

tub is run to the amalgamator-house. Amalgamation is effected in revolving barrels actuated by a water-wheel. Plushes should be washed every eight to twelve hours, and blankets more frequently.

“In the treatment of wash containing gold it should be possible to easily and at any time alter and adjust the proportions of stuff and water dealt with, also to adjust the hoppers and the fall on the tables, especially when variations in the nature of the ground or in the available water have to be considered.

“Experience has proved the value of the sand-box, of separate and direct ducts from the sand-box to each table, of the trough-ripples, and of adjustable parts, but the dimensions and general arrangement of any plant must be made to suit the conditions of the case. In determining the size required the amount of water available is generally the ruling element. From observation and the experience of those working with tables there should not be less than 10 ft. width of table per sluice-head of water, or 60 cubic feet per minute, and 12 ft. of table or more per head is better. In sluicing it requires special experience to keep the stuff moving regularly down the tail-race, or the tables may be alternately under- and over-fed. In dredging, the delivery of dirt should be more regular, and therefore require the minimum proportion of water.

“I have endeavoured to ascertain the quantity of wash per sluice-head which can be dealt with by table-washing on a large scale. From measurements and estimates of the ground worked, and with carefully kept records of the hour-heads expended in working it, I conclude that the average quantity of ground per hour which one sluice-head can deal with is about 5 cubic yards. This result must differ in various cases, because the fall and capacity of the tail-race, the proportions of material which go respectively over the stone-shoot and tables, and other elements have to be considered. In the two cases from which my estimates were made, one fall was of very sandy beach-gravel with a considerable overburden of coarse shingle, while the other had very sandy washdirt with an overburden of blue-reef pug.”

Drawings Nos. 1, 2, and 3 show the general arrangements in plan and section of a plant erected at the Waiwhero Sluicing Claim, near Barrytown. It has been found in some instances that the very strong winds have a tendency to lift the adjustable tables at their upper end when fitted with the rocking-joint shown. To meet this an improved joint has been designed, which is strong, easily fixed, and inexpensive. The table-joint end runs between two studs—say, 4 in. by 2 in.—and rests in a stirrup of 2½ in. by ¼ in. iron, with perforated side. A pin of ⅝ in. round iron passes through the studs, joists, and stirrup, making a very secure hinge-joint. The drawing No. 4 gives a good example of a small cheap plant if modified in construction so as to have the improved table-joint, separate distributing-ducts, and tables having three strakes of 2 ft. length, with a fourth and lowest strake, say, 3 ft. long, and with extra fall of about 1½ in. per foot.

DREDGE-MINING.

As was to be expected as the result of the recent “boom” in both the West Coast and southern goldfields, a large number of investors have gained an experience in which disappointment is the leading feature. Numerous dredges have been built and put to work: in some instances dredges were not suited to the work required to be done; in others the conditions of the ground to be worked were not suitable for dredging.

It must not be considered that the designers of dredges are to be entirely blamed for the first condition named, as the rush of business brought about by the “boom” was such that engineers were not, in many instances, allowed time to properly consider the requirements of claims (many of which were inadequately tested), and reliable data for their guidance was frequently not available. As regards the second condition, many applicants for shares took little or no trouble to inquire into the *bona fides* of the claims or their suitability for dredging, and thus claims which might probably be worked to advantage by hydraulic mining, but not by dredging, were taken up as dredging claims, with results that any independent person with only a slight knowledge of alluvial gold-mining might easily see could only prove financially disastrous.

The impetus given to dredging by the “boom” has passed, and as actual work proves the value or otherwise of claims, as well as the suitability or unsuitability of the dredges employed, this branch of gold-mining is settling down to a steady industry, which will, it is to be reasonably expected, continue for many years to come. There is little doubt that the returns for dredging would have been much greater than they were during the year but for the fact that some of the larger rivers were high for a much longer period than is usual, consequently those dredges at work in rapid currents and gorges were of necessity stopped for a considerable portion of their time.

The following summary shows the number of dredges working, building, standing, and under removal at the end of the year:—

—		Working.	Standing.*	Building.	Under Removal.	Total.
West Coast district	...	36	8	29	...	73
Southern district	...	147	25	30	19	221
Totals	183	33	59	19	294

The above statement shows an increase of thirty-eight working dredges as compared with those of the previous year.

* Some of the dredges under this heading have been sold for removal.