

ART. XLIV.—*The Composition of Molybdate from Arizona*;  
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MR. W. T. SCHALLER has recently shown\* that the rare mineral known as molybdic ocher, or molybdite, from at least four different localities, does not possess the chemical composition of the trioxide which for over fifty years has been attributed to it, but is in reality a hydrated ferric molybdate. These investigations suggest the probability of the non-occurrence of the uncombined trioxide in nature, all samples hitherto so described being an iron molybdate instead of mixtures of the pure oxide with limonite. The matter cannot be definitely settled, however, until a large number of analyses from various localities have been reported. Owing to the extreme rarity of the mineral and its usual mode of occurrence as a dusty incrustation associated with limonite, chances for good analytical results are not many.

The Museum of the University of Arizona contains some excellent specimens collected from the Santa Rita mountains about thirty miles south of the city of Tucson. The mineral occurs in milky quartz with the usual associations of molybdenite and limonite. Occasionally small cavities are found in the pure quartz filled with pure molybdite not mingled with an appreciable amount of the oxide of iron. Here the mineral consists of tufts of fine fibers and acicular crystals sometimes two millimeters in length. They possess the usual silky luster and bright yellow color.

Sufficient amount of this material for analysis was collected by means of a pair of sharp-pointed pincers and the following results obtained:—

	No. 1	No. 2
Insoluble residue .....	4.86	2.66
Water .....	16.83	16.61
Ferric oxide, $\text{Fe}_2\text{O}_3$ .....	20.88	21.18
Molybdic trioxide, $\text{MoO}_3$ .....	57.38	59.79
Total.....	99.95	100.24

These two samples were collected independently from two different cavities in the same hand specimen. The insoluble residue was examined under a microscope and found to consist of small crystals of quartz.

\* This Journal, vol. xxiii, p. 297, April, 1907.

Deducting the insoluble residue and recalculating the analyses, we have

	No. 1	No. 2	Average	Ratio
H <sub>2</sub> O .....	17·69	17·02	17·355	7·06
Fe <sub>2</sub> O <sub>3</sub> .....	21·97	21·70	21·835	1·
MoO <sub>3</sub> .....	60·34	61·27	60·805	3·09

The empirical formula calculated from the above figures is  $Fe_2O_3 \cdot 3MoO_3 \cdot 7H_2O$ , or,  $Fe_2(MoO_4)_3 \cdot 7H_2O$ . With the exception of the water of crystallization, these results are identical with those obtained by Mr. Schaller on samples from New Hampshire, Ontario, Colorado and California.