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zone of the carbonates are sharp but irregular, indicative of replacement rather than tectonic emplacement. Northwards the dolomites pass into black ferruginous manganese breccias which contain anomalous amounts of base metals (Appendix I) and do possess a cellular boxwork indicative of carbonate.

The carbonates are thought to result from CO<sub>2</sub> metasomatism of a sheared serpentinite. This may have caused remobilisation of the Fe and Mn ions to give concentrations of ferruginous and manganese minerals in the enveloping talcose schists.

- (iii) The rocks mapped as hornfelsed argillite and make up the Argillite Sequence result from metamorphism of the country rocks by emplacement of granitic bodies. The main area of hornfelsing occurs in the aureole of the Pine Hill adamellite, within which all the rocks, including the ultramafics, have been hydrothermally metamorphosed. To a large extent the original mineralogical composition of the rock determined the nature of the metamorphic minerals as much as the distance from the hydrothermal source. The alteration effect was metasomatism due to introduction of hydrothermal fluids in addition to thermal contact metamorphism. Metasomatic effects do occur along deep seated structures and fault zones which acted as conduits for the hydrothermal fluids. The metasomatic alteration is best described with relation to the rock types:

#### Serpentinite

The serpentinites in the Ring River are silicified in sections, and this is thought to be due in part to hornfelsing, but also to the introduction of silica. Patches of felted tremolite-actinolite enclosed in the serpentinitised pyroxenite, may also have formed during thermal metamorphism. Generally, however, the rocks show little obvious effect, since many of the hydrothermal minerals introduced into the system are similar to those formed during serpentinisation.