

UTILIZING SOLAR ENERGY.

With solar radiation is the great fountain of terrestrial energy. Together easy to utilize direct total amount of radiant energy by the earth may be roughly at the equivalent of no less than 60 horse power per acre, more than enough to satisfy requirements of industry. Ericsson was the first engineer to seriously as a practical problem of utilizing this enormous with his customary dogged persistence did not rest until he had a solar engine that would do work. The result he attained production of one horse power per square foot of exposed collector surface—a figure that has been reached by other investigators which may, therefore, be taken as a basis of reckoning. The method used by Ericsson, and by those who have followed him, was to concentrate the solar rays upon the boiler by means of a large condenser, thus compelling the sun to do the fuel and serve as a stoker. The process worked well, both with the inventor's great hot air engine and with ordinary steam engine. The most practical type of such apparatus erected and in service in California consists primarily of a mirror forming the frustum of a hollow cone, with its base turned to the sun. The cone is lined with aluminized glass, perhaps two feet long or eight inches wide, set in a metal framework by means of bolts and washers. The frame is supported between two skeleton piers in a position capable of being moved in any direction along the arcs shown in the drawing a little above the mirror, so as to follow the seasonal changes in the altitude. This adjustment is readjusted by hand every few days as the sun's position changes.

The quick transformation in a few months of a prospect into one of the big mines of the Boundary country has begun to attract a good deal of attention in mining circles and the Miner presents a reliable statement of the salient facts for the benefit of its readers. The property in question is the Oro Denoro at Denoro township on the C. P. R. Phoenix branch line and being two miles from Eholt and three miles in a direct line from the famous Phoenix copper-gold camp. The Oro Denoro was located eight years ago by William Corbett, who later obtained a concession. Mr. Corbett dug a great many prospect pits and trenches showing ore over acres of the claim so that it was often spoken of as a mountain of ore and has always been counted on to make a mine. A thousand feet of tunnel and shaft work had been done when operations ceased three and a-half years ago. In January last Smith Curtis was instrumental in organizing the Denoro Mines, Limited, and became managing director. This company acquired the Oro Denoro and in the middle of April last, six men under the superintendence of R. H. Anderson (now superintendent of the Le Roi mine at Rossland, B. C.) began development work. The previous underground work has not yet been utilized but it can later on be made available. Hence the recent work done is as if the Oro Denoro were largely an undeveloped prospect. Three ledges that were known to intersect the C. P. R. line, which crosses the property were attacked and stripped of earth and rock capping with a view to shipping by quarrying the ore. In a few weeks tons of thousands of tons of pay ore were exposed. It is safe to say that after \$1,000 had been spent the property was able to take care of itself, one of the rare cases where a large low grade property would pay from the grass roots. The values are in order of value, copper, gold and a very little silver. The status of the property after ten weeks of development will be best understood by quoting Superintendent Anderson's report to the directors and a reference to the photo-engravings on this page.

REPORT. To the Directors of Denoro Mines, Limited: Work under my superintendence was begun on the Oro Denoro mineral claim in the middle of April, 1903, and has proceeded continuously since upon three large ore bodies known as the Magnetic Iron Vein, No. 1 Tunnel and No. 2 Tunnel Vein.

MINING INVESTMENTS

More money is being made at present than at any time in past history by investments in stocks of the better class. We can furnish all western stocks at the lowest price obtainable for cash or monthly payments. We also have valuable mining properties for sale.

L. Whitney & Co.

Thomas S. Gilmour, ACCOUNTANT,

Agent and Stock Broker. Member Rossland Stock Exchange

Shares Bought and Sold Strictly on Commission.

