

First Gold Medal of the Exposition awarded to Colorado Ores.

COLORADO,

UNITED STATES OF AMERICA.

SCHEDULE OF ORES

CCNTRIBUTED BY SUNDRY PERSONS TO THE

Paris Universal Exposition of 1867.

WITH SOME

INFORMATION ABOUT THE REGION AND ITS RESOURCES,

BY J. P. WHITNEY,

(OF BOSTON, MASSACHUSETTS,)

COMMISSIONER FROM THE TERRITORY.

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1867.

This is a reproduction of a pamphlet written by Joel Parker Whitney for the World Exposition held in Paris France in 1867. Whitney published 15,000 copies of this document in English, French and German (5,000 each) for distribution to those visiting the Colorado exhibit. Whitney was appointed Commissioner of the Colorado Territory delegation and he paid all expenses associated with the exhibit that consisted of display cases loaded with hundreds of actual Gold and Silver Ores weighing a total of 12,000 pounds that he had accumulated and are listed herein.

His primary reason for writing this document was to interest Europeans (mainly those with lots of money) in investing in the mines in Colorado, many of which were owned by Whitney himself. There is no doubt that Whitney was interesting in promoting the mining industry in Colorado and securing European investments therein, or that he was a masterful promoter, but whether he was primarily interested in increasing his own wealth will probably never be known. He actually had retired and sold all of his very successful businesses in Boston before traveling to Colorado fully believing that he had all of the money that he would ever need. That the Colorado mines later provided him with about \$1,000,000 of income per year (over \$20,000,000 per year in today's dollars) between 1885 and 1910 may have been an accident of history (or not?)

Whitney received a Gold Medal for Colorado's (Whitney's?) exhibit and was granted an audience with Emperor Napoleon the Third who, after listening to Whitney, decided to appoint a delegation to travel to America and report back to him. A professor of Geology by the name of Louis L. Simonin was assigned as part of the delegation. The trip took place between September and December of 1867 with Whitney, Simonin and Col Heine traveling together on the trip from Chicago to Denver and the mines by rail, stagecoach and horseback. While on that trip, Simonin wrote a series of letters to a friend in Paris. Those letters were published as a book, in French, shortly after the trip. Professor Wilson O. Clough of the University of Wyoming translated that book into English, in 1966. That translation, entitled "The Rocky Mountain West in 1867", provides a fascinating view of the American West in general and the mining area around Denver in particular. Simonin provides the only account, by a civilian, of meetings held with a number of Indian Tribes which were sponsored by the United States Government in a desperate attempt to devise a peaceful accommodation. The University of Nebraska, the Copyright holder, has granted permission to the Rocklin Historical Society (RHS) to place "The Rocky Mountain West in 1867" on their web site for your enjoyment. This book is truly a joy to read. Simonin's writing style, as Professor Clough mentions, is very free flowing and upbeat.

Whitney's account of his trip with Simonin was not written until 40 years later, when he wrote "Reminiscences of a Sportsman." It is extremely interesting to compare their accounts of events that occurred at that time. Whitney's explanation of the events surrounding the Paris Exposition is excellent reading although you should be warned that the book does contain an awful lot of fishing stories. You can download a copy of his book from the web site.

Please note that, in this reproduction, the LIST OF ORES that appeared at the beginning of the original has been moved to the end and that maps of Colorado and the United States that appeared in the original are not included.

Notes by Ken Morrow, a member of the RHS of Rocklin, CA.

COLORADO.

[25]The Mississippi River, the largest in North America, takes its rise in the State of Minnesota, near the extreme northern line of the United States, almost at the geographical centre of the North American Continent, and flows south uninterruptedly through the United States, 3,200 miles, to the Gulf of Mexico.

Until within a few years the settled portions of the United States were all east of the Mississippi River, excepting in those States directly adjoining the western side. Thus an area, comprising some 2,000,000 square miles, was unknown to the world, excepting from the few vague and uncertain descriptions given by bold and adventurous men, who had traversed its unbroken wilds in pursuit of novelty or gain.

The discovery of gold in California, upon the extreme western line of the Republic, first induced active emigration there. The population of that region increased rapidly, and extended northward to Oregon, and eastward to Nevada, in which sections valuable mineral deposits were found. Immense sums have been annually drawn from those regions [26] during the past fifteen years, and added to the currency of the world.

Passages were annually made by teams of emigrants from the settled sections adjacent to the Mississippi River, across the country, 1,500 miles, to the Pacific coast. By these incursions the interior regions became better known as possessing rich and fertile tracts, admirably adapted for agricultural purposes, accessible, and- well watered. This emigration from the Eastern and more populous States has been steadily increasing for the past fifteen years, and the result is that the population west of the Mississippi River is now computed by millions, instead of by the few thousands a short time ago, who are now rapidly changing the wild aspect of those regions by the subduing influences of civilization.

Intersecting the great region west of the Mississippi River, and continuing north in its course from Mexico to British America, is the Rocky Mountain or Sierra Madre Range, which maintains an average distance from the Pacific Ocean, or western limits of the United States, of 700 or 800 miles. Between this range and the Mississippi River, is a tract, 1,500 miles in length, by 600 in width, denominated as the great Plains of the United States, devoid of timber, having a fertile and productive soil, and yielding rich herbage for thousands of wild buffalo and antelope, and for the oxen and mules employed by emigrants and freighters. This tract had long been the hunting grounds of numerous tribes of Indians, all of whom having now been driven from the vicinity of the direct route to California, leaves the passage safe. Directly upon the line of travel from St. Louis and Chicago to San Francisco is the [27] territory of Colorado, distant but a few hundred miles from the navigable waters of the Missouri River, the great tributary of the Mississippi, and 900 or 1,000 miles from the Pacific Ocean. The territory is between latitudes 37° and 11° north, and longitudes 102° and 109° west from Greenwich, being bounded on the north by the State of Nebraska and the new territory of Wyoming, south by New Mexico, east by Nebraska and Kansas, and west by Utah. Its average extent east and west is 380 miles, and north and south 280 miles, containing an area of about 111,700 square miles.

The position of the territory is central, and within its limits are the most practical passes over the mountain ranges, from the Mississippi to Utah, Nevada, and California, and which must be taken as the great highways of the nation, as well as of the world's commerce, as it passes from Europe to the eastern nations of Asia. This will be evident by a moment's consideration of the fact, that upon the completion of the Pacific Railroad through to San Francisco—which, at the present rate of progress, will be completed in three years— mails and passengers will be landed in San Francisco from New York in seven days: add to this ten days consumed by passage from Europe to America, and the twenty-two days' passage from San Francisco to Japan, the average time of the steamers now employed, and we have thirty- nine days as length of passage from London or Paris to Japan : add six days as length of passage from Japan to Hong Kong, and we have forty-five days as total. With an advantage so palpable over the route by the Isthmus of Suez, it is evident that the direct line from New York to San Francisco must be the great route from Western Europe to [28] Eastern Asia, and that Colorado—from its position, its wonderful mineral wealth, its surpassing fertility, salubrious climate, and scenic beauty, its enchanting contrast to the level Plains between it and the more populous States east, and the sterile wastes on the west between it and the valley of Salt Lake—must be the great middle station upon the route across the American Continent. The Pacific Railroad has already reached the line of Colorado—800 miles west of Chicago, and 1,800 miles distant from New York. It has contracted to build during the present summer 225 miles, which will bring it to the foot of the mountain range in Colorado. Passengers are now carried from New York by railroad in four days to within a distance of 230 miles of Denver City, the capital of Colorado. From the terminus of railroad, coaches and freighting-teams leave daily for Denver and regions beyond.

The discovery by some emigrants, in 1858, of gold upon the shore of the River Platte, near the present City of Denver, twelve miles from the mountains, first drew attention toward Colorado as a mining region. At that time there were no white residents in the territory, excepting a colony of Mexicans, who were located in San Luis Park, in the extreme southern part, engaged in sheep raising, cultivating the soil to a limited extent, and depending upon the trading settlement of Santa Fe South for their supplies. With this exception, the whole region was wild and unbroken, inhabited in sections by tribes of Indians living in a primitive state, who, drawing from the soil a very scanty proportion of the food required by them, depended almost entirely upon the wild animals abounding in the region. These tribes were constantly in strife with each other, and by their [29] hostile manners prevented peaceful settlements in the region which they claimed as their hereditary hunting-ground.

The discovery of gold, however, stimulated an emigration of hardy pioneers from the eastern section of Kansas, Nebraska, and Missouri, who, going in bodies, were sufficiently strong to defend themselves from any attacks which the Indians could make. These emigrants followed up the different tributaries of the Platte into the mountains, where they discovered a large number of rich mineral veins.

During the years of 1860, 1861, and 1862 there was a continuous stream of emigration to Colorado, which during the years of 1863, 1864, and 1865 received a material check, owing to a variety of causes, some of which we will briefly review. First, the war unhappily

existing in the United States distracted public attention to a great extent from the region; also reports, having their foundation in reality, of the privations and sufferings experienced by the first settlers, were widely circulated through the United States. The long passage, exceeding 600 miles, from the last settlements of the Eastern States to the mountains of Colorado, over a sweeping plain, denuded of timber, and yielding only a precarious supply of food to man, necessitated the taking of supplies sufficient for the through passage. This passage, when taken with mules or oxen, required from thirty to sixty days, and was often indefinitely prolonged by bad weather or by the loss of animals. In such cases—which were not unfrequent—and in others, when the amount of provisions taken were inadequate for the ordinary passage, much want existed, and for a period extending a considerable length over the early days of Colorado, there was a great scarcity of food in the mining regions; and often the worn-out emigrant from the [30] Plains arrived to find a condition of affairs but little better there than he had known upon the road. There were also great difficulties met with in working the sulphurets found when the mines were sunk upon below the surface ores, which, though vastly richer than the decomposed ore above them, would not yield the precious metal by the simple and rude process found so profitable when applied to disintegrated or alluvial deposits.

