

# **ASTRONOMY**

**for**

## *English Majors*

**Michael Ferber**

This little guidebook is meant to help students majoring in English literature or other fields in the Humanities to learn what they need to know about the sky. What goes on there, especially the movements of the celestial bodies at night, often carries important meanings in poetry and literary prose. Every year in my Romantic poetry course at the University of New Hampshire I have found students who are unable to determine why the sun, moon, planets, stars, or comets appear in a poem and whether they carry symbolic meanings or simply indicate the season or time of day; often my students are unsure how these bodies behave in the real sky. Many students cannot say, for example, whether the full moon is ever visible at noon. And some of them live in the countryside or small towns, where they have frequent opportunities to observe the clear night sky unpolluted by city lights. Even those, however, who understand the positions of the moon and sun during the moon's phases have not encountered the ancient theory of the celestial spheres, the seven "planets" (which included the sun and moon), and astrological "influence," a set of beliefs of great importance for literature even after Copernicus and Galileo overthrew it. This book is for them.

I am writing it in sections as I have time and making them available on-line as I go. There are, of course, helpful websites and many good books that introduce astronomy ancient and modern, and there are books on astronomy and astrology in literature, but I have not seen anything that briefly explains the basics with literature students in mind.

### **The Sky**

Today we understand that the earth floats in "space," and that "space" is unimaginably vast; if we have some grasp of Einstein and recent theories of the "Big Bang" we also understand, if "understand" is the word, that space can expand and contract and bend into shapes like saddles. This book, however, is not concerned with space in this sense, filled with galaxies of stars and pulsars and quasars and black holes, though a good deal of recent literary prose, especially science fiction, deals with it. It is about the *sky*, the region *as we see it* above our heads from horizon to horizon, a

hemisphere or bowl that contains the sun, moon, stars, comets, meteors, and clouds. It is almost entirely about what can be seen with the naked eye, the eye unassisted with telescopes or any other devices except those that steady our sight and help it measure altitudes and positions on the horizon. “We don’t need telescopes,” the poet Derek Mahon has written, “to appreciate / the silent music of the sky at night” (“Data”). It is this sky, accessible to anyone with good eyesight and patience, that authors from Homer and those of the Bible to those of our time have evoked and whose patterns and events their readers should know.

I should add that the sky in this book will nearly always be the sky of the northern hemisphere, for the simple reason that western literature, and eastern as well, is the literature, until recently, of people who have lived north of the equator. The great majority of human beings for the last ten thousand years, at least, have lived in the northern hemisphere, where, after all, most of the world’s land is located. If I have any readers who live in Australia, South America, or southern Africa they will need to make a few adjustments as they read this book, as they do when they read most of the world’s literature, but much of it will be applicable to the sky seen from any spot on the globe.

The word “sky,” by the way, used to mean “cloud”; it was adopted during the Middle Ages from Old Norse *sky*, which still means “cloud” in modern Norwegian. Chaucer writes of a strong wind “That blew so hidously and hye / That hyt ne lefte not a skye / In alle the welkin long and broad” (*House of Fame* 1599-1601). Here the word “skye” means “cloud” and the word “welkin” means “sky” in the modern sense—the wind “left not a cloud in all the sky,” we would say. Shakespeare’s Oberon speaks of the “starry welkin” (*MND* 3.2.356). Yet “welkin” itself, before Chaucer, also meant “cloud,” as the kindred term *Wolke* does in German and *wolk* in Dutch. A parallel development is found in French *nue*, from Latin *nubes* (“cloud”): in poetry especially, *nue* or its plural *nues* often meant “sky.” These little linguistic facts may suggest that the sky was usually cloudy in England, Norway, and France; they also remind us that until recently those who theorized about the sky did not distinguish, as we do, between astronomical and meteorological events.

## **The Sublime Sky at Night**

The star-filled sky has had a profound impact, usually with a religious significance, on people of virtually every human culture beneath it. In many traditions the stars and planets were taken as gods, and the constellations embodied their myths. The western classical tradition will occupy us in the pages that follow, but we might begin by noting more modern expressions of the awe-inspiring or “sublime” effect the starry sky has had, and which is often described in literature. Immanuel Kant famously wrote, “Two things fill the mind with ever-increasing wonder and awe, the more often and the more intensely the mind of thought is drawn to them: the starry heavens above me and the moral law within me” (*Critique of Pure Reason*). Echoing this passage, Victor Hugo wrote, “There is one spectacle grander than the sea, that is the sky; there is one spectacle grander than the sky, that is the interior of the soul” (*Les Misérables*). Writers have often merged the two, showing how the interior of the soul might be

changed, made more serene or more grand, or reduced into its proper small place, by contemplating the heavens. For a fine example, consider this by Virginia Woolf, from her novel *Night and Day*:

Without knowing or caring more for Church practices than most people of her age, Katharine could not look into the sky at Christmas time without feeling that, at this one season, the Heavens bend over the earth with sympathy, and signal with immortal radiance that they, too, take part in her festival. Somehow, it seemed to her that they were even now beholding the procession of kings and wise men upon some road on a distant part of the earth. And yet, after gazing for another second, the stars did their usual work upon the mind, froze to cinders the whole of our short human history, and reduced the human body to an ape-like, furry form, crouching amid the brushwood of a barbarous clod of mud. This stage was soon succeeded by another, in which there was nothing in the universe save stars and the light of stars; as she looked up the pupils of her eyes so dilated with starlight that the whole of her seemed dissolved in silver and spilt over the ledges of the stars for ever and ever indefinitely through space.

### **Homer and the Constellations**

But let's go back to the beginning by taking some bearings from Homer, the first recorded Greek poet, though he was the heir of many centuries of oral poetry chanted by illiterate bards. In Book 18 of the *Iliad*, Hephaestus the smith-god makes a wonderful shield for Achilles, a shield of bronze and gold and silver and decorated with many scenes, the first of which is this:

He made the earth upon it, and the sky, and the sea's water,  
and the tireless sun, and the moon waxing into her fullness,  
and on it all the constellations that festoon the heavens,  
the Pleiades and the Hyades and the strength of Orion  
and the Bear, whom men give also the name of the Wagon,  
who turns about in a fixed place and looks at Orion  
and she alone is never plunged in the wash of the Ocean.

(18. 483-89; trans. Richmond Lattimore)

In the *Odyssey*, nine years after the Trojan War, when Odysseus sets out on his raft in Book 5,

. . . he kept his eye on the Pleiades and late-setting Boötes,  
and the Bear, whom men give also the name of the Wagon,  
who turns about in a fixed place and looks at Orion  
and she alone is never plunged in the wash of the Ocean.

(5. 272-75)

The fact that three of the lines are identical in Greek displays the "oral-formulaic" style of Homer. A poet who composed with pen and ink would not be likely to repeat three lines verbatim, whereas an oral poet, who half-memorized his poem and half-reinvented it with each performance, would need to resort from time to time to fixed passages,

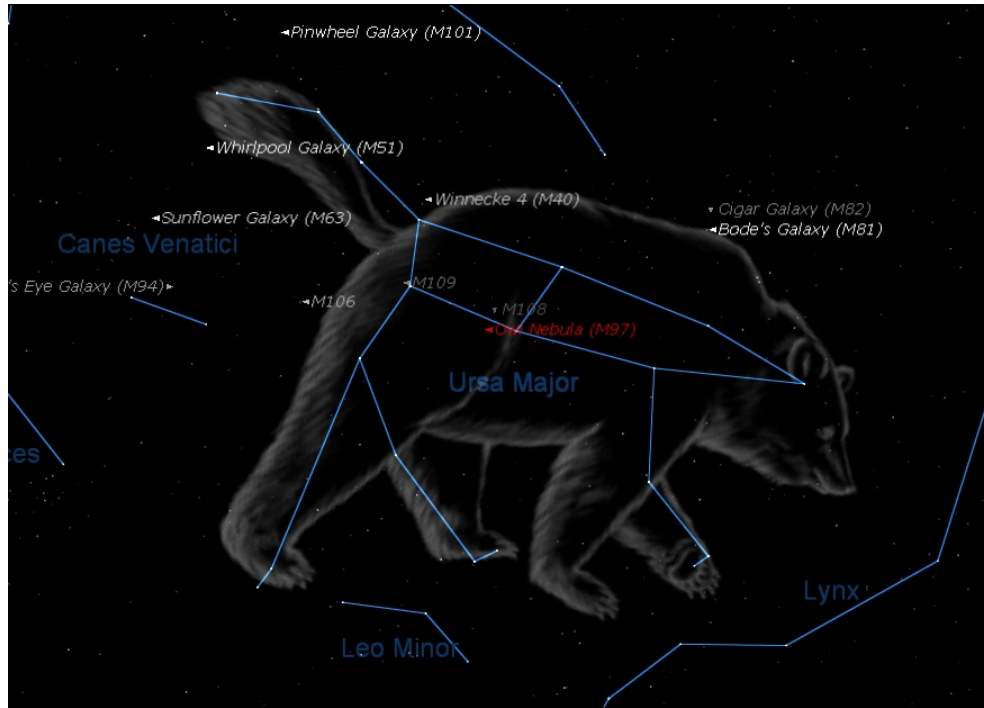
especially for similar scenes—and what could be more similar than the constellations on two nights a mere decade apart?

The “she” in both passages refers to the **Bear** (Greek *Arktos*, a feminine noun); the translator could just as well have used “it.” (“Wagon” in Greek (*Hamaxa*) is also a feminine noun.) *Arktos* gives her name to the latitudes directly beneath her, the Arctic. Astronomers call her Ursa Major, Latin for “Bigger She-Bear,” but in America we know the constellation, or part of it, as the Big Dipper; in England it is still sometimes called “Charles’s Wain” (“wain” means, and is related to, “wagon”) and sometimes “The Plough.” “Charles” here is a mistake, for the word goes back to a word similar to “churl,” which used to mean “man”: hence it is the “man’s wagon,” in contrast to the Little Dipper, once called the “woman’s wagon.” The seven bright stars that outline the Big Dipper or Wagon or Plough are only a part of the much larger Bear.

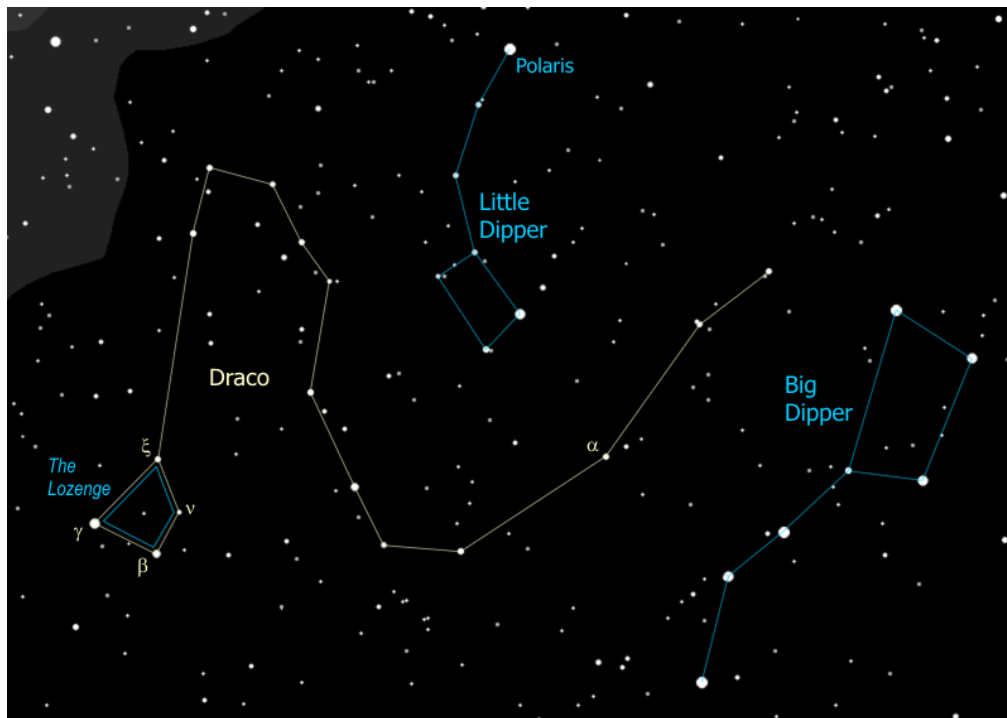
In Homer’s day the Bear or Wagon never set below the horizon, was “never plunged in the wash of the Ocean,” at Greek latitudes (Athens is about 38° North, about the same as San Francisco) but was always visible as it revolved around the pole. Ovid elegantly reduced the phrase in Latin centuries later to *immunemque aequoris Arcton*, “and the Bear exempt from the sea” (*Metamorphoses* 13.293). Because of the drift of the celestial pole through the sky, however, the Bear is no longer entirely exempt. It was never the case that the Bear was the *only* constellation that never sets, so perhaps Homer means that only the Bear *among these constellations* never sets, which was true. Homer does not mention the Little Bear (*Ursa Minor*, our Little Dipper), whose tail ends in the star we call Polaris or the North Star. Except as seen from near the equator or south of it the Little Bear never sets: it is one of the “north circumpolar constellations.” Occasionally writers use “the Bear” to refer to the north, as when Joad in Racine’s *Athalie* refers to the north-facing walls as the “side of the Bear” (*Ourse*) (1534).

The Greeks had other names for the Great Bear, though they are not found in Homer. One was Helikē, which means “revolving”; as Homer says, she “turns about.” Another was Kallisto, “most beautiful,” on the basis of the story that she was one of the objects of Zeus’s lust and bore him a son, Arkas; in jealous anger Hera turned her into a bear, and then Zeus placed her among the stars. The Roman writer Valerius Flaccus calls it “the Arcadian constellation” in his *Argonautica* (481). The Romans also called it Septentrio, from *septem*, “seven,” for the number of major stars in it, the part we call the Dipper.

As for Helikē, there was a city by that name in the Peloponnesus (Greece), said to be the birthplace of Kallisto; that fact may account for the name of the constellation. Dante writes of northern barbarians who come from “a region that is covered every day / by Helice, who wheels with her loved son” (*Paradiso* 31.32-33, trans. Mandelbaum), for Arkas too was placed in heaven by Zeus and became the Little Bear (as told by Ovid in *Metamorphoses* 2.496-507). Spenser reduces the constellation to a single star, “Helice the lodestar of my life,” as a symbol for his beloved (*Amoretti* 34).

