

**The Perigo
&
Gold Dirt Group
Part I**

**A Summary gathered from a
compilation of historical data**

CONFIDENTIAL REPORT ON THE GOLD DIRT AND PERIGO GROUPS OF GOLD MINES

By W. Weston, M.I.M.M. 1908

INTRODUCTION

Having just returned from an examination of the property, I beg to give herewith a short history and description of the Perigo and Gold Dirt group of mines, which have been put in my hands for sale by the owners, and as well for any profit which will accrue to me for negotiating the sale, as for the interests of the "Moffat road", I am desirous of seeing this great aggregation of mines pass into the hands of those who will develop and work it on a scale commensurate with the extent of its gold-bearing veins, and give our railway the very large tonnage which the property is capable of producing.

If this preliminary report should engage the attention of the intending buyers sufficiently to induce them to consider the purchase, I will make such arrangements with the owners as will enable the former to have a close examination and report made on the same, for as in this case I am practically the vendor, they will doubtless desire to have an engineer of their own appointing make an inspection of the property.

Here, in brief, is an opportunity to purchase over two and one-half miles in length on the course of three proved gold-bearing lodes, in a district which, by thirty years' work and production, has established the fact that its veins are permanent in size and values to a depth of over two thousand feet. With the exception of two shoots of ore one thousand and five hundred feet in length respectively, which have been worked to a depth of six hundred feet, the whole of the above is practically virgin ground. In addition to this are many other valuable claims in the two groups.

The change in conditions which has made this great property capable of doubling the profits on ore produced is simply the completion of the Denver, Northwestern and Pacific Railway to within three and one-half miles of the *workings*.

HISTORY

For the early history of the property, I quote as follows from a book entitled "General information", published by the Denver, Northwestern and Pacific Railway:

"Mining began there in 1860, and two or three years later one of the liveliest camps in the territory was fairly established. Gamble Gulch was lined with arastras, quartz mills, sluice boxes, cabins, stores and saloons and almost everybody had money who operated claims in that vicinity. The best of the settlement were from 1862 to 1864, when some five hundred votes were polled in that precinct at the annual elections.

Some of the quartz gave up the precious metal so plentifully that little care was taken in milling or saving it and the dumps and mill tailings were long after found to be quite valuable. Sluices and stamp mill coppers were lined and coated with gold, and dust enough could be panned from the surface dirt to satisfy the most avaricious prospector. Some idea of how loosely it was scattered about may be formed from the fact that when the camp began to break up, a miner obtained over a thousand dollars worth of gold by cleaning up the fireplace and dirt floor of a deserted cabin where retorting had been done occasionally.

GOLD DIRT

In 1864 a committee of Gold Dirt citizens, appointed for the purpose, approximated the yield of the Gold Dirt Lode for the two preceding years at \$930,000, in the varying currency values at which it had been sold. J.Q.A. Rollins had obtained \$250,000 from a claim only 33 1/3 feet long on the vein, and Hollister & Company \$200,000 from an adjoining claim of equal size. Such a production from so little territory in so short a time has seldom, if ever, been equaled in Colorado. Fairbanks & Keene, on another claim, Obtained \$70,000 then came Grill, Hurlbert & Co. with \$250,000; Elliot & Fowler, \$64,000; the Mulligan Brothers, \$15,000; the Gold Dirt Company, \$120,000; and Hall, Evans & DePeyster, \$60,000. The banking house of Clark, Gruber & Co. of Denver, paid \$150,000 for gold from the Hollister claim alone.

PERIGO

The Perigo was worked by a score of different owners through as many shafts, and is said to have yielded altogether not far from \$400,000. This yield like that of the Gold Dirt, (*from* mines worked without system or concerted action), indicates what could be done under happier auspices. Poor milling caused more gold to be lost than was saved, the superintendents of companies on these lodes came from entirely different pursuits at the East, and knew nothing of mining and cared less. Finally one mine after another shut down and the miners departed for more inviting fields. The yield of ore ranged from \$150 to \$600 a cord, and \$300 were common returns at the Rollins mill.”

TITLE

There are thirty-six claims in these groups, of which twenty-seven are held by United States patent, and the title is clear. The property is situated forty-four miles from Denver via the new railroad.