But the great evils which discouraged emigration more than any others, were those entailed by the Indian wars, which raged during the years 1864 and 1865. The different tribes of Indians upon the Plains, who saw the regions they had so long considered exclusively their own continually invaded by emigrants, not slow to resent a real or fancied injury, sank their personal animosities, their heritage, and combined in a general league against their invaders. The opportunity was seized when the civil war in the United States had reached its greatest height, when the Government, requiring all its power, had withdrawn to a great extent its forces from the frontier. The injuries, aggravated by acts of retaliation given and received, inflamed the Indians to more desperate acts of valour and cruelty than they had ever exhibited before. With scarcely an intimation of their purposes, they suddenly and simultaneously attacked the route over the Plains. Sweeping down upon emigrant teams, and the small settlements which had been established every twelve or fifteen miles upon the route, as stations for the mail and stage lines, they massacred the whites indiscriminately, men, women, and children, often scalping and mutilating the bodies of their victims; the wagons and buildings, [31] after being divested of all that pleased the savage eye, were given to the flames. In one place, for a distance of 150 miles, the route was made desolate. From other places, the inhabitants and emigrants were driven to central spots, where, for days, they were besieged by their savage foes. The military station at Julesburg, where a considerable number of troops were congregated as well as emigrants, was surrounded for a number of days by a large body of Indians, who, cutting off communication in every direction, made desperate efforts to obtain possession of it, and were only repulsed by the use of canister and grape.

The number of Indians engaged in these outrages were from 10,000 to 15,000, though at the time the number was supposed to be larger, as the tribes to which these Indians belonged comprised some 30,000 warriors. The condition of affairs in Colorado during these difficulties was aggravated by the expectation of attacks from other tribes than those engaged upon the Plains, who were living in the mountain regions adjacent; but, fortunately, those tribes maintained a peaceful attitude.

In the meantime, troops were sent from the east, and volunteer companies were organised in Colorado from the hardy miners, who scorned the Plains in all directions, and soon opened the route. But the vigilance and activity of the savages prevented their being punished to any considerable extent. In one instance, however, a large body of them were surrounded, when encamped near a stream, not a long distance from Denver City, when from 400 to 500 of the Indians were killed.

During this condition of affairs, although the mail and stage lines were open almost all the time, and passages of [32] combined bodies of emigrants were regularly and safely made, prices for the necessities of life rose to a height previously unknown in the territory. Corn, oats, and other grains, sold at from 20 to 25 cents per lb.; potatoes from 5 to 15 cents per lb.; flour, butter, and other articles of food, sold at prices correspondingly high. Freight across the Plains to the territory readily commanded an average price of 10 cents per lb., in some instances reaching 25 cents per lb. The natural result, in Colorado, was an increase in price of labour, which could not be obtained at less than from \$5 to \$10 per day. During those years mining languished, and at least half of the miners who had emigrated to the territory in previous years, left it for the new mining regions still farther west, which had their communications with the States of California and Oregon, upon the Pacific Coast.

But despite the high prices and Indian difficulties which prevailed, a large emigration set in during the summer of the year 1865, which was encouraged by the protection afforded by Government in placing 10,000 troops upon the route from the Missouri River to Salt Lake.

A large number of the emigrants who crossed the Plains in 1865 were en route for regions beyond; but the amount of freight received in Colorado during that year exceeded that of any previous one; and a large number of settlers were added to the population of the territory. The protection afforded by Government has been found sufficient to give entire safety to the route over the Plains, and to the regions beyond, which are now being rapidly settled, and any fear of serious difficulties with Indians has passed away. The emigration over the Plains during the year 1865 was immense. Government [33] alone paid a sum exceeding \$6,000,000 for freight across the country to its various western military stations. The amount of freight which was carried over the Plains in 1865 is estimated to have exceeded 150,000,000 lbs.

From 15,000 to 20,000 teams were employed in the passage, some of which made two trips to the mountains during the summer, the average amount of freight carried by the teams being 5,000 lbs., each team having from four to six horses or mules, or from six to twelve oxen. The writer, while returning east over the Plains by stage in 1865, counted in three days 3,384 teams of this description, all passing westward; the distance made by the stage during this time being 320 miles. At one point upon the route there passed westward, by actual count, in sixty days 9,494 teams, having over 58,000 head of horses, mules, and oxen. The emigration of 1866 was large and steady, uninterrupted by Indian raids, the savages having been driven far away from the routes. The Plains, though free of timber, are well watered, and covered with a rich soil, which yields a heavy bladed grass of the most nutritious quality, and from which the cattle employed in freighting to Colorado acquire a fitness which well fits them for the market. This grass grows in a native state to a considerable height and could be cut for hay by thousands and millions of tons. Antelopes in large numbers are found upon the Plains, also rabbits of large size, wolves,

ground squirrels, grouse, snipe, curlews, &c. Immense herds of buffalo roam annually over the expanse, at times so plentiful as to prevent for days the passage of teams. At some seasons, they can be seen by thousands and tens of thousands, strung out over an area of from 50 to 100 miles in width. The Indians slaughter [34] them in large numbers; and, after taking from them favourite strips of meat, leave their immense bodies, weighing from 600 to 1,000 lbs., to be eaten by wolves, or to decay upon the ground.

POPULATION AND SETTLEMENTS.

Colorado now contains a population of 36,000, exclusive of Mexicans and Indians. The capital, Denver, is pleasantly situated upon the banks of the Platte River. To the westward of this city, twelve miles distant, the mountains rise abruptly from the Plains. These ranges of mountains can be plainly seen from the north to the south for 200 miles, presenting one of the grandest sights imaginable. The foot hills, rising moderately from the Plains, give to the eye an appearance of cultivation, seeming to have been cut by the hand of man into the shapes they present: here, trimmed upon the sides and rounded to the top with perfect evenness; again, cut midway from a horizontal surface-line with mathematical accuracy. Rising evenly beyond, are higher bills, girt with walls of rock, which, shooting up perpendicularly for hundreds of feet, seem like embattlements ready to belch forth the crashing weight of iron upon the vales below. Succeeding are ranges of mountains piling in upon each other, until they culminate in white peaks, which rise to an altitude of from 14,000 to 16,000 feet above tidewater. These are the beacon lights of welcome to the traveller upon the Plains, long before he refreshes himself at the sparkling streams of the foot-hills which they supply. (Note: The underlined sentences above are quoted in Whitney's "Reminiscences of a Sportsman" at the bottom of page 179.)

Denver contains a population of from 7,000 to 8,000. Its streets are regularly laid out, and it has many blocks of [35] substantial brick stores. It has seven churches, two large seminaries, a number of common schools, and one theatre; three daily and two weekly newspapers; a national bank, and numerous banking houses. A branch of the United States Mint is also established there. It has a number of large hotels, and many good restaurants, from which can be obtained all the varieties of meat, fish, wild game, and vegetables. The expenses of living in Denver are not, at the present time, higher than in any of the large western cities. It is by far the most advanced and comfortable place of residence, between the large cities of St. Louis, Chicago, and San Francisco.

No city could well be more pleasantly located, or blessed with a more genial climate, never experiencing the rougher storms met with in the mountains above, and having in the summer a mild and uniform temperature. The water from a point upon the river above the city is turned to flow as required through the streets, giving strength to the many trees which have been set out, and freshness to gardens of flowers or vegetables. Denver is the great trading and outfitting station of the Rocky Mountain regions, and is destined to be the great central depot of the different railroads now building. Golden City, at the foot of the mountains, and thirteen miles from Denver, has a population of 1,500, and commands the most practicable passage to the mining regions from the Plains. The town is divided by a rapid stream, furnishing an unlimited amount of water-power, and is in the vicinity of immense deposits of iron-ore, fire-clay, and coal, which are being rapidly developed under

the direction of eastern capitalists, who have properly estimated the great value of their possessions.

[36] To this point will a great bulk of the ores from the mountains above be brought for smelting. An act of incorporation has been obtained for building a railroad to the mines, which can be completed at a moderate expense. A newspaper is published there, and many fine buildings are being erected; near by are very fertile tracts of lands, a portion of which are under cultivation.

Twenty-two miles above are the mining towns of Black Hawk, Central, and Nevada, these towns being, in fact, a continuation of settlements. They contain a population of from 6,000 to 8,000 and have two weekly and two daily newspapers, good hotels, schools, stores, repairing shops, and all the conveniences required in mining. They contain many mining mills, and in Black Hawk are the smelting works lately introduced. The mines in the vicinity of these towns have been more extensively developed than in any other part of Colorado, and many of them are now being worked to great profit. The amount of gold taken out of them from June 1, 1866, to January 1, 1867, exceeded by 400 percent the amount taken out during the preceding six months.

Within a radius of fifteen miles from Central City are the towns of Idaho, Spanish Bar, Georgetown, Elizabeth City, Empire, North Empire, and the settlements in Boulder County, all of which are active and growing towns, connected by good roads, and in the vicinity of rich mines. [37]

GOLD.

The localities in which gold is most plentifully found are in the counties of Boulder, Gilpin, Clear Creek, Jefferson, and the extreme southeastern part of Summit. Although it is evident that many other sections of the territory contain gold-bearing veins, no great amount of attention has been bestowed upon them, and the principal amount of mining that has been done has been in the counties of Gilpin and Clear Creek.

The gold veins proper, found wholly in granite formation, vary in width, from a scarcely perceptible streak, to forty and even fifty feet, but seldom averaging over four or five feet. When discovered from the surface, the vein is indicated by a light porous quartz, discoloured by the oxidation of base metals, in which small particles of gold are disseminated sometimes in the form of small scales, fine dust or stringy pieces, but seldom in masses of any size. A few dozen pieces, averaging from half an ounce to a pound and a half in weight, are exhibited in the Colorado Department at the Exposition, comprising some of the finest pieces ever obtained in Colorado, which has rarely given specimens of this character.