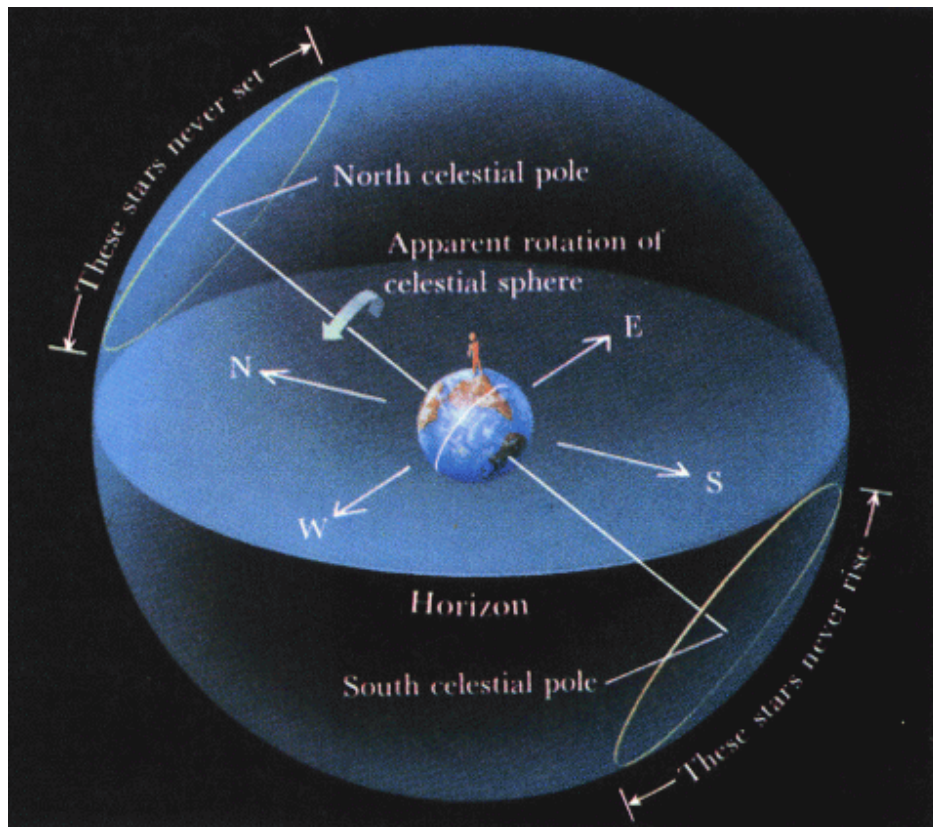


The Greater Bear



The Two Bears, with the Dragon between them

Thanks to [my.execpc.com/.../astronomy/Spring/Polar.html](http://my.execpc.com/.../astronomy/Spring/Polar.html).



### The Circumpolar Constellations on the Celestial Sphere

Thanks to: [astro.wsu.edu/worthey/astro/html/lec-celestial-sph.html](http://astro.wsu.edu/worthey/astro/html/lec-celestial-sph.html)

The **Pleiades**, the first group Homer names in both passages, are a striking cluster of stars in the constellation Taurus (the Bull). The Greeks and Romans thought there were seven of them, and they are named after the seven daughters of Pleione and Atlas. Euripides uses the adjective *heptaporos* (“seven-pathed”) to refer to them (*Iphigenia at Aulis* 7); Milton calls them “the Seven / Atlantic Sisters,” after their father (*Paradise Lost* 10.673-74); Keats calls them “those starry seven, / Old Atlas’ children” (*Endymion* 2.689-90). I have never been able to make out more than six without binoculars. (I feel justified in my inability whenever I get into my Subaru, for *subaru* is Japanese for “Pleiades,” and there are only six stars in its logo.) Even the ancients questioned whether there were really seven, for as Ovid wrote: “They are usually said to be seven, but there are usually six” (*Fasti* 4.170). This discrepancy gave rise to the idea of “the lost Pleiad,” as if there were once seven and now only six, and from there to various tales of a lost or stolen sister. An ancient tradition held that one of them, Electra, an ancestress of the

Trojans, was unwilling to look down on the destruction of Troy by the Greeks and so departed the heavens. For some reason the idea of a lost Pleiad appealed to nineteenth-century writers and artists, for there are quite a few poems, plays, sculptures, and paintings celebrating her. Two of the best-known English women poets of their day, Letitia Elizabeth Landon and Felicia Hemans, wrote poems called “The Lost Pleiad.” The most famous painting of the subject is by Bouguereau, *L'Étoile perdue*.



**William-Adolphe Bouguereau, *The Lost Star* (1884)**

However many there are, as a group the Pleiades are easy to locate. The time of year when they first become visible in the eastern horizon at dawn before being blotted out by the sun (their “heliacal rising”) was the beginning of the sailing season in the Mediterranean Sea, so Odysseus would know them well. Hence their name may come from the Greek root meaning “sail,” but there are other possible etymologies.

The Pleiades are named twice in the Book of Job in the Bible (if “Pleiades” is the right translation of the Hebrew *kimah*, which is far from certain). In the King James or “Authorized” translation (1611), God asks Job, “Canst thou bind the sweet influences of the Pleiades, or loose the bands of Orion?” (38.31). Milton echoes this verse in *Paradise Lost* as he describes the creation of the heavens:

First in his east the glorious lamp was seen,  
Regent of day, and all the horizon round  
Invested with bright rays, jocund to run  
His longitude through heaven’s high road: the grey  
Dawn, and the Pleiades before him danced  
Shedding sweet influence . . . .

(7.370-75)

By “longitude” here Milton means the path of the sun through the heavens, what we would call the celestial equator, the line in the sky directly above the earth’s equator. Since in Milton’s view the fall of Adam and Eve brought with it the fall of nature, and the tilting of the earth’s axis from the vertical, the sun no longer runs along the equator but on the “ecliptic,” a circle which intersects the equator at two points at an angle of 23°.

What is “influence”? It was believed until recently that an ethereal fluid flows in from every star and planet, and affects events on earth. In fact it is still believed by many millions: it is the basis of astrology and the horoscope. The Pleiades had a good reputation, and were thought to be beneficent or “sweet.”

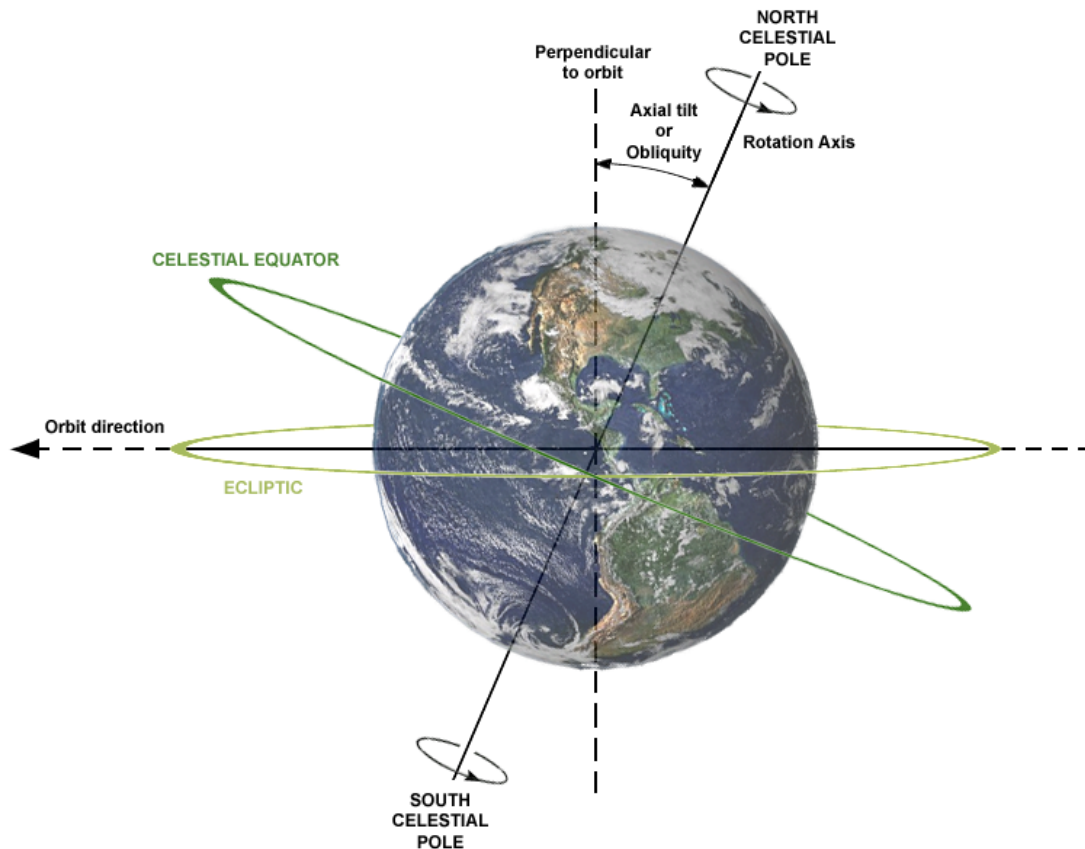
In the nineteenth century, Alfred Lord Tennyson wrote these lovely lines about this lovely cluster: “Many a night I saw the Pleiads, rising thro’ the mellow shade, / Glitter like a swarm of fireflies tangled in a silver braid” (*Locksley Hall* 9-10). Wordsworth called them “those fair Seven, / Acquaintances of every little child” (1850 *Prelude* 4.245-46)—alas, no longer the case. (It is possible Wordsworth is referring to the Big Dipper, still known to, well, nearly every little child.) In the third century BCE a group of writers of tragedies who lived in Alexandria were known as the Pleiad or Pleiades, but none of their work has survived. Better known to us is *La Pléiade*, the group of seven French poets of the sixteenth century who aimed to do for French poetry what Petrarch and others had done for Italian; the best known of this group are Ronsard and Du Bellay. A group of seven patriotic American poets at the time of the Revolution, all Yale graduates, playfully called themselves The Pleiades; the best known of these is Joel Barlow, who wrote an epic called *The Vision of Columbus* (1787).

The **Hyades**, which Homer names in the *Iliad* passage but not the *Odyssey*, are a smaller and less prominent cluster, also in Taurus. They are another set of daughters of Atlas, five of them, half-sisters to the Pleiades. When their brother Hyas was killed, they fell to weeping, and when they were made stars, their distinctive risings brought rain. Their name is related to the verb ἵω (huō), which means “I bring rain”; the Greeks said



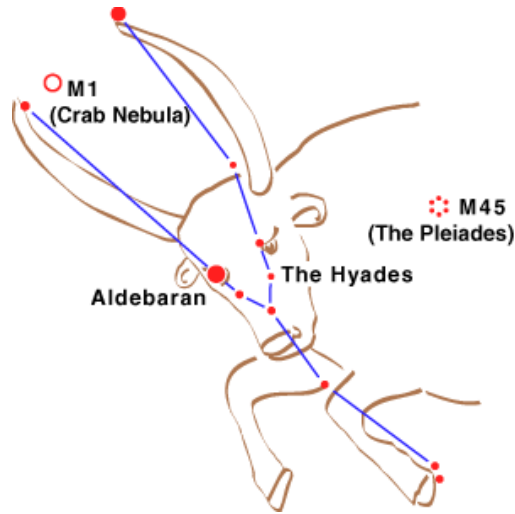
*Zeus hui*, “Zeus rains,” and then dropped the “Zeus,” giving “(it) is raining.” When Virgil names them (twice) in the *Aeneid*, he calls them *pluvias Hyadas*, “rainy Hyades” (1.744, 3.516), which Tennyson echoes in his poem *Ulysses*: “when / Thro’ scudding drifts the rainy Hyades / Vext the dim sea” (9-11).

Taurus is one of the twelve “houses” or stations of the “zodiac,” the belt of constellations on or near the annual path the sun takes through the fixed stars, the ecliptic; they make up the twelve months of the horoscope used in astrology. Since the sun’s path is never far from the celestial equator, any constellation in the zodiac will set at a certain time of year in the latitudes of Greece, Italy, and the rest of Europe, not to mention the United States.



Celestial Equator, Celestial Poles, and Ecliptic

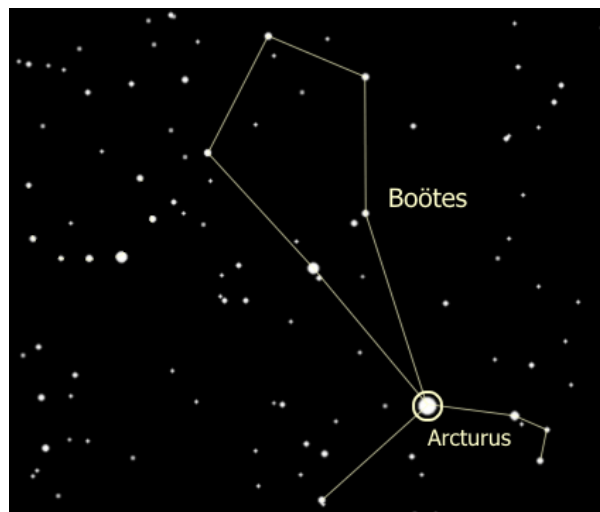
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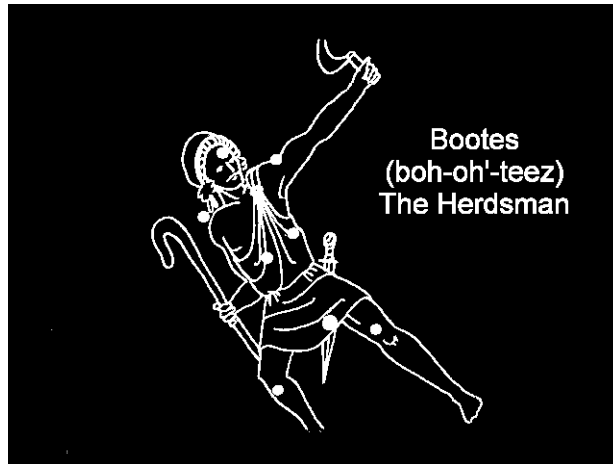


## Taurus

Thanks to StarDate OnLine.

**Boötes**, which Homer names in the *Odyssey* passage but not in the *Iliad*, seems to mean “Ploughman,” or more literally “Ox-Driver,” but the etymology is uncertain. Its brightest star, and the fourth brightest in the northern sky, is called Arcturus (Greek *arktouros*), “Bear-Watcher” or “Bear-Guard”; it seems to be watching over the two Bears. (*Arktos*, as we noted, means “she-bear.”) The star may be located by following the sweep of the handle of the Big Dipper. Homer called Boötes “late-setting” probably because it is so bright, that is, when other nearby stars have faded in the dawning sunlight Arcturus will remain visible for a while. Arcturus was a frequent marker of the seasons; in Sophocles’ *Oedipus Tyrannus*, for example, a shepherd defines the summer pasturing season as from “spring to the rising of Arcturus” (1137), that is, to the time of year when Arcturus is visible just before dawn, a little before the autumnal equinox.

