The SUDEKUM PLANETARIUM of the CUMBERLAND SCIENCE MUSEUM
presents

THE EXPLORERS

A program designed for grades 6 and up

OBJECTIVES:
As a result of the students' visit to the Planetarium they will be able to:
1. Measure the altitude of an object in the sky using a fist.
2. Describe at least two requirements necessary to determine a position on the Earth.

PRE-VISIT ACTIVITIES:
1. Have students investigate unmanned explorers from the American and Soviet space programs and underwater expeditions.
2. Lead a class discussion: Did Columbus "discover" the "New World"? Was it a good or a bad thing? What would the world be like if no one had "discovered" America?

VOCABULARY:
Some of these words may be new to your students.

caravel	chronometer	cross staff
latitude	longitude	quadrant
sand glass	sextant	

CONCEPTS COVERED:
I. Basic navigation concepts
   A. Navigating on a flat surface with no landmarks is very difficult.
   B The open sea appears to be a flat surface with no landmarks.
   C. Navigating on a curved surface is more difficult than a flat surface.
   D. Knowing the altitude of Polaris above the northern horizon allowed travelers to know their latitude on the Earth.
II. The Vikings
   A. used Polaris to sail across the north Atlantic Ocean.
   B. Eric the Red led a Viking settlement to Greenland in 982 AD.
   C. Bjarni Herjolfsson accidentally landed on North America instead of Greenland in 986 AD.
III. Marco Polo
   A. traveled extensively in the Orient during the thirteenth century.
   B. saw many new and wonderful things and shared this news with people in Europe; coal, paper money, fireworks, and noodles.
IV. Henry, the Navigator
   A. Henry, Prince of Portugal, is known today as Henry, the navigator.
   B. sought to develop better ways of sailing.
   C. sponsored many sailing expeditions around Africa.
   D. is responsible for the development of the caravel.
   E. One of Prince Henry's captains, Bartholomew Dias, was the first to sail around the tip of Africa.