Lowry D.C. and Jennings, J.N. 1974: **The Nullarbor karst, Australia.** *Zeit. Geomorph. N.F. 18 (1)*, 35-81.

Summary.

The Nullarbor karst, about 200,000 km2 of pure Upper Eocene and Miocene limestones in almost horizontal attitude, has been subjected to very slow subaerial erosion since Middle Miocene times, greater in its southern semi-arid part than its arid interior. This has left it with an almost planar surface inclined very gently southwards and eastwards. Unbroken vertical sea cliffs form much of its coast; elsewhere three coastal plains cut in the limestones are backed by remarkably continuous emerged cliffs, modestly weathered subaerially except where buried by dunes and eolian calcarenite.

Part of the karst plateau has a residual soil and kankar cover but deflation has generally removed this to give a thinly soil-covered and bare karst with subdued surface solutional relief, usually joint-guided. This relief takes the nature of low ridges and corridors or scattered very shallow, gentle circular depressions, sometimes aligned in chains. Weathering has indurated the limestone near the surface. The plateau is pocked abruptly by collapse dolines, few in relation to the karst area. Though most have slopes degraded by surface weathering, the proportion which is sharp featured and well preserved is significantly high. In the southwest crystalline basement inliers are rimmed by moats in the limestone. Minor solutional sculpture *(Karren),* rare and poorly developed, is found mainly around dolines, along the emerged cliffs and the hogbacks of 2-cycle cliffs on the present coast. There is a direct relationship between amount of surface diversification and rainfall.

The same relationship holds for caves, which are few in relation to the karst area, particularly large caves. Various types of caves are described but there are pronounced common characteristics notably the prevalence of breakdown forms and deposits, and rarity of bedrock solution forms. In a number of caves salt weathering forms and products are especially well developed. 'Blowholes' (circular entrance shafts) may be closely related to blind pipes and may have developed from below upwards. Vadose modification of shallow caves and of the forward part of deeper caves is not great and may be younger than the deflation of the clay and kankar cover. The origin of a near-surface zone of perforation is variously interpreted as due to tree-root activity and salt weathering, on the one hand, and to shallow phreatic solution on the other; it needs further study. Deeper caves reach down to brackish large and small lakes in a regional watertable where present-day solution is negligible. Deep cave characteristics are mainly due to upward stoping from a former zone of shallow phreatic solution along joint-guided trends, probably during the last glacial low sea level when the watertable was lower and the groundwater more aggressive. However earlier higher zones of shallow phreatic tube formation are known which may

have weakened overlying rock and promoted collapse. Speleothems are poorly developed and are marked by the relative importance of gypsum and halite in their makeup.

There is a variety of evidence relating to climatic history; geomorphic, such as relict river courses in inner parts, deflation of cover, halite speleothems following calcitic ones, and biologic, namely subfossil and fossil fauna and pollen from surface and underground sites. Effectively drier and wetter oscillations can be recognised, if not dated. Overall, however, climate appears never to have departed from an arid/semiarid aspect very far, or for very long, since mid-Miocene emergence.

In conclusion attention is drawn to the many attributes characterising this karst which derive from its dryness in the present and prevailingly in the past.