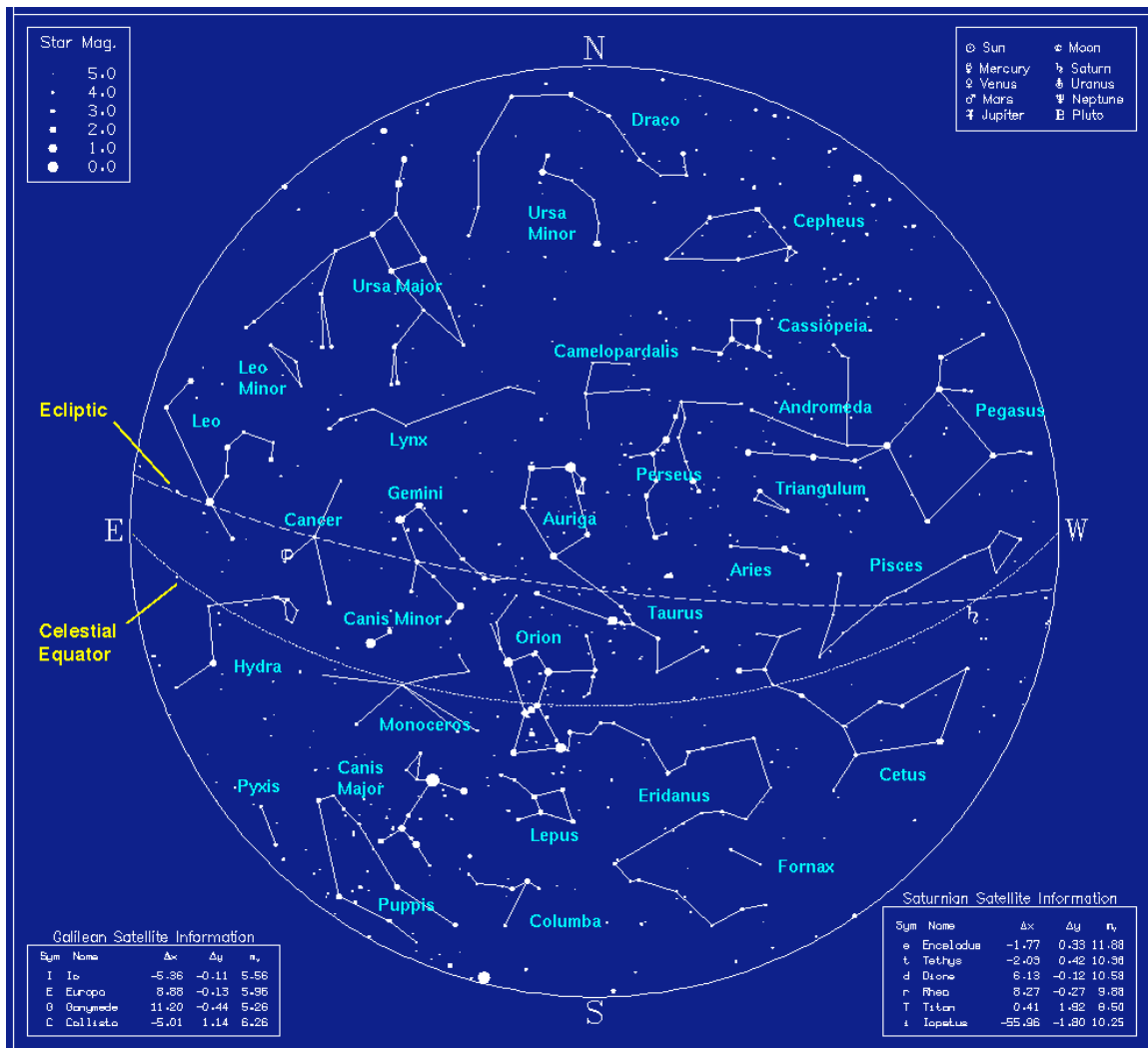




## Bootes

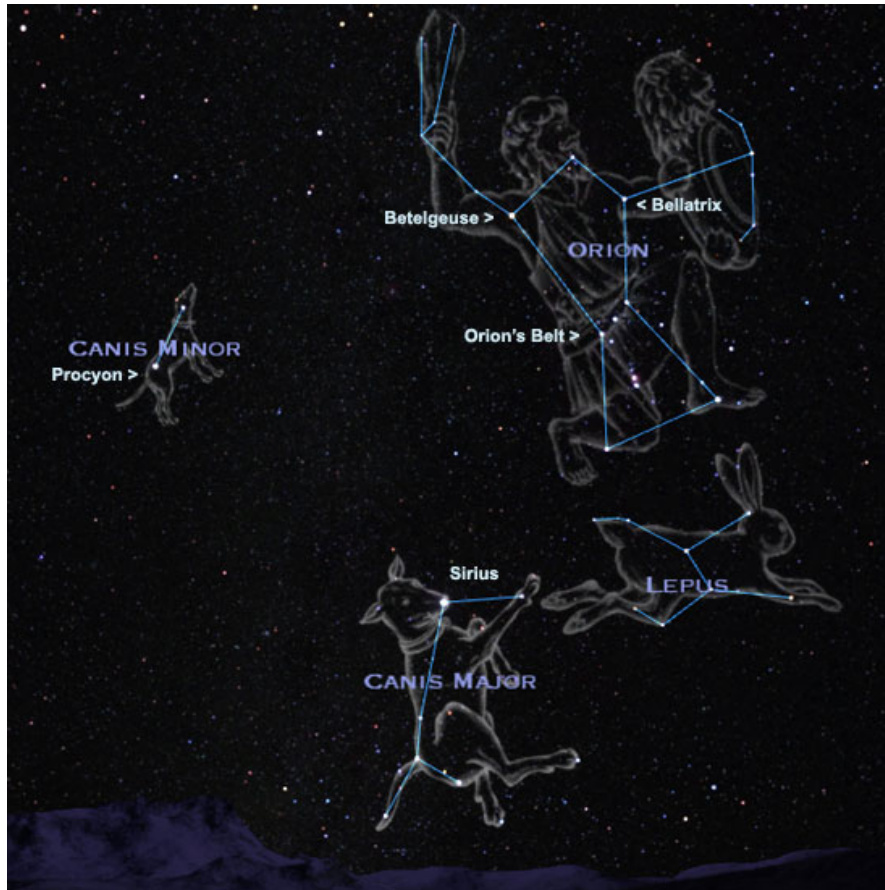
Thanks to Bristol Channel Cutter Elizabeth and Fairfax County Public Schools Planetarium

Finally there is **Orion**, the Hunter, whom Homer says the Bear “looks at.” As we see in the chart below, the Bear seems to face southwest toward Orion, whose belt lies right on the celestial equator:



Thanks to [Mount Wilson Observatory StarMap program by Bob Donahue](#)

And well she might, for his Hunter also has a dog, which we know as Canis Major (Latin for “Bigger Dog”).



### Orion and his Dog

Thanks to [Starrynighteducation.com](http://Starrynighteducation.com)

The three stars in the belt are easy to find, and they can be used to find other stars, such as Sirius, the brightest star of Orion's Dog, and the brightest star in the sky. That star appears in one of the most famous similes of the *Iliad*. When Achilles, enraged at Hector's killing of Patroclus, finally enters battle to take revenge, he shines like a baleful star,

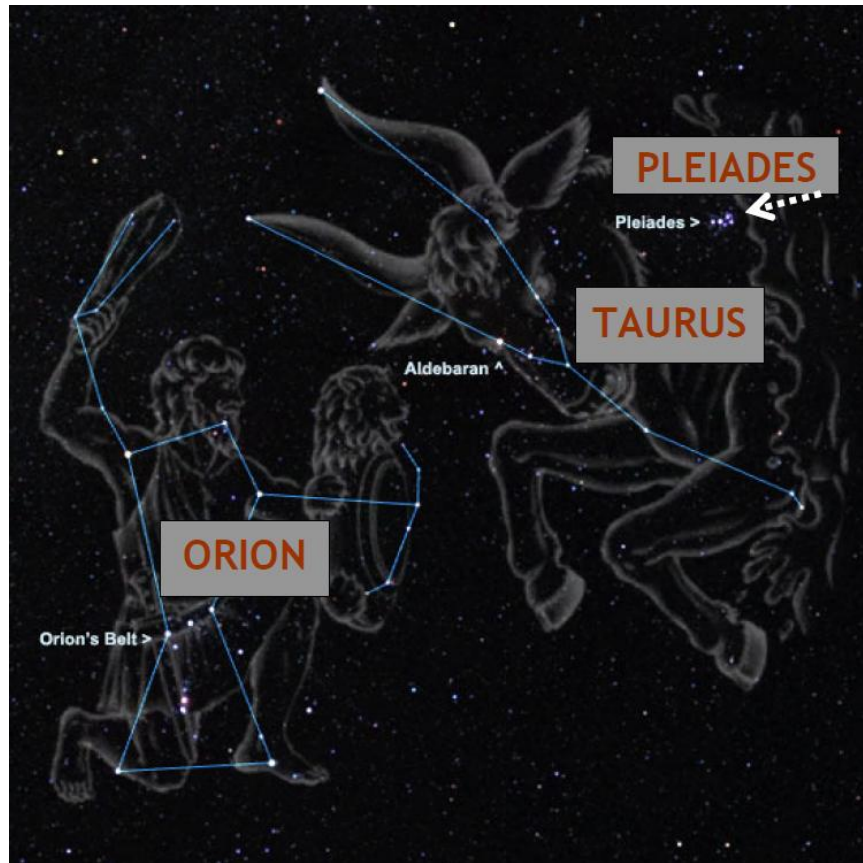
like that star  
which comes on in the autumn and whose conspicuous brightness  
far outshines the stars that are numbered in the night's darkening,  
the star they give the name of Orion's Dog, which is brightest  
among the stars, and yet is wrought as a sign of evil  
and brings on the great fever for unfortunate mortals.

(22.26-31; trans. Lattimore)

The heliacal rising of Sirius, the time when it is first visible on the eastern horizon just before dawn, was in mid-July, so it "comes on" in late summer and early autumn, the hottest season, when people felt feverish and sick. We still call them the "Dog Days" after Sirius the Dog Star (Latin *Canicula*). In the *Agamemnon*, Aeschylus writes of foliage providing shade against the *seiriou kunos* or "Sirian dog" (966-67). In Virgil's

*Aeneid*, “Sirius burns the sterile fields” while men die of pestilence (3.141). But the Roman poet Horace boasts, “Here [on my Sabine farm] in the remote valley you will escape the heat of the Dog Star” (*Odes* 1.17.17-18). Milton calls Sirius the “swart star” in *Lycidas* (138), “swart” meaning “black” or “dark,” perhaps because it is evil or because the fields are scorched black by it. Homer’s simile for the brilliant Achilles, then, is itself brilliant: the great warrior is not just bright like the brightest star, but like that brightest star he brings death to the unfortunate mortals of Troy.

Orion is not far from the Pleiades in the sky.



Orion and the Pleiades  
Thanks to Livingspark.net

Hesiod tells us that the Pleiades sisters “plunge into the misty sea to escape Orion’s rude strength” (*Works and Days* 619-20). The Irish poet Seamus Heaney alludes to Orion’s amorous pursuit of these virgins in his poem “Oysters” (1975), where he likens his enjoyment of the oysters to a rape: “As I tasted the salty Pleiades / Orion dipped his foot into the water.”

The sun, moon, and stars all rise in the eastern half of the sky and set in the western half, except for the circumpolar stars that neither rise nor set but just revolve. The stars shift a little each night because the sun passes through them in a great circle

once a year (the ecliptic), blotting out half the stars, but a slightly changing half, each day. A star's **heliacal rising**, we noted, is the time of year when the star appears for the first time on the eastern horizon just before dawn, having just been released from the blotting-out effect of the sun's brightness. A star's **heliacal setting**, as you might guess, is the last time of the year when the star is visible on the western horizon just after sunset (on the following evening, the star will pass below the horizon while there is still too much sunlight for it to be visible). The word "heliacal" comes from a Greek adjective from the noun *helios*, "sun." Astronomers from ancient times also noted two other dates: the **acronychal rising**, the first time a star appears in the east when the sun is setting in the west (on the following evening, the star will rise while there is still too much daylight for it to be visible); and the **acronychal setting**, the last time a star is visible in the west after the sun rises in the east. "Acronychal" (spelled variously) comes from the Greek *akro-* "tip" or "point," and *nych-* "night"; hence it means "at the point of night." These phrases seldom appear in poems or novels, but the facts they refer to were well known to ancient watchers of the sky.

Indeed they were well known until quite recently to anyone who had to work outside at night, such as the shepherd Gabriel in Thomas Hardy's novel *Far from the Madding Crowd* (1874):

After placing the little creature [a lamb] with its mother, he stood and carefully examined the sky, to ascertain the time of night from the altitudes of the stars.

The Dog-star and Aldebaran pointing to the restless Pleiades were half way up the Southern sky, and between them hung Orion, which gorgeous constellation never burnt more vividly than now, as it swung itself forth above the rim of the landscape. Castor and Pollux with their quiet shine were almost on the meridian: the barren and gloomy Square of Pegasus was creeping round to the north-west; far away through the plantation, Vega sparkled like a lamp suspended amid the leafless trees, and Cassiopeia's chair stood daintily poised on the uppermost boughs.

"One o'clock," said Gabriel.

But let's return to Orion:



Orion Thanks to [www.acmecompany.com](http://www.acmecompany.com)

As a large and salient constellation, the annual risings and settings of Orion, or parts of him, were frequent markers of the seasons, especially for sailors. The acronychal rising (which is nearly the same date as the heliacal setting) of Orion's distinctive belt marked the beginning of the stormy season of late autumn and winter. Apollonius of Rhodes likens a violent deed of Heracles to "a sudden violent wind-squall" that "strikes down upon a ship's mast" at "the winter setting of grim Orion" (*Argonautica* 1.1201-04, trans. Richard Hunter). The fleet of the surviving Trojans, making for Italy, are scattered by *nimbosus Orion* ("stormy Orion") (Virgil, *Aeneid* 1.535). In his version of the same event, Marlowe calls him "gloomie Orion" (*Dido* 1.274). Spenser in his *Faerie Queene*, names "huge Orion, that doth tempests still portend" (4.11.13), and Milton in *Paradise Lost* describes the "fierce winds" of Orion as he overthrows the army of the Pharaoh at the Red Sea (1.305). The Pharaoh should have had a star-gazer on his staff, such as Homer's Odysseus or Hardy's Gabriel.

After this little survey of the constellations in two similar Homeric passages, one in the *Iliad*, the other in the *Odyssey*, we might reflect that, though they are similar, and thus in some sense "formulaic," it does not follow that they are just set pieces of description expressing the standard set of stars well known to Homer's audience and useful for navigating. As the star-simile for Achilles reminds us, the sky is not utterly remote: most of the gods live there, but they often descend to earth, like clouds, or like birds, while mortal heroes, when they die, join the gods above. Orion, for instance, is not just a constellation to Odysseus; Odysseus actually sees Orion's shade in Hades: "I was aware of gigantic Orion," he tells the court of Alcinous, "in the meadow of asphodel, rounding up and driving together / wild animals he himself had killed in the lonely mountains, / holding in his hands a brazen club, forever unbroken" (11.572-75).



Besides constellations, one of the Homeric passages we began with also describes “the tireless sun, and the moon waxing into her fullness” (*Iliad* 18.484). The sun is “tireless,” we may guess, because it rises every day without fail, and perhaps because it radiates heat and brightness without let-up; a variant of the Greek word for “tireless” is also a Homeric epithet of “fire.” The moon, in contrast, waxes and wanes and disappears altogether for a couple of days each month, and even at its full brightness it is far from fiery.

