

send round, hat in hand, every time money is wanted. Some steps should be taken to furnish the school with a steady source of revenue—enough to keep it out of debt for necessaries. It is at present in debt for these.

“Since my last report good progress has been made with the erection of the experimental testing-works. Separate tenders were called for the building, roasting-furnace, and crushing and amalgamating machinery in December, 1887. All these contracts are now very satisfactorily finished. A contract for delivery of water-pipes to connect with the town mains was also let in December, but as the pipes had to be procured from England, they only arrived a short time ago, but are now being laid, and will be all connected in a few days. Carpenters are now at work fixing platforms, tailing-pits, launders, &c., inside the building, and will have finished in a few days. When the whole of the works are completed that are now in hand they will cost £1,029, but there are several things yet to be got which will bring the total expenditure up to £1,200.

“At the time the estimate was made there had been no plans prepared, and it could only be regarded as an approximate one. It was thought sufficient, however, to cover the cost of a plant such as would do for the purpose. But when plans and details were undertaken it was seen that the original intention of having the coffer of the stamping-battery placed almost on the ground would result in a great deal of inconvenience, and increase the cost of working, while lessening the efficiency. It was therefore decided to raise the coffer 10ft. from the ground so as to allow crushed material to run direct to the furnace-feeding floor, to the pan and settler, and to the classifiers and concentrator. This increased the cost of foundations for the battery very considerably, and led to the contract price exceeding the estimate somewhat. The pan and settler obtained are also larger than those provided for in the estimate, as it was found that they could be obtained without any greater cost, Messrs Price Bros. having patterns for the larger size. The estimate for water-pipes was very much under the mark, because we made no doubt that we could get water from the mains in Pollen Street, and that about 600ft. of pipe would be sufficient, but when the time came to order the pipes we found we were forced to take water from Albert Street, a distance of a little over 1,300ft. The reverberatory furnace cost a great deal more than was estimated, but is of a much superior character to that estimated for. The committee was convinced that it was true economy to have the better class of furnace. The tender for the furnace, as designed, was £315, but by sacrificing some of the conveniences and reducing the dimensions the price was reduced to £232. For this we have a very good furnace of a sufficient size to do good work. The furnace originally intended was much smaller, and its cost compared with its duty would have been much greater. The only work that has now to be done to bring the portion of the plant already erected into a state to begin work is the erection of platforms and staging round the battery, pan, and settler, and the building of tailing-pits, shoots, and drains. A good deal of filling with earth will also have to be done to form a floor. If a concrete floor can be at all cheaply made it will be laid in the most necessary places. Until the part of the plant now erected is set in-going order it is not intended to put up the classifying vats, concentrator, or chlorination- and leaching-vats. These are very necessary, and will be erected if possible, but it is better to complete the part in hand before going further, and then we can see what funds are in hand for further machinery. It will be possible to fix up some temporary apparatus to try leaching and chlorination of quantities of 56lb. to 112lbs., so as to try these processes, though there will not be anything like the satisfaction in making such tests as there is in having proper working tests on a suitably larger scale. The maintenance of the machinery and the working expenses have been, and are, a source of much thought to the committee, as it will be almost impossible to make the testing-plant self-supporting, and there will always be a current expenditure going on. A mechanic will have to be employed to look after the machinery, and another man will have to be occasionally employed to attend the roasting of the ore in the furnace; in short, there is an expenditure of about £200 per annum which the committee will have to provide for.

“The work of the experimental plant will be—

“(1.) To determine which of the many known processes in use here or elsewhere is most suitable for each sort of our ores here. Different treatment is necessary in different cases.

“(2.) To modify these processes so as to adapt them more fully to our local requirements.

“(3.) To afford prospectors an opportunity of getting stone tested under the most favourable conditions on a scale large enough to give real information. Assays, if not taken from large quantities of somewhat finely-crushed material, are often worse than useless because misleading. A sufficient quantity of material cannot be crushed by hand without immense labour. To have really good tests we must have means to crush samples of from one to five tons, from which reliable assay-tests may then be made. This cannot be done at present.

“(4.) To teach, practically, the miners and people of the goldfield the use of the various processes, and to show them how to work them themselves. It will not then be necessary to import ‘experts’ at high salaries. It is not so much want of capital as want of knowledge how to deal with our silver ores that is keeping the field back just now. If people could satisfy themselves by actual trial of the efficacy of any process they would find capital to put up all necessary machinery. But they are not disposed to spend money on plant that may prove useless when erected, and prefer to send the ore all over the world, begging for help from abroad. Help from abroad is costly.”

In the South Island the School of Mines has done considerable service at Reefton. In this district the gold is obtained in a far more pure state than in the North Island, and it would be expected that a far greater percentage of the metal would be saved from the ordinary process of treatment. Mr. Fenton, who is teacher of the School of Mines in this district, has repeatedly warned the managers of mines that they are losing a large percentage of gold by the ordinary battery process, as on assaying the tailings they were found to contain a considerable quantity of gold after they were considered as a waste product. Recently, some of the mining companies have been prevailed upon to stack the tailings, and after treating them with berdans, as much as 14dwt. of gold per ton has been obtained.