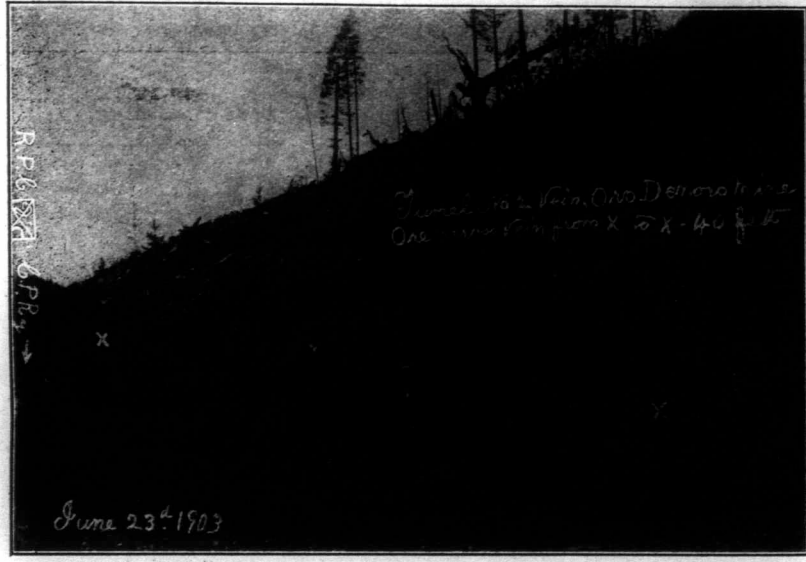
Special Attention to Interests of Clients living out of City.

Address "WHITEHALL" Rossland, B. C. Codes Bedford McNeill, Clough.

Office Building, Rossland, B. C.

THE ROSSLAND MINER.

THE ORO DENORO MINE.



NO. 2 VEIN, ORO DENORO MINE—ORE ACROSS VEIN FROM X TO X 40 FEET.

The quick transformation in a few months of a prospect into one of the big mines of the Boundary country has begun to attract a good deal of attention in mining circles and the Miner presents a reliable statement of the salient facts for the benefit of its readers.

The property in question is the Oro Denoro at Denoro township on the C. P. R. Phoenix branch line and being two miles from Eholt and three miles in a direct line from the famous Phoenix copper-gold camp. The Oro Denoro was located eight years ago by William Corbett, who later obtained a concession. Mr. Corbett dug a great many prospect pits and trenches showing ore over acres of the claim so that it was often spoken of as a mountain of ore and has always been counted on to make a mine.

In January last Smith Curtis was instrumental in organizing the Denoro Mines, Limited, and became managing director. This company acquired the Oro Denoro and in the middle of April last, six men under the superintendence of R. H. Anderson (now superintendent of the Le Roi mine at Rossland, B. C.) began development work. The previous underground work has not yet been utilized but it can later on be made available. Hence the recent work done is as if the Oro Denoro were largely an undeveloped prospect.

REPORT. To the Directors of Denoro Mines, Limited: Work under my superintendence was begun on the Oro Denoro mineral claim in the middle of April, 1903, and has proceeded continuously since upon three large ore bodies known as the Magnetic Iron Vein, No. 1 Tunnel and No. 2 Tunnel Vein.

MAGNETIC IRON VEIN. Starting at the railway track this vein has been stripped for a width of 60 feet, with ore still dipping to the north under an altered limestone capping giving promise of a still greater width. In blasting across this vein for railway siding a face of twelve feet in height has been made. The ground rises rapidly away from the track and the stripping has been carried upward and has proven the continuity of the ore body. A trench across the vein a considerable distance above shows that the ore body maintains its width and that a large tonnage above the railway track is assured. Assays taken several times across the vein as the work has proceeded convince me that practically all the ore disclosed is profitable shipping ore.

NO. 1 TUNNEL VEIN. This ore body has been stripped on the upper side of the railway track,

and so far a width of 70 feet of shipping ore has been shown up. The vein with further development may show a greater width. The ore body has been traced and partly stripped up the hill from the track 75 feet, and is being still continued. It is shown on the surface below the track for about 50 feet, when it disappears under the soil.

This is an excellent showing and promises large tonnage, the assays showing pay ore all across the vein. A railway siding 270 feet long has been graded in front of this ore body and the nearby ore body of No. 2 tunnel, affording plenty of room for shipping on a good scale.

