

and a block of wood lin. higher than the desired drop is placed between the shoe and die. The tappet is then loosened and allowed to drop on to the prop and again keyed fast. As the prop and the block of wood placed between shoe and die are both lin. higher than the required drop, on removing the block the stamps will all have the desired uniform height of drop, while the different levels at which the tappets are keyed to the stem will indicate how much the shoe and die are worn down.

“The crusher-men, in addition to looking after the grizzlies, breaking the coarse ore, and feeding the crushers, have to watch for any pieces of wood and iron found amongst the ore, take it out, and throw it aside. This is the only way in which the chips of wood entering the mortar can be reduced to a minimum. All small pieces of wood that pass through the grizzlies are finally found in the mortar, where they are periodically removed by the amalgamators, if not taken previously by the ore-feeder men when the ore passes from the trough of the automatic feeder into the mortar.

“The oilers have to keep all the wearing iron parts of the mill lubricated, and have to be especially careful not to use any excess of grease at parts where it might drop into the mortar or upon the apron-plates. The feeders attend exclusively to the regular and uniform feeding of the ore. The principle followed is to feed “low.” The height of ore between the shoes and dies should never be more than lin., and as much less as possible without the stamp beginning to pound. One or two day-labourers are generally found around a large mill, because there is apt to be constant need of extra work which does not fall within the province of the regular hands. The shifts in the mill are changed monthly. The following table shows the rates of wages :—

Class.	Caledonia, 60 Stamps.			Homestake, 80 Stamps.			Father de Smet, 100 Stamps.			Golden Star, 120 Stamps.			Comparison of Wages paid if Eight-hour Shifts were adopted as in New Zealand.
	Number of Men employed.	Length of Shift, Hours.	Wages per Shift.	Number of Men employed.	Length of Shift, Hours.	Wages per Shift.	Number of Men employed.	Length of Shift, Hours.	Wages per Shift.	Number of Men employed.	Length of Shift, Hours.	Wages per Shift.	
Foreman	1	..	£ s. d. 1 6 6	3	..	£ s. d. 0 17 8	1	..	£ s. d. 1 0 5	3	..	£ s. d. 0 17 8	£ s. d. 0 17 8
Millwright	1	12	0 18 4	1	10	0 17 4	1	10	0 17 4	1	10	0 17 4	0 17 4
Pipe-fitter	..	..	..	1	10	0 14 3	..	..	..	1	10	0 14 3	0 14 3
Engine-men	2	12	0 14 3	2	12	0 14 3	2	12	0 14 3	2	12	0 14 3	0 14 3
Firemen	2	12	0 13 3	2	12	0 12 3	2	12	0 12 3	2	12	0 12 3	0 12 3
Watchmen	..	..	..	1	12	0 12 3	1	12	0 12 3	1	12	0 12 3	0 12 3
Head amalgamator	..	..	..	1	10	1 16 4	1	12	0 16 4	1	10	0 16 4	0 16 4
Amalgamators	2	12	0 15 4	4	12	0 14 3	4	12	0 14 3	4	12	0 14 3	0 14 3
Crusher-men	1	10	0 12 3	5	10	0 12 3	6	10	0 12 3	6	10	0 12 3	0 12 3
Oilers	..	..	..	2	12	0 12 3	2	12	0 12 3	2	12	0 12 3	0 12 3
Feeders	2	12	0 13 3	2	12	0 12 3	4	12	0 12 3	4	12	0 12 3	0 12 3
Day-labourers	1	10	0 10 2	..	..	..	1	10	0 10 2	..	..	..	0 7 7½
Total number	12	..	..	20½	20½	..	25	..	..	23½	..	..	..

“From the foregoing table it will be seen that the Caledonia mill employs fewer men than any of the other three mills. In comparing the 80- and 120-stamp mills of the Homestake Company, located next to each other, and working on the same ore, we see that only three more men are required in the latter than in the former, although the product is half as much again. From this it can be seen that a large number of stamps is very profitable, as greatly increasing production without necessitating commensurate outlay of labour.”

GOLD-QUARTZ.

An interesting paper was read before the American Institute of Mining Engineers at the Ottawa meeting, 1889, by W. M. Curtis, on the appearance of quartz, as to whether it is likely to be auriferous or not, of which the following is an abstract :—

“There seems to be a well-established belief that there is an indescribable something in the appearance of gold-quartz, not to be learned from books, that enables those who are fortunate enough to have acquired the power to recognise this characteristic to pronounce at once that a certain quartz will or will not pay. The stronger this claim is made the more certain is the claimant to be one of the self-styled practical miners. After several years spent among the gold-mines of California with practical and professional gold-miners, my conclusions are that very few care to risk an opinion on a piece of quartz until some of it has been ‘horned out.’ Nevertheless, there is what the miners call a ‘kindly’ appearance that is more often followed by good results than is a vitreous water-wet-looking quartz. A dark, resinous quartz seems to be the most in favour, but there are so many exceptions that even quartz as ‘white as a hound’s teeth’ produces gold in some mines.

“The ribbon-quartz, a laminated variety separated by thin talc or chlorite partings, has a well-known name. The slides of rich-quartz specimens show that this parallelism is a microscopical characteristic of the only microscopical distinction that, as a rule, these quartz show. This is shown in Figs. Nos. 12 and 13, being photographs of the richest quartz, that averaged £13 per pound. It is noticeable also in Figs. Nos. 7 and 9, and others. Dr. Henzolt, of Columbia College, who prepared a large number of my slides, says of Figs. Nos. 12 and 13, ‘This variety of quartz differs considerably microscopically from the others of your locality, and is in more than one respect remarkable. Like the others, it is crowded with fluid enclosures ; but the cavities, instead of being irregularly scattered, are here arranged in parallel lines or rows with considerable symmetry. Many, if not all, of them contain vacuoles in a state of continual motion, which makes me inclined to