The sun and the moon, it turns out, play a great if unobtrusive part in the pattern of the *Odyssey*.

The Trojan War lasted ten years (the *Iliad* begins during the final year). Then the victorious Greeks set sail for home. Most make it home safely, but Odysseus, when the *Odyssey* opens, has not been heard from for nine years. His son Telemachus, a baby when he left, is now nearly twenty. When Odysseus finally reaches his homeland, Ithaca, disguised as a beggar, it seems to be winter, for it is cold (14.457ff), there is morning frost (17.23-35), and fires are built up. And it is the interlunar time of month, “either at the waning of the moon, or at its onset,” as Odysseus himself puts it to his unknowing host, the swineherd Eumaeus, and then again to his wife Penelope; or we might say, “between this moon’s end and the beginning of the next” (14.162, 19.307). We are at some turning point of the year, at least, and indeed a festival to Apollo is in progress (20.156, 20.278, 21.258) to mark the new year. Apollo, or Phoebus (Greek *Phoibos*, the “Bright One”), was associated with light and the sun, as his sister Artemis was connected with the moon, and he was usually honored at the time of the winter solstice during a new moon (that is, no moon): the time of least sun and least moon, as the year begins to turn again toward greater light. Odysseus begins to take on the characteristics of Apollo himself, for like the god he is a skilled archer: he sends his shaft through the twelve axe-heads and then, revealing himself as the returning hero, slaughters the suitors who have ruined his household and threatened his son.

There is more to this pattern. Odysseus returns to Ithaca when nineteen years have passed since his departure for Troy. Nineteen years is known as the “Metonic Cycle,” after Meton of Athens (fifth century BCE), who calculated it accurately; nineteen is the least common multiple of the year and the month. The month, which depends on the motion of the moon, and the year, which depends on the motion of the sun (as it then seemed), are independent variables with no connection or “resonance.” Just as we have to fidget with leap years, adding a day every four years, to make the day and year come out right, more or less, so ancient calendars had to add a month every three years or so to make the month and the year come out right (we are speaking of true lunar months, not the slightly longer conventional months of our calendar). Even so, they did not come out right until nineteen years passed. Nineteen solar years and 235 lunar months coincide very closely, to within two hours. In the Christian Church this cycle is known as the *computus* and is used to compute the date of Easter, which is always the first Sunday after the first full moon after the vernal equinox, that is, the date depends both on the sun and on the moon. It may have been known long before Meton made his calculations. It seems likely, in any case, that the Ithacans were having an especially momentous festival

to Apollo when Odysseus showed up, retrieved his great bow and quiver of arrows, and then shone like the bright god of archery himself.

#### A Note on **Aldebaran**

Hardy's Gabriel notes the bright star Aldebaran, which you have also seen labeled in the two diagrams of Taurus (either part of, or next to, the Hyades), and says it is "pointing to the restless Pleiades." They are restless, probably, because they are fleeing the amorous Orion. But the star Aldebaran, the brightest (or alpha) star in Taurus, also seems to follow the Pleiades in their westward course. In fact the name Aldebaran comes from the Arabic *al Dabaran*, "the Follower." It is one of hundreds of stars with Arabic names, including ten of the twenty brightest. Aldebaran is the thirteenth brightest; it is easy to find. Two stars in Orion are brighter: Betelgeuse and Rigel. Betelgeuse comes from *Ibt al Jauzah*, "the Armpit of the Giant (or perhaps of the Central One)," the giant being Orion. Rigel comes from *Rijl*, "left leg" (of Orion). Why are so many names Arabic? Because during the Middle Ages in Europe the chief source of astronomical knowledge was the Arabic translation of the Greek astronomer Ptolemy. Many of the Arabic names are translations of Greek terms, though some seem to have independent origins, traceable perhaps to ancient Babylonian names.

#### A Note on **Sirius**

The brightest star in the sky, Sirius has called attention to itself from as far back as we have records. The Egyptians used it to construct its calendar, and associated it, as the Greeks did much later, with a dog. Our name for it comes from Greek *seirios*, which meant something like "scorcher," but its etymology cannot be traced any earlier. Hesiod names it three times in *Works and Days*; other Greeks sometimes used the word to refer to the sun. I can't help thinking that the American poet Lawrence Ferlinghetti is punning on the name in these lines from his book *Coney Island of the Mind* (1961): "the serious constellations / with Greek names / still stare down on us."

### The Directions

Everything—sun, moon, planets, stars—rises in the east and sets in the west. The exceptions (in the northern hemisphere) are the north circumpolar stars, which never rise or set but simply revolve more or less around the pole star. Just how many stars are circumpolar depends on where you stand on the earth: the farther north you go the more of the sky will neither rise nor set. At the north pole, the north star (Polaris) will be just about overhead and all the heavenly bodies will revolve counter-clockwise, some just skimming the horizon, some in smaller circles around the center at the zenith, all the way round (assuming it is dark for 24 hours, as it is for a few months each year). Farther south, in the latitudes of Europe and the US, the majority of the bodies will rise in the eastern quarter, some due east, some north or south of due east, varying with the seasons.

As they rise upward, they also move southward until they pass their meridian or high point and then move northward and downward toward the west.

“East” comes from Old English and farther back from a Germanic form something like *austro-*, whence come our adjectives “eastern” and “easterly” and our noun “Easter.” The word *\*austro-* (the asterisk means it is a hypothetical or conjectured form) seems to derive from a root in Proto-Indo-European (PIE), the ancestral language of most European and many central Asian languages, a root something like *\*aus-*, which meant “shine,” especially the “light of dawn.” In Greek this root became *eos*, “dawn” (in some dialects *awos*) and the goddess Eos, while in Latin it became *aurora*, which also meant “dawn” and which was also deified as the goddess of morning. “Easter” may well be derived from the Old English name of this same goddess, worshipped at the vernal equinox, and ultimately from the same root. Christians believed the resurrection of Jesus took place in the spring, and may have redesigned the pagan spring holiday into what we know as Easter. The root meaning of “east,” then, is “dawn,” or “the brightness of dawn.” (It is a little puzzling that the name of the south wind in Latin, *auster*, seems to be from the same source; perhaps it was originally a southeast wind, or perhaps the Romans were thinking that the sun mainly occupies the southern part of the sky, and rises south of east half the year.)

The origin of “west” is a little less certain. It is also from an old Germanic root, something like *\*westro-*, whence our “western” and “westerly.” It probably goes back to a PIE root *\*wes-*, which we find in Latin *vesper*, which meant “evening” (and which is still in use in English in the plural to mean “evening prayers”), and in Greek *hesperos*, also “evening.” If this is so, we have a satisfying symmetry in the origins of these two directional words, both ending in *-st*, the *-s-* in both cases stemming from the original root, and the *-t* a shortening of the *-tro* or *-tor* suffix.

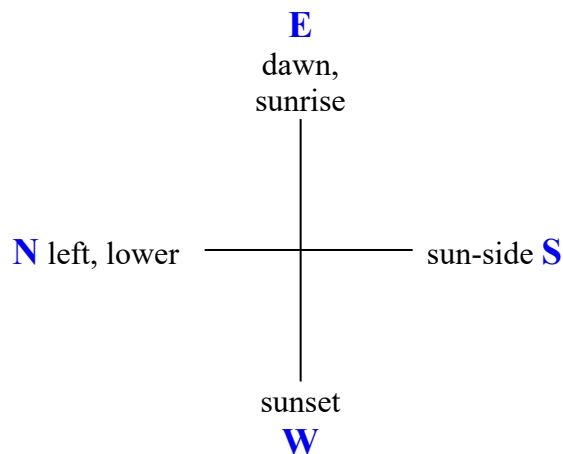
The meanings (basically “sunrise” and “sunset”) that lie hidden in these English directional terms are more obvious in the Latin equivalents. The Latin word for “east” is *oriens*, which means “rising,” the participle of the verb *oriri*, “rise” or “arise”; *oriens* gives English “orient” and “oriental.” The Orient is the eastern part of the world (from the point of view of Europe, of course). The root *\*or-* goes back to a PIE root which, via Germanic, gives English “rise,” “raise,” and “rear.” The Latin word for “west” is *occidens*, the participle of *occidere*, “fall down” or “sink” (also “die”); English gets “occidental” (“western”) from the participle. Both Latin words, when used as directions, refer to the sun, rising in the east and sinking or setting in the west.

A Greek word for “east,” *anatolē*, means “rising” and hence “sunrise.” It is the source of Anatolia, the Greek term for Asia Minor (modern Turkey), which of course is east of Greece; it is still in use in English. It is in use in Turkish, too: *Anadolu* is the name of Turkey’s eastern-most province. The French word for “rise,” *lever*, has a participle *levant*; capitalized, “the Levant” (in English as in French) means the eastern part of the Mediterranean. In German, *Morgenland* (literally “morning-land”) means “the Orient” and *Abendland* (“evening-land”) means “the Occident” or “the West.”

We use the verb “orient” (in British usually “orientate”) to mean “find (or give) direction” or “align correctly,” but of course the original sense was to face the east. At the start of each day, presumably, if you were travelling on unmarked paths (or no paths) and with no compass, you faced the rising sun and chose your route accordingly. I like to imagine the first day of Freshman Orientation as beginning with the lining up of all the new students with their faces to the east.

“North” goes back through Germanic to (probably) a PIE root *\*ner-*, meaning “low”; the *-th* suffix may reflect a comparative ending *-ter* which we find in Greek *nerteros* (“lower”) or perhaps a locative ending *-then* which we find in Greek *nerthen* (“from below”). (*Nerteroi* as a noun meant “the dead,” that is, the ones down below, in Hades.) In ancient Umbrian, a language related to Latin, there was a word *nertru*, which meant “on the left.” These words suggest the core idea that, when you are oriented toward the east, perhaps facing an altar for a sacrifice, your left hand is to the north, and the north seems the “lower” part of the sky compared to the south, where the sun is. We find a similar indication in Arabic: *šimāl* means “left,” while *šamāl* means “north wind.” (Remember that if you live north of the Tropic of Cancer the sun is always in the southern half of the sky.)

With “south,” finally, we come to the sun itself. It comes from Germanic *\*sunthaz*, meaning “sun-side.” “Sun” goes back to the PIE word *\*sewul* or something similar, or, with a variant ending, *\*suwens*. The former shows up in Latin *sol* (whence English “solar” and “solstice”) and in Greek *helios* (found in many compound words in English). So the most ancient meanings we can recover in our Proto-Indo-European family of languages of the four cardinal points are these:



## A Digression: The Sun and Moon in *The Rime of the Ancient Mariner*

The mysterious movements of the ship in Coleridge's famous ballad are a little less mysterious if one carefully notes the positions of the sun and moon, though at one point Coleridge may have made a mistake. (I will be quoting from the 1817 version.)

"The Sun came up upon the left," we are told, and "on the right / Went down into the sea" (25-28). The east (sunrise) is on the left, west on the right, so the ship is heading south.

"Higher and higher every day, / Till over the mast at noon" stands the sun (29-30): we are in the tropics, between the tropic of Cancer and the tropic of Capricorn (why they are so called we will discuss at a later point). But the only region of the earth where the sun can ever be directly overhead is the tropical zone, a band between 23 degrees north and 23 degrees south of the equator. In Europe and the continental United States the sun is always in the southern half of the sky, even at noon in the summer. Coleridge does not tell us the season of the voyage so we cannot be more precise as to the ship's location. If it were March 21, the vernal equinox, and the sun were exactly overhead (at the zenith), the ship would be at the equator (called "the line").

After they sail near the Antarctic, "The sun now rose upon the right" and "on the left / Went down into the sea" (83-86): a formulaic repetition of the earlier passage, telling us the ship is heading north. And indeed "the good south wind still blew behind" (87; see 71).

And again, "The bloody Sun, at noon, / Right up above the mast did stand" (112-14): we are back in the tropics, near the equator.

After a weary time passes, one evening they see a ship against the setting sun: "Almost upon the western wave / Rested the broad bright Sun" (173-74). Then it sets: "The sun's rim dips; the stars rush out: / At one stride comes the dark" (199-200). Some uncertain time passes while "From the sails the dew did drip" (208) "Till clomb [climbed] above the eastern bar / the horned Moon" (209-10). A "horned" moon is a crescent moon, and if it is a crescent moon then it must be near the sun, either an hour or so before it or an hour or so after it; here evidently it precedes the sun, so the time must be an hour or so before dawn. But apparently not, for soon we read: "The moving Moon went up the sky, / And nowhere did abide: / Softly she was going up, / And a star or two beside" (263-66). If the moon is well up the sky and some stars are still visible then it is night, not dawn. Quite a bit happens that night, the moon is mentioned twice again, and dawn does not arrive until line 350. Evidently, then, we were meant to imagine the moon rising shortly after the sun sets, and then mounting the sky, but if that is the situation then the moon must be full, or nearly so, and not horned at all. So Coleridge has nodded off here, or the Mariner has.



Illustration by Gustave Dore

You should pause to be sure you understand why a crescent moon must always be near the sun. (By “near the sun” I mean their apparent locations in the sky as we see them from earth, not their real positions in space.) A full moon must always be in the opposite part of the sky from the sun—rising as the sun sets, setting as the sun rises, or at its high point in the sky at midnight while the sun is “below” us—in order to receive the sun’s light full on the face we see. The less we see of the moon’s face the closer it is to the sun, until, as a new moon (invisible) it is right next to the sun, if not in fact eclipsing it.

But that is not all Coleridge seems to have nodded over. The passage about moonrise goes on: “Till clomb above the eastern bar / The horned Moon, with one bright star / Within the nether tip” (209-11). It is impossible for a star to be *within* the tip of a

crescent moon, for between the tips is all moon, unilluminated, it is true, but moon, and it blocks out the stars behind it. Mariners, no matter how superstitious, would certainly be familiar with that fact.

The sun and the moon continue their prominent roles in the poem, and it is clear that they are more important as symbols or mood-setters than as indices of time or place. Coleridge's apparent carelessness may itself indicate that we are not, after all, in a realistic world.

Coleridge's friend Wordsworth gets it right in his poem "Gipsies," the second stanza of which describes the sun, the moon, and the evening star (Vesper):

The weary Sun betook himself to rest.  
—Then issued Vesper from the fulgent West,  
Outshining like a visible God  
The glorious path in which he trod.

The glorious path is, I think, the sky still lit up where the sun has just set. Vesper, the planet Venus, is now visible because the sun is below the horizon and no longer blots it out, but it follows the sun's path into the west.

And now, ascending after one dark hour,  
And one night's diminution of her power,  
Behold the mighty Moon!

The moon is rising in the east an hour after the sun has set in the west, so it is no longer quite full—just one night past its full power.

It is interesting that Wordsworth makes the sun "weary" while Homer thinks he is "tireless." I am tempted to say that in the 2500 years between Homer and Wordsworth the sun has risen and set about a million times and might well be ready for a nap. The real reason of course is that, in personifying the sun, Wordsworth makes him more human than divine—he has done his day's work and is ready to retire for the night—whereas the moon is just beginning her night shift.

