GENEVA GREY

PROSPECTUS

FOR 1883,

OF

THE GENEVA

GREY COPPER, SILVER AND GOLD MINING AND MILLING COMPANY,

OF COLORADO.

R. O. Polkinhorn, Printer, Washington, D. C.

PROSPECTUS

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OF

The Geneva Grey

Copper, Silver and Gold Mining and Milling Co.

OF

COLORADO.

This Company is formed for the purpose of acquiring and working valuable mineral properties situated at the head of Geneva Valley.

Geneva Valley is sixty-four miles from Denver, and opens on to the north fork of the Platte Valley at Grant, where there is a station on the Denver and South Park Railway.

The property is composed of a number of mines and mining claims, including the well-known Revenue lode, which crops out and crosses the continental water-shed. This mine, together with the group of lodes below it on the Atlantic slope, came into the possession of the parties owning the Britannic tunnel, and those owning the Leviathan tunnel, several years ago. Acting under the advice of mining experts, it was decided to suspend active working from the surface, and to prove the lodes by tunneling from the mountain side. Accordingly, the two tunnels were started about one thousand feet apart. The Britannic tunnel cutting, in its course of 1,025 feet, no fewer than fourteen silver and gold-bearing lodes, and the Leviathan intersecting, in 800 feet, 13 lodes, which are undoubtedly extensions of the former; together they may well be called the Geneva Group. Little more has been done upon these lodes than to prove

their value, but sufficient has been accomplished to demonstrate their vast paying capacity when fully developed, and also to continue and increase their present ore producing capacity.

The surface claims are the Revenue, Baltic, Celtic, Republic, Oceanic, Gaelic, Adriatic, Murphy, Hugh Kelley, Best, Dudley, Blue, Little Railroad and the Kelly & Dudley lodes, for all of which United States Government patents have been issued, also the Jurassic, Japanic, Occidental and Graphic—all secured in accordance with the United States mining laws, and embracing with the tunnel rights an immense mining territory.

Included in the purchase is the property embraced in the following inventory:

This Company takes all the ore broken at the mines, estimated at 300 tons, and slag at the smelting works, about 300 tons.

The mines have been reported upon by several mining engineers and experts, under whose advice the improvements and developments have been made. Formerly, Mr. R. O. Old, M. E., of Georgetown, was employed by the then owners of the Revenue, and in a careful report gave an unhesitating opinion of the great value of this mine and of the merits of the other claims. Later, Mr. Thos. Belt, F. G. S. M. E., of London, England, examined the Revenue and other property as far as then opened, and advised pushing the Britannic tunnel in preference to working from the surface, concluding his report as follows: "Altogether, I consider the Revenue mine, both as regards its production of valuable ore and the great advantages the district offers for the erection of reduction works, the most promising undertaking that came under my notice in Colorado, and am satisfied that if judiciously managed will yield enormous profits."

The lodes in the Leviathan tunnel have not been explored as much as they have been in the Britannic, but as in most instances they will be found to be continuations of the veins cut in the Britannic tunnel, the report and descriptions apply generally to the whole property. A record is attached of some mill runs and samples.

The extensive forests in Geneva Valley are becoming valuable, and are practically under the control of this com-

pany. Lumber is being shipped to Denver from a point twelve miles below Grant, and accessible timber is becoming daily more scarce. Rough Colorado lumber is worth in Denver $22.50 per 1,000 feet; the freight from Grant would be about four dollars per thousand, leaving a wide margin for profit.

Taken altogether, the combined interests present one of the most perfect and extensive mining properties in America. Some of the directors visited the mines in October, and have every confidence, that after carrying out some further improvements, that the mines will be at once placed in a paying condition. They satisfied themselves thoroughly in respect to titles, and the correctness of the extracts and reports attached hereto, and have no hesitation in recommending the enterprise as one of the soundest and most promising mining investments in Colorado.

According to purchase this company takes possession of the properties free from all debts or other encumbrances.

DENVER, COLO., *October 23d, 1883.*

General B. B. SIMMS,
Washington, D. C.

MY DEAR SIR: I submit the following as an inventory of buildings and personal property of the Geneva Grey Copper, Gold and Silver Mining and Milling Company:

At Grant—

One dwelling-house 36×40, second story 16×20.
One chair.
One cook stove.
One parlor stove.
One wardrobe.
Two tables.
Two carpets.
One wash stand.
One bureau.
One log barn 20×30.

At Asterville—

One smelter building 40×40.
One matte furnace and stack. Capacity 12 tons per day.
One calcining building 40×45.

One reverberatory furnace 20×40. Capacity 25 tons per day.
One crushing room 40×50.
One Blake crusher, ten inch.
Two setts Cornish rolls.
One screen.
One set of elevator boxes.
One Howe's scale, large size.
One saw mill building 40×40. Capacity 12 M per day.
One 36-inch circular saw.
One shingle mill.
One jointer and cut-off.
One steam engine and pump, 24 horse power.
Full equipment of line shafting and pulleys, belting, etc.
One barn 20×30.
One superintendent's house and office 24×36, 1½ stories, with lean-to 12×20, eleven rooms.
One store room 16×24, with cellar.
One scale house 10×12.
One set of Fairbank's five-ton scales.
One blacksmith shop 12×16.
One ore house 16×40.
Two houses for men 12×20.
One Oertling button balance.
One Oertling ore balance.
One pestle and mortar.
Two bucking plates.
One cupel mold.
One porcelain mortar and pestle.
One burte.
Six large plumbago crucibles and scorifiers.
One assay furnace.
One smelting furnace.
One lot glass ware and chemicals.
One desk.
Three bedsteads, with springs, mattresses and bedding.
One hall safe.
One cook stove.
Two heating stoves.
Ten chairs.
One letter press.
One center table.
Two wash stands.

Two mirrors.
One small bureau.
One grindstone.
One lot ore screens.
Two extra pulleys.
Six oil barrels.
One cross-cut saw.
Three carpenters' levels.
Three carpenters' squares.
Three iron wheelbarrows.
150 feet one and one-half inch rubber hose.
One whim harness.
Seven kegs of black powder.
Twenty-six doors.
Eight window sash.
One set Fairbanks' scales.
One chest carpenter's tools.
One keg of nails.
One saw gummer.
One belt stretcher.
Five hundred pounds of iron.
860 pounds drill steel.
Eight pick eyes.
One surveyor's chain.
Twenty striking hammers.
One hundred pounds bone ash.
One hundred ore sacks.
Fifty ore pockets.

At the Mines—

One boarding house 24×40, with kitchen and store room 12×40, and lean-to 12×36.
One large cook stove.
Two heating stoves.
One parlor stove.
Dishes, knives, etc., for twenty-five men.
One tunnel house 16×16, with bunk-room 10×20 at Leviathan.
One boiler-room 16×24, at Britannic.
One blacksmith shop 12×16, at Britannic.
One ore-house 16×30, at Britannic.
One 35 horse power engine.

Two 20 horse power boilers.
One hoister.
One large blower.
One small blower.
One whim.
Three pair of bellows.
One set blacksmith's tools.
Two heaters.
One carpenter's level.
One Fairbanks' scales.
One surveyor's compass.
One surveyor's level.
Three iron ore buckets.
Six iron ore cars.
Eight hundred feet T rails.
325 feet one and one-half inch rope.
Three iron wheelbarrows.
Ninety pounds drill steel.
Two hundred pounds of iron.
One whim house 20×30, at Revenue.
One bunk-room 16×20.
One tunnel house 12×16, at Centennial.
One log store room 16×20, with lean-to 12×30.
Two log cabins.
One log stable.

