

Astronomy in Freemasonry

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When I set out to present a paper on Astronomy in Freemasonry I naively thought it would be a straightforward task. Interestingly, several Masonic researchers informed me that apophenia was a more likely outcome than a definitive astronomical link with our rituals.

It just goes to show how wrong you can be. What has revealed itself to me is a large body of complex knowledge across all orders and degrees. Trying to address the Craft, Mark and Chapter would be too much to do any justice to in a presentation such as this. As a result, I am limiting this presentation to the Craft; introducing the basic astronomical concepts that we immerse ourselves in, often without acknowledging or understanding their significance.

The rituals of Craft Freemasonry have a clear spiritual import conveyed in a solar allegory illustrated by astronomical symbols combining the initiatory rite of the unity of God and the immortality of man into the symbolic nature of the annual solar cycle. Sacred knowledge, reserved only for the initiated, and preserved in our ritual, forms the very essences of our modern rites of initiation.

Astronomy is the oldest of the natural sciences. It originated in religious, mythological, cosmological, calendrical, and astrological beliefs and practices. Early civilisations used astronomy to keep track of time, orient their cities, and to try to predict the future. Early astronomy was a mix of careful observation of the positions and motions of the heavenly bodies, religion, and astrology.

Early cultures identified celestial objects with gods and spirits. These gods and spirits often controlled seasons, tides, rain, drought and harvests. Agriculture relied on calendars set by the sun and moon for planting times with our ancestors recognising the power of the sun and moon over our very existence. Solar religions developed with the sun worshipped as a god or as a symbol of god

The ancient Greeks named the stars and plotted their positions and while Europe endured the Dark Ages, astronomers in the middle east translated Greek texts into Arabic, preserving and expanding humanity's knowledge of the night sky.

The beginning of the real renaissance in astronomy took place in 1543 when Nicholas Copernicus; on his deathbed, published *De Revolutionibus Orbium Coelestium* 'On the Revolution of the Heavenly Spheres'; advanced the idea that the Sun is in the centre of the Solar System.

A combination of careful observation of the positions and motions of the heavenly bodies and religious mythology led to the development of the principles of solar religions.

At the summer solstice, the sun is at its greatest strength in its annual cycle and represents the apex of the sun's journey throughout the year. The sun then journeys on to the autumnal equinox losing its strength before 'dying' at the winter solstice and being reborn to ascend anew; growing in strength as it journeys to the vernal equinox; and again, reaching its greatest strength at the summer solstice. As each cycle is completed a new one begins.

The sun in all its strength at the summer solstice came to represent man's spiritual ascension, enlightenment and the return to oneness with his god. Culminating in the individual's enlightenment; initiates likewise ritually journeyed through the solstices and equinoxes of the year.

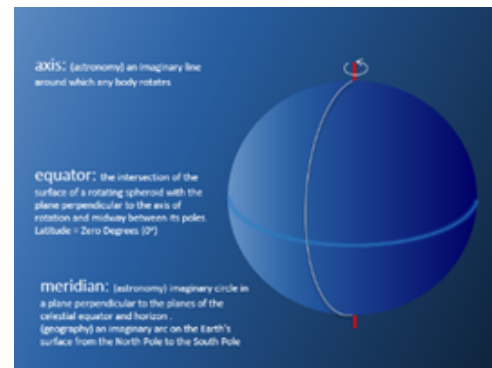
The initiation into all the ancient mysteries was a drama founded upon the astronomical allegory of the death and resurrection of the sun. A drama intended to impress upon the mind of the candidate the two great doctrines of the unity of God and the immortality of man.

This drama is as archaic as man himself. Secreted by the masses, ridiculed and ruled against, known only to the initiate who searches for that which was lost. Herein lies the answer to man's quest, the journey of the hero, to reconcile his eternal spirit with its mortal existence bounded by his physical body, intellect and emotion.

