

dip of the "lead." The former appear to me to be sure investments when large quantities of rock are being handled, but where, as in many districts in this Province, the surrounding country rock is exceedingly hard, and where practically small quantities of rock are being handled, I believe that the inclined shaft sunk on the dip of the vein, proving the portion of "lead" sunk through is the more advisable.

The consideration is, whether the amount saved in hoisting by application of cages against skips is sufficient to warrant the outlay necessary to sink a vertical shaft, which has, undoubtedly, to be cleared as dead work.

When several "leads" are known to exist in close proximity, where the intention is to crosscut and develop them all from one centre, and especially where these "leads" are practically uniform in quality, it would probably be advisable to sink a vertical shaft.

The more important consideration, that is the prospect of deep mining, will be dealt with at the conclusion of this paper, under Pay Streaks, their perils eney in depth.

I believe that everyone will agree with me when I say that systematic mining—the developments carried on by means of drifts about 100 ft apart, which are connected by winzes—is far ahead of the method—sinking several shafts and carrying on underhand stoping at the same time—which has been applied in many cases in this province. Assuming that the former system be adopted, the next consideration is, what method of stoping should be applied. This, I take it, is a matter in which the mine manager has to exercise his discretion and judgment.

I have seen some portions of ground in the Montagu district where, in my opinion, by applying overhand stoping one is likely to not only lose a portion of the quartz among the debris deposited on the scaffold, but lays himself open, in all probability, to losing gold, especially heavy gold.

This coveted metal is undoubtedly highly attractive in its appearance, and one gets so entranced by its sight, that he momentarily forgets who is the rightful owner.

Large quantities of rock can be handled more cheaply, by the application of the overhand system, as shown can be reared up with the slope, the intervening spaces being filled with debris.

I am a great believer in the application of the contract system in carrying on the development of the mine. By doing so, you employ the miners' brains, in addition to his manual labor. What interest can one expect the days pay man will take in his work or in its result? Manipulation of labor is a very important factor in mine management.

A great deal more attention might be paid to cross-cutting, particularly at depths where the pay streaks are known to be continuous in richness. The application of rock drilling machinery is essential for this work, as well as for the general development of a mine.

Pay Streaks.—Their persistency in depth. I look on this, as being really the most important of all considerations, relative to the future success of gold mining as an industry in this province.

When one looks around at the many gold districts, and sees a large number of mines, that were once successful, closed down, the first question that presents itself is: What is the reason why operations have been suspended? The usual local reply generally consisting of: Could not cope with the water, reckless management; had a barren streak for a few feet, and just before closing down, rich quartz was discovered right at the bottom of the deepest shaft; never should have stopped, &c.

It is, in fact, nearly impossible, according to local opinion, to find a mine that has been really closed down through barrenness. In nearly every country one hears the same, what should be termed, sentiment.

The next question, at what depth was the mine when operations were suspended, together with the reply, is something that requires consideration.

I have found, when making this enquiry, that the approximate depth of abandoned Nova Scotian mines is from 200 to 350 ft.

When one gets this information, he naturally concludes this must surely be the depth where the pay streak, discovered at surface, ceases to be continuous in richness. There is one argument which may be fairly raised against this conclusion, that is on account of the former primitive system of mining applied. The cost of pumping, hoisting, &c., was excessive, and, as depth was attained, the general working cost proportionally increased, until the streak, which paid from the point discovered until its present depth, would no longer pay to work.

At present, I am inclined to support the former conclusion, that is, that the pay streaks become practically barren at a comparatively shallow depth—from 200 to 400 feet, but hope that this paper will be the means of creating a discussion, which will enable the society's members engaged in gold mining, to place on record their views, together with experience on this all-important subject.

As the extent of mining machinery required for the working of our mines, depends very largely on this consideration, it is essential to know, as far as possible the facts of the case, therefore we, as a mining society, having the interest of the mining industry at heart, should openly discuss a matter of this kind, seeking to aid the industry by placing it on a sound and creditable basis.

The inference drawn at first sight appears to be decidedly derogatory to the gold mining industry.

Seeing that there are an innumerable quantity of unexplored quartz "leads" running parallel to those on which good pay streaks have been found, I am of the opinion that it would be more advisable to ask investors to place their capital for the exploiting of these "leads," rather than to work abandoned "leads" possessing a good record.

Some people may argue, that in every probability, there are other pay streaks which occur below those already worked, and, if the mines were developed to a depth of, say 600 to 800 ft., these streaks should be discovered. Assuming this to be a feasible theory, it would be a very difficult

matter to secure capital with simply this object in view, as the development of Nova Scotian mines below 300 feet, through a hard, dense quartzite, is an expensive business.