The value of veins are usually determined by the miners, by crushing to a fine powder, in a hand mortar, a few pieces of surface ore, the powder being carefully washed with water in a hand pan. This consists in giving the pan a peculiar motion, which settles the gold at the bottom; the fine particles of earth and quartz being carefully floated off. It is seldom that surface ore is found so poor as not to exhibit [38] from a few pieces so treated a streak of

fine gold dust at the bottom of the pan. From some veins, pieces can be readily found, by a little search, showing specks of gold up to the size of pin-heads. Some surface ores are so rich that with a hand mortar and pan, and a few pails of water, from \$3 to \$10 per day can be obtained by one person. Sometimes streaks of white and yellow earths are found in surface ores which yield from \$5 to \$60 to the panful of twelve or fifteen pounds. When such streaks are found large amounts are often obtained from them. The surface ore, generally quite soft and porous at the top, gradually grows harder and more compact as it recedes from the oxidizing effects of the atmosphere, and is finally lost in the glittering sulphurets of iron and copper which take its place, being equally rich in gold, and oftentimes a vast deal richer, having in addition a percentage of silver, and oftentimes an amount of copper equivalent to twenty percent of bulk. The surface ore, when found in veins of ordinary width and richness, is stripped from the veins until the sulphurets are met with, and is submitted to the ordinary process of amalgamation, on large copper plates, coated with quicksilver, or in large iron or wooden pans, the ore being scoured by revolving spars of iron, or masses of stone. In this manner surface ores are made to pay good profit, and in some instances very large amounts.

The tracts containing gold veins, designated as belts, seem to have a uniform course north-east by south-west, cropping out in some localities, and then disappearing from the surface to be found beyond in their continuation. The number of veins that are found in some localities is astonishing. In some districts they are found succeeding [39] each other with such regularity, that it is not an exaggeration to say, that they may be counted by the hundred in the space of a mile. In places, by some natural convulsions of Nature at an early period, they are broken and distorted from the regularity which marks them elsewhere, and for acres in extent the surface of the earth is discoloured by the peculiar blossom, which indicates the presence of sulphurets below. Such tracts, when water can be brought to them, are sluiced to great profit. A tract of this description is now being sluiced in Upper Union District, Clear Creek County, water having been brought in a ditch from a long distance for the purpose: and from \$20 to \$30 per day per man employed is obtained by the parties engaged; and there are many other localities in the territory where large amounts can be obtained in the same manner, when, by a combination of interests, water can be brought to hand.

Many alluvial deposits, which contain gold, are also found in the territory, some of which have been sluiced to advantage, but of which the greater portion remain untouched.

A peculiarity of the Colorado gold veins is, that they are invariably found richer the deeper they are sunk upon. This rule seems to be without exception, and in no instance is a vein lost, excepting- by a break off in the adjoining formation. Gold is not found to any great extent in a free state, after leaving the surface ore. The great percentage of the precious metal is found intimately associated with the sulphurets of iron, copper, silver, lead, antimony, and arsenic. Iron predominates over the other metals, often comprising from thirty to forty percent of the crevice matter. Copper is almost invariably represented, and few veins show less than from three to five percent of this metal; and many [40] exhibit from fifteen to twenty percent. This metal increases almost invariably as the veins are sunk upon, showing a tendency to assume the form of sulphate as it descends. In the copper—particularly the sulphate—is found the greatest percentage of gold, often giving an assay exceeding \$2,000 to the ton of 2,000 lbs.

Miles of shafts have been sunk, and tunnels run in Colorado; but no single shafts or tunnels have yet attained any great depth.

The deepest shaft, so far sunk, is upon the Burroughs lode, in Nevada District, Gilpin County. This has attained a depth of 525 feet, and exhibits ore altogether superior to anything previously discovered in this lode, which has given between \$3,000,000 and \$4,000,000 taken from other shafts sunk upon it, none of which, however, have been sunk to a depth of 300 feet. The ore taken from the deepest shaft is now yielding, in an ordinary stamp and pan mill, a sum three times larger than that expended in mining and treating it, and by assay shows that scarcely twenty-five percent of the gold contained in it is saved by the amalgamating process.

Shafts have been sunk upon the Gold Dirt, Bobtail, and Gregory lodes, to a depth of between 300 and 400 feet, in every instance exhibiting ore of surpassing richness. The great majority of shafts, however, from want of means, and from ignorance of the true method of treating the ores found, have not been sunk more than sufficiently deep to demonstrate the value of the lodes they are upon.

The gold mining regions are easily reached from the Plains below, and are connected by good roads. Streams having sufficient water and fall to furnish unlimited power [41] for mining purposes, are plentiful. The valleys and agricultural lands, though being less sheltered and productive than those upon the western side of the range, or on the Plains below, are sufficiently fertile to furnish more than a much larger population can consume. Timber also is plentiful; and the climate, though uncertain in its temperature during the summer, is not attended in winter with that severity which is peculiar to the Atlantic sea-coast towns of the same latitude.

Within the last year a considerable quantity of ore, taken from several mines, was freighted across the Plains to the river, and forwarded to Swansea, in Wales, that it might be experimented upon by the skilled experience employed there. No difficulty was found in working the ore in Swansea, which gave yields of between. \$200 and \$300 to the ton; the same ore not yielding over \$10 or \$15 to the ton by the stamp and pan mills in Colorado, yet paying a profit from that amount.

No accurate estimates can be made of the amount of gold obtained from Colorado, particularly during the earlier days, owing to the irregular methods of remitting in vogue; but probably not less than \$30,000,000 have been obtained within the limits of the territory from 1859 up to the present time—not a large amount, when compared with the yields from other more advanced mining regions during the same time, but a large sum considering the small number of people engaged in obtaining it, their isolation from settled regions, their Indian difficulties, and the destructive influences of the civil war raging at the same time in the United States.

SILVER.

[42] This metal is found in all the gold mining districts of Colorado, associated with the

ores containing gold: in the galena particularly, which is found at times in considerable quantity. It is always present, but not sufficiently plentiful to be a feature of value in the gold mines; yet large masses have lately been obtained by the smelting process from ores considered strictly gold bearing, and it is quite evident that in the future, with the advantages of improved processes, this metal will be freely obtained. But not until within the last two years was it generally known in Colorado that immense belts of silver veins, separate from the gold, existed upon the western declivities of the Rocky Mountain Range, corresponding in their direction and general features with those of gold upon the eastern side. The prevailing great richness in silver in the ores of Griffith and Argentine Districts, in Clear Creek County, upon the head-waters of South Clear Creek, some thirteen miles distant from the towns of Central and Black Hawk, and correspondingly near to the snowy peaks of the range, first attracted particular attention to the element of silver. In these districts silver ores of great richness have been discovered, masses being exhibited at the Paris Exposition from the Baker lode of Argentine District, and of the Elijah Hise and Indigo lodes of Griffith Districts, which assay respectively in silver alone \$532.12, \$1,656.20, and \$1,804.83 to the ton of 2,000 lbs. of ore. These veins were followed to an altitude previously unknown in mining experience in Colorado. Enterprising men were soon engaged in prospecting the regions corresponding upon the other side [43] of the range, which resulted in the discovery of immense deposits of rich argentiferous galena. The black sulphurets of silver, antimonial silver ore, rich chlorides, ruby silver ore, and pieces of native silver, were found, and a new region, the extent of which has not yet been determined, was thrown open to the attention of all those who might have the curiosity to examine it.

Much excitement was occasioned in Colorado by this discovery, and a large number of prospectors were soon engaged there in making discoveries and preemptions under the liberal laws of the territory, which gave undisputed possession to discoverers who should have their claims recorded in the County Office, after making the developments and improvements required by law.

That portion of the silver region first opened is situated in Summit Co., upon the head-waters of the Snake and Swan Rivers, which flow into the Blue River, a tributary of the Rio Colorado, which flows into the Gulf of California. An examination of the region a few miles south-west, in the neighbourhood of Ten Mile Creek, another tributary of the Blue, led to the discovery of still more wonderful exhibits of mineral wealth than were found in the Snake River region. Veins of great width and prominence were found, which, in some instances, could be distinguished by their discoloured surface ores, when miles distant, seaming the mountain-sides like gigantic roads, measuring from twenty to fifty feet in width. In this region, the result of violent volcanic action is evident by the great height of many peaks, their abrupt and broken sides, and by the immense masses of lava and scoria which abound. Not far distant are hot saline and sulphur springs, as well as deposits of dry salt.

[44] The belief in increasing richness upon the continuation northward of the mineral regions of Mexico, has been expressed by the most eminent authorities, Humboldt, Ward, and Glennie, who have given us so much information upon the subject, and the theory is universally believed in Northern Mexico. South, scarcely 350 miles from the border-line of Colorado, is the State of Chihuahua, in Mexico, which, undoubtedly, contains the

richest silver-mines ever worked in the world. Adjoining Chihuahua, are the mines of San Dimas, where one individual paid in his lifetime 11,000,000 of Mexican dollars, or one-fifth royalty, upon the amount obtained by him from two mines. Intervening between Chihuahua and Colorado, upon the right and left, are the territories of New Mexico and Arizona, the latter famous for its mineral wealth, but comparatively unexplored, and inhabited by hostile Indians. From this territory have been obtained the largest masses of native silver ever found in the world. One mass, weighing 2,700 lbs., was carried to the City of Mexico, and the evidence concerning it is well substantiated by the records of the Royal Fiscal. North of Colorado, in the territory of Wyoming, silver nuggets have also been found; yet no settlements of whites are in the territory, and no mining has yet been done there. Still farther north, upon the continuation of the range, are the wonderfully rich mines of Idaho, which have been developed but to a very limited extent, but have produced silver ores unequalled for richness. At the Paris Exposition are five pieces of ore from this region; one, a mass of ruby silver, weighing over 200 lbs., which gives an assay of over sixty percent pure silver; the other pieces, in the aggregate weighing from 600 to 800 lbs., being chloride ores, and assaying [45] from twenty to forty percent of pure silver. The evidence is positive and conclusive of increasing mineral wealth from Mexico northward upon the Rocky Mountain Range. North from Chihuahua continues the Rocky Mountain, or proper Sierra Madre Range, exceeding all its other exhibitions of volcanic action in Colorado. By its immense upheavals of lofty mountains and high table-lands—since we depend upon volcanic action for our mineral ores—it presents the best possible arguments for attention; while the wonderfully rich and inexhaustible mines, which have been so lately discovered there, rivet our stronger interests.

