The Sudbury Mining Journal

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MINING AS A BUSINESS.

No other legitimate industry can show such large and well-sustained profits during the past thirty years. This, too, in spite of the fact that mining, as a science, was then in its infancy, and experimental. To-day, mining, if intelligently, honestly and prudently conducted, will yield far greater profits with as little element of risk as farming, which, though regarded as permanently safe, is dependent upon seasons and markets. In all other industries, consideration must be had to market as well as to the volume of product, whereas in mining, the product is money itself.—*Extract from Pres. Gibbon's address before the Bankers' Convention, Saratoga.*

The Sudbury Mines.

It is only five years since mineral was first discovered in this district, by a young man named McConnell, while out looking for tie timber when the Canadian Pacific Railway was being constructed through here. He got lost in the woods one day, in the township of Snyder, a few miles west of where Sudbury now is, and camped over night at the foot of a red-looking bluff near Lady Macdonald Lake. He wondered what the peculiar color of the rocks meant, and broke off some specimens with the back of his axe, and put them in his pocket. Two weeks afterwards, in grading the road three miles west of here on the main line, a similar red hill was met with, and in making a small rock cut through one side of it, a lot of what was supposed to be copper ore was taken out and thrown on the road bed. These discoveries led to more or less prospecting in the district the following season, and several claims were taken up; but two years elapsed before any practical development was done. From the above circumstance the mines here were misnamed and are really nickel instead of copper mines. The ore is massive pyrrhotite, or magnetic iron pyrites, carrying from 2½ to 10 per cent of nickel, and considerable yellow sulphurets of copper, with traces of platinum and other rare metals. The beds have a high dip towards the north-west, and occur in somewhat lenticular ridges of coarse-grained diorite.

Canadian Copper Co.

The Canadian Copper Co., of Akron, Ohio, were the first in the field. They bought a number of fine properties some four years ago, and began soon after to open them up. They have since purchased the invervening lands from the Government, and now own about 15,000 acres in one block, connecting the most of their claims. Their principal mine is the Copper Cliff, which is located four miles southwest of Sudbury on the Algoma branch of the railway. It was worked as a quarry at first, in the face of the bluff, but mining is now confined to an inclined shaft, which has already been sunk in the bed to a depth of 500 feet. The ore is high grade, carrying from 4 to 7 per cent. of nickel and from 5 to 10 per cent. of copper.

The company work two other locations, the Evans mine, about two miles south-east of the Copper Cliff, the ore of which is still richer in nickel, and the Stobie mine, four miles north-east of Sudbury, or eight miles from the head mine. The ore from this mine, as far as yet taken out by open quarrying and two shallow adits in the side of the hill, does not carry as much nickel, but is valuable as a flux for the ore from the other two mines, which holds a good deal of silicious gangue.

The Smelting Process.

The reduction works of the company are at the Cliff mine. They have two smelters going night and day continuously, one of which has been in operation for over a year and the other about six months. The capacity of each is 125 tons of ore every 24 hours. The smelters are mug water-jacketed cupola furnaces, partly the invention of Dr. E. D. Peters, the able and energetic superintendent of the mines, who is one of the best authorities in America on the smelting of sulphide ores. By the old methods it would require a dozen furnaces to do the same amount of work. These improved smelters are made at Sherbrooke, Quebec, and only cost $2,500 laid down here.

The ore is first broken up in large Blake crushers and then roasted in great heaps in the open air to burn the sulphur out of it. Each heap is about 100 feet long, 35 feet wide and 6 feet high, and contains from 800 to 1,000 tons of ore, piled over a bed of dry pine wood two feet thick. The wood burns up in 24 hours, but ignites the whole mass, when the sulphur in the ore keeps up the combustion for two to three months. After being roasted in this way the ore goes to the smelters and is reduced to matte. Six tons of average ore make one ton of matte, which varies in richness from 15 per cent. of nickel and 25 per cent. of copper to 20 per cent. of nickel and 30 per cent. of copper. The matte is shipped to England, France, Germany and the United States, and is worth from $100 to $150 a ton on the cars here.

