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Virtue

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INTRODUCTORY

In presenting this report, it might as well be stated at the outset that it describes a mining proposition of considerable magnitude. The property in its present form is the result of a consolidation of the famous Virtue Mine, with other surrounding claims,- the whole comprising a tract of 400 acres of valuable mining lands.

The pioneer miners, although handicapped by the scarcity of surface water, washed much gold from the rich placers of the gravel-filled gulches of the locality, and in 1862 these rich diggings led up to the discovery of the quartz vein now known as the Virtue, and of other veins. The rich float they found on the hill-sides also contributed to the gains of those argonauts. The source of the gold in the gulches and float was of course traceable only to the rich croppings of the quartz veins of the locality.

The Virtue vein soon became the best producer of the Eastern Oregon Gold Fields. The mine became celebrated far and near for its remarkable yield of rich ores. From time to time it passed from one ownership to another.

The United States Government Mint reports credit the mine, up to the year of 1902, with a gold product valued at about \$2,200,000. However, it is a well known fact that much of the very rich ore produced by this mine was clandestinely carried off. It is freely asserted by those who are acquainted with the early history of mining in that locality that rich specimen ore was purloined from the mine in quantities, and either sold, bartered, or promiscuously - and it is admitted, very generously - distributed as presents all over the region, and beyond it; it is also said that some were even secretly engaged in the "business" of handling and disposing of such ores.

In addition to the amounts to be charged to purloining, is the loss of gold left in the tailings which were allowed to escape beyond recovery. Evidently much of the gold which the mine yielded was not included or accounted for in the Government Mint returns, and in all events it was not credited to the Virtue. In view of these facts the estimate of a total yield up to date of \$3,000,000 in gold from the Virtue may indeed be rather low.

For some time, and apparently for no valid reason, the Virtue, notwithstanding its great possibilities, has been allowed to remain practically idle. The mine has much unworked ground which will prove very productive; valuable and profitable ore bodies also will be found on the other veins.

With well-directed development and efficient management, the remarkable record of the Virtue will be greatly exceeded by its future yield, and the property is bound to become a great gold producer.

(Signed) Leo VonRosenberg
Cons. Engr.

New York,

June 28, 1913

(From Virtue Dist folder)

THE VIRTUE MINE

LOCATION:

The Virtue Mine is situated about 11 miles due east of Baker, in Baker County, Oregon. Baker, with a population of 8,000, is on the Powder River, and on the Main Line of the Oregon-Washington Railroad & Navigation Co. (Union Pacific Railroad System). The distance from Chicago to Baker is 1,442 miles; from Ogden to Baker, 508 miles; from Baker to Portland, Oregon, 357 miles.

From Baker, a good wagon road of about 8 miles leads to the Virtue Mine. The head waters of Powder River are in the High Mountains about 20 miles west of Baker. The River forms at Sumpter; it courses easterly to Bennett, then runs northerly through Baker. About 20 miles north of Baker, it makes a very sharp turn, to the southeast, and continues in this direction for 50 miles to Robinett, where it empties into the Snake River.

The Virtue District consisting more or less of arid hills, lies in the big bend of the River. The drainage is principally northeasterly toward the lower part of Powder River Valley. Its main drain is Ruckles Creek, which empties into Powder River a short distance below Erwin. At Erwin the River is only 8 miles northeast of the Virtue Mine, but about 1,000 feet lower in elevation than the collar of the Virtue shaft. However, at Baker, 7 miles west of the Virtue, the River is only 333 feet below the collar of the Virtue shaft. East of and below the Virtue Mine and the Borman Placer ground is "Virtue Flat" which is an old lake bed about 7 miles long (west and east) and two miles wide; its average elevation is 3350 feet (or about 400 ft. lower than the collar of the Virtue shaft). The hills in the western part of the property are about 650 ft. higher in elevation than the collar of the Virtue shaft. The hills are treeless, the vegetation consisting chiefly of grass, sage brush, and other varieties of low brushes. The accompanying map shows the topography and other features of the locality.

EXTENT OF THE PROPERTY:

The property consists of the following mining claims:

CLAIMS, Patented:

Michael Hyde, (Now called the Virtue)
Virginia
Sunset
Virginia Extension
Sunset Extension
Mogul
Collateral
Borman Placer
Virginia Consolidated Mill Site.

CLAIMS, -Not patented:

Little Pittsburg
Little Pittsburg Fraction
Eureka Fraction

The claims form a tract of mining land comprising 400 acres.

The property in its present form is the result of a consolidation of several properties, effected a few years ago.

The Virtue shaft house and the adjoining 20-stamp mill and several other buildings are on the Mogul claim; the cyanide plant, Company's office, superintendent's house, assay office, store, boarding house, stables, together with about twenty-five other buildings, are on the Borman Placer. The whole forms "Virtue Camp". See map of property and photographs.

The mouth of the main adit is on the Mogul claim, near the mill. The adit runs in a southwesterly direction through the Virtue claim, into the Collateral ground; it is 1125 feet long, and along its course cuts several veins.