Nearly all of the above property is in good condition and ready for immediate use. Some changes should be made in the arrangement of the buildings, and some additions to the stock of tools.

Very respectfully yours,

A. W. KELLOGG,
Mining Superintendent.

In addition to the above personal property there are nine lodes and several mill sites, and 480 acres of land at the town of Grant, on the South Park Branch of the Union Pacific Railroad, including that town and the depot, telegraph office and other buildings, and where the company have a large dwelling house, all with perfect titles beginning with United States patents, and 160 acres upon which the smelter, saw mill, and other buildings are located.

WASHINGTON, D. C., *October 25th*, 1883.

To the Board of Directors of "The Geneva Grey Copper, Silver and Gold Mining and Milling Company:"

Gentlemen:—

Having visited the mining property known as the Geneva property, situated at the head of Geneva Gulch, in Clear Creek, Park and Summit Counties, in the State of Colorado, and personally examined the same for my own satisfaction and that of others, for the purpose of ascertaining its value, beg leave to submit the following report, which is substantially a copy of a report made by me to Hon. B. F. Jonas and Gen. John A. Logan.

First. I submit the following copies of letters and papers relating to this property, namely—1st. Letter of George Teal, a mining Engineer of Boulder, Colorado; 2nd. Letter of Hon. J. B. Grant, Governor of that State; 3rd. Letter of Geo. Rust & Co., owners of a recently constructed Concentration works at Decatur, Colorado, and 4th. A letter of A. A. Egbert, the General Superintendent of the Colorado division of the Union Pacific Railroad Company.

These letters explain themselves.

Second. The result of my personal examination of these mines, and the property belonging to them. To begin that, I call your attention to the printed report made to Jno. W. Godfrey, by A. W. Kellogg, (copy herewith enclosed). This report, as to the amount and character of developemnt-work done in the mines, I found substantially correct. In making my examinations of the property, I explored all the tunnels, shafts and levels or drifts, cut and sunk. There are three tunnels, namely,—the "Britannic," the "Leviathan," and the "Mallory." The "Britannica" has been run into the mountain (the main divide of the Rocky Mountains, a distance of about 1050 feet from the Atlantic side, and within about 300 feet of the Pacific slope.) The "Leviathan" a distance of about 750 feet, and the "Mallory" about 400 feet. The "Leviathan" cuts two veins; one of which has some developement-work done The "Britannic," or principal tunnel, cuts three good silver veins, the "Celtic," the "Baltic," and the "Revenue." It cuts the "Celtic" lode at about 400 feet

in the Mountain, the "Baltic" at about 750 feet, and the "Revenue" near its present terminus. On the "Celtic" vein or lode, a drift has been run a distance of near 200 feet, passing in its course the shaft sunk on that vein from the surface, thus furnishing good ventilation of the tunnel at that point. On the "Baltic" vein or lode, the principal work of ore developement has been done; at the point where the "Britannic" tunnel cuts or crosses this vein, a shaft has been sunk, on the vein, to the depth of 240 feet. From which shaft, at intervals of each 60 feet in its downward course, drifts have been been run, on the vein, distances averaging about 100 feet each, thus exposing, ready for mining, the vein 60 by 100 feet for each 60 feet thus run. This is what is called in mining parlance "Blocks, or ore in sight." There are four of these "blocks" opened and developed in this 240 feet shaft. In my measurement of this vein, in this shaft and in the different drifts run from it, I make the average thickness 16 inches. The thinest point I found being 8 inches, and running from that to 23 inches. But allowing the vein to average only 12 inches, then we find that there is ore in these four blocks, (60 by 100 feet each), 24,000 cubic feet, and allowing 10 cubic feet to the ton there is 2,400 tons of ore ready to be taken out for market from this devlopement alone. The assays I had made from ore that I took from this vein, *in person*, excluding the largest, "No. 6," shows an average of $113.-28 per ton. In obtaining the samples, I cut the vein at various points in the shaft and dirifts, and, in doing so, I took the ore in each case from clear across the vein, in order to secure an average quality of the vein. These samples I took personal charge of and took them to Denver to be assayed, and before having the assays made, I made inquiry of the oldest and most reputable citizens of that place, Governor Grant among the number, to ascertain who was the reliable assayist there, and was unanimously recommended to rely upon Prof. E. E. Burlingame. I then committed my samples to him to assay. His certificate thereof was mailed to you at New Orleans, also a copy thereof to Gen. John A. Logan at Chicago. In regard to these assays I will explain that I did not intend the large assay "No. 6" should be included with the other eight in making the average assay of the lode. After I had procured the samples I did, for that purpose, I then, with the

mining engineer, looked through the vein to try and find the richest specimen we could, and selected the "Bismuth" specimen, from which assay "No. 6" was made. But, excluding that, the average of the remaining eight shows a value far above what is now considered valuable mining ore. The best informed men I found said to me that ore which would run $60 per ton, with reasonably moderate transportation, would pay well. On the subject of the market for the ore of these mines and the transportation thereof, I will say that, with the main tunnel, (the Britannic,) being completely through the mountain to the Pacific slope, a distance of only about 300 feet from its present terminus, brings that end of the tunnel to within about two miles of the town of Decatur, situated immediately below that point, in the valley of a tributary of Snake River, where the Concentration (works) mill of Geo. Rust & and Co. is now operating, and, by the construction of a suitable tramway, the ore can be transported from the Pacific end of the tunnel to that point automatically. Besides this, I have the assurance of the General Superintendent of the Colorado Division of the U. P. R. R., that its South Park branch, now within ten miles of Decatur, will be extended to that point early next spring (see his letter). With these facilities, all the ore of these mines, (both high and low grades), can be available conveniently and at a large profit. In addition to the ore development, above mentioned, there is now out of the mines, and on the ore dumps at the Atlantic ends of these tunnels, about 300 hundred tons of low grade ore, that is to say, ore taken from the mine in making these developements, from which the richest parts have been culled and carted or packed to market. This low grade assay $51.07 per ton. (See assay No. 5.) Hitherto all ore taken from these mines had to be taken to "Grant," a station on the South Park Railroad, distant 12 miles from the mines. Consequently, this low grade ore was not and could not be made available. But with the "Britannic" tunnel completed it can be made available at a good profit. There are embraced in this property, nine well defined fissure-veins or lodes, all in one group, the titles to which are perfect; beginning with the United States patents, and coming down to the present owners, in one unbroken line. Besides these lodes, there is a large amount of other property, consisting of timber lands, and milling sites, all with like titles. Also, a large amount of machinery and tools,

consisting of one heat concentrator; steam saw mill, in complete order; one 35-horse power engine, in the mines, complete; a complete assay office and apparatus; blacksmith shops snd tools of all kinds, nearly.

