

## **COLLECTING THE CARDINAL DIRECTION-MARKERS OF THE NATIONAL MUSEUM OF THE AMERICAN INDIAN (NMAI)**

In his presentation at the January 5, 2005 MSDC meeting, Tim Rose of the Smithsonian National Museum of Natural History (NMNH) described a unique, one-time activity to collect rocks at the four corners of the western hemisphere. The boulders now mark the cardinal directions on the grounds of the NMAI.

The story begins in June 2003, while the new museum was under construction. Two NMAI staff members, Jim Pepper-Henry and Caleb Strickland, approached the Department of Mineral Sciences of the NMNH for assistance with collection of suitable stones. NMAI's landscape plan needed rocks about one meter square (5-6,000 pounds) for predetermined spots on the perimeter of the exterior landscaping.

Why these particular spots? They spots lay on radials going directly North, South, East, and West from the center of the NMAI rotunda. Placed in the cardinal directions, the four stones would be a sort of guardian for the museum. They would also represent a spiritual bringing together of the entire western hemisphere. But there was one key condition: the rocks must be extracted not only with legal permissions but also with the blessing of the local indigenous peoples.

NMAI readily agreed with Tim's suggested sources. The Northern stone would be acasta gneiss, the oldest dated rock in the world, 3.9 billion years old. The Western would be some of the youngest rock in the world, from Hawai'i. For the East, the selection was Paleozoic quartz from near Washington, DC, and for the South, Cretaceous rock from Tierra Del Fuego, the last tip of land before Antarctica. The various ages of rock express the cycle of the earth. Tim was involved in collection of all but the Tierra Del Fuego rock.

### **The Northern Stone: Acasta Gneiss (in the flower bed by Jefferson Drive)**

For the acasta gneiss, the Smithsonian team headed for Yellowknife in the Northwest Territories of Canada. The Dogrib tribe was eager to help the team select a rock for the NMAI. Two of the elders spoke only Tlicho, the Dogrib native language. (Tim attended a tribal council meeting that began with the Lord's prayer in Tlicho, after which the men crossed themselves.)

To go 200 km north of Yellowknife to collect the acasta gneiss, the team flew in a Twin Otter float plane, because there are no roads. So far north, the surface has been thoroughly glaciated. Flying over, one sees vast areas of fairly smooth rock.

The plane landed on a lake. On the opposite shore was an outcrop that had been partially excavated after the discovery of these very old rocks. One of the Dogrib selected the rock to be collected. But could the helicopter support it on the long trip back to Yellowknife? The helicopter would carry it suspended in a net (and creating drag), while also carrying the significant weight of fuel needed to transport it back to Yellowknife.

Tim estimated its weight to make sure it didn't exceed 2000 pounds. Then the team put straps on the rock. The helicopter picked it up by the straps and moved it to a padded net. Only then could the helicopter pick it up and begin the flight to Yellowknife.

Before leaving the area, Tim had about 25 minutes to collect rocks for the NMNH – some from the immediate area of the selected rock, and some from an area of glacial pavement that had been cleaned off by local geologists specifically to show it off. Acasta gneiss has a percentage of granite (from which zircon crystals come) but also amphibolite, which also holds some unakite. Tim was able to collect a variety and brought 8 samples to the meeting.

With the main rock on its way back to Yellowknife, a tribal elder sang a native chant and everyone had the opportunity to chew on dried caribou meat, take some tobacco, and give an offering into the fire, while reflecting on why they were there and what the land had given them that day. The Dogrib had brought firewood because they were so far north that there's little to burn. Then the group had sandwiches, got on the airplane, and flew back to Yellowknife.

(Tim mentioned that Yellowknife was full of bilingual English-Japanese signage and Japanese tourists who come to see the aurora borealis, which they view in rotating, heated, outdoor chairs. But it was overcast the whole time Tim was there.)

The area held another interesting mineral story. Less than a month before the team arrived, the Dogrib Nation had ratified a treaty that dated to the early 20<sup>th</sup> century. It was also signed by the current prime minister of Canada. The treaty gave the Dogrib Nation control of a large portion of what was originally their native land, including mineral rights.

The two gold mines that had been the lifeblood of Yellowknife have been closed because of arsenic. But then chrome diopside, a beautiful, unmistakable green mineral, was discovered in the Northwest Territories. The miners traced its source to a kimberlite pipe, the same matrix that holds diamonds all over the world. This discovery led to a diamond rush in the Northwest Territories.

So, thanks to the new treaty, the Dogrib Nation now controls an area with three operating mines and very plentiful diamonds. The mines almost guarantee full employment for the foreseeable future, particularly because the mining operations have agreed to create jobs for the local people. Some of the jobs include the cutting and faceting of the diamonds in Yellowknife. Diamonds from the Northwest Territory have a tiny polar bear carved on the girdle to differentiate them from the African "blood diamonds."

### **The Southern Stone: Cretaceous Gneiss (Independence Avenue near sidewalk)**

Near the southern tip of South America, in the islands of Tierra Del Fuego (Cape Horn), is Isla Navarino, which is controlled by the Chilean navy. The Yagan tribe had been

moved off the island some years ago. They returned with the Smithsonian team to select the rock for the NMAI. The Chilean navy excavated the rock, dragged it onto a flatbed truck with some of the Yagan watching, put it on a ship, and took it to Baltimore, and no cost to the museum. Again, many of the local native people participated in collecting the boulder. The stone stands alone, a gneiss boulder, actually a glacial erratic. It looks much like other boulders around the building, which are from Quebec.