The company have their own railway engine and trains to draw the ore from the mines to the furnaces. They employ about 400 men altogether, making, with the women and children, a population of nearly 1,000 in the growing villages around the three mines. The cost of running the mines and smelters is only $15,000 a month, while the matte produced is worth $90,000 a month; which makes it, in proportion to the capital invested, the best paying mining business in America to-day. They have unlimited capital, and will no doubt become one of the greatest mining companies in the world in a very few years.

The Dominion Mineral Co.

This new company began operations last summer on their fine nickel property six miles to the north-east of Sudbury. They are putting up large works and will be ready to begin smelting in the spring. The Stobie branch of the railway has been extended to the mine. They have also two other locations in the township of Denison which they intend to work. They employ about 200 hands already and will soon need as many more. For the time they have been at it they have accomplished a wonderful amount of work, doing everything in a systematic, intelligent effective way, which augurs well for the success of the company. The ore in their mine is high grade, carrying from 4 to 10 per cent. of nickel, and they have apparently any quantity of it. The company is composed of Canadian, English and American capitalists with ample means. Mr. George Attwood, F.G.S., the manager of the works, has a world-wide reputation as a mining engineer, and judging by the ability and energy he has shown here he fully deserves it. John A. Ferguson has charge of the company's office in town, which is no sinecure.

The Murray Mine.

This is another new mine, lying some four miles west of Sudbury on the main line of the Canadian Pacific Railway. The work of testing the claim was commenced last June, but it was towards fall before the final transfer of the property was completed. It has been purchased by H. H. Vivian & Co., one of the great smelting firms of Swansea, Wales, who intend to work it on an extensive scale. Mr. A. Merry, jr., who is a thorough expert in the mining and smelting of nickel ores, though only a young man yet, is manager of the mine. They are building fine works, and expect to begin smelting next summer. The ore in this mine is of good average richness all through, and the property is likely to turn out one of the most valuable in the district.

We have thus three strong companies of different nationalities in the field, one American, one Canadian and one English, and their combined experience and push should ensure the rapid development of the mines here. It will be interesting to see which of them makes the biggest success of it.

The Vermillion Mine.

This well-known mine is in the township of Denison, 22 miles from Sudbury, on the Algoma branch of the road. Gold was first discovered on it two years ago last fall by a prospector named Henry Ranger. The following winter the excitement over it spread far and near, and all the claims for miles around it were taken up on speculation, with two feet of snow on the ground. It is beyond question an extraordinary property in many ways. In a shaft put down about 45 feet on a small branch or offshoot of the main lode, the finest samples of quartz gold ever seen anywhere were taken out by the bucket-full. Then some 40 rods to the south of this vein a remarkable deposit of ore crops out on the side of a high ridge, carrying gold, silver, nickel, copper and platinum, with traces of cassiterite or tin ore. The copper in it is mostly bornite of a deep blue color. For a carload of this ore shipped to Chicago last summer returns of $28 a ton were made. The silver in it averaged $11.50 a ton, which alone would pay well for working the mine. The platinum goes about 4 oz. to the ton, and the nickel from 25 to 40 per cent., or five times the yield of the Sudbury ores. Native gold may also be seen on the surface and in one of the shafts on the hill.

Why then in view of the undoubted value of the property has it not been developed right? Mainly because there is unfortunately not a single mining man in the whole company owning it, and the work done on it so far only indicates either a "freeze out" game or a fearful amount of "capricious stupidity," as Carlyle would say. The way the ancient mound builders worked the copper mines of Lake Superior was the very science of mining as compared with it.

The Simpson Mine.

On the third concession of the township of Graham, a mile west of the Vermillion river, Col. Simpson, of Evansville, Illinois, has been working a platinum mine for the past two seasons. He has sunk a test shaft 35 feet in one place. The lode is only 13 inches wide on the surface, but expands to 5 feet at the bottom of the shaft. The vein rock is hard black quartzite. In four months last summer he is said to have taken out, with only two men and himself, nearly 1,000 ounces of platinum, worth $4 an oz., and $500 in gold and silver, grinding the ore in a primitive Mexican eraster worked by a horse. He intends to put in a ten stamp mill this spring and work the mine on a large scale. He is a practical miner and goes about his work in the right way. His property comprises 900 acres.

