

Manitoba Tyndall Stone – Geocaching Activity

A cache by [junglehair](#) Hidden : 5/10/2007

Difficulty:



Terrain:



N 49° 53.303 W 097° 08.079

UTM: 14U E 633989 N 5527889

In Manitoba, Canada

Geocache Description:

This is an EarthCache located in Downtown Winnipeg. It is wheelchair accessible. All fossils can be found on the exterior of the buildings **no more than 2 meters above ground**. NOTE: The accuracy on your GPS will be low in these areas due to the obstruction of the buildings. Be prepared to search a wider area than usual.

Tyndall Stone is used as an ornamental building stone in many cities in Canada and the United States. It is a light brown, fossil bearing limestone that has darker coloured branching streaks called trace fossils. While there are many limestones used as building stone in North America, Tyndall Stone is unique.

The colour, beauty and strength of Tyndall Stone has allowed for its use in a variety of ways and architectural styles. Impressive buildings containing Tyndall Stone include the Parliament Buildings in Ottawa, the Canadian Museum of Civilization in Gatineau, the Provincial Legislature in Manitoba, the Rimrock Hotel in Banff, and the Empress Hotel in Victoria.

Tyndall Stone is quarried at Garson, Manitoba, about 40 km northeast of Winnipeg. It was first discovered in the area around 1894, when a farmer came upon the mottled limestone while digging a well. The first large quarry was opened by William Garson in 1898. Gillis Quarries Limited began quarrying there in 1915, and the fourth generation of this family-owned business is still at it today.

How Did Tyndall Stone Form?

Four hundred and fifty million years ago, what is now southern Manitoba was part of a warm, shallow, inland sea. During this time, which geologists call the Ordovician Period, this area was just south of the equator. Many different types of animals lived in this ocean. Some, such as corals, sponges, molluscs, and algae, we would recognize today. Others, such as trilobites and stromatoporoids, are extinct. All of these creatures lived on or above the soft, muddy sea floor. After they died, their remains became part of it. The calcium carbonate in their skeletons made the mud limey, so that when it hardened into rock it became limestone. Fossils of these animals and plants are visible today in Tyndall Stone.

Other animals burrowed in the mud of the sea floor for food or protection. And it is the preserved burrows of these creatures that make the beautiful mottling which gives Tyndall Stone its unique appearance. Nobody knows what exactly these animals were, because the traces of their burrows are all that they left behind. But shrimp in the Caribbean Sea make similar burrows today, so it's possible these creatures were shrimp-like.

Why are the burrows a different colour from the rest of the rock? Well, it all comes down to a difference in grain size and chemistry. As the animals burrowed through the soft, limey mud, they left traces of their passage that caused the mud in the tunnels to be slightly different from the surrounding sediment. The more tightly packed surrounding mud hardened before the less dense deposits in the burrows. Later, magnesium-rich waters percolated through the rock and deposited dolomite in the burrows, but couldn't penetrate the tightly cemented limestone rock. The darker colour of the burrows may be a result of oxidation of trace amounts of iron in the dolomite, or of pyrite that was deposited along with the dolomite.

The information listed above was copied from a publication by the PDAC.

Requirements

To log this EarthCache, you must match **the location name**, with **the correct photo** and **the coordinates** where that fossil was found.

Location Names:

391 York - East Side

St. Boniface Cathedral

Fort Garry Place

North side of Union Station

St. Boniface Cathedral

South side of Union Station

Coordinates:

N49° 53.318 W097° 08.708

N49° 53.366 W097° 07.342

N49° 53.180 W097° 08.209

N49° 53.370 W097° 08.086

N49° 53.349 W097° 07.345

N49° 53.310 W097° 08.027

Photos: Note: You can click on the photos to view a larger version.