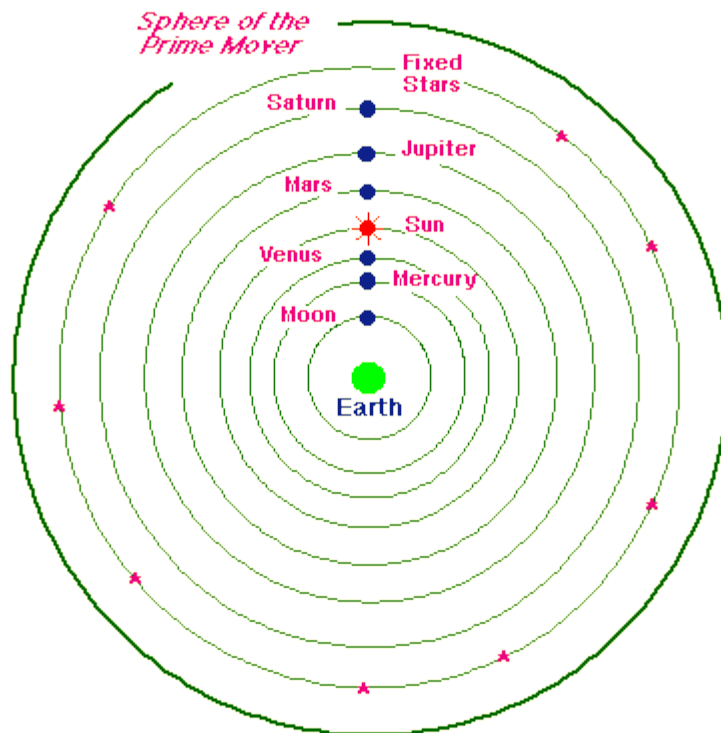
\* \* \* \* \*

In the passages we have looked at, neither Homer nor Coleridge discusses planets (though Wordsworth does), unless the bright star within the tip of Coleridge's moon is understood to be one. The bodies we know as planets are bodies that revolve around the sun, one of which is our earth. But until the modern era "planet" had another meaning, the seven lights in the sky that moved with their own motion against the backdrop of the fixed stars. Day and night the whole sky rotates from east to west around the North Star; it makes a complete revolution in 24 hours. But against that motion seven bodies move faster or slower or backward or at differing angles, so their positions with respect to the other stars change noticeably each day (or night). These seven bodies, of course, did not include the earth, which is the standpoint from which the heavens are observed, but they did include the sun and the moon.

To go further with the planets, however, it would be helpful to look first at the ancient model, or set of similar models, of the sky.

## The Two Systems

Since the late Renaissance, references to astronomy in literature, and to celestial objects or events used as symbols, may evoke either of the two major cosmological systems in the west: the ancient or the modern. The modern, or Copernican, model places the sun at the center of the solar system, and the earth in orbit around it as one of the planets. As knowledge has grown since Copernicus and Galileo, we have added planets, added moons around planets, added asteroids or little planets, placed this whole solar system in a galaxy, and placed the galaxy among an enormous number of other galaxies in an expanding universe. To understand western literature, however, even well after the Renaissance, it is the ancient model that we need to know. Under the ancient system, sometimes called Aristotelian, more often called Ptolemaic, the earth is the center of the cosmos and the heavens revolve around it once a day. Most of the heavenly bodies are “fixed stars” whose positions relative to each other never vary, but seven of them, including the two great lights the sun and the moon, change their relative positions from night to night. These are the seven planets. They and the fixed stars are embedded on solid, translucent spheres that rotate at different speeds, all set in motion by the ninth and outermost sphere, the Primum Mobile or Prime Mover.



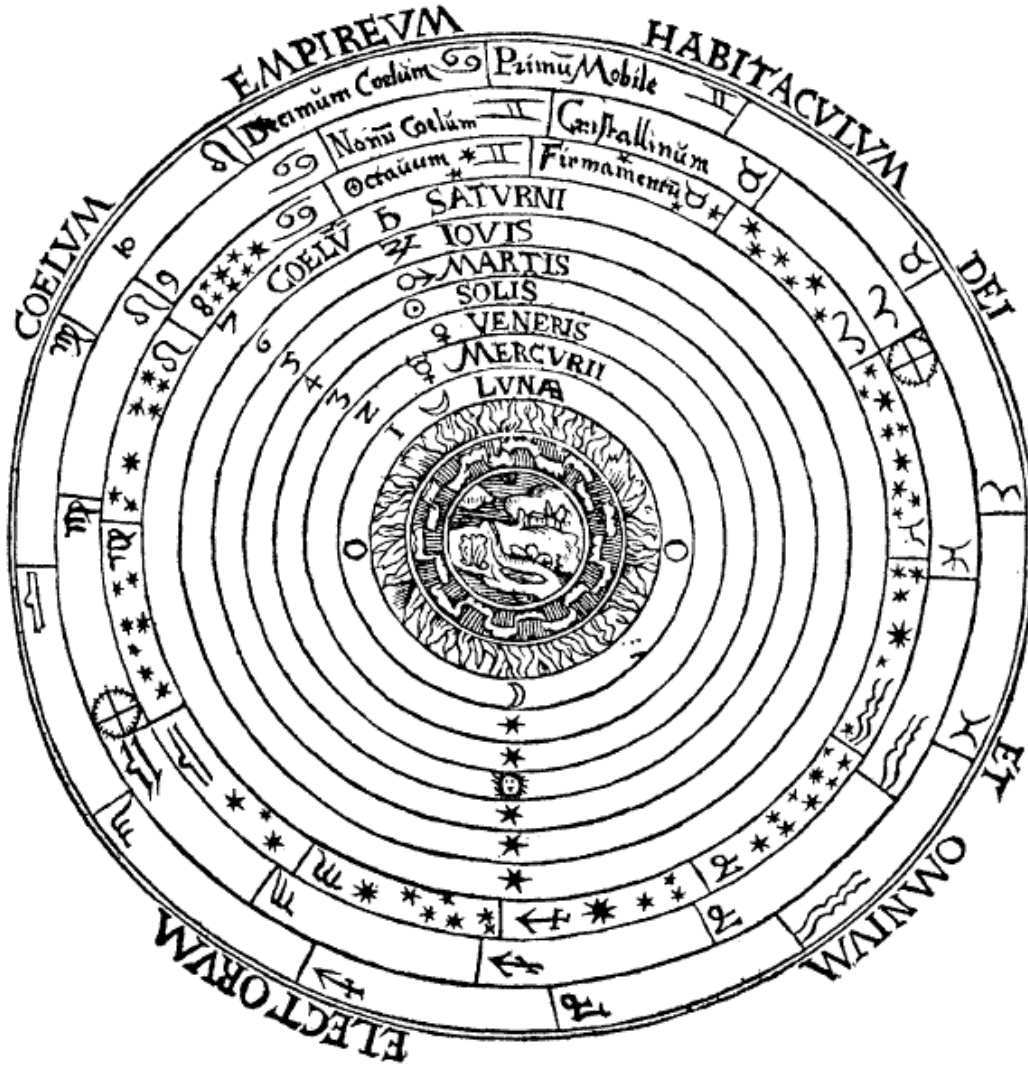
*Aristotle's Universe*

(Thanks to Astronomy 161 at University of Tennessee, Knoxville)



And here is a medieval diagram of the same model, complete with various layers of zodiacal signs:

**Schema huius præmissæ diuisionis Sphærarum .**



There were many further complications of the ancient model. Aristotle thought there were fifty-five spheres, many of them serving as buffers between the ones carrying planets. Such obvious observable facts as the “retrogressions” of planets, whereby after many months moving slightly forward each night along a line through the fixed stars they go backward for a while before resuming their forward motion, required something more than nested orbits or spheres. “Epicyles” were dreamed up, orbits on top of orbits, or spheres on top of spheres, to account for the anomalies. For an excellent moving diagram of the Ptolemaic system, which shows epicyles at work, see:

<http://astro.unl.edu/naap/ssm/animations/ptolemaic.swf>

The word “planet” comes from the Greek *planētēs*, an adjective meaning “wandering.” An *astēr planētēs* is a “wandering star.” The first thing to get used to, then, is that the sun and the moon are planets, and the earth is not. And all the planets, not just the moon, revolve around the earth.

## Sun and Moon as Planets

In his *Timaeus*, Plato refers to “sun and moon and five other stars, called planets” (38c), an ambiguous construction, but it was normal to consider all seven bodies as planets. Sometimes, not surprisingly, the sun and moon are separated off, as in Plutarch’s phrase “sun and moon and the five planets” (*Platonicae Quaestiones* 8). Dante, lost in the dark wood, find guidance in the light of the rising sun, “that planet [Italian *pianeta*] / which leads men straight along all roads” (*Inferno* 1.17-18). Petrarch calls the sun “the planet that marks off the hours” (*Rime* 9.1). Spenser calls the sun the “fayrest planet” (*Epithalamion* 282). In his famous speech on “Degree,” the basis of social order, Shakespeare’s Ulysses speaks of the role of “the glorious planet Sol” in correcting the influence of other planets (*Troilus and Cressida* 1.3.89); Sol is the sun. Dryden calls the sun “the warm planet” (*Don Sebastian* 2.2).

Less common are instances where the moon is called a planet. When Shakespeare’s Cleopatra is resolved to kill herself, she declares her fixed intent by contrast to the proverbially inconstant moon: “Now from head to foot / I am marble-constant. Now the fleeting moon / No planet is of mine” (*Antony and Cleopatra* 5.2.238-40). Thomas Campbell writes “The moon’s pale planet” (*The Pleasures of Hope* 114). As the speaker of Wordsworth’s “Strange Fits of Passion” approaches Lucy’s cottage, the moon slowly sinks until “down behind the cottage roof / At once the planet dropped” (23-24). In a later version Wordsworth, no doubt aware that, since nearly everyone in his day accepted the Copernican system, the word might be puzzling, changed the line to “At once, the bright moon dropped.”

Both sun and moon are sometimes called stars as well as planets. In 2 Peter 1.19, for instance, the sun is called the “day star” (King James Version); Milton calls it “this diurnal star” (*PL* 10.1069); Shelley names it “the broad / Star of day” in “Julian and Maddalo” 132-33. Lamartine’s phrase “l’astre au front d’argent” (“the star with silver forehead”) seems to refer to the moon (“Le Lac” 59).

## The Names of the Planets

We usually say the Greeks named the planets after their gods, though it may be more accurate to say the Greeks considered the planets to be the gods themselves, at least at the time they named them. Of the five star-like planets, the one nearest earth, the one that moves most swiftly through the sky, is Hermes, the fleet-footed messenger god. The

next planet, the most beautiful, is Aphrodite, goddess of love. The Greeks at first did not identify the evening star (Hesperos) with the morning star (Phosphoros). (The evening star is so called because it follows the sun closely downward into the west and thus, being very bright, is the first star visible in the evening; the morning star rises ahead of the sun in the east and thus is the last star visible before dawn. We know them both as Venus, which at different times of its cycle precedes or follows the sun.) The dimmer “red” planet is Ares, god of bloody war. Zeus is the brightest after Aphrodite but slow-moving, while Kronos (or Cronus in a more Latinate spelling) is fairly dim and the slowest of all. All five are major characters in the Greek myths, where their astronomical meanings are often ignored. The sun (Helios) and moon (Selene), however, though they are also gods, almost always stay within their (very prominent) celestial roles.

It was the Babylonians who worked out the first recorded system of planet names, as well as a great deal of astronomical lore we still use. Their god names correspond roughly to the Greek ones: thus Nebo or Nabu, the messenger god and god of writing, was attached to the planet Hermes (Mercury), and Ishtar, goddess of love, was identified with the planet Aphrodite (Venus).

We know the five lesser planets by the Latin equivalents of the Greek gods, and the two greater ones by English names. Hermes becomes Mercury, Aphrodite becomes Venus, Ares is Mars, Zeus is Jupiter, and Kronos is Saturn. All the Latin names, including those for sun and moon, have given rise to words in English. Taking them in the ancient order, from nearest to earth to farthest from it, the moon is Luna, from which we get “lunatic,” from the belief that madmen are “moonstruck,” as well as the more erudite term “sublunary,” meaning “under the moon,” that is, on this inconstant and fallen earth. Mercury yields “mercurial,” meaning “quick and changeable,” like the speediest of the planets and the winged messenger god; the element mercury is also known as “quicksilver.” Venus, the brightest of the lesser planets, named after the goddess of love, gives us “venereal” (from the genitive case of the word, *veneri*, visible on the chart above): venereal diseases come from careless indulgence in the domain of Venus. (“Venery,” now obsolete, meant “pursuit of sexual pleasure”; Benjamin Franklin advised us to “use venery” once a week.) Besides the obvious “solar,” Sol gives us “solstice” (from Latin *solstitia*), the time twice a year when the sun “stands” at its highest or lowest point in its path through the sky. From Mars we derive not only “martian” but “martial,” that is, “warlike,” as befits the god of war. Jupiter provides a word via its alternative name, Jove: “jovial.” Saturn gives us “saturnine,” which means more or less the opposite of “jovial.” Five of these terms, six if you count “venereal,” can apply to personalities or temperaments, and indeed it was believed that certain planets cast their “influence” on different people in different ways. To round out the seven, we often speak of a “sunny” personality or disposition.

The order of the planets was known to everyone. A character in Caldéron’s play *Love after Death*, declares he is ready to go to battle with the son of Charles the Fifth even he were *hijo del quinto planeta* (“son of the fifth planet”) and even if the whole horizon were covered with *marciales señas* (“martial banners”) (597-99).

<b>Latin Name</b>	<b>English Name</b>	<b>Adjective</b>
<b>Luna</b>	<b>Moon</b>	<b>lunatic</b>
<b>Mercurius</b>	<b>Mercury</b>	<b>mercurial</b>
<b>Venus</b>	<b>Venus</b>	<b>venereal</b>
<b>Sol</b>	<b>Sun</b>	<b>solar</b>
<b>Mars</b>	<b>Mars</b>	<b>martial</b>
<b>Jupiter (Jove)</b>	<b>Jupiter</b>	<b>jovial</b>
<b>Saturnus</b>	<b>Saturn</b>	<b>saturnine</b>

When we use “lunatic” or “martial” or any of the other terms today, we seldom think of planets or ancient astrological beliefs, but now and then a poet may evoke them, as Wallace Stevens does when he imagines that, “in the planetary scene,” reformed flagellants may “whip from themselves / A jovial hullabaloo among the spheres” (from “A High-Toned Old Christian Woman”).

The seven planets also provide the names for the days of the week in many European languages, as they did in Babylonian and Greek, and especially in the Romance languages descended from Latin. English borrows only one, Saturn, from the Roman pantheon; it keeps the old English words “sun” and “moon”; for the other days it uses names of pagan English gods that correspond to the Roman (and ultimately Greek) gods. The **box** below outlines the origins our day names, tracing them through Germanic or Latin words back to the mother of most European languages, Proto-Indo-European (PIE), which was spoken about 3000 BCE. (PIE left no writing, so all words or roots attributed to it are conjectural.)

