

mining. The falling-off was due to a partial collapse of the district, which removed many of the students. There has, however, been some good work done, and four of the students competed in the last annual examination, obtaining a very fair percentage of marks in the subjects taken.

*"Progress."*—This class was started at the foot of the Progress Hill, in August, 1892, for the miners in the Progress and Globe Mines. A building was obtained, and about twenty members enlisted. It was carried on until the end of the year, the students attending regularly, and were instructed in logarithms, plane trigonometry, use and adjustments of surveying instruments, tabulation and calculation of traverses, and calculation of heights and distances. One of the students obtained 45 per cent. in surveying at the annual examination. The class has been started again this year, but the attendance is not so good.

*"Denniston."*—This school was visited in July, 1892, and in January, 1893. The attendance was not so good as expected, and the interest taken in the school does not appear to increase, many of the miners being afraid to attend. Some of the more intelligent, however, attended, and made fairly good progress.

*"Brunnerton."*—In accordance with your instructions, I visited this town during February, 1893, and formed a school of mines with about twenty members. The students throughout the month attended with every regularity, being most eager to come to the classes. Instruction was given in ventilation; gases, composition, detection, and properties; coal-mining, logarithms, and surveying. The classes were held in a small room off the Library, which could not comfortably accommodate the students. They however decided, if a little assistance could be obtained, to erect a school and fit it out; if this was done there is no doubt that a much needed institution would be added in this place, and that a first-class school could be formed.

*"Merrijigs."*—This class has been conducted throughout the year by Mr. B. Sutherland, manager of the Golden Lead, who takes a very great interest in the work, and, although the attendance was not large, there has nevertheless been some good work done in mining and surveying, some of the members coming well up in the last examinations.

*"Laboratory."*—During the past year over 137 assays, meltings, and analyses have been made, which show a considerable increase over the previous year, consisting of 64 fire-assays of gold and silver, 38 berdan tests, 13 bullion assays, and smeltings of gold and amalgam, 4 antimony, 6 tin, 4 analyses, and 8 coal analyses. Many tests and experiments were made on the tailings on the field, and towards the latter end of the year on samples taken from large quantities of cement, which extend along the West Coast. These were assayed by fire and by amalgamation, and many were treated by the cyanide process, the results showing the losses which were taking place, and also the cost of treatment and percentage extracted by the cyanide process.

"Experiments were made to treat the cement in lumps by the cyanide, which were successful in some cases where the cement is porous and poor, but in the closer grained and richer samples the results were not so good, perhaps owing to the great difficulty in washing the stuff clear of solution. The cyanide, however, extracts a very good percentage when the cement is crushed, the gold being fine and well suited for this process. The consumption is in some cases rather large, but may be reduced by some preliminary treatment. Experiments are still being made in that direction, but I find some difficulty in getting correct samples sent to Reefton. With regard to the tailings on this field, although crushed somewhat coarsely, experiments show that a very fair percentage can be extracted by the cyanide process, and, as the cost of treatment is not too great, there is every probability that most of the tailings on this field will pay well by the process. The coarseness of the tailings is in my opinion an advantage to a certain extent, notwithstanding that a certain percentage of the gold is enveloped in the quartz and cannot be attacked by the cyanide, because the tailings can be more easily and properly washed; whereas in slimy tailings a certain amount of the cyanide solution containing gold cannot be washed out without much extra trouble and time, entailing a loss of both cyanide and gold. A cyanide plant is now nearing completion on the heap of Welcome tailings lying at Boatman's. These tailings assay nearly 10dwt. per ton, and, although crushed rather finer than the average tailings here, should give a good idea to others of the cost of treatment on a large scale. The plant is apparently constructed to give downward percolation only, but from my own experiments I consider that a slow upward and downward percolation (especially for fine tailings) would give a far better percentage of extraction. There is no doubt that this process has in this district a big field, not only in the tailings, but in the millions of tons of cement which extend along the coast, a great part of which I believe will pay with careful treatment on a large scale.

"There is now a fair stock of chemicals, &c., in the laboratory, and benches have been fixed, with cupboards, which is a great convenience to the students.

*"The School."*—The appliances and arrangements of the school are each year improving. A scientific library has been added, at a cost of about £70, and is stocked with a fair number of scientific papers from various parts of the world. It is well patronised; but so far very few scientific books have been obtained, these however, will, no doubt, be gradually added to. The small berdan erected has been of great service in testing small parcels of stone, although the water-power is insufficient for the work. This requires altering, and the school requires to be lighted better, which I believe will be done as soon as funds permit. The Committee have lately allowed the use of the furnaces and part of the apparatus to the Cassell Company, during the day, for the purpose of introducing the process here. This interferes with the school to a certain extent; but it will, no doubt, be of benefit to the district, and may find employment for students of the school who have gone through a course of assaying and chemistry.

*"Examinations."*—The annual examinations in the various subjects taught were held from 2nd to 13th December, 1892, and the results obtained were highly satisfactory, and are evidence of good work done by the students. The older students, as was expected, headed the list, the papers of J. W. Lee and W. J. Young being done well throughout. The number of candidates were fifty-eight for all subjects, as against thirty-four the previous year.