

CHAPTER XIX.

ON THE REPOSITORIES OF METALLIC ORES.

Metallic Matter disseminated through Rocks.—Masses of Metallic Ore.—Metallic Beds.—Metallic Veins.—Rake Veins.—Flat Veins.—Accumulated Veins.—Cross Courses.—The remarkable Structure of the Botallack Mine worked under the Sea.—On the Formation of Metallic Ores.—Remarkable Phenomena in Mines.—Stream Works.—Gold disseminated in the Sands of Rivers in Africa, and North and South America.—Rocks in which certain Metallic Ores are found.

THE rocks and strata, described in the preceding chapters, are composed of earthy minerals, sometimes combined with a portion of metallic matter, which in such instances may be regarded as a constituent part of rocks. The mineral substances to be described in the present chapter, as forming beds or veins, or irregular masses, or grains imbedded in other rocks, consist of metallic matter either pure, or in combination with sulphur, oxygen, or acids.

The difference of external character between a pure metal and an earth is so great, that we find some difficulty, at first, in conceiving how metallic matter can form beds interstratified with earthy rocks; but the discoveries of modern chemistry have shown, that metallic and earthy minerals are closely allied. Nothing can appear more essentially different than a piece of polished iron and a piece of marble or slate; yet if iron be exposed to the action of air and water it is converted into rust, and in this state is known as ochre; and between ochre and powdered stone there is little difference of external character; nor would any one, unacquainted with chemistry, suspect that ochre was a metallic mineral. The ochre can, however, be easily reconverted into metallic iron: but, to convert the earths into a metallic substance is a difficult process,—yet, it has been effected; and it is further proved, that both earths and alkalies are metallic substances combined with oxygen. The metallic nature of the earths being ascertained, we can no longer be surprised that metallic minerals should be found, intermixed with earthy minerals, in rocks. Iron is found combined with earths in almost all rocks that are not white; and to the presence of iron they generally owe their colour, whether red, brown, or black.

The other metals rarely occur, chemically combined with rocks or strata, but are found either disseminated in grains or irregular pieces, or forming beds between earthy strata, or filling veins that intersect rocks in different directions, as represented Plate IV. fig. 4. *a* and *b*.

The metals, except gold and platina, are rarely found pure, but are generally combined, either with sulphur, oxygen, or acids; in this state, they are called *ores*. When the metals occur pure, they are called *native metals*: thus we have native gold, native iron, &c.