

## Triple S Geotur 2010

*This account of a recent MVFN field trip was written by Cathy Keddy (MVFN Programme Chair) and includes photos by Cathy Keddy except as indicated*

This was not just another bicycle rodeo, but a fantastic geological outing in Lanark County led by Dr. Allan Donaldson. The tour really began just downstream from the road bridge at Pakenham where we were carried back to Paleozoic times (about 500 million years ago), when the area was beneath a warm, shallow sea.

Cross-sections of sea lily stems, appearing as half-centimeter-diameter washers, were scattered across the exposed, flat riverside rock pavement. Among them were the fossil remains of long, straight, conical shells of nautiloid cephalopods (like squids with shells on their bodies)—orthocones. The one below, however, was just a baby. Some grew to lengths of meters!



Probably the most distinctive fossil organisms we encountered were the stromatoporoids, resembling dark, sponge-like formations. They were the remains of animals, colonial aquatic invertebrates. Like corals, they created exoskeletons from minerals in the water and continued to grow in height by adding layers. They also formed reefs. Fossil orientation was quite variable. Some were found vertical as they had grown, while others had toppled before being fossilized. Howard and Mary kindly loaned their appendages for scale in the photo on the next page to show the size of this stromatoporoid (dark dumbbell-shaped feature).



The rock blocks used to construct the Pakenham bridge showed stylolites, distorted layers in the limestone caused by the pressure of overlying rock and differential solution of softer layers (seen as lines in the rock block, top left of photo below). Buildings constructed of limestone with stylolites are structurally less sound than those made of uniform, higher quality stone. Difficulties with the foundation of the Daly Building in Ottawa, for example, were due to this weakness in the rock.



Our tour progressed to a quarry near the Burnt Lands alvar where we discovered not only more orthocones, but fossilized invertebrate burrows.



(photo by Howard Robinson)

After lunch at the waterside in Metcalfe Geopark in Almonte, where we added a little green heron to our list, we headed to Perth to admire the eclectic, but considerate collection of Precambrian bedrock samples arranged outside the Crystal Palace. Potentially this might serve as a nucleus for another geoheritage park, complementing the Almonte display.

At this point in the tour some folks became sidetracked by the Stewart Park Festival, leaving just five brave, keen individuals to head back east for the finale of our tour—the third “S.” The stromatolites at the bridge in Appleton were under water, so that was a wash-out. We were rewarded, however, by seeing some on dry land that had been exposed during construction activities on the outskirts of Almonte. Soil removal brought to light a field of stromatolites appearing like a fleet of half-buried flying saucers.



They were easily recognized by their circular outline and domed surface which showed concentric rings. The photo above shows half a stromatolite, the centre being at the left side with rings radiating out to the right from it. It was hard to believe that these features resulted from just the cementation of sediment particles by films of algae and they were a few billion years old. Some of these “ships” were some almost 2 m in diameter. What a fine conclusion to our triple “S” adventure—stromatoproids, styolites and stromatolites!