NO. 2 TUNNEL VEIN. This vein has been faced up and some stripping done and shows 40 feet of ore in width. Some stripping has been done showing the ore body extending up the hill, but how far is not yet known. A considerable portion of the ore is of shipping quality, but will require some sorting. The railway grade for siding in front of this and the previous vein is now ready for tracklaying.

GENERAL REMARKS. It is expected that railway sidings will be put in immediately by the C. P. R., as already arranged. Shipments can then begin, but will not exceed 50 tons per day until the installation of your seven-drill compressor plant, which it is hoped will be ready for work upon 1st September next, when shipments can be quickly increased to 200 tons and upwards per day. The proposed compressor plant will be capable of breaking down 350 to 400 tons of ore per 24 hours, as the mining will really be quarrying and the cost will be correspondingly low.

I feel quite safe in saying that with ore values persisting the ore bodies so far stripped will yield ONE HUNDRED THOUSAND TONS of merchantable ore and that I have every confidence of the work showing more and more tonnage as it proceeds. This tonnage is not, however, blocked out—"in sight," in the technical sense. The ore shown justifies the compressor plant and your pushing development on a larger scale than heretofore.

Denoro, B. C., 23rd June, 1903. R. H. ANDERSON.

The directors had Mr. A. I. Goodell, superintendent of mines and smelters for the Montreal and Boston Copper Co., also examine the property and he endorsed Mr. Anderson's report as follows:

"I have been over the ground referred to, made some assays and analyses and am satisfied the above report is correct. The ore is a desirable smelting ore."

ALBERT I. GOODELL. Supt. Montreal and Boston Copper Co., Ltd.

Subsequently a contract was made with the Boundary Falls smelter which is claimed to be the most favorable rate ever given to any mine in the province, the rate being on a sliding scale downward, according to the excess of iron, and on the last ten shipments for which returns have been received, the smelter rate was less than sixteen cents per ton. The ore is also rich in lime so that it is not only self-fluxing but is capable of fluxing a large proportion of silicious ore.

The excellence of the Oro Denoro ore will be apparent when compared with the self-fluxing ore of the Granby company at Phoenix, the actual net cost of smelting which that company states to be \$1.35 per ton. As the smelter is doubtless making a good profit on its contract for the Oro Denoro ore by using it to flux other ores for which it would otherwise at considerable cost have to buy iron and lime to flux them, these being refractory ores for which the smelter charges a high smelting rate, there

could carry on mining operations at night and still further increase the output.

NO. 1 VEIN. The most of the shipments have been from this vein. In June it showed a width of 70 feet; the width is now 92 feet, and the full width has not yet been disclosed. The real ore body is overlaid by a few feet of mineralized capping, part of which will pay to ship. The removal of this capping is the only development work required above the railroad track. There is a clear

line of demarcation between the capping and the ore. I suggest that the ore body be stripped further down the hillside below the railway track and a tunnel driven in under the ore body and upraise made to the ore body now being quarried, when the quarried ore can be dropped to the tunnel and taken out. This "glory hole" method will necessitate another spur track from the railway being put in at the base of the hill, where ore bins and chutes for rapid and cheap loading in cars should be built. This proposed spur will serve the other quarries in the same way.

MAGNETIC IRON VEIN. Shipments are daily made from this vein; the work done showing constant improvement in the ore. There is a capping similar to No. 1 vein covering the real ore body, and the only development work required is to remove it.

NO. 2 VEIN. No work has been done on this vein, but when a compressor is installed a considerable increase in tonnage can be got by opening this ore body up.

GENERAL REMARKS. The shipments from the real ore body show a good profit—somewhat greater than I expected. This is due to the excess of iron in the ore, for which, under your contract with the Boundary Falls smelter (owned by the Montreal & Boston Copper company), you are allowed a deduction. The returns for the last ten shipments (1350 tons), for which assays have been received, show that the SMELTER CHARGE AVERAGE ONLY 16 CENTS PER TON. The fluxing qualities of your ore are excellent and make it highly desirable and much sought after, especially by the lead smelters. The showings made to date at so small a cost for development and the large tonnage now practically assured warrant the opinion that your property is a very valuable one.

