

TESTS FOR TIN ORE.

The following interesting description of tin ore is from the last annual report of Mr. Henry G. Hanks, the State mineralogist of California:

Cassiterite is derived from the Greek for "tin." This mineral is the binoxide of tin, Sn O_2 , atomic weight 74; its composition is, tin 78.67 and oxygen 21.33 per cent. It is found in nature both crystalline and amorphous; in the former state it occurs in veins intersecting granite, gneiss, mica schist, porphyry and other rocks. In the latter condition it is found in rounded nodules or grains, from several pounds in weight to the finest black or brown sand. This is called stream tin because it is found in placers, like gold, in the beds of streams into which it has been washed by the action of water, resulting, like placer gold, from the disintegration of rocks which contained it in veins, its great specific gravity (6.4 to 7.1) causing it to resist the force of the water which has washed away lighter minerals. Stream tin is found of various colors and texture, being black, brown, drab or nearly white; perfectly compact and amorphous, laminated, mammillary, or botryoidal, with elevated points (toad's eye tin), fibrous (wood tin), concentric, radiated, &c.; hardness, 6 to 7; luster, adamantine when crystallized; stream tin dull, nearly transparent or opaque. Tin is also found in nature as a sulphide, but is comparatively rare. It has been found also in meteoric stones.

Cassiterite is easily reduced to the metallic state in a crucible with soda and anthracite coal dust (culm) or cyanide of potassium. The crucible should be allowed to cool, and then be broken to remove the button of tin; for this operation a hot fire is required. Before the blow-pipe on charcoal it is easily reduced if the following plan is adopted: The ore supposed to contain tin should be pulverized and passed through a 40 to 60 mesh sieve, the resulting powder washed in a pan or horn spoon to a small quantity, the prospect dried and ground in an agate mortar with twice its bulk of carbonate of soda. This mixture is transferred to a cavity in a piece of charcoal, and heated in the reducing or inner blow-pipe flame until the assay assumes a spherical form; more is added until it is obtained half the size of a pea; a small piece of cyanide of