

10. Adventure Bay gravity profile.

D.E. Leaman

As part of an overall programme to examine Tertiary leads and basins in Tasmania a gravity survey has been carried out along the isthmus between north and south Bruny Island in order to establish whether a thick Tertiary deposit is present. The recent discovery of filled valleys in the northern part of the D'Entrecasteaux Channel and recognition of Tertiary sediments near Middleton and Gordon has raised the possibility of a major filled valley in the Channel itself. An outlet from such a valley could pass through Adventure Bay to Storm Bay.

SURVEY DETAILS AND INTERPRETATION

The traverse has not been tied to state gravity datum and thus no absolute Bouguer values can be given. The station spacing was about 500 m and a density value of $2,670 \text{ kg/m}^3$ was used for the Bouguer Reduction. The Bouguer profile is shown in Figure 14. No regional gradient adjustment has been considered necessary since the traverse line closely parallels the trend of the regional Bouguer anomaly (Leaman, 1972).

The figure also presents a possible structural solution for the observed anomalies. The densities quoted are typical for slightly sandy Tertiary sediments ($2,050 \text{ kg/m}^3$), Permian rocks ($2,550 \text{ kg/m}^3$), Upper Permian and Lower Triassic rocks ($2,450 \text{ kg/m}^3$) and dolerite ($2,900 \text{ kg/m}^3$). A fairly irregular lower surface to the Tertiary sediments is implied and faulting does not appear to have exercised any significant control on the shape of the deposit which is estimated at up to 250 m thick.

A fault is required within the region to produce the imbalance of total anomaly between the ends of the profile. No omitted regional component could contribute in the appropriate sense or magnitude and thus a displaced dolerite sheet is implied. A fault is suggested by the exposure of Upper Permian and Lower Triassic rocks at Adventure Bay and by Middle Permian rocks north of the isthmus.

CONCLUSION

The short gravity traverse along the isthmus at Adventure Bay has located a major Tertiary channel with a depth of about 250 m. It is probable, therefore, that a complex channel system exists beneath the D'Entrecasteaux Channel and that the main outlet to Storm Bay is beneath Adventure Bay.

REFERENCE

LEAMAN, D.E. 1972. Gravity Survey of the Hobart district. *Bull.geol.Surv. Tasm.* 52.

[11 April 1973]

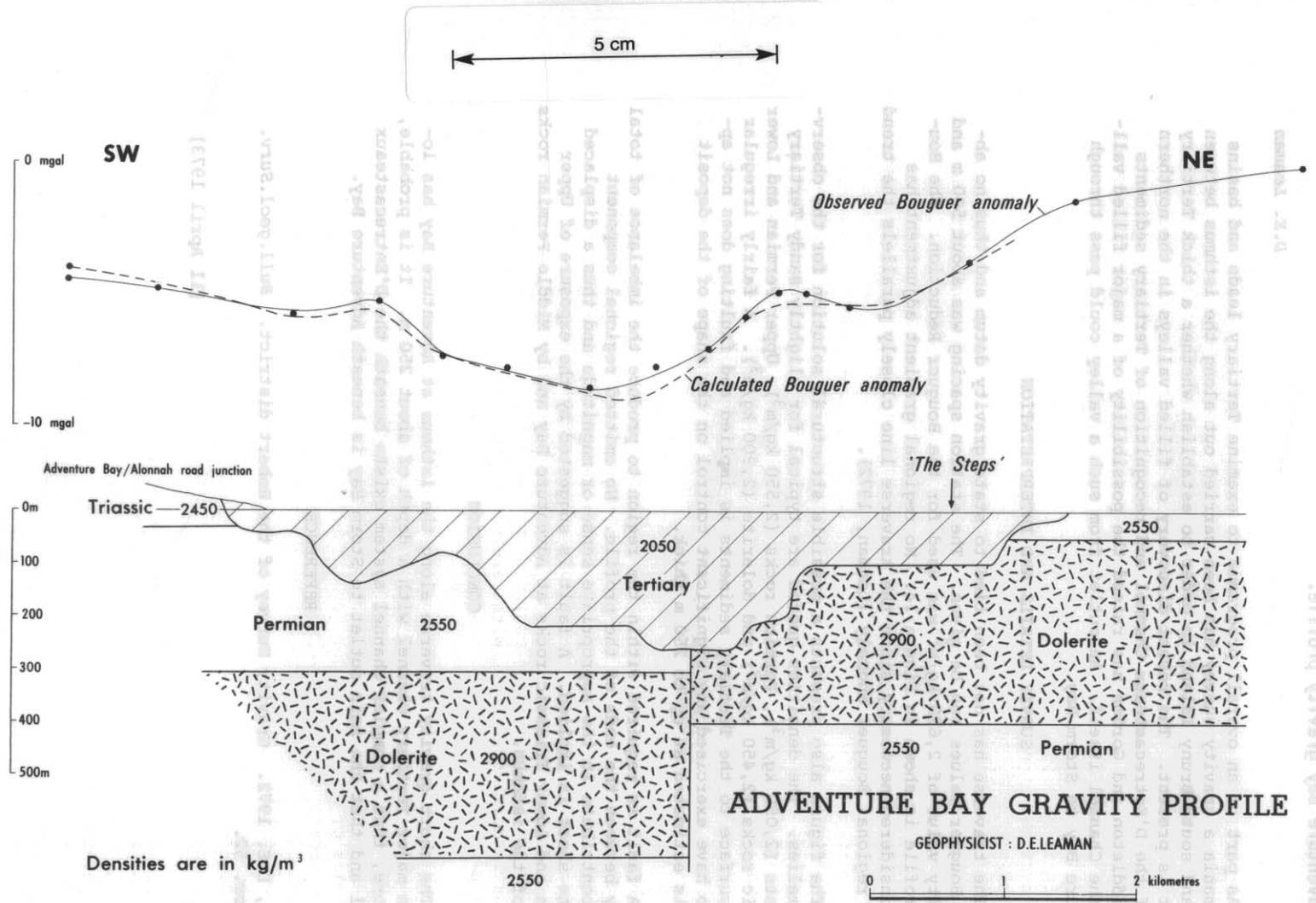


Figure 14.