

In only three instances—even of second-class ore after the richer ore had been roughly picked out—was less than five dollars per ton in gold found, and the highest assay of a five-ton lot was \$53.43 per ton. Samples of a few hundred pounds have been found to run as high as \$150 per ton, and hand samples very much higher; but these were not considered as safe guides in valuing a mine, and were therefore rejected as exceptional.

THE TREATMENT OF THE GOLD-BEARING MISPICKEL.

When I first commenced testing these mines, about fifteen months ago, I was met by a vast array of *dicta* concerning the difficulties to be encountered in roasting, in amalgamating, or otherwise getting the gold out of arsenical sulphurets of iron. It is fair to add, however, that these difficulties were always reported by *persons who had not themselves worked such ores*, but had “always understood” they existed. No satisfactory record of tests actually made with such ores being on record, so far as I know, I determined to make history myself; and though in some particulars we have still very much to learn, the facts which we did establish may be of use to the profession, and I gladly communicate them.

As there could be no possible question about the facility of concentrating mispickel with a specific gravity of about 6 or $6\frac{1}{2}$ from quartz and calc-spar, with a specific gravity of about $2\frac{1}{2}$, we did not consider it necessary to build concentrating works to test that point; and as there was no concentrator except a centre-discharge buddle taking all the ore as it came from the battery (with forty-mesh screens) without sizing, it was no matter of surprise that at times one-half of the gold was lost in this operation. That, however, was not so much a consideration with us as to determine points upon which knowledge was not obtainable.

The ores were sampled in the manner mentioned above before going through the battery. After concentration, the concentrates from some two or three hundred tons were roasted in a muffle furnace, those from nearly 600 tons in a reverberatory, and those from several hundred tons in a revolving cylinder. The results in all cases showed that these arsenical sulphurets roast with the greatest facility, and in much less time than simple pyrites, owing probably to the fact that the arsenic is volatilized at a much lower heat than the sulphur, and in escaping it leaves the ore in a measure porous, and therefore in suitable condition for oxidizing the sulphur. The consumption of fuel was far greater in the reverberatory and muffle