about the same weight of mercury as of gold per ton in the quartz, and to introduce a little at a time, and frequently.

The gold escaping in the tailings, occurs as free gold; gold dissolved in mercury, gold in the py ites. The quantity of arsenical pyrites in the Forest lode is inconsiderable, but the proportion of sulphurets of iron is large. The quantity of gold mercury dissolves without forming an amalgam (holds in solution), is about four per cent. of its weight. Hence the 70 lbs. of mercury which has been used and consumed since February 1869, in this mill, will contain about  $2\frac{8}{10}$  lbs. of gold, or 31 ounces. Of this quantity a large proportion could be saved in settling-boxes at the extremities of the different sections of the sluices.

The pyrites has for the most part been deposited in the streamlet, and it will be found profitable to sluice the fine stuff in the bed of the stream during the dry season.

Assuming 25 per cent., or one-quarter, as representing the amount of escaped gold, the actual quantity present in the bed of the stream will not fall far short of 500 ounces. In making this estimate, regard is had to the experience everywhere confirmatory of the fact, that in the presence of arsenical and sulphur pyrites, much gold escapes amalgamation.

By very simple contrivances this pyrites can be arrested and saved.

The floured mercury can be in part saved as well as the free gold.

Blanket strakes placed in the sluices and washed every two hours, will save the pyrites, free gold, and some of the floured mercury. The pyrites can be subsequently concentrated in a puddle. Settling-boxes (barrels) at the end of sections of the sluices, will save much mercury, from which the amalgam will crystalize in from four to six months; but these barrels should not be disturbed oftener than once in four months, better once in six months.

The Mill affords ample room for a concave buddle to concentrate the pyrites saved in the blanket strakes; also room for the washing tubs and the storage of a large amount of pyrites. The blankets will require to be washed but once in two hours.

The pyrites, when it has accumulated to a sufficient extent, will have to be roasted in a reverbatory furnace, of the construction described by Kustel or Phillips. Kiln-roasting is wholly inadequate; it merely reduces the sulphides of iron to a lower condition of sulphide, and when arsenical ores are present, it does more harm