that is claimed for them, may be a question, but they are not adopted in any other district. The machinery on every field has different peculiarities, and each one seems to imitate the other in the several districts where they are situated. This may, in a great measure, be due to a number of the shareholders and directors being local men, and when once any custom, or mode of working is adopted and established on a field, it becomes a hard matter for any one, unless at his own expense, to introduce any new appliance which would tend to upset the established custom, as it would, until well tried and found to be successful, be considered an innovation.

Diamond- and Rock-Drills.—In making inquiries of various mining managers of this field with regard to the use of rock- and diamond-drills, their unanimous opinion is, that the compressed-air rock-drills are a great saving in every respect, both with regard to the cost of working, and the greater rapidity with which the quartz can be taken out; but they do not consider the diamond-drills so well suited for prospecting unless under exceptional circumstances—such as testing reefs under the water-level; and even in this case they do not always give satisfactory tests, as they may go through the lode obliquely, and thereby lead one to suppose that the lode is of much greater width than it actually is.

Clunes.

The Port Phillip Company at the Clunes is the oldest quartz-mining company there is in the Australian Colonies, having been steadily in work for the last twenty-seven years, and their crushing-battery, although of a very old type, is as large as any yet employed in Victoria. Their crushing-battery consists of 80 heads of stampers of from 6cwt. to 8cwt. each, and makes about eighty blows per minute, with a drop of about 8in., and two of Appleton's stone-breakers. The stamps have the old-fashioned square shanks and heads, with discs keyed on, and are lifted by steel-faced tappets, wedged in, and projecting from a cast-iron drum of about 20in. in diameter. The stamp-boxes are made to discharge the tailings at back and front, having gratings made of copper plate about 14 B W gauge in thickness, with 84 holes to the square inch, which appears at first sight remarkably coarse; but the manager informed me, that, in order to crush the quartz fine, he kept the lower side of the gratings some distance above the bottom of the stamp-box, and by this means got the tailings as fine as with gratings having double the quantity of holes, and the gratings last much longer. These gratings are manufactured in England, and cost 2s. 4d. per lb. The company uses ordinary riffle-tables and quicksilver wells, at the end of which, are blanket-tables. After this the tailings and water go into a shoot and are carried into concentrating buddles 24ft. in diameter; one of these buddles being used to every five heads of stamps. These buddles have an inclination upwards of 1 in 12 towards the outer edge, and the tailings and water coming from the blanket-tables, flow into a hollow tube fitted on the vertical shaft that drives the arms, which has eight pipes leading out of it, that carries the tailings and water to the outer edge of the buddle, and at the same time they are made to act as stays for supporting the arms (which are of equal number). To each arm is attached three scrapers, or vertical plates of iron about 14in. in length and 3in. wide, standing at a slightly obtuse angle to the arms. As the tailings flow down the incline they are discharged in the centre, and, by means of the motion of the scrapers (which make about eight revolutions per minute), the stuff is always kept loose, which allows the sand to wash away, and leaves the pyrites and heavier particles on the inclined plane. At intervals of about eight hours, the pyrites is taken out of the buddle and stacked ready to undergo a similar process in another buddle, so as to get clear of as much sand as possible, after which, it is taken away and calcined in a reverberatory furnace similar to the furnaces used by the United Pyrites Company at Sandhurst, which have been fully described. The roasted ore is then taken and ground with quicksilver in Chilian mills, and afterwards flushed into a separator. This company's battery is fed from self-acting hoppers to every five heads of stamps by having a strong iron bar standing nearly vertical, with a knob on the upper end, and the lower end attached to the mouth of each hopper, so that the centre stamp, in falling, causes the disc to strike the knob, and allows the quartz to run into the stamp-box. It must, however, be remembered that, before the quartz is brought into the hoppers, it goes through the stone-breakers, and is reduced to the size of road metal. The false bottoms in the stamp-box, as well as the plates in the jaws of the stone-breaker, are all made of wrought iron. The company finds this a great saving, and it answers much better than the hematite bottoms that were used in former years, and which are generally used still in New Zealand. The nature and extent of this company's crushing, amalgamating, and concentrating plant, and the manner in which the quartz is treated from the time it is taken from the mine until the gold is extracted from it, may be better understood by the following particulars:—

Tramway from the Mine.

Appleton Stone-breakers.

Short Tramway from Stone-breakers to Self-feeding Hoppers.

Self-feeding Hoppers.

Stamping Battery.

Riffle and Quicksilver Wells and Copper Plates on Tables.

Pyrites taken out of Buddles and Stacked.

Waste Sand and Tailings, with water, flowing away in Shoots.

Reducing Buddle.

Reverberatory Furnace.

Chilian Mills, for Grinding Roasted Pyrites.

Separator.

Retorting and Smelting Furnace.