

### *Metallic Minerals.*

*Gold.*—This precious metal was found associated with some of the oxydized copper ores (blue and green carbonates) of the Clarendon mines, as stated in the reports of assays made in England. These mines were visited by the surveyors for the purpose of examining into the occurrence of these auriferous minerals. The officer in charge pointed out No. 1. shaft as the locality which had produced the carbonates and surface ores in question. The relative richness was stated to amount to 15 ounces per ton; a very large yield indeed. But the correctness of this assertion may perhaps be corroborated from the tradition of the Spaniards having obtained gold here, and from their having named an adjacent elevation "The Gold Mine." At the time of the visit of the surveyors it was impossible to prosecute any mineral or geological researches as the workings were long abandoned and the vicinity completely grown over by bush.

*Copper.*—The ores of this metal are very widely diffused in Jamaica, and assume different characters according to the geological circumstances and formations in which they occur. Thus when contained in the black shale overlying the cretaceous group

it occurs as carbonate of copper in crystals spread on the surface of the rock; and seems to have been brought there in solution and re-deposited under or in consequence of chemical action.

Generally when found in the shales or other stratified rocks it is in the state of carbonate, but sometimes as silicate or even native in a granular form. As already noticed the rocks with which it is in combination are occasionally coloured by the cupriferos minerals especially by the silicate. With rocks of the granitic type the copper is largely associated, not generally in veins or bands of definite limits and a certain direction, but disseminated throughout the mass of the rock like the constituent minerals, near the surface and where the granite may be decomposing it is the carbonate which prevails, but at a greater depth beyond the range of atmospheric influence it exists crystallized in the state of sulphuret, replacing in some instances the mica, or if the containing rock is syenite the hornblende; the condition of the mineral is usually that of carbonate, when occurring in the stratified formations, still the vicinity of the igneous intrusions has a marked influence and determines a different chemical combination, sulphurets being developed, which are accompanied by calcespar, iron pyrites, &c.

Copper also occurs in the form of veins both in Portland and Clarendon, but are most distinct in the latter parish, seldom, however, attaining more than 18 inches in width; the containing rock is a decomposed variety of porphyry. The veins were worked unsuccessfully by the Chariag Cross or Wheel Jamaica Mining Company. The expenses were very large on account of the staff of officers employed, but the concern might have been remunerative to private enterprize as a considerable amount of ores were extracted.

The occurrence of gold in the carbonates of this mine was first detected by a scientific stranger, who examined the ores lying on the wharf at Kingston, but most of these carbonates were thrown as refuse into the adjacent gullies, the per-centage of copper in them being considered too small to pay.

The veins in Portland also in porphyry were only worked to a slight extent. A few tons of rich produce were, however, exported. An American from Connecticut obtained about 80 tons from the Providence and Rose Hill mines of which no account is preserved. It is supposed the civil war in America prevented a resumption of operations at these localities.

The granite of St. Andrews and Metcalfs has also been the scene of mining operation in search of this metal as at Job's hill, Salisbury plains, and Sue river, but notwithstanding the abundance of copper minerals, remunerative results have not followed. Generally it seems that the cupriferos deposits of Jamaica, in place of being concentrated into powerful veins and masses are too much disseminated throughout the rock; and that notwithstanding the richness of some of the localities yet the great expenses attending on mining in this country and the

absence of skilled and intelligent labour render the practical utilization of such resources highly difficult and uncertain.