

before the rich slime-water is pumped into the pans for the purpose of thinning down the pulp, the mill is bound to over-run, presuming perfect accuracy of sampling and assaying, exactly the amount of that part of the silver contained in the slime-water used in the pans which is amalgamated. As the greatest care is exercised to secure the most accurate sampling possible, a large portion of the amount that the mill overran may safely be credited to the use of the slime-water in the pans. The pan-charges have been changed constantly, according to the character of the pulp treated, and amalgamation-tests have been many and varied. The charge now being used, which seems to be the best tested, is 50lb. of salt, 2lb. of sulphuric acid, and $\frac{1}{2}$ lb. of cyanide, with 100lb. of quicksilver strained in after the pan has been running for four hours. The temperature of the pulp is raised by steam to 180° Fahr., and the charge is run at sixty-five revolutions per minute for eight hours. Settlers are run fourteen revolutions per minute, and give good agitation with 3in. shoes.

"In the battery forty-mesh brass-wire screen-cloth has been used during the past year, with the exception of about two weeks, when thirty-mesh screen was tried by way of experiment. After a thorough test it was found that the loss occasioned by higher tailings exceeded the profit accruing from increased crushing-capacity, and the forty-mesh screens were replaced. The falling-off in the savings during the time the thirty-mesh screens were in use was largely owing to the fact that the difference between the very finest of the slimes and the coarse particles that would pass through a thirty-mesh screen was so great that, with the increased quantity of pulp to be treated by the vanners, they could not be made to do close and clean work."

KIDD'S ORE-CONCENTRATOR.

The following is a description of a new ore-concentrator, patented by Mr. Edward Kidd, taken from the *Scientific American* and published in the *Sydney Mail* of the 17th of January :—

"A machine for working pulverised ore-bearing rock, earth, sand, or tailings, and similar material, has been patented by Mr. Edward Kidd. The concentrating-table consists of a series of sections of a pane of glass each, the upper services being concaved and the panes being fitted with a watertight joint into a frame, the construction of the latter varying with the different forms of the table. The tables in their normal position are inclined, the combined sections representing essentially an inclined plane, while each table may be provided with a shaft or spindle for tilting it at will. A waste-flume is held upon uprights above the table, and at the upper end of the table is a frame in which a beam is held to slide vertically, the extremities of the beam being connected by links with the crank-arms of a rock-shaft, journaled near the base of the frame. At each side of the table is a support for a beam held to slide horizontally, motion being communicated thereto from the rock-shaft, and from the centre of this beam extends an arm carrying an agitating-comb reciprocating over one or more of the upper sections of the table. These sections are made with a flat upper face, and above them is a fixed hopper, below which is a water-chute, whereby a current of water may be turned upon the face of the concentrating-table at any time. To the upper end of the waste-flume is securely fastened one extremity of a flexible pan or hopper, the other extremity of which is detachably attached to the vertically reciprocating beam. This hopper may be made of rubber, canvas, or raw hide, and above it is a chute for supplying to the hopper such a current of water as may be desired. The pulp, gravel, ground, earth, &c., to be operated upon having been placed in this upper hopper under the stream of water is rolled backwards and forwards with the alternate rise and fall of the hopper, caused by the vertically sliding beam, the slimes, light gravel, &c., passing off through the waste-flume at every upward motion, the concentrates settling in the centre of the pan. When the charge has been sufficiently washed the upper end of the hopper is released from its attachment, and the contents dumped into the fixed hopper below, where they are further cleaned and concentrated in passing over the glass sections in the presence of water, the material being also agitated at the upper end of the table by the comb."

NEW PLYMOUTH OIL-BORING.

Indications of petroleum have always been found in the vicinity of New Plymouth, and a company was formed some twenty-four years ago to bore for oil. At that time very little was known in reference to boring oil-wells, so that the old system of hand-boring was resorted to, and, from the amount of work done by that company, a considerable amount of capital must have been expended. The first company put down a bore to a depth of about 300ft., a little to the north of the Sugar Loaves, which gave indications of oil, and some of the strata passed through gave off a small quantity of carbureted hydrogen gas. Another bore was put down on Mikotahi Island for about 200ft., with the same result, but neither oil nor gas was found in any appreciable quantity. The first company became disheartened with the results and suspended operations. Subsequently another company was formed, who sunk a shaft about 12ft. above high-water mark, directly in a line with the present breakwater, to a depth of 60ft., when the quantity of carbureted hydrogen became so great that sinking could not be proceeded with. At the depth of 44ft. a porous stratum was passed through containing a little oil. After sinking was abandoned a borehole was put down from the bottom of the shaft to a depth of 680ft. A little oil and considerable quantities of gas were met with at different levels in boring, but the largest quantity of oil was found at the 44ft. level. It is stated that about 50 gallons of oil per week were got for a few weeks out of this borehole. The oil was collected by pumping out the borehole into a tank and skimming off the oil from the top of the water.

Recently an English company has been formed to carry on a system of boreholes, to ascertain whether petroleum can be found in such quantities as will pay for working. This company has commenced boring operations at the place where the previous company sunk a shaft, and have put down a borehole to a depth of 680ft. This borehole was down at the time of my visit, on the 17th February last, to a depth of 340ft. In boring this distance a little oil has been met with, and also