## Names of the Days of the Week

### Abbreviations

MLG = Middle Low German	OE = Old English
OF = Old French	OHG = Old High German
ON = Old Norse	PIE = Proto-Indo-European
* = hypothetical form (not attested in writing)	

**Tuesday** < OE *Tiwesdæg*; cf. OHG *zîestag*

Tiwes is the genitive (possessive) case of Tiw, god of war and the sky (OHG *Ziô*, ON *Tyr*), corresponding to Mars.

Hence Tuesday corresponds to Latin *Martis dies*, “day of Mars,” whence Italian *martedì*, French *mardi*, Spanish *martes*.

Tiw, Zîo, and Tyr descend from PIE \**deiwo-*, as does Latin *deus*, “god.” A variant of the PIE root yields Greek Zeus and Latin Ju- (as in Jupiter) and Jove; another variant gives Latin *dies*, “day.”

**Wednesday** < OE *Wodensdæg*; cf. MLG *Wôdenesdach*, ON *Othensdagr*

Woden (OHG *Wotan*, ON *Othenn*) was the god of eloquence and swiftness, among other things, hence the counterpart of Mercury.

So Wednesday corresponds to Latin *Mercurii dies*, whence Italian *mercoledì*, French *mercredi*, Spanish *miércoles*.

The root of Woden is PIE \**wat-*, “inspire,” whence Latin *vates*, “prophet, poet.” The same root appears in obsolete English “wood,” meaning “mad, insane.” So we might think of Wednesday as the day of madness and poetry. Why not? It would break up the work week nicely.

**Thursday** < OE *Thunresdæg*; cf. OHG *Donares-tac*, Modern German *Donnerstag*; ON *Thorsdagr* (possibly an influence on English): “Thunder’s Day”

Thunor or Thor corresponds to Jupiter or Jove, the wielder of lightning.

Hence Thursday matches Latin *Jovis dies*, whence Italian *giovedì*, French *jeudi*, Spanish *jueves*.

**Friday** < OE *Frigedæg*; cf. OHG *friâtag*

Frig (ON *Frigg*) was the wife of Woden; the name seems to mean “wife,” from a root meaning “dear one” or “beloved.” She corresponds to Venus, goddess of love. Hence we have another motive to say “TGIF!”

Friday corresponds to Latin *Veneris dies*, whence Italian *venerdì*, French *vendredi*, Spanish *viernes*.

The root of Frig comes from PIE \**pri-* > \**priya-* “beloved” > Germanic \**frijjo*. Frig is cognate with “free” and “friend.”

Note **Tuesday**, **Wednesday**, and **Thursday** all retain the genitive (or possessive) case-marker -s, but **Friday** does not. The reason is that Tiw, Woden, and Thunor are male names, and -s marked only the masculine genitive in most noun-classes; the feminine genitive was not distinctively marked.

**Saturday** < OE *Sæterdæg* < *Sæternesdæg*, from Roman Saturnus, the god Saturn, first probably an Etruscan god. Latin *Saturnis dies*. This is the only English day-name borrowed from Latin.

**Sunday** < OE *sunnandæg*; *sunnan* is the genitive of *sunna*, “sun.” Though it is masculine in gender, *sunna* belongs to a class of noun that does not take the genitive case-marker -s; there was also a feminine form *sunne* (corresponding to German *Sonne*), which may have influenced the compound word.

Sunday corresponds to Latin *Solis dies*.

In the Romance languages (Italian, French, Spanish, Portuguese, and many others) Christian terms replaced the pagan Latin terms for Saturday and Sunday. Thus French *samedi* (Saturday) comes from OF *samadi* < *sambedi* < Vulgar Latin *sambati dies* < Latin *sabbati dies*, “day of the Sabbath” < Hebrew  $\text{שַׁבָּת}$ , “rest.” French *dimanche* (Sunday) comes from Vulgar Latin \**diominica* < Latin *dies dominicus*, “day of the Lord.”

**Monday** < OE *monandæg*; *monan* is the genitive of *mona*, “moon,” also masculine in gender, of the same class as *sunna*.)

Monday corresponds to Latin *Lunae dies*, “day of the moon,” whence Italian *lunedì*, French *lundi*, Spanish *lunes*.

## The Order of the Days of the Week

The order of the planets according to distance from the earth under the Aristotelian/Ptolemaic system is: (1) Moon, (2) Mercury, (3) Venus, (4) Sun, (5) Mars, (6) Jupiter, (7) Saturn. So the week order, starting with Monday, would be 1, 5, 2, 6, 3, 7, 4. There is a pattern here: they are in sequence if you fill every second day-number with a planet in order, starting with 1, and then return to fill in the blanks. Another pattern: starting with 1, put in every fourth planet in order and keep cycling through them until you finish. Yet another: If you start with Monday and go through week while skipping every other day, you will generate the planets in order. Why this order?

The Romans assigned planets to each of the 24 hours of the day, and assigned to the day the same planet as the day’s first hour. In the course of a day, the seven planets would cycle three times through with three left over. Thus, if the first hour (midnight to one AM) was governed by the moon, it would be Monday; on that day the 8<sup>th</sup>, 15<sup>th</sup>, and 22<sup>nd</sup> hours would also be moon hours. If you take the planets in order starting with the outermost, then the 23<sup>rd</sup> hour of Monday would be Saturn’s, the 24<sup>th</sup> Jupiter’s, and the next hour, the first hour of the next day, would be Mars’s, making the next day Mars Day, or Tuesday. The final hour of Mars’s Day would be Venus’s, making the first hour of the next day Mercury’s, hence Mercury Day, or Wednesday. So the seven days are generated in the order we have them.

## The Double Motion of the Planets

Marlowe’s *Doctor Faustus* discusses astronomy with the devil Mephistopheles. Mephistopheles explains that the planets, which he calls “erring stars,” “All jointly move from east to west in four-and-twenty hours upon the poles of the world, but differ in their motion upon the poles of the zodiac” (*Doctor Faustus*, A-Text, 2.3.45-47). There are two motions. (1) All seven planets have a common daily motion: they rise in the east and set in the west, returning to their starting points in (more or less) twenty-four hours. That is, the whole “world” or cosmos turns on its “poles” or axles in that period. (2) The planets differ in that each has its own secondary motion, which can be traced against the zodiac,

the belt of stars along the sun's path or ecliptic. (More on the zodiac under "Astrology" below.) They don't return to exactly the same starting point each day because they drift at different speeds against the east-to-west daily motion.

Faustus' reply to Mephistopheles specifies these motions:

Who knows not the double motion of the planets?

The first is finished in a natural day,

The second thus, as Saturn in thirty years,

Jupiter in twelve, Mars in four, the sun, Venus, and Mercury in a year, the moon in twenty-eight days. Tush, these are freshmen's suppositions. (50-55)

Perhaps not every freshman understands this today, but the two motions have been well known and accurately measured for thousands of years. (There are more motions than two, as it happens, but these are two most salient.) Today we think of the "year" of Venus and Mercury as different from the "year" of the sun, but under the ancient system these two planets were linked to the sun as the outer planets were not, and it is true that Mercury and Venus are always close to the sun in the sky, that is, as we see them.

"Pole" can mean the axle or axis of a wheel or any circle. It comes to English via Latin and French from the Greek *polos*, which meant "axis" or "pivot." Plato used it to mean the axis of the celestial sphere, and Aristotle used it to mean the end of the axis in the sky. The poles of the celestial sphere are the poles of the circle of the celestial equator as projected onto the sphere. We are familiar with the north celestial pole, which is marked (in our era) fairly closely by the Pole Star or Polaris. (The south celestial pole is not so well marked.) What Mephistopheles calls "the poles of the zodiac" would be the poles of the circle of the ecliptic, the path of the sun and the other planets through the sky, tilted at an angle of 23 degrees from the equator. (The paths are not quite on a line, but fairly close.) The north ecliptic pole is in the constellation Draco.

"Pole" could also mean the sky itself, the heavens; it was so used in poetry in Greek and Latin, and in English until recently. Virgil has the phrase *lucidus aethra siderea polus* (*Aeneid* 3.585): "a sky bright with starry radiance." Horace names the *rotundum . . . polum* (*Odes* 1.28.5-6): "the round sky" (perhaps "the whole wide heavens"). Though Homer did not use *polos*, his translator Alexander Pope used "pole": "Stars unnumber'd gild the glowing Pole" (*Iliad* 8.692). In the same book, Pope refers to the "starry pole"; Edward Young and William Blake, among others, used the same phrase.

## The Sun

The sun is so overwhelming a phenomenon and so fundamental to earthly life that its meanings in mythology and literature are too numerous to count. The sun is not only the most striking thing to be seen but the very condition of sight; light and seeing, some have argued, lie at the root of all symbolism. What follows, then, must be a highly selective discussion.

For the Greeks, to be alive was to see the sun. When a child was born he was brought "into the light, and he saw the sun's rays," according to Homer, while during

one's life one sees the light and when one dies one "must leave the light of the sun" (*Iliad* 16.188, 18.11, 18.61). The realm of Hades is never illuminated by the sun (*Odyssey* 11.15–19); it is located in the far west, where the sun sets. Wordsworth succinctly states the Greek view when he laments that so many friends have passed "From sunshine to the sunless land" ("Extempore Effusion" 24). Leopardi borrows the ancient idea in his phrase "give to the sun" (*dare al sole*) for "give birth" ("Canto notturno" 52).

Plutarch wrote that "sunlight is the symbol of birth" (*Aetia Romana* 2). Shelley was to echo this idea frequently, as in his phrase "birth's orient portal" (*Hellas* 202). To live on earth is to live "under the sun and starry sky" (*Iliad* 4.44). A similar idea is found in Hebrew thought. "Under the sun" is the formulaic expression of Ecclesiastes for "in this life": "there is no new thing under the sun" (1.9), and "I saw vanity under the sun" (4.7). In Latin literature, *lux* ("light") can mean "life": Virgil has *invisam . . . lucem* ("hateful life"; *Aeneid* 4.631). Similarly "day" can mean "life" in several languages. Death "shuts up the day of life" (Shakespeare, *RJ* 4.1.101). When one dies, as Gray puts it, one leaves "the warm precincts of the cheerful day" ("Elegy" 87). At the end of it, our life can seem no longer than a day; we are "ephemeral" beings (from Greek *epi* "on" and *hemera* "day"). The comparison of human life in its brevity to a day is indeed ancient. Mimnermus says one's youth is "short as the sunlight spreads on the earth" (2.8). Catullus urges his Lesbia to give thousands of kisses, for time is short: "suns can set and rise again; / For us, once our brief light has set, / There's one unending night for sleeping" (5.4–6, trans. Lee). It became a commonplace, but variously evoked. After urging his "Coy Mistress" to hold out no longer but "sport us while we may," Marvell concludes, "Thus, though we cannot make our sun / Stand still, yet we will make him run" (45–46). Hopkins concludes a sonnet, "all / Life death does end and each day dies with sleep" ("No worst, there is none").

Sophocles wrote that "everyone worships the turning wheel of the sun" (frag. 672). In Homer, Helios the sun is invoked as a god who sees everything and hears everything (*Iliad* 3.277, *Odyssey* 11.109, etc.); for that reason he is the god of oaths (like the Mesopotamian sun-god Shamash), the ever-present witness. Aeschylus' Prometheus calls on the "all-seeing circle of the sun" to witness his sufferings (*Prometheus* 91). (The phrase "circle of the sun" or "wheel of the sun" is a common Indo-European expression: cognate forms are found in Sanskrit and Old English poetry.) Sol sees all things in Ovid, *Metamorphoses* 2.32, 4.227–28, and 14.375. In Shakespeare, the "all-seeing sun" (*RJ* 1.2.92) has a "burning eye" (*RJ* 2.3.5), a "precious eye" (*KJ* 3.1.79), a "sovereign eye" (*Sonnets* 33.2); "The sun with one eye vieweth all the world" (*IH6* 1.4.84). If to be alive is to see the sun, it is also to be seen by it, as in Bryant's "Thanatopsis": "Yet a few days, and thee / The all-beholding sun shall see no more / In all his course" (17–19).

Rather than have an eye, the sun may be an eye itself. It is the "eye of day" in Sophocles' *Antigone* 104. The Hebrew phrase translated in the Authorized Version as "the dawning of the day" (Job 3.9) probably means "the eyelids of the morning" (as in the NEB). Ovid calls the sun the *mundi oculus* or "eye of the world" (*Met.* 4.228), Ronsard "the eye of the gods" and "the eye of God" (*Odes* 3.10.60, *Stances* 4.137), Spenser "the great eye of heaven" (*FQ* 1.3.4), Shakespeare "the eye of heaven" (*Sonnets* 18.5), Byron "the bright eye of the universe" (*Manfred* 1.2.10). Cicero, Pliny, and other Latin writers call the sun the mind or soul of the world. Milton combines these metaphors: "Thou sun, of this great world both eye and soul" (*PL* 5.171); Shelley in his



*Hymn of Apollo* has Apollo call himself “the eye with which the universe / Beholds itself and knows itself divine.” It is interesting that *súil*, the Old Irish word for “eye,” comes the Indo-European word for “sun,” the source as well for *Helios*, *Sol*, and *sun*.

The conventional attributes of Helios or Sol are well known. Brother of the Moon and Dawn, he drives his chariot of four (or seven) horses up from the eastern sea, across the sky, and down into the western sea, whereupon he somehow travels under or around the world, usually in a golden boat or cup on the river Ocean, back to the east. The Homeric *Hymn to Helios* and second *Hymn to Athena* mention the horses and chariot; Euripides describes sunset thus: “Helios drove his horses / Toward his final flame” (*Ion* 1148–49); it is these that Phaethon borrows in the disastrous tale told by Ovid in *Metamorphoses* 2. Homer sometimes calls the sun Hyperion, while Hesiod makes Hyperion his father; his mother is Theia. Later Apollo became associated with the sun, or with its brightness or clarity.

The sun’s celestial team became a commonplace in Medieval and Renaissance poetry. Spenser, for example, has “Phoebus fiery carre” (*FQ* 1.2.1); Shakespeare speaks of “The hour before the heavenly-harness’d team / Begins his golden progress in the east” (*IH4* 3.1.214–15); and Milton describes the same hour as “Now while the Heav’n by the Sun’s team untrod, / Hath took no print of the approaching light” (“Nativity” 19–20).

It became a persistent image that the sun’s horses breathed fire. Pindar sings of “the lord [sun] of fire-breathing horses” (*Olymp.* 7.71. Virgil, in Dryden’s expansive translation, has “Th’ethereal coursers, bounding from the sea, / From out their flaming nostrils breath’d the day” (*Aeneid* 12.115; see *Georgics* 1.250). Marlowe writes, “The horse that guide the golden eye of heaven, / And blow the morning from their nostrils” (2 *Tamburlaine* 4.4.7–8). In discussing Phaethon Spenser twice mentions the “flaming mouthes of □ortun” (*FQ* 1.4.9) or “the firie-mouthed □ortun” (5.8.40). Horses need not be divine to breathe fire, according to Lucretius, who refers to “the fire-snorting horses of Thracian Diomedes” (5.30 trans. Esolen); Virgil describes a thoroughbred whose “nostrils churn the pent-up fire within” (*Georgics* 3.85, trans. Wilkinson). In Blake’s *Book of Thel*, the lily’s perfume “tames the fire-breathing steed” (2.10).