The tunnels referred to are all well constructed, and in excellent working condition; their sizes are about 6 feet in width, and from $6\frac{1}{2}$ to $7\frac{1}{2}$ in height. The shafts and drifts are all large and roomy and all in good working condition. There is no water encountered in any of them. Indeed the attitude of these works is so great (about 11,000 feet) that no danger of being interferred with by water need ever be apprehended. From the cost of tunnelling and shafting at the present time, with the modern appliances therefor, the work of this character already done in these mines could not now be done for anything near the price for which this property has been purchased, namely, $200,000. So that, on the plan proposed to operate it the only question that need be considered by those engaging in the enterprise and furnishing the $30,000 in cash to be placed in the treasury of the company, as a fund to defray the necessary expenses and to push the "Brittanic" tunnel through to the Pacific slope, and to construct a tramway to transport the ore to the mill or railway at Decatur, by the time next spring when the railroad reaches that point, is whether the quantity and quality of the ore in the several veins developed and belonging to the property will justify the investment.

On that subject I have no hesitancy in saying that, from my personal examination, I am satisfied that the ore already developed in the "Baltic" vein, with the low grade ore above referred to as already out, is vastly more than sufficient to cover the $30,000 and provide for the interest on the $200,000 of the bonds of the company, at 6 per cent. per annum, given in payment for the entire property; and also to make all necessary developments and improvements for the further operation of the mines in the future. If I am correct in this, then those who furnish that operating capital, will be secure in being reimbursed the amount contributed to that fund within the first year, and have the interest represented by their stock in any future there may be in property, without any cost, beyond the use, for that time of the sum thus advanced to start the enterprise. As I presume you are not acquainted with the history of the

property, and its operation in the past, I deem it proper to explain that, as I learned it in Colorado from those who have known it from its first discovery, these mines were originally owned, partly by a company, and partly by individuals. Upon the development of these several lodes in the beginning, it was found from their "dips," that they were running together at no great distance down; therefore the company, and the several individual claimants consolidated their interests, and organized what was known as "The Geneva Consolidated Mining and Smelting Company." The business affairs of this company was committed to the management of a man who proved extravagant and careless, and, before the stockholders found it out, involved the company largely in debt; to provide for the payment of which the company borrowed money and secured that loan by a trust deed on the entire property. The company failing to pay the first interest thereon, the trust was executed, the property sold and purchased by the *cestue que trust*, who sold to this new company. This is the explanation why such an amount of valuable development-work on good veins of ore is made obtainable at the price of $200,000, payable in the bonds of this company, due in ten years, bearing interest at 6 per cent. per annum, payable semi-annually, with the privilege of the company paying the whole or any part thereof at any time after one year, if it desires to do so. These bonds secured by a first mortgage on the property only.

The basis of my estimates upon which I express the opinion that there can be no risk in embarking in the enterprise proposed is: that allowing the ore in "Blocks" to be 2,400 tons, which assays $113.28 per ton, I reduce that assay to $100 per ton, then allow the large cost of one-half for taking that ore out of the "Blocks," and milling the same, still there would be a net value thereof of $120,000 besides the avails of 300 tons of low grade ore now out.

In conclusion, I will add that, so well am I satisfied with the property, after a thorough personal examination of the same, and its future, that I shall take one of the six interests to furnish the $30.000, on the plan proposed by Gen. Simmes, in the formation of the new company, which I suppose he has fully acquainted you with, and I shall not hesitate to advise any of my friends, who may be able to do so, to do likewise.

Very respectfully, &c.,

(Signed) W. W. WILSHIRE.

Copies of Letters referred to in Report.

"No. 1."

BOULDER, COLORADO, *October 13, 1883.*

W. W. WILSHIRE Esq.:

DEAR SIR: Yours of to-day to hand, and in reply will say, 1st. I do regard the property valuable, and one, had I means, would cheerfully invest in. I also feel satisfied that with proper management, both in regard to the working of the mine and the treatment of the ore, the mine can and will pay largely.

Its past management is no secret; in fact, it has been well known as the mine of the forty thieves. Therefore, it is not to be wondered at why so much money has been expended, and so little returns.

2d. The mine can be worked all the year without any extra cost or danger. The snow does not affect the development of the property. Some winters the roads are better for travel from the mines to the railroad, owing to the good sleighing.

Yours, most respectfully,

GEORGE TEAL,
Mining Engineer.

Indorsed as follows:

I regard Mr. George Teal as one of our most able and reliable mining engineers in Colorado.

Oct. 15th, '83.

(Signed) G. G. SYMES.

I know Mr. Teal; he is a good mining engineer; has been in the management of large mines. I have no doubt about his statements being correct.

JOHN A. LOGAN.

"No. 2."

STATE OF COLORADO, GOVERNOR'S OFFICE,
DENVER, COLORADO, *October 11, 1883.*

Judge W. W. WILSHIRE,
City.

DEAR SIR: In reply to your inquiry as to the reputation of Mr. E. E. Burlingame as an assayer, I am happy to say

that I regard him as being entirely trustworthy in every respect. You can confidently rely upon statements that he may make to you with reference to the value of ore carrying the precious metals.

Very respectfully,

J. B. GRANT.

"No. 3."

DENVER, COLORADO, *October* 15, 1883.

Mr. W. W. WILSHIRE:

DEAR SIR: You ask me the character of my reduction works at Decatur, &c. It is for treating copper and zinc or antimony ores, or such ores as are considered refractory. Can use lead ore that does not run more than 10 per cent. in lead, but do not pay anything for it, as we cannot at present save lead; but in the course of a year we expect to add a smelter to our plant. Our plant is complete, and the first run has been made and is a great success. We can handle at present about ten tons per day, but by the addition of an automatic roaster can increase with our present capacity to 30 tons. We are running on Montezuma ores at present, which they have to bring eight miles up the valley.

We expect the railroad in soon, when we will be the natural centre for all ores in that region.

Very truly yours,

(Signed) GEORGE RUST & CO.

"No. 4."

UNION PACIFIC RAILROAD, COLORADO DIVISION,
GENERAL SUPT. OFFICE,
DENVER, COLORADO, *Oct.* 13, 1883.

Judge W. W. WILSHIRE:

DEAR SIR: In regard to our conversation as to the completion of our line to Decatur at an early date, I think it will be done early next year. I have advocated it, and expect a number of our directors here in a few days, and think, after my showing them the importance of it, that they will authorize the completion of it at once.

(Signed) A. A. EGBERT,
Gen. Supt.

Vol. 12, Folio 82. *Established 1866.*

E. E. BURLINGAME, ASSAY OFFICE,

446 Lawrence Street, AND CHEMICAL LABORATORY, DENVER, COL., *10 Oct., 1883.*

I HEREBY CERTIFY, *That the samples assayed for* W. W. WILSHIRE, *gave the following result:*

No.	DESCRIPTION.	Gold, oz. per ton.	Silver, oz. per ton.	Gold and Silver, Value. Dolls.	Cts.	Copper, Per Cent.	Lead, Per Cent.	Lead or Copper, Value.		TOTAL.		REMARKS.
1	....	Trace	29.93	30	72	.....	.....	.....	.....	....	..	Average of samples weighing 10 to 15 lbs.
2	....	0.10	196.50	218	15	.....	.....	.....	.....	....	..	
3	....	Trace	10.33	11	36	.....	.....	.....	.....	....	..	
4	....	0.13	76.33	86	56	.....	.....	.....	.....	....	..	
5	....	0.13	44.07	51	07	.....	.....	.....	.....	....	..	
6	Bismuth.	1.13	1729.29	1,924	81	.....	.....	.....	.....	....	..	
8	High with yellow cop.	0.26	91.04	105	34	.....	.....	.....	.....	....	..	
9	High grade cop.	0.10	246.90	273	59	.....	.....	.....	.....	....	..	
10	Galena.	.....	117.70	129	47	.....	64.00	.....	.....	....	..	
							Aevr	age of lot	$314.56	per	t	on.

