

## V. SUMMARY OF GEOLOGICAL HISTORY

The structure of the continental margin south of Australia arose as a result of block faulting and regional downwarp. The dating of these movements has been interpreted as follows:

1. Western Australia : the Block faulting that created the Perth Basin graben took place in the Lower Mesozoic (p. 7). The Regional downwarp that created the structural framework has been dated as Neocomian (Brown et al., 1972) while the ocean basement west of Perth is thought to be of Neocomian to/or Albian age (GC.257, 259).
2. Southern Australia : Block faulting began in Jurassic times, while the Regional downwarp may have taken place in Neocomian and/or Albian times (p.11). The ocean basement south of Australia is regarded, on the evidence of magnetic lineations, as being of Palaeocene to Quaternary age (55-0 my, Sutherland et al., 1973), the Palaeocene part being adjacent to the continental margin.
3. Eastern Australia : the initial block faults formed during the Upper Jurassic or Lower Cretaceous. The regional downwarp is thought to have taken place during the Upper Cretaceous and the ocean basement of the Tasman Sea is reported to be of Senonian age (80-65 my, Sutherland et al., 1973).

The sequence of geological events associated with these movements may be summarised as follows:

- (1) Block faulting leading to the formation of an initial graben or rift valley. This seems to have taken place in Lower Mesozoic times in the Perth Basin and in Jurassic (?) times in the Great Australian Bight and in Gippsland. In the Perth area the graben had a NNW-SSE trend and in southern Australia individual grabens have an E-W or NW-SE trend.
- (2) Following the graben formation a thick sequence of mainly continental to coastal clastics were laid down (up to 10 km in the Perth Basin, Encl. 16) during the Triassic to Lower Cretaceous (Neocomian in the Perth Basin and Neocomian (?) or Albian in the Great Australian Bight and farther to the east).
- (3) The graben fill stage was terminated by a phase of regional downwarp along very much the same trend, the main features of which were:
  - (a) Block faulting and tilting of basement blocks together with their sedimentary fill, where present,
  - (b) collapse to oceanic depth of those blocks adjacent to the present continental margin,
  - (c) slope failure and sediment slumping along the scarp slope so formed, and