Sudbury range for nearly fifty miles is characterized by immense hills, ridges, beds and veins of high-grade nickel, copper, gold, silver and other ores, all over it. We have seven mines being worked on it already, five of them on a great scale, and several more to be started this year. And, however the other minerals in the district may turn out, the nickel mines of the world are going to be here before many years are over. This fact is patent to everybody who knows anything about the matter.

The Demand for Nickel.

Hitherto the nickel produced by the few mines of this mineral in the world has been so limited that it was too scarce and dear for general purposes. Thirty years ago nickel was worth $1.20 a pound, now it is down to half this price, and when our mines here are fully developed large profits can be made at 25c. a pound for it. Nickel is a most useful mineral. Late experiments have shown that it is specially adapted for toughening steel and iron, and all the nations of Europe will therefore need vast quantities of it for making gun metal. It will also be used now in shipbuilding, the manufacture of railway car springs, bridge iron, electric machines, kitchen utensils and a thousand other things. Mr. James Riley, of Glasgow, who is one of the leading metallurgists of Great Britain, has been experimenting for some time on the alloys of nickel and steel, with the most astonishing results. He has discovered that about five per cent. of nickel increases the breaking strain of steel over thirty per cent. and almost doubles its elastic quality. Wire can be made of this nickel-steel so fine as to be suitable even for sewing thread. Then this new metal is practically non-corrodible, and does not tarnish or rust like ordinary steel. It also takes a finer polish, has a brighter look and lasts a great deal longer. It is quite probable that on account of this important discovery the great works of the Steel Company of Scotland will soon be adapted solely to the production of nickel and steel alloys. *The Mining Journal* of London, under date of November 23rd last, says: "A visit will very probably be made next spring to the Sudbury Copper and Nickel Mines of Canada by Mr. Krupp, a nephew of the great gun-maker of Essen. The value of these mines is very great, especially in view of the fact that apart from them not more than 1,200 or 1,400 tons of nickel are produced in the world annually. If the owners of the Sudbury property extend their works, as they at present intend to do, it is estimated that they will be producing ten times as much nickel as all the other mines of the world. The metal is now especially valuable to manufacturers of cannon and armor plates, as a discovery recently made by M. Marbeau, of the properties of an alloy of nickel with steel, is attracting much attention among experts. Experiments are now in progress, which, if successful, may revolutionize the whole art of gun-making. A company has already been started in France with the patentee, M. Marbeau, at its head, for the manufacture of ferro-nickel, and the importance of the discovery can hardly be overestimated. Several English firms have now orders for thousands of tons of ferro-nickel for plating steamships and the like, but are unable to obtain sufficient supplies of nickel for its manufacture."

Two things are quite evident from all this: first, that we cannot have too much nickel any more than we can have too much silver or gold, and secondly, that the Sudbury district is going to be one of the greatest mining centres of the world before long.

A Great Mineral Range.

The whole belt of Huronian rocks, extending from Lake Temiscaming to Batchewana Bay, in the shape of a mammoth boot, is evidently rich throughout in minerals of various kinds. But as far as explored, the great Sudbury range, in the middle of the belt, is beyond comparison the richest part of it. This extraordinary range is several miles wide and over fifty miles long. It begins some five miles north-east of Sudbury and runs in a south-west direction, culminating in regular mountains of mineral in the townships of Denison, Graham and Drury. Native gold has been found on it in seven different places, and gold in mundic, galena and other sulphides all over it. But the predominant minerals on it are, apparently, nickel and copper, occurring as explained elsewhere, and when the vast deposits of these ores on the range are worked the principal nickel mines of the globe are going to be here.

Then no district could be more advantageously situated for economic mining. The dry standing pine, with which the range is thickly covered, is the very best fuel for roasting the ore, and it can be delivered at the mines for $1 to $1.50 a cord. Coke for smelting was laid down at the furnaces last fall, by boat to Algoma and thence by rail, for $7.20 a ton, and one ton of coke reduces nine tons of ore, which is at the low rate of 80c. a ton. As for water there is hardly a claim on the whole range but has either a creek, river or lake on or near it, and clear running springs flow out of almost every hill on it. The Algoma branch of the railway runs through the south side of the range from end to end, affording cheap transportation facilities to every part of it, and everybody knows what a great advantage this is. In some western mining regions it costs more to pack the machinery and supplies in than would pay for and work a good mine here.

Our Mining Laws.

