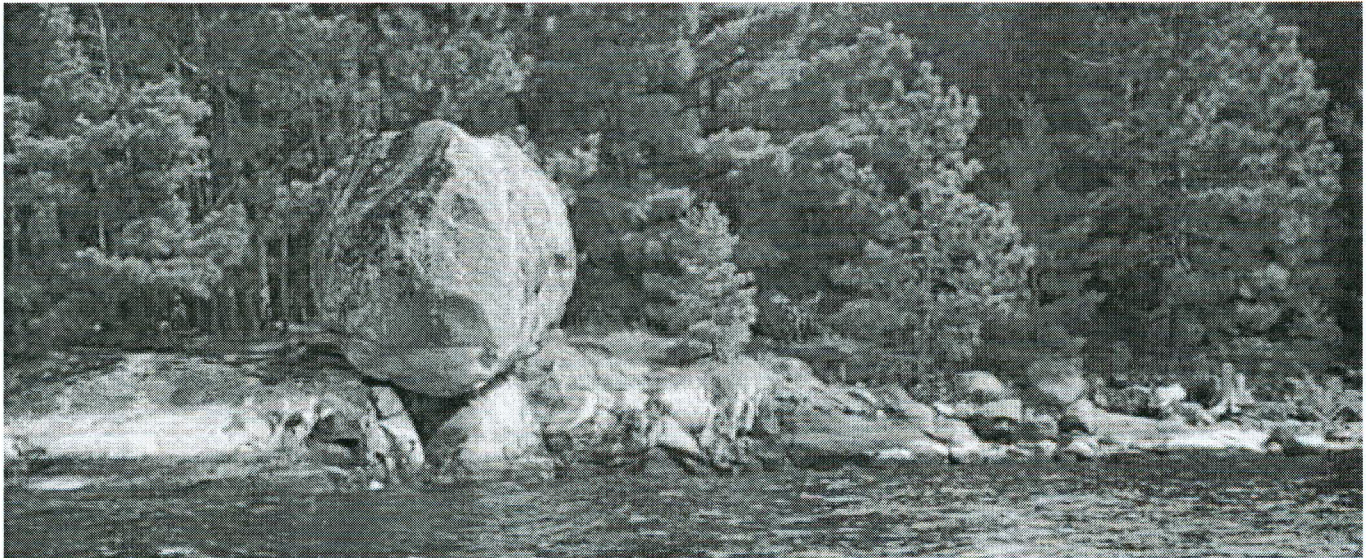




Geology



Glacial Erratic, Crane Lake

The Geology of Voyageurs Tells a Story

The ancient exposed rock of Voyageurs National Park is evident the minute one arrives. Glaciation has worn away the layers of time to reveal the bare bones of the continent. So unique is this geological landscape, that it is one of three reasons for the park's creation and establishment.

The Lake Country- Gift of the Glaciers

The peaceful lake country we enjoy today had its origin in great, natural disturbances. At least 4 times in the last million years huge sheets of glacial ice from the north overrode this area. Each time the ice advanced, it scraped and plowed the land beneath its crushing weight, and each time the ice retreated it left a changed landscape.

Geologists believe that a million years ago, before the first invasion of ice, northeastern Minnesota probably resembled the hill country of Kentucky and Tennessee as it is today. Streams were numerous; lakes were rare. As

the climate slowly became cooler and drier, forests of spruce and other conifers – much like those here today – began replacing the forest of warmer times. Sea level dropped, and land that had been submerged formed bridges over which many new animals to this part of the world immigrated from other continents. Mammoths, mastodons, bison, bears, and moose arrived from Europe and Asia. From South America came huge ground sloths and other animals now extinct. If humans had arrived on this continent, they left no record.

A Glacier is Born- A Land is Formed

As the climate cooled, the first glacial ice – which would reach here 25,000 years later – began forming in Canada. Snows came earlier and stayed later each year until there was snow on the ground year-round in the mountains of eastern Labrador. The snow piled up, and underlying snowflakes were consolidated into granules of ice. More snowfalls added their weight, squeezing the air from between the ice granules, compacting the bottom of the accumulating mass. When the whole mass reached a critical thickness, pressure from above forced the compact ice at the bottom to move away from the center of pressure. So a glacier – or moving ice – was born. As long as the ice sheet continued to receive an adequate supply of snow, the glacier continued to flow. The accumulating snow and ice became deepest over the Hudson Bay area and from there moved outward in all directions. At its maximum the ice covered nearly all of Canada and reached as far south as the Mississippi Valley.

The moving glacier plowed up whole forests, leveled rock outcroppings, stripped the land of soil, and quarried out massive blocks of bedrock. The resulting debris became imbedded in the undersurface of the glacier. Rock fragments, acting like the teeth of a file, grooved and polished the bare rock as the ice inched forward. The retreat of the last glacier left a barren version of today's lake country. Rough mounds and ridges of glacial debris, strewn with boulders, and surrounded by lakes and streams, characterized the glaciated landscape. The hills of pre-glacial times had disappeared, and the normal pattern of major streams and their tributaries had been drastically modified. Drainage was chaotic. Torrents of meltwater cut through debris filling depressed areas and spilling over basin rims as it sought lower levels.