Gold at $20.00 per ounce.
Silver at $1.10 per ounce.
Lead at per cent.
Copper at per cent.

E. E. BURLINGAME,
Chemical Laboratory,
Oct. 10, 1883,
And Assay Office,
Denver, Colo.

E. E. BURLINGAME,
Assayer.

REPORT

ON THE

Geneva Mining Estate.

DENVER, COL., *January 1, 1882.*

DEAR SIR: In accordance with your request, I herewith submit my report on the "Geneva Mining Estate:"

LOCATION, ETC.

It is situated in Clear Creek and Park counties in Colorado, about seventy miles from Denver, and consists of nineteen lode claims on Revenue Mountain, at the head of Geneva Creek, the tributary of the Platte River; of four mill sites on said creek; of 480 acres of timber and agricultural land at Grant, a station on the D., S. P. & P. Railroad, located at the mouth of Geneva Creek; of a smelter, saw mill, offices, etc., at Asterville, about eight miles from Grant, on said creek, and of boarding houses, machinery, and mining buildings at the mines.

LODE CLAIMS.

These claims are known as the Revenue, Baltic, Celtic, Republic, Oceanic, Adriatic, Gaelic, Graphic, Belgic, Blue, Best, (for all of which Government patents have been issued,) Japanic, Occidental, Murphy, Hugh Kelley, Dudley, Little Railroad, and Kelley and Dudley. These latter are distinct claims, but covered and protected by the surface lines of the patented claims.

HISTORY.

The discovery of good surface ore (float) on Revenue Mountain, in 1873, induced several prospectors to commence work at that point, and a large number of locations were soon made. The result of further work was the pro-

duction and shipment of fair quantities of high-grade pay ores; some of it of such exceptional richness as to attract the attention of investors, who, with a view of opening the claims at greater depths, purchased several of them, projected and drove the Leviathan tunnel. The company operating this tunnel also purchased quite a number of the adjoining surface locations, and did some valuable prospecting work by sinking shafts and running cross-cuts thereon, while driving their main tunnel a distance of 764 feet into the mountain, cutting several veins at a good depth, but not securing any large quantity of pay ore except from the second vein cut. One of the properties which attracted much attention, by reason of its rich surface ores, was the Revenue mine. This property was purchased for a large consideration from the original discoverers, and soon passed into the hands of English capitalists, who organized the Revenue Mining Company, by whom the work was prosecuted and large shipments of rich ore made. Other properties were acquired by this company, and, after some time, a conflict of title arising with the Leviathan Tunnel Company, a consolidation of property and interests was effected, and the Geneva Consolidated Mining and Smelting Company was organized, with a capitalization of two million five hundred thousand ($2,500,000) dollars. By this consolidation of interests the new company was well situated for good and effective work. Possessed of an immense mineral territory, with fissue-veins, mill, and tunnel rights of assured value, this company should have made a great success, and have added largely to the world's store of precious metals at a profit. That these results were not attained is to be regretted, but must not be charged against the property. An elaborate system of development was inaugurated and carried on until, by reason of lavish expenditure and mismanagement, the credit of the company was exhausted and its property sold to meet the demand of creditors. The mine development thus obtained, at a loss to stockholders, is all of value to future owners. The expenditure for the erection of the smelter may be considered as nearly a total loss, as it is of no practical value to the estate.

This enterprise was but a repetition of the mistake so often made by mining companies who, when operating at a distance from suitable ore markets, seek to lessen their freight charges by endeavoring to successfully treat their

own refractory ores, and this in total disregard of the fact that such ores of one class only can not be smelted economically; that a variety of ores, not usually obtainable from any one mine, must be had to secure a proper flux and such a profit as will warrant the expense of plant and treatment. The only works needed with this property is a concentrating mill, and that only when a large quantity of low grades shall have accumulated.

DEVELOPMENTS.

The actual mine developments, so far accomplished, may be summarized as follows:

Tunnels.	*feet.*	
Britannic	1,025	
Leviathan	764	
Mallory	408	
Centennial	193	
Republic	115	
Blue	278	
		2,773 feet.

Drifts.	*feet.*	
Baltic vein	1,703	
Celtic vein	193	
Blue	43	
Leviathan	677	
Centennial	69	
Mallory	45	
Revenue vein	551	
		3,351 feet.

Shafts.	*feet.*	
Revenue	455	
Baltic	275	
Celtic	240	
Miscellaneous	150	
		1,120 feet.

Stopes have also been driven to the amount of 650 fathoms. I estimate, roughly, the proper cost of the above work at $120,000. The erection of smelter, saw mill, buildings, machinery, etc., will make another item of a least $200,000. I

am informed, however, that under the system of management adopted, the outlay has been over $500,000. From the best information I can obtain, the property has produced between $150,000 and $200,000.

In the early history of the mines, much of the work was done by lessees, and large quantities of high grade ore were stolen and never accounted for. It has lately transpired that ore was regularly transported to Georgetown, a distance of fourteen miles, by night, from which the company never realized a dollar, and of which we are unable to get any returns as to quantity and value. The ore must have been high grade, in order to stand such high freight and treating charges as would be demanded under the circumstances. In many instances, also, sampling works, where the company marketed their ores, have changed hands, and the books of the previous owners can not be obtained from which to secure accurate returns. I append copies of returns from the Boston and Colorado Smelting Company, showing shipments to them which aggregate over $38,000. My estimate of total production is made from what I know of the ore at present, and from what I can indirectly learn from parties familiar with the character of the ore bodies in the past.

My attention was called to the property in July last, when I was shown a list of assays made by Professor Burlingame, of this city, (a copy of which is appended and marked Exhibit B.) They gave such a fine average that I was induced to examine the property, with a view to its future possibilities. At that time I took forty-two samples of ore from the various workings, many of these samples being assayed from curiosity only, but resulting in another large average, as shown in Exhibit C, hereto attached. Since that time I have had the general management of the work and have carefully examined the property, making frequent tests of the ore, and with uniformly large results, so much so that I am surprised at the quantity of the ore and its exceptional value. From these tests and my familiarity with the workings I am, therefore, to a certain extent, qualified to estimate the probable value of the ore already extracted.

In sinking and in driving the levels and stops, nearly 4,000 tons of ore should have been extracted, worth in the rough at least $50 per ton. This would give an aggregate yield of nearly $200,000, as indicated above, though it may not have reached that amount.

CHARACTER OF THE ORES.

The ores of this district are mainly argentiferous, galena, and bismuth, iron and copper pyrites, gray copper, and zinc blend. Ruby, brittle, and native silver are also found, and nearly all of these ores carry a small percentage of gold.

TREATMENT OF THE ORES.

At present the most available manner of realizing from these ores is to rough dress them by hand, and ship to smelters all ores running $75 per ton and upward. Ore of this class in quantity will pay handsomely, and the facilities for marketing them are increasing every year. Plans are now being considered for the erection in various portions of the State of leaching works similiar to those used in California whereby pyrites ores can be handled at a much less cost than by smelting. If this be done, the Geneva ores should be submitted to a different dressing and three classes made, viz: smelting ore—galena, gray copper, and bismuth; chlorination ore—iron and copper pyrites; concentration ore—all ore of too low grade for profitable shipment.

