A NEW OCCURRENCE OF MONTROYDITE IN CALIFORNIA

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Some years ago Professor Austin F. Rogers of Stanford University described a new locality in California for the mercury oxychloride, eglestonite,[1] which heretofore had only been reported from the original locality find in the upper levels of the cinnabar deposits at Terlingua, Brewster County, Texas.[2] The California locality is situated in the foothills of the Coast Range about two miles west of Redwood City, San Mateo County, where the various mercury minerals were deposited along the joints and fissures of a pale brown siliceous rock which is a replacement of serpentine. Known as "quicksilver rock," this siliceous type of vein material is fairly common in the various mercury deposits of the Coast Range. Recently the author visited the San Mateo prospect in search of specimen material and while working on a new section of the vein about a foot below the surface, noticed groups of small, red, acicular crystals floating on drops of native mercury and in some instances lining small vugs of dolomite crystals. Examined under the microscope, these orange-red crystals proved to be montroydite, an orthorhombic mercuric oxide, which heretofore has been reported only from the original locality at Terlingua, Texas, where it was described by A. J. Moses.[3] The name montroydite was given this mineral in honor of Mr. Montroyd Sharp, one of the mine owners at Terlingua. Associated mercury minerals found in the San Mateo County deposit are eglestonite in cubic, dodecahedral, and acicular malformed crystals and also as crusts coating dolomite; calomel in masses of small colorless euhedral crystals; native mercury in drops along seams and vugs in the vein; and cinnabar in subhedral crystals and crusts. In some of the vugs there is a greenish yellow powder which suggests the mercury oxychloride, terlinguaite, but not enough of the mineral is present to make conclusive tests.

Two forms of montroydite crystals were observed:

1. Long, orange red to dark red, subhedral, prismatic forms varying in length from fractions of a millimeter to 2 mm., terminated at one end only, the other tapering down to a sharp point. These

[1] Rogers, A. F., *Am. Jour. Sci.*, vol. **32**, p. 48, 1911.

[2] Turner, H. W., *Mining and Scientific Press*, vol. **81**, p. 64, 1900.

[3] Moses, A. J., *Am. Jour. Sci.*, vol. **93**, pp. 259–262, 1903.

showed adamantine luster, a high index of refraction, and some of the thinner crystals exhibit pleochroism from a reddish orange to a yellowish brown. They are anisotropic with parallel extinction, negative elongation, and showed cleavage parallel to the side pinacoid $b(010)$. Adhering to the prisms are minute globules of native mercury and in some instances a thin film of native mercury covers entire clusters of montroydite crystals. The color varies with the thickness of the crystal, the thicker ones showing a color range from a dark red to almost black, and the thinner ones from a brilliant orange red to a yellowish brown. The exact hue of red is difficult to clearly define, but the color of massive realgar which has begun to alter to orpiment is the nearest approach to it. No specific gravity determinations were possible.

2. Malformed and bent reddish brown crystals having a worm-like appearance. These are striated, uneven and show no terminations. In some cases the crystals are so bent that they assume U-shaped forms. This is evidently bend-gliding, described by Mügge[4] and by Buerger.[5] Due to the minute size of the crystals it was not possible to determine the faces on which the striations occur and therefore to determine the direction of translation and the bending axis. As the crystals remain bent after the external forces are removed, the compression on the concave face and the tension on the convex face must be in and out of phase with each other. The above explanation may offer a solution for the bent forms exhibited by montroydite. Stibnite, kyanite, and gypsum also show very marked evidences of this type of bend-gliding. The San Mateo County montroydite was found in several bent forms similar to those described by Hillebrand and Schaller.[6]

Heated in a closed tube, the montroydite crystals melted and disappeared, leaving a sublimate of mercury a short distance above the point where the heat was applied. No trace of sulphur could be detected. Sufficient material was not available for a chemical analysis, but the theoretical percentages of the two elements composing the mineral are as follows: Hg, as the metal, 92.59 per cent; O, calculated by volume, 7.40 per cent.

Thanks are due Professor Rogers for his kind assistance in the preparation of this note.

[4] Mügge, O., Ueber Translationen und verwandte Erscheinungen in Krystallen: *Neues Jahr. f. Min.*, **1898,** I, p. 72.

[5] Buerger, M. J., *Am. Mineral.*, vol. **15,** p. 45, 1930.

[6] Hillebrand and Schaller, *Bull.* **405,** *U. S. Geol. Surv.*, pp. 47-172, 1909.