

Text-books: Le Neve Foster's "Ore- and Stone-mining"; Gordon's "Mining and Engineering."

Mathematics.—(a.) Arithmetic—the whole subject. (b.) Algebra—elementary rules; simple equations; factors; use of formulæ; problems; square and cube root; H.C.F.; L.C.M.; fractions; quadratic equations; cyclic order, &c. (c.) Geometry—Euclid, Book I.

Text-books: Hudson and Smith's "Arithmetic"; Hall and Knight's "Elementary Algebra"; Todhunter's "Euclid."

Theoretical and Practical Surveying.—Nature and use of logarithms; the trigonometrical ratios; solution of triangles; adjustments of theodolite, miners' dial, and dumpy level; chaining; traversing, connecting underground and surface meridians; calculation of traverses; plotting survey; plan-drawing; mine-surveying problems.

Text-book: Brough's "Mine-surveying."

Geology.—(a.) Physical geography. (b.) Dynamical geology. (c.) Structural geology. (d.) Classification and mode of formation of rocks.

Theoretical Chemistry.—Fundamental principles; the non-metallic elements; the alkali metals.

Text-books: Roscoe's "Elementary Chemistry"; Jago's "Inorganic Chemistry."

Practical Chemistry.—(a.) Manufacture of oxygen, hydrogen, chlorine, &c. (b.) Making up laboratory solutions. (c.) Qualitative tests for metals and acids. (d.) Separation of the metals. (e.) Manipulation and manufacture of chemical apparatus. (f.) The various operations connected with chemical analysis, such as solution, precipitation, filtration, washing, drying, ignition, weighing, &c. (g.) Analysis of simple substances.

Text-book: Park's "Assaying and Practical Chemistry."

Wet and Dry Assaying.—(a.) Furnaces, materials, and appliances. (b.) Dry assays of gold, silver, mercury, tin, lead, copper, and antimony ores. (c.) Assay of gold and silver bullion. (d.) Problems and calculations. (e.) Gravimetric assays of silver, lead, antimony, bismuth, copper, iron, zinc, manganese, mercury, chromium, nickel, and cobalt. (f.) Volumetric assays of copper, iron, zinc, and potassium cyanide. (g.) Colorimetric estimation of copper. (h.) Making up standard solutions. (i.) Estimation of chlorine, hydrochloric acid, sulphur, sulphuric acid, phosphorus, phosphoric acid, arsenic, and tungsten. (j.) Analysis of limestone, complex sulphide-ores, and silicious rocks.

Text-books: Park's "Assaying and Practical Chemistry"; Beringer's "Assaying."

Metallurgy of Gold and Silver.—(a.) Crushing machinery. (b.) Concentrating machinery. (c.) Amalgamation processes. (d.) Chlorination and bromination processes. (e.) Cyanide process. (f.) Miscellaneous lixiviation processes. (g.) Smelting processes. (h.) Roasting- and smelting-furnaces. (i.) Chemistry of the cyanide, chlorination, and other processes.

Text-books: Park's "Cyanide Process"; Rose's "Metallurgy of Gold"; Louis's Gold-milling.

Drawing.—(a.) Use of drawing instruments and scales. (b.) Lettering. (c.) Elementary geometrical drawing. (d.) Elementary mechanical drawing. (e.) Plan-drawing.

Saturday Science Class.—Chemistry of the non-metallic elements oxygen, hydrogen, nitrogen, and carbon.

The school-year is divided into three terms, as follows: First term, from the first Monday in February to the 30th April; second term, 9th May to 20th August; third term, 9th September to 20th December.

In mathematics, mineralogy, geology, and drawing the fees are 5s. for each class per term; in mining, surveying, practical chemistry, assaying, and metallurgy the fees are 7s. 6d. for each class per term. In addition to the class-fees there is a membership-fee of £1 per annum.

The school-building contains five rooms—namely, lecture-room and library, laboratory, furnace-room, balance-room, and store-room. The total floor-space is about 1,800 square feet.

Sixteen students presented themselves for the annual Government examinations for schools of mines students last December, and took between them forty-one papers. Three first-class certificates were obtained, twenty-one second class, and twelve third class; while there were five failures, four of them in theoretical chemistry. Charles Moore, who did the best papers in assaying and chemistry, was awarded a gold medal, given by Mr. E. G. Banks, metallurgist to the Waihi Gold-mining Company. Thomas Thomson, the only student who took the mining and surveying papers, obtained a prize, given by myself, for proficiency in these subjects.

Last January nine of our students sat for mine-managers' and battery-superintendents' certificates, but the results of the examination are not as yet to hand. At the previous examination seven out of the eight Waihi School of Mines students who sat were successful. Four of these obtained first-class mine-managers' certificates, and three battery-superintendents' certificates. In consequence of their success a majority of the students referred to obtained almost immediate promotion from their employers.

During the year forty-one assays and analyses have been made for the public. Twenty-nine of these were for gold and silver, six for copper, and six for lead. A number of experiments were made in the laboratory in connection with the testing of cyanide solutions. Experiments were also made in order to ascertain the best and quickest method of dealing with the analysis of a complex sulphide-ore, containing gold, silver, copper, lead, zinc, iron, &c.

The following three analyses may be of some interest:—(1.) Sulphide-ore from Waiorongomai: Lead, 47·08 per cent.; copper, 7·24; iron, 6·87; zinc, 0·84; sulphur, 17·28; silica, 17·11; undetermined and loss, 3·58. In addition to the above constituents the sample contained gold at the rate of 3 dwt. 6 gr. to the ton, and silver at the rate of 4 oz. 11 dwt. 1 gr. per ton.

(2.) White substance deposited in the pipes used for carrying cyanide solutions, Waihi battery: Carbonate of calcium (CaCO_3), 90·90 per cent.; carbonate of iron (FeCO_3), 3·31;