Until the Leadville discoveries of 1878, there were but few mines in Colorado, outside of the Clear Creek-Gilpin field, which had even a state-wide reputation.

Among these the Humboldt and Pocahontas, situtated at Rosita, in the County of Custer, were easily the first. Discovered in 1874, they were opened up and worked practically concurrently, though under different and sometimes hostile management until the closing of the India mints in 1883 brought disaster to all silver producing properties.

Litigation between the properties, and a serious controversy over titles with the Government as to the Pocahontas, also tended, during the years preceding 1883, and for sometime thereafter, to practically close down both properties and there has been substantially nothing done upon them for the past twenty years.

In the meantime, all the litigation has been finished; the controversy with the Government has been satisfactorily ended and full patents issued, so that there is now a complete and perfect title under patents from the United States for both mining claims.

The actual production of values from these two mines has been very large. Prior to 1883, the estimated aggregate output is approximately $1,350,000, and the map of the workings shows from what a small area this came. Exact detailed returns are not fully available, but original settlement sheets and reports of sales, obtained from the former owners, and from the mills, sampling works and reduction plants which handled and purchased the ores, show the above figures to be safely conservative.
A most important feature of the examination of the old returns was that it clearly appeared that, during the days of the largest production the freight, hauling, sampling, reduction and treatment charges were in the aggregate not less than $40 per ton, the mines being, for most of the time, at a distance of nearly sixty miles from the nearest smelter (Pueblo) the haul being by wagon or pack train, only through a mountainous range at an expense of from $20 to $26 per ton. The result was that, no ore could be shipped at a profit, unless it would return better than $40 per ton, and all ore taken from the mine had to be sorted so as to leave out all lesser values. The practice was to sort as much as possible, filling the waste back into the stopes, or letting it go into the general dump.

These conditions left in the dumps and in the back filled stopes of the mines ores of great value, which, under present conditions, are at once available. The mines are now nine miles from a railroad, over a good road, open all the year, and the ores or concentrates can be delivered at Pueblo and treated at an entire charge, hauling, freight and treatment, of not to exceed nine dollars per ton.

These dumps and stopes should be concentrated. The tonnage available is, obviously, very large, and an engineer can closely approximate both amounts and values. The character of the ore lends itself readily to concentration.

There is water available for a mill of at least fifty tons daily capacity.

The weather conditions are ideal. The mines are on a southerly slope, in an open valley, at an altitude of about 9,000 feet and can be worked every month in the year.

The details as to development workings are more fully stated in the several papers herewith.
In 1893 P. H. Van Diest, M.E., then one of the best known mining engineers in Colorado, made a report upon the Pocahontas, as to its then condition of development, its production and history. The mineral character and value of the vein seems to have been accepted, as the report does not go into the technical descriptions now usual in engineer's reports. The report follows:

"THE POCAHONTAS MINE
By P. H. Van Diest, M.E.

This mine is situated in the SW 1/4 of Sec. 28, Tp. 22 S., R. 71 W. of the 6th P.M., on the SW slope of Lucille Mt., near Rosita, Custer County, Colorado.

