



## ANCIENT SEAS OF MANITOBA

### GEOGRAPHY

#### **MORDEN**

This community of 6,200, is located in south central Manitoba 120 km from Winnipeg. In the middle of one of the province's richest agricultural areas, Morden has utilized its natural advantages and then diversified, bringing in additional industry and promoting tourism, to give the town a stability and optimism envied by many.

**HISTORY:** Millions of years ago mosasaurs, plesiosaurs, giant turtles and other monstrous fish swam in the prehistoric salt water known as the Western Interior Seaway which covered most of Southern Manitoba, Saskatchewan, Alberta, and the United States to the Gulf of Mexico. Thousands of years later the Mound Builders came and grew corn, squash, pumpkins, beans and tobacco.

When Lake Agassiz retreated, it left a soil rich in nutrients, in which grew saskatoons, plums, all types of berries, wild herbs, flowers and shrubs. The Chipewyan, Cree and Assiniboine were among those who came to inhabit this part of the country after the Mound Builders left.

The establishment of fur trading here by the Northwest Company brought the first settlers - the Metis. In the valleys west of Morden they lived for decades.

Later, the Mennonite settlers to the east grew wheat, oats, potatoes, watermelons and flowers in abundance on the land lying between the Red River and Morden.

It was the building of the railway by the Canadian Pacific that brought Morden into prominence. The Mort Cheval Creek provided water for the steam locomotives, and prompted the railway to immediately build a water tower at the creek crossing. They named the stopping place "Cheval" and in a few months changed it to "Morden" after the original owner of the property.

Under the leadership of civic and community organizations the town's modern-minded population encouraged many improvements. One of the earliest important additions to the town was the establishment in 1915 of the Dominion Experimental Station adjoining the east borders of Morden. Early settler A.P. Stevenson started an orchard on his home-

stead and provided many Manitobans with apples, plums and other fruits as well as nursery stock for many years.

Stevenson is credited with growing one of the first apple crops on the prairies and proved how rich the land around Morden was, and what a variety of crops it could grow. The Federal government's decision to place the research station here was due to his work.

**TODAY:** Diversification is the keyword to Morden's dynamic growth. The community has utilized its natural advantages to bring in industry and promote tourism, to give the town a stability and optimism envied by many. A world-class golf and country club, Lake Minnewasta/Colert Beach and campground, art galleries, museums, professional sporting events and a variety of festivals are among the attractions. The main attractions are the friendly residents who share a real sense of community.

#### **THE ICE AGE**

Manitoba has been subjected to glaciation many times in the past. The most recent of these glaciations, which began about 75,000 years ago and ended in Manitoba about 8,000 years ago, was largely responsible for our present day landscape. The province was covered by a 2 kilometer high sheet of ice which finally began to melt back about 18,000 years ago. The great weight of the ice sheet caused the surface of the land to be depressed at least 600 meters.

**GLACIER EFFECTS:** As the glacier moved across the land, loose material on the surface (soil, sand, gravel etc.) was frozen into the bottom of the glacier. The moving ice and incorporated debris scoured the solid rock surface leaving scratches and grooves still visible today.

When the margin of the ice sheet began to melt, debris that was frozen into the ice many miles to the north was dumped at the edge of the glacier. It gradually accumulated as a ridge called an end moraine. The Pembina Mountains are an example of a group of end moraines.

Instead of gradually retreating northward as the climate warmed, much of the ice over Manitoba stopped moving completely and melted in place. Such a glacier is known as a dead or stagnant glacier. As the glacier melted, debris

accumulated on top. When the ice finally melted away the landscape became characterized by small hills and depressions typical of the area west of Morden.

**LAKE AGASSIZ:** One of the most important effects of glaciation on Manitoba was the formation of Lake Agassiz during the Quaternary period. The deposits of silt and clay left on the bottom of the lake account for the rich farmland of the Red River Valley.

Lake Agassiz was formed as north flowing rivers were dammed by the ice sheet preventing the water from draining into Hudson Bay. The lake was constantly changing its size, shape, and depth as the glacier's edge fluctuated. Along the Manitoba Escarpment beaches of fine sand indicated various levels of the lake.

### **BENTONITE**

Bentonite is a rock composed of clay minerals formed by the alteration of minute glass particles that once composed volcanic ash. The name was derived from the Fort Benton series of Cretaceous rocks in Wyoming where it was first found.

The layers of ash were deposited when extinct volcanoes, in what is now Montana, erupted spewing tons of ash into the air. The volcanic ash was carried by wind and water currents to form numerous beds over most of the interior of North America.

**MINING:** The occurrence of bentonite in the Pembina Mountain area was first reported in 1914. The first recorded claim for bentonite was by Jon E. O'Day on July 18, 1934. From 1936 to 1941, only small amounts of bentonite were quarried.

The main producers during this period were the Spencer brothers of Morden. In 1938, the Morden Bentonite Company Limited was formed but never attained continued production. Pembina Mountain Clays was organized in 1940. A drying plant was built in Morden and an activation plant was built in Winnipeg.

**REFINING:** After the bentonite has been mined, it is hauled by truck to the drying plant at Morden. There, the bentonite is dried in kilns and crushed. It is then loaded onto railway cars for the trip to Winnipeg. In the Winnipeg plant the bentonite is further refined and activated with acids. The finished product has a great many uses including:

- a filter to decolourize and remove impurities from animal, vegetable, and petroleum oils, fats and waxes
- reclaiming used oils
- a binding agent in cattle feed
- also used in detergents, cosmetics, as a water softener, as a filter, and for cleaning fur.

### **RESOURCES/CREDITS**



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### **Resources:**

The Reptiles — Car, Archie  
Fossils, Paleontology, & Evolution — Clark, David L.  
The Age of Reptiles — Colbert, Edwin H.  
Fossils — Rhodes, Frank H.T., Zim, Herbert S., Shaffer, Paul R.  
Fossils — An Introduction to Prehistoric Life — Matthews III, William H.  
Fossil Animal Remains — Rixon, A.E.  
Canadian Dinosaurs — Sternberg, C.M.  
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