The Virtue shaft is close to the main adit which forms the first level. The shaft is double-compartment, and 800 ft. deep. The principal plant at this shaft consists of one Risdon Geared Hoist, capacity 1200 feet depth; one Ingersoll Air Compressor, Class J.; one 200 H.P. General Electric Motor; three 80 H.P. Boilers, etc.

The mill consists of 20 stamps (950 to 1000 lbs. each) complete; five frue vanners; one 85 H.P. General Electric Motor, etc.

In the southwestern corner of the Virtue claim is the new 3-compartment shaft which has been sunk to a depth of 390 ft. The shaft building is large and commodious. The plant at this shaft consists chiefly of one Allis-Chalmers Double Drum Hoist; two 60 H.P. Boilers; one Ingersoll 18 x 18 A Air Compressor, etc. See Inventory.

On the Virginia claim is the Virginia shaft, 600 ft. deep; at present there are no buildings or plant at this shaft. On the Virginia and Sunset claims are a number of buildings. Before the consolidation of the properties, these buildings, together with the former shaft buildings, formed "Virginia Camp".

Elevation above sea-level;

Virtue Mine (mouth of Main adit)	3702 ft.
Baker (and Powder River at Baker 7 miles west of Virtue)	3435 "
Powder River at Erwin, 8 miles north- east of Virtue Mine,	2700 "
Difference in elevation between Powder River at Baker and Virtue Mine. Collar of shaft,	333 "
Difference in elevation between Powder River at Erwin and Virtue Mine. (Collar of shaft)	1068 "

High Hill about half mile west of mill....	4400	ft.
Collar of Virtue Shaft.....	3768	"
Collar of Virginia shaft.....	3474	"
Collar of new shaft.....	3872	"
Office.....	3700	"
Virtue Camp from.....3500 to.....	3600	"
Virtue Flat average.....	3350	"

Power: will be obtained from the Eagle River Electric Power Company. The plant of that Company is situated on Eagle River, about 22 miles northeasterly of the Virtue Mine. A substation has been built at the mine, and transmission lines have been constructed to the same. The cost of electric Power at the Virtue property will be \$40.00 per year per H.P.

This plant was discontinued and all equipment removed.

Past Production of the Virtue Mine:

The past production of the Virtue Mine is estimated at \$3,000,000. Owing to the very rich pockets and chimneys found in the main ore shoot, the actual production was probably much more. The average assay value of all the ore sent to the Mill may be placed at \$20.00 per ton.

It may be surmised that when the ore was mined, only the better grade was taken, and that much of the lower grade was left in the stopes as fills, or was left standing. Very likely the mining of the ore was done in a rather careless manner. As the working costs will not in all event be much less, owing to the great reduction of the cost of power, and other economies, much of the ore which was formerly rejected and left in the stopes as fills or remains still standing in the main shoot will under the present conditions yield a good profit. In general it may be stated that such material ranging in value as low as from \$2.50 to \$3.00 per ton can now be profitably worked.

Geology:

The country rock at the Virtue mine is greenstone. It is a very much altered rock of greenish-gray color. It is an intrusive rock, probably an old tuff or breccia. Some of the rock has the appearance of a much altered diorite (gabbro-diorite). South of the Virtue the rocks consist of argillites. Along the contact of the greenstone and argillites the rocks of these formations may be somewhat interbedded. West of the Virtue property, the hills are covered with a thin flow of basalt. To the east of the mine is Virtue Flat, which is an old lake bed. The material of this lake bed consists of clays, gravels, sand, etc., etc. The thickness from surface to bed rock may vary from 200 to 400 ft. The bedrock under the "Flat" is probably greenstone: in part it may be argillites.

The Vein system of the Virtue property is very extensive and interesting. As far as known there are about ten different veins. Very probably there are many more veins but yet undiscovered.

The Veins more or less opened up so far are as follows:

1. Virtue Vein, (2 branches) developed from the surface to a total depth of about 1000 ft., of which 800 ft. is by a vertical shaft, which crosscuts to the veins, levels, etc. The ore shoot has been stoped only to the 600 ft. level. Maximum length of stope about 1200 ft. Production of this stope estimated as \$3,000,000.00.
2. Young America Vein, developed for a length of only 200 ft. (from main adit).
3. Foster Vein, (a blind vein), developed by a short cross-cut from the Palmer Vein; length of level on Foster Vein 460 ft.; stoped for a height less than 30 ft.; produced very rich ore.
4. Palmer Vein, developed from surface to main adit for a depth of 360 feet; stoped for a length of about 650 ft.; Vein below adit level is intact. Stope reported to have produced \$175,000. The ore averaged \$12.00 per ton.
5. Emmett Vein, (probably collateral vein) prospected by a short tunnel in the southern part of the Collateral claim.
6. Chicago Vein, (or Little Pittsburg) prospected by shallow workings for a length of 600 ft. in the southern part of the Collateral, and northern part of the Little Pittsburg claim. Produced about \$116,000.
7. Blue Vein, little prospect work.
8. Pittsburg Vein, little prospect work.
9. Eureka Vein, very little prospect work.
10. Last Chance Vein, a short prospect tunnel.