Fletcher Mountain, in Ten-Mile District, where the richest mines yet discovered are found, may be designated—if the application is a proper one—the predominant peak or watershed of the Continent. From each side of this mountain rise streams—Gilpin and Clinton—which, flowing into Ten-Mile Creek, empty into the Grand and then into the Rio Colorado, in fact, being the head-waters and origin of that great stream which, originating at an altitude of over two miles above tide water, in a region teeming with mineral wealth, seeks the shores of the Pacific, through a region which is one vast field of metallic treasure, but which lies deserted, neglected, and comparatively unknown.¹ Upon the western side, near the base, are numerous rivulets, emptying into the Blue, another tributary of the Rio Colorado. Southward from Fletcher [46] Mountain a few miles, so near Ten-Mile Creek that the waters almost mingle, rises the Arkansas River, flowing into the Mississippi. To the south, not many miles farther, rise the headwaters of the Rio Grande del Norte flowing into the Gulf of Mexico. At the south-eastern base of Fletcher Mountain rises the South Platte River, which, striking north, circles over the great Plains, irrigating the soil in its passage, and supplying water to the tens of thousands who yearly make their migration to the promising lands of the Far West.

¹ The descent of this stream, until it reaches a distance of about 600 miles from the Gulf of California is quite rapid. In one locality before reaching that point, this river buries itself in an immense canon, worn in the earth by the impetuous speed of its boiling waters. For a distance of 200 miles it is almost hid from the light of day by the beetling cliffs and perpendicular walls, which rise above it to a height of from 1,000 to 5,000 feet, and which will ever be effectual barriers to an acquaintance with its mysterious passage.

During the short time which has elapsed since the discovery of the silver mining regions, good roads have been made, connecting them with the more settled sections of the territory from the Snake River Mines to Denver by way of Breckenridge, the county seat of Summit County, and from Ten-Mile District to Denver, by way of the Arkansas River and the South Park. In both sections, a large number of shafts have been sunk upon the principal veins to a depth of from twenty to sixty feet, some of which have exhibited an abundance of rich ore. In Ten-Mile District, miners were engaged during the past winter—in the employ of eastern capitalists, who subscribed a large sum for the purpose—in driving a tunnel from the base of Fletcher Mountain to its centre, for the purpose of ascertaining, from ore taken at a great depth, the true value of veins which presented such indications of wealth upon the surface. This tunnel, commencing at a height of about sixty feet above the water-line of the district, had been driven in February through the solid rock—of which the mountains, beneath a thin coating of earth, are almost entirely composed—to a depth of about 200 feet, and will be steadily prosecuted until it reaches, at a depth of from 600 to 800 feet, a large vein, known as the [47] "Campton," which exhibits upon the surface, for over a mile in length, a crevice which has a uniform width of ten feet, and which has given, from shafts sunk upon it, some of the richest ore obtained in the district.

From the silver-mines of Summit County seventy-six assays were made during the past year by Albert Reicheneker, a graduate of the Polytechnic School of the kingdom of Wurtemberg, and who served the State Government of that kingdom nine years as Chemist and Engineer of Mines, who obtained an average assay of \$121.64 to the ton of 2,000 lbs.; and deposed that said ores taken for assay were only a fair average of the ore of the mines from which they were respectively taken, and that they came from a depth not exceeding twenty feet, and in most cases from within five feet of the surface.

From thirty assays made by Fred Eckfeldt, molter and refiner at the United States Branch Mint at Denver, an average assay was obtained of \$130.28 to the ton of 2,000 lbs.: Eckfeldt deposing that the ores so assayed were but a fair average of the mines from which they were taken.

The silver mining regions abound in many streams, which have their sources in the immense masses of snow found always upon the high mountain-peaks. These streams, being fed by thousands of small rivulets and springs, gain in a short distance great force and volume, giving unfailing freshness to the rich grasses, flowers, wild fruits, and lofty trees found in the valleys they traverse.

At a height of 12,000 feet in these regions timber disappears, though rich pasturage and flowers are found growing close to the banks of snow. Strawberries are often found growing in great abundance far above the timberline, as well [48] as raspberries. The timber, above an altitude of 8,000 or 9,000 feet, is principally fir and spruce, which is quite abundant, and grows to a great size. The native grass is of an extremely nutritious quality, and for hay cannot be excelled. It grows high and vigorously, and in the valleys and parks can be cut in great quantities. Trout are found in the streams at a height of nearly 12,000 feet, and a variety of wild game is abundant. The climate is less severe in the silver regions than at the same altitudes upon the eastern side of the range, owing to the high mountains which intervene, and which form barriers against the sweeping winds of the Plains. Settlements are rapidly being made in those sections, and soon they will resound

with the busy labour of thousands, who will be required to develop the wonderfully rich and accessible treasures of which now the existence is comparatively unknown.

COPPER.

This metal is found plentifully in Colorado, distributed through all the gold and silver mining regions, and in the mountains surrounding the large Parks over the range. Extensive veins of it have lately been found about thirty miles south of Denver, which run through the foot-hills parallel with the belts of gold mines, and which are much richer than any previously discovered, containing a grey ore, which yields as high as sixty percent of metal. The metal is generally found in the form of sulphurets in the gold-mines, denominated by the miners as yellow iron, and is almost invariably found rich in gold. These sulphurets, [49] in many mines, comprise from ten to twenty percent of the ore raised. The deepest shafts which have been sunk in the gold mining regions, exhibit these sulphurets in immense and continuous masses. The sulphate is so plentiful in some ores—often giving an assay of gold of \$2,000 to the ton—that after being run through a stamp mill, and exposed to the oxidising effects of exposure, it becomes coated with a thick crust of blue crystallisations. It is sometimes found in a native state, but not in any large quantity. Reports, however, are lately current in Colorado that large masses of it, in a native state, have been discovered upon the surface of the ground, in some remote districts over the range; and that it is plentifully exposed to the eye in the bottoms and upon the sides of some mountain streams flowing into the Middle Park. The element of copper has not yet received any attention in the way of mining; but it is quite evident that it will be found as inexhaustible as the elements of gold and silver.

LEAD.

In the form of galena, exhibits itself in many of the gold-mines, but diminishes in quantity as the shaft sinks. It is more plentifully found in Ten-Mile District, Summit County, than in any other section yet known. In that district it is, in some instances, found projecting in large masses above the surface of the earth, upon the line of vein, and can be detached in a partially oxidised condition, in pieces weighing from 500 to 1,000 lbs. Upon Fletcher Mountain, thousands of tons could be easily gleaned from the surface; and but a short distance below the surface are large beds, the extent [50] of which has not yet been determined. This galena is never found free from silver, yielding from 10 to 500 ounces to the ton of metal.

From some pieces of galena, fair average ore from a number of veins in Ten-Mile District, the following assays for silver were obtained by Professor A. A. Hayes, State Assayer, of Massachusetts:

	OZS.	DWTS.	GRS.	
Pyramid vein	81	13	8	per ton (2,000 lb.)
Merrimac vein	68	12	0	per ton.
Polygon vein	266	8	0	per ton
Hard Cash vein	108	2	12	per ton
Blackstone vein	85	18	6	per ton

Young vein	65	6	16	per ton
Tinsley vein	178	17	0	per ton
Siberian vein	106	9	20	per ton
Augustine vein	221	3	12	per ton

giving an average exceeding 130 ozs. to the ton.

This metal, like copper, has not been mined for, excepting for the purpose of obtaining it to flux other metals with, by the new smelting process.

IRON.

Beds of this ore are found along the base of the mountains in irregular masses, in the form of limonite, of a brown and red colour, which yields from fifty to seventy percent of metal, containing in addition parts of manganese and alumina. At the head of Smoky Hill Fork there is an enormous deposit of this ore; but no distinct veins have yet been developed. A furnace for working the ore has been erected, but is not running, owing to the large amount of useless machinery sent to the country in 1864 and 1865, [51] which has been broken up and run into new patterns, and has supplied local demands.

COAL.

This is found in a profusion upon the Plains at the base of the mountains, which argues well for the future manufacturing interests of the region. One-third of the Plains in Colorado are estimated to be underlaid with this material. It is also found in the Parks over the range; in fact, is universally distributed, except in the mountains, where the formation forbids. The coal, so far examined, has been found in the form of lignite, and that of the Parks similar to the Albertine coal found in New Brunswick, upon the Atlantic Coast. The veins are found running north and south along the base of mountains, and are exhibited wherever a mountain stream cuts through the foot-hills upon its way to the Plains. The veins, so far observed, seem to have a width of from three to fifteen feet. The coal is now being used for grates, steam-engines, and reverberatory furnaces, and can be bought in Denver at from \$6 to \$10 per ton.

PETROLEUM.

