

deliver lectures on some mining subject, and visit any mines or reefs or localities of exceptional interest. If this system is to be carried out in its entirety (I have no doubt about the miners' part of it), there will be an annual sum of £2,805 available for the payment of an ample and thoroughly qualified teaching-staff and their necessary travelling expenses.

The expenditure in the different districts will, of course, be strictly proportioned to their contributions. Thus, at the Thames and for the branch-schools at Coromandel, Waihi, Karangahake, Te Aroha, and Waiorongomai, the sum of £900 per annum will be available; for the schools at Nelson, Collingwood, and on the West Coast, £1,005 will be provided; and for the schools on the goldfields of Otago, the sum of £900. These sums will provide for the services of two good men on the Thames Goldfield all the year round, and for the services of Professor Brown for part of the year; for two men on the West Coast all the year round, and my own services and those of my assistant (W. Goodlet) for three months in summer; for one man in Otago all the year round, a second man for six summer months, and my own services and those of "Willie" for three summer months. The time-table (appended) for the Middle Island is drawn up on the assumption that that number of instructors will be available. The Thames committee will co-operate with the committees at Coromandel, Waihi, Karangahake, and Te Aroha to organise efficient branch-schools at these centres.

The second column of the above table shows local subscriptions on the West Coast and at Nelson amounting to £335. This will earn a subsidy of £670, making £1,005 available for that part of the colony. The Otago subscriptions show £300, earning a subsidy of £600, making £900 available for Otago. The sum of £300 is suggested for the Thames and outlying districts, earning £600, and thus making a sum of £900 available for the requirements of the northern goldfields.

I have marked these sums as what, from my knowledge of the different districts and my experience of the miners, will be required and will be forthcoming for the support of the schools. If it should turn out that I have been too sanguine in my expectations of what the miners are willing and able to do to help themselves in the matter of these schools, I shall, of course, have to submit to my disappointment; but I have a very firm conviction that the miners will not shirk their part of the compact.

Such is the form the system of technical schools of mines will take if the principle of bringing the instruction within reach of the whole mining population of the colony is to be maintained. By carrying out this system as here outlined, and strengthening the Thames and Reefton schools as well as the Otago University School of Mines with additional and specialised teaching-power, and more liberal State aid, so as to foster them into first-class schools of mines, the colony will have done its duty in the matter of providing a system of technical mining education by which it will benefit a thousandfold. In drawing up this scheme I have followed the lines laid down by the Hon. Mr. Larnach, late Minister of Mines, as most suitable for the requirements of the colony.

The duties of such a teaching-staff would be to teach the miners and miners' growing-up sons in every mining district in the colony such subjects as the following: (1.) The chemistry of nitric acid, muriatic acid, sulphuric acid, aqua regia, common salt, saltpetre, corrosive sublimate, cyanide of potash, sodium, sodium amalgam, caustic soda, carbonate of soda, hyposulphite of soda, iodide of soda, lime. (2.) The properties and uses of these gold- and silver-saving agents (they are all used for these purposes), their action on each other and on copper plates, gold, silver, mercury, lead, tin, antimony, &c. (3.) The action of these chemicals on the ores and in the battery. (4.) The manufacture of sodium amalgam, its use for silvering the plates, preventing the formation of scum on them, preventing the sickening of mercury, and for reviving it when it has been sickened. (5.) The action of air, of water, and of acids on sodium amalgam. (6.) When to use sodium amalgam, how to use it, and how much of it to use for the different purposes and under different circumstances. (7.) The simplest way of testing stone to see whether it contains such metals as gold, silver, tin, antimony, bismuth, lead, copper, platinum, or zinc. (8.) The processes for assaying quartz, pyrites, and other minerals to see how many ounces, pennyweights, and grains of gold, silver, tin, lead, antimony, &c., they contain. (9.) The proper methods and conditions of roasting pyrites and other minerals that require roasting. (10.) The use of the blowpipe for testing minerals. (This is a most important branch of technical education for the miner, because the pipe and the necessary chemicals are so cheap and so easily carried about). (11.) The properties and uses of chlorine as a gold-saving agent, and the manufacture of that most important element from salt, sulphuric acid, and oxide of manganese, or from oxide of manganese and muriatic acid, or from chloride of lime and sulphuric acid. (12.) The different kinds of chlorination-plant in use, and practical experiments on a small scale to show their action. (13.) The different kinds of silver-ore (some fifteen in number), how to identify them and ascertain how much silver they carry per ton. (14.) The different processes now in use for extracting silver from the different kinds of ore, so that we may not—as in the case of the La Monte furnace for the Thames ores—let mining men commit the mistake of applying, at a great cost, a kind of apparatus for the treatment of one kind of ore merely because we know it to be the correct thing for quite a different kind of ore. It is partly from this view of it that I have always advocated the sending for the most recent information from the great silver-mining centres in America. (15.) The rational treatment of such complex ores as we have in abundance at the Thames, Karangahake, and Waiorongomai, in the North Island; as well as at Collingwood, Owen, Reefton, Ross, Waipori, and the Lammerlaws, in the Middle Island, and at D'Urville Island, off Nelson. (17.) The testing of scheelite, coal, clays, limestones, and iron-ores. (18.) The chemistry of the battery, the blankets, and the riffles.

SUPPLEMENTARY REPORT BY PROFESSOR BLACK.

SIR,—

The University, Dunedin, 9th December, 1887.

I have the honour to inform you that I find, on inquiry, by the telegraphic reports of the secretaries of the West Coast schools of mines and Mr. Fenton, that my estimate of the members