

(i) Tertiary

Following a long period of erosion and peneplanation, during which most of the dolerite was exposed, a major period of normal faulting took place, probably in the Paleocene Epoch. This faulting, which shows a general NW trend, produced a series of major horst-graben structures throughout Tasmania (Banks, et al, 1962). However, in the Launceston area the resultant Tamar Trough has been shown to be due to a series of stepped normal faults dipping vertical to steeply east and down-throwing to the east (Casey, 1946 modified by Longman 1966). The individual faults throw up to several hundred feet and caused tilting of the fault blocks.

The Tamar Trough extends from the present mouth of the Tamar through Launceston and Campbell Town over a width of up to about eight miles, with a basement of just below present sea level at Launceston. A further trough to the west, the Cressy Trough, extends from Campbell Town through Cressy to Westbury. It has an effective width up to ten miles and a basement in the deepest parts, greater than 1500 ft. below present sea level.

Throughout the Tertiary, the Cressy Trough was largely separated from the Tamar Trough by the Hummocky Hills "high" and hills to the north of Perth.

Following the basin formation, rapid sedimentation took place probably by the rivers in existence today with the South Esk, Macquarie, Meander and North Esk accounting for most of the activity. Sedimentation commenced in the Paleocene-lower Eocene Epochs, as shown by plant fossils, in Launceston bores (Gill in Banks et al, 1962), and spores identified in water bores (W.L. Matthews, pers. comm.) and continued throughout the Tertiary, probably aided by rejuvenation due to further movement on fault lines.

During this period, more than 1000 ft. of sediments was laid down in the Cressy Trough, with lesser depths in the Tamar. The chief source of the sediments was the sandstones, siltstones and mudstones of the Permo-Triassic, both capping and underlying the dolerite, these providing pebbles, sands, silts and clay material; the dolerite itself, being more open to chemical attack, provided finer silt and clay material. The lower Paleozoic rocks, in particular the Mathinna Beds, provided resistant quartzite pebbles down to silt grade material. It appears doubtful whether much of the Ben Lomond Granite would have been exposed over the greater part of the Tertiary, as shown by an apparent lack of granite detritus in Tertiary sediments under basalt in a small basin about Avoca (Reid & Henderson, 1929). The granodiorite in the upper North Esk-St. Patricks system, although exposed, would have shed material via the North Esk into the Tamar Trough near Launceston and not to the south.

Depositional conditions prevailing in the troughs alternated considerably throughout the Tertiary from fluvial to lacustrine, with swamps and dry ground existing in places, covered by dense sub-tropical forests as indicated by the major accumulation of part carbonized wood and plant remains. Much scouring of existing material and refilling appears to have taken place judging from rapid vertical and lateral facies changes.