

and dunite spinels and the variation within the grains can be related to their being regarded as the products of early fractional crystallization. The symplectites, with their contrasting and highly variable composition, may still be regarded as the products of a later recrystallization episode.

No consistent chemical compositional variation was found that might account for the black rims around some spinel grain boundaries and cross-cutting lines described by Rodgers (1973).

Acknowledgements. K. A. R. would like to express his deep gratitude to the Keeper and all the staff at the Department of Mineralogy, British Museum (Natural History) for the facilities they provided and their willing co-operation; and to the Nuffield Foundation without whose Fellowship funding his trip would not have been possible.

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[Manuscript received 28 July 1976; revised 6 October 1976]

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MINERALOGICAL MAGAZINE, SEPTEMBER 1977, VOL. 41, PP. 394–5

Rosenhahnite $\text{Ca}_3\text{Si}_3\text{O}_8(\text{OH})_2$ —a further occurrence

ROSENHAHNITE was first discovered experimentally by Pistorius (1963), who reported it as a possible high-pressure polymorph of xonotlite occurring below 450 °C and in excess of 20 kb. The first natural occurrence was recorded by Pabst *et al.* (1967) from a stream boulder in Franciscan greywacke, California. They described rosenhahnite in veins and cavities cutting brecciated metasediments composed of hard, fine-grained diopside, hydrogrossular, tremolite, and titanite. Associated with the rosenhahnite were veins of pectolite and xonotlite. Recently, Dunn (1975) has reported the first, natural, *in situ* occurrence from Wake County, North Carolina. Here the mineral was found as irregular segregations intergrown with prehnite, gyrolite, apophyllite, and okenite. The association of the high-pressure calcium silicate phase with a low-pressure zeolite assemblage made this occurrence of special interest.

In a recent re-examination of the metasomatized gabbro and rodingites of the Wairere Serpentinite described by O'Brien and Rodgers (1973a, b), rosenhahnite was found in association with pectolite, as angular to rounded fragments located in a brecciated zone at the base of a highly weathered pectolite–prehnite crust occurring at a rodingite–serpentinite contact.

In thin section the rosenhahnite occurs as fresh, euhedral, lath-like crystals (0.5–1 mm long), which are biaxial negative with an optic axial angle of 62° (cf. Pistorius, 1963–64°). Other optical properties agree with those given by Pabst *et al.* (1967) and Dunn (1975).

The X-ray powder pattern is comparable with that given by Pistorius (1963) and Pabst *et al.* Microprobe analysis gave SiO_2 47.6, Al_2O_3 0.01, BaO 0.01, total Fe as FeO 0.01, MnO 0.04, CaO 48.7, Na_2O 0.03, K_2O 0.01, total 96.41. Addition of the theoretical water content of 4.92 % to this analysis gives a hydrated formula of $\text{Ca}_{3.1}\text{Si}_{2.9}\text{O}_8(\text{OH})_2$, which approximates the ideal formula $\text{Ca}_3\text{Si}_3\text{O}_8(\text{OH})_2$ given by Jeffrey and Lindley (1973).

It would appear that the mineral associations and geological environments of the Californian and Wairere rosenhanites are closely comparable. The brecciated and cataclastic nature of the setting at Wairere suggests that formation of the mineral has occurred under highly strained conditions. However, the North Carolina association and setting points to other, as yet unknown factors being involved in the formation of rosenhahnite other than simple pressure and the use of this mineral as an indicator of high pressure may be in doubt—a comparable position to that of aragonite.

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[Manuscript received 14 July 1976; revised 27 September 1976]

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MINERALOGICAL MAGAZINE, SEPTEMBER 1977, VOL. 41, PP. 395–7

Chromite in pyroxenite from the Massif du Sud, southern New Caledonia

CHROME-SPINELS have been described from the alpine-type peridotite complex of New Caledonia by Guillon (1970), Rodgers (1973a), and Bevan and Rodgers (1977). The most common types prove to be magnesium-rich varieties (e.g. picrochromites and ceylonites) occurring in the major peridotite rock types (harzburgites, dunites, and chromitites). Electron microprobe examination of spinels associated with pyroxenites, which occur in minor amounts in the Massif du Sud, show a number of these to have $\text{Fe}^{2+}/\text{Mg} > 1$ and to be chromites, var. beresofite.

Typical of these pyroxenite occurrences is that at Col du Mouirange where a horse of ultramafics is included in a diorite–granodiorite complex intruded across a dunite–harzburgite