

## Gravel Mining in Placer County.

From Our Traveling Correspondent, The Forest Hill Divide' October 15, 1892.

To THE Editor:—The Forest Hill divide has, from the earliest days, been known as one of the richest gravel mining districts in the State, its estimated yield being no less than \$30,000,000. Lying between the north and middle forks of the American river, it reaches 40 miles to the summit of the Sierras. Mining operations have extended for nearly three-fourths of this distance. It represents the most complete and varied system of ancient rivers known on the coast, and has given the best opportunities for scientific investigation in this interesting field of geological study.

To Mr. Ross E. Browne, the eminent engineer, mining men and students are particularly indebted. He was the first to undertake the representation of these old channels and to preserve in permanent form, and in some manner systematize, the facts that the experience of 40 years has revealed. His map was published with the State Mineralogist's Report of 1890. With very few and minor exceptions, save, perhaps, in the case of the Morning Star channel, the developments of two years have further gone to prove the correctness of Mr. Browne's work as to the existence, general direction, continuation, etc., of the various channels. Of course, it is not a "Prospector's Guide," nor was it intended as such. I met, however, a number of men who decried its value and even declare its publication a serious injury, in that eastern men, interested in mines here and believing to be in or working toward a certain channel, saw on the chart no channel at all, or else, perhaps, saw it going another and entirely different direction. The result was that they became alarmed or disgusted, and forsook the work. This is said to be particularly the case on the Baker divide, to the west of Forest Hill [*Forest Hill is west of Baker Divide*]. Whether Mr. Browne is responsible or not, further work there has failed to find the unmapped but expected channel, and mining men are divided to-day as to its exact location or possible existence.

As is generally known, these ancient rivers really consist of three channels—the west and east, or rather the right and the left or upper channels, and the middle or lower and older. The former have afforded the great hydraulic mines and surface placers; the latter has been only approached by drift, and the gravel being cement in character, is valuable only by the milling process. Aside from the Red Point and Hidden Treasure, all the great mines of the present are of this class. The two excepted are in deep but uncemented gravel beds.

It is in the main channel or original Blue lead of the divide that the Paragon, Mayflower, Dardanelles, Gray Eagle and the mines under the town of Forest Hill are situated.

For many years the Dardanelles was considered the last point on the downward course of this channel. Below, the channel was not known and was not believed to exist. Six years ago, however, the Gray Eagle Mining Company started in three miles below the Dardanelles and three miles above the point where the Middle Fork of the American river cuts the divide. They have spent \$150,000 in experimenting and have shown conclusively within the last two years the existence of the Blue lead at this point. Seven miles more of this ancient river course are thus accounted for and given over for future development.

The Gray Eagle,—As noted this is the most recent enterprise on the divide. The property was first prospected through a shaft 375 feet deep and a short drift and incline 150 feet more to the bedrock. Thus justified, a tunnel was then run from the western slope in Owl Creek Canyon 2675 feet; an incline 165 feet long on 1/3 pitch brought them to the bottom of the channel, and the old workings and exposed both rims. The tunnel is the working passage. At the top of the old shaft are the old hoisting works, no longer used except the engines, which furnish steam to drive the hoist and the pump below. One ten-inch Hooker handles all the water at present. A north gangway has been driven 300 feet. The breast is carried forward

about 60 feet wide and four feet high. The gravel, in places showing a thick sprinkling of free gold on the walls, is generally of a very fair quality and gives indications of improvement with the progress of the work. The mine cannot be said to be fully opened up as yet by any means as the channel was only struck in July, but no anxiety is expressed as to its future. The ten stamp steam-mill, completed the latter part of June, is running but ten hours a day for the present. T. G. Durning is superintendent.

Electricity as a motive power in mine operations seems to be coming rapidly into favor on the divide as in Nevada county. The Gray Eagle is considering the advisability of putting in an electric-power plant. A mile below the mill at the mouth of Owl Creek is an unsurpassed site for such an enterprise. The canyon affords a fall of 1300 feet in half a mile and sufficient water is readily available. The divide could then offer a worthy rival to Grass Valley in the matter of cheap power as the surplus force would be in demand by the other mines. Many of them are waiting for the Gray Eagle to act and should nothing be done by the latter they will put in plants themselves, notably the Dardanelles and Paragon.

The property to be greatest benefited by the success of the Gray Eagle in proving the existence of the mammoth channel is probably the Spring Garden, owing to its extent and favorable location. As it is likely to be the next big enterprise, and is considered by many the best property on the divide to-day, an account of it may properly be given here.

The Spring Garden.—It is a well established fact that the old river-bed claims have the advantage over quartz ledges in that, no matter how rich the latter may be, they are liable at any moment to pinch out and baffle all efforts to trace them farther. The river channel, however, seems more tractable and traceable in spite of its windings, and the oft-vexed question of " extension " is avoided.