FUTURE WORK.

In regard to the future working and development of this great property, I suggest—

1st. The completion of the Britannic tunnel through to the Pacific slope, a distance of 300 feet.

2d. The completion of the upraise on the Revenue vein until a junction is made with the main or working shaft.

3d. The extension of the Mallory tunnel to a junction with the blue lode.

4th. The extension of the West tunnel level on the Baltic vein to a junction with a drift from the Mallory tunnel on the same vein.

5th. The projection and driving of a lower or main tunnel at least 600 feet deeper than the Britannic tunnel and from the lowest available point on the Pacific slope.

The first four items of the projected work are designed to secure proper ventilation, open new ground, and furnish adequate facilities for working; the ground already partially explored.

The latter item to constitute a new and grander system of development, and I give a few of the many reasons calling for immediate work in this direction:

1st. The cutting of veins not encountered in the Britannic tunnel or other workings, but known to exist on both sides of the mountain.

2d. The opening of large bodies of ore in the Baltic, Blue, Revenue, and other veins now being worked, and in the most favorable manner.

3d. The probabilities that the many veins cut by the Britannic tunnel will be found concentrated into a few larger veins at this greater depth, and thus be worked at less expense.

4th. The increased facilities for handling and marketing ores.

On the Pacific slope, where it is proposed to start this tunnel, we are much nearer railroad connections, and the expense to get the ore to the market will be greatly reduced; the water supply is more regular for steam purposes, and there is less danger of snow-slides and consequent impediment to the work. In order to secure the best results in this, as in every other enterprise, it is necessary that ample funds should be provided for machinery plants and development-work. This property being already developed to a depth of over 500 feet, its value is a demonstrated fact. The continuity of the ore bodies and their increasing strength and richness is known, and there is not the slightest doubt as to their permanence, and therefore, in the future, all plans should be made with the idea of prosecuting the work to great depths. Powerful and automatic machinery should be provided, and, while carefully guarding against the mistakes and reckless expenditures of the past, no money should be spared to make the improvements permanent in their character.

So far, in this State, proper attention has not been paid to the use of labor-saving devices in connection with the mining industry. In driving the tunnels and other work on this property I would advise, so far as practicable, the use of power-drills, automatic transportation of the ore, and every device by which time and money can be saved, even if the first cost of the plant is large. In the long run it will pay to use automatic appliances wherever possible, and

to pay good prices for hand labor when machinery cannot be substituted.

With an adequate plant and working capital this property can, at a low estimate, be made to produce handseme dividends on a capital of $500,000 invested, and is now in much better shape to produce such dividends than are a majority of the mining properties of the State.

From year to year its output can be increased as new ground is opened and better facilities are provided for the extraction and treatment of its ores. If the lower tunnel is at once driven to a junction with the Baltic and Revenue veins, (which will at that depth be united,) a body of ore will be exposed and available worth many times the price now asked for the property. For every foot of levels driven from such point of junction at least one hundred tons of ore will be ready for extraction, worth from $75 to $100 per ton. This is not a wild estimate, but a reasonable deduction from past experience in the upper workings. By reference to the maps accompanying this report you will see at a glance how admirably this property is located for a systematic development by cross-cut tunnels.

Revenue Mountain is a portion of The Great Divide, or Continental Watershed, and is cut by an unusual number of true fissure veins, running nearly parallel with the divide, and outcropping at an elevation of over 12,000 feet above sea level. At this point the divide is comparatively narrow or thin. It is, therefore, practicable to speedily cut these veins at nearly a right angle by these cross-cut tunnels, and thus open up large reserves of ore, while securing perfect ventilation and drainage and the means of extracting ore at a minimum cost. The importance of such a location is never underestimated by practical miners, and should not be overlooked by investors. Hoisting ore and water from great depths, as is necessary when confined to shaft work only, is one of the largest items of mining expenses, and should only be resorted to when the conformation of the ground will not permit of a system of tunnels.

The maps and plats accompanying this report will give you a good idea in detail of the location of the property and the work accomplished to date. The proposed lower tunnel noted on two of the maps is the one projected and commenced by the old company on the Atlantic slope, and only cuts the veins 400 feet lower or deeper than the

Britannic tunnel. My suggestion is in regard to a deep tunnel from the other, (Pacific slope,) the mouth of which would not be more than one mile distant from the track of the Denver, South Park and Pacific Railroad, at Decatur, to which point surveys have been completed, and where smelting works will doubtless be erected during the coming season. This proposed tunnel will cut the veins from 200 to 300 feet deeper than is practicable from the other slope, and save at least 12 miles of ore transportation. It may also become valuable as a means of railroad communication through the great range, it being the quickest and most accessible route out.

ORE RESERVES.

There is now in sight in the Baltic vein, below the 120 feet level, a block of ground 248 feet long by 155 feet in depth, and averaging at least 9 inches in thickness, which will yield 3,803 tons of ore, worth at least $90 per ton, or a total of $342,292, while scattered through the old Baltic stopes, in the workings of the Celtic, Revenue, and Leviathan vein No. 2, good ore is exposed, which would, though not technically in sight, aggregate aa equal amount, or a total of nearly a million dollars worth of ore, exposed in the present workings. Cut this down even 50 per cent. for expenses of extraction and treatment, and a handsome margin remains.

Before making this estimate, I went carefully through all the workings below the 120 feet level, taking samples across the high grade ore streak, (which averaged more than 12 inches every 4 or 5 feet, regardless of the grade of ore,) my assays gave, from three large lots taken in this manner, respectively, 140.6, 102.5, and 30.2 ounces of silver, or an average of 91.2 per ton.

In conclusion, I can heartily commend this property as one of the best in the entire region devoted to mining. The estate is large, and very valuable in all respects. The tract of land at and near Grant, including that town site, is finely located well watered and timbered, and yearly increasing in value. The mill and tunnel sites are also desirably located. The lode claims are true fissures, and therefore destined to hold their value for many years. Clear Creek county, in which they are located, ranks as one

of the largest and surest producers in the State, having yielded since 1859 over $20,000,000 of the precious metals, and each year increasing her output. However valuable for the time being, deposits of ore may be, it is to fissure-vein mining we must look for that steady and never failing supply of gold and silver which gives wealth to the nation and the judicious investor. I cannot insist too strongly that if your friends interest themselves in this property they should bring to the enterprise the same business capacity that characterizes all other successful business ventures. The mining industry has carried, in years past, a load of ignorance and incapacity that would have swamped any other industry, and had it not been for the exceptionally large profits arising from the few enterprises that were fairly managed, even it could not have survived. There are to-day thousands of dollars lying in the slag dump of the Geneva smelter that should have gone as dividends to its owners; and all over this State, like monuments of folly, exist to remind you and us of the sure effects of ignorance and mismanagement. With attention to three important items, men of capital can secure magnificent returns from mining; without this attention the results of investment must nearly always prove disastrous: First, secure property that possesses intrinsic value and gives assurance of permanency; second, provide the enterprise with an adequate working capital; third, employ practical mining skill in the management of your property.

