The final plant is located half a mile from the stamp mill and 300 feet vertically below it. The site, from which over 400 cords of timber were removed in clearing, is on a hillside, and required about 5,000 yards of excavating and 630 yards of masonry for footing and retaining walls. All the plant is housed, the buildings being heavily framed, as required by the deep snowfalls.

The vanner tailings are carried to the plant by a box launder 6 by 8 inches in section, and the excess of battery and vanner waters allows of a minimum grade of slightly under 5 per cent. At that grade, and with 1-inch riffles set 5 inches apart in the bottom of the box, the durability even of the local soft hemlock and cedar lumber used is quite satisfactory.

To make the required fall of 300 feet to the plant, a series of drop boxes is inserted where the topography is favourable; and a 12-inch sand pocket at the bottom of each drop, to prevent wear, should also be an efficient saver of escaping amalgam or mercury.

The tailings enter the top of the storage solution room; and when, as in the period under consideration, from forty to sixty stamps are running, the classification is done in two boxes, the first being 18 by 24 inches wide by 18 inches deep, with two vertical sides and false ends sloping 60 degrees to a 0.5 by 24-inch slot, under which hydraulic currents can be applied. This box settles only the coarse sands, which are drawn off through a 2-inch nipple into the charging launder. The second box is pointed, 3 feet 6 inches in width and depth, and 7 feet long, with a 3-inch outlet. A plug valve in this outlet, in combination with the hydraulic current in the box, regulates the speed of the distributors, while maintaining the same separating action in the box. The overflow from the box, carrying about 60 per cent. of the water and 20 per cent. of the total tailings, is run to waste. This overflow should all pass a 100-mesh screen, and is mostly impalpable material.

All of the vats and tanks, except the sumps, are of steel. The leachers, 32 feet in diameter by 6 feet deep, are on timber foundations with masonry footings. Caps and sills are parallel, an arrangement which renders jacking-up easier than the usual right-angled structure. Bents and posts are placed 4 feet between centres, and the bracing does not extend above the post, the shimming being done between posts and caps. On the caps are 4 by 8-inch joists, spaced 18 inches between centres. There is no flooring on any of the vat or tank joists, and there is head-room under them all, so that leakages occurring in the plant cannot be unknown or inaccessible. The vats are fitted with top annular overflow launders; and, to preserve a level rim, a soft wood strip, projecting above the edge of the vat, is fastened with stove bolts to the side plates, the joint being caulked with oakum. Any settling of the vats which is insufficient to require jacking-up from below can thus be easily rectified, as with tongue-shaped wooden vats.

The distributors are of the usual type, and have twenty 1.5-inch arms. This area of discharge openings, with our quantity of tailings, never allowing any head to accumulate in the distributor hopper, renders uniform distribution difficult. The slightest throw of the stream from the charging drop box off the centre of the hopper results in uneven charging, most of the slimes going to the low side of the vat. Many devices were tried to remedy this, and to prevent twisting of the drop stream, which motion also has a classifying effect; and the last and simplest plan was successful. The drop was made square; and inside the lower end of it an iron strip was fastened to each side. The square drop prevents twisting, and to throw the stream toward the low side of the charge small wedges were driven under the iron strips, as needed. These details may seem trifling; but when the object is to treat the maximum quantity of slimes by percolation they will be found of prime importance in obtaining a uniform charge.

Where there is enough head room to give distributor arms 3-inch grade per foot, arms of 1 inch diameter, or even smaller, could be used without danger of clogging. This would be an improvement upon the usual form, which has 1.5 inch arms at 1.5 inch grade; for it would approach the ideal conditions requiring a maximum number of arms fed from a full hopper.

Continuous, uniform charging is essential to make a good charge; hence, so far as possible, stamp mill hang-ups were made between charges. When, however, an emergency hang-up was made with a charge incomplete, a gentle hydraulic current was started under the filter in the vat; the water feed to the distributor was increased; and, when charging was recommenced, the settlers were run with a strong hydraulic current for a few minutes, allowing only the coarse sands to settle. Despite every precaution, however, a slime layer will mark in the charge every mill hang-up of over ten minutes' duration.

The overflows from the vats and the separators were combined before they reached the overflow sampler, so that I cannot give separate figures on the vat and box separations. The longest distributor arms occasionally make a wave strong enough to throw over a little of the finer sands into the overflow launder, so that of the combined overflow 1.1 per cent. was caught on a 100-mesh screen. Much of this coarse residue, however, was wood fibre from the mine and flumes.

The classification of values in charges and overflows was marked, the average assay and screen tests for the year being:

	Au. Oz. Per Ton.	Ag. Oz. Per Ton.	Through 100-Mesh. Per Cent.
Vanner tails	0.0838	1.008	64.86
Charges	0.0931	0.637	50.70
Overflows	0.0627	1.878	98.90

The high silver in the overflow is due to its association with galena in the slimes.

The system of classification, it must be admitted, was crude; and if the plant were pushed to its full capacity, close hydraulic classification, yielding a clean, quick percolating charge, would be necessary; but, as run at this time, the system was very satisfactory, for it settled and treated a total of 70.1 per cent. of vanner