

## HYDRAULIC SLUICING.

This branch of gold-mining is deserving of considerable attention, inasmuch as there is a large extent of country in the Middle Island covered with low-grade auriferous drift, which will yet be made to pay for working, and give profitable employment to a large population for many years to come. This will be accomplished by a good supply of water and a systematic method of working. It may be argued by many that this branch of mining is as far advanced as in other countries; but when the results and methods of working are compared with hydraulic sluicing in California it must be admitted we have yet a deal to learn in this direction.

It may be of interest to those engaged in hydraulic sluicing to give a synopsis of some of the principal sluicing companies in California, and show the magnitude of their workings. From statistics compiled by A. J. Bowie, jun., recently published, the following facts can be gleaned: That quicksilver is largely used in sluices and in undercurrents, which is entirely disregarded in this colony. The miners here are under the impression that the water is too cold to use quicksilver advantageously; yet the temperature of the water here, even in the coldest parts of Otago, is fully as high a temperature as that in California where the principal hydraulic operations are carried on.

Before going into detail on the methods of working the ground, it will be well to show the value of the ground worked in California and the cost of working the same. It is a difficult matter to get accurate statistics connected with this class of mining, so as to form a comparison between the hydraulic workings here and those in America; indeed, it may be truly said that no trouble has been taken to ascertain the exact value of the wash-drift in this colony, it being merely taken as payable or non-payable, as the case may be, according to the method adopted for working the ground. In working lodes in America and in the Australian Colonies, assays are carefully made to ascertain their value, and I am glad to see the mining population in New Zealand are beginning to adopt the same principle. It is only by carrying on mining on scientific principles that we may expect to see it made a commercial venture, so as to induce people to embark capital in this industry. Unfortunately, too much trafficking is carried on in taking up ground without due consideration whether it will pay for working or not; the great object being to form companies and sell the shares at a profit, so as to make money at all hazards, irrespective of consequences that must necessarily inevitably follow. This has brought mining into disrepute—made it to be looked on by many as a gambling transaction, an unsuitable occupation for men of probity and honour to be connected with. So long as this impression prevails every mining enterprise will be looked on by the outside public with distrust and suspicion. There is no reason why mining should not be conducted on the same commercial basis as any other industry. If proper steps are taken to test the value of mines before embarking capital in expensive plants and machinery, there is no more risk—if as much—than there is in agricultural or pastoral pursuits. The farmer is dependent on the seasons, and is subject to the fluctuations of the value of his produce, stock, and wool; while the only risk the miner has, is in prospecting the ground before commencing to work it. He may find that he has spent a considerable amount of money, and the prospects do not warrant him proceeding further; but this loss is a trifling one compared with the hap-hazard manner that is so commonly resorted to in bringing mining ventures before the public. To carry on mining successfully, there is no industry requires more scientific knowledge. It is to be hoped the time is not far distant when it will attract the attention of men more particularly to the conducting of mining operations on a more systematic and scientific basis. It is with this object in view that I wish to draw the attention of the miners to the usefulness and utility of keeping correct records of all workings they are engaged in, to ascertain in what particular item connected with the expense of working a saving can be effected. This appears to be carefully inquired into in California, as there is a large extent of ground of very low grade, which by a systematic plan of operations can be made to pay. At the present time I only propose to deal with hydraulic mining and the modes of working adopted for bringing about a successful issue in that country, so that the miners in this colony may make a comparison with the method of working the auriferous-gravel drifts here.

The information that I have derived from several American works on this subject leads me to believe that a large extent of low-grade auriferous-gravel deposits in Otago and on the West Coast will yet afford profitable employment for a large mining population. A work lately published by A. J. Bowie, jun., mining engineer, contains valuable information on this subject, from which I have been able to compile interesting statistics connected with the working of hydraulic sluicing claims in California.

The following tabulated statement will show the yield of gravel at important hydraulic mining claims in California, according to verified reports, from 1874 to 1877:—