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REGULAR MEETING, DECEMBER 2d, 1867.

President in the Chair.

Thirty-five members present.

Messrs. S. W. Holladay, Henry R. Goddard, and Henry K. Moore, were elected resident members.

Donations to the Library: Bulletin de la Société Imperial des Naturalistes de Moscow, 8vo., Moscow, 1866.

Professor Silliman read the following notices:

Note on three new Localities of Tellurium Minerals in California, and on some Mineralogical Features of the Mother Vein.

BY B. SILLIMAN.

(a.) **TELLURIUM MINERALS.**—It is well known to mineralogists and others that in the Melones Mine, on Carson Hill, there occurs, in considerable abundance, a tellurium compound which has been called Sylvanite by some mineralogists, but apparently without sufficient authority. It occurs in one of the veins on the Melones property, associated with Dolomite and quartz, in what appears to be a gneissic rock; but the mine being under water I am dependent on the specimens kindly furnished me by the intelligent proprietor, Mr. G. K. STEVENOR, for my knowledge of the gangue.

At the "Golden Rule" Mine, on the mother lode near Poverty Hill, in Tuolumne County, I detected in August last the same tellurium minerals which are found at Carson Hill in the Melones. The veinstone here is an argillite, with thread-like veins of quartz crossing the cleavages of the slate, and in these *filons* of quartz gold is seen in beautiful specimens. It was in this association that I detected two or three small groups of brilliant crystalline plates, identical in appearance and physical characters with the Melones mineral, which has been called Sylvanite, and affording the same blowpipe reactions.

At the Rawhide Rancho, a mine near Jamestown, on the mother lode, of which I have had occasion to make a careful study, there occurs a deposit or shoot of very rich sulphides containing copper, antimony, iron, arsenic, with gold, silver and tellurium. This ore has in general a bronzy, blackish appearance; shows often free gold in scales of a blackish yellow color, and appears to be a kind of fahlerz, or gray-copper ore, the value of which in silver and gold rises to one thousand dollars per ton, (2,000 lbs.) or even higher. Associated with this ore are brilliant sectile, flexible scales of the same tellurium compound which occurs at Stanislaus and Golden Rule, but in the Rawhide Mine intimately blended with the blackish sulphides before-named—occasionally in nests or small bunches with metallic gold. The blowpipe readily detects in this ore antimony, arsenic, tellurium, copper, iron, manganese, lime, magnesia, chromium, alumi-

num, gold and silver. It is only in portions containing dolomite and the peculiar greenish mineral, so characteristic of the mother lode, that lime, magnesia, alumina, and chromium are detected. In portions of the fahlerz-like mineral which appear nearly pure, the blowpipe detects only antimony, arsenic, copper, iron, and manganese.

Having transmitted characteristic specimens of these ores, with other interesting California species, to Professors Dana and Brush, at New Haven, these mineralogists inform me, by letter just received, that the tellurids above-named appear to be referable to a new species hitherto undescribed, and Prof. Brush proposes to undertake an analysis of it upon the specimens transmitted by me, which are barely sufficient for the purpose. It is a tellurid of silver and gold, containing more silver than gold. Associated with it is a white cleavable mineral which Prof. Brush thinks may prove to be native tellurium; this is in the Melones and Golden Rule specimens.

Hessite. I obtained from the Reist Mine, on the northeasterly end of Whisky Hill, Tuolumne County, a very small crystal corresponding in its physical characters to the extremely rare telluric silver, known to mineralogists as *Hessite*. It occurs in the auriferous slates to the east of the main vein; the slates being opened here for a width of seventy-five feet as an open cut. My attention was called to the existence of this species at the Reist Mine by Mr. D. T. Hughes, of Tuolumne County, who informed me that there was an interesting mineral species there containing, as he believed, tellurium, and that masses of it, half an ounce in weight, had been obtained some years since. Unfortunately these specimens fell into ignorant hands, and were destroyed in idle attempts to determine the nature of the substance. On visiting the locality, which is within one mile of the Rawhide Rancho, and on the opposite side of Table Mountain, I found that the proprietor was exploring in a different part of the open cut from that where this species was found, the place being under water. Fortunately in a collection of minerals from Whisky Hill, formed by Mr. Williams, one of the proprietors, and preserved in his house there, I was able to detect one small mass of the *Hessite* which Mr. Williams divided with me. This Mr. Hughes recognized as identical with the larger masses he had obtained at this mine some years since.

Prof. Bush, in his letter to Prof. Silliman, of October 29th, recognizes this species as *Hessite*. The specimen was associated with native gold which had been amalgamated and heated, but the constitution of the *Hessite* did not seem to be affected thereby.