### **The Western Rock: Volcanic Rock (7<sup>th</sup> Street near sidewalk)**

Hawai`i is the farthest western region of native peoples represented by the NMAI. The Smithsonian team went to Kilauea, the site of the longest sustained eruption in the world, which has been going on for 20 years. (Tim said this kind of sustained eruption isn't very unusual, but non-Hawaiians haven't seen it before.)

Tim had proposed an a'a' ball for the NMAI. An Hawai`ian elder, or Kupuna, chose the rock from a photograph of candidate rocks she had visited because she discerned a face pattern in the side of the rock. It was conveniently located about 10 feet from the side of the highway. Pualani Kanahale, who chose the rock, and her daughter Kekuhe performed a separation ceremony, with chanting and much sadness. They left behind a fragrant Hawai`ian plant offering and departed. (Mrs. Kanahale is a leading hula teacher and brought her troop to the NMAI opening ceremony.) After the women left, the National Park maintenance staff carefully padded, shrink-wrapped, and strapped the rock, and gingerly brought it back to main park headquarters.

Then the USDA found that the Smithsonian was taking a big rock off the island. Despite the team's assurance that the rock had been sitting on rocks (documented with pictures), the USDA required that its wrapping be opened in order to be sure there was no soil on it. Then it was re-wrapped, placed in a large shipping container, put on a ship, and brought to Washington, DC – all paid for by the Matson international shipping company.

Before leaving the island, Tim, Jim, and Caleb hiked about 4 km and 1500 feet vertically, as the sun set, and saw an active 'a'a lava flow, with a very fast flow in a central channel (quite unlike the pahoehoe flows usually seen on TV). Periodically they saw big rocks rolling along in the channel. These are accretionary lava balls and are not unusual in an a'a' flow that has cooled down.

Leis were placed on the boulder during the opening ceremony. During the separation ceremony, the rock was told that it was going on a significant journey to represent Hawai`i in an important place, but it would be coming back. And the agreement is that it will come back in 20 years, and be replaced by another. Tim has seen people just come up and place their hands on it; they know it's special.

### **The Eastern Stone: Paleozoic Quartz (Maryland Avenue near 3<sup>rd</sup> Street)**

It would be reasonable to expect that the easiest stone to collect would be the one from the NMAI's backyard, the East. The team knew that, for the local indigenous people,

quartz had mystical properties. Tim knew that some of the oldest archaeological investigations in the US are in Rock Creek Park, dating from work by geologist W. H. Holmes around 1900 in the hills above Piney Branch. The NMNH-NMAI team had visited Piney Branch and identified good candidates by the stream and in the streambed.

The week after returning from Hawaii, the Smithsonian team and two women representing local native people from Virginia and Maryland met with the superintendent of Rock Creek Park...and a lawyer from the Department of the Interior.

Jim of the NMAI team spoke first, saying how much the museum appreciated the cooperation of the National Park Service in Hawai'i and in Rock Creek Park. He noted that the quartz along Piney Branch is special because we know that native peoples worked the rock here.

The lawyer interjected with a list of reasons why it would not be possible to take a rock from Rock Creek Park (problems that had been completely solvable in Hawaii). The discussion continued as the whole group went to Piney Branch to look at the quartz. Separated from the lawyer and superintendent, one of the native women told Tim that this rock could not be taken because it was "spoiled": these things must be given of free will.

Only three weeks remained to get a big chunk of Eastern quartz onto the Mall. How could they do it? The team looked toward the biggest piece of quartz in this area: Sugarloaf Mountain, one huge chunk of quartzite. It was a suitable choice because there were known Indian settlements all around the base of the mountain.

The Stronghold corporation, which owns the mountain, welcomed the Smithsonian's overtures. On a lovely day with cicadas everywhere, a native woman, Suzanne Almalel, accompanied the team to Sugarloaf and found a gorgeous, huge rock, nearly 100% quartz – with hundreds of butterflies around it.

But how to get it out of the woods? The Stronghold people recommended a nearby company, Digging and Rigging in Comus, MD. Digging and Rigging turned out to have heavy equipment and plenty of experience; they move full-grown trees with 100-ton root-balls. This 6000-pound boulder would be no problem for them. The team went to the company office and entered a room decorated in Southwestern cowboy-and-Indian motif – a clear sign to the team that this was the right place. Could the company deliver the rock that same week? Yes!

The team returned to Sugarloaf at the end of the week. Native American Karenne Wood performed a ceremony and recited a prayer in her language. Then the company picked up the boulder in a canvas sling, put it on a flatbed on the truck, and brought it to the NMAI at no cost to the museum.

At about the time the rock arrived, Jim got a call from the superintendent of Rock Creek Park saying that it would be okay to take the Piney Branch boulder. But it's the Sugarloaf rock that stands near the NMAI's front entrance.

All four rocks were in place in June 2004, before the building was finished. In all cases the Smithsonian team carefully placed each rock, aiming to replicate as much as possible its original position in relation to the compass points and to the ground. When the rocks were in place, the Smithsonian held a dedication ceremony and a party, with indigenous people from all the places where the rocks had come from. The Hawaiians walked to each stone and left a flower lei.

The four cardinal stones are not labeled. They are intended to have spiritual significance rather than significance as specimens. In fact, NMAI visitors often comment about the overall lack of labels. Native traditions hold that when you label something, it loses something of its spirit; it changes from being itself into being an object.

The land and rocks are very important to native people. For example, the Dogrib Nation has a pictorial history. Their history begins with representations of rock at the creation of the world, rock at the beginning of time. The NMAI rocks mark the cardinal directions, reminders of where the sun comes up and goes down. Tim's presentation encouraged us not only to visit the stones, but to appreciate their significance to the native peoples who played such important roles in bringing these boulders here from the farthest reaches of the western hemisphere.