These are today the great fundamental principles of Freemasonry illustrated and taught in a similar manner in our rituals. Rituals based upon astronomy, primarily solar astronomy and an accompanying heritage over five thousand years old. The Epic of Gilgamesh, which I have referenced previously in a paper on the truth of myth is over 5,000 years old. The myth of Adonis was known to the Greeks as early as the fifth century BCE. The Egyptian myth of Horus dates to at least 4,000 BCE and was recorded in detail by the Greek biographer Plutarch (c46-120 CE). The Persian Sun-God Mithras was mentioned in the writings of the Greek historian Herodotus (c480-c245 BCE) and the cult of Mithraism reached Rome in the first century BCE.

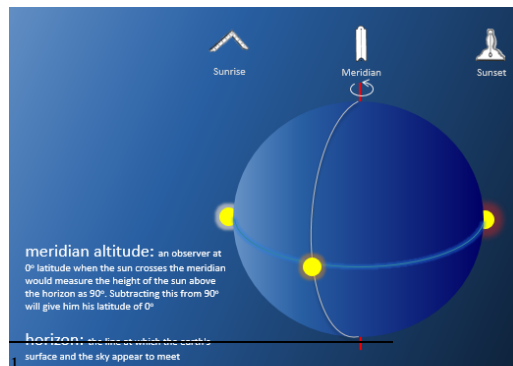
Our terrestrial home shares some common basic features with our neighbouring spheres in the solar system; and beyond for that matter.

The earth constantly revolves on its axis, the imaginary line around which a body rotates, and has an equator, being the intersection of the surface of any rotating spheroid, with the plane perpendicular to the axis of rotation and midway between its poles.



The Latitude at the equator is Zero Degrees (0°).

It is possible to envisage a meridian¹; an imaginary circle in a plane perpendicular to the planes of the celestial equator and horizon. In other words, an imaginary arc on the Earth's surface from the North Pole to the South Pole.



The perfect day has 12 hours of daylight and 12 hours of the night. The sun rises in the east at zero degrees latitude at the equator; the sun then passes through its meridian at its highest point at midday.

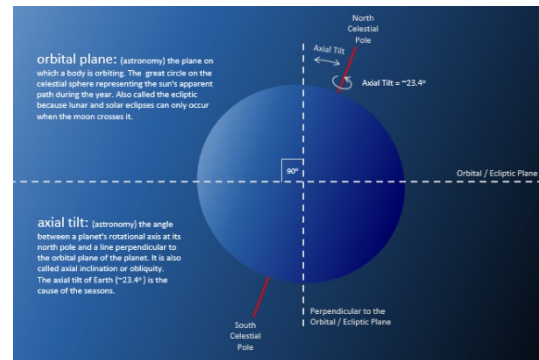
Measuring the altitude of the meridian: - an observer at zero degrees latitude when the sun crosses the

¹ {Meridian derives from the mid-14c from Old French *meridien* "of the noon time, midday; and directly from Latin *meridianus* "of midday, of noon, southerly, to the south," In a Cartographic sense it was first recorded late in the 14c. It's Figurative uses tend to suggest "point of highest development or fullest power." } i.e. The highest point. The Shorter Oxford English Dictionary on Historical Principles 3rd Edition 1987 Clarendon Press Oxford.

meridian would measure the height of the sun above the horizon as 90° . Subtracting this from 90° will give him his latitude of 0° .

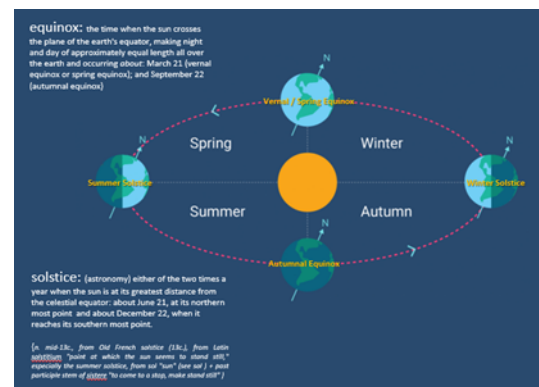
Of course, if all earth days were like this, we most likely would not be here!

