

to be £18; and, assuming that 80 per cent. of it could be collected by a cheap process, it would mean that the proprietors of this tunnel are allowing bullion to the value of £14 8s. to go into the sea daily, or £5,256 per annum. There is no doubt there is a large percentage of iron in solution, but it must be in the form of the higher salts, or else it would precipitate the gold. Further experiments should be made not only with this water, but also with the water from the Big Pump shaft and from other mines, so as to clearly ascertain whether those made by Mr. Aitken are reliable. The following shows the way Mr. Aitken arrived at the value of bullion the water contained:—

Sediment contained—Bullion = 0·0016 grammes, or 0·0246gr., per gallon—namely, gold, 0·0006 grammes, or 0·0092gr., per gallon; silver, 0·0010 grammes, or 0·0154gr., per gallon.

Solution contained—Bullion = 0·0025 grammes, or 0·0386gr., per gallon—namely, gold, 0·0010 grammes, or 0·0154gr., per gallon; silver, 0·0015 grammes, or 0·0232gr., per gallon.

The value of the bullion was £2 5s. per oz.; and, taking 100,000 gallons as the quantity of water flowing in twenty-four hours, then the value was as follows:—

				£	s.	d.	
Bullion in sediment	...	...	...	...	11	10	7½ per day.
Bullion in solution	...	...	...	...	18	1	10½ "
Total	...	...	...	...	30	11	6 "

If this quantity or value of bullion is found in solution amongst the water, it is possible that 80 per cent. of it could be collected by filtering the water either through granulated zinc or zinc-turnings, on the same principle as that adopted by the Cassels Company; or the gold could be collected by filtering the water through charcoal. Neither of these would be an expensive method, and, if successful, it would open up a new source of revenue from many of the mines.

The Thames School of Mines is largely patronised, and is now turning out young men who are able to assay all descriptions of ores, with a good theoretical knowledge of mining, the chemistry of metals and gases, underground surveying, and geology; and it is also a great boon to mine-managers and those who wish to obtain mine-managers' certificates, as classes are held at night to afford instruction to those wishing to qualify themselves to pass their examinations. It will be seen by referring to Mr. Park's report that twenty men at the present time are attending the mining class with this object.

The following is the report of Mr. James Park, F.G.S., Lecturer and Instructor in the Thames School of Mines, for the year ending 31st March, 1890:—

"I have the honour to report that during the past year the usefulness and general efficiency of the school have been well maintained. The institution now affords a sound training in practical, scientific, and mining subjects, the advantages of which are becoming more fully appreciated, as shown by the good results at last annual examination and the steady increase of students.

"At the end of August Mr. A. Montgomery, M.A., left for an appointment in Tasmania, and at the same time I was transferred from the Geological Survey Department to take his place. The classes have been conducted since that date with but little change, except in the case of the mixed class of geology and mineralogy, which was divided into two distinct classes, and in that of the surveying and mining classes, in which the course of study was remodelled with a view to adapting it more to the requirements of the mine-manager's examination for certificates of competency under the regulations of 'The Mining Act, 1886.'

"The course of study at the school includes the following subjects: (1) Practical assaying, (2) practical chemistry, (3) mineralogy, (4) geology, (5) mining, (6) surveying, (7) mathematics, (8) mechanical drawing, (9) Saturday science lectures.

"1. *Practical Assaying*.—In this class the students are instructed in the use and properties of the different fluxes and reagents used in assaying ores of all kinds, both by the wet and dry methods. Beginning with the assay of gold- and silver-bearing ores, the valuing and refining of bullion, the student passes on to the assay of ores of lead, zinc, iron, copper, antimony, bismuth, manganese, &c. Many of the attendants at this class are competent assayers, and capable of performing reliable work. The advantages of a knowledge of assaying are becoming more apparent every day, and already several valuable finds have resulted from instruction obtained at the school. The students in this class comprise, at present, school-teachers, bank clerks, bank assayers, clerks, engineers, jewellers, miners, battery-men and artisans.

"2. *Practical Chemistry*.—The instruction in this class is of great value to those attending the assaying class, as it explains many chemical reactions which could not be understood without an elementary knowledge of chemistry. It embraces the study of the reactions of the metals and acids, and the principles of qualitative and quantitative analysis, particularly of the ores of the metals. From the determination of simple substances the student passes on to the separation and analysis of mixed substances, including coals, limestones, rocks, soils, waters, and complex ores. Some of the more advanced students have undertaken and successfully completed analyses of extremely difficult substances.

"3. *Mineralogy*.—In this class the students are instructed first in the elements of crystallography, the physical characters and blowpipe tests of the different ores, and then in descriptive mineralogy, including the classification, occurrence, composition, and determination of mineral substances. The text-books used are 'Dana' and 'Collins.'

"4. *Geology*.—In this class the attention of the students is devoted principally to the study of stratigraphical, physical, and dynamical geology, more especially as relates to New Zealand mining; also to the occurrence and disposition of mineral deposits of all kinds, and the phenomena of slides, faults, contortion, &c. This class is taken to the field once every week so as to enable the students to acquire a practical knowledge of the principles of geological surveying and making original observations for themselves. In this way most of the leading mines and the greater portion of the