THE PERIGO MINE

The Perigo Mine is located in Gilpin County, three and one-half miles from Rollinsville, a town on the Denver, Northwestern and Pacific Railway, Locally known as the “Moffat Road”, a broad gauge railroad now completed across the Continental Divide, and being extended to Salt Lake City, Utah. The property is connected with Rollinsville by a first class wagon road down Gamble Gulch, wholly down grade, thus facilitating the transportation of ore and concentrates to the railroad.

ORE PRODUCTION

The Perigo proper is one of the old mines of Gilpin County, and has produced upwards of one millions of dollars in gold from an ore shoot about one thousand feet in length, and to a depth of six hundred feet. Excepting only the rich oxidized surface ores, the vein and ore are just as good in the lowest workings, and it is fair to assume that the next six hundred feet of depth will produce at the same ratio; and the persistence of these Gilpin county veins and their values with increased depth, are matters of record. The length of this main vein, as owned by the Company, is seven thousand feet, with five thousand feet of it practically virgin ground, and all this unexplored territory can be exploited to a depth of from seven to twelve hundred feet at the deepest point below the surface, by driving the present lowest tunnel

level along the course of the vein, when it is also fair to assume other ore shoots will be found.

IMPROVED ECONOMIC FACILITIES

The above ore shoot in the main Perigo vein is about worked out above the adit level, and new ground has to be opened as already indicated. But this will be done under new and improved conditions, and with a larger profit on the ore. The Denver, Northwestern and Pacific Railway (Moffat Road) has now been built, and passes within three and one-half miles of the mine, thus doing away with a wagon haul, over a high mountain pass, of eight miles to the nearest railway at Black Hawk, on the Colorado & Southern Railway, at a cost of \$2 to \$3 per ton for the smelting ore and concentrates, as against 80 cents per ton now from the mine to Rollinsville, a station on the Denver, Northwestern and Pacific Railway. On a gold ore of average low grade, the importance of this one item will be readily understood.

Added to this is the fact that coal can now be supplied at a lower rate of cost than the wood fuel which has been depended on so far, and if so desired, the owners of the property have for sale a very fine water right, by which a head of three hundred feet can be gained, and electric power generated to run the machinery and light the mines. Improved metallurgical methods are also an important factor in the profits of this mine, as it can be shown that while the present mill and methods save seventy-five per cent of the gold values, with cyanidation of the tailings, the saving can be increased to ninety per cent.

REASONS FOR OWNERS SELLING

The question, foolish though it always seems to me, may be asked, "Why do the owners want to sell such a mine at such a price?" I say, "Foolish", for the reason that in the United States it is not unusual to sell anything, provided the owners receive a very large profit by so doing, which would be the case in this instance, reckoning the large amount the mine has produced in the past, and the present selling price. The mine is owned by two rich men, the chief one a banker well advanced in years, who does not care to enter into any new and arduous enterprises or undertakings, such as the opening up a mining property on a large scale, and in fact, is preparing to retire from active business altogether. The owners are already wealthy men, and for reasons given are willing to sell.

WIDTH AND YIELD OF ORE

The average width of the Perigo ore, as shown by the present workings, is four feet. The average yield of the ore on the whole property, including the Gold Dirt group, is \$8 per ton in gold; it can be mined and milled at an average cost, under the new conditions, of \$5, giving a net profit of \$2.20 per ton, on a basis of ninety percent saving.

SURFACE IMPROVEMENTS

The surface improvements consist of a mill in good condition, and now running on ore from the various leases. There are thirty 850 pound stamps in six batteries, with automatic feeders, three Blake crushers, and bumping tables; the mill has a capacity of one hundred tons per diem. There are also two 80 h.p. boilers, one 110 h.p. Corliss engine, electric lighting plant, ten drill Ingersoll-Sargeant compressor; the entire plant being in complete condition.

FUTURE PROFITS

I estimate that in the next thousand feet of depth on the known ore shoot alone, there will be available \$660,000 net profit. This estimate is perfectly safe, as I have allowed for possibilities of lean places. This estimate is confined to the Perigo known ore shoot alone, and takes no account of the new ore shoots that may be found in other places in the undeveloped portions of the vein, or of the numerous other claims in the group, some of which show fine veins and surface indications of ore shoots, which have never as yet been exploited at depth.