The earth's axis is tilted at around 23.4 degrees relative to the perpendicular of its orbital plane. The orbital plane is the plane on which the earth is orbiting the sun. It also represents the great circle on the celestial sphere representing the sun's apparent path during the year. This is also called the ecliptic because lunar and solar eclipses can only occur when the moon crosses it.



The tilt of the earth's axis is what causes the four seasons as it orbits around the sun. Summer happens in the hemisphere tilted towards the Sun, and winter happens in the hemisphere tilted away from the Sun.

Scientists think an Earth without a tilt would be stratified into climate bands that would get progressively colder as you moved away from the equator. Humans would never survive the continuous winter of the high latitudes, and so we would likely congregate in the planet's tropical midsection. Fortunately, as things are, Earth's tropical zones tend to have minimal temperature and day-length variability over the course of the year, and so these regions can serve as archetypes for what a season-less Earth might be like.



Twice a year when the sun crosses the plane of the earth's equator it makes night and day of approximately equal length all over the earth. This occurs *about*: March 21 (vernal equinox or spring equinox); and September 22 (autumnal equinox). Likewise, it also causes the two Solstices² when the sun is at its greatest distance from the celestial equator: about June 21, at its northernmost point and about December 22, when it reaches its southernmost point.

Gerardus Mercator (1512 –1594) was a 16th-century German-Netherlandish cartographer, geographer and cosmographer. He lived in dangerous times, surviving charges of heresy brought by the Inquisition to live to the ripe old age of 82.

Mercator visualised the earth as a spherical body surrounded by a celestial sphere upon which the stars and planets were affixed. He further visualized a cylinder placed between the celestial sphere and the earth upon which the position of the stars would be projected and recorded. The cylinder could then be “unrolled” with the result being an accurate map of the heavens. The principles of projection mapping

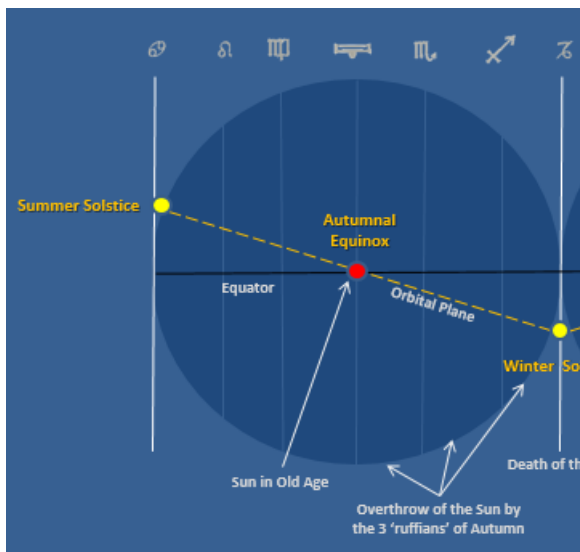


² {Solstice derives from the mid-13c., from Old French solstice and from Latin solstis "sun" + past participle stem of sistere "to come to a stop, make stand still" } - The Principles 3rd Edition 1987 Clarendon Press Oxford.

The principles of Mercator's star map 'cylinder' are illustrated in the diagram below, adapted from one in Bro David William Burkle's paper, "Does the Point Within a Circle allude to the Autumnal Equinox?"

