Cone-in-cone investigations

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Cone-in-cone structures in the Lower Ordovician, Halifax Formation of southern Nova Scotia are the subject of this study. These structures occur in discoid to ovoid shaped lenses up to 6m in diameter and 15 cm in thickness, although the average ones found measure about 50cm by 5cm. The lenses are made up of stacks of cones radiating outward from a massive core. The underside of each lenticular unit has a characteristic collar that parallels the outer edge and can be used as a right-way-up criterion. The individual stacks display an increase in cone diameter from a few millimeters at the base to 10mm diameter at the outer boundary. The outer surface of each stack of cones displays a series of concentric ridges representing the surface intersections of the cones below.

The cone-in-cone lenses are not randomly distributed through the slates but appear confined to specific horizons. They show a consistent diminution in size from west to east; the significance of which is not yet known.

The cone-in-cone structures in the Halifax slates arenot calcareous. Mass spectrographic analysis has so far failed to detect any carbon.

Cone-in-cone structures have previously been attributed to either brittle failure, Hills, E.S. (1972) or to stresses set up in the rocks as a result of volume expansion following recrystallization of carbonate minerals, Bonte, Maillot (1984). Morphological differences between cone-in-cone structures described in the literature and those presented here will be discussed. The origin of the cone-in-cone structures in the Halifax slates is not yet fully known.