It is necessary, however, that a large amount of the vein stripping should be done in the next two months so that quarrying may be carried on all winter at the smallest expense possible. There are now twenty men engaged upon the property. (Signed) R. H. ANDERSON, Rossland, B. C.

REPORT. Rossland, 29th August, 1903. To the Directors of the Denoro Mines, Limited. On the 25th and 26th instant I care-

fully examined the work done on the "Oro Denoro" mine since I ceased on the 8th inst. to be its superintendent (I having on that date taken the superintendence of the Le Roi mine at Rossland, B. C.). Meantime the work has been carried on under the foreman, Mr. Fred Curtis, and has been well done and the showings of ore continue to improve.

All the work done since my former report, on 23rd June last, has much enhanced the property and confirmed the statements then made by me.

SHIPMENTS. Two shipping spur tracks were, after considerable delay put in by the Canadian Pacific Railway company and shipments were begun in the middle of July. To date some 2400 tons of ore have been shipped, the output now being about 100 tons per day of ten hours, the ore being broken down by hand drilling.

COMPRESSOR PLANT. The seven-drill compressor plant purchased by you in July will be delivered on the ground in ten days, where the foundation for its reception is approaching completion. The plant should be in operation by the end of September and will enable you to double your ore output and to mine the ore at a greatly reduced cost.

ELECTRIC LIGHT PLANT. Should you close the pending negotiations for the electric light plant (80 lights of 16 candle power) you

could carry on mining operations at night and still further increase the output.

NO. 1 VEIN. The most of the shipments have been from this vein. In June it showed a width of 70 feet; the width is now 92 feet, and the full width has not yet been disclosed. The real ore body is overlaid by a few feet of mineralized capping, part of which will pay to ship. The removal of this capping is the only development work required above the railroad track. There is a clear

line of demarcation between the capping and the ore. I suggest that the ore body be stripped further down the hillside below the railway track and a tunnel driven in under the ore body and upraise made to the ore body now being quarried, when the quarried ore can be dropped to the tunnel and taken out. This "glory hole" method will necessitate another spur track from the railway being put in at the base of the hill, where ore bins and chutes for rapid and cheap loading in cars should be built. This proposed spur will serve the other quarries in the same way.

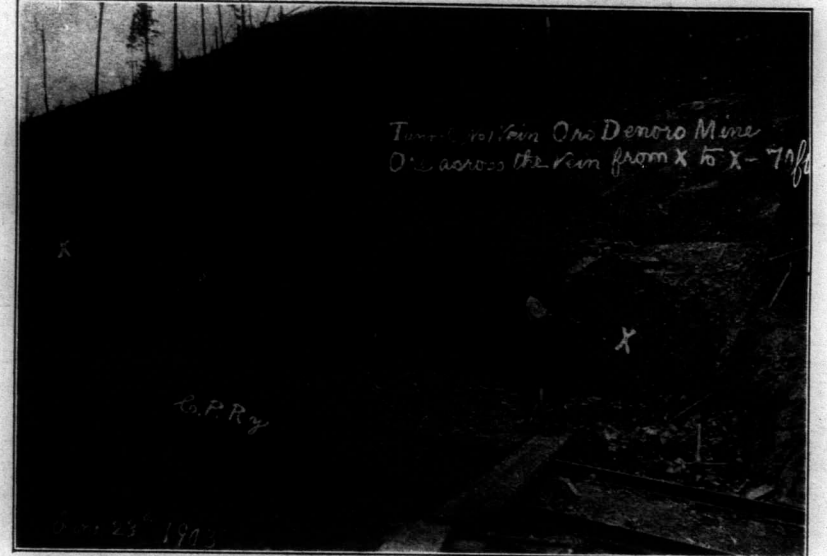
MAGNETIC IRON VEIN. Shipments are daily made from this vein; the work done showing constant improvement in the ore. There is a capping similar to No. 1 vein covering the real ore body, and the only development work required is to remove it.

