

Q. Do you find the vein in the No. 3 shaft narrower or wider or of the same width that the shaft itself is? A. The ore bearing part of the vein is narrower than the shaft. It lies near the foot of the shaft and there was over it from two to four feet according to the breaking of the shaft—

Q. Can you tell— A. May I finish this answer? Will you kindly read that to me again. (Last question and answer read.)

A. (Continued.) Before reaching the last seen hanging wall, which hanging wall is not continuous, but is sometimes broken into by the mining operations and for considerable spaces obliterated.

Q. Can you tell from an examination of No. 3 shaft, as it is at present, what is the width of the vein at that place? A. I cannot. I simply see that a little above, 2 or 3 feet above, the upper boundary plane of the ore is another parallel plane, which is undoubtedly in my mind, a part of the shearing system of the whole. But no works give me access to planes; if they exist, below the lower level of the ore; and I do not believe that I saw the upper planes of the veins; the ultimate plane of the vein, anywhere in this shaft. My reason for that is, that a few feet to the east, at the east end of this brown drift, which is the south drift from the Iron Mask stope, what I believe to be, from its position and character, an eastward projection of the ore body of this shaft.

Q. That is No. 3 shaft? A. No. 3 shaft—is accompanied by two superior parallel walls, at distances of from 4 to 5 feet in actual cross section. The lower one of these I believe to be the one which exactly geometrically fits it and which is the one which is the wall I have spoken of as overlying the ore of this shaft, but we have never cut high enough in No. 3 to get at the upper of those walls, and we have never cut below to get at the lower walls.

Q. From the explanation you have given, I understand this is what you described yesterday as the shear zone vein? A. Yes, sir, the shear zone vein.

Q. Now, you spoke a moment ago of the hanging wall disappearing. What hanging wall were you referring to? A. The lowest plane seen above in the No. 3 shaft.

Q. And what is the cause, if you know it, of its disappearing? A. I explained that, that it was due to cutting in by the miners, but they had never broken accurately to the planes; that they had sometimes left some material below it, and for large distance they cut into it.

Q. And had not gone far enough back to cut the wall? A. Any correlative planes that might be there.

Q. In the case of a vein that you have described, what would be the only possible way of accurately and mathematically demonstrating where the two ultimate walls of the vein were? A. By a thorough cross-cutting into the hanging and foot walls.

The Court: In the present shaft? A. In any case; in this case exactly the same cut.

The Court: And cutting out any particular place? A. Yes, sir.

#### DIRECT EXAMINATION

Mr. Davis: I may be a little long over this No. 3, but that is the shaft so much fighting is about.

The Court: I want all the information possible.

Q. Now, Mr. King, will you kindly come around here and point the ore in this Exhibit No. 90 out to the Judge and explain the different ores as you find

them. This is a sample from near the top of No. 3 shaft. I suppose that will explain the oxidation? A. Yes.

Mr. Davis: All of this evidence is being given with reference to the pieces of ore in Exhibit.

The Witness (Proceeding to illustrate to the Court from Exhibit No. 90): This is the type of the metallic mineral of the No. 3 shaft and of the vein at large. It is taken from near the surface, and this dull bronze lustre is a characteristic of the ore and of the copper—which is much more easily decomposed than the pyrrhotite, more soluble, appears only scattered. There (illustrating), for instance, is a little yellowish spot, which is the copper. Here is a sample which contains but little of the pyrrhotite or the metallic mineral, and is chiefly of country rock. The sample, therefore, is composed of a mixture of what I should probably consider the country rock and of the metallic mineral such as you would get by breaking into a more or less decomposed and not always perfectly defined outcrop. Here, for instance, is a piece of the siliceous, and the quartzose part of the vein which is found, but not an absolutely constant accompaniment, which contains a good deal of the copper mineral chalcopyrite. Quite often, as near the surface, some of the copper has been oxidized, and has left a green stain of itself, which indicates its former presence. That is the characteristic of this pan full of ore. It is made up of a mixture of broken country and ore material, with more or less silica.

Mr. Bodwell: I will put those in a piece of paper which Mr. King referred to.

The Witness: I picked that out on purpose to show the mixture.

Mr. Davis: This is more for the purpose of showing your Lordship the ore itself and having Mr. King point out the different minerals, than anything else.

Q. From what you said, Mr. King, you apparently find country rock more or less altered, and perhaps not altered at all in the vein. Is that correct? A. In parts of the vein.

Q. Here is Exhibit 91. This is the second one down in the shaft. A. (Illustrating.) I take the two top specimens, as illustrating precisely the same phases that I spoke of before. This sample is chiefly pyrrhotite, but contains a little copper mineral; this is chiefly country rock, containing a good deal of chalcopyrite and some calcite.

Q. As to Exhibit 92, first of all, Mr. King, what ore do you find in that, speaking generally? A. You mean what ore minerals?

Q. Yes. A. Pyrrhotite and chalcopyrite, with the calcite which I mentioned as accessory.

Q. You found both of those? A. If you will allow me to look at the very first specimen again. (Referring to Exhibit 90.) It has perhaps a little lime, but it is largely quartz.

The Court: Is that term "shear zone" that you mentioned yesterday and this morning a geological term? A. Yes, sir.

The Court: A very well known one? A. Yes, in modern times; it has not been very well recognized until very recent years. It appears in geological literature in a prominent way in recent times.

The Court: Owing to the new theory by compression. A. Owing to the new observations chiefly. This (referring to Exhibit 92) is again a mixture of country rock; and when I say country rock, I do not mean in this case to limit it to the country rock exter-