Milton alludes to the myth that the sun is “the lusty Paramour” or lover of the Earth (“Nativity” 36). It goes back at least to Lucretius, who explains the fertility of Mother Earth as due to the casting of rain in her lap by Father Sky (1.250–51); Virgil writes of the sexual intercourse between her and Father Aether (= Heaven) (*Georgics* 2.325–27). Sidney’s *New Arcadia* begins: “It was in the time that the earth begins to put on her new apparel against the approach of her lover.”

Sun worship in Hellenistic and Roman times left its mark on Christianity. Christ was crucified on the 14<sup>th</sup> day of Nisan (on the full moon of the first month) in the Jewish lunar calendar, on the eve of the Sabbath, and rose from the dead two days later, which happened to be *dies Solis* or “Sunday” in the Greco-Roman solar calendar. At Jesus’ death, according to Luke 23.45, “the sun was darkened.” The last chapter of the Hebrew Bible seemed to prophesy a “Sun of righteousness” (Malachi 4.2). All this and the doctrine of the Logos as light in the Gospel of John made the equation inevitable: Christ is the new and greater sun. “As the sun returns from the west to the east,” Athanasius wrote, “so the Lord arose out of the depths of Hades to the Heaven of Heavens” (*Expositio in Psalmen* 67.34).

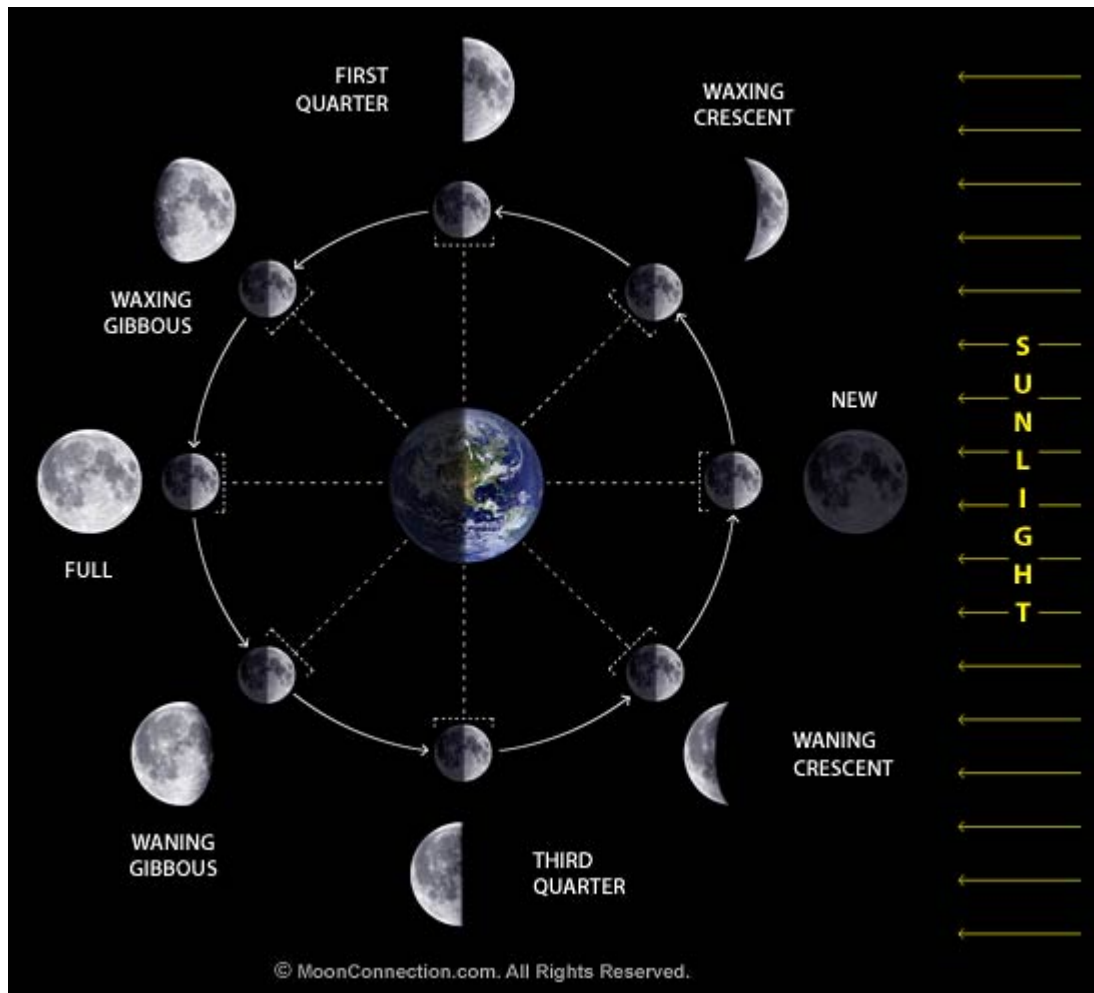
After much debate, the church in the west adopted the Roman calendar and set Easter as the first Sunday after the first full moon after the vernal equinox: the time of ascendancy of both sunlight and moonlight. Christmas was eventually set at the winter solstice, the “birth” of the sun out of darkness. To quote Milton’s “Nativity” ode once more, on the morning of Christ’s nativity “The Sun himself withheld his wonted speed, / And hid his head for shame, / As his inferior flame, / The new-enlight’n’d world no more should need; / He saw a greater Sun appear / Than his bright Throne, or burning Axletree could bear” (79–84).

## The Moon

The moon is one of the “two great lights” that God made on the fourth day, according to Genesis 1.16, “the greater light to rule the day, and the lesser light to rule the night.” Now known to be the only natural satellite of planet Earth, under the Ptolemaic cosmology it was thought to be the nearest or lowest of the seven planets that revolve around the earth on their transparent spheres.

Because it reflects the sun’s light from constantly varying angles to the earth, the moon passes through phases, one complete cycle taking one “moon” or “month” of about 29 ½ days. Five distinct phases have names: new (when the moon is invisible or just the first sliver is visible), crescent, half, gibbous (from Latin *gibbus*, “hump”), and full. When the first thin crescent is visible, some call the dark remainder the old moon, which may appear “with swimming phantom light o’erspread” (Coleridge, “Dejection”). The crescent and gibbous phases are said to be waxing before the full moon and waning after it. The crescent phase is often called “horned”: its “temples were marked with a small horn” (Claudian, *Rape of Proserpine* 2.54); “the Moon will veil her horn / In thy last smiles” (Shelley, *Epipsychidion* 376-77). It is likened sometimes to a boat, sometimes to an archer’s bow.

The nearer the apparent positions of sun and moon in the sky the less the moon is lit. Thus the full moon is always opposite the sun in the sky, rising when the sun sets and vice versa; only a full moon can be eclipsed by the shadow of the earth, and only a new moon can eclipse the sun (strictly speaking, an occultation of the sun). If the moon is at its meridian or high point at midnight, it must be full; the sun will be in “opposition” below the ground.



In Latin usage, the day when the moon is near the sun and thus invisible is the day of the “silent moon” (*silentis lunae*) or the “interlunar” day (*interlunii*) (Pliny, *Natural History* 16.190). When the Greeks return by stealth to Troy, according to Virgil, they come *tacitae per amica silentia lunae*, “by the friendly silence of the quiet moon” (*Aeneid* 2.255); that might mean they come in utter darkness. (Yeats borrows “Per Amica Silentia Lunae” as the title of an important essay.) Milton’s phrase, “silent as the moon, / When she deserts the night / Hid in her vacant interlunar cave” (*Samson Agonistes* 87–89), is echoed by Wordsworth: “All light is mute amid the gloom, / The interlunar cavern of the tomb” (*Evening Walk* 267–68); and by Shelley: “the silent Moon / In her interlunar swoon” (“With a Guitar. To Jane” 23–24). Shelley also combines this terminology with the boat and with Coleridge’s phantom light when he describes the earliest new phase: “I see a chariot like that thinnest boat / In which the Mother of the Months is borne / By ebbing light into her western cave / When she upsprings from interlunar dreams, / O’er which is curved an orblike canopy / Of gentle darkness” (*PU* 4.206–11). The synaesthesia lying behind this Latin usage is found also in Dante’s description of hell as a place where “all light is mute” (*Inferno* 5.28).

Its regular phases make the moon a measurer of time. The word “moon” derives from an Indo-European root *\*me-*, meaning “measure,” which also appears in Latin *mensis*, “month,” and *menstruus*, “monthly” (whence English “menstruate”), as well as in

□ *ortunat*, “measuring” (whence English “immense,” “dimension,” and “measure” itself).

In both Greek and Latin new terms for “moon” replaced forms based on the *me*-root: Greek *selēnē* (“blaze” or “flame”) and Latin *luna* (“light”), both with feminine endings, as opposed to the masculine gender of the original words. (Homer twice uses a feminine form, *mene*, for “moon,” which is based on masculine *men*, the usual word for “month.” Old English *mona* was masculine, as is modern German *Mond*.) In the classical tradition, then, the moon is invariably feminine, and since Homer and Hesiod it has been associated with Greek and then Roman goddesses. Greek Artemis, protectress of virgins as well as mothers in childbirth, guardian of young animals and of the hunt (with bow and arrow), became a moon goddess; Roman Diana was identified with Artemis; both acquired the epithet “Cynthian” from Mt. Cynthus on Delos, where Artemis (and her brother Apollo) were born, and Cynthia became a name in its own right. Another epithet, “Phoebe,” meaning “bright” in Greek, also became a name, like its masculine form “Phoebus” (Apollo). Horace calls Diana the *diva triformis*: her three forms are Luna in heaven, Diana on earth, and Hecate in the lower world (Shakespeare calls her “triple Hecate” at *MND* 5.1.370). All the Latin names enter English poetry singly or in combination as names of the moon or moon-goddess. She drives a chariot as the sun does, as we see as early as the Homeric Hymn to Selene and Pindar’s third Olympian ode; for an English example see Spenser’s Cynthia in *Mutabilitie Canto* 6.

Virginity or chastity is frequently attributed to the moon, partly through its connection with virgin goddesses and partly because its light is cold. Shakespeare calls it the “cold fruitless moon” (*MND* 1.1.73).

The moon’s continually changing phases led to its association with mutability, metamorphosis, inconstancy, or fickleness. The “sublunary” realm, everything beneath the sphere of the moon, is governed mainly by change, chance, or fortune, as opposed to the divinely ordered spheres above it.

It has long been known to cause the tides; hence it is called “watery” or “liquid” and associated with water or the sea. Shakespeare calls the moon the “moist star, / Upon whose influence Neptune’s empire stands” (*Hamlet* 1.1.121-22), and “our general of ebbs and flows” (*Two Noble Kinsmen* 5.1.163). Shelley calls the sea “Slave to the mother of the months” (*Revolt of Islam* 1420). Dew was thought to come from the moon; in one version of her story, Herse (Dew) is the daughter of Zeus and Selene.

From its silvery light, alchemists associated the moon with silver, whereas gold belonged to the sun. In Spenser, Cynthia steeps things in silver dew (*FQ* 1.1.39); “silver moon” has been a formula in English poetry for centuries.

Moonlight was thought to cause madness or “lunacy”; lunatics have “moonstruck madness” (Milton, *PL* 11.486). A “lune” is a fit of lunacy: we must beware “These dangerous, unsafe lunes i’ th’ king” (Shakespeare, *WT* 2.2.28).

As the sun is the eye of day, the moon either *is* the eye of night (e.g., Aeschylus, *Seven against Thebes* 390; Euripides, *Phoenician Women* 543; Ronsard, *Odes* 3.25.51), or it *has* an eye (Pindar, *Olymp.* 3.19–20; Shakespeare, *AYLI* 3.2.3). Like the sun, the moon drives a chariot and team (Ovid, *Fasti* 5.16; Statius, *Thebaid* 8.160).

## The Problem with the Moon in *A Midsummer Night's Dream*

The moon is a large presence, both literal and symbolic, in both Shakespeare's play and the play-within-the-play, the performance of *The Most Lamentable Comedy and Most Cruel Death of Pyramus and Thisbe* by the "rude mechanicals," Bottom and his friends. One of the "hard things" they must solve, in Peter Quince's view, is how "to bring the moonlight into a chamber—for you know Pyramus and Thisbe meet by moonlight" (3.1.42-45). Two options occur to them. When they look at a calendar and find out that the moon will shine on the night of the performance—at the wedding of Theseus and Hippolyta—Bottom suggests they simply open a large window in the chamber and let the moon shine in. Quince then suggests a less literal alternative: "Ay, or else one must come in with a bush of thorns [traditional appurtenance of the man in the moon] and a lantern and say he comes to disfigure, or to present, the person of Moonshine" (55-57). No decision is taken at that point, but when they perform the play they have obviously opted for Quince's idea, for Starveling charmingly "disfigures" the part of Moonshine. "All that I have to say is to tell you that the lantern is the moon, I the man i'th' moon, this thorn bush my thorn bush, and this dog my dog" (5.1.252-54). The nobles in the audience enjoy themselves at his expense, but in the end Hippolyta graciously praises him: "Well shone, Moon.—Truly, the moon shines with a good grace" (261-62).

Shakespeare uses neither device to get moonlight into his own play, of course, but relies on words alone, and perhaps on the moonstruck or lunatic behavior of many of the characters. The moon certainly seems to be shining during the long night in the woods that takes up acts two, three, and four. When Oberon and Titania meet, he greets her coldly with "Ill met by moonlight, proud Titania" (2.1.60). Though she will not give him the Indian boy she dotes on, Titania invites Oberon, "If you will patiently dance in our round, / And see our moonlight revels, go with us" (2.1.140-41). Later that night, and it seems quite a bit later, now in love with the ass-headed Bottom, Titania notes, "The moon, methinks, looks with a wat'ry eye" (3.1.188).

A prominent moon is what we were led to expect toward the end of the first scene when the lovers Lysander and Hermia reveal their plan to Helena of escaping into the woods. Lysander says, "Tomorrow night, when Phoebe doth behold / Her silver visage in the wat'ry glass," he and Hermia will steal out of Athens (1.1.209-10). And it will be late at night, for Hermia adds, "Keep word, Lysander. We must starve our sight / From lovers' food till tomorrow deep midnight" (222-23). We were led to expect it in the next scene as well, when Peter Quince tells his fellow actors to learn their lines in the next day: "con them by tomorrow night, and meet me in the palace wood a mile without the town by moonlight. There will we rehearse" (1.2.90-92). So the lovers, the mechanicals, and the fairies all agree that the moon is, or soon will be, bright enough to light the way through the forest, rehearse a play, or dance.

