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Fossil Walk  
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Subtle and small but impeccably preserved, the fossils and crystals embedded in Montreal's buildings make you see the city in a new light. If you know where to look you can see traces of Montreal's history that predate man. Suddenly, Montreal's past is not about squabbles and land grabs, but about explosions miles under the earth's crust and the silent scuttlings of creatures at the bottom of a coral sea.

This discovery was the upshot of a 10 minute walk downtown with Ingrid Birker, fossil curator of the Redpath Museum. As we made our way east along Sherbrooke Street from the Montreal Museum of Fine Arts, Birker pointed out a series of beautiful fossils and glinting minerals exposed in the stones used to construct Montreal's downtown core. It was a revelation.

Our first stop was Le Chateau Apartments, on 1321 Sherbrooke, corner of de la Montagne. This residential building is grand and aristocratic, adorned with turrets and built in the same style and out of the same limestone as the parliament buildings in Ottawa. The building was constructed in the mid 1920's with Tyndall limestone from the Garson Quarry north in Manitoba -- also a thematic reference in *The Stone Diaries* -- so it is truly a piece of Canadiana in more ways than one.

But the building's true history predates its construction by about 470 million years, says Birker. "Older than dinos, older than fishes, the world was just populated by invertebrates: spineless, soft-bodied animals with no bones," she said with some excitement as she pointed out flying saucer-like shapes, random burrowings, and lacy, concentric circles embedded in the limestone. "The animals built their own houses, called exoskeletons." It is these structures that became preserved in the sediment of the ocean floor and they're clearly visible in the building's façade.

Look closely at the stone above the easternmost arch of Le Chateau and you can see the tracks of worm burrows. These are the footprints of diggers that moved around in the sludge

before their tracks and shells became immortalized by time and compressed by the tons of sediment pressing down from above. The pale, flying saucer-like disk floating off to the right is a cross-section of a cephalopod, what Birker calls “the brainiest of marine mollusks. This is a slice across the orthocone cephalopod’s middle,” she adds with some authority.

In a booklet that Birker has written with her colleagues entitled “What Building Stones Tell,” there is a drawing of a cephalopod, a soft-bodied creature that secreted its own shell. It looks like an elongated sugar cone topped with an octopus -- edible treats I’d never considered in this combination until I saw this illustration. Even though it’s only mid-morning, eating also occurs to Birker as we examine the traces of the cephalopod. “This is the ancestor of today’s squid,” she says, describing it as a predator that jetted around the forest floor with bursts of water, its head topped with tentacles equipped with hooks and suckers to snatch its prey. “The glass-like shard you find in the middle of a squid is the vestigial shell of this animal,” adds Birker helpfully. Like a nautilus, the animal secreted its shell in a series of expanding chambers, moving to the outermost “room” as it grew, leaving a dividing wall behind it like a closed door.

As we walk around the building to de la Montagne, we see a primitive oyster shell on the rounded corner, a classic bivalve like the one on the Shell gas station signs. Then, on the eastern wall of the building between two Diplomatic Corps parking signs and just above eye level, there is a perfect, fossilized skeleton of one of those strange cephalopods. You can see its series of chambers very clearly, the animal’s exoskeleton, or shell, showing light on the dark background of the surrounding sediment just like an Xray. On the same wall is the imprint of a large circle that looks like the centre of a sunflower. Perfectly spaced and expanding outward in a mathematical, Escher-like progression, these are the chambers of a colonial coral, Birker tells me. Very similar to today’s brain coral, the prehistoric animals lived in the tiny tube-like spaces between little cups (called corallites) that joined together to form a coral reef. And like modern corals, only the top layer would house living animals, while the rock-like underpinnings acted as a foundation that anchored it to the ocean floor.

Crossing Sherbrooke to Holt Renfrew (1300 Sherbrooke Street) we suddenly jump from the mid 20’s, when The Chateau was built, to the time when the tony department store was constructed in the late 30’s. But we not only leapfrog decades but a hundred million years. Holt Renfrew is made of Indiana Limestone dating from the Carboniferous period, about 360 million years ago, according to Birker. On its eastern wall along de la Montagne you can see

fossils of ancient crinoids, or sea lillies. These are the ancestors of starfish, sand dollars and sea urchins, and although they look like flowers on long stems, they are animals with a mouth, an anus, feathery arms to gather up its food, and a long segmented column to hold up its oversized head. Now, all that can be seen of the huge underwater groves of sea lillies are bits of fossilized crinoid that look like tiny spinal columns.

Crossing back onto the north side of Sherbrooke Street to the Mount Royal Club (1175 Sherbrooke) are my favourites: remnants of gastopods, or snails. Embedded in a low stone wall by the sidewalk, they look like spirals, or the @ in an email address. Like the cephalopod, this snail secreted its shell in stages and got covered with the organic gunk that then became limestone about 470 million years ago. “We’re talking about 200 million years of accumulation of lime ooze and dead shell bodies,” explains Birker.

If you think that’s old, try the igneous rock in the Canaccord sign in front of the CIBC building, on Sherbrooke and Metcalfe (1010 Sherbrooke). This is polished anorthosite, a hard black granite that predates any life form on earth except bacteria. It’s at least a billion years old, and was formed from molten materials and metals that cooled at different rates deep inside the earth. Birker tells me that the shiny, reflective bits are biotite and the shiny black pieces are ilmenite and magnetite, which make the monument magnetic. It’s sitting on pink Rapakivi granite from Finland, which you can see cladding many of the buildings surrounding it.

We’re nearing the end of our walk and Birker wants to show me one more beautiful specimen. This is the blue, Labradorite granite of the Banque Laurentienne sign just beside Raymond Mason’s ivory-coloured sculpture entitled “The Illuminated Crowd” (1981 McGill College). Next to the hollow, polyester resin of the sculpture, the blue granite glints with iridescent shards of minerals and crystals, once formed and cooled inside the molten mass of the earth. We enter the building to see where the flecked, variegated Labradorite has been polished to a high gloss at the the banking machines. “This is one of the hardest, oldest rocks on earth, billions of years old,” says Birker with wonder, as we examine the jewel colours and flashes of reflected light on the surface of the banking console.

The wonder is not only that the earth’s cooling of its constituent materials created these swirling patterns, but that it was used in something as mundane as the floors and counters of an office building. As I pondered this, crowds surged through the doors, oblivious to the primordial forces that formed the stones of these buildings, just as I had been before I took this geological

walk. Now, familiar landmarks that I had passed a million times or more were no longer invisible. There was evidence of life forms in the building stones and traces of inner combustion in downtown signs and lobbies -- all showing Montreal's ancient origins, like prehistoric graffiti.

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#### Sidebar

A walking tour focussing on the fossils, rocks and minerals of Montreal's buildings is being organized by the Redpath Museum on April 28<sup>th</sup> at 2pm. Everyone is welcome. This will also be the launch of a new booklet entitled What Building Stones Tell, written by Ingrid Birker, Joan Kaylor and Trevor Gillingwater of the Redpath Museum. The tour is free but there is a \$3 charge for the booklet. For more information or to reserve a place on the walking tour, call 398-4086, local 4094.

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