All of the above named veins are west of the Virtue shaft. No crosscutting has yet been done from the Virtue Shaft workings into the territory east of the shaft. In all probability veins also exist in the large undeveloped areas east of the Virtue Vein. Owing to the deep top soil or wash on the eastern and southeastern portions of the property no rock exposures or veins croppings are visible over a comparatively large area, and for this reason no surface prospecting was done in this territory.

Very likely a number of veins will be found in the area covered by the Borman Placer, Virginia Mill Site, Virginia Fraction Placer, etc. Very probably veins also exist in the greenstone and argillites, underlying the Virtue Flat. The Virginia, Virginia Extension, the Sunset, and Sunset Extension claims, etc., cover the southeasterly continuations of the Virtue, Foster, Palmer, Emmett and other veins. It is almost certain that on these claims valuable ore shoots will be opened up.

The veins of the district are simple fissures, filled with quartz, carrying free gold and a small percentage of sulphurets.

The veins are of the same age; geologically they belong to a very remote period.

The gold was no doubt derived from deep-seated sources; from an igneous magma at profound depth. The veins and ore bodies were formed by ascending hot waters, carrying the gold, silica and other minerals in solution. These hot solutions circulated through the fissures and fractures and in cooling deposited the silica, gold and other minerals in the fissures, which formed channels of circulation.

The gold in the ore is more or less coarse, very pure, and fineness being from 850 to 940. The veins vary from a few inches to 12 ft. in thickness. The average thickness of the Virtue Vein is fully two feet. All of the veins have more or less a northwesterly and southeasterly course and dip to the northeast, with local variations. While several of the veins can be traced for considerable stretches along their course, the outcrops of the various veins, to a considerable extent, are covered by a deep wash or soil, particularly, as already stated, in the eastern and southeastern portions of the property. At the new shaft, the depth of the surface wash from the collar to bedrock is 114 feet. The Virginia shaft, I am informed was sunk through 200 feet of detritus before bedrock was reached. On the Borman Placer the depth of the wash or gravel is probably more than 250 ft. It may be here remarked that prominent quartz croppings do not necessarily indicate high values; on the contrary, they may be often barren. The richer parts of veins, being more easily oxidized, disintegrated and eroded by surface actions, may also be more readily covered up by soil and other loose surface material, than the hard barren quartz croppings, which often are far more in evidence than the richer portions of a vein.

The pay ore occurs in shoots along the course and dip of the veins. The Virtue ore shoot was remarkable for its great length and richness. On the surface it was 200 feet long; lower down its length was 1200 feet. The ore is stoped only to the 600-ft. level. Very good ore is also reported to exist on the 700-ft. and 800-ft. levels; and 800-ft. is the present bottom of the mine.

Further development will prove that the pay ore is not particularly confined to only one ore shoot on each of the veins but that the pay ore occurs rather in a succession of lenses or shoots, along the course and dip of the various veins. The veins between the ore shoots may, of course, be thin or barren. Apparently the pitch of the ore shoots is to the south. In the pay shoots some very rich ore chimneys were often encountered which yielded exceedingly rich gold ore, for which the Virtue has become famous. Unquestionably the Veins of the Virtue System will continue to very great depth. The Virtue Vein has been developed to a total depth of only 1000 ft., (about 250 ft. from surface to adit level, and 750 ft. below adit level). The depth reached by the workings on the other veins varies from 50 to 360 feet, but none of these have as yet been worked below the horizon of the main adit.

Considering the great length of the veins and the very moderate depth of the present workings on the several veins, only a very small portion of each vein has thus far been developed or even prospected, therefore the vein areas yet to be developed are very extensive, in depth as well as on the northwesterly and southeasterly extensions of the various veins. (See sectional maps).

When the Virtue Vein System has been more fully developed, the Virtue property will be one of the great gold producers of the west. It will also be one of the deep productive mines.

The Placers:

The gravel-filled gulches leading up to the veins to the veins on Virtue Hill have yielded considerable placer gold in the early days. It was by these rich gulch diggings that the quartz veins were discovered. The placer gold was derived from the erosion of the rich quartz croppings of the several veins on the Virtue Hill and also on Virginia Hill.

Some washing is occasionally being done when water is obtainable. From the time pumping starts at the Virtue shaft, water will then be available for more or less continuous washing; however, these surface operations will always have to be carried on upon a comparatively limited scale.

In these gravel diggings the true bedrock has never been reached. The depth of the soil and detritus overlying the bedrock may be as much as 200 ft., or even more. Very probably rich gravel channels exist close to or on the bedrock along the course of these gravel-filled gulches, and also in depressions of the bedrock, which owing to the deep wash are not now observable.