ADDITIONAL VEINS

In addition to this, I saw on my last examination three distinct parallel veins North of what is called the Perigo vein, and all three within a distance of say one hundred and twenty-five feet of the latter. One of these, known as the Baker, has produced a great deal of good ore; another, known as the Red Pocket vein, has produced ore that went as high as half an ounce of gold to the ton on the plates; the other, known as the Daisy, has had a good deal of work done on it, and some big stopes taken out. These fine ore veins seem never to have been properly exploited from the lower or adit level, and were only discovered in the upper levels by leasers driving into the North, or hanging wall; and I wish to call attention to the fact that in my estimates of production, I have not included what I believe will be a very large and permanent tonnage from these veins.

FUTURE DEVELOPMENT

The methods to be employed in developing fresh ore shoots will be to drive the present lowest adit level along the course of the vein in an East and West direction, and on the latter a depth will be gained at the West end of the property of twelve hundred feet below the surface. The total length of this proposed West tunnel level will be three thousand feet, and of the East tunnel level four thousand feet.

An eight by seven foot tunnel, having its portal at Rollinsville, on the railway, and on the bank of South Boulder Creek, would intersect this whole series of veins at a depth of one thousand feet below the present adit level on the Perigo, the distance being about sixteen thousand feet, and the cost about twenty dollars per foot. This, of course, would ultimately cause the removal of the entire surface plant to the tunnel portal.

A tunnel driven along the Reliance Lode one thousand feet to its intersection of the Perigo lode will cut the latter five hundred feet lower than the present lowest workings. Estimated cost of driving this tunnel by machine drills, about fifteen dollars per foot.

These methods, by doing away with the necessity for hoisting and pumping, will enable the ore to be produced at a minimum of cost, but will occupy considerable time. Sinking on the Perigo shoot is, of course, the quickest way to develop ore and bring the mine into a paying condition, but the foregoing tunnel schemes are given as alternative methods for the consideration of the purchasers. Of the two tunnels, the Reliance is, in my opinion, the better.

WORKING CAPITAL

The amount of capital necessary to put this group into a permanently producing condition of not less than one hundred tons per diem, and under the most economical methods of production and treatment, would be, in my opinion, about fifty thousand dollars. In all probability, only half of this sum would be required, but I recommend having this amount in the treasury.

As soon as the mine is properly opened up, and new ore reserves created, either by the East and West drifts on the present adit level, or by a shaft sunk at once on the ore shoot from the tunnel level, or by a development tunnel five hundred feet below the same, it will be in a condition to keep the mill running at full capacity of one hundred tons per diem.

SAMPLING OF LOWEST LEVEL

In 1904, a careful examination and sampling of the floor of the lowest level of the old workings was made, taking fifty samples of ore in place, covering a distance along the vein of nine hundred feet. A combined sample of every five was then made, giving a total of ten samples, each of about one hundred feet on the vein, the yield of which was as follows:

Sample Number Ounces Gold Value per Ton

1 .44 \$8.80

2 1.04 \$20.80

3 1.26 \$25.20

Sample Number Ounces Gold Value per Ton

4 1.10 \$22.00

5 .98 \$19.60

6 1.36 \$27.20

7 1.68 \$33.60

8 1.50 \$30.00

9 1.40 \$28.00

10 .18 \$ 3.20

It will be seen by the above table of assays that the average of the entire lot is about an ounce of gold to the ton, and very much richer, therefore, than what we have estimated as the yield per ton in gold for the entire mine. This is explained by the fact that in order to allow for possibilities of lean places in the vein, and to be well within the mark, I have placed the general average of the whole property, including the Gold Dirt, at \$8.00.

I may state, however, that shortly afterward, a well authenticated mining engineer in good standing, carefully sampled the whole mine, spending a month in doing so. Part of his examination consisted in taking up the floor of the lowest level, and having the ore tested. His results practically corroborated the other, and while these samplings showed a higher grade than average sulphide ore mined from the workings above, it is not improbable that at the tunnel level point the usual lean zone of the upper portion of the Gilpin County veins has been passed through, and that, as indicated by the results of the sampling, the ore will be of a higher grade from the tunnel level downward, in which case, of course, my general \$8.00 average of the ore for the entire property will be far too low.

