TASMANIA, AN OFFSHORE ISLAND

Valerie Burford

Earlier this year David and I went to Tasmania (TAS or Tassie) for a few weeks. Here is a little about the geology.

TAS is an island about the size of Ireland, sitting on the Australian (Oz) continental shelf across the Bass Strait south of Melbourne. Tassie and Oz are on the same tectonic plate and not divided by a fracture zone as was once thought.

The two contrasting geological regions of the western TAS pre-Carboniferous folded rocks (Western terrane) and the eastern TAS middle Palaeozoic granitoids (Eastern terrane) appear to be juxtaposed at the Tamar Fracture Zone.

The Western terrane pre-Cambrian rocks are faulted and folded, with metamorphism to greenschist or higher facies in the south, but mainly unmetamorphosed rocks to the north.
The oldest rocks of the Eastern terrane are Ordovician-Devonian with little or no metamorphism developed. However, these rocks appear to have been folded synchronously with those of the Western terrane. The fold trends indicate transportation from the SW, while those of the Western terrane indicate transportation from the NE. This suggests that possible sinistral lateral fault movement juxtaposed the terranes at a dislocation, the Tamar Fracture Zone.

We fell in love with friendly, heart shaped Tassie!

Reference: Geology and Mineral Resources of Tasmania, ed. Burrett C.F. and Martin E.L. (about 1986)

GLOBAL WARMING: A GEOLOGICAL PERSPECTIVE

- extract from an article in G.A. Magazine, Vol. 3, No. 2, 2004

Chris Green

Chris Green writes that geologists are well placed to assess the significance of climatic change. he says that the main problem today is the release into the atmosphere of fossil carbon as a result of burning fossil fuels. The main culprits are the greenhouse gases and especially carbon dioxide. The concentration of CO_2 in the atmosphere has increased from 280ppm (parts per million) in the pre-industrial era to 375ppm today. The increase is expected to continue and to reach a level possibly as high as 990ppm by 2100. The principal consequences are seen as rising sea level, possibly by as much as 0·9m in the next 100 years and, in the case of Britain, an increase of mean annual temperature by up to 3^0C and of winter rainfall by up to a quarter.

From the geological perspective, these changes are unexceptional. For much of the past 500 million years concentrations of atmospheric CO_2 have been substantially greater than even the highest level predicted for the year 2100. For the Late Cretaceous (chalk deposition), for example, estimates of 3,000ppm are widely accepted. The predicted rise of sea level, at a rate of up to 9mm/year is also relatively unspectacular. Since the closing stages of the last glaciation, about 15,000 years ago, sea level has risen 120m at rates of up to 24mm/year, with most of the change occurring between 13,000BP and 7,000BP at about 14mm/year.

However, knowing that the predicted changes have been experienced in the past is little comfort to those who are affected. At a regional level, changes of rainfall and temperature are difficult to predict. The most direct effect will be on wildlife and agriculture, but in most places the rate and magnitude of change are likely to be manageable. The rise of sea level is easier to predict but more costly to manage. In Western Europe alone there are 68 million people living in coastal localities. In the developing world, changing climate will place much greater demands on the resources of governments and local populations.

Although the evaluation of climatic change has moved away from the more alarmist predictions of catastrophe, there are still many imponderables in the global climatic system. For example, on the timescale of the Quaternary glacial/interglacial cycles, the present interglacial is probably past its peak and we should be worrying about the onset of the next glaciation. Christ Green concludes with ‘Don’t forget there was a time, in the Anglian glaciation, when the ice-front was in Finchley, in North London’.