Whitlockite from Sebdou, Oran, Algeria.

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With a chemical analysis by Miss Hilda Bennett.

[Read June 7, 1945.]

DURING the course of recent work on minyulite ($KAl_2(PO_4)_2(OH,F).4H_2O$) X-ray, optical, and density data were obtained for several hydrous K-Al phosphate minerals.[1] These included one specimen of a soft white compact mineral labelled by P. Pallary as minervite from Sebdou, Oran, Algeria, which was presented in 1940 to the Trustees of the British Museum by Major M. Connolly. Minervite was originally described and analysed in 1895 by A. Carnot from Minerva grotto, Fauzan, dép. Hérault, France.[2] In the same year Carnot also described the same species from Tour-Combes grotto, Misserghin, Oran.[3] Sebdou is some 80 miles SSW. of Oran and geological maps show there a patch of Pliocene on late Jurassic. No doubts were entertained that the specimen under discussion belonged to the same species as minervite from Misserghin, since the geological formations of both localities are closely related. However, no other specimen of minervite could be found in the British Museum collections and Miss Hilda Bennett undertook a chemical analysis of the mineral (table I). This showed at once that it is essentially a phosphate of calcium, and unlike minervite contains no potassium or aluminium. Dr. C. Frondel, on a visit to the Museum, was shown the powder photograph of the analysed mineral and at once recognized that it was identical with that of whitlockite, a new mineral which he described in 1941 from a granite-pegmatite at Palermo quarry, North Groton, New Hampshire.[4]

The specific gravity and optical data are in close agreement with this identification and the powder data are identical with those of Frondel[5]

[1] L. J. Spencer, F. A. Bannister, M. H. Hey, and Miss Hilda Bennett, Min. Mag., 1943, vol. 26, p. 309.
[2] A. Carnot, Ann. des Mines, 1895, ser. 9, vol. 8, p. 319.
[3] A. Carnot, Compt. Rend. Acad. Sci. Paris, 1895, vol. 121, p. 153.
[4] C. Frondel, Amer. Min., 1941, vol. 26, p. 145. [M.A. 8-52, 99.]
[5] C. Frondel, Amer. Min., 1943, vol. 28, p. 215. [M.A. 9-33.]

for whitlockite and of Bredig et alii[1] for artificial β-$Ca_3(PO_4)_2$. Frondel has also described four other occurrences of whitlockite, including martinite, the carbonate variety from insular phosphate deposits. The mineral is a rare one and this note records an African occurrence for the species.

TABLE I. Chemical analyses of whitlockite.

	1.	2.	3.
P_2O_5	45·87	45·68	45·78
CaO	48·15	46·90	54·22
MgO	3·53	2·53	
SiO_2	0·04	—	
Al_2O_3	0·06	—	
Fe_2O_3	0·05	1·73	
FeO	—	1·91	
MnO	0·01	—	
H_2O+	1·79	0·48	
H_2O-	0·21		
	99·71	99·80	
sp.gr.	2·96	3·12	3·19 (calc.)
ω	1·616	1·629	1·622 (obs.)[2]
ϵ		1·626	1·620 „

1. Whitlockite, Sebdou, Oran, Algeria, B.M. 1940,98; analysed by Miss Hilda Bennett; Cl trace, $(NH_4)_2O$ trace, Na_2O, K_2O, BaO, CO_2. F not detected.

2. Whitlockite, Palermo quarry, North Groton, New Hampshire, analysed by F. A. Gonyer; also F 0·06, insol. 0·51%.

3. Theoretical figures for $Ca_3(PO_4)_2$.

[1] M. A. Bredig, H. H. Franck, and H. Füldner, Zeits. Electrochem., 1932, vol. 38, p. 158. [M.A. 5–318.]

[2] H. Schneiderhöhn in G. Trömel, Mitt. Kaiser-Wilhelm Inst. Düsseldorf, 1932, vol. 14, p. 35.