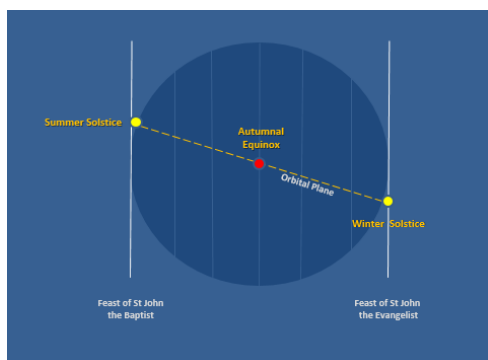
The ‘unrolled’ star map is useful for understanding the solar allegory and emblems of the ancient mysteries which are contained in the two fundamental principles of Freemasonry taught in the 3rd degree.

The diagram illustrates the Celestial Sphere, a model used in astronomy to represent objects in the sky. It features a blue sphere with a grid of lines. The Equator is shown as a horizontal line, and the Orbital Plane is shown as a tilted line. The Zodiac is represented by a cylinder surrounding the sphere, with zodiac signs marked along its top edge. The Summer Solstice (Sunrise) is marked with a yellow dot on the left, and the Winter Solstice (Sunset) is marked with a yellow dot on the right. Dashed lines with stars indicate the positions of the solstices.



Secondly, by personifying the sun, and requiring the candidate to represent him, the whole solar phenomena were exhibited in an allegorical manner and became symbolical of the unity of God and the immortality of the soul. When fully explained to the initiated, it fixed upon the mind certain great facts in astronomical science. It taught the order and position of the signs of the zodiac, the ascent of the sun from the point of its lowest declination below the equator to that of its highest above it. It also taught the duration and order of the seasons, the length of the solar year, and many other particulars, of the greatest importance to agriculture, as well as to science and art generally.

Viewed in an allegorical sense it also taught, by solar analogy, the unity of God and of life everlasting.

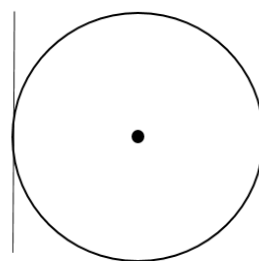


Saint John the Baptist is symbolically represented by the parallel line at the Summer Solstice (left of the circle), and Saint John the Evangelist is represented by the parallel line at the Winter Solstice (right side of the circle).

The Autumnal Equinox, which is separated from the Solstices by 90 degrees, is positioned exactly in the centre of the circle, coinciding with “The Point Within a Circle” of our Symbol.

Because the Vernal Equinox is located on the side of the projection in which the positions of the Saints John are reversed, it cannot be considered “The Point Within a Circle” as detailed in our Symbol.

The reasoning for this is that the **Vernal Equinox** is traditionally associated with rebirth and the **Autumnal Equinox** with old age (harvest and preparation for winter).



*To the just and virtuous man death has
no terrors equal to the stain of
falsehood and dishonour.*

JSM Ward notes in *Who was Hiram Abiff?*³. ‘Masons must not overlook the fact that for some apparently inexplicable reason these two saints are always associated with Freemasonry.....’

Saint John in Summer and Saint John in Winter represent old fertility festivals of the summer and winter solstices. When the church found she could not stop the pagan feasts she fixed the feasts of the two St Johns at the same periods and so changed the festivals into nominally Christian ones.

We thus see that the only reason why the two Saint Johns could have become associated with Masonry is that, in like manner, they represented older gods or their cults, and that cult must have been the old fertility cult, the central figure of which was the myth of the dying god’.

The Autumnal Equinox may then signify preparation for the symbolic death (Winter) which precedes Raising.

A point our Grand Master Hiram Abiff arrived at and did not err from and a point from which a Master Mason cannot err! described clearly in the Retrospect of the 3rd degree:

To the just and virtuous man death has no terrors equal to the stain of falsehood and dishonour.