Working Costs:

The ores of the Virtue Vein System are free milling. The milling method at the Virtue consisted of plate and amalgamation and concentration. However, values remaining in the tailings after amalgamation may be extracted by the cyanide process, and concentration may then be omitted. The cost of milling by amalgamation and concentration may be estimated at about \$1.00 per ton. The cost of milling, including cyaniding may be estimated at \$1.50 to \$1.75 per ton.

A 50-ton (per day) cyanide plant has recently been installed. The tailings now available amount to about 5,000 tons. Estimated value of tailings, about \$3.00 per ton in gold. Estimated cost of treatment, \$1.00 per ton. Estimated extraction 80 to 85%.

The ore which will be taken from the old stopes can be mined and milled at a cost of from \$2.50 to \$3.00 per ton.

When the property has been more fully developed and put in good working order, the total operating cost may then vary from \$4.00 to \$5.00 per ton, according to the scale of operations, amount of development done, and other conditions.

Development in Detail:

The Main Adit, or Tunnel. (elevation at mouth 3702 feet.) It has a general southwesterly course, and is 1125 ft. long.

Distances from Mouth of Main Adit to Veins: Depth from surface to adit:

From Mouth to Virtue Shaft	165 ft.	
" " " East branch of Virtue Vein.....	325 "	about 130
" " " West " " " "	420 "	" 225
" " " Young America Vein	500 "	
" " " Palmer Vein	650 "	" 360

From Mouth to drift on seams.....	710 ft.	Depth from surface to adit.
" " " drift on seams.....	830 "	
" " " Face	1125 "	

Chicago Veins has not yet been cut; it is about 25 ft. ahead of present face..... about 400

From the Main Adit, the following levels have been run on the Virtue Vein:

On East branch northwesterly	250 feet
On west branch northwesterly and some crosscuts	750 "
On East Branch southeasterly to junction of Veins	250 "
On west branch " " " " " "	250 "
From junction to 3-compartment shaft	525 "
Crosscut to Young American Vein and other crosscuts and drifts	150 "

See Map.

The Virtue Shaft:

Elevation 3768 feet. It is vertical, 800 feet deep, and double compartment. Each compartment is 4 feet 6 inches by 4 feet in the clear. Its collar is 66 feet above the main adit level. Owing to water in the shaft, the level on the Virtue veins, below the main adit level could not be examined. The water stands about 60 feet below the 1st, or main adit level. The Virtue levels are known as: 1st, or main adit level; 2nd; 3rd; the 350 ft.; 600-feet; 700-feet, and 800-feet levels. Crosscuts connect the shaft with each of the five lower levels. According to the maps, the various levels

(except the 800-ft.) extend northwesterly for distances varying from 300 to 500 feet, and southeasterly for 750 feet, more or less.

The mine makes about 350 gallons of water per minute. The water is tepid, indicating the existence of thermal springs.

Originally a shaft was sunk from the surface on the west branch of the Virtue Vein to a depth of 500 ft.; afterwards the vertical shaft above described was sunk and the crosscuts run to the vein. As already referred to, a long ore shoot was opened up on the Virtue which was stoped to the 600-foot level; its greatest length was 1200 ft. The vein is intact below the 600-ft. level. It is reported that very good ore exists on the 700-ft. and the 800-ft. levels; the 800-ft. level, however, was run only for a very short distance each way from the crosscut.

In this connection it is of interest to state that the continuation of the Virtue ore shoot, or, as may be, a new ore shoot, was encountered on the Virginia ground, by a crosscut run southwesterly from the Virginia shaft, at a depth of about 550 feet. This work was done by the former owners of the Virginia. Good ore is reported to have been encountered. While the former owners of the Virtue were keeping their mine unwatered, they incidentally also drained the Virginia Mine which was not equipped with pumping machinery. When the ore was found in the Virginia, the owners of the Virtue declined to bear all the expense of pumping. The different owners failing to come to an agreement, pumping was discontinued at the Virtue, which resulted in the closing down of both properties.

A few years later a consolidation was made of these and surrounding properties, but under new ownership and management.

As soon as the mines are again unwatered, connection should be made on the 600-foot Virtue level between the two mines, for the purpose of ventillation as well as for the development of the ore shoot on the Virginia, which is certainly of great promise. The distance to be driven from the present south face of the 600-foot Virtue level to the point where the ore was encountered on the Virginia may be estimated (according to the maps) to be about 250 ft. The driving should of course, be done on the Virtue Vein, as the vein opened up on the Virginia ground is no doubt the southeasterly continuation of the Virtue.

Young America Vein:

In the Main Adit, this Vein was intersected about 80 feet southw st of the west Virtue Vein. Very little work has been done on it. The level which was run southeasterly from the adit is about 200 feet long. Some ore was found. The vein was also intersected by a crosscut run southwesterly from the Virtue Mine level, about 550 feet southeast of the main adit. Connection should be made between the workings on the Young America. No work was done below the adit level.