NO. 2 VEIN. No work has been done on this vein, but when a compressor is installed a considerable increase in tonnage can be got by opening this ore body up.

GENERAL REMARKS. The shipments from the real ore body show a good profit—somewhat greater than I expected. This is due to the excess of iron in the ore, for which, under your contract with the Boundary Falls smelter (owned by the Montreal & Boston Copper company), you are allowed a deduction. The returns for the last ten shipments (1350 tons), for which assays have been received, show that the SMELTER CHARGE AVERAGE ONLY 16 CENTS PER TON. The fluxing qualities of your ore are excellent and make it highly desirable and much sought after, especially by the lead smelters. The showings made to date at so small a cost for development and the large tonnage now practically assured warrant the opinion that your property is a very valuable one.

It is necessary, however, that a large amount of the vein stripping should be done in the next two months so that quarrying may be carried on all winter at the smallest expense possible. There are now twenty men engaged upon the property. (Signed) R. H. ANDERSON, Rossland, B. C.

REPORT. Rossland, 29th August, 1903. To the Directors of the Denoro Mines, Limited. On the 25th and 26th instant I care-



NO. 1 VEIN, ORO DENORO MINE—ORE ACROSS VEIN FROM X TO X 70 FEET.

The ore bodies of the Oro Denoro cutting as they do up and down the hill (see plan) are as easily quarried as any in the world. For a great many years to come no hoisting or expensive machinery will be necessary. The Provincial government Bulletin No. 11 on "Mining in B. C." (1903), states (page 136) that in the Boundary district "mining by the quarrying system is carried on at a cost of between 30 cents and 60 cents per ton at the larger mines."

With the cheapest quarrying and the lowest treatment charges and with excellent pay values it should not be long before the Oro Denoro becomes a dividend payer. Copper mines have always been an attractive investment, because as a rule they are more permanent than other mines and pay larger dividends. The Tio Tinto copper mine in Spain has been worked over 2000 years and is still the largest producer of that metal in the world. Taking the present working mines of the United States that have paid over \$5,000,000 in dividends, it will be found that 7 of them are copper mines that have paid \$153,000,000 profits or an average of \$23,300,000 and five of them are gold, silver and lead mines that have paid \$44,800,000, or an average of \$8,960,000.

Altogether too much emphasis has been laid upon the Boundary copper ores being low grade. The contained metal values are less than in many other mining districts, but the costs of mining and smelting are also very much less. The expression therefore should be a relative term. In fact all the big dividend paying mines of the world with very few exceptions, whether gold, silver, copper, iron or coal make a profit of but \$1 or \$2 per ton and many of them a less profit, but their big inexhaustible tonnage counts. No one thinks of calling the Butte (Montana) copper camp a low grade one, yet its \$10, \$12 and \$14 ores owing to their refractoriness and to expensive deep mining are not so valuable as \$5 to \$8 ores in the Boundary, and be it known that there are but four of the large mines in Butte that make on their ore a larger profit per ton than is made by the Boundary copper mines, and two of these four at most make only a few cents per ton more profit. For instance, the big Anaconda mines, capitalized at \$30,000,000, and which have paid \$23,000,000 in dividends, made for the year ending 1st June, 1903, \$1,602,000 profit on 907,227 tons of ore or \$1.78 per ton, but this includes profit on smelting, converting and refining, all of which are done by the Anaconda company. Had it to send its ore to reduction works and pay out extra freight rate on its metals to the New York market, its profit would be less than \$1 per ton of ore. Other Butte dividend payers made during the year a profit of 90 cents, 83 cents and 18 cents per ton on their ores respectively. Mr. Walker recently in the Boston Commercial figured that the big Boundary mine owned by the Granby company can make \$1.80 profit per ton of ore.