The mining laws of Ontario are the worst in the world. They are simply regulations for the selling of mineral lands. The natural result is that thousands of mining claims have been locked up in the hands of speculators who are doing nothing to develop them, and will not sell except at such prices as practical men will not pay. We need a new Mining Act, framed with a view, not of collecting revenue for the Government, but of developing the mineral resources of the country. In order to do this, the prospector, who is the pioneer of the mining business the world over, should be given a better show here than he has under the present mining law. For one thing, he should be allowed to hold his claim for a year by paying a registration fee of $5, as in other mining regions, on the condition of expending not less than $250 in opening it up, which he could do himself in three months, estimating his labor at $2.50 a day. This would enable him to test the property before having to pay for it. On the other hand, such development work is the very thing the country requires in order to find out what mineral there is in it. The Government makes the settler improve his land before he gets his patent for it, and the same rule should be applied in the prospector's case.

When every location taken up ought to be staked out at the time by placing a wooden post at each of its four corners, with the name of the claimant and the date on each post, for the information of other prospectors when they come to it. The standard location might be fixed at one hundred and sixty acres—following the survey lines—with the privilege of taking eighty acres, or half a claim. There should be no objection to the same party taking up and purchasing many locations as he likes in this way, provided the required improvements are made on each claim. The main thing is to have as much development work as possible done, and the more the better for the country. It would do a great deal of good, too, if a clause could be put in the new Act to the effect that if the speculative owners of mining claims, already patented, should do nothing to open them up for three years after the passing of the Act, then any prospector or other party discovering mineral on any of them to be entitled to a half interest in the property, on expending $250, as above, on it. There would be no injustice in such a law, as in buying a mining claim there is always an implied contract to work it, and, besides, the most of owners should be glad to do this.

It is also necessary that the local agent should be in a position to do everything connected with the registration and purchase of all mining claims within his district, and every location taken up ought to be marked on a map in the office, so that prospectors may see before starting out what lands are not entered for and therefore open to explore on. As it is now, all such information has to be obtained from the head office in Toronto, which causes endless trouble and uncertainty, as well as great loss of valuable time where the season is so short as here; and when out exploring no one can tell patented claims from Government lands, as under the present law the locations sold are not staked out. There should be four local offices so equipped in Algoma, one at Sudbury, one at Sault Ste. Marie, one at Port Arthur and one at Rat Portage.

An inspector of mines ought to be appointed for each of the districts where mining operations are going on to look after the protection of life in the mines being worked, and to examine the testing work on all claims taken up, etc. A mining engineer would be able to estimate such work at its right value, and it would save the unnecessary expense of having to furnish proof by affidavits as in the old way. Then, with regard to the Sudbury district, about a dozen more new townships on each side of the Algoma branch of the Canadian Pacific Railway and also along the main line to the west ought to be surveyed this season, in sections and quarter sections, instead of the old method of long, awkward lots.

Finally, a better map of Algoma is much needed, to be given away gratis, as in all other land offices in America. The poor rag now issued by the Department, and for which $1 to $2 is charged, is very little use and away behind the age. The Government can well afford to be more liberal in this matter, as they must have taken over $100,000 out of the Sudbury district alone in the past three years, for rocky mining lands that could never have been sold for any other purpose.

The Gold Mines.

Nickel is king in the Sudbury district now, but evidently it will not be long till gold, too, will come to the front here. By bungling or scheming the development of the great Vermillion mine has been kept back, but it will likely be opened right this coming season. Old California miners who have examined the property, say there is any amount of gold on it, and that they would like to have just one acre of it to work. Don't they wish they may get it. The company want $3,000,000 for the mine. Free gold has also been found in several other places on the range, assaying from a trace up to $4,230 to the ton. Some of the Vermillion samples in large blocks are almost one-third gold. There is hardly a quartz vein of any size in the whole district but carries more or less gold, and especially in the townships of Denison and Graham, where it seems to concentrate, and, unless all indications fail, rich mines of it will undoubtedly be discovered there yet. The Madoc gold mines were found in the old Laurentian rocks, but the mineral range here is another formation entirely, and the gold veins occur in the black slates and diorites of the Huronian series. If they had the same showing for gold on the surface in any of the Western States there would not be standing room for all the men that would be after it.

