surface flows of rhyolite and trachyte of more limited character. The basalt and andesite are generally dark colored, heavy lavas; the rhyolite and trachyte generally light colored and light in weight.

These we refer to are surface effusive lavas. Before we speak of the great occurrences of the other form of eruptive manifestation in Colorado, viz: that of the intrusive character, let us call attention to one or two striking examples of the relation of these crater or surface eruptions to the occurrence of ore bodies.

In the case of Cripple Creek and Rosita or Silver Cliff, although neither of these localities show existing cones or typical craters, there is little doubt but that the ore-bearing lavas came from orifices of this kind. In both cases we have ample proof of violent explosive action, implying the existence of craters whose surface appearances have been carried away by erosion, leaving only the roots and necks for our examination. The region of Cripple Creek, as well as Rosita, is covered by sheets of lava breccia and tuff of just such fragmentary material as we have described as occurring from craters and explosive vents. Doubtless at Cripple Creek there once occurred much of the phenomena we have described at Monte Nuovo, Stromboli and Vesuvius, the cracking open of the ground after protracted earthquakes, the fissures diverging from one or more central vents, the grand and repeated explosions of steam, the steam cloud filled with its foreboding storm, which finally descended in awful cloudbursts of mud and inundated and covered up the surrounding region of granite hills and valleys with mudflows of adobe, formed of andesite

breccia and tuff. Later, after all was comparatively quiet, a second disturbance occurred, which, finding the old vents choked, instead of producing new craters, cracked the whole region for miles and filled the new fissures so formed with a rare form of lava, called phonolite. Later, solfateric or hot spring action set in, and the whole area steamed with hot spring emanations and with discharges of various gases, amongst which that of fluorine gas was conspicuous. These gaseous influences decomposed the lavas, both andesites and phonolites, and drew from them the gold-bearing minerals they contained and deposited them in the multitudinous cracks, fissures, volcanic necks and other orifices opened by the previous eruptive agencies. The conditions at Rosita were analogous, varying but slightly; here we have evidence of a series of andesitic eruptions, some explosive, others quiet, one producing breccia and tuff, the other solid lava flows, and instead of phonolite lava we have rhyolite and trachyte. In that region, too, we have the neck or throat of one of the craters filled up with granite pebbles, worn by volcanic or steam attrition in the throat. These granite pebbles are cemented together with a paste formed largely of various metals carrying extraordinary richness, both in silver and gold—"golden eggs," only the shell, rather than the egg, is the most valuable. A somewhat analogous circumstance occurs at Cripple Creek, in the Portland and Annie Lee group, where the shaft follows down vertically a volcanic throat full of little lava pebbles, cemented together by a paste carrying sylvanite gold-bearing ores. As at Cripple Creek, so at Rosita, the most striking and important feature from a mining point of view, is the solfateric action that succeeded the eruptions, decomposing the rocks and leaching the ores and depositing them in available fissures and other openings, by no means of the orthodox fissure kind, but, as we have described, in every natural weak place available, even between the pebbles filling a volcanic vent; in fact, the solutions arose and filled every sort of crack, crevice or space that was open for it.

Time will not allow us to do justice to that other and equally important form of eruption I have alluded to, known as that of intrusive bodies and sheets of lava called laccolitic—one of the striking examples of which is the Spanish Peaks. The camps and regions which illustrate best the laccolitic and intrusive sheet form of eruption, are those of Leadville, South Park, the Mosquito range, Kokomo, Red Cliff, the La Plata region, Hahn's Park and Aspen. In the Leadville and South Park region we find numerous enormously thick laccolitic sheets of various kinds of porphyry intruded between, and opening up, the leaves of sedimentary strata, and sometimes following between the bedding planes in comparatively narrow sheets for extraordinary distances. So much so that at first sight such narrow and parallel sheets might readily be taken for successive effusive surface flows alternating with and covered over by sediments; but closer examination shows them to be truly intrusive, to have been forced in or wedged in and down between the bedding planes of stratified rock. The proof of this is that they have abundantly faulted, the sedimentary rocks lying above them, as would not be the case had they been surface flows quietly covered by sedimentary beds. The lava, too, is massive and crystalline, showing no scoriaceous signs, such as accompany surface flows. But little evidence of heat on the strata above or below the lava is shown, as the rocks themselves are more or less metamorphic. The enormous arches, too, of the strata which they make, sometimes with a vertical diameter of several hundred feet, and tapering out wedge shape at either end, prove conclusively the lac-

colitic intrusive character of these porphyries after the strata has been laid down. To account for the long, thin, continuous sheets of lava intruded between the strata for miles it has been suggested that the lava eruption and intrusion took place contemporaneously with the folding up and faulting of the range, which might open lines of weakness between the strata as between the leaves of a folded unbound book. Be it as it may, there is no question as to the intrusive character of all these Leadville porphyries. The same is the case with the great sheet of diorite filling the lap of the Vallejo gulch at Aspen. This also was once a great intrusive laccolitic sheet, from which the overlying sedimentary rocks have been removed by erosion. The intimate relation of these intrusive porphyries to ore deposits is well known. Analyses show abundant gold-bearing minerals disseminated through their mass, sufficient sometimes, as in the case of the Antioch mine, and portions of the Gold Belt, to work the porphyry for gold; but the favorite receptacle for the gold leached from these porphyries is found mainly at the contact line of them with the underlying limestone and in cavernous-like deposits in the limestone.

[The foregoing interesting lecture was recently delivered to a large audience at the Miners' National Bureau of Information at Denver, Colorado, and published by the *New Road*.]

SAFETY APPARATUS FOR HOISTING IN MINE SHAFTS.

FROM a communication by Herr Bauman read before the Upper Silesian Association of German mining engineers, we learn that great efforts have been made in Germany to provide a safety apparatus in mining that aims at four things: 1. Indicating the position of the cage in the shaft. 2. To prevent the cages, in the event of a broken rope, falling down the shaft. 3. To prevent overwinding. 4. To cut off the steam and put on a brake in the event of the velocity of the cage being excessive when within twenty yards of the top of the shaft.

To secure these points the writer claims that an improvement on the cage brake can be made to act under the control of a rotary governor to reduce the speed of the hoisting engine and even stop it when the speed becomes excessive. To prevent overwinding, a rope clamp is used, and the writer claims that it proved trustworthy during some experimental trials to prevent overwinding. Kuhlow's German *Trade Review* contains an article on safety apparatus for winding in mine shafts, designed by Herr Johannes Romer, a civil engineer of Saxony; and the object aimed at by the apparatus is, first, to provide a means by which the engineman will be obliged to gradually slacken speed when nearing the pit bank; and, second, a means to bring the engine to rest automatically and at any speed of winding when the cage reaches within twenty yards of the pit bank, and the third feature in the invention is to prevent the speed of the cage exceeding the maximum velocity which is provided for in the construction of the apparatus. In this case, as in the other, the cage brake takes an important place.

Many of these new appliances for preventing overwinding, the falling of the cages, and the securing of the position of the cages in the shaft, are only repetitions of what has been done before.

At Silksworth colliery, England, they have in operation a very successful mode of preventing overwinding and excessive velocities of the cages; and this is done by a worm on the main engine shaft that carries the wind-

ing drum. And this so regulates the supply of steam that the cut off is less and less at every revolution in the hoist, and the control is capable of being so adjusted as to reverse the steam when bringing the cage to rest. At the colliery under notice the winding is done from a depth of 280 fathoms, or 1,680 feet, and as the output is large the cages are run at a high velocity, yet under such perfect control that no accident has hitherto occurred in hoisting. However, we hail with pleasure all inventions that have for their object the safety of life and property, and we have no doubt that something practical and useful will be obtained from some of these applications of the engineers just noticed.—*Mining Industry Review.*

ADVICE TO TENDERFEET.

PROSPECTING FOR BEGINNERS NOT ALL IT IS
CRACKED UP TO BE.

THERE is but little doubt but that before many months are over, says the *Montreal Trade Review*, a small army of prospectors, both young and old, skilled and inexperienced will pour into the British Columbia mountains in search of wealth. That the great majority of these are doomed to disappointment goes without saying; since only systematic and persevering efforts are likely to result in success. But there will be many of them to whom a little knowledge of how to conduct such a search may be of great value, and this they must obtain from the grudgingly vouchsafed experience of older prospectors, or by applying the rules of common sense to the ground work of such scientific knowledge as can be obtained at any of our better class educational institutions. Of course the beds of the rivers and torrents are the best guides to mineral wealth for the prospector, and the debris washed down by them should be most carefully examined. But this is by no means so easily done as the budding prospector imagines, and he requires to learn by bitter experience that the presence of "color" in the pan by no means indicates that he is on the road to becoming a millionaire. He had also better avoid "drift," as it requires a great deal of experience to ascertain even an approximate idea of the location of the lode. Moreover, sinking a shaft to the supposed location, approximated by means of the "float," involves considerable expense, and if he should find any desirable specimens among the "float" he will also find that any knowledge he may possess of the geological formation and the trend of the strata will be almost invaluable in locating the mother lode. In fact, although some of the richest mines have certainly been discovered by happy accidents, such windfalls are few, and success in mining as in most other lines of industry is usually the result of ripened experience coupled with scientific knowledge and patient and systematic research. Prospecting does not come intuitively, as numbers of these enthusiasts will learn to their cost before the summer is over. It is a business requiring just as much hard work and study to secure success as any other branch of industry. The possession of a pick and shovel and a smattering of geology will no more convert a man into a mining expert than buying a theodolite will make him an engineer; unless he also possesses that practical knowledge which would enable him to make use of them properly. A mining lead looks very different on the rough hillside to the prettily colored

drawings he sees in his text books, and the man who expects to find specimens like those in the museums and the windows of the mining brokers lying on the surface will prospect for a long time before he does so. In fact he will be apt to pass over real wealth simply because it does not resemble the only form in which he knows it. He may converse as learnedly as he likes about hanging walls, foot walls, true fissure veins, clay casings and similar mining terms, but unless he knows them as they occur in nature, or if he expects to find them looking anything like the models in schools, he had better leave prospecting to the humbler miner who has been brought up among the mountains and knows them like a book. For this reason we may expect to find the Kootenay flooded at the close of the summer with disappointed "tenderfeet," and the labor market choked with fortune-hunters who have failed to find their coveted El Dorados. Some, of course, by good luck or natural ability, may prove successful, not only in locating a paying lode, but in securing the capital necessary to exploit it properly. But these will be the exception and not the rule; for the prizes in the mining world bear but a small proportion to the blanks. The remainder will either drift homeward or into other occupations, and possibly not a few will discover that there are plenty of bonanzas to be discovered in the soil of British Columbia besides mineral lodes, and that he who drives the plough may achieve more lasting prosperity than he who depends on the drill. In agriculture, in business, and in other industrial pursuits there is quite as much money, and far more certainty, than in mining, and the man who has a small capital in his possession need not lack for opportunities to use it to advantage. But those who have nothing but their hands to push them onward had better stay out of the Kootenay at present. Already the labor market is overcrowded, and if the rush of unskilled unemployed labor continues we shall soon hear of distress. By all means let our young men try their fortunes in the Kootenay. But let them take with them sufficient means to bring them home again if the opportunities or conditions of labor are unfitted to their abilities.

