

from Talking Rocks by Ron Morton
and Carl Gawboy, Pfeifer-Hamilton
(2000).

AUTHOR'S NOTE

Carl and I first met at a workshop presented by the Plus Center at The College of Saint Scholastica in Duluth, Minnesota. The workshop, entitled "Reading the Land," was designed for fourth-through eighth-grade teachers to learn about the ecology and geology of Minnesota and how these could be integrated with Native American heritage and land perspectives.

During the workshop, listening to Carl talk about Native Americans who have lived in the midcontinent region for more than 10,000 years, I was struck by how close these people were to planet earth and how much of their culture was related to, and interwoven with, geology. I was also impressed with the way Carl blended the facts of Native American culture and tradition with different stories and myths. Carl's lectures started me thinking about this book, and the more I considered it, the more excited I became.

At supper one evening, in a kind of garbled rush, I outlined my ideas to Carl and was amazed to find he had been thinking along much the same lines. According to Carl, many of the geological topics presented at the workshop could be found in Native American stories and traditions. Geology, Carl said, provided a foundation for many of the things Native Americans had observed and believed for more than 10,000 years.

As the workshop ended, our collaboration began. We started to write a book that integrated geology and living with planet earth, as it related to the culture, science, and heritage of Native Americans living in the midcontinent region. However, as we soon discovered, in order to do justice to such a project we had to go beyond science, myths, and traditions. The book also had

to be about the search for common ground between two different ways of seeing planet earth and the land we live on and need.

In our explorations of the midcontinent region, Carl and I came to the conclusion that not only did these different worldviews, the Western view of planet earth as seen through the eyes of geology and the more holistic view of the land and planet as seen through the eyes of Native Americans, share a lot of common ground, but each actually strengthened and gave balance to the other.

In the end, then, *Talking Rocks* turned out to be not only a story of geology and how this geology affected and influenced the traditions, myths, and science of Native Americans for more than 10,000 years, but also a story of two people, from culturally different backgrounds, trying to understand and appreciate different ways of seeing this land and planet we call home.

The other difficult aspect of writing this book turned out to be finding a suitable and entertaining way to present and link together the different stories we wanted to include in the book. We struggled with this problem for some time without finding a satisfactory solution. It was Carl, or rather Carl in action, who finally provided the answer.

I was previewing slides for an Elderhostel course I was to teach on the Gunflint Trail when I came across one of Carl. Taken on a spring day at Jay Cooke State Park, it showed him demonstrating how the voyageurs transported goods and furs across portages. The very next slide caught him in action at Rice Lake. Under a deep blue sky Carl, in a canoe, demonstrated how Native Americans harvested wild rice.

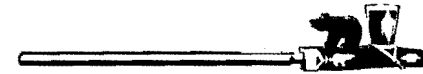
These two slides, the memories that went with them, and the lectures Carl and I had presented together gave form and substance to both the Native American storyteller and philosopher found throughout the pages of this book and the geologist who narrates this story. Together, they allowed us to interweave two different worldviews and the search for common ground with the stories we wanted to tell. At the same time these two characters give full voice to much that is within and between

Carl and me. Finally, though the geologist and the Native American we call Earth Walks are fictional characters, the geological and cultural descriptions and events in this book are as factual and accurate as our understanding of geology, astronomy, and history can make them.

Ron Morton
1999

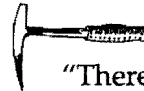
CHAPTER FIVE

THE WOLF'S HEAD



PART ONE

THE FIRE OF MANIDOO AND THE OLD MAN



"There is a vastness about Lake Superior's blue-green waters that make it more like a sea than a lake," I told some two hundred people. Somewhat to my surprise, after Earth Walks' Saturday sermon, the lecture hall was overflowing, with a few people actually standing in the back.

"In fact," I continued, "it's been written that Lake Superior breeds storms and rain and fog just like the sea, making it wild, masterful, and dreaded, as any great sea should be."

"The lake also has character," I said more softly. "The way it gently rubs against the legs of laughing children on a sandy beach, the rise and fall of its sealike swells, deep and regular like the slow breaths of a sleeping giant, and the frantic roar of its storm waves, building higher and higher, as they are driven against its rocky shores by the wild, north wind.

"Then there are its people—people who have lived along its shores for more than six hundred years—people who call it *Ojibwe-Gichi-Gami*, meaning Great Lake of the Ojibwe. To most,

though, it is known as Lake Superior, a mistranslation of the name the voyageurs gave it. Paddling their birchbark canoes through its tall blue waves, they called the lake *le lac superieur*, which simply referred to its location above the then better-known lakes of Michigan and Huron.