In the Geneva Mining Estate you will find the first requisite, and my experience and observation both teach that if you will meet the other requisites you will be greatly benefitted and immensely repaid. In this particular case and with this property it rests entirely with the management to make the enterprise a glorious success.

Respectfully yours,

(Signed) A. W. KELLOGG.

MEMORANDUM.

Of Ore bought of the Revenue Mining Company and Geneva Mining and Smelting Company by the Boston and Colorado Smelting Company.

Date.	Weight.		ASSAY, PER TON.			Price per ton.	Amount paid.
			Gold.	Silver.	Copper per ct.		
1879.							
April 11..	4,569	Ore.....	.....	214	.8	$192 90	$440 57
May 22...	1,977	"	.4	362	.7	343 80	339 67
" ..	2,092	"	.2	45	2.5	30 70	32 11
" ..	1,578	"	.....	280	13.0	267 80	211 29
" ..	3,184	"	.....	210	9.5	195 30	310 91
" ..	1,161	"	.35	210	9.5	201 70	116 98
" ..	6,161	"	.....	119	6.0	103 30	318 16
June 13...	19,164	"	.....	66	2.0	48 40	463 76
" ..	6,309	"	.....	162	5.5	149 00	469 94
" ..	2,176	"	.....	41	2.5	25 00	27 20
" ..	1,714	"	.....	177	7.5	167 60	143 63
" ..	400	"	.....	77	4.0	63 10	12 62
" ..	5,684	" ...	.....	112	6.0	101 30	287 89
" ..	391	"	.....	16	6.5	8 60	1 67
July 3....	782	"	.2	151	3.0	135 80	53 09
"	7,376	"	.....	173	5.0	157 50	580 86
"	8,092	"	.....	85	6.0	74 30	300 61
August 23	15,249	"	.....	178	3.5	157 20	1,198 49
Nov. 22...	1,931	"	.45	263	4.5	254 20	245 43
1880.							
Jan. 21...	20,453	Matte..	.67	308	19.5	338 40	3,460 47
Feb. 21...	20,111	"	.66	307	20.5	338 60	3,404 79
March 29..	7,274	" ...	.30	287	17.5	308 50	1,122 01
May 6	24,985	" ...	.75	225	9.5	238 67	2,981 58
Nov. 10...	17,607	" ...	1.70	467	24.0	519 90	4,576 93
Dec. 2....	12,325	" ...	2.90	527	27.2	606 60	3,738 17
Dec. 27...	2,039	Ore.....	3.60	338	5.8	389 46	397 05
1881.							
Jan. 17...	15,145	Matte..	2.43	470	24.0	530 22	4,015 09
" ..	913	Ore.....	3 15	531	14.7	584 33	266 74
" 31...	19,150	Furnace bottom	1.10	191	10.4	207 83	1,989 97
Feb. 5....	13,400	"	.75	189	9.0	196 97	1,319 70
"	4,628	Matte..	1.00	221	10.9	236 75	547 83
" 7....	19,989	"	.70	170	8.0	175 44	1,753 43
" 9....	8,373	"	3.05	616	32.4	704 60	2,949 80
"	495	1st-class ore....	7.05	771	12.3	890 52	220 40
"	4,904	2d-class ore....	.65	73	4.0	71 55	175 44
							$38,474 28

The above is a correct statement of ore and matte purchased by us from the Geneva Mining and Smelting Company and the Revenue Mining Company.

(Signed:) H. R. WALCOTT, *Acting Manager.*

ARGO, COLORADO, *October* 17, 1881.

NOTE.—In making our estimates at least 25 per cent. should be added to the above amount for smelting charges deducted; this would make the total $48,092.85.

We find, by corresponding with men who held leases on the property, that there has been sold at Georgetown and other points about $50,000.

(Signed) J. D. BEST.

EXHIBIT B.

Report of Assays by Prof. E. E. Burlingame.

Description.	Gold.	Silver.	Value per ton.
	oz.	*oz.*	
West side, 120-foot winze, west	.1	70.9	$79 99
Near bottom of shaft, east side	Tr.	337.8	371 58
East side 120-foot winze, west	.73	674.4	756 44
180-foot drift, roof near brest	Tr.	34	37 40
Between 180 and bottom of shaft	.1	14.7	18 17
180-foot dritt west, hanging wall	.7	83.03	105 33
Bottom 120-foot winze, west	1.8	836.2	955 82
180 foot drift, west in roof	1.46	49.2	63 32
New find, bottom of shaft	.....	266.2	292 82
240-foot drift, west	.....	355.06	391 22
180-foot drift, west, foot wall	.1	40.1	46 11
Bottom shaft, west end	Tr.	9.33	10 26
Pocket, near bottom shaft, west end	Tr.	321.13	353 24
Between 180 and bottom shaft, west end.	.46	28.5	40 54
East side shaft below 100 feet drift	Tr.	78.66	86 52
180-foot drift, east	.16	251.7	280 09
Bottom shaft, east end	Tr.	202.26	222 48
180.foot drift east	1.86	215.8	274 58
Brest of Mallory Tunnel drift	Tr.	33.3	36 63
Entrance Tunnel, Leviathan U slope	.....	488.06	536 86
Mallory Tunnel drift	1.0	183.03	221 44
Celtic, west drift	.26	14.87	21 55
60-foot drift at shaft	.....	305.06	335 56
End of slope, tunnel level	Tr.	85.33	93 86
Dump above Leviathan shaft	33	21.47	30 21
Winze below 60-foot level	.1	83.96	94 35
60-foot slope near west end	Tr.	43.66	48 02
Leviathan shaft	.8	352.2	403 42
60-foot drift	.2	41.96	50 15
Tunnel level, center of slope	.33	75.0	89 10
East side shaft, bet. 120 and 180 feet	.1	127.23	141 95
Celtic drift, east	.1	88.13	98 94
Select specimen	.6	310.4	353 44
Slag from mill	1.2	212.13	257 34
Slag from mill	.66	102.05	125 99
Slag from mill	Tr.	10.33	11 36
Ore at assay office	.46	108.53	127 38
Mallory Tunnel, east drift	.16	14.64	19 30
Upper cut dump	Tr.	49.26	54 18
60-foot drift, large pocket	.5	284.63	323 09
Iron ore	.4	27.6	38 36
60-foot slope, near winze	Tr.	385.66	424 22
60-foot slope, east end	.26	95.54	110 29
60-foot slope, east of winze	.2	668.46	739 30
60-foot slope, west end	.16	113.17	127 68
Average, forty-five assays	.....	.....	$206 66

EXHIBIT C.

Report of Assays by Thomas A. Houghton.