THE MINING ERA.

THE era of mining has only just begun says the *Rosslander* and there is a good reason for it. From causes which need not be recapitulated here, gold has become the most valuable commodity that can be produced. One of the results is that men, to a large extent, have ceased to make investments in anything but gold and gold mines. There is no profit at present in farming, stock raising, merchandising or industrial enterprises. All business traditions and experiences have been swept aside, and business, trade and manufacturing enterprises are either conducted at a loss or without profit.

There is just as much and more profit in mining as there was when prosperity was general all over the civilized world. As a consequence of this capitalists everywhere are turning their attention to mining investments, and the era of mining development has only just commenced.

It will in time amount to a craze, and soon the output of gold will be doubled and trebled, till the supply of gold will be so large that the doubting ones will begin to

question the value of gold and to wonder if the immense output will not make it as cheap as silver. There then will, perhaps, be some cessation, and the trend of trade and of speculation will be directed into other channels.

The impression is that the mining investment period will last between five and ten years, and during that time the greatest activity ever seen in mining will be witnessed.

There will be more or less wild speculations, as was seen during the real estate craze that swept over this province, when lots were plotted in the most out-of-the-way places and sold readily at prices which were many times in excess of their value. There is no danger thereof, that mines of any value whatever will go a begging for a purchase for the necessary money to develop them. The business is sure to be a paying one to those who follow it with prudence and discretion. Some people are inclined to croak and take a gloomy view of the situation. To such this paper wishes to report that the mining industry has not yet entered the temple of prosperity that it is only in the vestibule and that the greatest mining boom that the world has ever witnessed is just coming. Take the tide at the flood and ride in to fortune and success.

MIDWINTER IN THE HILLS.

SURVEYING, with from ten to twenty feet of snow on the ground and a blizzard blowing, says the *Trail Creek News* certainly has its hardships, and yet in certain countries it is an easier task than climbing and cutting ones way through a thick growth of underbrush. Dangerous snow slides and deep canyons are often encountered, but with plenty of men and packers the surveyor can usually make fair progress, notwithstanding the great depth of snow.

J. D. Anderson, P. L. S., with his party, has recently returned from a survey of the Nelson and Fort Shephard land grant. The party consisted of twenty-one men, six of whom were on the line; ten were engaged in moving the camp along the line each day, and five were packing provisions from Robson to Quartz Creek. The greatest difficulty was experienced in keeping the "grub" packers in communication with the camp, as the blizzards would completely obliterate the trails, and on more than one occasion the packers spent the night without shelter, walking up and down a well beaten track to keep warmth in their bodies.

Snow slides are of frequent occurrence, and come with terrific force, and snap off trees until a clearing is made that would do credit to a new townsite. On the high ridges the tops of the trees are solid masses of ice and snow, and loom up like pieces of marble statuary, assuming all sorts of odd shapes, as they are bent by the weight of snow.

FREE-MILLING ores are more attractive to the general public, but those who have spent the greater portion of their lives in the business of mining have learned by experience to trust the copper ledges, and it is a common comment on their inexhaustible nature to say, "You never can dig them out." Veins of this character having proved themselves more permanent and trustworthy than any others ever discovered, and a location on such a ledge is considered by practical mining men a sure thing for their lifetime, and probably for generations after them,

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AND

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ROADS WANTED.

COMPLAINTS are being made in all directions of the want of roads in mining districts. It is one of the greatest necessities in the development of the country; the working of mines is impossible without some means of reaching them with supplies, transportation of machinery and shipment of ore.

If the Dominion Government would join hands with the Provincial Government by making a special grant for building roads, in many places where railroads are either not necessary or impracticable by reason of the nature of the country, instead of spending so much money on the High Commissioner's department in London, it would be a good deal more effective in inducing a desirable class of immigrants to come here. We have no use for the scourgings of London slums, Canada is no dumping ground for the outcasts of society, the overflow of workhouses or the refuse of English jails. We do not want criminals either ready made or in embryo, tramps and vagabonds will not find this a happy hunting ground. The needs of the country are men with capital and enterprise, men who are able and willing to work, men who are prepared to put up with some hardships for a time, these are the men Canada welcomes with open arms and to whom a prosperous future is assured.

One good mine does more in one month to bring such men to this country than the efforts of the High Commissioner for a year. Let us show that we have got a good thing and the right class of immigrants will follow.

Good wagon roads are an absolute necessity; such roads are not costly, but very effective in opening the way for development of the vast resources which constitute the wealth of the country. Experimental farms have been established, why not establish experimental mines? Let the Dominion and Provincial Governments demonstrate by actual practice the science of mining and prove to the world the richness of the mineral deposits, and the men and the money will be forthcoming. Select a section here and there, employ practical miners, men who

thoroughly understand their business, and operations conducted on a proper basis will cost the country no more than the present methods being adopted for encouraging immigration and good prices could be obtained for the adjoining sections.

The future of Canada is her mines, with their extensive operation other industries must necessarily follow, the farmer, the manufacturer, are only waiting for consumers of their products, and money spent to help the miner will contribute to the prosperity of other industries in the country.

The Ontario Government has appropriated \$8,000 for the improvement of communication between the C.P.R. and the Manitou Gold Fields. Operations at the mines in that section are being retarded by the bad condition of the roads. Will the Ontario Government please proceed immediately with this work.

It seems to many that several thousand dollars spent on road building would be more wisely expended and contribute to a greater extent to the upbuilding of the province than in the expensive and many useless "frills" that are now tacked on to our common school education. Not one word is to be said about giving every child a good useful education, but of recent years education has run wild and wide of the mark and has altogether exceeded the limits of ordinary requirements. We have been grinding out lawyers, doctors and professional men to such an extent that the country is flooded with them, it is about time that educational efforts were turned in the direction of fitting boys for miners and farmers on which the future of this country will depend.

PROSPECTS AND MINES.

It is generally the case when a man has a really good mine for sale that he wants several times its actual value for it; there are plenty of good mines for sale, but the trouble is to get hold of them at a reasonable price. It is not an easy matter to estimate the exact value of a mine, owners are not apt to undervalue it themselves, and the probability is that the purchaser usually pays more than it is worth. Those who are looking for small investments must as a rule content themselves with prospects or partly developed mines. Some of the greatest fortunes have been made in that way—money has been spent far more profitably in development, and proved a better investment than, the acquiring of a ready made mine. Of course there is a greater element of uncertainty about a prospect than a mine, but when mining is reduced to a business there is no more speculation about it than in any other commercial venture. *Bradstreet* tells us that ninety out of every hundred business men fail. There are many prospects that will never be mines; there are mines that through mismanagement, extravagance, want of experience or other reasons will be failures; but with ordinary care, proper judgement and business ability, the development of mines will pay larger dividends than most other forms of investment, and the probabilities are will yield larger and more honest fortunes than can be made in most other ways.

ROOM FOR GOOD MEN.

"KEEP away from Rat Portage" has been dinned into our ears for the past few weeks. The changes have been rung in varied degrees of intensity and particularization. Now it appears that these dreadful stories of overcrowding, men starving for want, of work, and such other sensational paragraphs should have been received not only cum grano salis, but with a whole spoonful of sodium chlorid, in fact Rat Portage and probably Rossland too are on the other horn of the dilemma and "want men" A faceious correspondent writes this week: "There are some loafers and bums on our streets, and most of us have taken them for the ubiquitous unemployed, and have begun to cry out against people coming here. It is acknowledged on all hands now that we are not yet overcrowded—except with lawyers, who, by the way, do not want anybody's commiseration, for they can make business for themselves." And yet another obliging gentleman says:

"I am desired to request everybody to keep away from Rat Portage, but if any person takes the request seriously they are very foolish. It is all very well for young fellows who have 'struck it' here to write to the papers and warn everybody off their location, but life in the west must be the same as it is elsewhere, a struggle whersein the fittest survive; and the energetic and enterprising come out ahead. Just now it is a bad time to strike Rat Portage, but when navigation opens, when the weather is warm, then take your chance, come and see the place, measure yourself against those who are already in the field, and if you think you can succeed as compared with them, then spit on your hands and go in and win. Both yourself and rivals will be all the better for the struggle. We are here to open up a new country, to develop new possibilities; and every willing hand should be invited to the work. Those, however, who are looking for fat things, whatever their walk in life may be, had better remain away from a new country. They are not wanted. No more than they are wanted 'down east,' or 'in the old country,' or wher-ever else their present abiding place may be."

These are probably somewhere near the facts of the case. A man who wants work and can work, can get it. "Soft snaps" don't go begging any more in a mining camp than in the City of Toronto. If a man goes to the Lake of the Woods, or elsewhere, with the full intention of taking things as they come and roughing it, it is not likely he will be left to starve.

THE INFLUENCE OF MINING.

THERE is a good deal of truth in the following article, which appeared in a recent issue of the *Mining Industry and Review*. The development of our mines is going to be the making of Canada, and every possible encouragement should be given those who are legitimately trying to build up the fortunes of their country.

"The political economists tell us in their books that a nation's material prosperity is measured by the volume of money that circulates among its people. The newspapers take it up and ring a thousand changes on the fact, and write about inflation and contraction and their beneficial and destructive influences. The historian Gibbon tells of how Rome grew greatness into power, splendid in its temples and glittering show, under the influence of an in-

creasing volume of gold and silver money; and he tells of how power was lost, how splendor faded, and vice and crime and poverty came when the volume of money began to decrease, and how Rome declined and the darkness of the middle ages fell over the world and lasted for a thousand years, and more; and the cause is said to have been a scarcity of money. Money is said to be the life blood of trade, and its scarcity starves commerce and stagnates business just as a lack of blood in human veins makes a cadaverous and weakly mortal.

"Commerce leads the van in the world's race forward. It is based upon the desire and the opportunity for gain—the desire to surround one's self with the comforts and beauties and luxuries that wealth alone can supply. Whatever injures commerce stands in the way of the world's progress. A scarcity of money did injure and retard it during all the world's dark age. The darkness was lifted truly when Mexico and South America poured their silver and gold into the public money chests. Then blood grew full in the arteries of trade, opportunities were again embraced and barbarism was attacked in its strongholds by the quickened intelligence of mankind.