The hill or mountain on which the vein occurs is part of an extensive belt of an eruptive rock formation, broken through the Archean of the Sierra Majada Range. Probably during the Tertiary period. The main body of this eruptive belt belongs to the Sanidid Group, consisting principally of feldspar and amphibole. It contains nearly everywhere small particles of feldspar and of lead and copper minerals in minute quantities. On the NW side the character of the rock changes from a trachytic porphyry to a brecciated trachyte, which contains considerable chlorite and diologite. The vein formed in this rock has an average trend North 50 degrees west, conforming to the trend of the belt. The vein is very straight and porous and appears to follow a joint plane in the rock which has been faulted at a certain depth near the contact of the two different trachytic rock masses, the throw being to the southwest. It would appear that the sides of the joint have been gradually altered by the acid waters, concentrating the leached out ore particles of the matrix against the hanging wall sides in a streak of 8 to 10 inches in width. The gangue is principally in soft clay, formed from the decomposition
of the walls. Occasionally small boulders of trachytic rock are found mixed with this clay. The barytic pay-streak are often separated from the hanging wall by clay selvage. The foot wall is much broken up and altered by percolating waters, principally near the faulting vein. Joints in the rock on the foot wall side, which have a dip perpendicular to the dip of the throw, were endowed by solutions with argentiferous aryon-pyrites. The ore in the main vein is tetrahedrite. Galena occurs in quantity in different parts of the vein. Copper and iron pyrites are common. Antimonial compounds of silver are rare and chloride of silver was found exclusively near the outcrops of the vein. The Pocahontas mine has not yet reached the depth where the fault in the Humboldt and the Virginia occurs. The original discovery shaft being found to be within the Humboldt property, a miners' meeting was held, and the question having been left to arbitration, the overlapping 230 feet was divided. Two shafts were started and worked by whips to a depth of 175 feet, where, after passing through the first level, they met the second level which was connected with the outside by a tunnel 280 feet long. The two original shafts have, since the making of this connection, been used only as air shafts, thus securing a supply of air that has always needed checking. A main vertical shaft was then started 250 feet southwest of the vein, with an intention of cutting it at a depth of 800 feet. At a depth of 149 feet a cross-cut was driven connecting this shaft with the 300 ft. level. This shaft is now 75 feet deeper than the 300 ft. level. Over the main shaft stands a friction hoisting engine and a boiler of 30 HP. A small air compressor worked by common connection with the hoisting engine produces power for a Knowles pump, which, placed at a spring nearby, supplies water for the boiler (these have since been removed). The main vertical shaft is 16 by 8 feet (three compartments.) Large shaft house built over this shaft covering hoisting machinery, etc. The vein is prospected over the whole extent
of the claim above the 400 ft. level. The vein was found to be of uniform value. Mine yielded 4,403.7 tons of ore of a net value of $267,130.57. This is an average net receipt of $60.66 per ton. The amount of ground broken is very near 6,628 sq. fathoms of the vein surface, which gives a net value of $40.90 per square fathom. The ore reserves in this mine are not so extensive as in the Humboldt, the principal reserve being a block of 833 square fathoms, lying above the 200 ft. level. A small section of 140 square fathoms being between the two hundred and three hundred foot levels. To this should be added, as in sight, a block mostly high grade ore of 570 square fathoms between the three hundred and four hundred foot levels. This is not now accessible on account of 400 ft. level being filled with water from the Humboldt. In all, as in sight 3,333 square fathoms, representing an average assay value of $68 per square fathom, or a selling value of $135,000. To this should be added a large amount of ore available by overhauling old stopes from the waste dumps. It is estimated that half the ore broken consists of low grade, containing from fifteen to forty ounces of silver per ton, which was left for the greatest part in the mine as unavailable from the years of 1874 to 1878.

Leasers on a trial run sorted some of this ore left in the mine underground, after sorting, weighed 1,080 lbs., assaying 139 ounces per ton, and for which was paid $65. The ground in the Pocahontas mine is easily broken. Experience has shown sinking, including timbering, can be contracted for at a price varying from $15 to $20 per running foot. Drifting can be contracted for at a price of $5 per foot. Stoping can be contracted for at a price of $8 to $12 per sq. fathom."
The reference of Mr. Van Viest to a yield of 4,403.7 tons netting $267,130.57 is not clearly understood, but would seem to have been a yield for some special period, or some particular part of the mine. From the context, Mr. Van Diest seems to have been trying to ascertain the value per fathom of vein extracted. That it was not intended as a statement of the total production of the mine is made certain by the detailed returns of ore sales from the Pocahontas, covering the period down to some date in 1880, where the weights and values, with the names of the various mills treating the ore, are set forth.

DETAILED ORE SHIPMENTS FROM POCAHONTAS MINE.

A statement of ore shipments and of the mining expenses made by Alex Thornton, for many years manager of the Humboldt, and who had personal knowledge of the whole matter, follows:

"The entire mining work upon the Pocahontas mine has been limited to an area of 665 feet along the vein and to a depth of 480 feet, but little mining, however, has been done below the 400-foot level. The underground workings, including the shaft, winzes and levels, comprise an area of 197,280 square fathoms.

"From that area has been mined, exclusive of the low grade, 6,359 tons of ore that was shipped to various mills and reduction works and sold, which, after deducting the charges for freights, assaying, selling, loss for treatment and milling, netted the mine operators the sum of $476,298.89.

"About one-half of the ore mined consisted of low grade, containing 15 to 38.5 ounces of silver per ton -- mostly left in the mine.

"The original mill returns and receipts for ore sold from the Pocahontas mine, having been carefully examined and the sales to the different mills and ore buyers, have been compiled as follows:
To Whom Sold | Net Weight | Assay Value | Net Price Paid
---|---|---|---
N.P. Hill, Agent | 162,470 | $11,239.75 | $9,606.63
Geo. C. Munson, | 76,235 | 5,620.45 | 4,803.82
Boston & Colo. Co. | 1,462,578 | 129,811.56 | 86,774.72
G.C. Munson, Agt., | 30,407 | 3,158.63 | 2,023.53
Rosita Mill | 115,511 | 6,792.33 | 5,236.78
Golden Reduction Works | 86,754 | 8,033.12 | 5,479.17
Swansea | 186,632 | 11,354.86 | 7,126.19
Denver Dry Ore Co. | 767,484 | 49,022.95 | 31,385.16
St. Louis S & R Co. | 78 | 12.00 | 9.60
Polar Star Mill | 504,392 | Not given | 49,022.95
Mallers Works | 1,266,132 | Not given | 98,261.68
Pueblo Lixivation | 3,721,069 | 113,529.45 | 98,261.67
PS & R Co. | 1266130 | Not given | 56,761.32

