

netite of varying qualities, the western portion of the area being the better. Analyses of samples taken from surface pits, runs as high as 50% metallic iron and as low as 36%.

### THE ROBINSON GOLD DREDGE.

We illustrate in this issue a new gold dredge designed by Mr. A. W. Robinson, M. Am. Soc. C.E., and which is now being built by the Atlantic Equipment Company, of 111 Broadway, New York. In view of the growing importance of gold dredging, this dredge merits more than a passing description.

The introduction of gold dredges into the United States on a commercial scale dates from 1895. In that year a small electrically-operated dredge was installed on Grasshopper Creek, at Bannack, Montana. This dredge was built from Mr. Robinson's designs and was the precursor of several others in the same locality, all of which did well and made money for their owners.

having mooring lines instead of spuds, and a fine screen and tables covered with riffles or fibre for saving the gold, in place of the sluice-box. In New Zealand, however, the gold is fine, and the ground comparatively soft, or alluvial, and the early dredges were found to be too light for the harder service of this country, and were too cheaply built. Then followed a period in which the two types of dredge, American and New Zealand, were strengthened and improved by their respective makers, until some recent examples show such great size and weight of parts that the cost is greatly increased. That the durability and cost of repairs is still far from satisfactory in the average dredge, is shown by the report of the State Mineralogist of California for 1905, from which it appears that the cost of repairs frequently amounts to fifty per cent. of the whole operating cost. In a typical example, where three dredges were working together, the average operating cost for the three during the year 1903 was (in cents per cubic yard) as follows:—



Buckets of the Robinson Gold Mining Dredge.

These early dredges represented a combination of a dredging apparatus with an hydraulic sluice-box, and in both these elements the original separate forms were adhered to. The dredge was of a type and detail which had been successfully used by Mr. Robinson for river and channel dredging, and the sluice-box was similar to that long used successfully by miners in hydraulic mining. A type was thus established which, improved in detail, has been a favorite.

The elevator type was soon recognized as the most successful one for gold dredging, and the history of many experiments with others is one of failure. Subsequently, the New Zealand type of dredge was introduced. This differed from the American type in

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|----------------------------------------------------|------|
| Dredge crew, power and operating supplies. . . . . | 2.52 |
| Repairs, labor . . . . .                           | .48  |
| "    supplies. . . . .                             | 2.58 |
| Superintendence . . . . .                          | .16  |
| General expense. . . . .                           | .15  |
| Taxes and insurance. . . . .                       | .24  |

In the present design the aim has been to produce the very simplest construction of working parts that will accomplish the desired result, and to maintain a large margin of strength as well as durability. All the best features of both New Zealand and American practice have been retained, and complications and weight reduced as far as practicable, by correct design and the use of high grade steels, with as little cast