Canadian Mineralogist
Vol. 16, pp. 671-672 (1978)

XONOTLITE: A NEW OCCURRENCE AT ROSE BLANCHE, NEWFOUNDLAND

P. A. BROWN
Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario K1A 0E8

ABSTRACT

Xonotlite was found in a hornfelsed garnet-, vesuvianite- and wollastonite-bearing calc-silicate pod at Rose Blanche, southwest Newfoundland. Cell dimensions are compatible with the xonotlite from the Bay-of-Islands complex, but at variance with previous results from both natural and synthetic xonotlite.

SOMMAIRE

On a trouvé de la xonotlite avec grenat, vésuvianite et wollastonite dans les cornéennes à calc-silicates, à Rose Blanche, dans le Sud-Ouest de Terre-Neuve. Les dimensions de la maille s'accordent avec celles d'une xonotlite du complexe Bay-of-Islands, mais s'écartent des valeurs précédemment connues pour les xonotlites, tant naturelles que synthétiques.

(Traduit par la Rédaction)

Xonotlite ($Ca_6Si_6O_{17}(OH)_2$) has two modes of occurrence. The first is as a hornfels mineral in limestone such as at the type locality, Tetela de Xonotla, Mexico, from which it was first described by Larsen (1923). A similar occurrence has been reported from Virginia (Shannon 1925). The second mode of occurrence is in association with ultrabasic bodies (Kaye 1953, Smith 1954), in which case the xonotlite is generally thought to have formed by alteration of vein calcite (Kaye 1953). However, Smith (1954) suggested that the xonotlite associated with the Bay-of-Islands complex, Newfoundland, was formed by circulation of heated solutions along fault contacts. In this latter occurrence the xonotlite is associated with hydrogrossular.

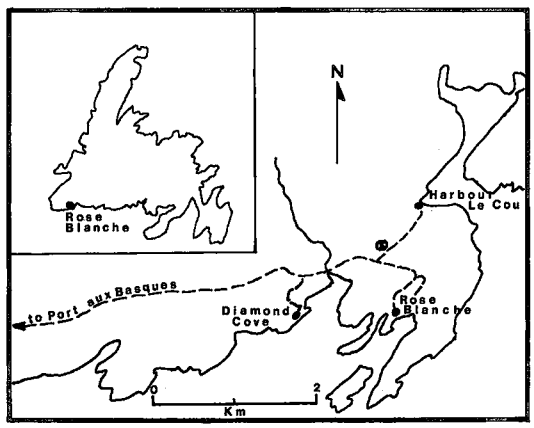

FIG. 1. Map showing the location of the xonotlite occurrence near Rose Blanche.

The xonotlite from Rose Blanche, southwest Newfoundland (Fig. 1), was found in a hornfelsed calc-silicate pod close to the contact with a leucocratic garnetiferous granite. As such it is the first reported locality for a xonotlite occurrence of this type in Canada. The mineral assemblage in the calc-silicate pod is: wollastonite, vesuvianite, garnet, xonotlite, apatite, calcite and quartz. These minerals are distributed in bands which parallel the granite contact. Close to the contact, wollastonite, apatite and calcite predominate, with the first two minerals occurring as columnar aggregates. These are succeeded by xonotlite–calcite and garnet–vesuvianite–apatite–calcite bands. Quartz occurs throughout the rock. These assemblages indicate pyroxene hornfels to upper hornblende hornfels facies of metamorphism (Turner 1968).

The xonotlite occurs as stubby aggregates: these are purple to dark pink on a fresh surface and weather to a light pink. In thin section the crystals are found to be extensively altered to a carbonate and the physical properties could not be determined. A positive identification was made by comparing X-ray diffractometer tracings with data from PDF cards.

X-ray diffractograms of xonotlite from Rose Blanche and from the Bay-of-Islands complex have been compared; the spacings are compatible and within 0.02Å for all observed peaks. The dimensions of the monoclinic cell were calculated (Appleman & Evans 1973) and found to differ from the values quoted in the Powder Diffraction File, primarily in *a*: PDF 3–0568 gives *a* 16.5, *b* 7.33, *c* 7.04Å, PDF 10–488 gives *a* 16.53, *b* 7.33, *c* 7.04Å, and this study gives *a* 17.032, *b* 7.336, *c* 7.056Å. All of these results were obtained from naturally occurring xonotlite. Recently, cell dimensions were calculated on synthetic xonotlite (PDF 23–125): *a* 17.020, *b* 7.353, *c* 7.004Å. The *a* dimension is now in

accord but the *c* dimension is at variance with the cell dimensions calculated from natural xonotlite from Rose Blanche and the Bay-of-Islands complex. In addition, PDF cards give $\beta = 90°$ whereas present calculations indicate $\beta = 90°21'$.

References

APPLEMAN, D. E. & EVANS, H. T., JR. (1973): Job 9214: indexing and least-squares refinement of powder diffraction data. *U.S. Geol. Surv. Comp. Contr.* **20**.

KAYE, C. A. (1953): A xonotlite occurrence in Puerto Rico. *Amer. Mineral.* **38**, 860-862.

LARSEN, E. S. (1923): The identity of eakleite and xonotlite. *Amer. Mineral.* **8**, 181-182.

SHANNON, E. V. (1925): Mineralogy and petrography of Triassic limestone conglomerate metamorphosed by intrusive diabase at Leesburg, Virginia. *Proc. U.S. Nat. Mus.* **66**, no. 28.

SMITH, C. H. (1954): On the occurrence and origin of xonotlite. *Amer. Mineral.* **39**, 531-532.

TURNER, F. J. (1968): *Metamorphic Petrology, Mineralogical and Field Aspects.* McGraw-Hill, New York.

Received March 1978; revised manuscript accepted May 1978.