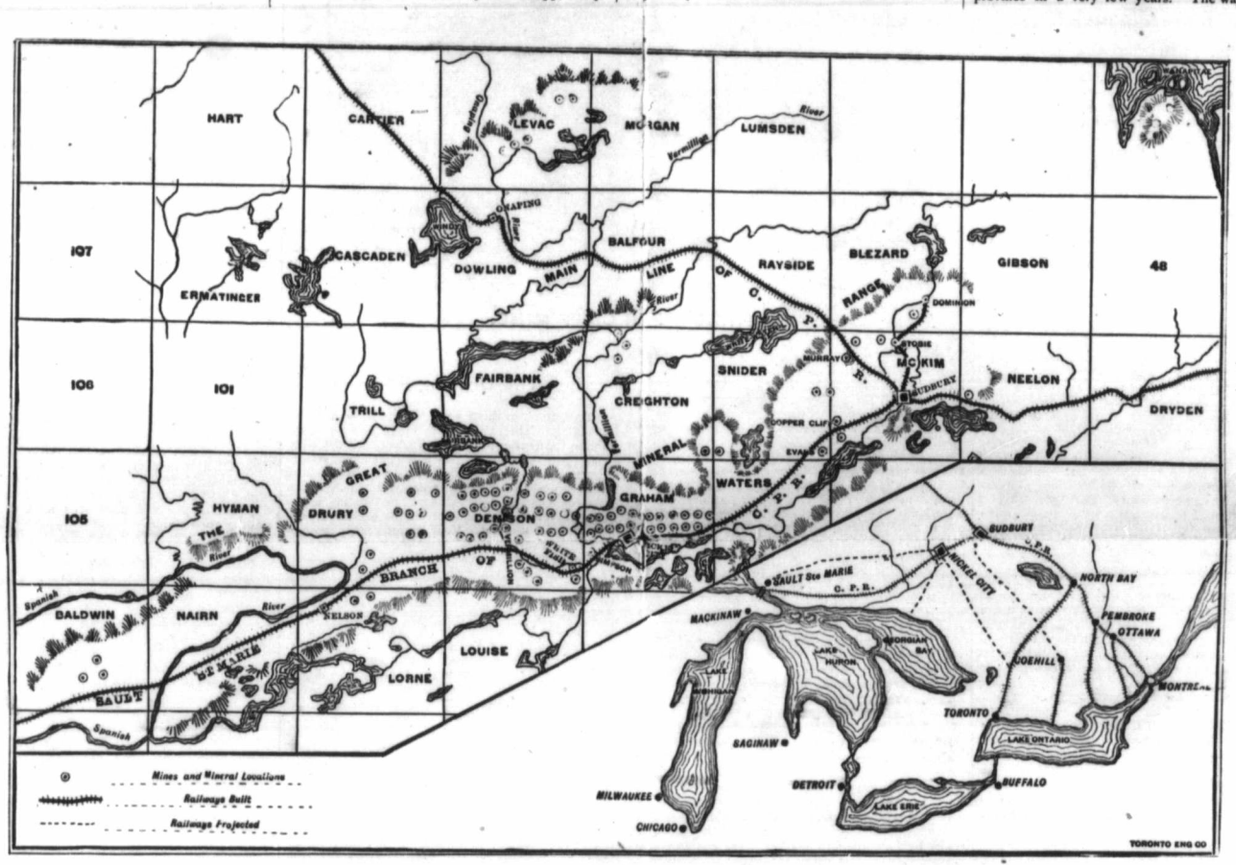
Looking to Hardy.

