ART. XXX.—*Further Notes on the Artificial Lead Silicate from Bonne Terre, Mo.;* by H. A. WHEELER.

IN the number of this Journal for August, 1885, there are some crystallographic determinations and analyses of both the crystallized and massive types of this artificial mineral from the Desloge Lead Co., of Bonne Terre, Mo.; by E. S. Dana and S. L. Penfield. Since then I have had an opportunity to examine some specimens in the metallurgical collection of Washington University of this interesting material. The metallurgist of the Desloge Co., Mr. J. T. Monell, who forwarded the above specimens, informs me that the crystals were found directly under the hearth of an old Freiberg or reverberatory roasting furnace, close to the fire-bridge. The ore of this company, which is exclusively galena, is all treated, preparatory to smelting in a water-jacket furnace, to a preliminary roasting. Silica, to the extent of 10 or 12 per cent, is added to the roasting charge, and the heat is carried sufficiently high, at the latter part of the roasting, to agglomerate and melt the charge by the time it reaches the fire-bridge. It was directly under this fusion hearth of the furnace that the crystals of the

lead-silicate were found as linings of irregular cavities. The gangue of the ore is a magnesian limestone, which though mostly removed by dressing, is still present in appreciable quantities in the roasted ore and shows in the analyses. Associated with the galena is more or less pyrite, and a very small but persistent amount of nickel and cobalt; especially the former, probably as siegenite, though it is generally not to be detected by the eye.

My examinations, as far as they go, largely confirm those of Dana and Penfield. In one group of dark-red crystals, of rather feeble lustre, the individual members measure from 30 to 40^{mm} in length and thickness, and their analysis is given below. Another group of crystals furnish dimensions of 8 to 15^{mm}, while they have a highly vitreous luster and are of a clear brownish-red color. They all seem to consist of one type of crystal, that is generally very perfectly developed, made up of two trigonal prisms and the basal pinacoid. One of the trigonal prisms is largely developed and is very prominent, while the faces of the other trigonal prism are much smaller and in some cases are scarcely apparent. The fracture is decidedly resinous and the streak yellow, while the hardness is 3.

Analyses of the large, dark, translucent and the small, clear, light colored crystals are herewith appended, which agree with those of Penfield in showing that it is essentially a lead silicate. The finely disseminated magnetite alluded to by Penfield I also found, but removed it, after finely grinding in an agate mortar, with a magnet. It probably comes from the scales that drop off from the iron tools that are so freely used at the fusion stage of the roasting process.

	Coarse Crystals.		Fine Crystals.
SiO_2	17·11		18·51
PbO	73·66		72·93
Fe_2O_3	0·80		1·31
Al_2O_3	0·53		0·62
CaO	2·35		1·66
MgO	0·22		0·20
Cl	0·08		undet.
Na_2O	2·22	5·36%	"
NiO	3·06		"
	100·03%		95·23%

In the analyses given by Penfield, the iron is given as FeO; as it plays so small a part in the composition, while the color of the specimens are all either red or brown, no special examination was made to determine the condition of the iron and it was assumed to be in the form of Fe_2O_3.

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