In the future, the value to be derived from this material will be large. Inexhaustible quantities can be obtained in a fluid state from the Plains, and from the coal found in the Parks. Springs are numerous, from which the oil saturates the adjacent ground for hundreds of feet. Scarcely [52] a hundred miles from the northern line of Colorado is a famous natural oil-spring, which steadily yields a flow estimated from 2,000 to 4,000 gallons per day, which, flowing for a considerable distance, finally empties into a branch of the Yellowstone River, a large tributary of the Missouri. In the vicinity of this spring are many smaller ones, and, in fact, for a long distance the region is prolific in them, betraying the existence of immense reservoirs below. Some thirty years before the settlement of Colorado, this famous spring was visited and noted by Captain Bonneville, of the United States army, while upon an exploring tour, and has probably continued its flow

during the interim. There are no settlements at present within a considerable distance of it, and no attempts are made to take advantage of its value. The only well sunk in Colorado for Petroleum gave a yield of thirty-four barrels per day, from a depth of seventy-five feet.

SALT.

Deposits of dry salt are found in some parts of the territory, and salt springs are quite plentiful in the Parks. The salt found in a dry state is comparatively pure, and the saline springs contain fully one half-pound of salt to the gallon of water. Some of the springs are very large.

In the South Park extensive works are erected and in operation for boiling and evaporating the brine. The spring from which the works are supplied, is some 1,000 feet long, by 150 feet wide, from the bottom of which the water boils up vigorously. [53]

SUNDRY DEPOSITS.

Alum, fluor-spar, fire-clay, gypsum, lime, manganese, zinc, sulphur, and soda are also found in Colorado in considerable quantities.

ALTITUDES OF SOME TOWNS AND PASSES IN COLORADO

	Feet.
Denver City above the sea	4,798
Golden City above the sea	5,242
Central City above the sea	8,300
Idaho City above the sea	7,122
Georgetown City above the sea	8,104
Empire City above the sea	8,871
Pass over the Range Via Cheyenne	7,500
Pass over the Range Via Berthoud	10,914
Pass over the Range Via South Park	11,000
Pass over the Range Via Boulder	11,700
Pass over the Range Via Jones	12,200
Pass over the Range Via Argentine	13,000
North, South, Middle, and St. Luis Parks from	6,000 to 9,000
Main Belts of Gold Mines from	7,000 to 9,000
Main Belts of Silver Miles from	8,000 to 11,000

CLIMATE.

The climate of Colorado is mild and healthful; between July and October but little rain falls, and not in excess at any time. The air is dry, and somewhat more rarefied than at more moderate elevations; but having great purity, gives speedy relief to those suffering from pulmonic complaints. Meat readily cures without salt when hung exposed to the [54]

air. The extreme heat of summer is moderate in its effects, owing to the rapid evaporation of perspiration. In winter the extreme cold felt in the Eastern States is unknown. Cattle remain out during all the winter months, in many of the valleys, exposed to the weather, and leave the best cut and cured hay, for that which dries naturally upon the hill-sides.

TIMBER, AGRICULTURE, ETC.

About one-half of the territory is covered with timber, the growth in some sections being small and scattering, composed of the pinon, or nut-bearing pine, and scrubby cedar. These are confined to the lower foot-hills of the mountains; higher up are found cedar, spruce, fir, and pine, which grow to an enormous size. Hemlock, aspen, and oak are also found. Plum and cherry trees are met with growing wild, and the apple and pear are being cultivated with success. Wild grapes, strawberries, raspberries, and currants are abundant; and heavy growths of wild clover, wild rye, and wild barley cover many of the valleys.

The records of the United States Land Office exhibit sales of 210,000 acres of farming land in the territory, with 190,000 acres claimed, but not paid for; making 400,000 acres under improvement. Of this number, 100,000 acres are well cultivated. The number of acres capable of being brought successfully under cultivation in the territory is estimated at from 5,000,000 to 6,000,000, of which it will be seen that only a very small proportion has been taken, the balance lying in solitude, as it has for centuries, ready [55] to yield, upon the application of labour, those immense crops which are found to leap almost spontaneously from the sections already touched.

Wheat, barley, and oats yield from thirty to seventy bushels to the acre, and all the varieties of vegetables are successfully raised. In 1865, for a number of months, corn and oats sold readily at prices ranging from 15 to 25 cents per lb. In the summer of 1866, grains sold in Colorado at prices less than those ruling in Chicago, Illinois, the largest grain mart in the world. Eight or ten flour mills are now in operation, which are making more flour than the people of the territory can consume.

TAXATION.

The tax valuation of property in the territory, in 1866, was \$10,610,800, a gain of nearly \$2,000,000 over the valuation of 1865, and being about \$300 per capita. Estimating very moderately the developed mining property in the territory, which is not taxed, to be worth the amount of property which is taxed, we have \$600 per capita, or an amount one-fifth in excess of the amount taxed per capita in the United States for the same year. To this should be added a large percentage for the farming improvements which have taken place upon Government lands, of which the occupants have not yet obtained titles, and are, consequently, untaxed. [56]

REVIEW OF MINING PROCESSES AND RESULTS.

In the counties of Gilpin, Clear Creek, and Boulder—nearly all being in the first two counties—there are ninety-one stamp mills, containing 1,698 stamps, varying in weight from 250 to 900 lbs. each. There are, in addition, forty-one other mills designed for Behr

and Keith's, Crosby and Thompson's, Bertola's, Dodge's, Mason's, and processes other than of stamps; also the smelting works at Black Hawk. Many of these mills are fine structures, and can be readily adapted to different methods of working ores. They are mostly built of wood — a few of brick and stone—costing from \$3,000 to \$100,000. They are nearly all designed for running by steam power, the balance by water-power. There are between ten and fifteen mine-pumps in the territory, varying in size from four to nine inches in diameter. There are between forty and fifty steam hoisting rigs over mines, some of which are run in connection with mills, others having separate engines. There are a larger number of horse and hand windlasses, and many miles of shafts, tunnels, levels, adits, tramways, &c. Nearly all these mills are in good repair, but many of them are not running at the present time, owing to various causes—the principal ones being, that some of the mills are in localities remote from veins which have been sufficiently developed to furnish good ore in some cases were erected in the blind haste of ignorant or deceiving men, during the first excitement, outside of the belts of gold veins, the courses of which are now more accurately determined. In many instances, the amounts which were originally pledged, [57] upon the guarantees of the originators of the mining schemes that such amounts would be ample for all purposes, were found insufficient. Sometimes these amounts were increased by farther sums, which were oftentimes foolishly expended by incompetent and extravagant agents, in experimenting with new processes, or in building elegant mills, more fitted for boudoirs or saloons than for the purposes of mining. These unwise expenditures by agents, who were far away from their employers, and left to act in accordance with their own ill-matured experiences, often induced a withdrawal of confidence upon the part of the capitalists investing, who at times were so dissatisfied as to abandon the improvements already made for the payment of debts contracted by their agents. But a large proportion of the mills which are quiet, are so kept by their owners in anticipation of a still better process than has yet been demonstrated. Many of these owners, well satisfied with their mining property, are engaged in sinking their shafts still deeper upon their mines, and in getting up ore to the surface.

The stamp and pan process, which has been found quite satisfactory when applied to surface ores, has been found deficient when brought in contact with the stubborn sulphurets, from which it takes but a small percentage of the gold known to be contained in them, and having no power to save the silver, which is found in nearly all of the gold ores, or any of the copper, which forms so large a proportion of them. Yet this process has occupied a prominent position up to the present time, from the fact that many of the ores are so exceedingly rich, that the small percentage of fine gold contained in them, and saved by the process, has, even in the times of high prices, paid a profit over the expenses [58] of mining and milling. In fact, nearly all the gold obtained from Colorado, which has not been obtained by sluicing, has been derived in this way; and, in the absence of more perfect appliances, now steadily yields considerable amounts, particularly since the time when the high prices demanded in previous years for labour and the necessities of life, passed away, never again to be known. By this process very large sums have been obtained from the Burroughs, Kansas, Sullivan, Bobtail, Gregory, and other lodes, by mill men who have steadily pursued their business, without giving their time and means to the many experimental processes which have followed each other in rapid succession—who, contented with making a daily profit, paid little attention to their ores after they had once passed them through their mills, though well aware of the great wealth still contained in them, depending alone upon the immense masses remaining in their mines, which were

easily detached and raised to the surface.

The process introduced by Messrs. Behr and Keith, by which the ore, after being finely powdered, is carried by a strong draft through a brick flue, where it is submitted to a great heat, by which the sulphur contained in it is consumed, the iron oxidised, and is then given to the action of quicksilver, has been quite successful in saving a large proportion of the gold contained in the ores; and many ores which have been worthless when worked in the stamp and pan way, have yielded from \$50 to \$100 to the ton of 2,000 lbs. by this process; and tailings from the stamp mills, which have once yielded a good profit over the expenses of mining and milling, are by the latter process made to yield an amount from two to four times greater than obtained by the first treatment. This process is not, however, calculated to [59] work successfully those ores which contain a percentage of galena in them exceeding ten percent; and as many of the gold veins contain a larger amount, they cannot be treated in this way. It is claimed by this process, that the infinitesimally fine particles of gold contained in the ores are aggregated in small round pellets or globules. This seems to be conclusive, upon an examination of the gold in the desulphurised ore with a magnifying glass. Many of the globules appear to have small concave indentations upon their surfaces, and others appear to have burst open from the natural shrinkage of the metal, when cooling from a molten state. The expense of the process scarcely exceeds that of the stamps and pans, and has the merit of great simplicity.

The ore after its first reception by the crushing apparatus, is conducted continuously by machinery from first to last, the same being so conveniently arranged, that the labour of four men is sufficient to complete the crushing, powdering, desulphurising, and amalgamating of twenty tons per day. The amount of fuel consumed is small, owing to the large amount of sulphur contained in the ores.