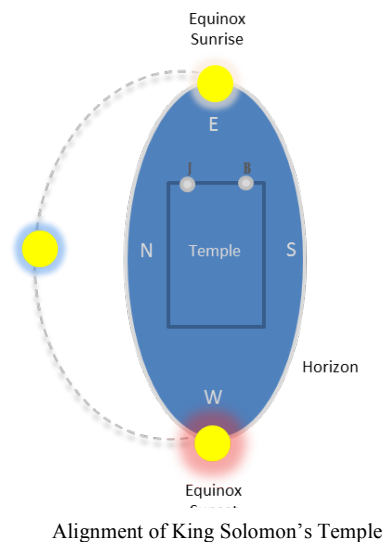
Just as nature is reborn from the death of winter during the spring (Vernal Equinox), so is the Master Mason reborn in his Raising. Of course, as with many of our symbols, there is more than one answer as to what is being represented.

³ Who Was Hiram Abiff? J S M Ward 1925 The Baskerville Press London

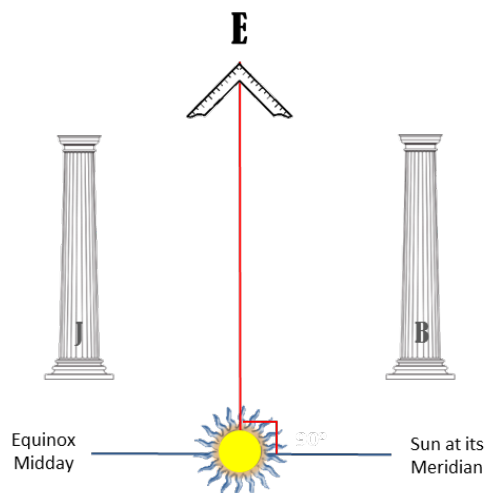
Our ritual is not quite consistent here with the Solar Myth as Hiram Abiff is not raised from death but remains slain. JSM Ward proposes³ that he may have been sacrificed in a peculiar fashion at the completion of the temple in a variation of the usual consecration sacrifice. Hence he was not raised but instead interred in the temple.

The layout of the Masonic temple is said to be based on the holy temple built by King Solomon in Jerusalem and faces east.

The Worshipful Master is seated in the east and represents the sunrise at the Autumnal and Vernal Equinoxes. To the North is the figurative pillar Jachin which marks the sunrise at the summer solstice and to the South is the figurative pillar Boaz marking the sunrise at the winter solstice.



Placement of Worshipful Master and figurative pillars



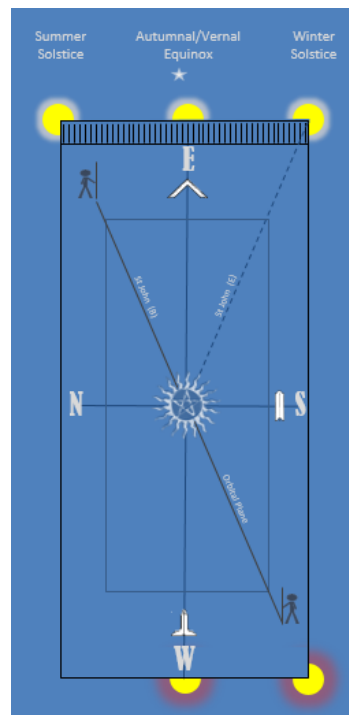
Two important feast days celebrated in some Masonic jurisdictions are the St John's Days. As previously mentioned these are celebrated on or about the two solstices; St John the

Baptist's on the summer solstice and St John the Divine's (or Evangelist) on the Winter Solstice. In the Lodge, these days are indicated by the figurative sunrise lines (shadows) cast by Jachin and Boaz. In the West sits the Senior Warden who represents the setting sun at the equinox. His principal duty, before closing the Lodge, is to mark the setting sun. The Jewel of his office, an emblem of equality signifying the equal measure of day and night at the equinox.

The Junior Warden in the South while representing the Moon is charged with the duty of marking the sun as it crosses the meridian. The jewel of his office, when combined with a square enables measurement of the angle of the sun at midday. Thus, the angle of the sun as it crosses the meridian on the equinox will mark the centre of the Lodge at 90 degrees.

