ART. XLIII.—*On the occurrence of Vanadium in the Leadville Ores*; by MALVERN W. ILES.

AT the Evening Star and Aetna Mines, I have detected a vanadium mineral, occurring in a pocket surrounded by a siliceous gangue, and also in a well-defined seam. In the Evening Star mine, the vanadium compound is associated with the so-called "hard carbonate of lead," and is found as an incrustation upon a dark chocolate-colored siliceous gangue, which gangue is in turn deposited upon nearly pure white quartz. The mineral in question has various shades of color, from red to yellow, and may be described as orange-red, reddish-yellow and lemon-yellow. Both the red and yellow specimens give a deep green solution when treated with hydrochloric acid, and not unfrequently the chocolate-colored mineral gives a marked amount of vanadic acid.

Prof. Silliman has called attention to the fact that a chocolate-colored mineral, found associated with vanadinite, also yields a perceptible amount of vanadium.* The reagents, upon which most reliance was placed to detect the presence of vanadium in the numerous specimens at my disposal, were hydrogen peroxide and potassium ferrocyanide; and the property vanadium compounds have of giving a green solution with hydrochloric acid was made use of. Portions of the brilliant colored incrustation were detached from several specimens, and submitted to a chemical examination; the results make it probable that the mineral is dechenite. The analysis is as follows:

SiO ₂	36·86
PbO	38·51
ZnO	9·07
V ₂ O ₅	9·14
Fe ₂ O ₃	2·59
H ₂ O	2·41
CO ₂	0·48
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	99·06

In the estimation of vanadic oxide we used the method of precipitating the vanadium as a basic lead vanadate, and subsequently decomposing this salt by means of dilute sulphuric acid; the concentrated filtrate, after using the well-known precautions to ensure removal of all traces of lead, was transferred to a platinum crucible, the sulphuric acid cautiously expelled, and then strong heat was applied with a blast lamp until complete fusion of the vanadic oxide.

* This Journal, III. xxii. 200, 1881; Engineering and Mining Journal, Sept. 3d 1881; Transactions American Institute of Mining Engineers.