The Palmer and the Foster Veins:

In the Main Adit, the Palmer was intersected at a point about 150 feet southwest from the Young America; from this adit a level was driven 200 feet northwesterly, and for 950 feet southeasterly. There are also some drifts which have been run on some branches or feeders of the vein. A shaft, following the vein on its dip extends from the surface down to the main adit level. The ore shoot so far developed is 650 feet long and is stoped from the adit level to the surface, a depth of 360 feet. The vein is intact below the adit level; the ore shoot, however, is bound to continue below that level. The production of this stope is reported to have been about \$175,000.

The Foster Vein was struck by a short cross cut from the Palmer. The level on the Foster is 450 feet long. The stope is 400 feet long, but its average height is only about 30 feet. This vein, while more or less thin, produced very rich ore. The ore is intact below the adit level.

On the Noanette Claim is a short tunnel on the Palmer Vein, which connects with the main stope of this Vein.

The Palmer Vein is very strong and is bound to produce much ore below the adit level and also on its northwesterly extension through the Virtue and Collateral claims, and on its southeasterly extension on the Sunset and other claims. Judging from the apparent dip of the Virtue and Palmer Veins, they will probably join at a depth of about 1200 feet. The Young America is probably an offshoot of the Virtue, while the Foster is probably an offshoot of the Palmer.

The Emmett Vein:

The prospect work done on this vein consists of a shallow tunnel and some surface cuts extending for a length of 300 feet, located in the northern part of the Little Pittsburg claim and in the southern part of the Collateral. The vein shows good values along the entire 300 feet. It was intersected by a crosscut (B) run southwestwardly from the south Palmer level. At this point of intersection it is barren. However, by drifting on the vein in a southeasterly direction, the downward continuation of the ore shoot worked in the surface drift and cuts will very likely be encountered within a comparatively short distance. By surface cuts made on the vein, it can be traced northwesterly through the Collateral claim.

The Chicago Vein:

This Vein is parallel to and about 150 feet west of the Emmett. The development consists of three shallow tunnels, with some crosscuts, situated partly in the southern portion of the Collateral, and in the northern portion of the Little Pittsburg claim. The workings are shown on the accompanying map of section of the vein. The ore shoot developed on the Chicago was comparatively small, but very rich. It produced something over \$100,000. The vein can be traced northwesterly through the Collateral claim, and no doubt, continues southeasterly through the Little Pittsburg Claim. The Chicago Vein also was intersected

by crosscut B. By following the Chicago Vein from the crosscut in a southeasterly direction very probably the downward continuation of the ore shoot which proved so productive in the surface workings will be met within a comparatively short distance. It must be borne in mind that the ore shoots have more or less a southerly pitch.

Later on the Foster and Palmer veins and the Emmett and Chicago ore shoots should be developed by a lower crosscut to be run from the bottom of the 3-compartment shaft in a southwesterly direction.

As already stated the prospect work done on the Blue, Pittsburg, Eureka, and Last Chance Veins is as yet very limited.

The Virginia Shaft. Elevation of collar 3774 feet:

This shaft is on the Virginia Claim, about 870 feet southeasterly of the Virtue Shaft. It is vertical, 600 feet deep and was sunk in the country rock. It has two compartments; each of the compartments is 4 feet 6 inches x 4 feet in the clear. At present there are no buildings or plants at this shaft.

At a depth of about 550 feet a crosscut was run in a southwesterly direction. Within 350 feet from the shaft, a vein was encountered, which beyond doubt is the southerly continuation of the Virtue Vein. It is reported that the ore opened up at this point is of good size and of very good quality.

This work was done by the former owners of the Virginia and of course before the consolidation. (As already referred to the discovery of this ore resulted in a dispute between the former owners of the two different properties over the cost of pumping.)

The New Three-Compartment Shaft: Elevation of Collar 3872 feet:

This shaft is in the southwestern corner of the Virtue Claim, about 850 feet south of the Virtue shaft; and about 500 feet westerly of the Virginia shaft. The collar of the shaft is 104 feet higher than the collar of the Virtue shaft, and 98 feet higher than that of the Virginia shaft.

The shaft is vertical and has three compartments; two are hoisting, 4 ft. 6 in. x 5 ft. each, and one ladder and pump compartment, 6 ft. 4 in. x 5 ft. These measurements are in the clear. The shaft is in the country rock and is reported to be 390 feet deep. The south No. 1 Virtue level connects the main adit with this shaft. The plant at this shaft is enumerated in the inventory. Ultimately this shaft should be sunk to a depth of at least 1500 feet. The cost of sinking may be estimated at \$75.00 per foot to a depth of 1000 feet; below that, the cost will be somewhat more.