The two deacons (from the Greek: *diakonos* – ‘attendant’) are the Senior Deacon placed in the northeast and the Junior Deacons placed in the South West. The wands they carry resemble the measuring rods, (sometimes referred to as Asherah by the early Jews). The purpose of these measuring rods in ancient times was to determine the angles of the sunrise and sunset indicated by the shadows cast from the vertically held shafts.

Not surprisingly the deacons are placed next to the line of the shadows of the summer solstice sunrise and winter solstice sunset which aligns with the orbital plane of the earth. Arguably they could symbolically attend the Worshipful Master and Senior Warden in establishing the summer solstice sunrise and marking the winter solstice sunset respectively.



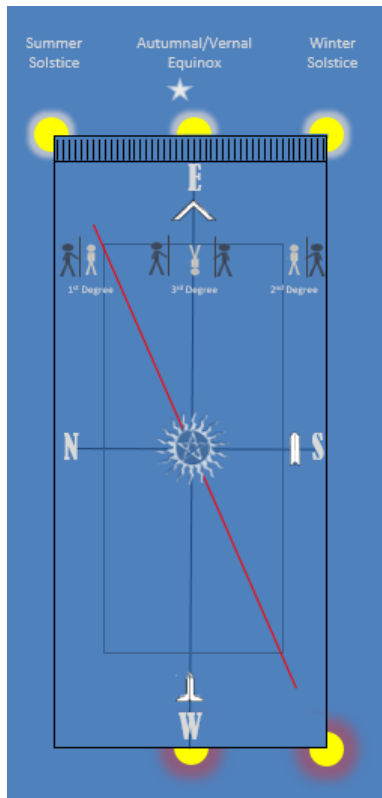
In his book on old ley lines, ‘Old Straight Track’ (1925) Alfred Watkins outlines a connection between the old tracks he called ‘Leys’ and the orientation of churches thus:

“Freemasonry affords a most striking link between ley sighting methods and orientation of buildings; for their lodges were formally oriented and annals of some of the Scotch lodges describe the exact procedure followed for the alignment of churches. The site of the Altar having been decided upon, a pole was thrust into the ground and a day appointed for the building to be commenced. On the evening previous, the Patrons, Ecclesiastics, and Masons assembled, and spent the night in devotional exercises; one being placed to watch the rising of the sun gave notice when his rays appeared above the horizon. When fully in view, the Master Mason sent out a man with a rod, which he ranged in line between the altar and the sun, and thus fixed the line of orientation.”⁴

The sun follows a path from the height of its new life at the summer solstice through to its preparation for its slaying by the 3 autumnal months then it's ultimate death at sunset on the winter solstice only to be reborn at the vernal equinox to commence a new life.

⁴ Old Straight Track' (1925) Alfred Watkins Harper Collins London

Being well acquainted with marking the path of the sun the Deacons direct the candidate along the solar path during the various degree ceremonies.



1st Degree: Our Candidate is placed in the North East Corner on the line of the shadow of Jachin; symbolising a new life illuminated by the full light and lustre of the sun at sunrise on the summer solstice.

2nd Degree: he is placed in the South East Corner on the line of the shadow cast by Boaz marking the sunrise at the winter solstice symbolising the shortening of his days as he journeys through life and his contemplation of the 'Hidden Mysteries' of nature and science and the sacred dictates of truth, honour and virtue, to which he will be put to the test in this life: - an allusion to the very solar journey he is living and discovering?

3rd Degree: Finally, the candidate arrives symbolically at the point from which Hiram Abiff did not err (the point within a circle) on the centre line of the Lodge.