Three hundred feet below the Gray Eagle's works is the boundary line of the Spring Garden. The company owning it is incorporated and is represented mainly by San Francisco and eastern capitalists. J. H. Widber, city treasurer of San Francisco, is president; another large holder is ex-Surveyor-General J. W. Shanklin, a well known mining authority.

The property, comprising 520 acres under mineral patent, was worked early in the mining history of the State. It was noted for the rich gulches leading toward the Middle Fork, and from this slope \$500,000 was probably taken out, and from a limited area. These mines were all in the west channel, the gold coming from the high rim in the deep lower channel too much water was met for the machinery of the time to cope with successfully. In 1874, an incline on the rim was run 125 feet, and from the bottom of this a tunnel 400 feet, when the bedrock again pitched and the water drove out the workmen. They were then, however, in the Blue lead, from the blue cement character of the last gravel extracted, which estimated \$12.50 a car. The facilities for working this mine surpass those of any other on the lower portion of the divide, as a tunnel can be run from the Middle Fork side at any depth required, offering natural drainage. Investigation has shown the main channel to extend nearly a mile through the property, the west channel about the same distance, and if an east one be found to exist, as is expected, it will have an extent of at least half a mile. A single tunnel 3000 feet long will drain and open for work the three channels.

The Dardanelles.—The Dardanelles is the individual property of Gen. Joe Hamilton of Auburn. Mr. H. F. Calenburg is superintendent. It is developed by a 2400-foot tunnel and a 30° incline 300 feet long on the rim to the bottom of the channel, which was reached early in the present year. The channel was struck here in a series of rapids, and work is going on toward the lower end at present, with a breast of 70 feet. At a distance of 40 feet, a large deposit of rich gravel was met, and for the past three months the mine has been paying very well. The average of the gravel is \$30 a car. Its showing is the most flattering of any on the Divide. It is working, though, to a great disadvantage with the present pumping

and hoisting system. By this, the power is transmitted from the mill by an endless cable over a mile in length to the pump and hoist in the mine. Through faulty construction, the mill of ten stamps is only allowed a speed of 38 drops a minute in consequence. However, as soon as the present cable is worn out, which will be in three or four months, electric power will be adopted.

The Mayflower.—The opening of this mine in 1884 created an epoch in the mining history of the divide and lent encouragement and capital to the other operations. After spending half a million in developments, the Mayflower yielded the first week it was opened the sum of \$87,000. Since then work has been carried forward 2200 feet south to the company's limits and north a mile from the working tunnel. This tunnel is 4000 feet long and connects with the channel by an upward incline 90 feet long. On this property is also a separate and cross-channel known as the Orono, which has partially cut through the original Mayflower channel. The Orono flows from east to west and crosses the other about 500 feet north of the working tunnel. In this second channel a drift 1300 feet in length has been driven and some very good gravel has been found in the past. Of late the work has been in a series of rapids which offers small encouragement. Breasting is going on in this from 30 to 60 feet in width, and also in the north workings of the original channel. The gravel from both channels at present is of only medium quality. The 20-stamp mill is kept running steadily, and about 50 men, a majority of them Chinese, are employed. Oscar Jones has been superintendent since the 1st of July.

I will continue my description of the mines of this region in another letter. Chas. E. Townsend.  
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#### Gravel Mining in Placer County, From Our Traveling Correspondent.

The Paragon or Breece & Wheeler.

To THE Editor :—The B. and W., situated at Bath, a mile above Forest Hill, was the first to develop the Blue lead, and at its upper known extremity here it has been cut away by the Middle Fork. Two years and a half ago, however, the company had worked 8000 feet to the limits of their property. Since then they have been busied developing the cross-channel, or Orono, of the Mayflower. The extent of this latter channel is as yet quite undetermined, as it has only been developed at these two points. The supposition is that it is a continuation of the Hazard or Weske channel exposed a few miles farther up the divide.

The Orono does not seem to have cut entirely through the Blue lead, as in places the cement gravel of the latter is the bed of the former. The same tunnel that served to work the original channel is used in the present developments to a point 5000 feet in, and from which it is necessary to work by upraises of about 40 feet. This upper channel has been opened about 800 feet, and in places has shown a width of 450 feet.

During the past three months \$5000 have been spent in repairing and rebuilding the mill, putting in new batteries, self-feeders, etc. Ten stamps of 850 pounds, with 97 drops a minute, crush an average of 34 loads per day of 12 hours. A three-eighths wire screen is used. The gravel averages \$6 a ton, while the cost of mining and milling is put at \$2 75, leaving thus a very fair margin of profit. Thirty men are employed. Mr. W. H. Grinnell, the general superintendent, stated that an electric-power plant would in all likelihood shortly supersede the steam of the present.

