

## NOTES

### Chemical and X-Ray investigation of chromiferous kaolinite ("miloschite") from The Geysers, Sonoma County, California

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THE USE of "miloschite" as a mineral name is no longer adhered to although there is confusion as to whether or not "miloschite" was originally intended to refer to a chromiferous kaolinite and/or halloysite. The only reference from the Western Hemisphere to include any chemical data is that by Wherry and Brown (1916); no X-ray data from any part of the world are known (M. Fleischer, written communication). The writer collected "miloschite" from the The Geysers several years ago from the location described by Vonsen (1948). It is the purpose of this note to report on the chemistry and X-ray identification of the "miloschite" from The Geysers.

The chemical data are summarized in Table 1. It is clear by inspection that both miloschites (Nos. 2 and 3) are very close to "ideal" kaolinite (No. 1); the analysis reported by Wherry and Brown (1916), No. 4, may be significantly different but the analysis may be suspect as well. For sample Nos. 2 and 3 all cation oxides were determined by replicate atomic absorption spectrophotometry (error  $\pm 1$  per cent of the reported value) and gravimetric methods; H<sub>2</sub>O (-) and H<sub>2</sub>O (+) were determined by weight loss at 110° and 1000°C respectively.

Table 1. Analyses of some kaolinites

	1	2	3	4
SiO <sub>2</sub>	46.54	42.30	41.95	35.46
Al <sub>2</sub> O <sub>3</sub>	39.50	38.30	37.85	30.39
Cr <sub>2</sub> O <sub>3</sub>		1.19	1.08	4.50
Fe <sub>2</sub> O <sub>3</sub>		0.39	0.38	0.90
MgO		0.08	0.10	
CaO		0.10	0.09	
H <sub>2</sub> O (+)	13.96	14.10	14.09	
H <sub>2</sub> O (-)		3.59	3.17	28.0
Total	100.00	100.05	98.71	100.07

- 1 - Ideal kaolinite (Deer *et al.*, 1966).
- 2 - Cr-kaolinite, The Geysers (material with slight reddish tint).
- 3 - Cr-kaolinite, The Geysers (sky-blue material).
- 4 - "Miloschite" (Wherry and Brown, 1916), H<sub>2</sub>O as H<sub>2</sub>O ((+) and (-)).

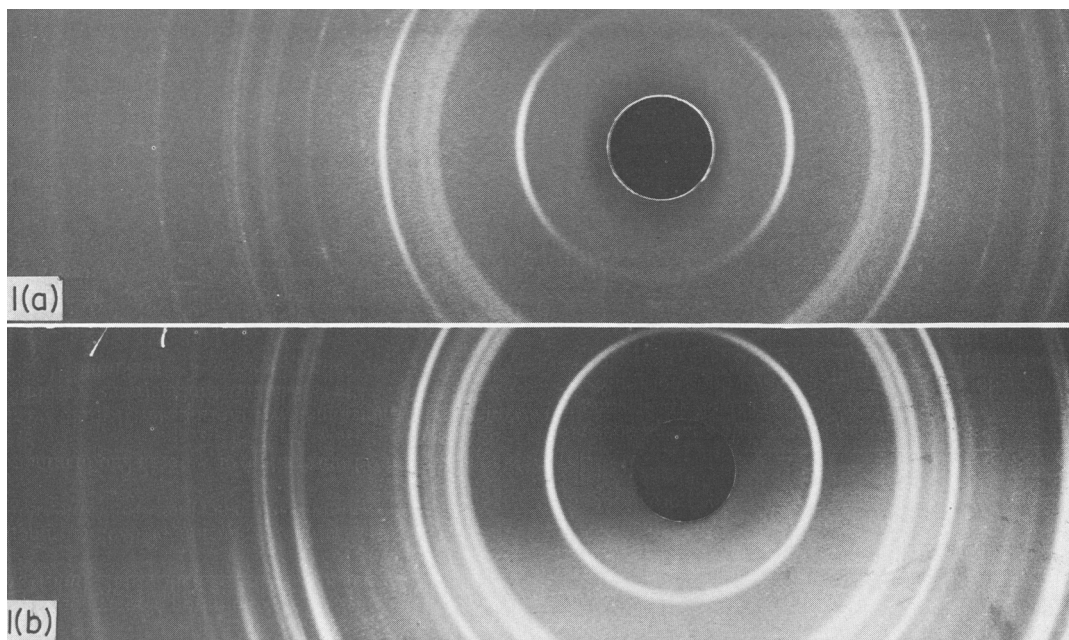


Fig. 1. No. 371 -Cr-kaolinite ("miloschite") from The Geysers, Sonoma County, California 187/cy:  
Kaolinite Standard, API-17, from Lewiston, Montana.

The material with a slight reddish-tint (No. 2) was suspected to contain k ammererite (?) but this was not demonstrated.

X-Ray identification of the "miloschite" from The Geysers proves it to be a Cr-kaolinite and not a Cr-halloysite. The operating conditions were: exposure time: 3 hr, Cu target, Ni filter, 11.46 cm Norelco Powder Camera, power settings: 40 kV, 18 ma. The unknown was compared with API-17 standard kaolinite from Lewiston, Montana. A comparison between the unknown and the standard is shown in Fig. 1: this is the first unequivocal identification of "miloschite" as Cr-kaolinite.

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