Recommendations for Development:

As soon as the mine is unwatered to the 350-foot level, the crosscut which has already been run for about 250 feet southwesterly from the Virtue shaft at the 350-foot level, should be

extended to the Palmer Vein and levels run on this and also on the Foster Vein. The ore shoot stopped on the Palmer Vein from the surface to the adit level, for a depth of 360 feet, and for a length of 650 feet, is bound to extend downward; The Foster shoot will also no doubt extend downward. Estimating that the ore shoots will have the same length as above, the stoping area should then be 650 feet long and 300 feet high on the Palmer (Block A on sectional map), and about 400 feet long and 300 feet high on the Foster (Block B on sectional map). When the mine has been cleared of water, crosscuts should be made from the lower levels of the Virtue to the Palmer, in order to develop the lower portions of the Palmer and Foster Veins and ore shoots. Crosscuts should also be run from the north Virtue levels in a southwesterly direction in the large and as yet undeveloped territory lying north of the main adit, in order to prove the northwesterly extensions of the Young America, Palmer, Emmett, Chicago, and other veins.

Later on a crosscut (already referred to) might be run from the present bottom of the new 3-compartment shaft northwesterly towards the Foster, Palmer, Emmett and Chicago Veins. This crosscut would cut the Emmett and Chicago Veins at a depth of about 400 feet below the surface. For this work a small hoist might be installed at the new shaft.

The south 600-foot level of the Virtue should be driven into the Virginia ground in order to develop the ore shoot encountered by the crosscut run southwesterly from the Virginia shaft, at a depth of about 550 feet. The distance from the present face of the south 600-foot Virtue level to the point where the ore was found on the Virginia ground is approximately 250 feet. The level should be continued southeasterly beyond the crosscut in order to develop the new ore shoot. Later the other Virtue levels should be extended southerly into the Virginia ground.

From the foregoing, and, by examining the sectional maps of the various veins, it will be seen that ore bodies can be readily opened up at several points in the mines. This can be done at moderate expense. The property can be put in a producing state within a short time.

For the development upon a large scale, the new 3-compartment shaft should be sunk to a depth of 1500 feet. The Virtue shaft should be sunk deeper. Crosscuts should then be made to the various veins, and levels driven on the same, etc., etc.

Apparently the Virtue and Palmer Veins converge in their southeasterly course. They may join in the southern portion of the Little Pittsburg claim or somewhere in the vicinity. Some surface prospect work should be done in that locality in order to determine the position of the veins. Should this work give good results, a working shaft should then be sunk in that part of the property, as suggested on the small map of the property and on the sectional maps of the veins. This shaft will be particularly useful in the development of the Emmett, Chicago, and other veins.

By examining the sectional maps it will be noted that the ore shoots of the various veins have apparently a southern pitch; therefore a working shaft in the locality suggested, will prove of considerable importance in the large plan of development of the property.

I would also recommend that crosscuts be run into the as yet undeveloped areas situated east of the Virtue and Virginia shafts. Very probably other veins exist in these portions of the property.

One of the crosscuts should be run clear through the country rock, toward the placer ground, in order to also prospect the gravel which lies at considerable depth below the present surface, near, or in the bedrock. Accumulations of rich gravels may exist close to the bedrock; rich auriferous channels may have formed prior to the period the sediments and gravels of the lake bed of Virtue Flat were deposited. The present gravel washings or diggings are very superficial; the deep gravels and bedrock having never been reached. Ultimately the placer ground might also be prospected by churn drills, or by sinking pits or shafts.

All of the gold in these placers was of course derived from the continued disintegration of the rich croppings of the quartz veins which traverse the property. By the process of erosion the disintegrated materials was gradually carried down the hillslopes and deposited mainly along the gulches below. Some very rich gravel zones or channels may be developed by the work recommended.

However, it must be borne in mind that of immediate importance is the development of the quartz veins, and all efforts should be directed to the opening up of other workable ore shoots on the various veins which can be accomplished in a comparatively short time.

CONCLUSION

The Virtue Mine having produced about 3,000,000 dollars has certainly a very good record. This was produced from the stopes which extends from the surface to the 600-foot level, and before the consolidation with the adjoining properties was made.

The Virtue together with the valuable territory included in the consolidation forms a mining proposition of considerable magnitude. It is certainly a very attractive one. The veins and ore bodies will prove to be very persistent in depth. Workable ore bodies will be found to extend to depths as great as have been reached by any of the deep gold mines of the world.

The climate of the locality is all that could be desired; the property is easy of access and well situated, near a large and prosperous town (Baker) which lies on one of the transcontinental railroads. Baker is also the base of supplies.

The ores can be easily and cheaply treated on the ground. The product is gold. Electric power is available. Water for milling will be supplied by the mine. The vein system is very extensive. With well planned development work a considerable tonnage of workable ore can readily be opened up.

The work required to put the property in a producing state would take about five months and cost approximately \$30,000, which amount is comparatively small, considering that the property would then be on a paying, or dividend basis.

At the same time it must be stated that the Virtue property deserves to be developed upon a large scale. An expenditure of 200,000 dollars or even more, for this purpose, is fully justified. The Virtue, if developed upon an extensive scale, will become a large dividend payer, and one of the World's great gold mines.

(Signed) Leo VonRosenberg,
Consulting Engineer,
New York City,
N.Y.