This process does not, however, save any silver or copper, and cannot therefore be considered a perfect method for treating the ores of Colorado. In the hands of the inventors, who expended a large amount before bringing their system to its present condition, it is now paying a large profit. Ores are treated for the benefit of owners in the vicinity at a fixed price, which, owing to the absence of competition, is exceedingly high, being confessedly from six to ten times higher than the actual cost. Yet the amount of ore offered is larger than can possibly be accepted, and in some instances [60] yields to the owners from 300 to 400 percent, more than the sum paid for treatment. The result attained by Messrs. Behr and Keith has induced a number of parties to imitate their method, who will soon have their mills in successful operation.

The process of smelting ores by the plan pursued at Swansea, in Wales, has lately been introduced into the territory, and though probably far behind the method imitated, owing to the obstacles incidental to the primary application of so delicate a process, in a region where difficulties of every description are met with, has, however, run steadily for a number of months, and turned out masses of bullion, weighing from 50 to 150 lbs. The parties having the process in hand have not made public their debit and credit account, and it is therefore impossible to estimate with accuracy their success; but from the fact that they have been constantly augmenting their capacity, and have paid owners of ores sums from four to five times larger than such parties could obtain from them by other treatment, it has been generally conceded that the process is a success. By this process the ore, after

beings crushed by stamps or other means, is passed into puddles, where the ores are concentrated, the siliceous or sandy portions being thrown aside as worthless. The galena is separated by itself, as well as the copper and iron sulphides. The galena is treated in Scotch hearths, and the sulphides of copper and iron in reverberatory furnaces, the silver and gold being afterwards obtained by cupellation.

The other processes introduced, known as Crosby and Thompson's, Mason's, Dodge's, Bertola's, Wilson's, and others, have not yet—so far as the public [61] are informed — attained that success which the enterprising spirit and persistent efforts of their originators deserve, but have principles of novelty and ingenuity which indicate the success that must ultimately be obtained. To this class of men will the territory finally be indebted for the immense streams of precious metals she will pour out from her belts of mines. Enough has been done in Colorado to satisfy any one of the true value of the countless and inexhaustible veins which so closely pack: and seam her mountain-sides, and the improvements which have been made there in so short a time must appear astonishing to any who will examine them. But the great difficulties which have been encountered must be taken into consideration by those who review her mining processes: the interruptions of the war and Indian difficulties; the long distance, and high rates of freight from the Missouri River, and the delay occasioned in getting the machinery ordered, which, being of novel construction, had to be manufactured expressly for the purpose. But these difficulties are, happily, now overcome, by the cessation of war, by the building of railroads, and by the erection of manufacturing establishments in the territory; and we may reasonably expect in the succeeding few years to see a more rapid and successful advance.

CASELL, PETTER, AND GALFIN, BELLE SAUVAGE PRINTING WORKS, LUDGATE HILL, LONDON, E.C.

LIST OF ORES FROM COLORADO,

CONTRIBUTED TO THE

PARIS UNIVERSAL EXPOSITION OF 1867, BY VARIOUS PARTIES.

Assays given being to Ton of 2000 lbs.;
Assay of Copper in Ore not being given, though largely represented.

From WHALE GOLD MINING COMPANY OF COLORADO
Ore from Whale lode, Spanish Bar District, Clear Creek Co.

From LONG'S PEAK GOLD MINING COMPANY.
Ore from Princeton lode, Ward District, Boulder Co.
From depth of 41 feet, 4-foot crevice.

From NIWOT GOLD MINING COMPANY.
Ore from Columbia lode, Ward District, Boulder Co.
From depth of 75 feet, 24-foot crevice.

From SHIPMAN AND ROCKWELL.
Of Central City, Colorado, and of Chicago, Illinois.
Ore from Indigo lode, Griffith District, Clear Creek Co;
From depth of 12 feet, 4-foot crevice.

Assays—Gold, None.
OZ. DWTS. GRS.
Silver, 1,374-6-16. Coin Value, \$1,804.83.
Ore from Johnson lode, Griffith District, Clear Creek Co.
From depth of 12 feet, 31 foot crevice.
Ore from Muscovite lode.
Ore from Silver Star lode.

From JOHN SENSENDERFER.
Ore from Branch lode, Gregory District, Gilpin Co.
From depth of 400 feet, 2-foot crevice.
Assays—Gold, 7-9— 4.
Assays Silver, 16-9-14. Coin Value, \$178.67.

From GUNNELL GOLD MINING COMPANY.
Ore from Gunnell lode, Eureka District, Gilpin Co.

(Contributor unknown.)
Ore from Prize lode, Nevada District, Gilpin Co.
Assays—Gold, 0-7-7.

Assays Silver, 160-8-8. Coin Value, \$216.07.

From BAKER SILVER MINING COMPANY.

Ore from Baker lode, Argentine District, Clear Creek Co.

Assays—Gold, 0-3-20.

Silver, 406-5-20. Coin Value, \$532.12.

From BLACK HAWK GOLD MINING COMPANY.

Ore from Gregory lode, Gregory District, Gilpin Co.

(First lode discovered in Colorado.)

From depth of 420 feet, 4-foot crevice.

OZ. DWTS. GRS.

Assays—Gold, 6-5-6.

Silver, 26-5-0. Coin Value, \$163.55.

(Contributor unknown.)

Ore from Gunnell lode, Eureka District, Gilpin Co.

Assays—Gold, 6-11— 6.

„ Silver, 17-18-18. Coin Value, \$158.77.

From H. A. VEZIE.

Ore from Gardner lode, Nevada District, Gilpin Co.

Assays—Gold, 1— 6-6.

„ Silver, 25-16-6. Coin Value, \$60.67.

(Contributor unknown.)

Ore from Branch lode.

From JOHN B. BRUCE.

Ore from Foot and Simmons lode, Gregory District,

Gilpin Co.

Assays—Gold, 8— 0-10.

„ Silver, 35-15— 0. Coin Value, \$212.04.

(Contributor unknown.)

Ore from Prize lode.

(Contributor unknown.)

Ore from Sadowa lode.

From J. ALDEN SMITH.

Ore from Champion lode, Trail Run District, Clear Creek Co.

OZ. DWTS. GRS.

Assays—Gold, 4-1-16.

Silver, 43-9— 4. Coin Value, \$140.77.

Ore from Kelley lode, Trail Run District, Clear Creek Co.

From Mr. W. H. CUSHMAN.

Ore from Burroughs lode, Nevada District, Gilpin Co.

(From Hardisty claim)

Assays--Gold, 7-2-22.

Silver, 15-9— 6. Coat Value, \$167.80.

From B. C. WATERMAN and T. R. RODMAN
Ore from Mackey lode; Nevada District, Gilpin Co.

From MONTEZUMA GOLD MINING COMPANY.
Ore from Newfoundland lode, Nevada District, Gilpin Co.
From depth 330 feet, 3-foot crevice.
Assays—Gold, 3-17— 8.
Silver, 16— 0—.20. Coin Value, \$90.05.

(Contributor unknown.)
Ore from Pewabic lode, Russell District, Gilpin Co.

(Contributor unknown.)
Ore from German lode, Gregory District, Gilpin Co:

From GEORGE R. MITCHELL,
Ore from Alps lode, Illinois Central District, Gilpin Co.

(Contributor unknown.)
Ore from Kansas lode, Nevada District, Gilpin Co.
Depth, 100 feet, 5-foot crevice.
OZ. DWTS. GRS.
Assays—Gold, 5-19-20.
Silver, 22-12— 2. Coin Value, \$152.78.

From SMITH AND PARMELEE GOLD MINING COMPANY.
Ore from Briggs lode, Gregory District, Gilpin Co.
Depth, 365 feet, 2-1/2-foot crevice.
Assays—Gold, 11— 4-14.
Silver, 22— 8— 2. Coin value, \$261.21.

(Contributor unknown.)
Ore from Franklin lode.

From ROLLIN'S GOLD MINING COMPANY.
Ore from Maurer lode, Independent District, Gilpin Co.
Depth, 80 feet, 6-foot crevice.

From J. T. HERRICK.
Ore from Elijah Hise lode, Griffith District, Clear Creek Co.
Assays—Gold, a trace.
Silver, 1,274-0-0. Coin Value, \$1,656,20.

(Contributor unknown.)
Ore from Bates lode, Gregory Gold Mining Co:

From EGYPTIAN GOLD MINING COMPANY.
Ore from Egyptian lode, Illinois Central Mining District, Gilpin Co.
OZ. DWTS. GRS.
Assays—Gold, 11-10-16

Silver, 51-12-12. Coin Value, \$305.23.

From FIRST NATIONAL GOLD MINING COMPANY.

Ore from Burroughs lode, Nevada District, Gilpin Co.

Depth, 270 feet, 4-foot crevice.

Assays—Gold, 4— 1-16.

Silver, 7-17-12. Coin Value, \$94.51.

From COLORADO GOLD MINING COMPANY.

Ore from Burroughs lode, Nevada District, Gilpin Co.

Depth, 260 feet, 4-foot crevice.

Assays—Gold, 11-10-10.

Silver, 9-18— 8. Coin Value, \$251.01.

Ore from Kansas lode, Nevada District, Gilpin Co.

Depth, 70 feet, 6-foot crevice.

Assays—Gold, 50-13-18.

Silver, a trace. Coin Value, \$985.65.

From QUARTZ HILL GOLD MINING COMPANY.

Ore from Stark Co. lode, Illinois Central Mining Company:

Assays—Gold, 1-12-2,

Silver, 25-19-4. Coin Value, \$76.88.

From G. W. SISTY.

Ore from Crystal lode, Idaho District, Clear Creek Co.

OZ. DWTS. GRS.

Assays—Gold, 4— 8-23.

