

The total weight of the ladder, buckets, tumblers, and links is 43 tons, whilst the total weight of machinery is 150 tons.

After this description it would not be amiss to follow up a little of her career.

The plant worked well, but, alas! in this case, it was not the management that was in fault, as latterly they had a first-class dredge operator from the Snake River, but the paucity of the claim in gold. As far as the writer's knowledge goes, the claim was bought principally upon the reports made by the sellers, and whether these were good or bad is not within the writer's province to discuss. It suffices to say that beyond a thin layer of sand and gravel of about an inch in depth upon the surface, no gold was found below that, neither disseminated through the gravel underneath this layer nor upon the clay bottom met with at a depth of from 15 to 20 feet. A further fact was brought to light during the operations of this dredger, viz.: that there was, with a few exceptions, no gravel met with in the middle of the river, nothing but a bare clay bottom into which the dredger dug for a depth of 8 feet to see if there was gravel underneath this strata.

Yet, showing how a dredger may fail with a fortune in sight, within a few miles was a mass of gravel which certainly carried a minimum of 25 cents per cubic yard, and the working expenses under careful management should not amount to over 3 cents per cubic yard. However, so disgusted were the owners with the financial results, that as soon as winter came on they shut down without a further effort to look elsewhere.

As would be natural in this instance, the claim sellers around blamed everything and everybody except the paucity of gold in the claim. One quondam claim seller and expert went so far as to state that a large quantity of "invisible gold" (!) was being lost in the tailings. Another, after showing all and sundry visitors (before the dredge commenced operations) the brilliant showing there was upon the surface, stated all that was necessary to make the claim a success was a cyanide plant (!) to treat the gravel and black sands.

It shows how careful one should be in investigating the values of a claim, and not to rely upon the general remarks of those particularly interested.

As a rule, with rare exceptions, one certain sign of good payable dredging ground is the immediate vicinity of sluicing or rocking operations, other dredging conditions being present. This, at any rate, determines the fact that payable gold is near, and there is a strong probability that a proposition may be looked into for dredging.

Upon the North Thompson River these operations were conspicuous by their absence. Upon the upper reaches of this river called the Clearwater, I understand there are claims worth looking into, and as to the Lower and South Thompsons no person can dispute their richness, but the gold seems to have been cut out from this river by the dividing range. As a matter of fact, there is no class of mining so profitable and so certain of financial results as gold dredging, provided the conditions given of gold present, workable ground, and a good machine. These points can only be determined by the expert, and not by the average engineer, as is generally imagined. The

business then really comes within the realm of an industrial proposition, producing large dividends for many years, being merely a question of value of ground in gold, with a constant factor of cost in production. The average figure for handling gravels with a bucket and ladder dredge should not at the outside limit exceed  $3\frac{1}{2}$  cents per cubic yard, including labour, fuel, etc.

The writer some years ago dredged gold gravels for over twelve months at the rate of 2 cents per yard.

Given, then, the actual value of gravels by expert prospecting and drill holes in any number, it becomes merely the every-day industry of machine mining.

New Zealand has been quoted and referred to so often that one is almost afraid to mention that country in connection with dredging, but the Government returns of gold won and dividends paid by the whole of the dredges working there show an average of 30 per cent. profit. Some, in fact, of their dredges produce something like 600 per cent. per annum upon their capital. Members can judge what this means to the investor.

#### A DESCRIPTION OF THE MINING OPERATIONS, PUMPING AND HAULING PLANT, ETC., AT THE COMOX COLLIERY.

By Jno. Matthews.

THESE coal measures belong to the Cretaceous formation. The strike of the coal usually lies east and west. The direction of the dip is N. E., but varies in places owing to the number of anticlinals and synclinals which occur. The dip varies from 1 in 5 to 1 in 15.

The coal is of a very compact nature, and contains 62% fixed carbon. It is an excellent coking coal, and is recognized as the best steam coal mined on the Pacific coast. It is used by the British and American navies.

Coal was discovered here about thirty years ago, but active operations were not begun until 1885, when the late Hon. Robt. Dunsmuir with his co-partners, i.e., Southern Pacific Railway Company, began the development of the discovery.

The mines are located near the town of Cumberland, distant about twelve miles from the shipping wharf, Union Bay, Baynes Sound, and connected by a standard gauge railroad. The different units of the plant are located at Union Bay and at the several mines.

There are three mines in active operation, viz., No. 4 slope, Nos. 5 and 6 pits, the two latter of which are worked by shafts. No. 4 slope is situated at the edge of the Comox Lake, and about two miles distant from Cumberland. It is the largest mine here, and one of the most extensive coal mines in the Province. It is worked by three slopes, Nos. 1, 2 and 3. No. 2 slope branches off No. 1 at an angle of  $45^\circ$ , and at a distance of seventy-five yards from its mouth. No. 3 slope branching off No. 2, also at an angle of  $45^\circ$ , about five hundred feet from its junction with No. 1 slope. No. 1 slope is down 7,500 feet, with an average pitch of  $7^\circ 30'$ . No. 2 slope has been driven