

Von Paterra, Russell, Ziervogel, and Augustine extracting processes. We preferably employ cast zinc, and this is reduced to the requisite fine state of division by any suitable means. The degree of division is preferably such as would be obtained by shaving or cutting pieces of a cake of zinc from $\frac{1}{4}$ in. to $\frac{1}{8}$ in. in thickness by means of a circular saw, and this is the method in which we prefer to reduce same, but instead of such method molten zinc may be caused to pass through the meshes of a fine sieve, and to fall into water. In order to obtain the best results, the finely-divided zinc should be used as soon as possible after it has been produced, either by one of the methods above described or in any other suitable manner.

"The precious metals may be separated from any excess of zinc, after separation of the solution by distillation, or the larger portion of the precious metals may be separated from excess of zinc by sieving (by preference, under water), when, with a suitable sieve, the greater part of the precious metals will pass through, the greater part of the zinc being left on the sieve.

"Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is—(1) In a cyanide process for extracting gold and silver from ores or other compounds with an alkali or alkaline earth preparatory to subjecting same to the action of cyanogen or of a cyanide; (2) the employment of zinc in a fine state of division for the purpose of precipitating gold and silver from cyanide, chloride, bromide, thiosulphate, sulphate, or other similar solutions.

"And we do hereby, for ourselves, our heirs, executors, and administrators, covenant with Her Majesty, her heirs and successors, that we believe the said invention to be a new invention as to the public use and exercise thereof; that we do not know or believe that any other person than ourselves is the true and first inventor of the said invention; that we will not deposit these presents at the Patent Office with any such knowledge or belief as aforesaid.

"In witness whereof we have hereunto set our hands and seals this 16th day of August, 1888.

"JOHN S. MACARTHUR.

"ROBERT W. FORREST.

"WILLIAM FORREST.

"Witness to the signatures of the said John Stewart MacArthur, Robert Wardrop Forrest, and William Forrest—David L. Taylor, clerk-at-law, 160, West George Street, Glasgow."

Waihi.

Waihi Company.—This company was formed about four years ago, with principally English capital, to work the ground formerly held by the Union and Rosemont Companies.

The ore from those mines contains a large percentage of silver, and requires a different method of treatment from any hitherto adopted in the district. The company has erected a dry crushing-plant, consisting of thirty heads of American stamps, with rock-breaker, Challenge ore-feeders, and a plant of eight combination-pans and four settlers.

At the time of my former visit, twelve months ago, the dry crushing caused a perfect cloud of dust in every part of the mine, but this is now remedied by the dust being partially collected and partially led away by ventilators in the roof of the building. The manager, Mr. H. Russell, deserves credit for the energy and perseverance he has displayed in combating the many obstacles he had to contend with in the erection of this plant from first to last; indeed, the expenditure made on works and plant by this company is stated to be somewhere about £60,000, and it seemed at one time as though the venture would not prove remunerative enough to pay interest on the large outlay, as the quantity of ore in the properties originally purchased from the Union and Rosemont Companies was not sufficient to recoup the outlay.

The adjoining ground was held by the Martha Company, who have been working it for over eight years without being able to make it pay more than working-expenses. The lode running through the Martha ground is very large, and on and near the surface, where the ore was oxidized, the company managed to save sufficient fine gold in the crushing-battery, which was of the old-fashioned type, to pay working-expenses, the ore yielding from 4dw. to 5dw. to the ton. The lode was quarried out in a face to a certain depth, and then a low level was constructed for about 500ft. alongside the foot-wall side of the lode and the lode stoped up for some distance to a width of from 8ft. to 10ft. but the class of machinery and appliances erected by this company could extract but very little free gold, and there is scarcely any free-milling ore in the lode. During last year this mine was purchased by Mr. Russell for £3,000, and at present it looks the best mining property in New Zealand. On one side of the main adit level, constructed by the Martha Company, can be seen large blotches of gold and silver combined. A cross-cut has been made through the lode for 40ft. and a commencement made to stope out the ore, but the hanging-wall of the lode has not yet been reached.

The lode is of such great width that, from the manner in which the workings are carried on, the mine-manager finds difficulty in taking it out. Blotches of gold and silver can be seen all through the lode, running generally in veins here and there; and the actual width of the lode is not yet known, but at the place where the cross-cut is made it must be at least 50ft. How far this shoot of auriferous and argentiferous ore will run along its length is not yet fully determined, but, from the appearance of the ore alongside the main level, it should extend at least for 300ft. The low-level adit gives 80ft. to 200ft. of backs. If the width of the lode be set down at an average of 30ft. the length of the shoot of payable ore 300ft.,—both measurements being considerably less than they appeared,—and the height of ore above this level 120ft., then the quantity of payable ore in sight would be about 77,143 tons, which would take the present plant nearly six and a half years to pulverise and treat, its crushing capacity being about 35 tons per day. When inspecting this