"Then came the unparalleled additions from the California gold discoveries, and in a single generation the world advanced in science, art invention, intelligence and all the qualities that ennoble and beautify human character, more than it did in the previous thousand years; and the advance was due to the addition to the money volume that came from mining. The miner with his pick and drill and hammer and gad stand very close to the cause of human progress. It was the discovery of a method for the extraction of metals from ore that changed man from a dweller in caves and tents to a resident in houses; that supplanted stone hammers and arrow heads with the axe and rifle; that made cleared forests, iron ships, the steam engines, the telegraph, the electric light and the printing press possible. It is the iron and copper and lead and gold and silver in the ore that the miner digs which makes mankind better than the savages. Human comforts and intelligence began by mining, and are largely sustained by it.

"The thing that injured commerce in the dark ages can injure it again. It can bring poverty and vice and crime and stagnant trade as it brought it before, for mankind is the creature for its surroundings. Progress will only continue as its tools for labor are supplied, and so long as the world uses gold and silver for money, just so long must the miner furnish those tools. This work is one that should be encouraged and protected by the government."

NOTES AND COMMENTS.

THE Saskatchewan *Times* in a strongly worded editorial urges opening of the Hudson Bay route as essential to the prosperity and very existence of the Territories. It urges that it is entirely practicable, simply sealed by eastern selfishness.

THE report that the Dominion Coal Co. have in view the shipping of coal to Great Britain is causing considerable comment. The old saying regarding "coals to Newcastle" does not seem to particularly apply to this case, as it is said that with present freight rates and other conditions, Cape Breton coals can be laid down in London at a price very close to the present market value there.

THE Vancouver and Victoria papers have been devoting some space lately in their endeavors to attract the Yukon trade to those cities.

It is a matter of complaint that Americans on their way to Canadian gold fields outfit in Seattle. "One thing can be done at once," says the *Colonist*, "and that is to make it known that for the most part the Alaska mines are for the most part not in Alaska at all." What the U.S. papers call "a rush to Alaska," is in reality to the Yukon. Another suggestion is the appointment of a Dominion Customs House Officer at the Chilcoot Pass. His presence there might not be of very great value, so far as the spring's trade is concerned, but when it once became known that duties will be collected on all goods going into the Yukon, miners will come to Canadian cities to buy their goods and we will soon find our American friends seeking a mutual bonding arrangement under which Canadian goods intended for the Yukon can pass in bond over the narrow strip of United States territory near the Coast in exchange for the privilege of carrying American goods in bond down the Upper Yukon waters to points in Alaska.

WRITTEN agreements are best when one has a crooked man or corporation to deal with, but verbal agreements also hold as is evidenced in a recent case in Victoria, B.C. The Monitor (Slocan) mining case was decided in favor of Wells, the appellant, against Petty. In May, 1895, Petty decided to prospect the hills near Three Forks. He met Wells, who told him he had found some float and where he thought he would find the ledge from which it came. Before Petty started out he told Wells "If I find the ledge, you are in on it." Petty found the ledge as indicated by Wells, and the Monitor mine valued at, at least, \$75,000 was located. Wells brought suit for a one-half interest. The facts as to the conversation were not disputed. The judge declared himself unable to decide what "in on it" meant, stating that it was too indefinite, but conceding that there was some sort of contract in which the plaintiff was entitled to something. The case was dismissed with costs against the plaintiff. An appeal to the full court resulted in the decision that the words "in on it" meant that Wells was entitled to "one-half claim." That is justice. It is primitive, but if our judges decided cases a la Cadi style, as is the fashion in the Orient, we would often have the crooked people who take advantage of precedents put in a corner from which all the logic of the bar could scarcely deliver them.

ENGLISH CAPITAL IN ONTARIO.

AN INTERVIEW WITH MR. ALEX. M. HAY.

No one has done more, or indeed as much, towards inducing English capitalists to invest in Ontario mines as Mr. Alex. M. Hay, of London, England, with whom a representative of the CANADIAN MINER had a few minutes' conversation on Saturday last, at the Queen's Hotel, where he was staying on his way to Rat Portage.

English people, he said, really know nothing yet of the mineral resources of this province, and there is comparatively little English capital invested in Ontario mines, the principal ones being the Mikado and Cornucopia, which we sold to the same people who are interested in what is known as the Engledue Syndicate. This was practically the first introduction of English capital into the Lake of the Woods district. Very few properties are more than mere prospects. English people are cautious and will not invest their money without first making a thorough examination and satisfying themselves that it is a genuine mine. They do

not understand the prevalent method adopted here of capitalizing at \$1,000,000, when perhaps only \$50,000 is required, and selling \$1 shares at from two cents upward. Anything offered at a price below par they have no confidence in. English companies are not permitted to do so, they must not sell at less than par value, and the directors are personally held responsible for any statements they make.

Referring to the Engledue grant, Mr. Hay said: I think the deal was better for the Government than for Col. Engledue and his associates. They are getting no more than any other syndicate could have obtained previous to the passing of the new mining act, but they are paying more for it than others were called on to do. I cannot see how it is going to induce other English capitalists to come here. It is usual in order to interest foreign capital to offer special inducements, whereas the Ontario Government demands more than what is required from Canadians. The legislation just enacted prevents any large grants of land being made on any terms and a foreign exploration company would not consider it worth while operating on a small tract like 320 acres. I think it will have rather a deterrent effect on English capitalists than otherwise.

No doubt, continued Mr. Hay, a large amount of English capital will eventually be invested in Ontario, but a great deal more development work will have to be done and actual results obtained before Englishmen will put in their money freely.

Mr. Hay has great faith in the mining future of the Lake of the Woods. He knows there are good mines there but every claim staked out will not become a dividend paying mine. Properties have to be thoroughly and honestly developed and the success of the district is assured.

LOCAL NOTES.

ON the strength of a report from the manager that the Hawk Bay was showing up as well as the Saw Bill, the directors have decided to withdraw all stock from the market.

CAPT. CURRIE, of Campbell, Currie & Co., who has been at Camp McKinney the last few weeks, writes he expects to reach Rossland to-day. The shaft in the Minnehaha is down between 40 and 50 feet, and they have made a strike of 7 feet of pay ore and no foot wall yet in sight.

MESSRS. BLEASDELL & Co. have received a telegram from Langley and Nepars, financial brokers for the New Brunswick Consolidated Gold Mining Company, which owns three full claims situated near the mouth of Wild Horse Creek, Salmon River District, 1 1/2 miles from Quartz City, that they have struck a four foot vein.

THE Dundee properties are in close proximity to the above and are showing up well. Mr. J. L. Parker, mining engineer for the Dundee Company, writes to Parker & Co., Toronto, under date 12th inst.: "I got ore that assayed \$49 gold, silver and lead. We have a good thing here." Weeks, Kennedy & Co. write that they have just refused \$150,000 for the mines, and they had that day sold 10,000 shares at 10 cents, and further advise that the price is to be raised and machinery ordered to facilitate operations.

MR. CHAS. J. PUSEY, President of the Irondale, Bancroft & Ottawa Railway, was in Toronto this week and said that the prospects of an iron smelter being built to treat the iron ores of Hastings County were now

NEWS OF THE MINES.

exceedingly bright. Providing the bonus of \$80,000 soon to be voted on by the surrounding townships in Hastings and Haliburton is passed, Mr. Pusey says that Mr. Gordon, Manager of the Philadelphia Engineering Works, is prepared to at once commence the erection of a charcoal furnace to cost about \$200,000 in the vicinity of some of the mines along the route of the I. B. & O. Railway.

MESSRS. WYATT & Co. had exhibited in their office window on King street west, on Thursday of this week, gold bricks from the now famous Foley mine on Seine River, weighing 377 ozs., valued at \$6,200; this represents only 16 days run. Mr. J. C. Foley, manager of the mine, was in Toronto this week and deposited the above with the secretary of the company. When he left Shoal Lake about three weeks ago, sinking on the deep shaft had begun. Nearly the whole of the winter season had been spent in drifting and driving in the levels. The 200 feet level north-west from the shaft proved that the vein was enlarging in that direction very considerably. In the shaft itself the average width was from 2 to 2½ feet, but at the end of the north drift it had widened to 8 feet. Work had also been commenced on a particularly promising new vein, which at the surface was only 10 inches wide but which at a depth of only 20 feet had widened out to 20 inches. Mr. Foley says that the ore from the vein will run from \$50 to \$60 per ton in free gold. Altogether, he believes the prospect for the mine is bright, and he is hopeful of producing bullion to the extent of \$180,000 to \$200,000 before the close of the present year.

THE JOSIE MINE.

A LETTER to A. W. Ross & Co. from the secretary of the Josie Gold Mining Company at Spokane, Wash., says: "We have probably shipped since the 1st of January about 300 tons of ore. At a recent meeting of the trustees it was concluded for the best interests of the stockholders that no more ore be shipped at present; that such ore as we are compelled to take out by reason of development would be piled in our ore bins and retained until such time as we could get the same treated at what we believed to be a fair price. As you are probably aware, the freight and treatment charge to-day is much less than it was a year ago, and we have every reason to believe a much lower rate will be offered us in the near future. It is quite possible that we may become interested in a new smelter that will be erected during the summer and from our knowledge of this business we know that the Josie ore can be treated at a profit for about \$8 per ton. We are using our entire power in development work, and at present are using two drills in the bottom of the main shaft, which we are sinking as rapidly as possible, believing that with sufficient depth the Josie can show as large and rich ore bodies as its neighbors."

THE STALKER MINE.

LAST week a party composed of J. D. Dewar and Son, mining experts, and Mr. E. F. Coxwell left the city for the purpose of having a full report made on the Stalker mine, which is situated two miles east of Plevna Village in Frontenac county. The snow being all gone and the ground clear of ice or water a splendid opportunity presented itself for the work. The shaft on this location is down about 11 feet, presenting to view a solid mass of pure white sugar quartz fully six feet wide and then not back to the walls. Upon examination the vein was found to be a true fissure vein. Mr. Dewar expressed himself as well pleased with the

location and that in proper hands will prove to be a valuable mine. The shaft is being sunk still deeper and we hope to be able to report in a short time of paying ore being struck which will bring that part of the country before the public as a mining section. This being Mr. Dewar's first trip into this section he was greatly impressed with the lay of the land and the highly mineralized state of the country rock, he predicting a bright future for this part of the country. Mr. Coxwell, staying behind the rest of the party for a day, discovered a very rich looking vein of sulphide of copper, which upon assay gave gold and copper \$11.60 to the ton. The pieces taken for assay came from the very surface, as no work of any kind had ever been done on this lot. An option has been secured on this property and stripping and cross-cutting will at once be proceeded with and the vein located. This should prove a valuable find for Mr. Coxwell, as it is within a quarter mile of the railway. Frontenac is surely coming to the front as a rich mineral county.

