



Joint Meeting of the BASS Division (Basin Analysis & Sequence Stratigraphy) and the Alberta Palaeontological Society

Tyndall Stone: Discovering Ordovician-Age Fossils in the Tyndall in Calgary's Downtown and Inner-City Areas

Presenter: Tako Koning, P.Geol.

Location: CSPG Classroom

2nd Floor Aquitaine Tower

Calgary AB T2P OM2

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12:00 – 1:00 PM Mountain Standard Time

ABSTRACT

The Tyndall limestone is the famous and iconic building stone from the Late Ordovician (450 million years old) Red River Formation which outcrops near the town of Tyndall, approximately 30 km northeast of Winnipeg, Manitoba. The Tyndall limestone, also known as Tyndall Stone, occurs within the lower half of the Red River's Selkirk Member which is 43 meters thick. Tyndall Stone is used extensively throughout Canada as an ornamental building stone. It ranks among one of the most beautiful building stones in the world. The interior of the Parliament Building in Ottawa are of Tyndall Stone as well as the Museum of Civilization in Gatineau, Quebec, the Provincial Legislature buildings in Winnipeg and Regina, the University of Alberta's Tory Building, the Rimrock Hotel in Banff, Chateau Lake Louise and the Empress Hotel in Victoria.

The Tyndall limestone was deposited in a shallow marine environment. It is fine grained and cream coloured with pervasive mottling of darker dolomitic limestone. The highly distinctive and beautiful mottled appearance is due to the extensive presence of trace fossils known as *Thalassinoides* which are fossilized tracks, trails and borrows left behind by burrowing organisms, such as worms and crustaceans, which burrowed through the limestone during or just after its deposition.

This presentation will show select locations in downtown Calgary, Kensington and at the Southern Alberta Institute of Technology (SAIT) where Tyndall Stone is used for ornamental purposes and to clad the sides of buildings. Downtown, on the north side of the classic art-deco style AGT (Alberta Government Telephone) Building at 119-6 Ave., SW, built over 90 years ago in 1929, one can observe occurrences of *Receptaculites* which is the highly distinctive fossilized algae sometimes referred to as "the sunflower coral". Abundant *Thalassinoides* can be studied. The *Thalassinoides* are more resistant to weathering than the limestone matrix. Accordingly, they are prominently etched on the surface of these blocks by almost a century of weakly acidic rainfall.



Ten meters high Ionic-style columns of Tyndall Stone grace the entrance of the heritage Bank of Montreal Building, built in 1932. Similar style columns of Tyndall Stone can be seen at the entrance to the Centre for the Performing Arts, built in 1930 and originally called the Calgary Public Building. Both buildings are on the Stephen Avenue Mall.

In front of the Safeway store in Kensington, ten blocks of Tyndall Stone are present. The top dimensions of each block are about 1.0 m by 1.0 m and the depth is 0.5 m. These blocks allow the observer to study the fossils in multi-dimensions (top, front, side and back). However, the best location in Calgary to view the Tyndall is at SAIT where in the southeast corner of SAIT the Senator Patrick Burns building is entirely covered by slabs of Tyndall Stone. The slabs are usually 1.4 m high and 0.7 m wide.

The Tyndall is highly fossiliferous in the locations to be shown in this presentation. These fossils represent life which flourished 450 million years ago in a tropical environment on an ancient sea floor. A variety of fossils have been observed including nautiloids, gastropods, stromatoporoids, brachiopods, sponges, rugose corals, and large (up to 25 cm diameter) circular *Receptaculites*.

In October, 2021, the presenter and his wife visited the quarry known as the Gillis Quarry to see the outcrops of the Tyndall Stone and also to learn how the Tyndall is quarried. This quarry is in the village of Garson about 3 km southeast of the town of Tyndall. Photos of their visit will also be presented. At the quarry is the “rubble pile” where rejected Tyndall Stone can be collected at minimal cost. They collected a large volume of Tyndall with representative fossils which were brought back to Calgary. These samples will be laid out for viewing by the attendees at the meeting.

BIOGRAPHY



Tako Koning is Holland-born and Alberta-raised with 45 years of oil industry experience. He worked for 15 years in Calgary for Texaco as a geologist, exploration manager and vice president exploration. He also lived and worked in various capacities including portfolio manager and assets manager in Indonesia (7 years), Nigeria (3 years) and Angola (20 years). He has a B.Sc. in Geology (1971) from the University of Alberta and a

B.A. in Economics (1981) from the University of Calgary. He is semi-retired and continues to be fascinated by geology and palaeontology. He is pleased to share his knowledge about the Tyndall at this joint meeting of the BASS Division and the Alberta Palaeontological Society.



Paleontology

Sedimentation – Limestones

Stratigraphy – Ordovician



Figure 1 SAFEWAY, Kensington. *Maculurites* gastropod.

Canadian loony coin for scale.



Figure 2 SAIT. *Receptaculites*, an Ordovician-age algae. The darker mottled features are known as *Thalassinoides* which are trace fossils (worm tubes) caused by organisms intensively burrowing in the soft sediment.



Fig.4 SAIT. Large orthocone nautiloid, length of 50 cm.