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REVISION OF THE ARCHAEAN TO CAMBRIAN GEOLOGIC RECORD OF THE MAWSON ESCARPMENT, SOUTHERN PRINCE CHARLES MOUNTAINS, ANTARCTICA

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The Mawson Escarpment (ME) is the only continuous exposure in the Prince Charles Mountains (PCM) that includes radiogenic ages (U-Pb, Rb-Sr) correlating with all of the main tectonic cycles known to have affected adjoining parts of East Antarctica after 3.5 Ga. The oldest ages occur dominantly in the **south ME** and are linked with the generation of low-Y tonalitic crust at 3.4 Ga, followed by high-Y granite intrusion at 3.2 Ga. These plutonic rocks were tectonically reworked and interleaved with Archaean metasediments at about 2.8 Ga, prior to intrusion of pegmatite dykes at 2.65 Ga. Ages spanning the Neoarchaean-Palaeoproterozoic boundary of 2.5-2.45 Ga are known only from the **north ME** and associated with the emplacement of granodiorite, now exposed as thick tectonostratigraphic horizons of polydeformed gneiss. Middle Palaeoproterozoic ages of 2.1 Ga are related to a relatively vast granite intrusion (now augengneiss) in the **central ME**; they are known also from xenocrystic zircon cores in nearby Cambrian intrusive rocks and detrital grains in metapelites. A hiatus of 1 Ga is reflected by the general absence of SHRIMP U-Pb single zircon ages between 2.1 and 1.1 Ga. This period is thought to coincide with major sedimentation in the **north** and **central ME**, although Mesoproterozoic intrusion ages of 1.3 Ga are suspected for dolerite dykes that overprint Archaean crust in the **south ME**. Felsic crust formed by granitoid magmatism at 1.1-1.05 Ga occurs in the far **north ME** adjacent to 2.5 Ga orthogneiss. Early Neoproterozoic ages of 1.0-0.9 Ga correlate with granulite-facies metamorphism and intrusion of syn-tectonic granite dykes in the **north ME** and have not been identified in the **south ME**. Cambrian ages are extensive and best known from late granite intrusions. The distribution of chronology data is disjointed and indicates that the **total ME** (a) records a remarkably complex yet near comprehensive tectonic history for the Precambrian PCM spanning 3.5-0.5 Ga, or (b) that it exposes a terrane collage comprising of allocthonous crustal fragments (Archaean opposed to Proterozoic) unified prior to, or during, the Cambrian.