If the Government of the country take any interest in their Gold Mining Industry, and if those in charge of the department of Mines, by making the necessary inquiries, and gathering together the requisite information, arrive at the conclusion that the prospects of deep mining are favorable, would it not be putting it in a practical form, if they—the Government—were to offer a bonus as an encouragement or rather inducement, to any investor attempting this form of speculation?

I am informed that the Governments of Queensland and Victoria, on two or more occasions, voted sums of £1000 and upwards, to promote the principle of deep mining together with other branches of industry closely allied to the same.

While on the subject, I would like to take this opportunity of calling attention to the Mines inspection, as conducted by the representatives of the Department of Mines.

I have been engaged in mining in this Province for nearly a year, and have never been officially called on, by either the Inspector or Deputy Inspector, although, I believe, an inspection of the mine has recently been made by the Deputy Inspector.

I anxiously await the publication of Mines Report, 1893, when the work will probably be particularized in the Deputies' Annual Report.

Candidly, what good does the publication of small matters of this kind do? In fact, it surely assists in keeping capital out of the country; for what speculator would for one moment think of the importance of gold mining in Nova Scotia, after reading the extract from the official Mines Report, (1892), as published in THE CRITIC of April 14?

There is undoubtedly plenty of room for improvement in this direction. It appears to me that either the Government or its officials might plead—"We have done those things we ought not to have done, and we have left undone those things which we ought to have done."

I may state in conclusion, that many of the rich deposits of Tin oxide in Cornwall, were discovered at a great depth, and that districts, where this mineral is found practically near the surface, are looked on as shallow districts, where the chances of deep mining are not as favorable as in the former districts.

I make this statement, with a view of calling attention to the many large quartz "leads", existing in the province, which on account of their not showing gold at their out-crop, have been apparently passed by as worthless.

LAKE CATCHA.—John Anderson, the veteran prospector of the Lake Catcha district, it is reported has been milling very rich ore from a lead on his areas.

MOOSELANDS.—The Mooseland Gold Mining Company have been making regular returns, while doing a large amount of work through rather poor ground, in search of the rich pay streak that it was supposed lay under the river. This has now been reached and large returns may be looked for. The main shaft was sunk on a pay streak that was of moderate size, and this has continued to yield the gold so far won, while drifting has been carried through a considerable extent of barren ground to cut the big pay streak. The work has been well laid out to pay expenses while the poor ground was being cut through, and the whole operations reflect credit on the skillful and economic management of Mr. H. G. Stemshorne. Good dividends may now be looked for.

GOLD MINE ROBBER.—Little Johnny gold mine, situated about four miles from Leadville, Col., and of which Mr. John Champion is manager, was robbed in a most daring manner, by four masked robbers, on the morning of the 18th inst. The robbers first cut the telephone wires connecting the mine with Leadville, then called night watchman Warren to the door, and overpowered and bound him with the wire. One robber then remained guard over Warren, while the other three broke in the shaft house door and secured about 1800 lbs of rich gold mineral. They then made off, taking Warren with them before releasing him. The robber's booty is worth about \$10,000. Mr. Champion is well known in this city.—*Charlottetown Herald*.

ACADIA MINES.—The Acadia Mine owners are highly favored in having as underground manager, a man of the high calibre of Mr. James Maxwell, who is a very superior man. The mine, although it is a very gaseous one, has never had an explosion and has already paid good dividends. It is over 3950 feet down the slopes, in the course of which there are 9 levels.—*Exchange*.

THE TRANSVAAL.—The gold fields of the Transvaal Republic in South Africa, yielded over 136,000 ounces in August, which is the largest product yet recorded in any one month. In round figures a year's output at the same rate would be worth \$32,500,000, which is about equal to the annual production of gold in either the United States or Australia. In the countries last named, however, the gold yield is about stationary, whereas it is rapidly increasing, year by year, in South Africa. If the Transvaal mines produce \$30,000,000 in 1893, there will be \$40,000,000 worth of gold mined in 1894, in all probability. Where the top limit will be reached can hardly be guessed. Good judges say that hundreds of square miles of territory are under-aid with gold-bearing rock, and that the total yield of the region will not fall below \$1,500,000,000. South Africa alone is likely to add 25 per cent. to the whole quantity of gold in civilized countries within the next twenty years.

Hundreds of people write: "It is impossible to describe the good Hood's Sarsaparilla has done me." It will be of equal help to you.