

in most cases the walls are compact limestone, showing only here and there signs of a crystalline structure, while the vein-matter is a crystalline limestone. In the second case, that of contact-veins, we have generally slate overlying, quartz or quartzite predominating as vein-matrix, and compact limestone as foot-wall. The outcrops of these veins are often very bold and massive, but in many instances they have suffered a dislocation sideways, the cause of which is fully explained by the abruptness of the cañons. This is very apt to mislead as to the actual width or dip of a vein, and even as to its location.

The course of the veins is northwest and southeast, with a changeable southwesterly dip, except in the extreme northern portion of the district, where the veins turn more and more to an east and west course, and dip north. The northwest and southeast course is a general rule, but is not exempt from exceptions, as metalliferous cross-courses exist in the district: for instance, the Soledad vein, which strikes the St. Lucas and Abundancia at an angle of 65° , and has an almost north and south course, and dips west. Most of the veins dip from 70° to 60° except near the surface, where irregularities are naturally to be expected and are frequently met with. The veins of the district may be divided into two distinct classes, according to their contents, namely: 1. Those which carry mainly argentiferous galena ores; and 2. Those which carry principally copper ores.

The first class have invariably limestone, the second class predominantly quartz and quartzite, as vein-matter. The second class are best defined and the more massive of the two, and are also less subject to irregularities near the surface than the first class. They carry the larger amount of precious metal, and are in consequence termed 'silver leads' throughout the district, while the first class are known as 'lead leads.'

Local circumstances have been the cause, that up to the present time but a limited amount of work has been done on the veins, hardly sufficient to realize the actual merits of many of them. The aim of all work done so far has been always to produce in the shortest possible time the largest amount of ore in order to *realize*, and judicious work, namely, *producing and developing at the same time*, has been neglected. Every mining district in its infancy is, of course, subject to this, especially if its yield can be made available forthwith, as is and has been the case in Cerro Gordo ever since its discovery.

To facilitate a description of the ores I shall retain the terms in vogue in the district, calling the above first class "galena ores" and the second class "silver ores."

The ores of the district are of various nature and character, the latter undoubtedly attributable to the character of the rock, which forms the main bulk of the vein-matrix, and also to the nature of the rock which occurs in the immediate vicinity of the veins. They are argentiferous galena, (coarse and fine crystallized,) carbonate of lead, argentiferous copper ore, principally as gray copper ore, and iron pyrites in various stages of decomposition.

Subordinately occur antimonial silver ore with traces of speiss-cobalt, silver-copper glance, silver-bearing malachite, azurite, sulphuret of silver, sometimes partly decomposed and mostly free from refractory metals, and native silver, which occurs often in the malachite and azurite.

Gold is found in traces only, and occurs mostly in the northern portion of the district, although some of the veins situated in the extreme southwesterly part of the district show it sometimes. Nearly all the veins carry more or less of all the above-named ores, but, as stated