MINERALOGICAL MAGAZINE, DECEMBER 1982, VOL. 46, PP. 503-4

X-ray powder data for hewettite

RECENTLY Bayliss and Warne (1979) published X-ray powder data for metahewettite. Although five specimens were called hewettite and four specimens called metahewettite, only data for metahewettite could be obtained. To confirm that the loss of water in a dry atmosphere is reversible, the seven valid metahewettite specimens were placed in a saturated atmosphere at room temperature (20 °C) for one year. The new X-ray diffraction patterns showed that the seven specimens are similar, but different from metahewettite.

The best crystalline specimen of 28398, American Museum, N.Y. from Monument No. 2 Mine, Monument Valley, Arizona was again selected for collection of powder X-ray diffraction data. A diffractometer trace was obtained with Cu-$K\alpha_1$ radiation (1.54048 Å) and a 0002 graphite monochromator from 4° to 66° 2θ at a scanning speed of 0.125°/min. A least-squares refinement in space group $P2/m$ (10) with the programme of Appleman *et al.* (1972) gave $a = 12.250(2)$, $b = 3.497(1)$, $c = 11.174(2)$ Å, and $\beta = 97°\ 15'(1)$. The *hkl*, 2θ observed, *d* calculated, *d* observed, and relative intensities (I/I_1) are presented in Table I.

Both the unit cell and the intensities are similar to that of Qurashi (1961). These data confirm that hewettite and metahewettite will change reversibly at room temperature in response to atmospheric humidity variations. The calculated density for hewettite based on $CaV_6O_{16} \cdot 9H_2O$ and $Z = 1$ is 2.67, which is similar to 2.618 measured by Hillebrand *et al.* (1914) on air-dried material.

The formula for metahewettite given by Hillebrand *et al.* (1914) and quoted by Fleischer (1980) and Embrey and Fuller (1980) is $CaV_6O_{16} \cdot 9H_2O$. However, both Ross (1959) and Qurashi (1961) consider the formula of metahewettite to be $CaV_6O_{16} \cdot 3H_2O$. With the unit cell of Bayliss and Warne (1979) and $Z = 2$, the calculated density is 3.56 with the chemical formula of $CaV_6O_{16} \cdot 9H_2O$, and 3.05 with the chemical formula of $CaV_6O_{16} \cdot 3H_2O$. Since Hillebrand *et al.* (1914) measured the density as 2.94, the formula of metahewettite is $CaV_6O_{16} \cdot 3H_2O$.

REFERENCES

Appleman, D. E., Evans, H. T., Jr., and Handwerker, D. S. (1972) *U.S. Dept. Commerce Nat. Techn. Inf. Serv.* PB216188.

TABLE I. *X-ray powder data from hewettite*

hkl	d_{calc}	d_{obs}	I/I_1	*hkl*	d_{calc}	d_{obs}	I/I_1	*hkl*	d_{calc}	d_{obs}	I/I_1
100	12.15	12.07	6	$\bar{2}10$	3.031	3.033	6	$\bar{6}02$	1.9848	1.9863	0.5
001	11.08	11.03	100	203	2.994	2.992	2	$\bar{5}04$	1.9535	1.9548	4
$\bar{1}01$	8.76	8.74	5	$\bar{2}11$	2.972	2.976	0.5	511	1.9297	1.9282	0.2
200	6.08	6.07	2	012	2.958	2.961	2	503	1.9222	1.9228	0.5
$\bar{2}01$	5.64	5.63	12	$\bar{1}12$	2.919	2.920	3	305	1.8490	1.8503	2
002	5.54	5.53	35	401	2.840	2.842	1	$\bar{2}06$	1.8332	1.8339	2
201	5.07	5.06	7	$\bar{4}02$	2.818	2.820	2	106	1.7932	1.7941	4
102	4.818	4.805	0.4	004	2.771	2.770	1	$\bar{6}11$	1.7611	1.7615	0.4
$\bar{2}02$	4.379	4.375	5	$\bar{2}04$	2.651	2.650	7	$\bar{6}04$	1.7433	1.7402	0.7
300	4.051	4.053	7	303	2.573	2.574	12	215	1.7381		
$\bar{3}01$	3.970	3.966	0.8	013	2.540	2.539	0.2	504	1.7226	1.7220	0.2
202	3.859	3.854	0.2	$\bar{4}03$	2.507	2.504	0.2	405	1.6920	1.6917	1
301	3.659	3.660	14	$\bar{5}01$	2.439	2.442	5	022	1.6677	1.6670	0.8
$\bar{3}02$	3.487	3.489	3	$\bar{5}02$	2.337	2.336	1	$\bar{1}22$	1.6607	1.6581	0.8
103	3.417	3.418	1	$\bar{3}13$	2.241	2.242	0.1	$\bar{6}13$	1.6551		
$\bar{2}03$	3.350	3.348	10	005	2.2170	2.2170	2	$\bar{3}20$	1.6055	1.6040	1
011	3.335	3.332	3	304	2.1635	2.1636	25	007	1.5836	1.5828	0.5
302	3.090	3.091	20	$\bar{3}05$	2.0572	2.0575	0.4	$\bar{5}06$	1.5693	1.5690	1
								107	1.5455	1.5459	2