NET | $476,298.89

The total mining expenses have been as follows:

- To sinking and timbering 707 ft. of shafts at $15 per ft. - $11,955
- To excavating 2744 ft. of levels and drifts at $5 per ft. - $13,720
- To excavating 460 ft. of tunnels and adits at $10 per ft. - $4,600
- To buildings, hoisting machinery, mng. implements & tracks - $30,600
- To mining timbers and other mining material - $5,300
- To making roads, sinking wells and laying pipes, etc., - $1,400
- To mining 12,800 tons, including the low grade ore - $70,400
- To freight, assaying, superintendence and other incidentals - $66,130

Total expenditures - $204,105

Net profit over expenditures $272,193.89
From these detailed shipments of the earlier days it would seem clear that the tonnage named by Prof. Van Dietz was of the new work done between 1880 and 1886, which would bring up the known net values received for the ore to about $743,400.00.

The treatment charges shown by these returns are also illuminating as to the difference in treatment charges then and now, and the extraordinary loss of value in the crude mill treatment of those days is shown most clearly by the returns from exclusive mill treatment.

It is worth noting that as to the Polar Star Mill, which was at Blackhawk, Colo., the Mallette and the Pueblo Lixiviation Works, no assay values were given in the returns. The figures show that nearly one-half the values were lost, or at least not paid for.

The U. S. Census reports, probably bringing returns up to 1879, stated the output of the Pocahontas and Humboldt Mines to have been to that date, about $900,000.

The only detailed figures given by the U. S. Reports are up to May, 1878, as follows:

<table>
<thead>
<tr>
<th></th>
<th>Tons Shipped</th>
<th>Currency Value</th>
<th>Mill Returns</th>
<th>Average Value per ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>POCOHANTAS</td>
<td>2,559</td>
<td>$317,477</td>
<td>$171,248</td>
<td>$124.00</td>
</tr>
<tr>
<td>HUMBOLDT</td>
<td>2,106</td>
<td>226,604</td>
<td>132,145</td>
<td>107.00</td>
</tr>
<tr>
<td>VIRGINIA</td>
<td>179</td>
<td>18,548</td>
<td>9,821</td>
<td>103.00</td>
</tr>
</tbody>
</table>

These official returns show an unusual loss of values in treatment, at least 40%, which is now, under present methods, almost entirely done away with. At this time, even this small proportion of the total shipments would have netted nearly $200,000 more than it did.
THE HUMBOLDT MINE.

There is not as full data available about the values taken from the Humboldt in the early days. The work continued on this property for a longer time than on the Pocahontas, where it had been stopped by litigation, but the best information available indicates an approximate output in all from the Humboldt of about $700,000, the last work having been done about twenty years ago. The Humboldt shaft was practically unwatered in 1900 and found to be in good condition, but no new mining work was done, the effort having really no financial backing, and being limited to the unwatering. By reason of the Pocahontas tunnel being open, both mines are now drained and dry to that level, so that practically all the upper workings, down to the 260 ft. level of the Pocahontas, can be examined with but little expense, it being necessary to make them safe in some places before trying to enter. The principal vein of the two claims has been opened up for the entire length of both claims and been shown to carry good ore values. That there are two parallel veins on the property, especially as to the Humboldt end, is not only the belief of every miner who has ever worked in the mines, but is also indicated by some of the workings, although no exploration work seems to have been done, while the main vein was being worked.

This is further indicated by the finding of the two veins on the Virginia, adjacent to the Humboldt on the south.

The conditions upon the Humboldt, as to the former saving of values, back-filling in the stopes and accumulation of low grade ores in the dumps and left in the workings, are exactly the same as in the Pocahontas. One of less than $40 value per ton simply could not be shipped under then existing conditions.
IMPROVEMENTS:

There is a shaft house on the Pocahontas, but no machinery or plant. The tunnel cutting the vein at 260 feet deep affords easy access to the upper workings.

There is a shaft house and hoist, boiler and engine on the Humboldt. The equipment, however, is in poor condition but can be restored without any large outlay.

PLAN OF OPERATION:

The owners are chiefly anxious to have the properties re-opened and worked and will co-operate in all ways within their power. They believe there should be a mill to concentrate the values in the old dumps and stopes and of the low grade ores taken from new ground opened up. This should have a fifty ton daily capacity. The owners will give favorable terms as to payment of the purchase price of the property, provided the mill is built and work started in the mines, but insist upon the necessary capital being secured in advance of beginning work.

There should be a thorough examination of the property by a competent mining engineer, to the extent which present conditions allow, and as the upper levels are dry and fairly well open, and the dumps are all open for sampling, an engineer should be able to make such a preliminary report as would determine the necessity of further examination, and also to state a plan of future work, and the location, size and character of the mill. The property should be unwatered entirely at a comparatively small cost, but this is probably not essential at this time.