177. **Gold-telluride Minerals from the Suzaki Mine.**

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Some thirty years ago, sylvanite was reported to have occurred in a scarce amount in the Nojiri mine. Since then, however, no gold-telluride minerals have been known from any mine in Japan. Hence, a new remarkable occurrence of calaverite and sylvanite in the Suzuki mine in the province of Izu seems to be worthy of a brief description. This mine has been worked for some pyritic deposits,\(^1\) which are believed to have replaced some Tertiary propylite and tuffs in a small peninsula on the east side of the Shimoda harbour, famous for its historical association at the beginning of the period of modern Japan. The deposits are, in the main, chimney-shaped aggregates of pyrite with some quartz and chalcopyrite. No gold mineral has been detected, though a rich content of gold in some ores from the lower levels has been noted by the mining engineers.

A special type of gray ore was, however, found, last September. It covers the wall of a large cavity, found at the boundary between the ore deposit and the country rock. The ore consists of several layers in the following succession:

1. Inner gray crust with some white metallic layers,
2. Intermediate gray crust with metallic grains and needles, sometimes radially arranged,
3. Outer crust, essentially of quartz,
4. Outermost crust, of pyrite, marcasite and chalcopyrite.

Besides, in some specimens, white metallic veinlets traverse the inner and intermediate layers.

When a fragment of the ore is heated in a burner, a vivid indication of tellurium appears in the colour of flame, and a number of small globules appear on such parts of the surface, where the white metallic minerals have been observed in forms of grains, layers and veinlets. The globules from different portions are separately removed from the ore and are used for blow-pipe and other qualitative analysis.

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By this means, the chemical compositions of several metallic minerals with different modes of occurrence were detected independently, and were compared with the results of microscopic investigation of the polished surface of the ores. The results are in good accordance with each other.

The white metallic layers in the inner crust consist essentially of gold and tellurium with only a small amount of silver, and have the microscopic characteristics of calaverite, as stated by Murdoch,1) Davy,2) Farnham3) and Borchert,4) whereas the white needles and particles in the intermediate layer are composed essentially of tellurium and exhibit, under the microscope, the characteristics of native tellurium. The white veinlets, which traverse these layers consist of gold and tellurium, with some silver, which is clearly detected when hydrochloric acid is added to a solution of the mineral in nitric acid. The characteristic cleavage and etched structures of sylvanite, which were fully investigated by Borchert on well-formed crystals, are clearly observed also in this veinlet mineral. Thus, three tellurium-bearing minerals, calaverite, sylvanite and native tellurium, are found in the ores from the Suzaki mine. They occur in different stages of successive mineralization, which represent the last stage of mineral deposition in this mine.

These tellurium-bearing minerals occur in intimate association with very fine-grained quartz, often with meta-colloidal textures, and are accompanied by marcasite, besides pyrite. They seem to be a product at lower temperatures, which are characteristic of the last stage of mineralization in Tertiary volcanic regions.

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Fig. 1. White layers of calaverite and particles of native tellurium. (×16)

Fig. 2. White veinlets of sylvanite. (×16)

Fig. 3. Sylvanite, etched with HNO₃. (×50)

Fig. 4. Sylvanite in different orientation, etched with HNO₃. (×50)