



Figure 47. Schematic diagram showing overlap (onlap) relationships and facies variations in Blue Creek Canyon area. North is to left. Sequence has been broken by faults, which may have affected present relationships. Key to thin-section sketches: *q*, quartz; *qo*, syntaxial quartz overgrowth; *g*, glauconite; *r*, rhyolite grain; *p*, porosity; *ph*, phosphatic fragment; *pe*, pelmatozoan fragment; *s*, sparite; *m*, micrite; *b*, brachiopod valve; *v*, shelter porosity now filled with sparite.

moderately well-sorted sandstones characterized by small- and medium-scale cross-bedding. Mineralogically, these sandstones consist of more or less equal amounts of granular glauconite and quartz together with subordinate feldspar and rhyolite fragments, the whole being intensively cemented by quartz (fig. 48). This facies is interpreted as a shallow-marine shoreline deposit. The third facies of the Reagan is restricted to an area where the underlying Carlton Rhyolite consists of tuffaceous sands and where the basal unconformity is planar. This facies consists of medium- to coarse-grained, well-sorted and very well-sorted sandstones characterized by medium- to large-scale cross-bedding (to 3 ft). Mineralogically, these sandstones consist largely of quartz grains with minor amounts of rhyolite and glauconite. They are tentatively interpreted as either eolian coastal dunes or marine sand ridges. This facies also is intensively cemented by secondary silica, which forms spectacular syntaxial overgrowths (fig. 49).

The upward passage from the Reagan Sandstone into the Honey Creek Formation records a gradual change from quartz-glauconite shoreline sands to a carbonate, sand-dominated shoreline. The boundary between the two formations is gradational and has been obscured by diagenesis. As a result of the diagenetic loss of calcium carbonate, a wavy texture has formed in which discontinuous lenticular, car-

bonate-sand bodies are enveloped by quartz-glauconite sandstones (figs. 47, 50).

In the southern part of the area, where the Honey Creek rests directly on a rugged surface of Carlton Rhyolite, three distinct facies are developed. The first of these, a very thin (0–12-inch) breccia of rhyolite fragments cemented by sparite (fig. 51), passes abruptly upward into medium-scale cross-bedded, bioclastic sandstones (fig. 52) consisting mostly of pelmatozoan fragments with lesser amounts of brachiopods, trilobites, quartz, and glauconite. The cement is sparite (syntaxial on pelmatozoan fragments), later generations of which are slightly ferroan (fig. 53). Subsequent loss of calcite is indicated by many sutured grain contacts. A third, more restricted facies consists of mounds of orthid brachiopods. These mounds were apparently shell banks of some stability, because individual shells acted as baffles that trapped calcareous mud and small amounts of quartz-glauconite silt particles (fig. 54).

#### Arbuckle Group: Area A (East of Blue Creek Canyon Fault)

The three members of the Fort Sill Formation, lowermost component of the Arbuckle Group, are