Silver, 118-18-18. Coin Value, \$246.43.

From GEORGE HUGELL.

Ore from Flack lode, Nevada District, Gilpin Co.

Assays—Gold, 1-10-15.

Silver, 31-18-18. Coin Value, \$73.11.

From STERLING GOLD MINING COMPANY.

Ore from Bobtail lode, Gregory District, Gilpin Co.

Assays—Gold, 16-17-22.

Silver, 12— 2— 2. Coin Value, \$344.28.

From E. K. BAXTER.

Ore from Baxter and Crispee lode, Nevada District, Gilpin Co.

Assays—Gold, 6-11— 4.

Silver, 23— 0-20. Coin Value, \$165.51.

From F. G. MARSHALL.

Ore from Compass and Square lode.

Assays—Gold, A trace.

Silver, 1,147-2-12. Coin Value, \$1,491.26.

From AMERICAN FLAG GOLD MINING COMPANY.

Ore from American Flag lode, Nevada District, Gilpin Co.

Assays—Gold, 0-17-12.

Silver, 42—8— 6. Coin Value, \$73.22.

Contributed by J. P. WHITNEY.
MAPS ILLUSTRATIVE OF COLORADO.

1 Map of United States.
1 Map of Colorado.
1 Map of Clear Creek Co.
1 Map of Gilpin Co. Mining Regions
1 Map of Portion Summit Co.
1 Map of Ten Mile Dist., Summit Co.
1 Map of Snake River Dist., Summit Co.
1 Map of Eureka Mining Dist., Gilpin Co.
1 Map of Nevada Mining Dist., Gilpin Co.
1 Map of Illinois Central Dist., Gilpin Co.
1 Map of Russell Dist., Gilpin Co.
1 Map of Upper Union Dist., Clear Creek Co.
1 Map of Griffith Dist., Clear Creek Co.
1 Map of Trail Creek Dist., Clear Creek Co.
(14 Maps)

Contributed by J. P. WHITNEY.
PHOTOGRAPHIC ILLUSTRATION OF COLORADO
MINING INTERESTS.

Flood at Denver, 1864.
Bird's-eye View of Central City.
Town of Nevada.
Town of Buckskin Joe.
Town of Georgetown.
Town of North Empire.
Town of Montgomery, View No. 1.
Town of Montgomery, View No. 2.
Town of Black Hawk and Gregory lodes.
Georgetown Gold Company's Mill.
Philips lode, Lincoln District.
Gregory lode.
Site of Mill of N.Y.G.M. Co.
American Flag lode, Quartz Hill.
Mines of North Empire.
Tenth Legion lode.
Lincoln District, Fall River, looking North:
Lincoln District, Fall River, looking South.
Montrose G.M. Company's Mill, Lincoln District.
Lower Section of Quartz Hill.
Colorado Gold M. Co's. Mill.
Nevada Gold M. Co's. Mill.
Twin Lakes.
Waterfalls at Montgomery.
Gate from Garden of the Gods.
Gate to Garden of the Gods.
Garden of the Gods, near Colorado City.
Garden of the Gods, near Colorado City.

Scene on Monument Creek, No. 1, near Colorado City.
 Scene on Monument Creek.
 Scene on Monument Creek No. 2
 Scene on Monument Creek, near Colorado City, No. 5.
 Park at Elizabethtown.
 Mountain near Colorado City.
 Ute Chiefs.
 Sensitivefer's Mill, near Black Hawk.
 (36 photographs.)

Contributed by J. P. WHITNEY.

	OZ.	DWTS.
1 nugget of gold, free of quartz, from Georgia Gulch, Colo.	15	7
1 nugget of gold, free of quartz, from Georgia Gulch, Colo.	8	3
1 nugget of gold, free of quartz, from Georgia Gulch, Colo.	5	10
1 nugget of gold, free of quartz, from California Gulch, Colo.	5	10
1 nugget of gold, free of quartz, from Georgia Gulch, Colo.	2	1
1 nugget of gold, free of quartz, from California Gulch, Colo.	1	13
1 nugget of gold, free of quartz, from California Gulch, Colo.	1	10
1 nugget of gold, free of quartz, from Georgia Gulch, Colo.	1	0
1 nugget of gold, free of quartz, from Georgia Gulch, Colo.	1	1
1 nugget of gold, free of quartz, from Georgia Gulch, Colo.	0	18
1 nugget of gold, free of quartz, from Georgia Gulch, Colo.	0	14
1 nugget of gold, free of quartz, from Georgia Gulch, Colo.	0	7
1 nugget of gold, free of quartz, from Georgia Gulch, Colo.	0	8
	47	6

	OZ.	DWTS.
1 nugget, mixed with quartz, from Georgia Gulch, Colo.	10	12
1 nugget, mixed with quartz, from Russell Dist., Colo.	9	0
1 nugget, mixed with quartz, from Clear Creek, Colo.	7	18
1 nugget, mixed with quartz, from Nevada Dist., Colo.	3	0
1 nugget, mixed with quartz, from Nevada Dist., Colo.	1	0
1 nugget, mixed with quartz, from , Russell Dist., Colo.	1	0
1 nugget, mixed with quartz, from Russell Dist., Colo.	0	17
1 nugget, mixed with quartz, from Russell Dist., Colo.	0	13
1 nugget, mixed with quartz, from Russell Dist., Colo.	0	15
1 nugget, mixed with quartz, from Georgia Gulch, Colo.	0	13
1 nugget, mixed with quartz, from Georgia Gulch, Colo.	0	10
1 nugget, mixed with quartz, from Georgia Gulch, Colo.	0	4
	39	6

ORES contributed by J. P. WHITNEY.

ORES FROM EUREKA MINING DISTRICT,
 GILPIN CO., COLORADO.

Ore from Barnet lode
 Ore from Big Thing lode
 Ore from Beladona lode
 Ore from Casto lode
 Ore from Continental lode
 Ore from Eureka lode

Ore from Flagstaff lode
Ore from Grand lode
Ore from Gunnell Ext. lode
Ore from Gunnell lode
Ore from Hattie lode
Ore from Joe Cass lode
Ore from Ore from Kimber lode
Ore from Kregbaum lode
Ore from McDonald lode
Ore from McKee lode
Ore from Pap lode
Ore from Sucker lode
Ore from Superior lode
Ore from St. Louis lode
Ore from Unknown lode
Ore from White and Richardson Lode
Ore from Wisconsin lode

ORES contributed by J. P. Whitney
NEVADA DISTRICT, GILPIN CO.

Ore from American lode
Ore from Adeline lode
Ore from American Flag lode
Ore from Alger lode
Ore from Barker lode
Ore from Baker lode
Ore from Buckeye lode
Ore from Burroughs lode
Ore from Bufort lode
Ore from Big Thing lode
Ore from California lode
Ore from Columbia lode
Ore from Columbia Excelsior lode
Ore from Corydon lode
Ore from Cuba lode
Ore from Champion lode
Ore from Dyke lode
Ore from Edgar Co. lode
Ore from Excelsior lode
Ore from Erie lode
Ore from Forks lode
Ore from Flack lode
Ore from Gladiator lode
Ore from German lode
Ore from Hubert lode
Ore from Indiana lode
Ore from Illinois lode
Ore from Kent Co. lode
Ore from from Kavannah lode
Ore from King lode
Ore from Kentucky lode
Ore from Kansas lode

Ore from Keystone lode
Ore from Minnesota lode
Ore from Monte Cristo lode
Ore from Mercer Co. lode
Ore from Missouri lode
Ore from Never Fail lode
Ore from Newfoundland lode
Ore from New York lode
Ore from Nebraska lode
Ore from Onondagua lode
Ore from Port Hole lode
Ore from Prize lode
Ore from Powers lode
Ore from Revenue lode
Ore from Shanks lode
Ore from Sherman lode
Ore from Secreto lode
Ore from Sullivan lode
Ore from Tapioca lode
Ore from Travers lode
Ore from Whiting lode
Ore from Whitcomb Indiana lode
Ore from Whitcomb lode
Ore from Wilbur lode

ORES contributed by J. P. Whitney
ILLINOIS CENTRAL DISTRICT, GILPIN CO.

Ore from Alps lode
Ore from Cornucopia lode
Ore from Crystal lode
Ore from Canton lode
Ore from Egyptian lode
Ore from Effie lode
Ore from Fairview lode
Ore from Gold Dirt lode
Ore from Gardner lode
Ore from Girard lode
Ore from Harsh lode
Ore from Holson lode
Ore from Illinois lode
Ore from Ingalls lode
Ore from Kirk lode
Ore from Kirkpatrick lode
Ore from King lode
Ore from Mackey lode
Ore from Massachusetts lode
Ore from McKee lode
Ore from Metropolis lode
Ore from Michigan Tunnel
Ore from North Star lode
Ore from Norwegian lode
Ore from Nebraska lode

Ore from Parent lode
Ore from Papp lode
Ore from Postage lode
Ore from Pacific lode
Ore from Pike's Peak lode
Ore from Quartz Hill lode
Ore from Rothschilds lode
Ore from Roderick Dhu lode
Ore from Stark Co. lode
Ore from Siseler lode
Ore from Sioux City lode
Ore from Statton. lode
Ore from Shaw lode
Ore from Sugar Loaf lode
Ore from Sylvia lode
Ore from Stuart lode
Ore from Unknown lode
Ore from Ulysses lode

RUSSELL DISTRICT, GILPIN CO.

