

There has been a corresponding advance in the amount of work performed for the public in the shape of assays and analyses and the treatment of ton parcels of ore by the plant, showing that the school retains the confidence of the mining community as an accurate and reliable institution for the valuation of ores. The following table gives a comparative view of the number of assays performed during the last two years:—

	1895-96.	1896-97.
Number of public assays	743	1,204
Number of assays in connection with ton parcels	360	592
Total	1,103	1,796

This increase to 1,796 in 1896-97 from the already large number of 1,103 in 1895-96 has been largely in consequence of the widespread prospecting which has been going on throughout the peninsula, and in the very nature of things it is reasonable to suppose there will be a falling-off again in the number of assays after a time. When the mining properties are more developed the companies will employ assayers of their own, and already a number of our students have left to take up positions of assayers at various up-country mines.

The plant for the experimental treatment of ton parcels of ore has been, with the exception of one week's stoppage for repairs, continuously employed throughout the year, and during several weeks it was necessary to work double shifts in order to cope with the sometimes sudden influx of several separate tons of ore at one and the same time. During 1896-97 the plant treated seventy-four parcels of ore, of an aggregate weight of 122,941 lb. dry weight, as against forty-five parcels, aggregating 80,457 lb., in 1895-96. Of these seventy-four parcels, a table of which is given below, sixty-two were treated by pan-amalgamation and twelve by the cyanide process, and in the case of seven of the parcels it was necessary to chloridize roast the ore before amalgamation. The percentage saving on the average was, by cyanide, 64·75 per cent., and, by amalgamation, 82·9 per cent. It should be noted that most of the parcels were treated by cyanide at the request of the owners as experimental tests to ascertain to what extent the bullion could be successfully extracted by this process, but the results show that few of the parcels contained gold in a fine enough state of division for successful cyanide treatment direct. In most cases the bullion can be better extracted by amalgamation, followed by cyanide or other treatment of the tailings.

The chief alterations to the plant during the last twelve months have been the erection of a larger percolation-vat in connection with the cyanide process, a second zinc-extractor, and a centrifugal pump for cyanide solutions. The vat is 7 ft. in diameter, is fitted with all necessary appliances, and has proved very suitable to our requirements.

During the year it has been necessary to re-bed the mortar-block, and to make repairs to the amalgamating-pan and the furnace, while the Council now contemplate extensive alterations during the coming year. It is proposed to remove the present two stamps and erect a three-stamp battery instead, on a solid concrete foundation. This will necessitate the laying of a 9 in. main to drive the stamps, and the total cost, including the erection of a separate public assay-room, will amount to something like £800.

Students are, subject to permission granted by the Director, allowed to work with the experimental plant, and many have taken advantage of this, and have derived considerable useful practical experience thereby in the metallurgical treatment of ores.

In order to insure accuracy, as well as to keep the results from becoming public property, I have, during the last year, arranged that all public assays are performed by the Laboratory Assistant after the students have had their instruction in the classes; so that when these assays are made no students are present and the public work goes on without interruption. This was a necessary alteration, and the very large number of assays performed for the public shows that reliance is placed in the methods adopted. Still, it has meant keeping the school working late and early, and the Laboratory Assistant has had an exceptionally busy year. My thanks are due to Mr. George Nicks, Mr. A. Jones, and Mr. F. Woolcock, who have in turn occupied this position creditably to themselves. They have each had their rewards, however, in that the large amount of practical experience gained by them as Laboratory Assistants has enabled each of them to secure a lucrative appointment with mining companies.

The Mines Department has very kindly donated to the school a series of models imported from Germany, illustrative of the action of a plunger pump and man-engine and of the mode of construction of various kinds of dams and sinking of shafts—all very useful models for practical demonstration of the lectures. The Government, through the courtesy of Sir James Hector and Mr. Alexander McKay, has made a gift of the past Geological Reports, which will form a welcome and valuable addition to the library; while the thanks of the school are due to Mr. George Wilson, Inspecting Engineer of Mines, Mr. T. P. Moody, of Hikurangi, and others for various collections of rocks, coal, and minerals. I myself have made a collection of several hundred samples of auriferous quartz, which, as illustrating the different appearances assumed by the gangue of the precious metals mined on these fields, will, I trust, prove useful to the mining community.

So many students enrolled themselves this present year in the drawing class that it was found necessary to obtain a special instructor for this important subject, and in March, 1897, Mr. John Parr, B.Sc., M.E., mechanical engineer, of Christchurch, was appointed drawing master, and is giving every satisfaction.

The field geology class has been well attended throughout the year. Many trips, some of them necessitating hiring horses, have been made across country to illustrate the relation of the beds one to another, and excursions underground into the mines have also been made to give students the benefit of actual observation of the details of mining operations and the occurrence of mineral deposits. Excursions to one place or another are made weekly, and are invaluable as affording practical illustration of the subjects discussed in the lectures.

My thanks are due to the members of the Council, who have given me their assistance throughout the year, and have shown that, all along, they are greatly interested in all that concerns the wel-