The Littleton Formation was then deposited atop the Silurian Rangeley, Perry Mountain, Smalls Falls and Madrid Formations in the Early Devonian period, 409 million years ago. It was eroded and transported from the Avalon plate to the east. This sedimentation episode heralded the onset of the Acadian Orogeny that built the framework for today’s Presidential Range. The Littleton Formation is made up of different combinations of what were once mud and sand deposited in the deep Kronos Ocean. These sediments were metamorphosed during the Acadian collision and are now schists and quartzites respectively. On the map, units shown in various shades of yellow, such as

Photographs of the Devonian Littleton Formation. In photo 6, the smooth, light gray, fine-grained quartzite (Q) grades, in the direction of the arrow, into the coarse-grained andalusite schist (S) to the right. The arrow points in the “topping” direction of the old marine sediment indicating that the now tilted layers get younger in the direction of the arrow. Another quartzite rests on top of the schist to the far right. Photo 7 shows thin, rhythmically bedded schist and quartzite east of the Mt. Madison summit cone. The latter is slightly indented as they weather faster than the schists.
Dlmj, Dlcp, and Dlab, are schist-rich with only 10-20% quartzite. Units that are blue, such as Dlog, Dlag, Dlirp, and Dlgg on the map, are quartzite-rich with less than 50% schist (Photo 6). The orange-colored units, such as Dlmm and Dlhr on the map, have roughly equal amounts of schist and quartzite layers interbedded on the centimeter scale (Photo 7).

**Submarine Fans**

The Littleton Formation was deposited as a series of overlapping submarine fans on the slope of the Kronos Ocean. As the name indicates, these underwater features have a fan-like shape and the sediment moves from the “handle” of the fan spreading toward its outer edge. Each fan has a feeder channel that is primarily filled with sands and extended downslope from the “handle.” Sediments become progressively more mud-rich with increasing distance from the channels towards the edge of the fan. The massive schists that formed from these muds, like the Parapet near Star Lake or in Edmands Col (Dlec), were probably the distal (or outermost) edges of one such fan. The thin, evenly bedded muds and sands (schists and quartzites) exposed on Mt. Madison (Photo 7, Dlmm) and throughout Bigelow Lawn (Dlbl) were probably the mid section of a fan. The thick sands (quartzites) exposed on the shoulder of Sam Adams just above Storm Lake (Dlirp), along Osgood Ridge, and also just above the Alpine Garden (Dlag) on the Mt. Washington summit cone were probably the feeder channel to various fans. In these fans, muds or schists dominate. Muds interbedded with the sands (schists and quartzites) are the next most common, and sands (quartzites) are quite rare. The exact number and locations of fans that made up the Littleton Formation is unknown in part because of the subsequent complex deformation but also as a result of incomplete exposure.

The estimated total thickness of the entire Rangeley, Perry Mountain, Smalls Falls, Madrid, and Littleton Formations is 3.5 kilometers, but possibly much more as neither the base of the Rangeley Formation nor the top of the Littleton Formation has ever been identified.