

PROTEROZOIC EVENTS IN AUSTRALIA RELATED TO THE ASSEMBLY OF RODINIA AND GONDWANALAND

POWELL, C. McA. Tectonics Special Research Centre, Nedlands, Australia.

The Precambrian architecture of Australia comprises three major cratons stabilised between ca. 2.8 Ga to 1.65 Ga, separated by 1.85 Ga to 1.2 Ga mobile belts. The West Australian craton comprises the Archaean Pilbara and Yilgarn blocks amalgamated along the Capricorn orogen by 1.8 Ga. The North Australian craton formed by 1.8 Ga by amalgamation of Kimberley and Northern Territory cratons along the Halls Creek mobile zone, and the Archaean nucleus of the Gawler block was enlarged by accretion to form the Southern Australian craton by ca. 1.65 Ga. The North and Western Australian cratons could have been amalgamated by ca. 1.65 Ga, but an unconstrained amount of Mesoproterozoic shortening across the ca. 1.3 to 1.12 Ga Albany-Fraser-Musgrave orogenic belt separated them from the South Australian craton. The north-trending Mt Isa-Broken Hill metallogenic belt, active between ca. 1.8 and 1.5 Ga, ran along the eastern border of Paleoproterozoic Australia. Palaeomagnetic information shows that North and Western Australia were joined to Laurentia in a Rodinia configuration by 1.1 Ga, and possibly since 1.65 Ga. Breakup of Australia from Laurentia by 750 Ma formed the ancestral Pacific Ocean, and truncated the older Precambrian fabric of Australia. The stable Neoproterozoic Australian craton was divided into two between 610 and 530 Ma by dextral shear along the WNW-trending Paterson-Petermann orogenic belt during final amalgamation of Gondwanaland.