REPORT. Rossland, 29th August, 1903. To the Directors of the Denoro Mines, Limited. On the 25th and 26th instant I care-

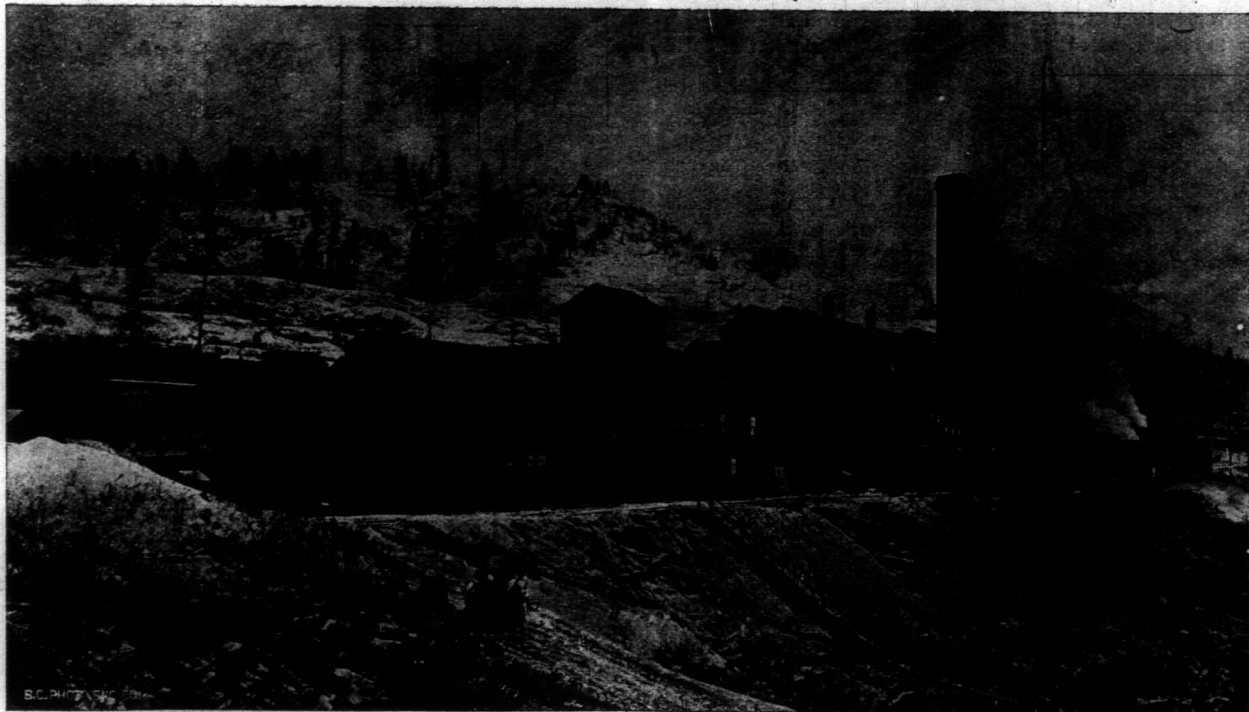
fully examined the work done on the "Oro Denoro" mine since I ceased on the 8th inst. to be its superintendent (I having on that date taken the superintendence of the Le Roi mine at Rossland, B. C.). Meantime the work has been carried on under the foreman, Mr. Fred Curtis, and has been well done and the showings of ore continue to improve.

All the work done since my former report, on 23rd June last, has much enhanced the property and confirmed the statements then made by me.

SHIPMENTS. Two shipping spur tracks were, after considerable delay put in by the Canadian Pacific Railway company and shipments were begun in the middle of July. To date some 2400 tons of ore have been shipped, the output now being about 100 tons per day of ten hours, the ore being broken down by hand drilling.

COMPRESSOR PLANT. The seven-drill compressor plant purchased by you in July will be delivered on the ground in ten days, where the foundation for its reception is approaching completion. The plant should be in operation by the end of September and will enable you to double your ore output and to mine the ore at a greatly reduced cost.

ELECTRIC LIGHT PLANT. Should you close the pending negotiations for the electric light plant (80 lights of 16 candle power) you



GRANBY SMELTER, GRAND FORKS, B. C. CAPACITY 2200 TONS PER DAY.