The man who sighed for a lodge in a vast wilderness could be accommodated in Algoma. It is an immense territory, and no other province in the Dominion has such a grand heritage as Ontario has in this valuable district. To the Hon. Oliver Mowat the people of Ontario are mainly indebted for acquiring the western part of it for the province, and whoever devises the best scheme or policy for developing its great mineral resources will do fully as much for his country and be a statesman worthy of the name. We look to the Hon. A. S. Hardy, the new Minister of Crown Lands, as the man. He was here last week on a hurried trip, and made an excellent impression on everyone interested in mining in this section who had the pleasure of meeting him. His tact, ability, energy and courage are well known, and we shall be more than disappointed if he does not take a special interest in the mining affairs of the district. We need a better mining Act to encourage prospecting and give the poor man a chance. As it is now the speculator and capitalist have everything their own way. In this part of the district we also need another railway, as the C.P.R. monopoly is worse in Algoma than it ever was in Manitoba, and the wonderful nickel and copper mines around here—which are unequalled in the world—will never be worked right nor to advantage, till we have better transportation facilities. A line from Coe Hill on the Canada Central, or "Ritchie's Railway," as it is called, would run through a belt of country rich in agricultural lands, in timber and in minerals, and serve as a colonization road at the same time. The distance is only about 200 miles, and a bonus of $3,200 a mile, as has been given to other lines, would not be much over $500,000, while it would add untold millions to the wealth of the province in a very few years. The wages already paid in the mines here exceed the amount of the bonus asked for in one year, and mining has hardly commenced here yet. Besides, if the mines of Algoma were worked on an extensive scale it would give employment to thousands of our young men and keep them in the country. The mines of North Michigan are full of Canadians, mostly from Ontario, who would rather stay at home if they had the same opportunities for getting on. This would be the true national policy. The district of Algoma is capable of maintaining a population of at least one million, but there are only 24,000 in it yet, or 2,000 less than the Canadians in one county in North Michigan around the American Soo! Why? Simply because over there the settler or prospector gets all the timber and minerals on the land when he takes it up, but here under our land laws he only gets a good chance to starve. No wonder then that all along the north shore one meets so many pronounced annexationists among all classes. The Dominion Government is largely responsible for the exodus, but the Provincial Governments have a duty in the matter too, as they own the land, timber and minerals, and should adopt a more liberal policy so as to give our young men a start in life as the American Homestead Act does.—Cor. *London Advertiser.*

Torrens Titles.

The Torrens system of land titles is no doubt the best in the world in every way, but the expense and trouble connected with it in this part of Algoma makes it unpopular here. In the first place, there are very few lawyers in the district, and the forms are drawn up in such a technical way that it is rather difficult for anyone else to fill them out right. And the forms of affidavits on them are even worse. The witness, for instance, must swear that he is well acquainted with the parties mentioned in the transfer, that they are the owners of the property being conveyed, and, if married, that the woman signing away her dower is the vendor's wife; also, that they are each of "sound mind." This last clause has probably been put in because it is somewhat doubtful if any man in his right senses would go prospecting for mining claims here under the present one-sided mining laws. The witness, too, must in turn have some magistrate or government official certify that he is of "good repute," if the Master of Titles does not know him, which is often the case. It may have been to encourage matrimony that if a man is single his name has to be written in the affidavit no less than six times, but if married, only three times.

Then as to the expense; the usual charge for making out a deed in this new district is $5, and the registration fees from $2.50 to $5, costing more, strangely enough, when a part of the property is sold than if the whole of it is! The affidavits have to be sworn to before a commissioner (a J. P. won't do), and as they are few and far between here, long and expensive trips have to be made to execute transfers, and women, with young children to attend to, have sometimes to leave home for several days. Except near a few points, where there are lawyers or land agents, the expense of making a transfer under the Torrens system here, in the case of a married man, is from $25 to $40, counting the time lost. We should have more commissioners in the district for taking affidavits, or simpler forms of transfers, or both.



Map of Sudbury District Showing Mineral Range.

Projected Companies.

Several more new companies are being organized to commence operations in the district this season. The most of them had agents out last year looking up desirable claims. They will all locate in the townships of Denison, Graham and Drury, where the greatest beds of ore on the whole range occur, and which would have been worked before now only that they are a few miles back from the railway, though quite accessible by the construction of a short branch line.

No other new mining district of the same character has ever made such rapid and substantial progress in so short a time at the start, and there is every indication that far greater development will be made in the next five years.

On a Permanent Basis.