"*Tellurid of Silver*" is mentioned by Blake, in his list of California species, as found by him near Georgetown, in El Dorado County, in 1854, washed from the gold drift, but the parent vein had never been found.—Ross Browne's Report, 1867, p. 209.

It appears therefore, from the present state of our knowledge, that a compound of gold and silver tellurium belonging probably to a new species has been detected in three localities upon the mother vein, and associated with it in two of these, probably also native tellurium; and that *Hessite* (the tellurid of silver) has been found in place in one locality and in the drift in another. I have also

detected the foliated tellurium in extremely minute quantity in one of the mines at Angels, and I mentioned in a publication, in 1864, its probable occurrence among the ores of the Josephine and Pine Tree Mines of Mariposa. A careful scrutiny will probably detect those compounds of tellurium at other points when the mother vein is opened, as at Blue Gulch, Quartz Mountain, and Whisky Hill. I have already recognized the blackish antimonial copper sulphides at the App Mine and Silver's Mine, and in the croppings on the surface of Whisky Hill. Indeed it may not be too much to state that these ores appear to be somewhat characteristic of those portions of the mother vein occurring south of Angels, and especially wherever it is inclosed in magnesian rocks.

Genth has named a species *Melonite*, from Melones Mine, which he says is a tellurid of nickel. I have not been able to recognize this compound among those ores of the Melones, which I have seen.

(b.) SOME MINERALOGICAL FEATURES OF THE MOTHER VEIN.—From the opportunity I have had of studying the mother vein, I arrive at the general conclusion that its mineralogical characteristics vary greatly with the chemical constitution of the rocks which inclose it. Wherever the serpentine or talcose and calcareous rocks from the inclosing walls, or are near it, the mineral contents of the vein are essentially different from those observed where the inclosing rocks are argillites, or syenites and diorites.

These we find at Mariposa, in the Josephine and Pine Tree Mines, at Peñon Blanco, Maxwell Creek, Blue Gulch, Quartz Mountain, Silver's, Whisky Hill, Rawhide, Chapavele Hill, Carson Hill, Angels, and Placerville—at all which places I have examined the mother lode with more or less care—a peculiar light apple-green mineral, occurring in scales, associated with iron pyrites in small and brilliant pentagonal dodecahedrons and implanted in a gangue of dolomite mingled with quartz. The dolomite is of the variety known as ankerite, and by its decomposition, which seems hastened by the oxidation of the associated pyrites, gives origin to those highly characteristic masses of brown and reddish-yellow iron gossan which form the characteristic feature of the outcroppings of those portions of the mother vein just enumerated. These gossans always retain the bright green mineral before alluded to unchanged, as also cellular quartz which discloses in its rhombic cavities the form of the decomposed crystals of dolomite or ankerite whose removal has left the vacant spaces. Before decomposition this triple carbonate of lime, magnesia, and iron is brilliantly white, and its real chemical character would never be suspected.

The green mineral, so far as I can ascertain, has never been described, although it has often been noticed. It has been called by some, *nickel gymnite*, and I have once distinguished it by this name in a mining report. But this is a misnomer which I take this occasion to correct; nickel gymnite of Genth, found at Texas, Penna., is a hydrous silicate of magnesia, lime, and nickel. The species so characteristic of certain portions of the mother vein is anhydrous, and contain no nickel.

MARIPOSITE (Provisional Name). Before the blowpipe it yields evidence of the presence of the protoxides of iron, lime, magnesia, and potassium; of the

sesquioxides of chromium and aluminum with carbonic, silicic, and sulphuric acids. The oxide of manganese and sulphuric acid exist only as traces. The mineral is probably new, and must be referred to the mica section of an hydrous silicate. Should it, on a careful chemical examination, prove to be new, I would suggest the name *Mariposite* as an appropriate name for it, as it was on the Mariposa estate that it first attracted my attention, and where it exists in great abundance.

This species which is so characteristic of the mother vein, in connection with magnesian or chloritic rocks, occurs nowhere so far as I have observed in this vein when it is inclosed in argillites or syenites.

Of sulphides occurring in the mother lode there are two classes which deserve special mention, beside the ordinarily occurring pyrites of iron and copper.

These are the (1) antimonial copper sulphides, and the (2) antimonial lead sulphides; both are arsenical and are rich in both gold and silver.

To the first class allusion has already been made in the former part of this paper. Besides the Rawhide Mine, they are found in most of the openings on Whisky Hill, in Tuolumne County, in the Silver, App and Josephine, and Pine Tree Mines. The lively stains of blue malachite, seen at Williams' Mine, on Whisky Hill, and occasionally elsewhere, are derived from atmospheric decomposition of the antimonial copper sulphides. The blowpipe detects the presence of iron, antimony, arsenic, copper, sulphur, tellurium (in certain cases) sulphur, gold and silver. The vein is so abundant as to give to the raw ore, in some cases, magnetic properties; and the button from the blowpipe assay becomes strongly magnetic.

