

THE UNIVERSITY OF ADELAIDE.

- A. The geology and petrography of an Archaean inlier, south of Normanville.
- B. The origin of the "Houghton" granulite.

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ABSTRACT.

Detailed mapping established <sup>1</sup> definite rock units within the Archaean inlier south of Normanville. The distribution of the rock types ~~is suggestive~~ <sup>suggests</sup> of a major antiformal structure. <sup>\*2</sup> Only metamorphic layering <sup>3</sup> is recognised in the area. <sup>3</sup> <sup>4</sup> Not true. Unable to determine this fact for sure.

The first Archaean orogeny produced this layering and reached upper amphibolite grade of metamorphism, as defined by the minerals, sillimanite, garnet, diopside, and scapolite. The temperature and pressure conditions were <sup>\*4</sup> 750°C and 2-3 Kbars. This was established using mineral assemblages and the presence of <sup>considerable</sup> ~~much~~ partial melting, pegmatitic masses and migmatites.

This same orogeny was also responsible for the development of a strong schistosity, which was always parallel <sup>15</sup> to the metamorphic layering.

A Proterozoic orogeny produced a strong ~~crumulation~~ <sup>crinulation</sup> of the schists, <sup>which was</sup> ~~this crinulation~~ is parallel to the fold axis of a major antiform, which plunges 35° to 138°.

The deformation reached biotite grade of metamorphism, as shown by the minerals biotite, sericite, and epidote, which, commonly replace the higher grade minerals. An antiform overturned to the west was the major structure. Its underlimb was sheared away, so that the inlier represents the eastern limb only. The western outcrops of the inlier represent the shear zone. <sup>6</sup>

Geochemical analyses of the Houghton granulite suggest a sedimentary origin. This, coupled with its conformability with the surrounding rocks, and its association with a zircon rich meta-quartzite, support this conclusion. <sup>7</sup>