ten times in succession through the flower-pot, and the water again tested. This time it was found that the water contained *less* solids in solution, showing clearly that the soil had exerted a retentive influence over even perfectly soluble manures. One expected from these experiments that at least all the nitre would have been washed away, but such certainly was not the case. Whether the lime had anything to do with fixing the nitre in the soil I am not prepared to say. Some further experiments to test this would be interesting. I had not time at my disposal to make a complete analysis of the solids held in solution by the water, but a careful examination convinced me that a good deal of it was organic matter that was in the soil before the manures were added. Reactions for soda, potash, and lime were readily obtained from a concentrated portion of the water, but the reaction for sulphates was only slight, showing that not much of the lime-part of the superphosphate had been washed away. A drop of the concentrated water was evaporated to dryness and examined under the microscope, but nothing very definite could be made out. A few very small crystals—probably nitre—could be seen in a glutinous mass. As large quantities of chemical manures are used in New Zealand, the subject here treated is of great importance, and should be thoroughly investigated by able chemists.

CONCLUSION.

No adult classes have been held during the year, owing to my time being taken up with agricultural experiments. A suitable room for holding adult classes is badly needed. I intend to build one myself as soon as I have the means. My thanks are due to the town School Committee for the use of the schoolroom on two afternoons a week for the blowpipe classes.

REEFTON SCHOOL OF MINES.

Mr. J. W. Lee, Director, reports:—

Classes have been held regularly throughout the year, and satisfactory progress has been attained. A number of students presented themselves in January, 1901, for examination as battery superintendents and mine-managers, but, unfortunately, results are not, as yet, available.

At present the number of individual attending students is thirty, with good prospects of an increase very shortly. During the year the average attendance has been as under:—

Class.	Number of Students.	Average Attendance.
Mining and mathematics	... 18	15
Surveying	... 19	15
Theoretical and practical chemistry	... 12	8
Practical assaying	... 12	9

The instruction given in each class has been as follows:—

Mining (including Mining Geology).—Construction and timbering of shafts, tunnels, stopes, &c.; hauling and winding; strength of materials; blasting and explosives; mineral deposits, their nature, occurrence, and classification; metalliferous ores, occurrence and identification; rocks and rock-forming minerals described; kinds of strata in which metallic ores occur; faults and fault rules; tapping water in mines; dams.

Some work has also been done in mine-ventilation, mine-drainage, and pumping-appliances, steam, steam-engines and boilers.

Mathematics.—Arithmetic, comprising the simple rules, weights and measures, proportion, vulgar and decimal fractions, square and cube roots, averages and percentage, timber measurement, practical questions in mensuration of plane surfaces, as circles, triangles, &c.; solidity of bodies; mine accounts—wages in mine and battery, time-sheets, costs per ton, statements, &c.

Text books: H. A. Gordon's "Mining and Engineering," C. Pamely's "Colliery Managers' Handbook."

Surveying.—Logarithms, plane trigonometry, chaining, traversing, recording in field-book, and computing by rectangular co-ordinates of practical field-work; computation of omitted lines and areas; reduction of magnetic to true meridian; adjustments, care, and uses of theodolite, compass, and miners' dial; methods of connecting underground and surface traverses, plotting plans and sections; problems in mine-surveying *re* dip, underlie and strike of reefs, also cross cuts or tunnels, and shafts required to intersect reefs and beds at certain positions; methods of underground traversing; dialling.

The Y theodolite granted to the school in January last by the Hon. the Minister for Mines has been a most useful instrument for this class; most of the students are now fairly proficient in instrumental work, and can accomplish very good work with it.

Theoretical Ch mistry.—General principles; atoms; molecules; quantivalence; combining weights, &c.; non-metallic elements; metric system of weights and measures; chemical formulæ and percentage compositions; chemical combination, salts, acids, bases, radicals, and their physical and chemical properties.

Text-books: Bloxham's "Chemistry," Lupton's "Chemical Arithmetic."

Practical Chemistry.—Reagents; qualitative tests for metals; group separations and detail separations, proceeding step by step to simple analysis; principles of volumetric analysis and processes connected thereto; standard normal solutions; tests of potassium-cyanide solutions; manipulation and laboratory operations. All instruction is shown and illustrated by practical experiment, students being encouraged to verify results by personal observation and experiments.

Practical Assaying.—Fluxes and principles of fluxing; reagents used; furnaces; dry assays of gold, silver, lead, tin, mercury, and antimony ores; problems and calculations; wet assays and tests of metalliferous minerals and ores.

Metallurgy of Gold and Silver.—Special classes in this subject have been held, for the benefit of students preparing for battery superintendents' examinations, dealing with the following