The antimonial lead sulphides occur in considerable abundance at the Trio Claims, on Whisky Hill. The appearance of this ore recalls that of granular galena. The gold and silver value of this ore is very high, but no portion of it can be saved by the ordinary mechanical treatment with mercury. The blowpipe detects the presence of antimony, lead, iron, arsenic, sulphur, gold and silver. There is no trace of copper, and the quantity of arsenic present is slight. The ore is therefore essentially an antimonial lead sulphide, rich in gold and silver.

There is good reason to believe, that as this remarkable vein becomes more thoroughly explored, it will disclose other new or rare compounds containing gold, and that these already noticed will be found to be more widely diffused when proper care is applied to the study of the mineralogy of the lode.

In Amador County the mother lode is found in connection with argillaceous slates and syenite. Thus at the Eureka Mine, of Hayward, known as the Amador Mining Co., the vein has a soft, black slate for its foot wall and a heavy, firm syenite or greenstone (called *granite* by the miners) for the hanging wall. The mineralogy of the vein is extremely simple, being in fact nothing more than iron and copper sulphurets, chiefly the former, with rarely galena or blende. I sought in vain for any of the species mentioned in the former part of this paper. There are no magnesian minerals, and the *Mariposite* is entirely absent. The other mines of that range, as far as I examined them, all partake of the same simplicity in mineralogical character. There can be but little

doubt, as it appears to me, that the inclosing rocks in each case exercise an important influence on the mineral contents of the vein.

SAN FRANCISCO, December 2d, 1867.

Mr. Stearns read the following :

List of Shells collected at Bodega Bay, California, June, 1867.

BY ROBERT E. C. STEARNS.

In pursuance of the idea mentioned in my paper on the shells of Baulines Bay, of examining the bays and coast to the north of San Francisco, I made a brief trip to Bodega Bay in company with my friend Dr. Newcomb, on the thirteenth of June, 1867. Most of the species enumerated were collected within a very limited area, between tide marks, at the extreme point of Bodega Head, as the arm of land is called, which extending in a southerly direction from the general line of the coast, incloses what is known as Bodega Bay. The bay itself is, for the greater part, left bare at low tide, and the flats then exposed, composed of sandy mud, contain abundance of the common bivalves of the coast, principally *Macoma*, (two species) and *Tapes*, in all its varieties : *Saxidomus gracilis* may also be found here in considerable quantities, and is at certain seasons dug by the Indians, together with the other so called "clams." At the spot where the principal portion of this collection was made, the outcropping rock is a coarse granite, upon which *Litorina planaxis* is found in great numbers. The limited time at my disposal, at the season when the trip was made, was only sufficient to admit of a brief, and therefore unsatisfactory reconnaissance ; nevertheless, at least seventeen species were detected which have not heretofore been found (or reported) so far to the north. Many of these species I failed to find at Baulines, and some of them have not been reported north of the Bay of Monterey. At Baulines, the rocks are principally shales, and contain many species of pholads, which as will be seen by a glance at this list, if not entirely absent, must be rare at Bodega ; the various "nestlers" which are found associated with the borers are also wanting ; *Haliotis rufescens* is abundant upon the rocky islets off the coast, but not even a fragment of *H. Cracherodii* was met with.

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| 1. Cryptomya Californica, Conr. | 15. Cardium corbis, Mart. |
| 2. Schizothærus Nuttalli, Conr. | 16. Lazaria sub-quadrata, Cpr. |
| 3. Entodesma saxicola, Baird. | 17. Kellia Laperousii, Desh. |
| 4. Mytilimeria Nuttalli, Conr. | 18. Lasea rubra, Mont. |
| 5. Machæra patula, Dixon. | 19. Mytilus Californianus, Conr. |
| 6. Macoma secta, Conr.* | 20. — edulis, Linn. |
| 7. — nasuta, Conr. | 21. Modiola*ornicata, Cpr.* |
| 8. Tellina Bodegensis, Hds. | 22. — recta, Conr.* |
| 9. Tapes staminea, Conr.† | 23. Axincea subobsoleta, Cpr. |
| 10. — — var. Petitii, Desh.† | 24. Pecten hastatus, Sby. |
| 11. — — var. ruderata, Desh.† | 25. Hinnites giganteus, Gray. |
| 12. — — var. diversa, Sby.† | 26. Placunanomia machrochisma, Desh. |
| 13. Saxidomus gracilis, Gould.* | 27. Helix Nickliniana, Lea. |
| 14. Chama exogyra, Conr.* | 28. — Columbiana, Lea. |