

identical with the lustrous mineral previously described. I will suggest that the dullness of the surface may be due in part to the presence of gas-cavities, visible under a power of 70 diam, which are so numerous as to cause the fragments to float on water.

The Asphalt Wash mineral differs from albertite and grahamite, to both of which it has some resemblance, in its greater hardness; in containing substances soluble in alcohol, and in the high percentage of substances soluble in ether.

The mineral has probably been derived, originally, from the highly bituminous shales of the Green River Eocene, which formation is predominantly developed in the surrounding country.

NOTES ON A TRIP TO TELLURIDE, SAN MIGUEL COUNTY,
COLORADO.

BY P. H. VAN DIEST.

[ABSTRACT.]

After a description of the mode of travelling, the scenery, and the general formation, mention was made of the typical rock section seen in approaching Marshall Basin by the trail from Pandora. The red beds of the Trias are overlaid by a hard gray or red sandstone, followed by a thin layer of limestone, and above this by a conglomerate made up of fragments of the above named sedimentary rocks with trachyte, cemented together by an earthy trachytic tufa. This changes upwards to a breccia, which rarely contains sandstone fragments, and has a crystalline trachytic mass which has melted together pieces of red and greenish trachyte. Above this follows andesite and what Breithaupt would have called timazite, containing a greenish hornblend. All these trachytic flows have a thickness of about 2,500 feet.

In this trachytic cap the outcrops of veins are readily seen. They are either gold or silver bearing.

Next the Savage Fork Basin was described. At its head the surrounding walls appear nearly vertical. The trachyte forming these walls contains galena, iron and copper pyrites, in particles visible to the naked eye. In the middle of the basin vast tracts of snow partially cover the accumulated debris from these walls, and in some places fragments of pure galena, several cubic feet in size, were seen projecting out of the snow. The snow has, principally along its rim, a beautiful crimson color, due to the microscopic organism known as "red snow." A piece of this hard red snow was melted and the residue carefully dried. By slow drying the red color disappeared and the substance turned green. Under the microscope this dried matter shows cells with little dents or impressions.

Bear Creek Canon is situated directly south of the town of Telluride. The Bear Creek Falls run over the croppings of a prominent silver vein, opened by tunnels and cuts, several miles in extent. The tunnel or adit near the falls, is in red sandstone, and shows in the breast. copper pyrites, brittle silver, and galena. This vein begins in Prospect Basin, west of Bear Creek. Easterly it cuts through the breccia and the trachyte and extends into La Junta, Deer Trail, and Bridal Veil Basins.

Above the Bear Creek Falls, first the breccia and then the trachyte is reached. A dike running north and south is here observed, which has faulted the strata considerably. Higher up the canon widens into a basin, where several dikes of hard basaltic-appearing rocks are observed, running through the lighter colored trachyte. The Nelly gold vein crops out near one of them. The vein is opened by three adits and winzes. In the lower adit the vein is two feet in width carrying some good ore. Then for over 150 feet it pinches to a few inches, but suddenly widens to five feet with a good showing of gold ore. Then comes in a cross-vein which is faulted by the Nelly vein ten feet to the west. The middle tunnel starts with a thin streak widening soon to five feet, with very rich pockets. A farther part of this vein is barren, but at the end of the tunnel it comes into good ore, corresponding to a rich part of the upper tunnel. The succession of corresponding barren and rich parts in the different tunnels indicates that the ore chute dips into the moun-

tain, that is, to the west. The ore is crystallized electrum containing two parts of gold to one part of silver.

The continuation of the Nelly vein can easily be traced easterly across the creek, plainly cropping out as a brownish quartz streak, through the gray trachyte. In this part of the vein limonite having the form of pyrite crystals is observed, but pyrite itself is not found in the vein, although the surrounding country rock contains it in abundance. There is hardly any doubt that the theory of vein-filling with gold quartz, so well explained by Mr. R. C. Hills, in his article on the "Ore Deposits of Summit District."* holds good in this region. The reaching of a rich part of a vein in this region is almost invariably announced by open spaces or cavities.

Northerly there occurs a second vein—the Ballard—running parallel to that just mentioned. It is of the same character and the gold contains the same proportion of silver. Although a strong fissure, is not so extensive as the other, which is probably due to the occurrence of two cross-veins. The force producing fissures—probably contraction by cooling—thus found a partial vent through other channels, and its effect, in the main fissure was diminished. Beyond these cross-veins the Ballard vein divides into several small and short branches or spurs. This vein is opened by extensive workings which reveal a succession of barren and rich parts and also that the chutes, as in the Nelly vein, dip into the mountain, to the west. The outcrop of the vein can be followed nearly to the top of Ballard Mountain, where, beyond the cross-veins, it subsides into a network of small stringers. On the opposite side of the mountain a large fissure is observed having the same direction and dip as the Ballard. It is considered as a continuation of the latter, but it is more probably a new fissure started by contraction along the old line of weakness. This vein runs through the Lake Basin.

The walls of this basin are vertical and show plainly that they are formed of different flows, some having the character of andesite, others more nearly of rhyolite. In places it looks as if

* Proc., Vol. I, pp. 20.

the upper flow took place after the fissures of the main mass were already formed and filled by vein matter.

North of the Ballard several parallel veins occur having the same general character. It is claimed that in the Aurora and New Australia lodes, gold amalgam is found.

NOTE ON COLUMBITE.

Prof Wm. P. Headden stated that he had recently received for examination, a mineral supposed to be cassiterite, from Turkey Cr., Jefferson Co., Col. which upon analysis proved to be columbite specially rich in manganese, and also containing a small amount of tin. He had been able to find but one published analysis showing a greater amount of manganese than the present one. The analysis is as follows:

Cb ₂ O ₄	77.83
WO ₃ (SnO ₂)	1.00
FeO	9.92
MnO	11.23
MgO	trace
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	99.98

Sp. Gr. = 5.48 at 15°C.

MISCELLANEOUS NOTES AND REMARKS.

Mr. Whitman Cross exhibited specimens of topaz and garnet occurring in lithophyscs of rhyolite from near Nathrop, Col. A detailed description of the species and their mode of occurrence was reserved for a future communication.

Mr. Richard Pearce presented specimens with remarks. 1. Artificial magnetite from the bottom of an old furnace at Argo, near Denver. The magnetite occurs in small but very perfect and brilliant octahedra. 2. Pseudomorphs of cassiterite after orthoclase from Wheal Coates, near St. Agnes, Cornwall, Eng.