Description.	Gold.	Silver	Value per ton
	oz.	*oz.*	
Baltic, rich specimen	20.1	1,873.9	2,502 16
" slope, 60-foot level	.....	27.55	30 85
" slope, from tunnel level	Tr.	219.1	245 59
" sott streak, under pay, 60-ft. level.	.....	10.7	11 98
" select specime ı	4.45	392.5	531 58
" select specimen	2.77	259.73	337 14
" small pocket, near west end shaft	Tr.	263.5	295 12
" slope, above tunnel level	.1	2.3	4 63
" slope, 60-foot level, west	.....	325.25	364 27
" bottom shaft	.....	92.65	103 76
" bottom shaft	.....	72.4	81 08
" 120-foot level, west	.....	145.9	163 40
" shaft, 8-inch streak	1.	200.1	226 17
" 60-foot level, east	Tr.	407.6	456 51
" winze, between 120 and 180	1.7	344.4	420 85
" bottom of shaft	.....	2.5	2 80
" slope, above tunnel level	.2	19.9	25 40
" 180-foot level, west	Tr.	195.9	219 40
" dump	Tr.	25.6	28 67
" 180-foot level west	.6	22.9	38 00
" level, east	.35	181.65	210 67
" shaft, west end	35.1	322.15	1,086 31
" 180-foot level, east	.15	25.1	31 21
" 120-foot level, east	.4	48.5	62 58
" bottom shaft	Tr.	8.1	9 07
" tunnel level, west end	.....	73.6	82 43
Leviathan dump	.15	195.1	222 11
Leviathan dump	.....	53.4	59 80
Revenue dump	.....	34.0	38 08
Celtic winze, west	.2	24.1	31 11
Leviathan drift No. 4	.1	2.4	4 74
Mallory, drift No. 2	.....	20 9	23 40
Mallory, drift No. 1	.1	4.55	7 15
Republic dump	Tr.	63.5	71 12
Galena lode	.....	28.6	32 03
Revenue, bottom shaft	.....	43.2	48 38
Barry's dump	.....	113.7	137 34
Leviathan shaft, drift No. 2	.....	641.1	718 03
" " " " 1	Tr.	1.6	1 79
" " " " 3, side	Tr.	2.2	2 46
" " " " 3, brest	.2	7.5	12 52
Centennial dump	.1	46.2	53 80
Average, 42 assays			$214 88

DENVER, COL., *May 15, 1883.*

GEN. B. B. SIMMES,
Denver, Col.:

MY DEAR SIR: I learn with pleasure that you have secured the Geneva property, and in response to your inquiries can say briefly, that you have obtained one of the best properties in the State. I prepared a report on this property in January, 1882, for a Mr. Godfrey, of New York city, which gives full details in regard to the extent of the property and its development. You doubtless have a copy of this report, and I am at this time confident that no statements were therein made which will not stand the closest examination and be confirmed by any reliable expert. Since writing that report I have visited many of the leading mines of the State and find none that excel the Geneva combination, both in present and prospective value, and I therefore congratulate you on your purchase.

It is now understood that the Chicago, Burlington, & Quincy R. R. will extend its line across the head of Geneva Gulch this season, its track passing within 200 yards of the mine, and thus putting the property in direct connection with Denver and other smelting centres. The Denver, South Park, & Pacific R. R. is also pushing its line up the Snake river to Decatur, and will be running regular trains from that point this year. The smelting works at Decatur, of which mention is made in my report, are under construction and will buy ore this season.

All over the State the mining prospects are flattering and the output of ore for the first quarter of this year gives assurance that the yield of precious metals for 1883 will be many millions in excess of any previous year.

I was shown yesterday a large sample of ore taken from the Terrible mine at Georgetown, (same county and Mineral Belt as that in which Geneva is situate,) which runs from 900 to 1,200 ounces in silver. This ore was from the depth of 1,300 feet, the lower workings of the mine, and at this point the vein is stronger and richer than at any other depth in the mine. This should give you renewed confidence in deep mining, and in the permanence and value of the Geneva property.

You enter upon the mining business at a very favorable time, recent improvements in mining and mill machinery make it possible to mine and mill ores at a profit, which a few years ago could not be handled, while the extension of our various railroad systems to remote camps is bringing a greater variety and quantity of ore to market and rendering it possible to establish large smelting works where our ores can be treated at a minimum cost.

There are many thousand dollars now lying idle in the ore and slag dumps of the Geneva property that can be made available this season, it not having been practicable hitherto to move this slag and ore on account of heavy transportation and smelting charges. Under wise management the Geneva property should pay handsome monthly dividends for years to come on a capitalization of $500,000, and if I owned the property with capital enough to provide a good plant of automatic machinery, I would not sell it at that figure.

With best wishes for your success, and the assurance that I shall be glad, at any time, to furnish you with any information I may possess in regard to the property or the best mode of working it,

I remain,

Yours, very truly,

A. W. KELLOGG,

Mining Sup't.

COPY OF REPORT OF PROF. BOARD,

OF THE

SCHOOL OF MINES, GOLDEN, COL.,

UPON THE REVENUE GROUP.

(NOW KNOWN AS THE GENEVA GROUP.)

This property has been worked from the surface for some years past; more lately, however, these surface workings have been partially abandoned, owing to the expense consequent upon hoisting from the lower levels after they had been carried down to the depth of 200 feet. The mine having been proved beyond question a rich and paying one, the decision was come to to open it by a tunnel which would (besides intersecting many other prominent veins belonging to the company) cut the Revenue Mine at the depth of 400 feet. This tunnel, known as the Britannic Tunnel, has been driven in during the last three years, and has been carried a distance of 1,025 feet, cutting on its way no less then fourteen veins, three of which only have been worked on—the "*Celtic*," "*Baltic*," and "*Revenue*." It has been considered of primary importance to push on the tunnel, the other eleven veins were only sufficiently worked on to determine their general bearing (*vide* Plan, No. 1.)

Britannic Tunnel is driven from the head of Geneva Gulch, on the Atlantic Watershed, about 8° north of west, or almost at right angles to the general lay of the dividing ridge, which is almost due north and south, and gaining the crest of which, the Pacific Watershed is reached. The tunnel, if pushed about 300 feet further, would, in fact, become a connecting link between the waters of the Platte on the east, and of the Snake on the western side of the range.

The geological formation exposed by the Britannic Tunnel is similar to that of the Georgetown district on the

north, and the St. John's Mines on the south; the whole of the great mineral belt which intersects Colorado being, in fact, the same; that is, the belt in which true fissure veins occur. Gneiss, interstratified by veins of porphyry, granite, and other metamorphic rocks, is the country rock of the district, which in this case seems to be perfectly riddled with mineral-bearing veins, which can readily be traced on the surface from a point about half a mile northeast of the Revenue workings to 1½ miles southwest, where the Montezuma district is reached, through which the veins pass to the St. John's district, also to the head of Deer Creek, the Snake and Hall Valley.

The Celtic Mine (No. 7 on the map) was the first cut by the tunnel on which any important work was done, it being deemed necessary to take advantage of its surface shaft and make connection with the tunnel for ventilation, as well as to develop; the vein being a large and promising one, and cut at 454 feet in, this point being 240 feet from the surface. This shaft has developed a vein from six inches to (in places) 2½ feet wide, the ore consisting of yellow and grey copper, galena, zinc-blende and iron pyrites. It will average about 50 ounces of silver per ton, and when worked can give a large yield.

The Baltic Mine (No. 10 on the map) has been actively working during the past season. A roomy engine-house has been blasted out, and a shaft sunk 120 feet, and a rise put up 123 feet. From the tunnel levels have been driven east 189 feet, and west 160 feet; at a point 60 feet below the tunnell levels a drift has been driven east 126 feet, and west 71 feet. The best body of ore is down below these levels, being 12 inches thick and very rich; but a good average body of six inches is visible through almost the entire workings; and when the 120-foot levels are driven in, so as to open the best stopes, a production of about 10 tons is expected, which will average 100 to 120 ounces. The last lot of first class, which was sold to Professor Hill (seven tons), gave an average of 265 ounces. To-day the Baltic Mine could not produce one-half of the estimated yield; but it must be borne in mind that whilst the rich ore in the shaft has been exposed, the drifts are not yet sufficiently advanced to enable stopes to be started, or the mine in any way to do itself justice. It is intended to sink the main shaft a fur-

ther distance of 340 feet, and connect it with a second tunnel from the Geneva basin, which would work, drain and ventilate the whole property, and give the mine a "back" of about 800 feet, and the Revenue one of 900.