NEW MINING COMPANIES.

LETTERS patent have been issued incorporating the following companies:

The Minerals' Exploration and Development Company of Ontario; capital \$2,000,000, in \$1 shares. The incorporators are: Hon. F. Clemow, Senator, Ottawa; Hon. A. W. Ogilvie, Senator, Montreal; Hugh Blain and Alfred Ansley, merchants; Oliver Aiken Howland, barrister, and Allan Henry Macdonald, mining engineer, all of Toronto; and George Lawson Milne, Victoria.

The Gold Brick Mining and Development Company of Saw Bill Lake; capital \$500,000, in \$1 shares. The incorporators are: Joseph Eugene Mathe, merchant tailor; Mary Jane Mathe, Charles Augustus Martin, mineral explorer, and Catharine Matheson, all of Fort William; David McKay and Joseph George Naughton, both of the city of West Superior, bookkeepers, and George Hughes Watson of Toronto.

The Megatherium Gold Mining Company of Jackfish; capital \$100,000, in \$1,000 shares. The incorporators are: Charles Bagot Jackes and Albert Ogden, barristers-at-law; Thomas Hunter, insurance agent; Charles Richard Sleeman Dinnick and Robert Carroll, contractors; Benaunce Kingsmill Burden, real estate agent, and Albert John Harrington Eckardt, merchant, all of Toronto, and Jacob Merner Staebler of Berlin.

The Keewatin Gold Mining, Prospecting and Development Company; capital \$750,000, in \$1 shares. The incorporators are: Samuel Hunter and Thomas Andrew Shaw, merchants; Nils Julius Hansen, engineer; Ronald Hunter Gilchrist, druggist; Alpheus McFadden, William McQuaig and Cyrus McFadden, millers, and Hamilton Windor Echlin, druggist's clerk, all of the township of Keewatin, in the district of Rainy River.

The Scramble Gold Mining Company of Ontario; capital \$1,000,000, in \$1 shares. The incorporators are: Levi Wheeler Partidge, real estate dealer and director of the Chamber of Commerce, and Edgar Decamp Williamson, contractor, both of Detroit; Herbert Henry Beck, manager and vice-president of the Manitoba Assurance Company, and Robert Henry Agur, manager of the Massey-Harris Company, both of Winnipeg, and Sargeson Verral Halstead of Rat Portage, in the district of Rainy River.

In replying to Advertisements in this paper, mention The Canadian Miner.

ONTARIO NEWS.

Rat Portage.

Talk is being revived about removing the Indians from the Sabiskong reserve 38 B., and the throwing open of the lands for mining purposes.

The Pine Portage is still full of slime, and on a road which goes through soft muskeg. The Regina, the Cornucopia, the Mikado, the phenomenal La Mascotte and its neighbor, the Trojan, are all out of reach for a couple of weeks yet.

Among the most important transactions this week is the sale of Dr. Edmison's Nanki Poo property to the purchasers of the adjoining Yum Yum location. Yum Yum sold for \$35,000 not so long ago, and development on the veins, which lead right into Nanki Poo property, proved so satisfactory that another purchase at a very large figure followed.

The Mikado mine is a pretty busy place just now, as men are out preparing the way for the incoming stamp mill. The new mill building, the foundation for which is now being laid, will be 124 feet in length and 82 in width. Mr. G. A. Mitchell, lately of Winnipeg, has prepared the plans, which show provision made for a cyanide plant as well as a stamp mill.

Boring operations with a diamond drill on the property of the Rat Portage Hardware Co., south of the town and inside the limits is going on. The company have 45 acres mining up to and close to Ross, Hall & Brown's mill yards, on which a vein of quartz 4 or 5 feet in width has been discovered. From what has been developed it promises every appearance of being very rich, and is a true fissure vein.

If anybody wishes to make money and at the same time confer a favor upon a very deserving people, says a correspondent of the *Toronto Globe*, let them come to Rat Portage and build us some houses. Rents have gone up from 100 to a 150 per cent. within the past two or three months; and those who are loudest in denouncing anything in the shape of booming the town are most conspicuous in their demands for high rents.

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Sudbury.

It is reported that the mill at the Crystal gold mine on Lake Wahnapietaw will begin running about June 1st.

(Sudbury Mining News.)

Mr. Craig, of Toronto, intends opening gold claim W.D. 47, and will have force at work next week.

We are pleased to hear that the Myrtle gold mine near Webbwood is turning out well, and the last assay is most satisfactory.

Reports from the Lake Superior gold mining district are favorable and assays are all the way from \$8 to \$250 per ton, and veins from 6 to 25 feet in width.

Dr. Schumann, of the Comstock Gold Mining Co., was here yesterday. He states that cross-cutting is being pushed and the outlook is decidedly satisfactory.

The Spanish River Talc and Nickel Mining Co., of North Bay, intends commencing cutting mica next week, and have an abundant supply in sight and a ready market.

Mine Centre.

Much excitement prevails here on account of the discovery of rich placer gold in the river from which a crew of men were cutting ice.

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Manitou.

On account of an inflow of water, work on the Brandon syndicate's shaft had to be suspended until machinery can be put in to continue operations.

The property known as HP 301, on Upper Manitou Lake, discovered by Crawford, of Koochiching, and others, and sold for \$15,000 cash, is now under development, and is showing up wonderfully well. At 60 feet, free or visible gold has been struck in great quantities.

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Parry Sound.

Valuable deposits have been found in different parts of McDougall and a good vein is also reported from Horse Shoe Lake, township of Foley.

The richest discovery of gold yet reported in this district has been made in Christie township, not far from Maple Lake, and the assayer's report shows that the quartz carries the enormous quantity of \$5,400 to the ton.

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Wabigoon.

There are now four general stores in active business in this town, and hotel accommodation is inadequate for the numbers that are going into the district.

Three prospects almost in the village are now being developed. The farthest one of these from the station is very little more than a mile away, and the test shaft is now down about 50 feet.

In the Victory vein the shaft is down to a depth of 50 feet and they have drifted 45 feet, the cross cut extends 60 feet. The Mosher mine, bought from Mosher brothers, opposite Combine Island, is also showing up very favorably. The shaft is down 30 feet, and every blast has shown free gold.

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North Hastings.

Gold has been discovered at Chard's Bridge, seven or eight miles from Campbellford.

The Tweed *News* says it is an assured fact that an assay office is to be established in that village.

The Ledyard mine owners are negotiating with an English syndicate for the sale of their property.

The Golding-Moon-Coe gold property in Tudor was bonded to a Toronto company last week for \$15,000.

A few days ago John Badgley discovered what promises to be a very large bed of iron ore on lot 10, 6th con. of Madoc.

A contract has been let to sink a shaft to a depth of 25 feet on the Murray property near Marmora, for the Canadian Gold Fields Ltd.

A well-known Belleville lawyer a few years ago bought 2,000 acres in Elzevir for \$50 at a tax sale. All such land is now in demand by blanket claim men at \$1 per acre.

Mr. Fred. Comerford last week opened up a fine vein of quartz on his farm near Eldorado. This vein is situated within a few hundred yards of the old Richardson gold mine.

Madoc has apparently just discovered it is "in the centre of rich gold fields. Its fences are built of gold quartz, and," says the *Review*, "there is no telling how many

rich samples of gold-bearing rock have been put to the base uses of furnishing the paving of our Madoc streets, and the foundations of our buildings in the years that are past."

Ald. W. A. Hungerford, of Belleville, has men at work stripping the vein on his property next to the Craig mine. The results are confidentially expected to be equal to the Craig, as it is on the same veins.

David Seley is opening up a vein on lot 25 in the 6th con. of Marmora. Some good samples of gold-bearing quartz have been taken out already. He has reached a depth of about four feet. Mr. Bush, of Stirling, has an option on the property.

Mr. Joseph James' mills in Actinolite, five miles from Tweed, are running steadily turning out a car load of actinolite every day. This product is being shipped to Chicago, Montreal, Buffalo, Toledo, Niagara Falls, Winnipeg, Toronto, and other cities for roofing purposes.

Three gangs of miners, nine in each, are starting work this week. One gang will develop a mica mine at Wilberforce. Another will develop a mica mine at Bird's Creek, the property of Membery, Urquhart & Allison, of Toronto. The third gang will open up the Best & Membery copper mine on lot 32, con. 9, of Herschel, near Baptiste.

THE LEDYARD MINE.

The Ledyard Gold Mines Company have received the following letter from McWilliam Nichol who is in charge of operations at the Ledyard mine:—"I am glad to say I have been turning out No. 1 ore all day. I shot and loosened out blocks of quartz as much as team could turn over and visible gold was to be seen in the ore all day, and there is plenty more in sight. I never saw better rock full of honeycomb quartz, the loose gold in nearly all of it. I could turn over Ochry ore and see the particles of gold shining all through it. We have also been opening another new location which looks exceedingly promising. We have quarried out about two tons of rusty quartz which is perforated with sulphurets, with some visible gold through it."

BRITISH COLUMBIA.**Rossland.**

Before the end of this year Rossland will be connected by all-rail communication with Slocan City.

The railways in Slocan are now open and handling ore after two weeks' blockade. This means renewed activity in the whole district.

Ten more gold bricks from the Foley Mine were sent over to Duluth and exhibited "for the benefit of the doubting Thomases". They are the result of 16 days run, weigh 34 lbs. and are worth \$7,500.

News has been received from Sheep creek, a tributary of Salmon river, of a very fine showing of ore on the White Cloud, one of four claims in the Salmo Consolidated group.

Mr. Haskins, President of the Orphan Boy mine, has brought suit for \$33,000 against the directors. The mine will be sold by the sheriff. It cannot now be ascertained what the outcome will be, as the directors decline to talk.

As the result of the land slide near Sheep Creek, on the Red Mountain railroad, six men were killed and a number of the others seriously injured. The men were employed on the railroad. Twelve of them were asleep in camp, when a huge land slide 300

feet wide swept over their camp. Numerous slides have been reported along the railway.

The tunnel in the Red Point on Lookout mountain is now 310 feet, and a new contract for 200 feet was made last week. The depth of the shaft at present is about 300 feet. A good deal of interest is taken in the Red Point work as the test is the deepest of any on Lookout mountain.

THE TRILBY.

Very little doubt now remains that the Trilby has one of the strongest and most continuous ore chutes in the camp. The average value of the ore is believed to be about \$16. No. 1 shaft was sunk about 600 feet from the west end line where it is joined by the Celtic Queen and was put down about 50 feet with a good showing of ore from the very beginning. In order to get a better site for a machinery plant, which the company expects to put in, shaft No. 2 was started about midway between No. 1 shaft and the west line.