"Lake Superior, as it turned out, was most appropriate, for it truly is a first-class Gichi-Gami. Superior could fit all of New Hampshire, Vermont, Massachusetts, and Rhode Island and most of Connecticut within its shoreline. The lake measures 160 miles across, 400 miles in length, from Duluth to Sault Ste. Marie, and contains enough water to cover all of North and South America to an icy depth of one foot. Icy, because its average temperature is 40°F.

"It took detailed topographic surveys, and then satellite images, to show us that Lake Superior has the shape of a wolf's head, though it certainly appears to be a Disneylike wolf who finds the city of Duluth full of exotic smells."

"Or it could be the big bad wolf," Earth Walks exclaimed as he came to the podium, "a not too friendly creature just waiting for the right moment to devour the entire city."

Holding up a bow and arrow, he continued, "Long before satellites, airplanes, cameras, or topographic surveys, the North American Indians told stories about the great bow and arrow of Gichi-Gami. From their travels around the lake, and from their geographic and mathematical knowledge, the Indians had



Lake Superior has the shape of a wolf's head.

figured out that the shape of Lake Superior resembled that of a bow and arrow.

"The string of the bow represents the south shore," he said, as he slotted an arrow onto the string and pulled the bow back. "The arrow represents the Keweenaw Peninsula, while the north shore is the bow, which has been drawn back, ready for action. Unfortunately, the stories never do tell us what Lake Superior is supposed to be aiming at."

Putting the bow and arrow aside, Earth Walks continued, "The formation of Lake Superior has been the subject of legends, poems, and the science of geology.

"According to Indian legends Lake Superior was made after a great flood and after the god Nanaboujou had recreated all the big islands and the continents. When the land was whole again, Nanaboujou took his long measuring string in hand."

Earth Walks took a long piece of leather from his pocket, held it up, and smiled broadly. "This is not the original string," he said. "It's one of those scale-model replicas—HO-scale, I think. Anyway, Nanaboujou walked all over the earth, measuring everything with his string.

"He decided on the length of rivers, on the size and depth of the lakes, on the height of the hills and mountains, and on the shape of the land so that everything would be in good proportions.

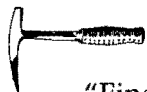
"When this was done he walked once more over the earth, searching for the perfect place to make his greatest lake. When he found this place—not too far north, nor too far south; forest on one side, prairie on the other—he made his great lake. And he made it in the shape of a bow and arrow, so the people that would live along its shores would always have good hunting."

Pausing, Earth Walks dropped the string and pulled a small leather notebook from his pocket. It looked old and worn. "There are also poetic explanations of its formation," he explained, as he opened the book. "Here is one I kind of like."

And he read:

*Superior was born and shaped by the fire of Manidoo,
Then finely sculpted by the icy fingers of old man winter,*

*And when the warmth of the sun returned to the land
It was filled with the old man's blood;
Which is why its waters are cold and clear as ice,
And why the north wind plays along its rocky shores."*



"Finally," I said, taking Earth Walks' place at the lectern, "comes the geological point of view: that Lake Superior was forged by glacial ice, but given birth by the fire of a hundred volcanoes. One billion years ago, in the far reaches of geological time, the land split open like an overcooked sausage. A great crack formed in the earth's crust, a crack that spread from the Lake Superior region, down what is now the St. Croix River Valley, and on through Minnesota and Iowa and clear across Kansas. Geologists refer to this great crack as the midcontinent rift, a place where the western part of North America tried to separate from the eastern part, much as Africa and South America did some 200 million years ago. Hot molten rock—magma, or lava—rose along this crack and poured out to cover the land. Year after year, lava flow after lava flow, thicker and thicker, until a pile of basaltic rock some two to ten miles deep covered the Lake Superior region.

"These lavas, being about as sticky as wet cement, had a great tendency to pile up close to their source, and so they were thickest directly over and adjacent to the great crack. The tremendous weight of this rock pile caused the land to sag downward for hundreds and hundreds of feet. This formed a large, bowl-shaped depression that geologists today call the Lake Superior Basin.

"Today you can walk on these ancient lavas along the north shore of Lake Superior, on the Keweenaw Peninsula of Michigan and on the island of Isle Royale. When you hike over these one-billion-year-old rocks, you will find they look a lot like recent lava flows found on the Hawaiian Islands or in Craters of the Moon National Park.

"Lava flows, like those in Hawaii or the North Shore of Lake Superior, often have round or angular holes in them, which are formed by volcanic gas—mostly water vapor, carbon dioxide,

and sulfur—as it slowly rises and escapes from the cooling lava, much as round bubbles of carbon dioxide rise to escape a yeast-water mixture. These holes, called vesicles, vary in size from pinheads to rare ones that are the size of watermelon. Over the eons, as the lava slowly cooled and turned to rock, surface waters, seeping down into the cooling lava, precipitated out a wide variety of minerals that filled the holes to give us such beautiful things as thunder eggs, agates, and geodes.

