cumulus-textured rocks, ranging from orthocumulates through to adcumulates and showing a wide range of olivine morphologies and grain sizes. The relative distributions and proportions of spinifex and cumulus rock types vary widely, and this is one of the defining features of different volcanic environments.

Other lithofacies are much less abundant, but are significant as indicators of environment. Crescumulate rocks exhibit dendritic (commonly called 'harrisitic') crystal morphologies, contain a high cumulus component and are normally enclosed within polyhedral olivine cumulates. They are distinct from platy and acicular spinifex which occur in A zones of differentiated flows and have therefore grown downward. Spinifex rocks in some cases contain a component of cumulus crystals, and therefore do not necessarily reflect liquid compositions. They are distinct from crescumulates in containing a much lower cumulus component, and in having strongly dendritic fractal crystal shapes.

As noted in Chapter 3, most komatiite flow tops typically contain few (<1%) vesicles (Pyke *et al.*, 1973; Arndt *et al.*, 1998a) but some komatiite flows enclose strongly vesicular zones or layers, defining a separate mappable lithofacies. Vesicles occur in flow tops (e.g., Dundonald: Eckstrand and Williamson (1985); Barberton: Dann (2001)), in porphyritic lavas (e.g., Lewis and Williams 1973), and in some cumulate rocks (Keele and Nickel, 1974; Stolz and Nesbitt, 1981; Beresford *et al.*, 2000; Hill *et al.*, 2004). Beresford *et al.* (2000) distinguished *amygdales* (vesicles filled with late-stage minerals) from *segregation vesicles* (partially filled with interstitial silicate or sulfide melt). *Sulfide-filled segregation vesicles* are described and illustrated in Chapter 10.

Volcaniclastic lithofacies are produced by consolidation of volcanic fragments formed by ejection from a vent (*pyroclastic*), by quenching with water (*hydroclastic*), by flow fragmentation (*autoclastic*), or by erosion (*epiclastic*). Volcaniclastic komatiites are rare, but have been described at Scotia, Western Australia (Page and Schmulian, 1981), in Sattasvaara, Finland (Saverikko, 1985), on Gorgona Island (Echeverría and Aitken, 1986), in Karasjok, Norway (Barnes and Often, 1990), in the Steep Rock and Lumby Lake greenstone belts, Ontario (Schaefer and Morton, 1991; Tomlinson *et al.*, 1999), at Dachine, French Guiana (Capdevila *et al.*, 1999), at Gabanintha in the Murchison Province, Western Australia (Barley *et al.*, 2000) and in the Wallace greenstone belt, Ontario (Sasseville and Tomlinson, 2000). Some have been interpreted to be *pyroclastic*, but contain fragments of rock types that do not form pyroclastically (e.g., spinifex-textured or cumulate lava) and are therefore more likely epiclastic. Others contain only fine-grained glassy material and are limited in stratigraphic extent, so they are more likely *hydroclastic*. We