

chemistry—senior and junior classes, (4) mathematics, (5) geology—senior and junior classes, (6) mineralogy and blow-pipe determination, (7) mining, (8) surveying, (9) mechanical drawing, (10) agricultural chemistry.

"1. *Practical Assaying and Metallurgy*.—A knowledge of the fuels, appliances, fluxes and reagents used in assaying ores of gold, silver, lead, antimony, bismuth, iron, zinc, copper, manganese, tin, &c.; also the methods of melting, refining, and valuing gold and silver bullion. A great many of the students attending this class are competent and reliable assayers, and to many of them I am greatly indebted for much valuable assistance in the performance of the public assays. On our weekly round of the mines and batteries the attention of the students is directed to the different appliances and methods adopted for saving the precious metals; and when our experimental plant is working they are permitted to assist in the different operations, such as attending to the roasting of ore in the reverberatory furnace, feeding the stamps for wet or dry crushing, charging the pans, cleaning and retorting the amalgam and quicksilver, dressing the copper plates, and the general work of a battery.

"2. *Practical Chemistry and Laboratory Practice*.—The reactions of the metals and acids, the separation of the metals into their groups, &c., and the principles of qualitative and quantitative analysis. Also the analysis of coals, waters, limestones, rocks, oils, complex ores, &c.

"3. *Theoretical Chemistry*.—The atomic theory; the chemistry of the elements and their compounds. Instruction in this subject is imparted by lectures illustrated by numerous experiments.

"4. *Mathematics*.—Higher arithmetic, Euclid, and algebra. This class was conducted by Mr. R. D. Duxfield, M.A., until the end of the May quarter. Since that date it has been incorporated with the surveying class.

"5. *Geology*.—The study of stratigraphical and physical geology; the occurrence and disposition of mineral deposits; rocks; and the phenomena of faults, slides, &c. Weekly instruction is given in the field in the practice of making original observations.

"6. *Mineralogy*.—The elements of crystallography, physical characters of minerals, specific gravity; classification, occurrence, and composition of minerals; and blow-pipe determination.

"7. *Mining*.—Methods of constructing and timbering shafts, drives, chambers; explosives; ventilation and chemistry of mine-gases; pumping and pit-work; strengths of materials; dynamics of lost lodes, faults, &c.; composition and occurrence of ores of the common metals. Our text-book is "Gordon's Miners' Guide," which is the cheapest and most useful work on general mining in the hands of the public. It is very highly appreciated by men qualifying themselves for certificates as mine-managers, and has had great praise bestowed on it by mining engineers throughout New Zealand and the Australian Colonies.

"8. *Surveying*.—The procedure and practice of land- and mine-surveying with dial and theodolite in the field; different methods of connecting underground workings with surface-meridian; recording field-work, showing method of offsets; chaining and reducing slope-measurements; plotting to scale by protractor and rectangular co-ordinates; mapping; calculation of areas, of bearing and distance of last line, of line connecting underground workings with any point of surface-boundary of mining lease; adjustments of theodolite; also use of logarithms, trigonometrical functions of sides and angles of triangles, tabulation of traverses, solution of equations, and use of formulas.

"The progress made in this class has been most marked during the past year. Miners and mine-managers have not been slow to appreciate the value of a knowledge of surveying. Several of them have procured instruments of their own and made good use of them by making surveys for purposes of underground connections and holing, with results that would be creditable to any mining surveyor, and fully justify the teaching of this important subject at the School of Mines.

"I have much pleasure in stating that Mr. J. Dreyer, Mining Surveyor, has offered a miners' dial to be presented to the student who makes the best underground survey before Christmas.

"9. *Mechanical Drawing*.—This class is conducted by Mr. E. F. Adams, Mining Surveyor, whose able instruction has been amply rewarded by the very satisfactory progress made by most of the pupils. The instruction includes outline and shaded plans and sections of different parts of machinery, drawn to scale. The pupils are chiefly mechanics and artisans, to whom a knowledge of mechanical drawing is a supreme necessity.

"10. *Agricultural Chemistry*.—The different parts of plants, and their functions; fertilisation of flowers and formation of seed; storage of food in seeds, roots, &c.; germination; composition of plants and animals; the chemistry of air and water; how plants obtain their food; leaf-green; absorption of food by the roots; action of root-hairs; the soil—how formed, its composition, a source of plant-food, &c.

"*Class-work*.—The large increase of students has taxed our accommodation to the fullest extent. At present our practical chemistry class comprises twenty-three students, while our laboratory benches can only accommodate twelve; and, similarly, in the practical assaying class of twenty-nine students the limited size of our furnace-room and the possession of only one balance have caused much delay and inconvenience in the course of instruction. What we urgently require is an assay-balance, and a built-in muffle-furnace, which would render available a spare melting-furnace at present covered by the portable muffle-furnace now in use, and also effect a great saving of fuel.

"*Library*.—The committee has recently spent some £40 on well-selected standard works on mining, surveying, metallurgy, &c., which have proved a great boon to the students, and will form a valuable nucleus of a much-needed school library. More books will be added as funds become available.

"*Annual Examinations*.—At the annual examinations held last December 39 candidates presented themselves for examination for certificates in practical assaying, practical chemistry, mining, surveying, and agricultural chemistry. Of that number, 15 secured first-class, 17 second-class, and 3 third-class certificates.

"The work of the different students showed a marked improvement on former years, and was