THE PUG STRIKE.

Additional information shows the strike on the Pug mine to be one of the greatest ever made in the country. A tunnel was being run to cross cut the vein, and had been driven in about 165 feet last Monday, when the foot wall was broken into and the ore found in almost a solid mass.

The tunnel was driven straight ahead and up to last night had penetrated the ore body 14 feet, a steam drill being in use. The ore is a massive sulphide, resembling strongly the typical ore of Rossland, but carrying little copper. One assay is reported to have shown \$27 in gold. Nothing can be learned as to other assays made.

Very little of the Pug stock is on the market, most of it being tied up in a close pool.

THE GOPHER MINE.

Among the new mines which have come through the winter in a creditable manner and which must command much attention from this time forward the Gopher is in the front rank.

Since January there have been over 300 feet of tunnels and crosscuts run. The main tunnel has been driven in 275 towards the Homestake. The mouth of the tunnel is 540 feet from the the Homestake east end line, consequently the tunnel has been put in about half its length so far as the Gopher is concerned. A chute of ore was struck soon after the tunnel was started and this was drifted on 100 feet. Its width varies from three and one-half feet at the beginning to eight feet at the west end.

It is now shown beyond doubt that the Gopher has a very wide, strong ledge and that it has at least one chute of ore 100 feet long in a distance of 275 feet, with a big chance for another chute.

STRIKE AT CROWN POINT.

At last the vein appears to have been found on the Crown Point. There has been deal of anxious enquiry among mining men in the camp on this subject for several weeks, for it was expected the vein would be cut the last of January or first of February.

The face of the drift is on a line with shaft No. 2, which is probably 100 feet west of the No. 1 or old shaft. No. 2 shaft was put down only about 40 feet. If it were to be continued to the 160 foot level it would connect with the drift at the point where the face is now. The ore was found not ten feet away from where Mr Hastings expected to find it. The drift will be continued towards No. 1 shaft with the hope of finding

the continuation of the big chute opened above.

This strike is probably the most important ever made in the camp. The reputation of the entire South Belt may be said to have depended on the success of the Crown Point. If no vein had been found at the depth of 160 feet, it would have been a clear case of petering out, something that has not yet happened to a Rossland mine, and this very fact constitutes the strongest ground for faith in the permanency of the camp.

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The Slocan.

The Sapphire is shipping a car load of ore this week.

Moore has commenced work again on the Purcell claim which adjoins the Goodenough and Grey Copper.

Two claims on Cody Creek called the Glen and Liberal have recently been bought by an English syndicate.

The R. E. Lee is shipping steadily. There is a nice showing of grey copper in the face of the main tunnel.

Avalanches in the vicinity of Sandon have seriously impaired transportation, especially over the Kaslo and Slocan railway.

The water supply for the Slocan Star concentrator is rapidly rising. The company will soon be able to dispense with its steam power.

Work on the Bondholder progresses slowly. The tunnel is in 300 feet, has cross-cut one lead and is within 25 feet of the main ledge. It is expected to strike the shaft within three weeks.

The tunnel on the Dalhousie has been put in about 400 feet, another 100-foot contract having just completed. The lead has not been struck and the property is in about the same condition apparently as a month ago.

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Kootenay.

The workmen at the IbeX last week came upon the lead, for which they have been driving for several months, at a distance of 235 feet. Where encountered the lead was about 18 inches in width, carrying some ore. Drifts on the lead to right and left were at once started with the result that on Saturday the lead opened out on the left to 3½ feet, all high grade concentrating ore.

Work on the London is progressing rapidly. In the upraise to the winze, dropping from the upper tunnel on the North Fork side of the mountain, ore was encountered. The company is preparing to let a contract to continue this upraise 100 feet to connect with the winze, which, when completed, will give opening through the mountain 800 feet in length. Immediately on completion of the upraise, the company will begin stoping and shipping ore.

EAST KOOTENAY.

The Sullivan group situated 20 miles from Fort Steele and two miles from the famous North Star mine, in East Kootenay, has been purchased by a number of the members of the Le Roi company. The claims to be operated by the company are the Hamlet, Shylock and Hope, and as soon as the weather permits machinery will be sent in and a force of men set to work developing the claim. The surface shows remarkable croppings, being from 15 to 25 feet of solid galena ore. Assays run from \$20 to \$60 per ton.

A special to the Toronto *World* from Montreal says: One of the largest single ore

contracts ever given out in British Columbia has just been signed here by the owners of the North Star Mining Co. of East Kootenay comprising Dan Mann, Sir William Van Horne and other eastern capitalists. They have agreed to deliver 5,000 tons of their silver and lead ore to the United Smelting and Refining Co. of East Helena and Great Falls, Montana, the same to be delivered during May, June and July. The International Transportation Company, of which Mr. Jim Wardner is president, will carry the ore from the mine to Jennings, on the Great Northern, then to be forwarded by rail. The North Star shipped 2,500 tons last season, and they have been waiting for the Crow's Nest Pass Road to enable them to carry on the full development of this great mine, which experts claim has \$14,000,000 worth of ore in sight. The owners refuse to say what this latest 5,000-ton deal will net them, but a little bird gives the total figure at about \$250,000, and the best of it is the entire quantity is already mined and on the river bank.

WEST KOOTENAY.

The West Kootenay Power and Light Co. is seeking a blanket charter within 50 miles of Rossland, to supply power, light and heat, to erect buildings, etc., to construct and operate railways, operate telephone systems, etc., in the towns and cities and throughout the said cities of West Kootenay.

Within the area affected by this bill are located Rossland, Nelson, Trail, Sayward, Salmo, Robson, Cascade City, Grand Forks, Greenwood City, Anaconda, Boundary Falls, Midway and many of the best known mining camps, nearly all of which are in their infancy.

To give such power with incidental privileges of monumental extent to this octopus company, says the *Nelson Miner*, means the creation of a gigantic monopoly. The passage of this bill will place in private hands practical control over a wide extent of territory. But the legislators seem to think that it is all right.

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Trail Creek.

Wild Horse claim has been sold for \$500 cash.

A strike of free silver is reported from the Elise on Wild Horse creek.

The well known Hilda claim near Waneta has been sold to Toronto people, represented by Isaac Anderson. The owners, McCoy Bros., received \$15,000 for the property.

The two calcining furnaces at the smelter were started this week. The building is 100x160 feet and the furnaces are so constructed as to permit of being enlarged on both sides.

The Dundee mine in the Parker group is being steadily worked and the shaft is now in solid ore at a depth of 94 feet. A crosscut to examine the size of the vein will be started at the 100 foot level.

An institution at Trail is now furnishing a superior power drill. Within 30 days this industrial and commercial city will be the seat of an establishment that will manufacture the giant force used to tear the glittering ores from their iron chambers. Nitro-glycerine powders will be prepared for commercial purposes at Trail by the Canada Powder Company of British Columbia.

Immense quantities of ore are being brought over the road to the Trail smelter and the present business, large as it is, is nothing to that for which preparations are being made. Most of the Le Roi's output

now comes to the Trail smelter and the War Eagle resumed shipments this week. The Iron Mask has been shipping here all the time and is now in shape to increase its shipments. The Kootenay has not yet resumed shipments since the transfer of that property to Mr. Heinze, because it is impossible to get sleds up to the ore dump owing to the deep snow.

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Kaslo.

The Kootenay Mining and Protective Association has been organized. It has a strong membership and will no doubt prove of value to the mining industry.

The mineral claims Humming Bird, Robin and White Swan, situated in Whitewater basin, have been sold to J. T. Wilkinson, the widely known representative of the Vancouver *World*.

C. F. Caldwell has purchased the mineral claim Surprise No. 2, which is situated on the right hand bank of Glacier creek, about three miles from its mouth, and has men already at work developing the property, which is said to be unusually promising.

Some Chinamen have again commenced placer mining on Kaslo creek just outside of the city limits. They have worked in the same vicinity on previous occasions, but it has never been accurately ascertained how much they took out as they are reticent as to their earnings.

New locations in considerable numbers have already been recorded at the office of the mining recorder in this city. Thus far, however, they are principally relocations of ground abandoned or run out. It is presumed that the locators knew pretty well where to place their discovery stakes.

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Cariboo.

Mining matters are reported very bright; there will probably be 500 men employed within a radius of 15 miles from the mouth of Quesnelle constructing ditches, flumes and dredging. Then at the Forks of Quesnelle and Horse Fly there will be fully 1,000 men at work. At Barkerville considerable change has taken place. The old town is reviving and only awaits the iron horse to be equal to many other mining centres. Some 30 men are engaged on quartz claims. The reduction works are running night and day, making tests of the ore.

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Trout Lake.

The balance of \$10,000 on the Great Northern bond is forthcoming.

The American, bonded by Abrahamson Bros. to James Dixon, has been turned over by the latter to Vancouver people.

On Tuesday the Horne-Payne company made the final payment of \$13,400 due on the Broadview and \$10,000, the final payment, on the Old Sonoma and Phillipsburg.

On Saturday last Abrahamson Bros. bonded the Morning Star, Wild Man and Alice to a Scotch syndicate for \$30,000. The Morning Star and Wild Man are located on the Silver Cup lead and the Alice on a parallel one. The two former are silver propositions and assays from the latter give \$53 in gold.

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Pilot Bay.

A vein four feet wide runs across the Gold Bug and Virginia Dare claims on Hooker creek and assay results show \$16 of gold, 93 ounces of silver and 12 per cent. lead.

At Mountain Bell the vein varies in width from 3 to 20 feet and is a very high grade gold proposition. Two tunnels have been driven on

the vein at different levels, one is 280 feet in length, and the other is about 110 feet. From the lower tunnel to the upper two uprisings have been driven and much other work has been done to further develop the mine.

Work on the Empress is progressing rapidly. A tunnel is now being driven across the strata and is now advanced 102 feet, and will probably tap the vein at a further advance of 50 feet.

Considerable work is being done on the Commonwealth claim, which is owned by the London and British Columbia Gold Fields Company. This property is situated on Hooker creek on this side of "the divide."

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Big Bend District.

The Big Bend mining district properly speaking, says the Kootenay *Mail*, comprises all that portion of East and West Kootenay lying north of the C.P.R. main line between the stations of Golden on the east and Revelstoke on the west. It acquires its name from the course of the Columbia River, which, flowing north from Donald for about 100 miles turns suddenly southward and is crossed again by the C.P.R. line at Revelstoke 75 miles further west. This immense triangular area is mineralized throughout, but as a settlement, or more properly, discovery, came from the west and south the little that is known of its resources is confined to its western portion reached from the town of Revelstoke which is its natural and only supply point.

