Ancient Skies

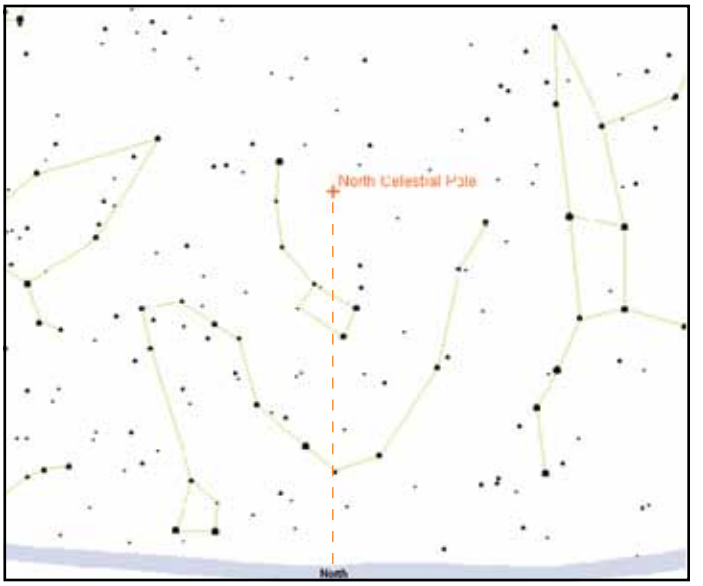
Writing this month's column is quite literally a once in a millennium opportunity. As the New Year, century, and millennium get underway, many of us are wondering what lies ahead. But before we take a look at the evening skies of our future, I'd like to take a moment to look back at the dawn of the last millennium. What were some of the celestial events that highlighted the eleventh century—the first hundred years of the last millennium?

Exploration

At the close of the tenth century, much of Europe was just beginning to reemerge from the Dark Ages. (I wonder if they suffered a Y1K scare?) Scholarly study was beginning to reappear, including a renewed interest in science. Compared to our mobile society, people living back then did not travel as much and consequently knew little of discoveries or writings from other cultures and civilizations until the advent of the crusades. When they did travel, they navigated differently than how we navigate today because during that time there was no North Star (see sky map at right).

Due to the slow wobble of the Earth on its axis known as *precession*, the North Pole of the Earth traces out an imaginary circle against the stars. As the wobble-like precession motion occurs, any star that is close to or on the precession circle can serve as the North Star, or Polaris (meaning pole star). Figure 1 shows how the sky over the northern horizon at 9 P.M. on January15, 1001 would appear to someone living at 40 degrees north latitude. As you can see, the North Celestial Pole is several degrees away from Polaris, the North Star of our millennium.

While there was not a North Star for taking a compass bearing, there was exploration taking place. In fact, Vikings may have visited North America in approximately 1000 AD. It is thought that these Vikings, led by Bjarni Herjolfsson, were en route to Greenland from Iceland when their ship was blown off course. They reached land much further west than Greenland, but returned home without exploring the new land. Upon hearing news of this inadvertent discovery, Leif Eriksson bought Herjolfsson's boat and set sail for the new land. Eriksson and his crew retraced Herjolfsson's steps, eventually landing at and exploring what are now known as Baffin Island and Labrador, in northeastern Canada.



The relative position of the North Celestial Pole in the year 1001.

Astronomy

During the 11th century, several interesting celestial events occurred, some of which are still evident today. Two special "guest stars" made an appearance—supernovas that brightened the night skies. During 1006, a supernova occurred within the constellation of Lupus, the Wolf, that reached an estimated brightness of magnitude –9.0. The supernova was many times the brightness of Venus, and could be seen for several years during the day and night.

Nearly 50 years later, Supernova 1054 brightened the skies for about 23 days as the light from this dying star reached an estimated

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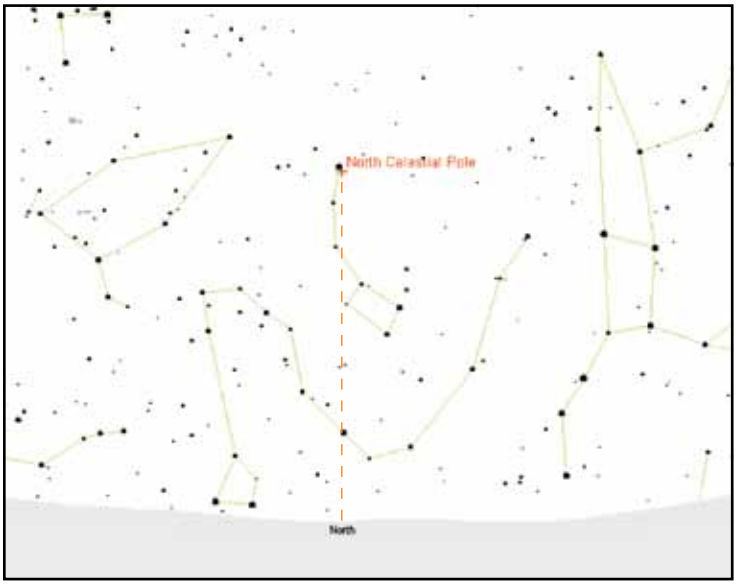
brightness of magnitude –6.0. The remnants of this supernova, a cloud of dust and gases known as the Crab Nebula, can be seen today within the constellation of Taurus, the Bull, using even small telescopes.

During 1066, as William the Conqueror was besting the English, Comet Halley swung by Earth for it's eighteenth visit since first being noted in 240 B.C. In 2061, Comet Halley once again returns to our skies, this time for its millennial anniversary.



The relative position of the North Celestial Pole in the year 2001.

The current sky

During January of 2001, three of the four brightest planets are very visible in the evening skies. Dominating the western horizon at sunset is Venus, while high over the southeastern horizon at the same time are the planets Jupiter and Saturn—both of which are near the open cluster of stars, the Hyades, which mark the face of Taurus. During January a millennium ago, only Saturn was visible in the evening skies. Coincidentally, this planet was located within Taurus very close to where it can be found in our current evening skies.

Sky events

01/01 Beginning of new century and new millennium
01/03 Earth reaches perihelion, closest to the Sun along its orbital path (0.983 A.U.)
01/03 Quadrantid meteor shower
01/09 Total Lunar Eclipse (best visible from Europe)
01/28 15th anniversary of Shuttle Challenger explosion

Visible evening planets

- Mercury will be visible over the western horizon at sunset during the end of January and early February.
- Venus is very visible over the southwestern horizon at sunset and sets about three hours later.
- Both Jupiter and Saturn are over the southeastern horizon at sunset and are visible all night.

Moon phases

	January	February
First quarter	01/02	02/01
Full Moon	01/09	02/08
Last quarter	01/16	02/15
New Moon	01/24	02/23

Resources

- When is the Earth Closest and Farthest from the Sun?: *solar-center.stanford.edu/FAQ/Qperihelion.html*
- Quadrantid Meteor Shower: *comets.amsmeteors.org/meteors/showers/quadrantids.html*
- Lunar Eclipse: *sunearth.gsfc.nasa.gov/eclipse/LEplot/LE2001Jan09T.gif*
- Shuttle Challenger: *science.ksc.nasa.gov/shuttle/missions/51-l/mission-51-l.html*
- Gregorian Calendar: *es.rice.edu/ES/humsoc/Galileo/Things/gregorian_calendar.html*
- Celebrating the Leif Eriksson Millennium: *www.vikingssail2000.org/History.htm*
- Supernova 1006: *www.seds.org/~spider/spider/Misc/sn1006.html*
- Supernova 1954: *seds.lpl.arizona.edu/messier/more/m001_sn.html*