



Sons of Norway Mini Presentations

#307: VIKING NAVIGATION

The Vikings were seafaring explorers. They built great long ships and sailed from their northern ports to discover new lands, plunder foreign riches, settle and develop what would become present day cities; and then return home to greet their families and organize their next sea journey. However, there is one question that comes to mind, how did the seafaring Norsemen find their way without a compass or the use of stars on stormy days?

History proves that the Vikings traveled extensively through unfriendly waters in the North Atlantic often times making return trips to the British Isles, Greenland and most notably North America, discovered by Leif Eriksson over 1,000 years ago. According to modern textbooks, the twilight compass, which was used by pilots when crossing the North Pole (where the magnetic compass was of no use), was invented in 1949 at Johns Hopkins University. However written documentation proves that this invention was first used during the Viking Age, according Danish archeologist, Thorkild Ramskou (1915-1985).

According to Old Norse sagas the Vikings used a sunstone to traverse the seas during stormy skies. The sunstone, also called the solarstein and the Viking compass, could accurately navigate the seas in bad weather according to scientists. The stone was made of calcite crystal, also called Icelandic Spar, and had polarizing attributes which made it extremely sensitive to sunlight. Scientists claim that Viking navigators could determine where the sun was on cloudy days with an exactness of just 2 degrees. This helped determine where they came from and where they were going when they couldn't see landmass on stormy days.

The modern twilight compass is based on the principle of the polarization of light. So was the ancient sunstone. The sunstone is a rock crystal known either as calc-spar or iolite, the first found in Iceland, the other in Norway. A Dane named Rasmus Batholin discovered in 1659 that if he had a black spot on one side of a piece of calc-spar and then held it up to the light, he could see two light spots which, in the right position, enabled him to determine the exact direction of the light. It was this principle which was used to construct a twilight compass for pilots flying over the North Pole. The Vikings were considerable astronomers and measured the sun's azimuth (angle) for each day of the year. They used this as the basis of a system for pinpointing their position at sea. Knowing this, the Vinland voyages (present-day Canada) of Leif Eriksson and his fellow Vikings seem more plausible and acceptable to historians and other scholars.

The sunstone story does not end here, however. It has been proven that it does work. Not long ago, Dr. Ramskou and a Scandinavian Airlines chief navigator tried the sunstone on a flight from Greenland to Denmark. The result was almost stunning, the report stated. The margin of error as compared with a modern compass was only 2 degrees. As the stone was turned, it changed from yellow to dark blue under the influence of the polarized light from the sun. As the navigator put it, "I'm sure that we could've made our way home if we had based our calculations on the stone. The sun was tracked until it was seven degrees below the horizon." These men used a piece of cordierite while, according to "The Saga of St. Olav", the Viking seamen used a piece of mineral known as andalusite. Geologists note that, the mineral was quite common in Norway and Sweden at that time, and its disappearance by now might have been caused by the extensive use of the sunstone by the Scandinavian Vikings at the time of their heydays.

