

copper (chrysocolla), stain the rock for one hundred feet from the vein, occupying the fissures, and giving the surface a green or bluish tinge. In some places chrysocolla forms in small botryoidal incrustations on the face of the rock. The ores of copper occur in veins in the claystone and the rock of this dike, but most abundantly near the junction of the two rocks. The veins are very irregular, and are more or less elongated. They are occasionally connected, but in the excavations frequently run out. In order to discover new ones, they follow the lines of the green carbonates, or the seams of calcareous spar and quartz. The name of *metal* is given as a general term to all the ores, that of *quizo* to the lode in which they are contained.

The ores contain more or less sulphur, and often a portion of arsenic. Some silver is also occasionally mixed with the copper. Some of the ores found at this mine have been very rich, yielding sixty-five to seventy per cent. of pure copper. The average yield is about forty-five per cent. The various qualities are denominated, *metal-regio*, *platiado*, *bronze*, and *pedra bruta*. The last, as the name implies, is worthless.

The mines, by the light of the numerous candles, exhibited all the shades of green, blue, yellow, purple, bronze, &c., having a metallic and lustrous appearance. The confined air, with the heat of so many candles, made it quite oppressive; and persons who have not often visited mines, are subject to faintness and vertigo from this cause. Mr. Alderson and Mr. Dana were both affected by it. It was the first time the former had ever penetrated so far, Mr. Newman and himself being governed by the report of the mayoral, and the ore brought up in their operations. The miners were not a little astonished at our gentlemen loading themselves, besides the specimens of ores, with the *pedra bruta*, which they considered of no value. The manner of labour in the mines is in as rude a state as it was found in the agricultural branches of industry. A clumsy pick-axe, a short crowbar, a stone-cutter's chisel, and an enormous oblong iron hammer, of twenty-five pounds weight, were the only tools. The hammer is only used when the ore is too high to be reached with the pick or crowbar. The miners, from the constant exercise of their arms and chest, have them well developed, and appear brawny figures. When the ore is too tough to be removed by the ordinary methods, they blast it off in small fragments, not daring to use large blasts, lest the rock should cave in upon them. Only a few weeks previous to their visit, the mayoral, while at the farthest end of the gallery, was alarmed by the rattling down of some stones, and before he could retreat, the walls caved in