The Hidden Treasure.—Mr. H. T. Power, late of the May flower, has been superintendent since the 1st of July and is the largest owner. About this famous mine has grown up the thriving little mining camp of Sunny South, five miles above Michigan Bluff. The channel is entirely distinct from those mentioned. of the lower divide, not being generally traceable southward except on the extreme eastern

points, the remainder of it having been entirely effaced by the erosion of present watercourses. The Hidden Treasure ran north 9000 feet to their bounds. Here a lava flow caused a break in the channel and its upper continuation of the old Mountain Gate, the channel being generally known as the Mountain Gate or "White" channel from the quartz character of its gravel. For a great distance this old river-bed is divided by a high ridge of rock, razor back and island-like, which turned the ancient waters into an east and west channel. It was in this western one that the old workings were, and when the end of that had been reached it was supposed that the mine was worked out. The discovery of the east channel two years ago revealed a second Hidden Treasure. At 5000 feet in an east drift disclosed this. Since then work has gone on here toward the face of the mine, a distance of 500 feet and an average 160-foot breast, the gravel being removed through the old tunnel. At the same time a tunnel is running from the front and is in 2300 feet. By the 1st of January it is expected to connect with the back workings, and the mine will then be fully and finely opened. One hundred and fifteen men, for the most part Chinese, are employed.

The Eureka, eight miles above Sunny South, is a property regarding which I was unable to learn much, but for which much in the future is anticipated. Mr. Felix Chappellet is forming a company for its development.

The Red Point, situated five miles beyond Sunny South, is operated by a French company, and is under the superintendence of Mr. Chas. F. Hoffman of Oakland. The mine is in the channel known as the Golden River, and is distinct as far as known from those previously mentioned. At this point its course is east and west.

Gravel was struck here in 1888 and work has since progressed continually. The channel was reached by a south tunnel 2200 feet in length and a 20-foot upraise. It was worked west to the limits where it was very rich. East, it has been followed a mile, varying in width from 75 to 700 feet, but always paying best from 200 to 300 feet width. The average pay chute of gravel is about 8 feet in depth. Few pillars are left, all the gravel between the lava-capping and the bedrock being taken out, and timbering is consequently without its usual difficulties.

The gravel is blue and free-washing, and the gold is generally fine and scale-form. Since the mine was opened, Mr. Hoffman states that the average per car has been \$2.50. That the gravel runs much higher than this in places may be judged from the fact that the day I visited the mine, I saw an ounce of this fine gold washed from a single pan of dirt from a portion of the mine just then being opened. At present about loo carloads a day are taken from the mine by a force of 70 men. In the mine there is an unusual and continuous flow of water, amounting to 40 inches, which is carried off in pipes and furnishes the water for washing.

Adjoining the Red Point on the west, and where it proved richest, is the Bob Lewis claim of Mr. Robert Lewis, who seeks purchasers at a good, plump sum.

This completes the list of prominent gravel mines on the divide proper. The Iowa Hill section is distinct and has as its most important properties the Waterhouse & Dorn and the Morning Star.

The Waterhouse & Dorn, formerly known as the Harman, is operating two large Bryan mills, though owing to slackness of water, only one is running at present. A modern ten-stamp mill is to be built in the spring, for which much of the machinery is now ready. For the past six months the mine has been doing well, and the anxiety of the proprietors to sell has given place to a feeling of satisfaction and faith in the property. In early days the mine was worked a distance of about 2000 feet and 70 feet in depth by hydraulicking, and could now be similarly worked even to the bedrock. With the present milling mode, it is developed by a 1200-foot tunnel northward, with the course of the channel on slight pitch. The present

work is that of development. The pay streak runs from six to seven feet in length and 90 in width. Mr. Elliot West assumed charge as superintendent in April of this year.

The Morning Star.—This is rapidly coming to assume among gravel mines a position similar to that held by the Idaho, in quartz, as a dividend-payer. Like the latter, it has a small number of shares—2400—which in a degree account for the four and five dollar monthly dividends. As shown by the last annual report of the superintendent and president, Mr. J. H. Neff, the mine has produced the past year \$150,000, and the average of the gravel milled has been \$7 a car.

The ten-stamp mill has run for the past 30 years, and is one of the oldest on the divide. It is intended to add shortly ten more stamps, put in self-feeders, etc., and remodel the works on a modern basis. Lately, the company has purchased the Iowa Hill canal of the Coleman Bros, of Grass Valley, and are now preparing to introduce waterpower. In time the canal will likely be extended to some permanent water supply high in the mountains, as was contemplated by the original projectors. At present the mines of this whole section and of the divide are dependent upon the limited rainy season, and for three months at least water is unavailable for mining purposes and steam becomes necessary in consequence. With this intended introduction of water-power, the company has lately laid 2400 feet of lapwelded pipe, securing 460 feet of pressure.

The working tunnel of the mine is in bedrock and run in a southeasterly direction 3200 feet, and up the channel, which is reached by upraises. It is believed that the channel in which Waterhouse and Dorn are operating merges eventually into the Morning Star, while there is still another branch channel lying to the east of the former and toward which present developments in the Morning Star seem trending. The channel at present is 170 feet wide and 18 feet deep. Owing to the consequent high breast, timbering is unusually difficult.

This about concludes the gravel interests of the county. In another letter I shall give an account of Placer county in quartz. Chas. E. Townsend.

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