Furthermore, operations being carried on by lessees at the time of my last visit, had opened up a large body of ore on the tunnel horizon; but of equal importance is the fact that a side vein, the Baker, dropped into the Perigo vein at this point, causing a large ore-body at the junction. This is a substantial reason for believing that this large and rich ore-body, resulting from the junction of the two veins, will continue for a considerable depth below the tunnel

level, and it possibly also explains the high values obtained by the two engineers who sampled the ore in the floor of the tunnel level.

LEASERS' WORK

In a former part of this report, I have described the upper part of the vein in the old workings as "worked out." I must qualify this, however, by the following statement: the term, "worked out", was meant by me only as applied to the Perigo vein or lode proper. But there are at the present time leasers, or "tributers", working above the adit level, and they are steadily producing milling ore, which is being treated at the Perigo mill. It appears that in cross-cutting from the vein proper, the leasers encountered ore-bodies unknown to exist theretofore, and which are in either parallel veins or branches from the main vein; and this condition of affairs will very probably continue indefinitely.

THE GOLD DIRT MINE

The Gold Dirt mine is only a short distance from the Perigo, and has its own individual workings, and its own mill.

TITLE

This property consists of five claims, all covered by United States patent, and the title is therefore perfect.

IMPROVEMENTS

The property covers forty-five hundred feet on the course of the vein, and is worked by an adit tunnel which develops the vein two hundred and fifty feet below the surface, and is developed below this tunnel level by a shaft, which is sunk to a depth of six hundred and eighty feet from the surface; the mine is now being worked through this shaft. The winding plant, or hoist, as it is called here of two 80 h.p. boilers and a 50 h.p. hoisting engine, and a No. 7 steam pump, the capacity of the hoist being one ton from a depth of one thousand feet.

WORKINGS

The mine is developed by seven levels from the shaft, and the high grade ore is worked out down to the fourth level; but the low grade ore in these upper levels, owing to the proximity of the railroad, can now be extracted at a profit.

By these workings, about one thousand feet only on the course of the vein have been proved., leaving about thirty-five hundred feet of vein unexplored. The early history of the Gold Dirt Vein has already been given, and from this it will be seen that in the thirty-five hundred feet of the unexplored portion of the vein, there must be great possibilities.

MILL

There is a complete mill on this property, erected at a cost of fifty thousand dollars, necessary office building, boarding-house, and laboratory, and everything complete for immediate work. The capacity of this mill is fifty tons per diem, but it can be enlarged to a capacity of one hundred tons per diem at a cost of not to exceed ten thousand dollars.

PROBABLE REVENUE

It is my opinion that with a new shaft close to the mill (and therefore in the center of the property) and proper development work, this mine can be made to pay from five to six thousand dollars per month.

GRADE OF ORE

This is strictly a gold ore, the average grade so far being fifteen dollars in gold per ton for the milling (i.e. amalgamation and concentration) ore, and from one to three ounces in gold to the ton for the smelting ore – twenty to sixty dollars per ton. About five percent of the output is smelting ore, which comes to the Denver smelters.

THE COMSTOCK

In the Comstock, which is one of this group, and probably a parallel vein, quite lately some leasers took out ore that yielded as high as eight ounces of gold to the ton.

THE COLORADO

The Colorado is worked by a tunnel having its portal just above the bed of Gamble Gulch Creek, and driven on the course of the vein in an Easterly direction for five hundred and fifty feet.

At four hundred feet in, ore was encountered, and this continued one hundred and fifty feet to the breast, having an average width of three feet. At the point where the ore was met with, a shaft was sunk from the surface to connection with the tunnel. At a point half way down the shaft, a level was driven East one hundred feet in ore, and a stope taken out about thirty feet in height, Connection was made from the back of this stope to the surface by shaft on the tunnel level. East of the lower shaft a stope thirty feet high and one hundred and fifty feet in length was taken out, and in the back of this stop there are four feet of ore.

The extensive workings on the oxidized ore along the outcrop of this vein show that a large amount of pay must have been extracted in the early days, but the ore in the lower workings is very low grade, and I doubt if it can be mined at a profit. But it is quite probable that, as often occurs in the veins of this district, there is a lean zone (locally called a “cap”) for say two hundred feet below the oxidized zone, and that with greater depth, the ore will improve in gold contents. Richer shoots may also be met with in driving on the course of the vein. This property is fifteen hundred feet in length on the course of the vein, and one hundred and fifty feet in width. Title, United States patent.