Ore from Bench lode
Ore from Baldwin lode
Ore from Belle of the West lode
Ore from Big Horn lode
Ore from Bangor lode
Ore from Broad lode
Ore from Benton lode
Ore from Chase lode
Ore from Canton lode
Ore from Calhoun lode
Ore from Clara Belle lode
Ore from Clayton lode
Ore from Dyke lode
Ore from Egyptian lode
Ore from Gorham lode
Ore from Grey Rock lode
Ore from Harsh lode
Ore from Hill House lode
Ore from Hedges lode •
Ore from Hard Cash lode
Ore from Jefferson lode
Ore from Kingston lode
Ore from Leavenworth lode
Ore from Leavitt lode
Ore from Morrill lode
Ore from Marquet lode
Ore from Monday lode
Ore from May Flower lode
Ore from North Pole lode
Ore from Notaway lode
Ore from New Boston lode
Ore from New Baltimore lode

Ore from Pendleton lode
Ore from Pewabic lode
Ore from Platte Co. lode
Ore from Peck lode
Ore from Quartz Mill lode
Ore from Red Rock lode
Ore from Russell Gulch lode
Ore from Rothschilds lode
Ore from Saratoga lode
Ore from S. P. Chase lode
Ore from Shaw lode
Ore from Star lode
Ore from Topeka lode
Ore from Stump lode
Ore from United States lode
Ore from Washcash lode
Ore from Wilkinson lode
Ore from White Cloud lode
Ore from Cubes Iron Sulphurets.

ENTERPRISE DISTRICT, GILPIN CO.

Ore from Attleborough lode
Ore from Backus lode
Ore from Cairo lode
Ore from Excelsior lode
Ore from Kinney lode
Ore from Kendall lode
Ore from Mammoth Tunnel
Ore from Peters lode
Ore from Rockford lode
Ore from Running lode
Ore from Tip Top lode

ORES contributed by .J. P. W HITNEY.

VIRGINIA CANON DISTRICT, GILPIN CO.

Ore from Black Eagle lode
Ore from Creses lode
Ore from Crystal lode
Ore from Conquest lode
Ore from Crisis lode
Ore from Defiance lode
Ore from Grey lode
Ore from Leaton No. 6 lode
Ore from Octagon lode
Ore from Virginia lode

GREGORY DISTRICT, GILPIN CO.

Ore from Bobtail lode
Ore from Black Hawk lode
Ore from Bates lode
Ore from B. G. M. Company's Tunnel

Cubes of Iron Sulphts. from Bates lode
Ore from Cotton lode
Ore from Foot and Simmons lode
Ore from Fiske lode
Ore from Gregory lode
Ore from German lode
Ore from Hopeful lode
Ore from King Solomon lode
Ore from Leavitt lode
Ore from Monitor No. 1 lode
Ore from Monitor No. 2 lode
Ore from Michigan Tunnel
Ore from Mammoth lode
Ore from Omaha lode

CENTRAL CITY DISTRICT, GILPIN CO.

Ore from A. No. 1 lode
Ore from Burgher lode
Ore from Basswell lode
Ore from Brown Thrush lode
Ore from Bamboo lode
Ore from Central City lode
Ore from Copper Ore lode
Ore from Corydon lode
Ore from Dawson lode
Ore from Decker lode
Ore from E. A. Lynn lode
Ore from Eagle Bird lode
Ore from Franklin lode
Ore from Golden Eagle lode

ORES contributed by J. P. WHITNEY.

Ore from Girard lode
Ore from Huber lode
Ore from Hunter lode
Ore from Smoky City lode
Ore from Illinois lode
Ore from Jenny Lind lode
Ore from Laurel lode
Ore from Lake City lode
Ore from Monument lode
Ore from Mountain Lion lode
Ore from Moscow lode
Ore from Newfoundland lode
Ore from Wilbor lode
Ore from Yankee Jim lode
Ore from Young America lode.

INDEPENDENT DISTRICT, GILPIN CO.

Ore from Abe Lincoln lode
Ore from Bateman lode
Ore from Broad lode

Ore from Brooks lode
Ore from Barrahoo lode
Ore from Blackhawk lode
Ore from Belmont lode
Ore from Champion No. 1 lode
Ore from Chrysolite lode
Ore from Creole lode
Ore from Chippewa lode
Ore from Elkhorn lode
Ore from Fremont lode
Ore from Gold Dirt lode
Ore from Grill lode
Ore from Hull lode
Ore from Keystone lode
Ore from Keene lode
Ore from Lost Mountain lode
Ore from Lawrence Wells lode
Ore from La Crosse lode
Ore from Lydia lode
Ore from Langley lode
Ore from Lake Superior lode
Ore from Mohler lode
Ore from Mowrey lode
Ore from Northup lode
Ore from Norway lode
Ore from Primrose lode
Ore from Reynolds lode
Ore from Rolla lode
Ore from Royal lode
Ore from Surprise lode
Ore from Smith lode
Ore from Twin Sister lode
Ore from Tarbox lode
Ore from War Eagle lode
Ore from Wild Cat lode
Ore from Wolf lode

ORES contributed by J. P. WHITNEY.

LAKE DISTRICT, GILPIN CO.

Ore from Bennet lode
Ore from Clay Co. lode
Ore from Golden Eagle lode
Ore from Parent lode

HAWKEYE DISTRICT, GILPIN CO.

Ore from Caledonia lode
Ore from Canton lode
Ore from Great Western lode
Ore from Lyndon lode
Ore from Stuart lode

QUARTZ VALLEY DISTRICT, GILPIN CO.

Ore from Elector lode
Ore from Continental lode

VERMILION DISTRICT, GILPIN CO.

Ore from Grant lode
Ore from Mann lode
Ore from Peck lode

WARD DISTRICT, GILPIN CO.

Ore from Stoughton lode
Ore from Ward lode
Ore from Twin Sister lode

ARGENTINE DISTRICT, CLEAR CREEK CO.

Ore from Bob Morris lode
Ore from Belmont lode
Ore from Guthrie lode
Ore from Rockland lode

EMPIRE DISTRICT, CLEAR CREEK CO.

Ore from Atlantic lode
Ore from Long John lode

ORES contributed by J. P. Whitney
GRIFFITH DISTRICT, CLEAR CREEK CO.

Ore from Alabama lode
Ore from Columbus lode
Ore from Cuckoo lode
Ore from Creole lode
Ore from Darrell lode
Ore from Gold Dirt lode
Ore from Great Mammoth lode
Ore from Griffith lode
Ore from Magenta lode
Ore from New York lode
Ore from Nance Smith lode
Ore from Pine Tree lode
Ore from Rockland lode
Ore from War Eagle lode
Ore from Western lode
Ore from Asphaltum Native

IDAHO DISTRICT, CLEAR CREEK CO.

Ore from Genl. Grant lode

IOWA DISTRICT, CLEAR CREEK CO.

Ore from Blackstone lode
Ore from Banner lode
Ore from Frank Peirce lode
Ore from Hamlin lode
Ore from Surprise lode

LINCOLN DISTRICT, CLEAR CREEK CO.

Ore from Allen lode
Ore from Danl. Webster lode
Ore from Huddleston lode
Ore from Philips lode
Ore from Tompkinson lode

SPANISH BAR DISTRICT, CLEAR CREEK CO.

Ore from Cook lode
Ore from Edgar lode
Ore from Grundy Co. lode
Ore from Harshaw lode

ORES contributed by J. P. WHITNEY;

Ore from Hukill lode
Ore from Lincoln lode
Ore from Pike Co. lode
Ore from Pleasant Valley lode
Ore from Quail lode
Ore from Spanish lode
Ore from Silver Creek lode
Ore from Salisbury lode
Ore from Whale lode

TRAIL CREEK DISTRICT, CLEAR CREEK CO.

Ore from Black Earth lode
Ore from Capital lode
Ore from Cornelius Vanderbilt lode
Ore from East Fork lode
Ore from Freeland lode
Ore from French lode
Ore from Holman lode
Ore from Lion of the Woods lode
Ore from May Flower lode
Ore from Octavia lode
Ore from St. Regis lode
Ore from arah lode
Ore from pur lode
Ore from ilver Blossom Rock

TRAIL RUN DISTRICT, CLEAR CREEK CO.

Ore from Cayote lode
Ore from Champion Dirt lode
Ore from Kelly lode
Ore from Jefferson lode
Ore from Mammoth lode
Ore from Pendleton lode
Ore from Tennell lode

UPPER UNION DISTRICT, CLEAR CREEK CO.

Ore from Atlantic lode
Ore from Conqueror lode

Ore from Empire lode
Ore from Gold Dirt lode
Ore from Pioneer lode
Ore from Silver Mountain lode
Ore from Superior lode
Ore from Stars and Stripes lode
Ore from Tenth Legion lode

ORES contributed by J. P. WHITNEY.
TEN MILE DISTRICT, SUMMIT CO.

Ore from Augustine lode
Ore from Blackstone lode
Ore from Campton lode
Ore from Fields lode
Ore from Freemont lode
Ore from Hard Cash lode
Ore from Incas lode
Ore from Merrimac lode
Ore from No. Nine lode
Ore from Polygon lode
Ore from St. Regis lode
Ore from Watson lode
Ore from Young lode

MISCELLANEOUS.

ORES contributed by J. P. WHITNEY.
AVALANCHE MINING DISTRICT.

Ore from Eldorado lode
Ore from Patch lode
Ore from Spaulding lode
Ore from Venango lode

ELK HORN DISTRICT.

Ore from Brown Thrush lode
Ore from Franklin lode

MUSQUITO DISTRICT.

Ore from Dowser lode
Ore from Kitty Clyde lode
Ore from Star lode

MINNESOTA DISTRICT.

Ore from Devonshire lode
Ore from Jennie lode
Ore from Ophir lode

MISSOURI DISTRICT.

Ore from Pollock lode

ORES contributed by J. P. WHITNEY.
MAGNOLIA DISTRICT.

Ore from Maryland lode

WEST FORK DISTRICT.

Ore from McGoffin lode

SNOWY RANGE DISTRICT.

Ore from Asbestos lode

Ore from Lincoln lode