Bayliss, P., and Warne, S. St. J. (1979) *Mineral. Mag.* **43**, 550.
Embrey, P. G., and Fuller, J. P. (1980) *A Manual of New Mineral Names 1892–1978*. Oxford University Press.
Fleischer, M. (1980) *Glossary of Mineral Species*, Mineralogical Record, Tucson, Arizona.
Hillebrand, W. H., Merwin, H. E., and Wright, F. E. (1914) *Proc. Am. Phil. Soc.* **53**, 31–54.
Qurashi, M. M. (1961) *Can. Mineral.* **6**, 647–62.
Ross, M. (1959) *Am. Mineral.* **44**, 321–41.

[*Manuscript received 16 January 1982*]

Dept. Geology and Geophysics, University of Calgary, Alberta, Canada T2N 1N4

PETER BAYLISS

MINERALOGICAL MAGAZINE, DECEMBER 1982, VOL. 46, PP. 504–6

Re-examination of the alleged occurrence of wollastonite and epistilbite in Jersey

Wollastonite. Teilhard de Chardin and Pelletier (1911) described an occurrence of wollastonite associated with calcite at the Hermitage, Elizabeth Castle, near St. Helier, in veins separating porphyritic dolerite from a small dyke of 'porphyrite' (actually aphyric dolerite) which intrudes it. Mourant (1961) commented that the identification as wollastonite 'is extremely doubtful' (p. 86) and went on 'white crystals do occur embedded in calcite in precisely this situation, but they were found impossible to identify . . . such rough [optical] data as were obtained would not fit wollastonite.'. The original specimens both of 'wollastonite' and 'epistilbite' were presumably transferred to France in about 1950 with the Jesuits' geological collection which, some twenty years later, was sold to a dealer.

A specimen recently collected from this locality by one of us (A.E.M.) has been examined in an attempt to verify or otherwise the long-standing claim for the occurrence of wollastonite at the Hermitage. The specimen carries a vein, up to 15 mm wide, which occupies a fracture within the aphyric dyke and consists essentially of translucent, slightly milky quartz, a little calcite in discrete and fairly large crystals, and abundant, buff, compact prehnite. In thin-section the vein has a marginal zone of fine-grained, turbid, granular prehnite containing a few grains of pleochroic, iron-rich epidote, and a little sphene. The central part of the vein comprises coarser, bladed prehnite occurring as stout crystals, as radiating masses in places arranged perpendicular to the vein walls, but more commonly in random orientation, as 'bow-tie' aggregates, and as groups of clear, stout crystals often with castellated terminations. The main associated mineral is quartz; a little calcite, epidote, sphene, and interstitial chlorite are also present. Wollastonite has not been identified. The identity of the prehnite has been checked by X-ray powder diffractometry and hence, assuming that this occurrence is indeed that from which the alleged wollastonite was obtained, there seems little doubt that the original identification was mistaken. Prehnite frequently occurs in veins in many of the igneous rocks in Jersey and its occurrence at the Hermitage is to be expected, much more so than wollastonite.

Epistilbite. Teilhard de Chardin and Pelletier (1921) also published a *liste supplémentaire* of mineral occurrences in Jersey in which they described the occurrence in Waterworks Valley, St. Lawrence (known also as St. Lawrence Valley), of 'une zéolite monoclinique, très calcique, dont l'espèce n'a pu être déterminée exactement . . .' The occurrence was described thus: 'Les cristaux incolores, très petits, et piquants, semblent être facilement décomposables, car on ne trouve souvent plus, dans les fissures de la roche, qu'une croûte blanche de calcite et de silice provenant sans doute de leur altération.'

In the early 1930s one of us (A.E.M.) located what seemed likely to have been the occurrence described by the two Jesuits—a small abandoned quarry in the Jersey Shale Formation of Brioverian (Upper Proterozoic) age, to the north of Dannemarche Reservoir in Waterworks Valley—and described the small crystals found there (Hey and Mourant, 1933). The identification as epistil-