DESCRIPTION OF THE ORE AND VEINS

The Perigo, Gold Dirt and Colorado are vertical true fissures in a granite and Gneiss formation, and area from four to twenty feet in width, the vein-filling being quartz and porphyry, and the ore auriferous copper and iron pyrites. The solid streaks or portion of this ore is shipped to Denver smelters, and that in which the pyrite is more sparsely scattered through the matrix is called “mill dirt”, and is treated at the mine by amalgamation and concentration, the gold being recovered as bullion and as concentrates, which latter is also shipped to the Denver smelters. It is now proposed to add cyanidation of the tailings to the above process, by which at least ninety percent of the gold values will be saved.

PROPOSED DEVELOPMENT

The plan of future operations, in my opinion, should be as follows:

The ores in all the different veins are of one general character, i.e. auriferous iron and copper pyrite, and therefore one method of treatment only will be required. What that particular method is must be decided by an experienced metallurgist, but as will be seen, there is nothing complex about the ore. The present one hundred ton mill on the Perigo, with some slight alterations or additions, can probably be made to effect a much higher saving.

The fifty ton mill on the Gold Dirt, which is new, has never made a run on ore, and therefore whether or not it will effect the high saving predicted by the metallurgist who designed it, cannot be said, but the machinery is all of the most modern and perfect description. As both these mills, therefore, can be put in perfect running order at a comparatively small cost, and made suitable to the treatment of the ores, this should be done first, and a run made in both on the ore already available, for a period sufficiently long to demonstrate their adaptability.

Attention should then be turned to develop of the veins, and creation of such reserves ahead of extraction as will keep the mills running without cessation thereafter.

The plan of development should be as follows;

On the Perigo, electric power should be generated at once from the head of water near by, with which to operate drills, hoist and pumps to sink a working shaft on the main ore shoot from the tunnel level, and by driving on the vein from this shaft, open up ore for the mill, and thus make the mine productive; but in as much as the Central Colorado Power Company will be in operation within a short period, it would perhaps be better to purchase the electric power from it. This company is installing a very large and thoroughly modern plant with the sole object of disposing of the power to mines and mills cheaper than it could be developed in small units on the properties by steam and in some cases, by water power, if the cost of the installations figured with interest and depreciation, as it should be.

Then the 200 level should be driven East for eight hundred feet, which owing to the slope of the mountain, would in that distance come to the surface. This would be all in virgin ground, and judging from the extensive workings which were done on the surface oxidized ores in the early day, one or more shoots of ore are almost certain to be opened up by this level.

The same probabilities exist in the adit tunnel West, which is two hundred and fifty feet below the 200 level, above mentioned, and should be driven the same distance or further.

At the West end of the tunnel on the Perigo vein, the workings have got off the main vein onto a branch vein; and having recovered the main vein, this tunnel should be driven West, and would have three thousand feet to go to reach the West end of the property, gaining a depth at that point of about twelve hundred feet below the surface, all in virgin ground.

From the tunnel level there is a crosscut run to the Daisy vein, which is about one hundred and twenty-five feet back of (or North) the main Perigo vein. A prospecting drift should be run East and West on this Daisy vein at least two hundred feet each way, as good ore is being stoped on this vein at the 200 level, which is two hundred and fifty feet above where the tunnel crosscut intersects it.

On the Gold Dirt group, the Colorado vein is about five hundred feet North of the Gold Dirt vein, and the Comstock about two hundred and fifty feet South of it, all parallel veins. All the ore from those workings would go to the Gold Dirt mill.

The Gold Dirt adit tunnel, which is connected by shaft with the surface workings, has its portal at the level of the mill.

The Comstock vein was extensively worked on the surface in the early days for the rich oxidized ores, but has not been developed at depth.

The ore now available in the Gold Dirt should be brought to the surface by the adit tunnel at the mill level and there elevated to the top of the mill. This method would be followed until a main working shaft, with its collar just above the mill, could be sunk say three hundred feet below the level of the Gold Dirt adit tunnel, and then crosscuts run North to the Colorado vein, and South to the Comstock vein, and all the ore from the workings on the three veins brought to the surface through the main shaft, and from thence conveyed into the mill.

