Erupting magma froth is broken into ash and pumice.

79th ANNUAL SPRING BANQUET
April 20, 2006
Old Courthouse Museum
Sioux Falls, South Dakota
MINNEHAHA COUNTY HISTORICAL SOCIETY
VOLCANIC ASHFALL

About 610,000 years ago, volcanic activity in the Yellowstone National Park area produced a cataclysmic eruption 1000 times larger than the Mount St. Helens eruption in 1980. At the blast site a huge depression (caldera) was created covering about 1500 square miles. Ground-hugging flows of hot volcanic ash, pumice, and gases swept across the western United States.

The eruption shot a towering column of volcanic ash and gases high into the air. Downwind from the volcano, fine ashfall blanketed a large part of North America. As much as a foot of ashfall accumulated across Minnehaha County.

The eruption occurred during an interglacial stage, and subsequent ice flows buried or removed the ash. Over time, erosion revealed an outcrop of ash near here in a cutbank on the east side of Skunk Creek.

Locally called Hartford Ash, the site is used as a marker to distinguish three distinct stages of glaciation. The drift from two older glaciers has been identified below the Hartford Ash bed, while the drift from a third and more recent glacier is above it.

DEDICATED IN 2006 BY THE MINNEHAHA COUNTY HISTORICAL SOCIETY IN HONOR OF DENNIS W. TOMHAVE
A SEM Image of An Ash Particle

With Scanning Electron Microscopy (SEM) zoom magnification, it is possible to magnify an object up to 50,000 times. As can be readily seen from the magnification above, a tiny ash particle is extremely abrasive and is similar to finely crushed window glass. It is mildly corrosive and is electrically conductive, especially when wet.

Volcanic Ash

Volcanic ash consists of rock, mineral, and volcanic glass fragments. It is hard, does not dissolve in water and is created by the shattering of solid rocks and violent separation of magma (molten rock) into tiny pieces.

Explosive eruptions are generated when ground water is heated by magma and abruptly converted to steam. They may also occur as magma reaches the surface when the molten rock expands and also when magma escapes (explodes) into the air with extreme rapidity. After being blasted into the air by expanding steam and other volcanic gases, the hot ash and gas rise quickly to form a huge eruption column above the volcano.
Extent of Ashfall from the 610,000 B.P. Eruption

The shaded area of this map represents where ashfall from the Yellowstone National Park volcanic eruption settled to Earth. The Hartford Ashfall bed is one of five locations in South Dakota where ashfall from this eruption has been found. Because the ash was compressed by thousands of tons of glacial ice during the Ice Age, the band of ashfall found near Hartford is only about four inches thick. Image owners: U.S. Geological Survey.
Dennis W. Tomhave

Dennis is a graduate of Fergus Falls (MN) Community College and St. Cloud (MN) State University where he earned a degree in Earth Science. He is a geologist with the Department of Environment and Natural Resources, Geological Survey program, Vermillion, SD. The VOLCANIC ASHFA
LL historical marker is the seventh geologic marker dedicated by the Society in which Dennis has provided expert technical assistance. Thank you again, Dennis!
MCHS Geological Historical Markers

With the additions of the VOLCANIC ASHFALL and ROCKY RIDGE markers, the MCHS will have compiled a total of nine Earth history markers. Geologists generally agree that the Earth assumed its present form about 4.6 billion B.P. (years Before Present) when it solidified and ceased to be molten. It is interesting to compare the dates of the geologic events described in the MCHS nine historical markers with the date of the Earth's beginning.

The nine marker titles, the dates of the geologic events, and the location of the marker sites are as follows:

1. THE SIOUX QUARTZITE, 1.63 to 1.76 billion B.P., Falls Park;
2. MAGMA, 1.42 to 1.52 billion B.P., Lien Park;
3. INLAND SEAS, 65 to 135 million B.P., Falls Park;
4. VOLCANIC ASHFALL, 610,000 B.P. rural Hartford;
5. CACTUS HILLS, 300,000 to 610,000 B.P., Great Bear Recreation Park;
6. TWIN MOUNDS, 135,000 to 300,000 B.P., rural Garretson;
7. EARTHQUAKE, 68 to 14,000 B.P., rural Renner;
8. THE GREAT BEND, 13,500 B.P., Yankton Trails Park; and
9. ROCKY RIDGE, 13,000 B.P., rural Hartford.
PROGRAM

79th Annual Spring Banquet
Minnehaha County Historical Society
Old Courthouse Museum
April 20, 2006

Dinner Music
Tony Saia

Invocation
Coletta Bly

Emcee
Emma Abbott

Catered Banquet
Garretson Food Service

Welcome
President Carol Mashek

About the MCHS Historical Marker Program
Bruce Blake

The Geologic History of Minnehaha County
Dennis W. Tomhave

Drawing for Door Prize

Dismissal