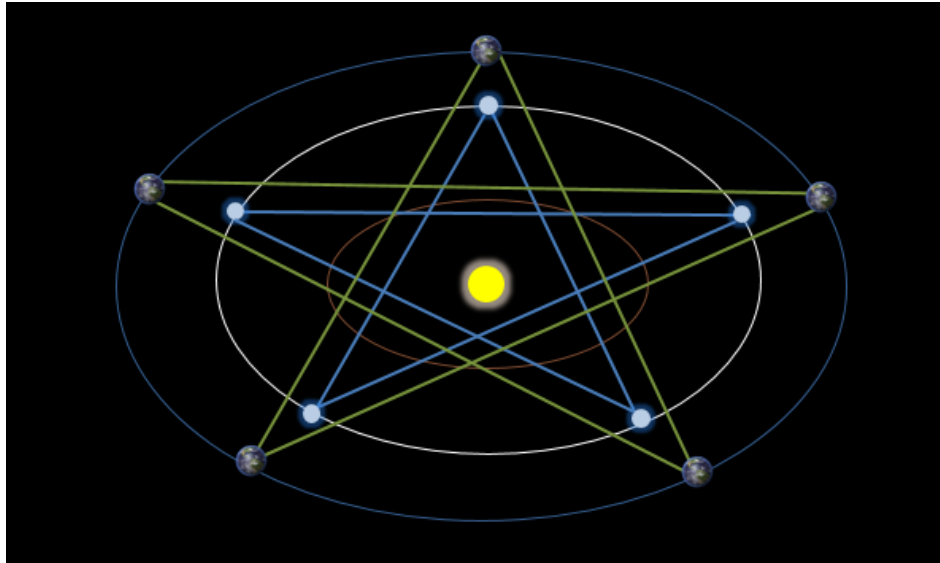
This represents the equinoxes, the Autumnal when he will be prepared for and experience a figurative death; and the Vernal where he will be raised to the dawn of a new life symbolised by the rising of Venus in the East just before sunrise.

In the cold light of the pre-dawn sky, our candidate becomes a balanced harmonious personality with the blazing star at our centre enabled to balance every conflicting aspect of our life.

When the candidate is raised from his grave his head rises in a curve towards the East to meet Venus which is also rising above the horizon.

The East-West line of the lodge marks the equinox, the point of equilibrium between the two solstices when there are twelve hours of light and twelve of darkness.

The W.M. directs the candidate's gaze towards the East where he can see a five-pointed 'star' rising before the sun at dawn. The planet Venus as she moves around the sky touches the path of the sun in just five places, just like the W.M. embracing the candidate at just five points, when he is raised.



The result is a pentagonal synodic series that takes about eight years, and which consists of five synodic cycles

This near perfect pattern, (called a grand quintile), occurs because five cycles take place in an even number of Earth years and is the perfect symbol of the balanced harmony of reconciling man's eternal spirit with his mortal existence.

Earth – Venus Synodic Cycle

Synodic: (astronomy) pertaining to a conjunction, or to two successive conjunctions of the same bodies. Venus orbits the Sun in 224.701 Earth days (~.615 Earth years).

Venus must orbit the sun 2.6 times while Earth orbits 1.6 times before the two planets align. (583.92 Earth days) As the process continues, five unique Venus-Earth locations are created in the orbital plane.

As I said at the outset, limiting this presentation to the Craft, and introducing the basic astronomical concepts that we immerse ourselves in, often without acknowledging or understanding their significance, only scrapes the surface of the subject.

As we are well aware the rituals of Craft Freemasonry have a clear spiritual import conveyed in a solar allegory illustrated by astronomical symbols. Both the allegory and symbols are as old as civilisation itself.

The allegory combines the initiatory rite of the unity of God and the immortality of man into the symbolic nature of the annual solar cycle essential to the survival of our ancestors and the observation understanding and meaning of the world around them.

Knowledge of the divine spark in man's nature and the workings of the Gods' creation was sacred knowledge indeed, reserved only for the initiated.

This knowledge has been preserved in our ritual from time immemorial and continues to form the very essences of our rites of initiation.

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