Canada is full of croakers who always predict the failure of any new enterprise. We had lots of them even in this district a few years ago. They were positive that mining could never be made to pay here, and every new-comer was advised not to go into it. Of course, with mountains of the finest nickel, copper and gold ores before their eyes, they could not deny that there was any amount of mineral here, but they said there was too much sulphur in it to be of any value. Somebody had told them so. When Dr. Peters demonstrated that the sulphur could be roasted out of the ore for nineteen cents a ton, these croakers got on to another trail. They were afraid the mines here were only surface deposits and would soon give out. The ore was too rich for there to be much of it. But again when the Copper Cliff shaft was sunk 500 feet, the Evans shaft 150 feet, and the Stobie mine worked as an open quarry, all in solid massive beds of ore, this new theory was exploded. The average croaker, however, dies hard—it's the nature of the beast. The next and last bugbear they caught on was that the mines here would soon produce too much nickel and there would be no market for it. But when the agent of a large German metal house offered last summer to take the whole out-put of the smelters at a good price for three years, and plank down $100,000 as a forfeit, the poor croakers had no more ground left to stand on. They disappeared mysteriously and you cannot find a single one of them here to-day. Like old Carlyle's bankrupt neighbors, "they gaed out o' sicht."

Then a good many outsiders have been in the habit of shaking their heads wisely and expressing grave doubts as to the mineral wealth of Algoma. They have heard of the failure of Silver Islet and Bruce Mines after something over $3,000,000 had been taken out of each, and without reflecting on the various ways in which nature has stored her vast treasures in the earth, they jump at the absurd conclusion that all the other mines in the whole district are likely to prove the same! But, unlike Bruce Mines and Silver Islet, mining here is on a different and far more permanent basis. At both Silver Islet and Bruce Mines there was only a single mine found and worked in each case, and the one was on a small rock under water out in the lake, and therefore difficult and expensive to work, and the other mere shallow deposits of low-grade copper ore, while the

Honor to whom Honor is Due.

The fathers of mining in the Sudbury district are Mr. S. J. Ritchie of Akron, Ohio, and Dr. E. D. Peters, of Boston, Mass. The former, who is manager of the Canada Central Railway, organized the first company to buy claims and begin mining operations here; and the latter started the first smelter in the district, for the same company, and showed that the ore could be treated successfully here. Mr. Francis L. Sperry, the efficient chemist of the company, has also distinguished himself in the same way, as he was the first to discover tin ore here, in the screenings of the Vermillion Gold Mine. We have erected costly monuments in Canada to men who have done far less for the country.

A PROSPECTOR'S LIFE.

DESCRIPTION OF A TRIP ON THE SPANISH RIVER—CANOE ISLAND—HOW TO MAKE A CAMP BED—A TERRIBLE NIGHT—RUNNING FOR LIFE—AN EXTRAORDINARY MINERAL RANGE—WHY MINING IN CANADA IS KEPT BACK.

One fine evening last summer two middle-aged men, tall, sun-burnt, and looking as if they had both been used to roughing it, met by appointment at a small way-station on the Algoma branch of the Canadian Pacific Railway near the mouth of the Spanish River. The one was a geologist from the American Sault, and the other a prospector from the Sudbury district. They carried heavy packs, consisting of provisions and a camping outfit, and started at once for the shore, a mile or so away, where they hired a row-boat from an old Indian and paddled out to one of the picturesque islands at the mouth of the river to camp for the night. It is called locally Canoe Island, as the Indians on the neighboring reserve make canoes on it in summer, being comparatively free from mosquitoes and black flies. It is one of the prettiest spots on the north shore.

CAMP BILL OF FARE.

Our two friends pitched their moving tent in a beautiful pine grove close to the pebbly beach, and began to cook their evening meal on a blazing fire of drift wood. In a few minutes they sat down on the grass, with a newspaper for a table cloth, to the following bill of fare:

Brown bread and ham.
Buttered toast, and canned fruit.
Doughnuts and cheese.
Tea with sugar—a pot-full.

The average cost of such a meal in camp was only 5½ cents by exact calculation, but there was no waste by servants, no rent or fuel to pay for, and they were both old explorers who knew what to buy and how to buy it. After supper they prepared a camp bed, which can only be made right in one way, by covering the floor of the tent a foot thick with small pine or spruce limbs, placed one over another like feathers on a bird, at an angle of forty-five degrees, beginning at the head of the bed. It is an hour's work, but well worth the trouble. No mattress is as soft and springy, and the fresh aroma of the brush induces sleep. One double blanket under and two over will be enough in the summer season.

TELLING STORIES.

