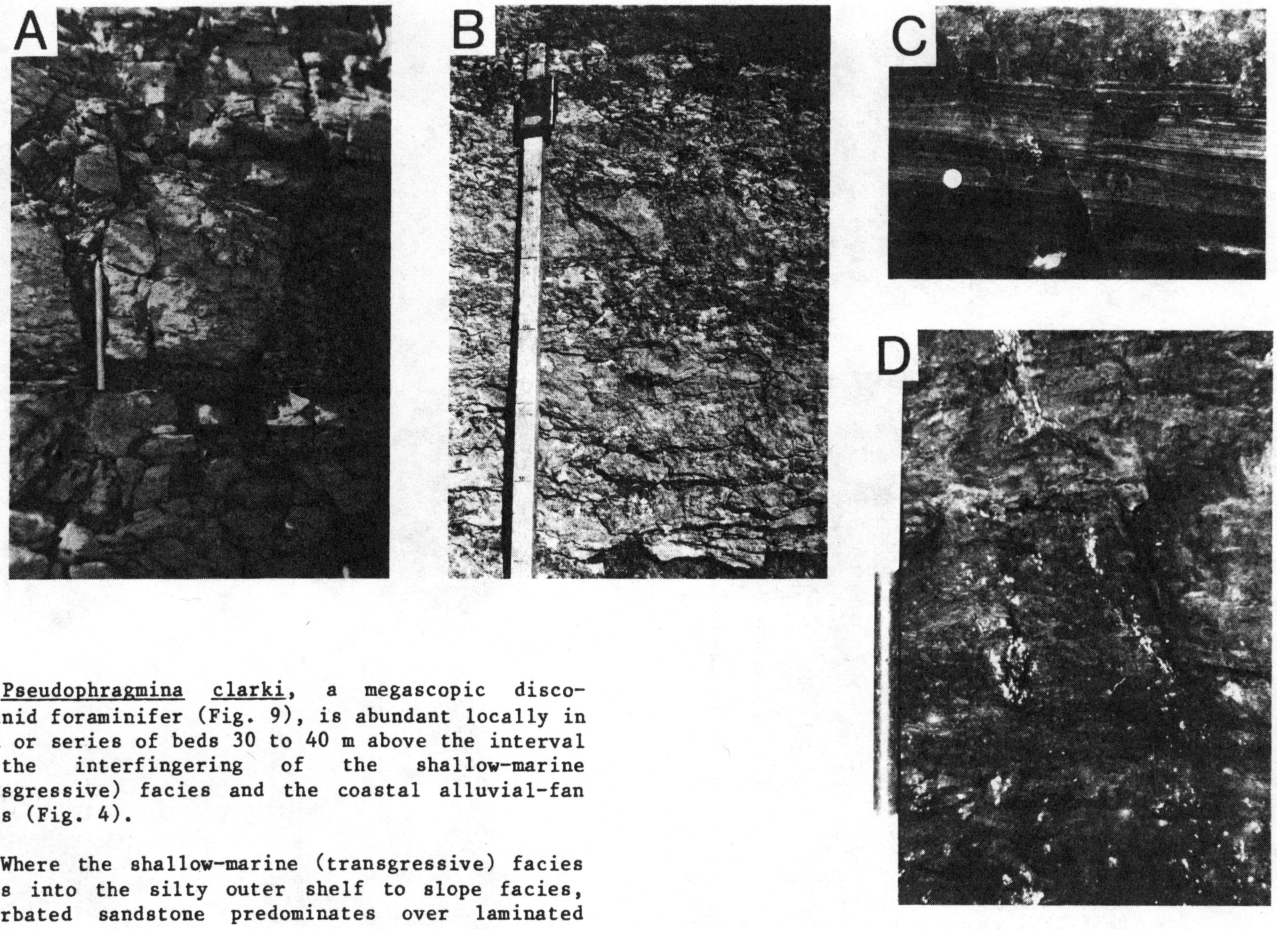

Figure 7. Shallow-marine (transgressive) facies: A) Type section, lower part, alternating laminated (top and bottom) bioturbated (middle) sandstone beds with abrupt contacts, pen is 14 cm long. B) Las Llajas Canyon (see Figure 1), alternating laminated and bioturbated sandstone with bioturbated contacts. Scale is in 10 cm increments. C) Upper Las Llajas Canyon, near Los Angeles-Ventura Counties boundary (see Figure 1), scoured, laminated sandstone; coin is 2.4 cm in diameter. D) Type section, middle part, bioturbated sandstone overlain by laminated sandstone; scale is in 30 cm increments. (After Squires, 1981).

Pseudophragmina clarki, a megascopic discocyclinid foraminifer (Fig. 9), is abundant locally in a bed or series of beds 30 to 40 m above the interval of the interfingering of the shallow-marine (transgressive) facies and the coastal alluvial-fan facies (Fig. 4).

Where the shallow-marine (transgressive) facies grades into the silty outer shelf to slope facies, bioturbated sandstone predominates over laminated sandstone and most of the fossils are confined to a few 30 to 60 cm-thick beds whose contacts are not distinct due to bioturbation. One such bed is the most distinctive and the richest fossiliferous bed in the Llajas Formation. It is a 1 m-thick, glauconitic resistant bed, informally called the "Stewart bed" (Fig. 10). The bed can be traced laterally from the type section to about 10 km to the east. The fossils in the lower part of the bed show even less signs of post-mortem transport as those elsewhere in the shallow-marine facies (Fig. 11). Many of the taxa show nearly complete growth series and some specimens are the largest found in the formation. Many of the bivalves, especially Crassatella uvasana and Venericardia (Pacificor) hornii calafia, are articulated. Many taxa show preservation of delicate morphologic features. As many as 50 species of megafossils have been found in this bed (Squires, in press). It is the stratigraphic highest occurrence of Turritella andersoni lawsoni, which is the most common mollusk in the shallow-marine (transgressive) facies.

Shallow-Marine (Regressive)

The shallow-marine (regressive) facies has been removed by pre-Sespe erosion east of Las Llajas Canyon. It consists primarily of bioturbated silty sandstone with scattered fossiliferous units and minor occurrences of laminated sandstone. Beds are up to 7 m thick. The sandstone is usually mottled by bioturbation although, locally, Ophiomorpha is recognizable. Contacts of the fossiliferous beds are not distinct due to the bioturbation. Fossils are mostly unabraded fragments in hashlike concentrations, but in a few localities, there are articulated bivalves such as fragile Pinna lewisi specimens (Fig. 12).

The taxonomic composition of the regressive phase of the shallow-marine facies is similar to that of the transgressive phase but not quite as diverse. Megafossils which commonly occur in both are Calyptrea diegoana, Phalium (Semicassis) tuberculiformis, Turritella uvasana applinae, Corbula (Caryocorbula) dickersoni,and Glycymeris (Glycymeris) rosecanyonensis.

Discussion

A shoreline environment is interpreted for the lowermost part of the shallow-marine (transgressive) facies where it interfingers with the conglomerate beds of the coastal alluvial-fan facies. The upper parts of these conglomerate beds are gradational with the overlying fossiliferous sandstone beds of the