"In the Lake Superior region, the vesicles were filled with minerals that the native peoples found to be valuable as trade goods, useful in the making of tools and decorations, and important for their magical powers or spiritual significance. These were such minerals as native copper, which you will hear a lot more about in just a short while, native silver from the Thunder Bay area, fine quartz and hematite which form the banded Lake Superior agates, and the so-called greenstone of Isle Royale.

"When volcanic activity finally came to an end, a long period of weathering and erosion began. This erosion created a huge amount of sedimentary material, material that was carried by rivers and streams into the Lake Superior Basin. The erosion of the lavas went on for millions of years, and over this span of time the sediments managed to fill the basin clear to the top, creating a broad, swampy plain.

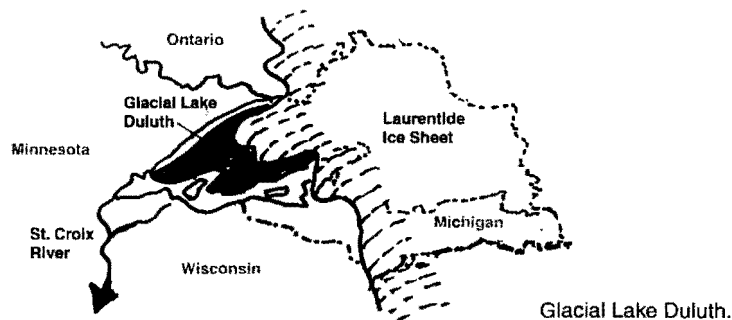
"Over the next few million years this sedimentary material became hard, solid rock. Several times these rocks were covered by great oceans; during dry times plants and trees spread over them, and they were walked upon by great dinosaurs. Through it all, more than a billion years of earth history, the Lake Superior Basin remained about as flat as a pancake.

"And that's the way it was until the coming of the glaciers about two million years ago. The ice, as it periodically advanced and retreated over the Lake Superior region, found the sedimentary rocks that filled the basin much to its liking, and proceeded to scoop them out as easily as a child scoops seeds out of a pumpkin. The removal of these rocks, coupled with the subsequent glacial plucking and abrasion of the underlying lavas,

excavated and deepened the Lake Superior Basin. The glaciers formed an abyss over 1,300 feet deep.

"During the final advance of the Laurentide Ice Sheet, some 20,000 years ago, the basin was completely filled with ice. When the ice began to melt, some 13,000 years ago, the meltwater was trapped between the retreating ice and the southern and southwestern edges of the basin, forming a glacial lake geologists call Duluth. Though covering a much smaller area than the present day lake, Glacial Lake Duluth had water levels more than twice as high as those of modern Lake Superior; this high water drained away through the Brule River, in what is now Wisconsin, to discharge via the St. Croix Valley into the Mississippi River.

"As the Laurentide Ice Sheet continued to melt and shrink, it eventually uncovered a new outlet for Glacial Lake Duluth in the vicinity of Sault Ste. Marie. Because of the tremendous thickness of ice, more than one mile, that had been sitting over the Sault Ste. Marie area, the outlet was lower than the water levels of Glacial Lake Duluth. (Sault Ste. Marie was lower than it is today but due to crustal rebound, this part of the land has risen 180 feet in the past 6,000 to 7,000 years.) The difference in elevation between Glacial Lake Duluth and the Sault Ste. Marie area caused a sudden drop in the water levels of Glacial Lake Duluth, and possibly led to catastrophic floods down the St. Marys River channel. These times of great floods, interestingly



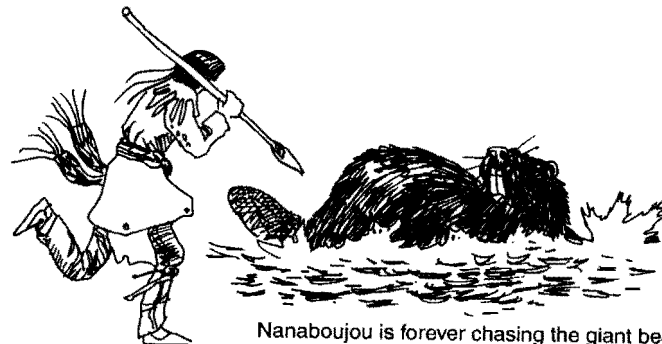
enough, may be remembered in Ojibwe myths, such as in the story of Nanaboujou and his battle with the giant beaver."

Carrying a large cardboard box, Earth Walks walked to the front of the stage. He opened the box and took out a large skull, which was usually found in the fossil collection of the geology department.

JS

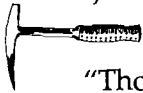
"Giant beaver were real," he said, holding up the skull. "This used to be one of them. They were creatures some six to seven feet long and four feet high at the shoulder. The term 'beaver pond' must have had a totally different meaning way back then!