The ore from the mine is particularly clean, and free from spar and gangue, and consists of iron pyrites, generally enclosing a broad streak of grey copper quartz, sprinkled liberally with brittle silver and occasional small streaks of galena or blende. On the surface a shaft has been sunk for 35 feet, and bismuth, silver, galena and grey copper met with in separate streaks. The crevice is large and well defined, and unmistakably a true fissure.

THE REVENUE MINE (No. 12 on the Plan) is the next on which important work has been done, and is the mother vein of the district. When first struck, it was a narrow and unimportant looking streak, but after a raise had been put up some 30 feet, a large body of ore was struck. At the point of intersection with the tunnel the vein was 888 feet in, and 400 feet from the surface. The "rise" has now been put up 70 feet and is intended to connect with the 180-foot shaft of the upper workings. This will probably be done in the early spring of 1884, which will at once give a ready and cheap access to the large bodies of ore left standing in the "Upper Mine," and largely increase the daily yield. A drift is now being driven west from the Revenue rise, and a very good body of ore struck, a sample from which, lately assayed, is said to have given 1,260 ounces per ton. The average of the mine has been about 75 ounces, and yields about a ton to the fathom. The ore is chiefly grey copper and galena, mixed with heavy spar and some little blende, with iron and copper pyrites. The vein matter extends to 12 to 14 feet, and the lode is almost perpendicular, all the others pitching in a greater or less angle in towards it. It is my opinion that at greater depths those lodes will come together and form one large body, in which case the expenses of running would be decreased and the yield increased. The vein which runs along the ridge of the mountain has been opened from the surface by three shafts, 180, 120, 70 feet deep, which have been connected with levels driven on the lode, and exposing a strong and valuable vein for a distance of about 300 feet. Part of this ground is now leased out, the men making good pay, though they have to pack

the ore to Georgetown (23 miles by trail), pay all expenses and a royalty to the company of 25 per cent. Large boarding houses and ore-sheds have been constructed at the mouth of the tunnel, and others, together with the company's offices on the plateau below, from which the lower tunnel is to start. The furnace-house, saw-mills, general offices and stores have recently been constructed in the valley below, where ample supplies of timber and iron ore beds have been secured.

The other veins belonging to the company on the Atlantic slope, which have already been (or will be) cut by the tunnel, are the "Republic," "Gaelic," "Adriatic," "Belgic," "Oceanic," "Dramatic," "Comic," and part of the "Perry Hunt," and "Congress."

THE LEVIATHAN TUNNEL, belonging to Detroit and Baltimore parties, is situated about 900 feet southwest of the Brittanic Tunnel, and has been driven in 800 feet, intersecting several promising lodes. The latest cut is one showing 15 inches of ore, with 100 ounces per ton, chiefly iron pyrites. A large quantity of ore may be mined here next season. About a mile west of the Brittanic Tunnel, and in the horse-shoe adjacent to Montezuma district, are a number of important veins, the most prominent of which is the "Colorado," owned chiefly in London. A large sum has been expended in the development of this property. A shaft has been sunk about 70 feet, and intersected by a cross-cut tunnel about 120 feet, and drifts run out northeast and southwest on the vein for some 200 feet—a short upper drift, some 40 feet. Here a large body of ore has been exposed, chiefly galena, carrying from 55 to 60 ounces per ton; but, owing to the difficulty and expense hitherto experienced in packing the ore to market, the mine has been remaining idle for the past year.

A tunnel has been started below, and driven in about 150 feet, which will, when completed, give a back of at least 350 feet, and make the ore to be mined much more cheaply. Like the whole of the Revenue property, this mine is secured by a United States patent. Other more prominent mines in the immediate vicinity may be enumerated as follows: The Treasure Vault, Silver Bell, Elgin, St. Charles, Chicago, Silver Glen, Naval, Gilman (extension of the Colorado), Eagle Bird, Bob Tail, Queen, Modoc,

Santa Fe, Anglo-Saxon, Sherman, Mary Anne, A. V. Sill, Comstock, Victoria, Minnie, May Flower, America, York Town, Lexington, Centennial, Casino, Elendale, Tainburg, Corkingdale, Joe Lee, Perry Hunt, Congress, Star, Green, Blue, etc., etc. Of these, besides the Colorado, the Star, Silver Bell, Gilman, Green, Treasure Vault, and one or two others, have had a considerable amount of work done, and show, as do indeed most of the others, good bodies of ore; but the high rates of freight hitherto prevalent have, in most cases, checked both development and production, so that the whole district may be said to be in its infancy. The completion of the wagon road, built by the Revenue Company to Grant, will stimulate work not a little; but with the facilities afforded by railroad communication, it is believed that the whole district must rapidly assume the position nature has given it every chance of getting—namely, one of the surest and largest producing districts of Colorado. In conclusion, I would again briefly refer to the Revenue Company's property. It is, beyond all question, a very valuable one, the true fissure character and richness of the veins being beyond all question. The rich ore exposed in the Baltic shaft will be available at a minimum cost when the drifts below (now in progress) are pushed further in, and the stopes opened. This work is now rapidly progressing, and when these stopes are opened, and when, in the Revenue Mine, the connection between the 70-foot rise and the 180-foot shaft has been made, the general production—which to-day, by careful calculation, is estimated to be from 5 to 7 tons per diem—would be considerably more than doubled; whilst, when the lower tunnel intersects the veins on the 900-foot level, and the Germanic Tunnel, cutting the surface workings near the northeast boundary, and connected with them by the extension of the present levels, enables the whole of the upper workings to be brought into play, discharging their ore by the main shaft to the 900-foot level, the product of these mines daily may be confidently estimated as second to but very few indeed in the State. From my personal examinations of the Geneva and St. John's Mines, together with the reports I have heard of the adjacent districts of Montezuma, Deer Creek, and the head waters of the Snake River, and with the knowledge gained by the purchase and smelting of many tons of ore from these and surrounding districts, I

believe a daily production of 100 tons is the very least that can be estimated; and that these veins will be *permanent* producers, in contradistinction to those of deposit formations, is also beyond doubt. The broad rule, too, of richness increasing with depth (which is not always a safe one to base estimates on) seems, in the case of the Revenue Group, to be substantially borne out; for by far the richest ore yet struck is in the deepest workings, the body lately struck 60 feet below the tunnel level (extending to 120 feet to the bottom of the shaft) assaying, the superintendent informs me, as high as from 2,000 to 3,000 ounces per ton.

Explanatory of the above report, I herewith forward the longitudinal *Plan of Britannic Tunnel*, showing the various veins hitherto struck; *Section of the Revenue Mountain*, showing the course of said lodes, also the points of intersection by Revenue Tunnel, and the line of proposed lower tunnel; *Section of Baltic Mine*, showing ground already opened and that stoped out up to date.

JANUARY, 1882.