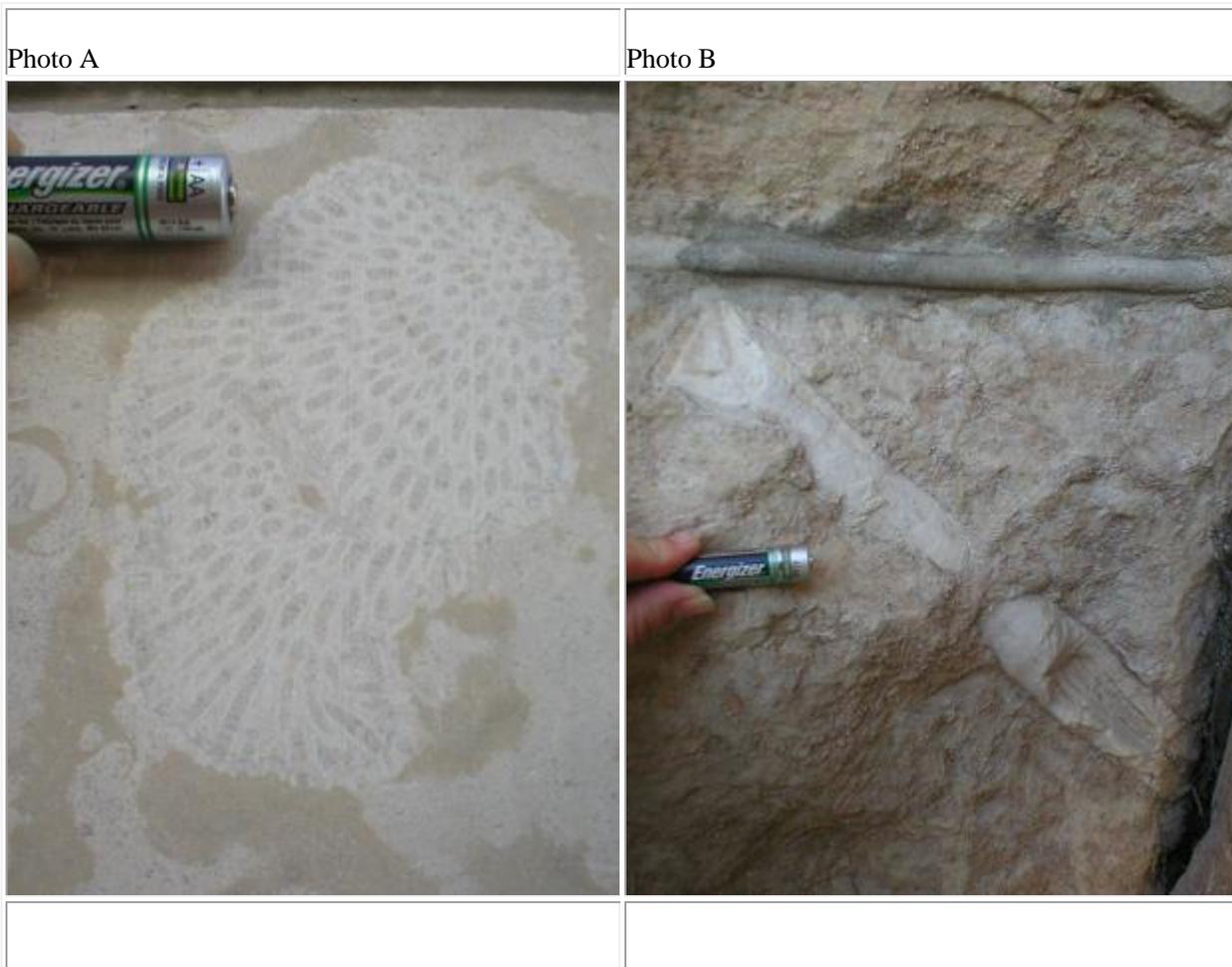


Photo C



Photo D



Photo E



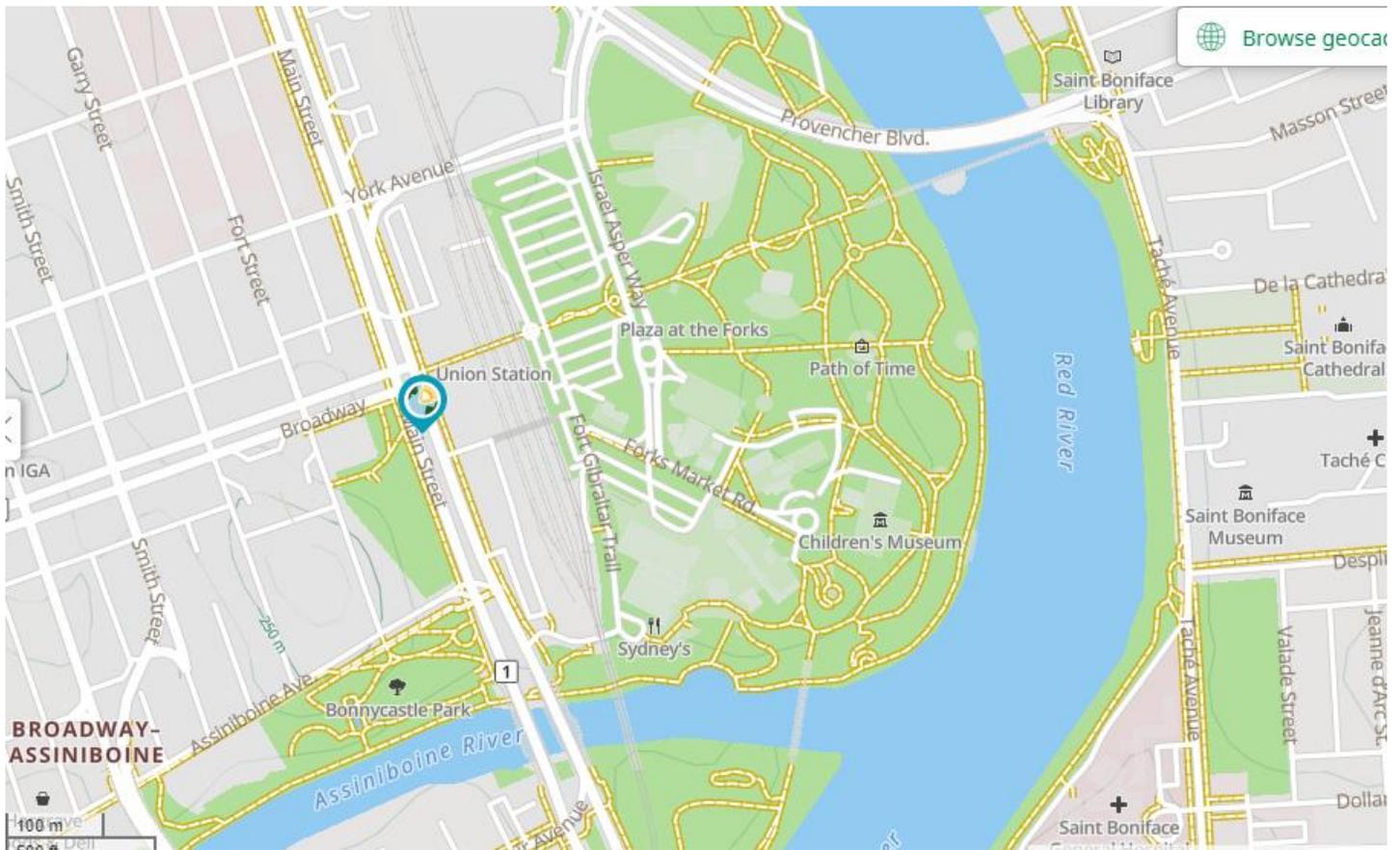
Photo F



Complete the rest of this table, then email your answers to me.

Photo	Name of Location	Coordinates
Photo A		N49° 53.318 W097° 08.708
Photo B		
Photo C		
Photo D		
Photo E		
Photo F		

Special thanks to Jacques Bourgeois and Dr. Graham Young for their assistance in identifying some of the fossils.



Map of Area for Geocaching Activity.