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Sandon.

The Reco is unable to continue rawhiding owing to the present precarious condition of the Noble Five slide.

The Ivanhoe has closed down for a time, but later will resume development work to be continued during the summer.

The tunnel which John M. Harris started on the main street of this town in order to prevent a lot jumper from building is now in some 25 feet. The mine was named "Johnny-on-the-Spot" by some facetious Sandonite.

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Revelstoke.

A slide between Twin Butte and Albert Canyon, a slide at the 13th crossing, and a slide between the 46th and 47th snowsheds near Clan William effectually cut off Revelstoke from all communication east or west from Saturday morning till Monday evening. The slide between the Butte and Albert Canyon was one of the worst and most destructive to the railway ever experienced on the C.P.R. The mountain, down which it came, lies back at least 500 yards from the line and the area between is flat; still immense trees and rocks embedded in an enormous mass of snow were forced across the intermediate space and partly piled on the track and partly hurled into the Canyon below. Communication was not resumed till Monday evening, when a transfer was effected at the Clan William slide.

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New Denver.

Spokane parties are getting hold of the Ophir.

The Two Friends mine has shipped over 10 carloads of ore this winter.

The Enterprise will make a shipment of 40 tons in the course of a few days.

Five men are employed on the Regina, a claim situated in the Arlington basin.

The Lily B has a very fine showing of ore at present. The vein, in the face of the drift is 14 inches in thickness and it extends back

unbroken for over 80 feet varying from 8 to 14 inches in width.

The Alma group, bonded to Jim Gilhooley recently for \$30,000 is employing five men who are busily engaged in developing the property.

* *

Salmo.

H. C. Weatherhead staked a claim, one-half mile from town, which shows native copper.

A solid body of ore, four feet wide, running \$85.00 in gold has been struck on the Little George.

The Salmo Consolidated Mining Company made a rich strike on their property at Sheep Creek last week. They started on a 4 inch vein but on going in a few feet discovered a body of ore 10 feet wide which runs 80 ounces in silver, \$15 in gold and a small percentage of lead.

The placer excitement at Salmo has been revived and according to the reports, recent development shows that considerable gold exists there in paying quantities. A gentleman just returned states that he saw two or three small nuggets and over 300 colors from a single panful of dirt.

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The Yukon.

An Ottawa dispatch says: The government's call for tenders for dredging Stewart river, a tributary of the Yukon, for gold, is the outcome of an application just made to the Interior department for a lease for a term of years of 100 continuous miles of that waterway. The applicant has a patent dredge, which it is said does wonderful work in lifting gold, and he proposes, if he secures a lease, to place one on this stream for placer mining purposes.

The British syndicate which wishes to develop the Yukon after the manner of the Hudson Bay and South African Chartered companies is pressing its application to get at the rich gold fields. The first practical step toward carrying out the project was taken yesterday, when Mr. Fraser (Guysboro') presented a petition for the incorporation of the British Yukon Company. The petition is signed by His Highness, the Duke of Teck, Messrs. H. C. Beeton, Adolphus Drucker, C. H. Wailkinson, G. W. Mitchell, R. B. Martin, M.P., Capt. Pirie, M.P., Harry Samuel, M.P., Major Dalbaic, M.P., Hon. H. V. Duncombe, M.P., H. H. Marks, M.P., Ernest Flower, M.P., Major Pryce-Jones, M.P., Thomas Richardson, M.P., Henry C. Richards, M.P., Sir Chas. Freemantle, M.P., Captain McCalmont, Frank A. Labouchere, and other members of the British Yukon Chartered Company. The petitioners seek power to construct and operate a railway line from a point on the northern boundary of British Columbia north and westerly to Fort Selkirk, to build steamers and acquire lands and other aids from Government or private individuals. They desire the right also to levy a royalty on all precious metals passing outward over the road, to carry on the business of a general trading company, to own and manage hotels, mines, explore and develop mineral lands, and, with the approval of the Government, administer the Yukon territory under conditions to be prescribed.

In a letter to the Minister of the Interior, from Mr. William Ogilvie, Dominion Land Surveyor who has been in the Yukon territory, around Fort Budhad, all summer, and closed in there for the winter, he says:—"The gold is increasing in quantity and richness, and now it is certain that millions will be taken out of the district in the next few years. One pan of dirt gave \$14.25. The whole claim is expected to give from \$5 to \$7 per pan. This would give \$400,000, calculating at \$5 per

pan, in the whole claim. There is intense excitement here, and everyone who can is staking out claims. Three married women, whose husbands have claims, have staked out claims for themselves." He reports that the prospects of the Clondyke are still very encouraging. "So much, so in this case," he says, "that all the other creeks are practically abandoned. Especially is this so in regard to Forty Mile, in American territory, and nearly 100 men have made their way from Circle City. Those who cannot get claims are buying in on those already located. Men cannot get any one to work for love or money, so scarce are laborers, and development is consequently very slow. One dollar and a half per hour are the wages paid. A few men work for higher wages, and they are permitted to remain on duty as many hours as they please. Some of the claims are so rich that over night a few pans of dirt suffice to pay the hired labor. As much as \$204 has been reported in a single pan." In regard to getting a road from the south, a petition is now in circulation for the purpose of being forwarded to the Minister of the Interior. The petition asks for the road to go by the White Pass route. Mr. Ogilvie told the parties who are getting up the petition that the government could not possibly agree to building a road, and that it would have to be done by private enterprise.

* *

Tailings.

Interesting discoveries of the work of prehistoric miners have been made near Silver Mountain, in Minnesota, just over the Canadian border.

A petition is being circulated asking the government to include the Lardeau railway among those specified in the proposed railway loans of \$2,500,000.

The Kaslo and Lardo-Duncan Railway charter has passed. This road has a branch running from the lower Lardeau river up the west shore of Trout Lake to the Arm at Lardeau City.

A number of the American miners, who are staying at the south side, are putting up houses on the islands up the river, in the vicinity of their proposed gold washing and smelting operations.

The famous Vulture mines, of Phoenix, Arizona, which produced beyond \$10,000,000 of gold, have been sold by Ben. Heironymus, of Springfield, Ill., to Henry M. Love, of Chicago, W. G. Davis, of Tucson, and associates.

A valuable discovery of asbestos has been made on Fish Creek, 25 miles from Calgary. It has the appearance of very fine silk when pulled apart, is of a delicate blue tint, and stands fire test perfectly. The vein is 4½ inches wide. Asbestos of this quality is worth from \$75 to \$100 a ton.

It is stated on good authority, says the Spokane *Chronicle*, that the Pilot Bay smelter has passed into the hands of the Canadian Pacific. If this is so it can be taken as an evidence that the Crow's Nest Pass railroad will strike Pilot Bay and pass down the lake to Nelson or else make a crossing of Kootenay lake and connect with the Columbia and Kootenay road at Slocan City.

The Montana Mining company of Marysville, better known in mining circles as the Drum Lummon company, has commenced the erection of a mammoth cyanide plant on their property, three miles south of Marysville, and work the tailings which are said to contain several million dollars in gold. The future operations of this plant are being watched with considerable interest by owners of low grade properties.

THE LILLOOET.

The report of Mr. Fred Souls, gold commissioner for Lillooet district, has just been made public. The total yield of gold from the district (ascertained from reliable sources only) is \$33,665, showing a decrease from the annual returns for the last 17 years, at least. The total ascertained district yield for the past 17 years is \$1,185,023; an annual average of \$69,727. It should be borne in mind that the above amounts is really the returns of desultory work done by Chinese and Indians. There certainly have not been over half a dozen white gold-producing miners in the district during the year.

ON THE YUKON.

HOW THE MINES ARE REACHED—72° BELOW ZERO
DOG TEAMS COME HIGH.

Freighting to the mines during the winter is now done mostly with sleighs and horses, and costs 8 cents a pound. Last winter it cost 10 cents and was done with dog trains. During the summer some supplies were packed out on horses at a charge of 45 cents per pound. So you see that freight, added to the cost of supplies here, makes living at the mines come high.

As the cayuse once was to the miners of Idaho and Montana the most useful and valuable animal, so is the dog to the miner here. Almost every man is the owner of from one to a dozen of them. They are useful in hauling out supplies to places where horses do not go; they are useful in hauling his wood or his lumber, and in summer they will carry a pack of 50 pounds and follow him over the mountains in search of new diggings. Just now they come high owing to the excitement about the new gold district discovered last August about 300 miles up the river. A team of 5 dogs sold to-day for \$525.

So far it has not been very cold this winter. This morning the thermometer registered the coldest—15 degrees below zero. Last winter was the coldest experienced in this country by the "oldest inhabitant." During the month of December the mercury remained frozen at 40 degrees below zero for a number of days. In January the spirit thermometers refused to register after going down to 65 degrees below. On February 10, painkiller froze at 72 below and it is believed that it was 10 degrees colder than that, though there was no way here of telling. It was cold enough. The walls of my cabin inside resembled a miniature glacier, with fire burning in the stove day and night.

A NEW DISTRICT.

The new gold district which is attracting the attention of those who can get there, is only 40 miles above Fort Cudahy, in the tributaries of a river called Clondyke, and only a short distance from the Yukon. The diggings are reported to be very rich. I expect to start for that place in a few days, hauling on a handsled my tent, stove, blankets and a small amount of supplies to last while on the way. It is a long haul of 300 miles. Flour is said to be worth \$60 a sack. All other supplies are plentiful.

On the 10th, this letter will be taken out by a party of men starting out with dog teams on their long journey to Juneau of 1000 miles. They will reach there early in March. We do not know yet who was elected president last November.

The above extracts are from an interesting letter written by Thomas Mallory, in Circle City, to a friend in Rossland.

MINING VISIONS.

THE St. John's, Newfoundland correspondent of the *Halifax Chronicle* writes as follows with regard to the development of wild-cat mining fever:—

Some of our people are founding their hopes for the future of this colony on the fallacious foundation of mining. They are prepared to lie by the yard and to cheat by the square mile if only they may succeed in deluding some ignorant and credulous persons abroad to advance them money on the strength of mines. They care not what may happen afterwards, nor how far they may deviate from truth and honesty to accomplish their purpose. 'Tis your money we want and that's all we care about the matter.

I hope, Mr. Editor, the people of Canada and the United States will be warned against lending a too credulous ear to all sorts of wild-cat mining schemes such as some of these that are being promoted here just now. We are bad enough in all conscience, to have to struggle with our poverty, but if to that we have to enter upon the swindling career of a community of mining blacklegs we shall be poor indeed.

