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MINING.

FAULTING IN VEINS.

Written for the Engineering and Mining Journal by S. F. Emmone. (Continued.)

Such fractures are not necessarily plane surfaces. The fractures produced by Daubiés in a plate of gless, by subjecting it to a torsional strain, though fairly straight and generally parallel to such other on the strike, were curved on the dip or across the plate. In nature they are generally found to be irregularly curved in both strike and dip, though they are apt to be drawn as comparatively straight, because it is impracticable, or not worth while, to show all their minor irregularities. Such irregularities are made use of in treatises on vein formation to account for the supposed open spaces in which the ore is deposited. The graphic illustration of this explanation is generally a sinuous line assumed to represent the intersection of the original fracture with a horizontal surface. If we divide a sheet of paper or a board along such a sinuous or curved line, and move one part laterally upon the other, projecting points of either side will alone be left in contact, and between such contacts will be open spaces of varying size and form. But in this case the board or sheet of paper is unconfined, and the lateral movement has produced an actual prying apart of the two portions, so that after the movement the board is wider than it was before.

In rock fractures at great depth there is not this freedom of movement, and the pressure of gravity would be opposed to such prying open. In my eximinations of veins I have always looked with particular cure for places that bore evidence of having once been open cavities, but have never found any that I felt sure had actually been open in the way the theoretical illustration supposes, for the reason that the surprising capabilities of the section of replacement, as actually demonstrated, render it difficult to distinguish what is actual filling of open spaces from what is simply a metasomatic change of material already in the first.

We can only be sure that vein materials are such a filling when, by a banded or concentric structure similar to that seen in vugs or in the successive layers deposited around fragments of country-rock, as in the Bull-Domirgo and other well known mines, they show evidences of having been deposited by freely moving solutions. Even in the comparatively rare instances of comb structure, most of which I know only by the description of others, I am inclined to think that some of the layers of mineral may be the replacement of squeezed and altered bands of country-rock material which, by the mechanical alteration due to pressure, combined with a decomposing action of percolating waters, had been rendered peculiarly susceptible to chemical attack by mineral-bearing solutions. My own observations have led me to doubt if pressure will admit, as a rule, of any openings being left within a fault fissure other than relatively small itregular spaces between bands and fragments of draggad-in material.

I have already given somewhat at length my views as to the most rational method of regarding ore deposits, which include a description of the various effects of faulting as seen in fissure veins, and wil not, therefore, discuss them again here. I will only repeat that, in order to avoid the misconceptions which some engineers seem to entertain in regard to the causes of vein phenomena, it is first important to bear in mind that the full phenomena are the result of movement and pressure combined, and that what appears to be the filling of vein fissures is, in a measure, the more or less complete replacement of material already there.

Now, slity cloavage has long been recognized to be the result of intense pressure in a comparatively plastic rock material, combined probably with a certain amount of intermolecular movement. As geological studies in the internal structure of rock masses become more thorough, more of the larger features of schistosity in originally harder rocks are found to result from the same cause; what were once supposed to be the bedding planes of large areas of metamorphic rocks are now found to be the result of pressure, and of certain resulting changes in internal structure and mineralogical composition, and to be entirely independent of original bedding.

tion, and to be entirely independent of original bedding. The sheeting of rock material along a fault fissure is a developement of the same process, localized along a given zone, and being generally in less plastic rocks, not as a rule so regular, and the movement gives it a greater extent parallel to the fracture than laterally. Nevertheless, in faults of great displacements a sort of sheeting of the country-rock is often developed for considerable distances on either side of the main fissure by a series of parallel fractures, on which the movement of displacement is not infrequently in part distributed, producing what are known as step faults. These secondary fractures are probably produced in larger measure by movement that, by shock, for when the displacement is slight they are less frequent. Even if there be no perceptible displacement, however, provided the pressure by sufficient, the phenomena of stuation and crushing may be produced, as Doubree has shown experimentally (Geol. Exper., p. 376.)

(To be continued)

Some fancy the charms of the lily-white maid, Of etherial form and languishing eye, Who faints in the sunshine and droops in the shade, And is always "just ready to die."

But give no the girl of the subshipy face, The blood in whose veins courses healthy and free, With the vigor of youth in her movements of grace, Oh, that is the maiden for mo!

She is the girl to "tie to" for life. The sickly, comulaining woman may be an object of love and pity, but she ceaves to be, a "thing of beauty " worn down by femate weakness and disorders, subject to hysteria and a martyr to bearing-down pains. It. Pierce's Favorite Prescription is a sure cure for these distressing complaints, and will transform the feeble, dio ping sufferer into a healthy, happy, blooming woman. Guranteed to give satisfaction in every case, or money paid for it refunded.