THE MAPS:

1. Map of the Virtue Property - Scale 600 ft. to 1 inch.
 2. Map of part of the Virtue property - Scale 100 ft. to 1 inch
 3. Approximate Cross-Section showing principal Veins.
Scale 200 ft. to 1 inch.
 4. Longitudinal Section on Virtue Vein - Scale 200 ft. to 1 inch.
 5. " " " Young America Vein - Scale 200 ft. to 1 inch.
 6. " " " Foster Vein - Scale 200 ft. to 1 inch.
 7. " " " Palmer Vein - Scale 200 ft. to 1 inch.
 8. " " " Emmett Vein - Scale 200 ft. to 1 inch.
 9. " " " Chicago Vein - Scale 200 ft. to 1 inch.
-

NOTE :

The Longitudinal sections show the portions of the veins which have been stoped. It will be seen that the areas which have not yet been worked or developed are very large. It is also evident that with a moderate amount of development work a very considerable tonnage of workable ore can easily be opened up on most of the veins.

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THE VIRTUE DISTRICT

This old mining district, about seven miles east of Baker, is situated in the great bend of Powder river in a region of low arid hills, 3,400 to 5,000 feet high.

GEOLOGY

The geology is similar in the main essentials to that of the other mining sections of eastern Oregon, in that the ore deposits are the result of an intrusion into older flows and sediments. Obscured as it is by the covering of hillside wash, basalt, and lake beds laid down since the time of the intrusion and only partially removed, makes field investigation difficult.

The intrusion exposed over but a limited area in the northern part of the district is a greenish-gray diorite, grading into gabbro. This diorite is probably a local development of a granodiorite intrusion. By this we mean that the intrusion in stopping its way into the older greenstones and argillites has incorporated so much of these older rocks that its acidic nature has been so modified on this upper part as to become sufficiently basic to be called a diorite. Erosion has exposed nothing but the diorite, but there are many things which evidence that underneath this modified exterior it will shade into granodiorite at depth.

The argillites and greenstones into which the intrusion came have been much mashed and altered by regional metamorphism, doubtless both before and during the time of the intrusion. Of the older rocks greenstones predominate in the northern part of the district,

while argillites are the chief older rocks in the southern part. They doubtless continue underneath their basalt covering many miles to the south and west. Thin basalt flows are found on the tops of the elevations and on much of the hillsides. In Virtue Flat lake bed materials to considerable depths exist.

ORE DEPOSITS

At different times during this period the intrusion was fractured and its roof of sediments and flows as well. Into these fractures was injected the dikes which grade from basic to acidic, the latter from granodiorite-porphry to aplite. After the dikes had been formed, later fractures were filled with gold-bearing quartz deposited in them by hot ascending waters coming from the intrusion itself. Since the intrusion apparently is a stock or roughly circular, it is to be expected that there would be no parallel vein system. The quartz veins strike in many directions and individual veins are not traceable for long distances. Most of the deposits are normal, simple, quartz veins containing very small amounts of sulphides and the free gold is coarse and contains but little silver. Very rich pockets were frequently found. The total production of the district is about two and one-half millions.

The Virtue mine, the most productive in the district, was discovered in 1862, and is by wagon road about eight miles from Baker. A great deal of work was done in the eight years following its discovery and with the exception of seven years beginning in 1884 the mine was in operation most of the time until 1889. Since that time there has been no production from the mine, although some

VIRTUE
DISTRICT
DEPOSITSVIRTUE DIST.
DEPOSITS

VIRTUE MINE

VIRTUE DISTRICT DEPOSITS

\$1,500 was extracted from the dump. Its total production is \$2,200,000.

There are two levels above and eight below the lowest tunnel level. From the 800-foot vertical shaft each 100 feet has crosscuts to the vein where the development varies upon each from 1,000 to 1,400 feet.

There are eight nearly parallel veins, but only two have produced and only the most productive one farthest to the northeast will be described. The veins strike N. E. and their dip southwest varies from 45° to 80°. The principal vein's width is from 6 inches to 12 feet, but the average is about 14 inches. The length of the shoot is about 1,200 feet from the seventh level up to the tunnel level. There was not much ore stoped below the seventh. The average yield per ton in the upper workings was from \$20 to \$40, while from the later operations in the lower levels it was about \$15.

The rock is a fine-grained dull greenish-gray greenstone, which was originally a volcanic tuff or breccia. Most of it is very much altered.

