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Winter Solstice 2017

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WINTER SOLSTICE 2017 Ken Tapping, 19th December, 2017

At 11:28 am EST/08:28 PST on Thursday, 21 December the Sun will rise and set at the southernmost extreme of its yearly travels. Its height above the horizon at noon will be its lowest and we will have the smallest number of hours of daylight. This is the Winter Solstice, which comes from the Latin *sol* ("sun") and *sistere* ("to stand still"), because that is the point where the Sun pauses before reversing its apparent motion, like a swing pausing momentarily before heading back.

For those of us with a view of the eastern or western horizon this annual motion is very obvious. After the winter solstice we see the sunrise and sunset points on the horizon moving northwards each day, imperceptibly at first and then faster and faster, and then slowing until around 21 June we reach the northernmost points of sunrise and sunset – the Summer Solstice – after which the sunrise and sunset points start moving southward again. These days, with heated homes, light available at the operation of a switch, and stores full of food from all over the world, we are not as much affected by the annual motions of the Sun; also, we know what is going on.

The Earth orbits the Sun once a year, spinning on its axis once a day. That axis is tilted by 23 degrees, so that it is always pointing at the Pole or North Star. This means there is a point in the Earth's orbit where the northern end of that axis is leaning towards the Sun, so the Northern Hemisphere gets the maximum amount of sunlight – the Summer Solstice, and on the opposite side of the orbit, six months later, a point where the northern end of the axis is leaning away from the Sun. Then the Northern Hemisphere gets the minimum amount of sunlight – the Winter Solstice.

This annual rhythm of the Sun meant more to our remote ancestors. The death of the old year and welcoming the return of the Sun and the birth of a new year was acknowledged in ceremonies. One of these was attaching fruit and other offerings to a

tree to encourage the return of the time where fruit and other things would grow once again. In an age when there was little long distance transport of produce, life depended on what could be hunted or grown locally. Ancient monuments like Stonehenge were sites of huge celebrations of death and new life, coinciding with the death of the old year and birth of a new one. Horus, one of the Egyptian gods was born on the Solstice. So was Mithras, worshipped by the Roman Legions. He was born in a cave, attended by shepherds.

As the Sun approaches the Solstice, the sunrise and sunset points move along the horizon more and more slowly. Without clocks or calendars, our ancestors found it hard to know exactly when the Solstice happened – until it was past. To cover this they allocated a period of 12 days around the Solstice for celebrations such as Saturnalia, a riotous party dedicated to the Roman god, Saturn.

When Christian priests moved into the cold, dismal winters of Northern Europe, they saw the pagan celebrations and rededicated them to celebrations of events in the Christian calendar. The solstitial celebrations became Christmas. Over the following 2000 years the calendar became partially detached from astronomical events and went through various adjustments, moving the Christmas celebration to where it is in the calendar today, and that 12-day period became the "12 Days of Christmas". So today, our celebration of Christmas combines our religious beliefs, our culture and traditions dating back at least 5000 years, and astronomy. I wish you all a Wonderful Christmas. The Mars Saga continues next week.

Jupiter shines brightly in the southwest before dawn. Mars, much fainter, lies to its right and Mercury shines low in the dawn glow. The Moon will reach First Quarter on the 26th.

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