"In the Ojibwe story a giant beaver has constructed an immense dam blocking up the waters of Ojibwe-Gichi-Gami not too far from *Boweting*, which means Place of the Rapids. It is now called Sault Ste. Marie. The giant beaver and Nanaboujou are archenemies, and Nanaboujou is forever chasing the beaver all across Lake Superior with only one object in mind: to bash its brains out. The two have one great battle after the other until the beaver, tired of fighting and realizing Nanaboujou will never give up, decides to leave Lake Superior. However, the only escape route is to break through its own immense dam. Sensing Nanaboujou's approach, the beaver attacks the dam in a wild frenzy. Just as Nanaboujou creeps close enough to deliver a crushing blow to the beaver's head, the dam gives way. Water rages out of the breach, washing mud, debris, and beaver down



the St. Marys River and into the southern shores of Georgian Bay. There the mud, debris, and beaver are deposited in the form of thirty thousand islands. Today you can visit and explore some of these islands and see if you can figure out which one was once a giant beaver!

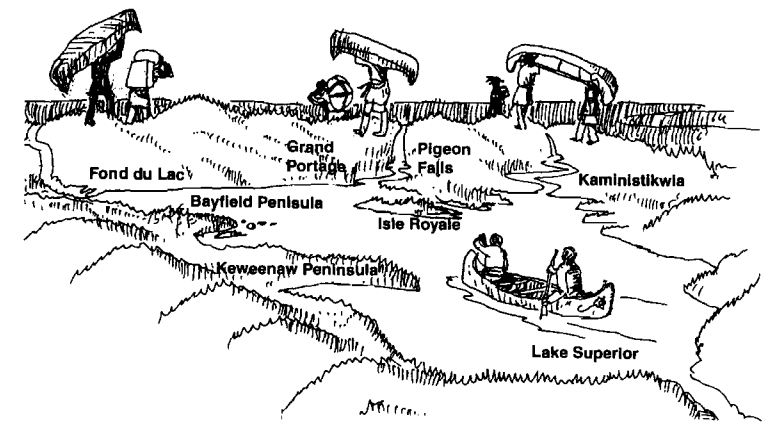
"Now we know giant beaver went extinct about 10,000 years ago during the final melting of the ice sheet. So one can ask if this story is an ancestral memory of mega-fauna, the breaking of a great ice dam, and an ensuing catastrophic flood that represents the end of Glacial Lake Duluth, as well as the end of the age of ice. Or," Earth Walks asked with a shrug of his shoulders, "is it all just a very tall tale?"



"Though it is long gone, Glacial Lake Duluth is not completely forgotten," I told the audience as I watched Earth Walks carefully pack the skull away. "There are old beaches, left high and dry and more than 180 feet above the current lake, there are sticky red clay deposits spread across the region, making gardening in the north land such a joy, and there are steep, rocky promontories, ridges, and shores that were once under cold, clear water.

"The Lake Superior Basin is deep and rocky. It is deep because of volcanic activity, glacial erosion, and the difference in water levels between Glacial Lake Duluth and the Sault Ste. Marie outlet. It is rocky because the hardened lavas were relatively resistant to erosion, so they rise as steep and broken cliffs, barren and grand, high above the restless lake. Present-day Superior only partly fills this basin, and this led to all sorts of problems for people whose main mode of travel and trade was canoe and water.

"For the Ojibwe, the Assiboine, and all the other tribes living in the vast lands to the west and north of Superior, and for the voyageurs and the fur trade, there were only three easily passable routes into and out of this steep, rocky basin. And here I use the words 'easily passable' in comparison to the other possible choices.



Favored canoe routes out of the Lake Superior Basin.

"The southernmost route, via the St. Louis River, led to the founding there of Indian villages and the fur post at Fond du Lac while the northernmost route, along the Kaministikwia River, saw the building of Fort William. In between the two was the Pigeon River route, which led to Ojibwe villages and the fur post at Grand Portage. European and Indian alike favored the Pigeon River route, for it led, by an almost uninterrupted chain of lakes and rivers, clear to Lake Winnipeg and the plains. Its only major obstruction occurred close to the lake, where the Pigeon River plunges through a basalt gorge in a series of waterfalls and rapids.

"The Ojibwe originally settled at Grand Portage and named it *Gichi Onigaming*, Great Carrying Place. They knew it had been a well-traveled path along the Pigeon River and around the Pigeon Falls for thousands of years—a path that had been extensively used by their prehistoric ancestors and that would continue to be used by those who trapped and traded furs.

"So there it is: Ojibwe Gichi-Gami and the Ojibwe people, Lake Superior, the voyageurs and the fur trade—all woven together and shaped by volcanic fire, glacial ice, and a deep, rocky basin called Superior."