VIRTUE MINE

VIRTUE DISTRICT:

IS 12 miles east from shipping point, Baker, Oregon, on the Union Pacific and the Old Oregon Trail. First discovered (according to Lindgren) in 1862, and consists of 9 lode and 10 placer claims, recorded in Baker county. Located in a hilly area; the country rock is greenstone; vein strata bearing northwest and southeast; 20 inches in width, 4500 feet long. Mineral is gold, assays at \$8. Water is plentiful from shaft, no timber close but can be had from Lookout mountain, 5 miles away; power from Eastern Oregon Light and Power Co. Mine is now idle, but has a wonderful past production record of \$4,000,000. Equipped with a 20-stamp mill, compressor, air drills, cars, track and all mining tools, camp, shops, mine buildings, which are in bad repair. There is 800 feet of shaft and several thousand feet of tunnels; shaft is now full of water. Owner is William Wendt, Baker, Oregon. (Prescott--6/1/37)

Virtue

BLANK B—ANNUAL REPORT

This report must be properly executed and filed with the Corporation Commissioner on or before July 1, 1933, in order to entitle a corporation mining for any of the precious metals, coal, or prospecting or operating for oil, or operating an oil well, to pay a license fee of only \$10. If not so filed, such corporation must pay the same license fees as are required to be paid by other corporations for gain.—Section 25-244, Oregon Code 1930.

ANNUAL REPORT TO THE CORPORATION DEPARTMENT

FOR THE YEAR ENDING JUNE 30, 1933 1937

Of VIRTUE MINES DEVELOPMENT COMPANY

(Give legal name in full)

a corporation organized and existing under and pursuant to the laws of the State of Oregon.

The location of its principal office is at No. 2010 Main Street, in the city of Baker, in the state of Oregon

The names and addresses of principal officers, with the postoffice address of each are as follows:

Table with 3 columns: NAMES, OFFICE, BUSINESS ADDRESS. Includes W. m. Wendt (President, 2010 Main St., Baker, Oregon) and M. Boswell (Secretary and Treasurer, 210 Shoemaker Bldg., Baker, Oregon).

The date of the annual election of officers is 3d Tuesday in June

The date of the annual election of directors is do

Table with 4 columns: Description, Common With Par Value, Common No Par Value, Preferred. Rows include authorized capital stock, subscribed, issued, and paid up amounts.

State amount of capital, represented by stock of no par value, with which the corporation began business \$ none

Total amount of its properties in Oregon (name of claims, lodes, or placers) Virtue Group of mining claims, containing approximately 350 acres, the greater part of which are patented.

The location of its properties 7 miles east of Baker, Oregon

The amount of work done thereon and improvements made thereon since the time of filing last report 500.00

The amount of output or products of the mines or wells of such corporation from January 1, 1932, to December 31, 1932, inclusive, 512.25; not commercially worked

The value of output or products of the mines or wells of such corporation from January 1, 1932, to December 31, 1932, \$ 512.25

IN WITNESS WHEREOF, I, Wm. Wendt, President

of said corporation, have signed this report, this 26th day of May, A. D. 193 7. (signed) Wm. Wendt, President

[CORPORATE SEAL]

STATE OF OREGON, County of ss.

I, being first duly sworn, depose and say, upon oath, that I am of the foregoing corporation; that said corporation is not engaged in or transacting any other business except that of locating, prospecting, developing or operating mines for any of the precious metals, coal, or prospecting or operating for oil, or operating an oil well; that the value of the output or products of the mines or wells of said corporation from January 1, 1932, to December 31, 1932, inclusive, did not exceed \$1,000; and that the above and foregoing statement is a full, true and

Virtue Mine

Gold

NAME			OLD NAMES	PRINCIPAL ORE	MINOR MINERALS
------	--	--	-----------	---------------	----------------

9 S	41 E	21	
T	R	S	
..... Baker			COUNTY
..... Virtue			AREA
..... 3800			ELEVATION
.....			ROAD OR HIGHWAY
..... 14 mi. Baker			DISTANCE TO SHIPPING POINT

PUBLISHED REFERENCES

Lindgren 01:722
 Swartley 14:130
 Grant and Cady 14:150
 Parks and Swartley 16:229
 Gilluly, Reed and Parks 33:72
 Gilluly 37:94
 Dogami 14-A, page 108

MISCELLANEOUS RECORDS

PRESENT LEGAL OWNER (S) John C. Robison, Inc.
 F. M. Barrett
 Robert Barrett

Address 2209 Grove Street, Baker, Oregon
 Portland, Oregon
 Portland, Oregon

OPERATOR

Name of claims	Area	Pat.	Unpat.

Name of claims	Area	Pat.	Unpat.

EQUIPMENT ON PROPERTY

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REPORTS

Virtue Mine, by Leo Von Rosenberg, ME., June 28, 1913

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SHIPMENT AND ASSAY RECORDS

MAPS

See the Keystone Group

C. M. Foster 1913

x

Virtue Extension Claim

NAME	OLD NAMES	PRINCIPAL ORE	MINOR MINERALS
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9 S	41 E	
T	R	S

PUBLISHED REFERENCES

..... Baker..... COUNTY

..... Virtue..... AREA

..... ELEVATION

MISCELLANEOUS RECORDS

..... ROAD OR HIGHWAY

..... DISTANCE TO SHIPPING POINT

PRESENT LEGAL OWNER (S)

Address

OPERATOR

Name of claims	Area	Pat.	Unpat.

Name of claims	Area	Pat.	Unpat.

EQUIPMENT ON PROPERTY