In proportion as the fortunes of a country decline there is a natural tendency on the part of some to resort to all sorts of shady and desperate shifts to retrieve themselves. Pressure in business competitions drives people to forsake the legitimate paths of commerce and seek monopolies of one kind or another. Any money gained in this way, i. e. by fraud, is sure to be lost again; it is of no permanent value either to place or person; it benefits not him who gives and it curses him who takes. Better that little a poor man has if he gets it honestly, than large revenues and trouble therewith. After all, life is brief and the wants of man are few. What, in this world, can for one moment compare with a peaceful mind and a quiet conscience?

I do not wish by this observation to imply that there are no mines or minerals in Newfoundland, far from it. But our best by all odds most unfailing mine is the illimitable ocean which yields wealth to the extent of nearly ten million dollars a year around this one small island. Just think of it; and, thinking of it, is it any wonder that we have been reckless, extravagant, spendthrift of this wealth?

SEPARATION OF NICKEL AND COPPER.

A PATENT (No. 579,111, U.S.) has just been issued to N. V. Hybrinette and Albert R. Ledoux for a process of separating nickel from copper in ores and mattes. The process consists in taking advantage of the fact that sulphur has a stronger affinity for manganese and copper than it has for nickel. When, therefore, manganese is added in the form of oxide or otherwise to a copper-nickel matte the sulphides of manganese and copper go to the top and the sulphide of nickel, which is practically insoluble in sulphide of manganese, goes to the bottom, and in the first operation the top, in addition to the manganese, contains nearly all the copper sulphide and about half the iron, while the resulting bottom contains practically all the sulphide of nickel, with a small amount of copper and the balance of the iron. The top is removed, the bottom retreated with manganese, when the second separation removes from the nickel the balance of the copper and practically all the iron.

The process in practice will be continuous, and the patent covers all modifications of the method or principle. We learn that the process was tried by Ledoux & Company at the works of Messrs. Balbach, in Newark, on a

considerable scale, and, it is said, with gratifying success. The manganese can be used over and over again, or a manganese bronze can be made as a final step by oxidizing and reducing the intimately associated sulphides of copper and manganese after the extraction of nickel. Patents are pending in Canada and elsewhere for this and other modifications of the principle.

COAL AND THE TARIFF.

THE *Boston News Bureau* publishes the following: "The stock of the Dominion Coal company advanced yesterday on buying by F. S. Mead & Co., assisted by short covering. The tariff is a dominating factor in Dominion coal at the present time. If the proposed duty of 75 cents a ton is placed on coal it means practically the loss of the American market to the Dominion Coal company, but that company has been shipping less than 10 per cent. of its output to the United States, and this loss would be small compared to the gain that would accrue to the company by the increase in the duty on United States coal into Canada, and an advance in the Canadian tariff from 40 to 75 cents would seriously interfere with the traffic and give the market to the Dominion Coal company. Although the major part of the coal shipped from the United States is anthracite coal, bituminous coal can in many cases take its place. The coking plant at Halifax is now working satisfactorily, eight or nine ovens running."

RECKONED BY BITS.

GOODS, wages and drinks in Kootenay are reckoned, not by quarters or dollars, but by "bits." A "rubberneck" (tramp or "bum") will "hit" you for "two bits" to get a meal. I asked the brakeman on the narrow gauge railway into Rossland what wages he got.

"Two six-bits," was his reply.

"What's that in English?" I asked.

He stared at me and wanted to know where I was raised.

I admitted that my education on these delicate matters of finance had been sadly neglected, whereupon he explained that "two six-bits" meant \$1.50. That was his daily wage. The conductor received \$2.25 a day. Practical miners get \$3 and \$3.50 a day. Deck hands on the steamboats receive \$35 a month. Plenty of men are glad to work for their board. The number of clever, educated men I met in every town who had gone to the dogs, was pitiful. Drink, women and gambling are the prolific causes of their downfall. The temptations are so strong and so numerous that it is hardly to be wondered at that men go to the devil here. I met one man—but it would be very painful to go into details. It is sufficient to say that this is no country for any man, old or young, who is not blessed with a head cool enough to keep him from getting hopelessly mired in immorality, and it only needs a look at the brilliant and talented fellows who have fallen by the way to point the conviction that extraordinary powers of self denial and strength of character are needed to keep men in the narrow path of rectitude. I have met people here who once stood high as citizens of the Territories, both financially and socially, who are to-day without a dollar, some without self respect, to say nothing of the respect of their fellow men.

A NEW METAL.

A NEW silver colored metal of beautiful appearance and great strength has been discovered. The inventors claim that their new metal, which is to be called "vestadium," is far greater utility than any other metal. Vestadium is an alloy of aluminum.

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Montezuma, 7 $\frac{1}{2}$.

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Though we expect to pay much larger dividends in the meantime out of the profits of their mines.

This stock must be sold before the 1st of May next.

Apply for a Prospectus, etc., to the Company at Berlin, Ont., or to

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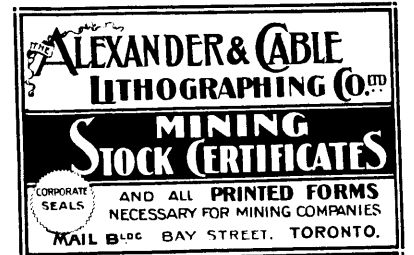
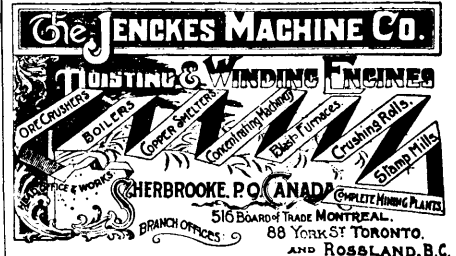
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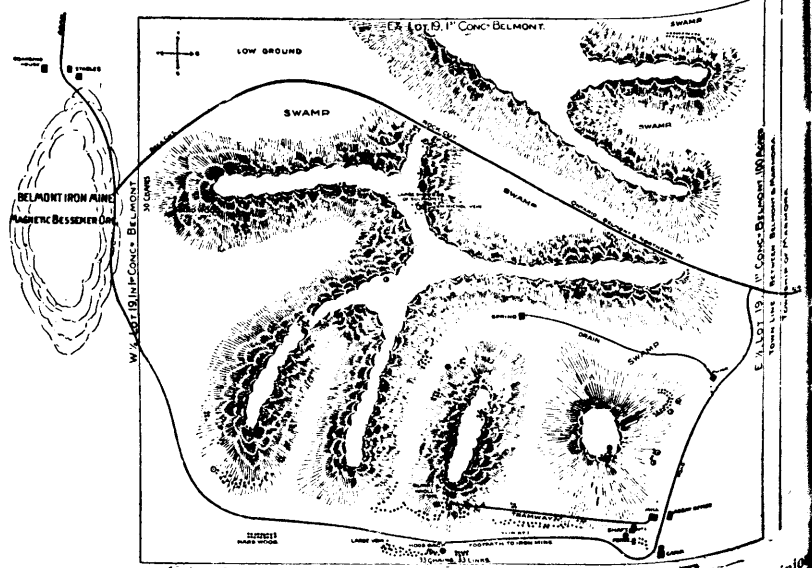
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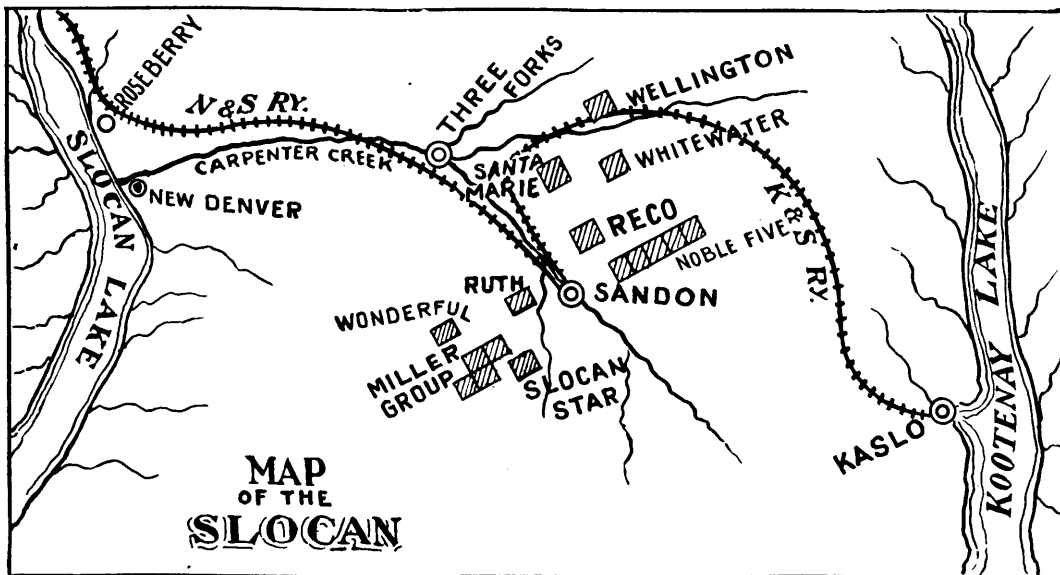
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Alf	1,000,000	1 00	0 11	Kootenay (London).....	1,000,000	1 00	0 12
Arlington Con.....	1,000,000	1 00	0 10	Lake Harold.....	1,000,000	1 00	0 15
Bannockburn	500,000	1 00	0 20	Ledyard	1,000,000	10 00	2 50
Big Three.....	3,000,000	1 00	0 09	LeRoi.....	2,500,000	5 00	7 50
Bondholder.....	1,000,000	1 00	0 14	Lily May.....	1,000,000	1 00	0 20
British-Canadian Gold Fields.....	2,500,000	1 00	0 15	Lloyd Gold Mining and Dev. Co.....	1,000,000	1 00	0 06
Butte.....	1,000,000	1 00	0 04	London Hill Min. & Dev. Co.	150,000	0 25	0 25
Caledonia Con.....	1,000,000	1 00	0 10	Mabel.....	1,000,000	1 00	0 15
California.....	2,500,000	1 00	0 10	May Flower.....	1,000,000	1 00	0 14
Canada Mutual.....	2,500,000	1 00	0 15	Mikado.....	£250,000	£1	7 50
Cariboo M. C. C.....	800,000	1 00	0 50	Miller Creek (Slocan)	\$1,000,000	1 00	0 07½
Colonna.....	1,000,000	1 00	0 26	Mines Dev. Co.....	2,500,000	1 00	0 10
Colorado.....	1,000,000	1 00	0 12	Minnehaha	1,000,000	1 00	0 15
Columbia and Ontario.....	750,000	1 00	0 10	Monarch.....	1,000,000	1 00	0 10
Commander.....	500,000	1 00	0 20	Monita.....	750,000	1 00	0 16½
Consolidated Sable Creek.....	1,000,000	1 00	0 10	Monte Cristo.....	1,000,000	1 00	0 12
Confederation Mines Dev. Co	2,500,000	1 00	0 10	Montezuma	1,000,000	1 00	0 07½
Cornucopia.....	£100,000	£1	7 50	Morning Star.....	1,000,000	1 00	0 12½
Cracker Jack.....	\$1,000,000	\$1 00	0 09	North American Mining Co	2,500,000	1 00	0 20
Crown Point.....	1,000,000	1 00	0 48	Norway.....	1,000,000	1 00	0 10
Deer Park	1,000,000	1 00	0 21	Novelty.....	1,000,000	1 00	0 10
Dellie.....	750,000	1 00	0 15	Old Flag	1,500,000	1 00	0 10
Eagle Nest.....	25 00	25 00	25 00	O.K.....	1,000,000	1 00	0 20
Eastern Mining Syndicate.....	1,000,000	1 00	0 09½	Old Ironsides.....	1,000,000	1 00	0 11
Eldon.....	1,000,000	1 00	0 10	Ontario Gold Fields.....	1,000,000	1 00	0 08½
Elsie.....	1,000,000	1 00	0 08	Ottawa and Ivanhoe.....	250,000	1 00	0 12½
Empress.....	500,000	1 00	0 21	Orphan Boy.....	700,000	1 00	0 06½
Enterprise.....	1,000,000	1 00	0 20	Phoenix.....	500,000	1 00	0 15
Ethel Group (Preferred)	1,500,000	1 00	0 75	Pug.....	1,000,000	1 00	0 10
Eureka Con.....	500,000	1 00	0 10	Princess	500,000	1 00	0 25
Evening Star.....	1,000,000	1 00	0 15	Poor Man.....	500,000	1 00	0 07½
Exchequer.....	1,000,000	1 00	0 10	Rathmullen Con. M. & Dev. Co	2,500,000	1 00	0 12½
Foley.....	1,000,000	5 00	3 50	Red Eagle.....	1,200,000	1 00	0 08½
Germania	1,000,000	1 00	0 20	R. E. Lee.....	1,000,000	1 00	0 10
Gertrude.....	500,000	1 00	0 15	Rosland Gold Mining and Dev. Co.....	2,500,000	1 00	0 12½
Gold Bar	2,500,000	1 00	0 07	Rosland Red Mountain.....	1,000,000	1 00	0 25
Gold Exploration Co.....	1,000,000	£1	5 00	Royal Five.....	1,500,000	1 00	0 10
Gold Hills.....	1,000,000	\$1 00	0 10	Santa Marie (Slocan)	1,000,000	1 00	0 05
Gold Quartz.....	2,000,000	1 00	0 10	Saw Bill	1,000,000	1 00	2 85
Gold and Silver Mines Dev. Co.....	1,000,000	1 00	0 20	Silver Bell.....	500,000	1 00	0 05
Golden Cache	500,000	1 00	1 75	Silverine.....	1,000,000	0 10	0 10
Golden Gate Min. and Dev. Co.	300,000	1 00	1 50	Slocan-Cariboo	1,000,000	0 50	2 63
Good Hope.....	500,000	1 00	0 10	Slocan Star.....	1,000,000	1 00	0 21
Great Western.....	1,000,000	1 00	0 16½	Smuggler	1,000,000	1 00	0 10
Great Western Mutual.....	2,500,000	1 00	0 15	Spokane-Kaslo	900,000	1 00	0 11
Hansard	1,000,000	1 00	0 10	St. Elmo.....	1,000,000	1 00	0 12½
Heather Bell.....	1,000,000	1 00	0 20	St. Paul	1,000,000	1 00	0 25
High Ore.....	500,000	1 00	0 07	Sweden.....	500,000	1 00	1 00
Homestake.....	1,000,000	1 00	0 17	The Industrial Mining and Dev. Co.....	250,000	0 30	0 31
Ibex.....	1,000,000	1 00	0 03½	Two Friends.....	240,000	1 00	0 10
Ibex of Slocan	300,000	0 25	0 30	Victory-Triumph.....	1,000,000	1 00	0 13
Investors Prospecting G. and M. Co (Cripple Creek).....	1,250,000	1 00	0 10	Virginia.....	500,000	1 00	0 10
Iron Colt	1,000,000	1 00	0 20	Waneta.....	1,000,000	1 00	0 10
Iron Mask.....	500,000	1 00	0 45	War Eagle (Con.).....	1,000,000	1 00	0 04
Iron Queen.....	1,000,000	1 00	0 04	Washington.....	1,000,000	1 00	0 26
Josie.....	700,000	1 00	0 52	West LeRoi and Josie.....	500,000	1 00	0 27
Josie Mack.....	1,000,000	1 00	0 12½	White Bear.....	2,000,000	1 00	0 12
Jumbo.....	500,000	1 00	0 60	Winnipeg and Eureka.....	1,000,000	1 00	0 10
Kelley Creek.....	1,000,000	1 00	0 15	Yale.....	1,000,000	1 00	0 02½
				Zilior.....	1,000,000	1 00	0 15

