BOLSON FILL, PEDIMENT, AND TERRACE DEPOSITS OF HOT SPRINGS AREA, PRESIDIO COUNTY, TRANS-PECOS TEXAS

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ABSTRACT

Regional block-faulting, probably in Miocene time, created the Presidio Bolson and initiated erosion in flanking mountains and deposition in the basin. Deposition continued in a saline lake, in centripetal fresh-water streams, and on alluvial fans through late Tertiary time, filling the basin to a high level with sediment derived largely from the flanking mountains in Texas and Mexico. Three previously unmapped facies, which grade laterally and vertically into each other, were produced as the basin filled: a clay facies, composed chiefly of silty clay; a sandstone facies, dominantly fluvial sandstone and siltstone; and a conglomerate facies, composed largely of conglomerate with interbedded sandstone. Three genera of ostracodes, Ilyocypris, Candona, and Cypria, and an unidentified charophyte, from the sandstone did not yield useful age data, but aided an interpreting a shallow-water transition zone between the clay and the sandstone facies.

With cyclic climatic changes during the Pliestocene epoch an ancestral main stream varied its rate of downcutting by the main stream, possibly during relatively dry interglacial periods, and formed gravel-veneered surfaces of lateral planation in a series of steps descending to the present river. The surfaces are pediments and terraces: Qgl, Qg2, Qg3, Qg4, and Qg5, in order of decreasing elevation and age, are pediment gravels; Qg6 is the gravel veneer of a terrace complex representing the last major state of lateral planation by streams. Fossilized Equus sp. teeth found in a Qg6 terrace deposit are Pleistocene in age. There are at least four major surfaces of lateral planation in the Presidio Bolson, whereas there are only three in basins to the northwest, suggesting that it was breached at an earlier time, possibly at the beginning of the Pleistocene epoch.

A terrace deposit of the ancestral main stream not differentiated by previous workers in the basin, the "Ruidosa conglomerate," is intermediate in age to the Qg3 and Qg4 pediment gravels, and is the oldest direct evidence of a main stream in the basin.