EXAMINATION FOR PURCHASE

The policy of the owners of this property has been to work it entirely on the leasing system, by which they have realized enormous profit without expenditure of their own capital, the mine itself, in this way, paying for all the extensive development and improvements. But the result of this policy is that the mines have been "skinned" of every pound of ore that could be got at without doing any "dead work", i.e. development ahead of extraction, and having arrived at this point where capital is necessary to put the property on a permanent paying basis, the owners, who will not do this, are willing to sell. For this reason, the intending purchasers or their engineer must not expect to find ore in sight in the veins from which to draw his conclusions, had sampling being entirely out of the question in a property of this magnitude and in this condition He will therefore have to rely on the record of past production, the proof that in this district the veins retain their size and permanence of values with depth, by actual prospecting by shafts and winzes from above and below the lowest workings on the vein, and also by drifts for ore, from which to obtain ton samples; and time will be given for *this if work is commenced at once*.

SUMMARY

I have shown in the foregoing that we have under consideration here a property which embodies upwards of two and one-half miles along the course of four well-proved true fissure, gold-bearing veins or lodes, which have produced five millions of dollars in the past, and at comparatively shallow depths, with pay ore and good bodies of it, showing in the lowest workings of two of these veins, this being backed up by the records of the great Gilpin County Gold District, which has produced upwards of one hundred million dollars in the past forty years, and down as deep as two thousand feet, where the veins are still holding their size and values.

I am of the opinion that with ample working capital (say one hundred thousand dollars) with which to open new ore reserves, provide drilling machinery, increased mill capacity, etc., and with thoroughly economical and scientific management of the mining and metallurgical departments, and office expenses, the mines are ultimately capable of paying \$20,000 per month, or \$240,000 per annum. If, for purposes of being absolutely safe in computation of profits, and to offset any unforeseen contingencies which might arise, you choose to cut this annual production in half, the revenue is still very handsome, and will re-pay the entire purchase price and working capital in four years; for with two mills of one hundred tons daily capacity each, two hundred tons per diem at a profit of \$2.20 per ton, and three hundred working days in the year, would realize \$132,000 profit per annum, or \$528,000 in four years; but I consider this too low an estimate.

These estimates are based on \$8 ore only; on the probable product of the lower portion of the present Perigo ore shoot; on possible discoveries of other ore shoots East and West on the same vein; on the ore of the God Dirt Mine, and other possible discoveries in that property; on possible discoveries in the Colorado mine; and on possible discoveries on the many parallel veins known to exist North of the Perigo, and which have not been exploited.

But it must be remembered that the time consumed in putting the mines in condition to pay the revenues named will be probably two years, which period will be devoted mainly to "dead Work" as it is called. But this period will not be barren of revenue. The Perigo and Gold Dirt are both in ore, and the Gold Dirt mill is ready to run, with the possible exception of some changes or reconstruction which may prove to be necessary, costing perhaps two thousand dollars. These two mines should be able to pay say three thousand dollars a month within three or four months of the time when the mill is ready to treat the ore, and with fifteen hundred to two thousand dollars coming in from leasers, the property would pay from four to five thousand dollars a month practically from the start.

This revenue would be very largely increased as soon as ore is opened up by the working shaft sunk on the main ore shoot from the tunnel level on the Perigo.

Another source of immediate revenue is the profit realized on the milling of the ore produced by the "tributers" or leasers, which profit should be in the neighborhood of seventy-five cents per ton, or seven hundred and fifty dollars per month for every thousand tons so produced and milled.

The pay-roll at the start would probably not exceed five thousand dollars a month, for men employed in doing "dead Work", including superintendence. Of course, the number of men would be increased as fast as ground is opened out to make room for them.

The immediate revenue would, in my opinion, be very largely increased by leasing every available portion of the vein to tributers, on what is called the "footage plan", i.e. allowing them a small amount per foot for all the "dead work" they do, and then allowing them to extract the ore so discovered and developed, on a flat royalty of say fifteen percent of the net returns.

The working capital necessary to put the mines in a permanently paying condition would be, in my opinion, about one hundred thousand dollars.

Hitherto these mines, as is ordinarily the case here, have been worked on "hand to mouth" methods, but in my estimate I am figuring on creating ore reserves for at least one year ahead of the mill capacity; two years would be better, as there is then little likelihood of a cessation of dividends.

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