(OVER)



Miller Creek Mining Company

DIRECTORS.

A. J. ROSS, Vice-President Exchange National Bank.	C. H. THOMPSON, Vice-Pres. "Wonderful Group" Mining Co.
J. M. ARMSTRONG, Treasurer LeRoi Mining Co.	H. C. BELL, Secretary "Wonderful Group" Mining Co.
W. C. JONES, Member of Congress.	E. J. FIELD, Manager "Wonderful Group" Mining Co.
F. A. DAVIS, Superintendent Summit Mining Co.	

OFFICERS.

President, C. H. THOMPSON.	Treasurer, A. J. ROSS.
Vice-President, J. M. ARMSTRONG.	Secretary, H. C. BELL.

CAPITALIZATION.

Capitalization at 1,000,000 Shares of \$1.00 Each, with 400,000 SHARES Appropriated for Treasury Stock. Shares fully Paid-Up and Non-Assessable.

THE PROPERTY.

It owns in fee the three claims known as the "New Springfield," "Sampson," and "Wonderful Fraction," comprising in all about 130 acres of mineral land, directly adjoining the famous Wonderful Group Mining Company's property in Slocan Mining District, West Kootenay, B.C., only one and one-half miles from the town of Sandon, in the very heart of the Slocan country, which stands without a rival in mining history; and so far every prospect which has been systematically developed has proven a mine. Among the most noted of which are the "Slocan Star" with its record of \$100,000 paid in dividends, and its shares with a par of 50 cents, are eagerly sought for at \$2.60. The "Reco" with its \$150,000 paid to shareholders during the past year. The "Idaho and Alamo" with their \$135,000 to shareholders; the "Goodenough," "Noble Five," "Payne Group," "Ruth," "Wonderful Group," "Reed and Robinson," the "Whitewater," "Wellington," and a host of others.

SITUATION.

On the mountain lying south of Carpenter creek and close to the town of Sandon is the "Slocan Star," next west is the "Ruth," next west is the "Wonderful," and adjoining this on the west is the "Miller Creek" properties. The Wonderful has extracted a large amount of ore from surface workings by hydraulic mining, and in prosecuting this work their tail race down the steep mountain side has cut a large strong vein (see Field's Report) which courses directly through the entire length of the Miller Creek property, and should it continue that far would give us over 3,000 feet of this heretofore unknown vein, and in that distance several ore chutes ought to be discovered, and one means a fortune.

This vein, and that exposed by the work on Miller Creek, make this group of claims have great prospective value. Title to the property is perfect and lies absolutely in the Company. It was passed upon by W. C. Jones, Attorney-General of the State of Washington. Application will be made for a Crown Grant, and as there are no adverse claimants, the Crown Grant will unquestionably be issued during the summer of 1897.

Adjoining as it does directly on to the Wonderful on the north and east, it ought to have the same veins and character of ore and in order to show what that is, it may not be amiss to here quote from the smelter returns received by the Wonderful from the first five carloads of ore shipped by them (since which time they have shipped many additional cars of like ore).

SMELTER RETURNS.

DATE.	TO WHOM SHIPPED.	TONS.	NET PER TON.	NET PER CAR.
1896				
July 28	Tacoma S. & R. CO.	18.197	\$ 87 07	\$1,302 95
August 4	" "	21.211	99 47	1,871 28
" 4	Puget Sound R. Co.	15.897	95 98	1,346 52
" 8	" "	16.165	99 30	1,420 66
" 10	" "	15.952	102 14	1,449 92

TRANSPORTATION.

The Canadian Pacific Railway track is within one-fourth of a mile of the Miller Creek Company's property; down hill. Easily reached by a gravity tram. Kaslo and Slocan Railway at Sandon, one and one-half miles distant. A good trail is now built to the property from the wagon road on Carpenter Creek, and can be easily and cheaply converted into a wagon road.

DEVELOPMENT.

There is about one hundred feet of work done where Miller Creek crosses the vein and a few prospect holes. Where Miller creek crosses the property it has made a deep gorge, and exposed the vein at the point described by Mr. Field; it is here the company propose doing the first work, and they will be enabled to drive both east and west on the vein and gain considerable depth from Miller Creek without sinking any shaft or requiring pumps or machinery, except an air compressor and drills which if supplied will enable the work to be done in one-half the time required by hand.

While the company does not claim to have a developed mine, they do believe they have a very valuable property and one which on proper development will take rank with the best of them. And as they own their property in fee, and are absolutely out of debt, and with the assurance that all money received from the sale of treasury stock will be honestly and judiciously expended in developing the property, they offer their shares to the investing public with the fullest confidence that they will be readily taken up by investors, and those who buy this stock now and hold it until the property can be developed, will undoubtedly find themselves shareholders in one of the big mines of the famous Slocan.

Following is a letter from Richard Shea, Esq., superintendent of the Rambler-Cariboo property, giving his opinion of the property of the Miller Creek Mining Company:

H. C. BELL, Esq., Sec'y Wonderful Group Mining Co.,
311-312 Hyde Block, Spokane, Wash.

RAMBLER MINE, MCGUIGAN SIDING, B.C.
February 24, 1897.

DEAR SIR: - Yours of February 12th at hand. You must excuse my delay in answering as I was away when it came. I beg to report as follows on the New Springfield, Sampson and Wonderful Fraction: - There are two (2) ledges running across the Springfield, namely, the Queen Bess and Palmetto which I sold the other day. My opinion of the property is that it is as good a prospect as there is in this country. Hoping to hear from you soon, I remain, yours respectfully,

RICHARD SHEA, Supt. Rambler-Cariboo.

A limited number of Treasury Shares are now offered at 7½c. per share.

Apply to **COULTHARD & CO., Mining Brokers, 28 VICTORIA STREET, TORONTO.**