

are placed on two apron-plates, at each of which are four men to remove the amalgam, under the supervision of the head amalgamator. This is done by scraping the plates with a chisel, when the hard amalgam drops off on the apron-plate beneath. As much amalgam is removed as is possible without exposing the copper. Then quicksilver is sprinkled on the plate, to dilute the hard amalgam somewhat. This is then divided evenly over the plate and brightened by scouring with a whisk-broom and tailings, and finally smoothed with a soft paint-brush. The amalgam that has dropped on the apron-plate from the three chuck-blocks is collected at the head and put under lock and key by the head amalgamator. Thus the chuck-blocks of the entire mill are scraped and cleaned in four sets of six each. In the meantime another set of men scrape and wash the rim and flanges of the mortar and collect the amalgam. They also remove the plate amalgam which has settled down during the past twenty-four hours, which is then taken in charge by the head amalgamator. The dressing of the plates does not take place yet. In order to keep them soft, a little quicksilver is sprinkled over them and evenly distributed with a brush. A third set of men begin with the work on the mortar as soon as the amalgam from the apron-plate has been removed. Two small platforms are placed at its head on the wooden frame for the men to stand on. They then remove the water still remaining in the mortar, and shovel out the sands above the dies into a heap on the apron-plate. As the sands consist simply of coarse ore, and does not contain any amalgam, they are returned to the battery after the dies have been put again in place. Before the die can be taken out the stamp has to be raised higher. Formerly block and tackle were used for this purpose. Now a piece of timber is placed crosswise on the rests of the splash-board, serving as a fulcrum for an iron bar, with which the stamp is raised. It is kept in this position by placing a 4in. piece of wood on the prop of the stamp and allowing the tappet to rest on it. The dies are prised up with an iron bar, lifted out, and roughly cleaned. Those which are to be exchanged are taken away and piled up, to be carefully scraped and washed in due time. Those that are still good are returned to the mortar without further cleaning; the dies usually last six weeks. After the dies have been taken out the remaining sand is shovelled out and piled up in a convenient place in the mill to be treated separately in the rocker and pan. It is rich in amalgam, and contains pieces of iron that have accumulated in the mortar. Any particles of amalgam adhering to the rough sides of the mortar are removed and added to the sands, and the dies put in place again. If new shoes are required they are placed on the top of the dies with the wooden collar slipped over the shank. Then the recesses for the chuck-block, screen-frame, &c., are cleaned by directing a hose on them, and these are put in place, the screens having first been cleaned in a wooden box with a brush and water. When the chuck-block is in its place the sands first removed are shovelled in to fill up the bottom of the mortar up to the top of the dies. The drop of the stamp has now to be regulated; if new shoes are used the wooden block 1in. higher than the drop is placed on the shoulder of the shoe, and the stamp let down until the head rests on the block. If the shoe has not been replaced the block stands on the die. In both cases the keys of the tappets are loosened. These are allowed to fall on to the prop, and are then keyed up again. The apron-plates are now dressed in the usual way. Any amalgam adhering to the small sluices leading to the mercury-traps and to the sluice-boxes is removed, and these are brightened up in the same manner as the apron-plates. When the engine has been started the stamps that have new shoes are first allowed to drop several times until the sound and the vibration felt when touching the tappet show that the shoe is thoroughly fastened to the head. The splash-boards are put in place, some ore is fed into the mortar, the water is turned on, and the stamps of one battery after another are let down from the props. Special care has to be taken by the feeders to regulate the ore-supply, as the mortars are empty above the dies when the mill starts. In cleaning up a mill, all hands have to take part, the night-shift working six hours extra.

"The detail description of the clean-up of a 120-stamp mill has been given, because it seemed important to show how it is possible to accomplish it in the short space of seven hours without requiring any outside help. When it is remembered that more than a day was formerly consumed in this work it will be seen how admirably the operations are now systematized and worked one into another. When the clean-up of the mill is over, and the stamps are once more in operation, the sands that were shovelled out of the bottom of the mortar have to be worked up, and the amalgam has to be cleaned, so as to be ready for the retort. Two crusher-men are detailed to clean-up the sands. These contain bits of iron that have come from the tools used in the mine, or the crushing machinery of the mill, and also pieces of amalgam. The sands are first treated in a rocker; any coarse pieces of iron are picked out and collected in a heap. When the sands have been rocked for a little, while the hose has been playing on them, the residue in the hopper is broken as fine as possible with a wooden mallet. The products obtained by rocking are the coarse particles remaining finally in the hopper; these are washed in a coarse screen over a clean-up pan, and any amalgam remaining on the screen is picked out and thrown into the pan. The sands go back to the battery. The heavy sands which collect on the curtain and riffle are taken up in a bucket to be worked in the pan. Those settling in the sluice which conduct the sluices to the waste-flume are shovelled out and returned to the battery.

"There remains the purifying of the amalgam collected from the chuck-blocks, apron-plates, sluices leading to the mercury-traps, mortars, old shoes, dies, and screens. It is charged with water into the clean-up pan—5ft. in diameter, the muller making thirty revolutions per minute—and from 600lb. to 700lb. of quicksilver are added. It takes about three hours to clean in the pan all the by-products that contain any amalgam. When this is all collected and the water above it is somewhat clear, the muller is raised with block and tackle and the entire contents of the pan are emptied through the lowest discharge-opening into a square box which overflows into the tailings discharge-box. The muller and the bottom of the pan are cleaned with a brush and water. The liquid amalgam in the first box is now freed from water and passed through a strainer; the resulting pasty amalgam is removed, and freed from the excess of quicksilver by wringing it in canvas bags in water. The balls of hard amalgam remaining in the bags contain about 38 per cent. of gold. The quicksilver collected beneath the strainer goes back to the main stock; that obtained by