

FREE GOLD BELOW OXIDATION ZONE

Free gold, though commonly found entangled in brown "gossans" or "blossom" in the upper zone of a vein where it has been liberated from the iron pyrites matrix by the oxidizing influence of surface waters, is not found nor always confined to this upper zone, a zone which, by the way, may extend from a few inches to several hundred feet below the surface. Gold is sometimes found far below the influence of surface waters and oxidizing influences deep down in the mine in the unaltered quartz of the vein, or associated with unaltered sulphides in the vein.

In the Ontario mine at Central City, Colorado, free or crystalline gold occurs in the vein at a depth of 1,000 feet, associated with silver-bearing galena. Galena is an unusual associate for gold. Gold is commonly associated with iron and copper pyrites and tellurides, sometimes with zinc blende, not often with gray copper and rarely with lead or galena. In the Topeka mine, in the same neighborhood, a vein of white unoxidized quartz from six to ten inches thick is found in the lower levels, lying between the hanging wall of country rock and a wall of galena and zinc blende, forming the main vein. This vein of quartz is for some distance clouded over with films or splashes of free gold to an extent we have never seen equaled. The comparative pureness of the banded quartz vein and its position next to the hanging wall and parallel with the bodies of footwall sulphides is suggestive of its being a later filled vein fissure, introduced at some later time by a reopening of the main fissure after it had been formed and filled with sulphide ores.

In Grass Valley, at Nevada City, and at some mines along the mother lode of California, large pockets of free gold are found more than 1,000 feet below the surface in unoxidized quartz, and intimately associated with or lying upon unoxidized sulphide ores.

All these occurrences of free gold are in unaltered unoxidized zones, remote from all surface influences. The gold is in a crystalline form and is not a pseudomorph after any other mineral, but is suggestive of having been deposited in the same way as the accompanying sulphide ores, though at times later, as it appears to crystallize over and entwine the sulphide ores, though in some cases as in that of the Ontario, the gold is said to be overlain by the galena.

From the above instances it would appear that gold may be deposited in veins directly from solutions in a free and crystalline state, like the common sulphide ores, without being first chemically or mechanically combined with or locked up in the sulphide ore matrix, from which it is commonly found freed by oxidation near the surface or oxidation zone.

The consideration of these facts may sometimes have an important relation to milling. Too often it happens that the ordinary stamp mill is good only for the first fifty or 100 feet of the vein, or for the zone of oxidation in which the gold is free. When the unoxidized zone is reached, the stamp mill is then only fit for crushing the ore and for concentrating purposes, the treatment required being smelting or cyaniding. Little or no gold is collected by amalga-

mation on the plates. In quite a few instances, however, after the main zone of free milling oxidized ore has been passed, quite a perceptible amount of gold is found for some depth free, or between the interstices of the sulphides or set free in minute crevices of oxidation in the sulphide zone. A good example of this is at the so called "Manco's Contact" in the La Plata mountains, where a zone of gold bearing pyrites occupies a fissure or the bedded plane of a gently dipping sedimentary quartzite hogback of presumably Mesozoic age. This bed of pyrite comes right to the surface and at a few feet from it the majority of it is unoxidized, but following down the dip of the hogback into the hill a series of narrow channels or "rat holes" run down with the dip in the center of the sulphide bed. These water courses have oxidized the sulphide ore on either side and set the gold free, consequently stamping and free milling has been continued on the ore for some years and to as great a depth as the mine has reached.

If gold is sometimes found profitably in unaltered quartz and sulphides, as in the instances cited, such would be an encouragement to keep up the original free milling plant. Again, a mining engineer can not always feel confident that a prospect showing free gold on the surface will at depth and in the sulphide zone necessarily cease to contain it. — Arthur Lakes in Mining Reports.

WILL PROBABLY PUT IN PUMPS AT LISTEN LAKE

J. Win Wilson, manager of the Listen Lake, left this afternoon on a ten days trip east, to arrange with the stockholders for making certain improvements at the property. The amount of water now in the shaft makes pumps necessary for effective work, and it is Manager Wilson's purpose to confer with the eastern people to this end.

The shaft is down ninety-feet, and is below the water level. The intention is to sink to the 100 and then crosscut the vein again. The shaft is now about two feet outside of ledge matter.

OSWELL DEVELOPING THE AMAZON GROUP

George Oswell, mine superintendent at the Golconda, has charge of the development work at the Amazon for J. G. English, while the former property is closed down. Mr. Oswell came down from there today. Mr. English, while in Sumpter a short time ago, made a visit to the Amazon, and arranged with Mr. Oswell to take charge of the work. He has a good force of men engaged and will prosecute development.

The Amazon is a Cracker Creek mother lode property.

Eastern Stockholders Here.

Ray Nye, of Fremont, Nebraska, who is largely interested in the May Queen, accompanied by Mrs. Nye and John Thomsen, manager of the company, and Mrs. Thomsen, arrived this morning and left immediately after noon for the mine. Mr. Nye will remain with Mr. Thomsen for several days, looking after his interests.

\$85 ROCK FOUND IN THE OVERLAND

M. E. Bain last evening received the assay returns from the ore which he brought in from the Overland the previous day, mention of which has been made in The Miner. The lowest assay received was \$47, the highest \$132, the average being about \$85.

He returned to the mine this morning and will have the rock sacked as fast as it can be taken out, and shipped to the smelter here.

While he has had some individual assays that ran higher than any of these, this is the best average which he has yet found in the mine. The values mentioned above are in gold and silver. The ore also carries some copper, as an analysis made at the smelter demonstrates.

This new character and high grade rock was found in the main ledge, on which the drift is being run. At present it is only ten or twelve inches wide; but has every evidence of gaining in width. The tunnel is now approaching a point horizontally beneath the shaft, high up on the hill, where such excellent rock was found last season, and on which the great value of the mine was based.

EASTERN OREGON STUDENTS BRIGHTEST

J. B. Horner, registrar of the Corvallis Agricultural college, left this afternoon after spending several days in Sumpter in the interest of the institution. Mr. Horner says that eastern Oregon is very poorly represented in the school. Last year out of an attendance of over 500, less than 100 came from eastern Oregon, and only four from Baker county. And eastern Oregon, too, is paying a big per cent of the state tax which goes toward the support of the school.

The institution has all the departments usually found in a first class college or university with few exceptions, beside departments in manual training, agriculture, domestic science, business and the like. There is also a thoroughly equipped mining department. Mr. Horner thinks that one thing which keeps eastern Oregon students away is the railroad fare since the school is in the eastern west end of the state. He is trying to perfect an arrangement with the railroad companies for a reduction of fare for students. The eastern Oregon students, Mr. Horner says, are the brightest in the school. They are usually a little behind when they enter but soon take the lead. He attributes their quickness of mind and general aptness to the mountain climate and surroundings to which they have been accustomed.

Mining Exhibit.

Pete Healy has added a mineral cabinet to his refreshment stand, the Elk Head, conducted on Center street. He has secured the specimens of the late Tom McEwen, which with his own collection, makes an attractive display.

E. L. Kennon, Whitney, Oregon, number, sash, doors, shingles, building material, mining timbers.

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