The bed being completed to their satisfaction, they filled their pipes, and stretching themselves on top of it, they whiled away the evening hours in relating various reminiscences of their past life. The geologist, among other things, told the following story: "When I was exploring in Mexico, some twenty years ago, two native prospectors found a very rich gold mine in one of the mountain gulches. They came into town every few weeks with bags of nuggets and dust to have a great blow out, but always left at night so that no one could follow them. At last the priest of the parish, who wished to get a finger in the pie, threatened to excommunicate them if they would not tell him where it was. Then they consented to show him the place. The three set out, at night as before, and mounted on pack mules—which is the usual mode of prospecting there, and is more fun as compared with the same work in Canada. But before they reached the mine they left the mules, and blindfolding the priest, they walked the rest of the way by a circuitous route. After showing him the location, they blind-folded him again and started back. They soon noticed, however, that every few steps my lad would put his hand in his grip-sack and drop a large red bead to mark the trail. They said nothing, but picked up the beads as fast as he dropped them, and to his great surprise and indignation, handed them all back to him when they reached the mules."

It was now the prospector's turn, and taking the pipe out of his mouth, he said: "We had something like that attempted in our camp near Sudbury this spring. A tony professor was exploring out there for some Toronto parties, and as he had a handle to his name, and even talked of running for Parliament, we kind of looked up to him, and told him, on returning to camp at night, about any finds we had made. But imagine our astonishment when we discovered that he was trying to jump one of our best claims. We gave him short notice to leave, and in less than two hours he was seen walking down the railway track, a sadder and, it is to be hoped, a wiser man. He always comes up that way after night since then."

It was now ten o'clock, and the geologist suddenly jumped up and, poking the fire, made a generous tin of hot Scotch toddy. Then, taking off their shoes and coats—using the latter for pillows—they turned into their comfortable bed and slept almost as sound as the rocks around them till morning.

THE OTHER SIDE.

But there is another and far less pleasant side to a prospector's life. Next day, after a hasty breakfast, they rowed back to the mainland, and began to explore the range, climbing over high rocky bluffs and picking their way through deep intervening gulches and swamps, covered with tangled slash and second growth timber; each carrying about fifty pounds on his back, and the hot sun pouring down upon them out of a clear June sky. At noon they had to be content with a dry lunch, no water fit to drink being obtainable. They made fourteen miles the first day, or a mile an hour, which is a good average when prospecting in such a rough country. The second night they camped in the woods beside a running stream, tired and foot-sore. They went to bed early, but towards midnight a fire that had been burning fitfully all day in a pine bluff close by, suddenly blazed up with a rising wind. A forest fire at night is a grand sight, but not so interesting when dangerously near your tent. They had scarcely time to pick up their traps and put for a bare rock cliff half a mile off. But they could not erect the tent on it for want of fastening ground, and very soon a dreadful thunderstorm broke out and the rain came down in torrents, soaking their provisions and bedding, and wetting them to the skin. In the midst of the storm they heard some one, as if in distress, shouting on the opposite ridge and firing a gun. They answered back, and gradually the voice came nearer till a man and a dog appeared at the foot of the hill. The poor fellow had been sent by a mining camp up the river to the railway station for supplies, but had lost his way, and seeing the fire thought there might be somebody around it.

A GREAT MINERAL RANGE.

The second and third days were uneventful, but the fourth day they struck the west end of the great mineral range that crosses the townships of Denison, Graham and Drury. There is nothing like it in the known world. For twelve to fifteen miles it is a constant succession of tremendous hills and ridges of the finest nickel and copper ores, with collateral deposits of gold, silver, platinum and other valuable minerals. On one location alone there is at least a million tons of ore, worth $25 a ton, in sight above the surface. But, owing to our defective mining laws, from one end of the range to the other not the sound of a hammer was to be heard, except on a single claim, where four poor prospectors were sinking a test shaft. It is all owned by outside speculators, who are doing nothing to develop it.

When our two friends arrived at Sudbury on the sixth day, looking as if they had been returning from the Thirty Years' war, the geologist was enraged at seeing so much of our best mineral lands practically locked up, to the great injury of the country; but the prospector only remarked in his quiet way, as he threw down his pack, "Now I know why the United States go ahead in mining as in everything else, and Canada is kept back; it is all in the Government." And he was right.