

We Live on a Top Spinning in Space

By Barry D. Malpas – Special to the Williams-Grand Canyon News – 2014 December

As everyone knows, the Earth rotates on its axis once every 24 hours, much as a top does. So when you spin a top, and observe closely, you will note it also has another motion ... its rotation axis wobbles in a slow circle. Much like a top, the Earth's rotation axis also executes a slow circular wobble with a period of 25,772 years.

This "Precession of the Equinoxes" is the migration over time of the Vernal Equinox, March 21, where the Sun crosses the plane of Earth's planetary orbit, due to the circular wobble of Earth's axis of rotation. The cause is due to the gravitational influence of the Sun and the Moon acting on Earth's equatorial bulge. This was first noticed by the Greek astronomer Hipparchus (c. 129 BCE) who observed that star positions had shifted in a systematic way from earlier Babylonian catalogues.

Because the Earth's precession occurs in the opposite direction to the Earth's orbit, the Ecliptic and Celestial Equator move in opposite directions. As the Sun moves westward through the constellations, the precession moves eastward. In 3000 BCE, the Vernal Equinox was well situated in the constellation Taurus. Between 2000 BCE and 1 BCE, it resided in Aries. Around 1 CE, it moved into the constellation of Pisces where it is presently located and will reside there for several hundred more years until it slowly migrates into the constellation Aquarius. (No, we are not yet in the Age of Aquarius.)

One of the effects of Precession is that the north and south poles point to different parts of the heavens over time, and that Polaris, fairly recently named for the North Pole, will no longer be the North Star. In fact, over the

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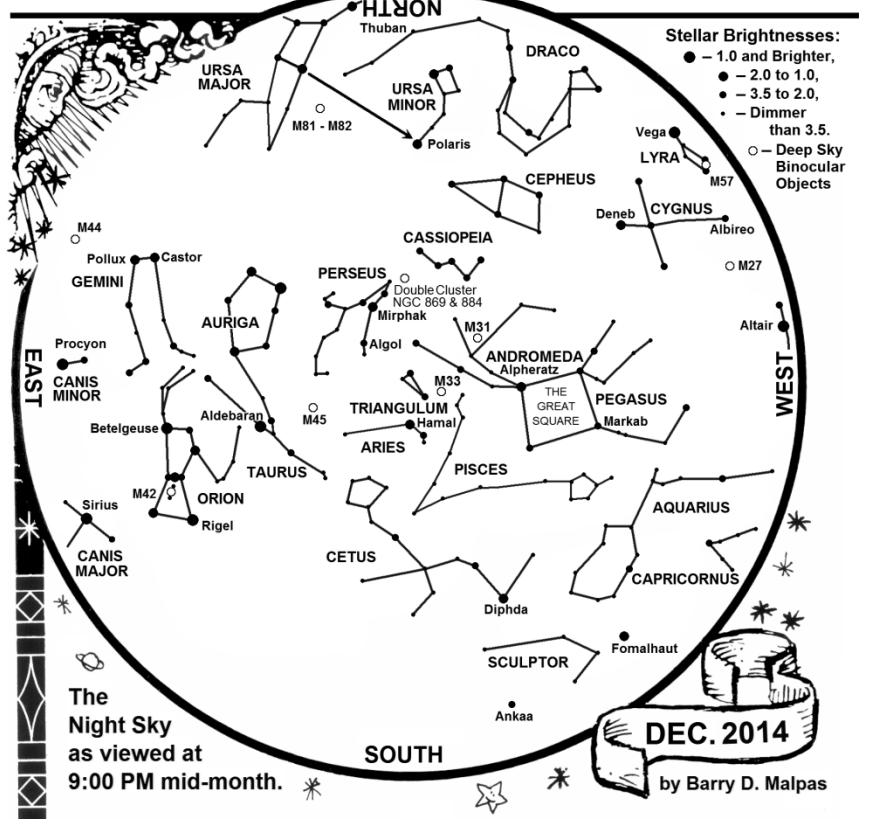


Table of North Pole Stars

Year	Star	Constellation	Magnitude	Dist. from North
-11700	Vega	Lyra	0.03	3.3 °
-10000	Theta Her	Hercules	3.89	1.6 °
-5500	Iota Her	Hercules	3.80	0.4 °
-5000	Edasich	Draco	3.29	2.8 °
-3000	Thuban	Draco	3.65	0.1 °
-1000	Kochab	Ursa Minor	2.08	4.2 °
2000	Polaris	Ursa Minor	2.02	0.3 °
4000	Errani	Cepheus	3.21	1.3 °
6000	Alfirk	Cepheus	3.23	2.9 °
7500	Alderamin	Cepheus	2.45	1.5 °
10000	Deneb	Cygnus	1.25	4.2 °
11500	Delta Cyg	Cygnus	2.97	1.4 °
14000	Vega	Lyra	0.03	3.3 °

last several thousand years there have been a number of pole stars. For instance, 5000 years ago, Thuban in the constellation Draco, was well known to the ancient Egyptians as the North Star. The brightest stars which will become north stars will be Deneb, in 8000 years, and Vega in Lyra in 12,000 years, though they will not be as close to the pole as Thuban and Polaris have been. – Note the preceding table.

Another effect of precession takes place (in the northern hemisphere) as we look south. The star Sirius is the brightest star in the sky and currently stands high in the evening sky during winter and spring. It was an object of wonder and veneration to most ancient peoples throughout human history. To the ancient Egyptians, Sirius was revered as the Nile Star, or the Soul of Isis. Its annual appearance just before dawn at the summer solstice heralded the rising of the Nile waters upon which Egyptian agriculture depended.

However, 12,000 years ago, due to the Earth's precession, several constellations including Orion, Gemini, and several others were positioned much farther south in the sky. This especially includes Canis Major, of which Sirius is its brightest member. Sirius could never have been observed by the Egyptians of the time. From Egypt's 30° North Latitude, it would have never risen above the horizon. Hence, all of the mythological, astronomical, and astrological lore based around this brightest of stars has to have been derived since then.