The trouble is, in the very opening lines of the play, Theseus and Hippolyta make a point of discussing the current phase of the moon. "Now, fair Hippolyta, our nuptial hour / Draws on apace. Four happy days bring in / Another moon—but O, methinks, how slow / This old moon wanes! (1.1.1-4). Hippolyta replies that the four days will pass quickly, "And then the moon, like to a silver bow / New bent in heaven, shall behold the night / Of our solemnities" (9-11). Setting aside the "four days" problem—the play takes

place in less than three days—it is obvious that there will be no moon at all tomorrow night. Today’s moon is a waning crescent, about as thin as it gets before it vanishes, and it is very near the sun; it rose an hour or so before the sun rose and it will set an hour or so before the sun sets. Tomorrow night (and the next night, if we need to imagine another day to make up four) it will not be visible at all. Midnight will indeed be “deep,” as Hermia unwittingly suggests; the lovers will not see a thing if they bring no lights with them. And the mechanicals will need Starveling with his lantern or they will rehearse in total darkness. At the wedding, two nights from now (or three), a new moon will appear, a thin, waxing crescent, like a bow, rising shortly after the sun rises and setting shortly after it sets. If the royal couple expects the moon to behold their wedding festivities they had better start early and be done by twilight. But in fact the solemnities last until midnight: “The iron tongue of midnight hath told twelve” (5.1.354), Theseus announces right after the mechanicals’ play, and the couples and the courtiers all go to bed (see also 4.1.86).

What is said about the phase of the moon seems a flat contradiction, and a salient one, to what everyone else says, and does, later on. Does it matter? In his edition of the play, Harold F. Brooks dismisses the inconsistency: “To object that between the old and the new moon there would be moonless nights is an inappropriate demand for consistent naturalism” (Arden 2 edition, note on 1.1.3). Well, true enough, an amazing night of fairies, transformations, and magic potions is not the sort of thing we expect to find in Ibsen or Chekhov, but Brooks does not face up to its prominent place at the very opening of the play. It is the first thing talked about. The moon is a major feature in the world of the play, as it is in the play of *Pyramus and Thisbe*, and the audience, which in Shakespeare’s day was much more alert to the movements of the moon than we tend to be today, would have in the back of their minds that during the next day or two there is no moon. They might well think that moonlessness will be a factor in what is to come. They may well wonder what Hermia and Lysander think they are doing, running off into the forest at midnight with no natural light. But all that is just forgotten, as moonlight seems to pervade the rest of the play.

No doubt the readiest answer, besides Brooks’ waving away the problem, is that the fairies can do anything, even transform a new moon into a full one, and rewrite the calendar too. After all, the natural world is going badly awry as a result of the quarrel between the king and queen of the fairies, and the moon, said to be “pale in her anger” (2.1.104), might well have reversed her phases, skipping half a month. But nothing is said about this possibility. Another answer is that sometimes Shakespeare nods.

In fact he seems to nod over another astronomical body in the same play. Demetrius tells Hermia that she looks “as bright, as clear / As yonder Venus in her glimmering sphere” (3.2.60-61). Though at least an hour must have passed since the four lovers entered the wood, it is possible that Venus is still visible near the western horizon; it is Venus as the Evening Star. But later in the same scene Puck tells Oberon, “yonder shine’s aurora’s harbinger” (380); it is Venus as the Morning Star. Perhaps the “yonder” in both lines is some fairyland where Venus always shines, but here on earth Venus cannot be both Evening and Morning Star in the same night, or even in the same week.

## Conflicts between the Two Systems

It took several centuries for the heliocentric theory of Copernicus (1473-1543) to be accepted by most educated Europeans. It was not until the year 2000 that Pope John Paul II issued an apology for the Catholic Church's condemnation of Galileo in 1632, though by the end of the millennium few Catholics doubted that he and Copernicus had been essentially right. But for a century or two there was considerable confusion and doubt, even among the learned, over which system was the truer one, or over whether there was a possible compromise between them. "And new Philosophy calls all in doubt," John Donne wrote in "The Anatomy of the World" (1611),

The Element of fire is quite put out;  
The Sun is lost, and th'earth, and no man's wit  
Can well direct him where to looke for it.  
And freely men confesse that this world's spent,  
When in the Planets, and the firmament  
They seeke so many new[.]

This appeared just a year after Galileo published his *Starry Messenger*, which announced the four "Medicean Stars" or the moons of Jupiter, the "Planets" Donne speaks of. "The Element of fire" probably refers to the outer sphere of fire, which according to some versions of the old system was located between the fixed stars and the prime mover.

A generation later John Milton imagines Adam feeling a little doubt himself about the heavens even before the Fall. In Book VIII of *Paradise Lost* Adam takes advantage of the archangel Raphael's visit to Eden to ask him why such noble celestial bodies seem to concern themselves with the infinitesimal earth. Raphael replies that it is enough to admire God's works, not to try to fathom them, for God has concealed the truth: "whether heaven move or earth / Imports not." God may laugh at the "quaint opinions wide [stray]" of future astronomers

when they come to model Heav'n  
And calculate the Stars, how they will wield  
The mighty frame, how build, unbuild, contrive  
To save appearances, how gird the Sphere  
With Centric and Eccentric scribbl'd o'er,  
Cycle and Epicycle, Orb in Orb[.]

To "save appearances" was a technical term going back to ancient Greek: a theory of the heavens, or any scientific theory, must account for or preserve the phenomena we observe. A theory of the heavens might "save" all appearances but still not be really or absolutely true. Such a notion was regularly invoked during the long dispute between geocentric Ptolemaeans and heliocentric Copernicans.

## New Planets and Moons

As new planets were discovered with powerful telescopes they were named after more Greco-Roman gods: Uranus, discovered by Herschel in 1781, is the Latin form of the Greek god Ouranos or "Sky"; Neptune, discovered by Le Verrier in 1846, is the

Roman god of the sea, corresponding to Greek Poseidon; and Pluto, discovered by Tombaugh in 1930, is the Roman god of the Underworld, corresponding to Greek Hades.

In 2006 the International Astronomical Union reclassified Pluto as a “dwarf planet,” not a true planet, and one of several “plutoid” dwarfs in the solar system, some of them larger than Pluto. Some astronomers, and much of the general public, have vigorously disagreed with this demotion. By contrast, Herschel’s discovery of the first new planet was widely celebrated. Keats alludes to the discovery in “On First looking into Chapman’s Homer”: “Then felt I like some watcher of the skies / When a new planet swims into his ken.” Thomas Campbell blurs the two systems, Ptolemaic and Copernican, when he imagines the genius who shall “yield the lyre of Heaven another string” (*The Pleasures of Hope* 134); the lyre has seven strings, corresponding to the ancient seven planets, but under the modern system Uranus is itself the seventh planet, not the eighth, as Campbell implies.

Alluding to clues to Neptune’s existence, Tennyson in 1885 compares a daughter swayed by both the love of her mother and the love of her husband to “some conjectured planet in mid heaven / Between two Suns” (“To H.R.H. Princess Beatrice” 20-21).

As moons around the planets have been discovered they have been given names appropriate to their planet, at least until such names were exhausted. Thus the four great moons around Jupiter, discovered by Galileo with the newly invented telescope in 1610, are named Io, Europa, Ganymede, and Callisto, three maidens and a boy (Ganymede) whom Jupiter/Zeus seduced, raped, or abducted in one way or another. (Galileo named them the “Medicean Stars” to flatter his patrons in the Medici family; they are now sometimes called the “Galilean moons.”) That custom continued as new moons, all of them tiny, were discovered in the centuries since Galileo. Leda, for instance, whose rape by Zeus in the form of a swan is the best known of his acts of sexual violence (she gave birth to Helen as a result), is the namesake of a Jovian moon discovered in 1974. At last count, however (2018), we know of seventy-nine moons orbiting Jupiter, some of which still lack names. Even the insatiable king of the gods, who “used venery” at every chance, does not seem to have had that many amours, according to the myths, so some moons have been given names from the Horae (“Hours”), who were the god’s daughters.

The moons of Saturn were first named after the Titans, the generation of gods before the Olympians, since Saturn/Cronus was the leader of the Titans, and the father of Jupiter/Zeus, leader of the Olympians. Hence such names as Enceladus, Tethys, and Titan itself. But with sixty-two moons discovered so far, we have run out of Titans, so in a spirit of cultural diversity, the International Astronomical Union has drawn names from Norse mythology (Fenrir, Bergelmir, and about two dozen others), Gallic mythology (Albiorix, Bebhionn, and two others), and Inuit mythology (Kiviuq, Paaliaq, and three others).

English majors will be pleased to learn that Uranus’ moons are named not after figures from classical mythology but after characters from English literature, mainly from Shakespeare’s plays but with a few from Pope’s *The Rape of the Lock*. The discoverer of Uranus, William Herschel, was English, after all, though he was an adult when he moved to England from Germany, and his son named Uranus’ first four moons after fairies, presumably because they fly through the sky, *ouranos* being Greek for “sky”: Titania and Oberon from *A Midsummer Night’s Dream*, and Ariel and Umbriel from Pope’s poem



(though Ariel is also Prospero's spirit helper in Shakespeare's *The Tempest*). The list has now grown to 27. When the space probe Voyager 2 reported the existence of another batch of moons in 1986, they were given such names as Cordelia, Ophelia, Juliet, and Desdemona; the most recent contingent, discovered between 1997 and 2003, have names from *The Tempest*, such as Caliban and Sycorax.

Neptune's fourteen known moons are mostly named after other sea gods or sea nymphs, such as Proteus or Nereid; the largest, Triton, refers to the fishing tool Neptune (or Poseidon) typically carries.

Even dwarfish Pluto has at least five moons. By far the largest is Charon, named for the ferryman of Pluto/Hades; the others are Styx, Nix, Kerberos, and Hydra.

No moons but the earth's were known before the telescope, of course, and most of the 190+ moons now known in the solar system were discovered in the last three or four decades by space probes or the Hubble telescope, now in orbit around the earth. No poems, novels, stories, and plays, except the most recent, have any knowledge of these things, of course. What they do know are the ancient seven planets and their patterns in the sky.

## Meteors and Weather

The other bodies in the heavens are the fixed stars, attached to the sphere or spheres beyond that of Saturn, the outermost planet. At the other extreme, beneath the moon, in the "sublunary" realm, there are other bodies, all of them transient, called "meteors." What we call a meteor, the streak left by a rock entering the earth's atmosphere, or the rock itself, is only one such phenomenon; the word once had a broad range. It comes from the Greek noun *meteoron*, "something high above," from the adjective *meteoros*, "high above" or "up in the sky." Such things included rainbows, lightning, will-o-the-wisps, and snow. Meteorology today, the science of weather, deals with snow and lightning but not, usually, with what we call meteors. Juliet tells Romeo that the breaking daylight is not the sun: "Yond light is not daylight, I know it, I. / It is some meteor that the sun exhales" (3.5.12-13). It was believed that the will-o-the-wisp, or marsh gas, was drawn up or "exhaled" by the sun, rather like mist. Comets, too, which we know occur among the planets, were thought to be sublunary things.

[more to come: meteoric, symbolism]

## Evening Star and Morning Star

Let's return to the planets. The "evening star," called *Hesperos* in Greek and *Vesper* in Latin, both meaning "evening" and akin to "west," is the planet Venus, which is never far from the sun. It sometimes appears in the west shortly after sunset ("evening star") and sometimes in the east shortly before sunrise ("morning star"). Homer mentions the evening star just once, in an extraordinary simile for the spearhead of Achilles as he levels it at Hector at their climactic battle: "And as a star moves among stars in the night's darkening, / Hesperos, who is the fairest star who stands in the sky, such / was the shining from the pointed spear Achilleus was shaking / in his right hand with evil intention toward brilliant Hektor" (*Iliad* 22.317-20, trans. Lattimore). Earlier in this

episode, as we saw, Achilles is likened to the deadly star Sirius; now the quiet beauty of Hesper contrasts with the imminent act of slaughter. It is as if we are taken out of the action for a moment in order to see the little fracas at Troy from the gods' serene viewpoint (though in fact they are not always detached from the events below), where mortal combat is more beautiful than terrifying. And the simile tells us that Hector's night is darkening rapidly.

In the tradition of the epithalamium or wedding song, the appearance of the evening star, because it is associated with the goddess of love, is the signal to light the bridal lamp and lead the bride to the bridegroom. The Greek woman poet Sappho may have been the first to write *epithalamia*, though only fragments survive; we have other fragments of hers about Hesperos, which she calls "the most beautiful of all the stars" (Loeb 104b). The Latin poet Catullus begins an epithalamium by announcing "Vesper is here, young men, stand up!" (62.1). Spenser's great "Epithalamion" has a lovely passage about the evening star which nonetheless gets the astronomy wrong:

. . . at last I see it gloom [darken]  
 And the bright evening star with golden creast  
 Appeare out of the east.  
 Fayre childe of beauty, glorious lampe of love,  
 That all the host of heaven in rankes doost lead,  
 And guydest lovers through the nightes dread,  
 How chearefully thou lookest from above,  
 And seemst to laugh atweene thy twinkling light,  
 As joying in the sight  
 Of these glad many, which for joy doe sing,  
 That all the woods them answer, and their echo ring!  
 (285-95)

The "fayrest Planet" (the sun) has just set in the west, as he says in the lines before these, and it is now "glooming," so the evening star, which closely follows the sun, must appear out of the west as well, not the east. Ben Jonson wrote several epithalamia, one of which has this line as a refrain: "Shine, Hesperus, shine forth, thou wished star!" ("Epthalamion: Up, youths and virgins"). Wordsworth, as we saw earlier, describes Vesper as a brilliant god following the glorious path of the setting sun.

Sappho describes *Hesperos* as the gatherer or returner of flocks and children: "Hesperos, bringing everything that shining Dawn scattered, / You bring the sheep, you bring the goat, you bring the child to its mother" (Loeb 104a). This role earned it the name "folding star" in English: the star that tells shepherds when to "fold" the sheep, or bring them to the fold. "The Star that bids the Shepherd fold," is Milton's phrase (*Comus* 93), while Collins calls it the "folding star" in "Ode to Evening" (21).

The "morning star," not surprisingly, is "th'unfolding star" that "calls up the shepherd," as Shakespeare puts it (*Measure for Measure* 4.2.203). In Greek it is called *phosphoros*, in Latin Lucifer, both meaning "light-bringer." Homer once calls it *Heosphoros*, "Dawn-bringer" (*Iliad* 23.226); and Hesiod makes it the daughter of Dawn (*Theogony* 381). The most prominent of the planets by far, it is the only one mentioned in surviving Greek literature before the fourth century BCE. Milton invokes the star-name as he compares the unfallen Satan, still called Lucifer, to "the morning star that guides / The starry flock," misguiding a third of them into rebellion against God

(*Paradise Lost* 5.708-09). He also calls it the “morning planet” (7.366), as does Alexander Pope in his translation of the *Iliad* passage: “The Morning Planet told th’approach of Light” (23.281).

The morning planet, Milton says, “gilds her horns” from the light of the sun (7.366). These horns are the tips of the crescent when Venus is very near the sun, or “in conjunction,” as we see them in the sky. But the crescent shape, or any shape Venus takes as it moves around the sun, is not visible to the unaided eye. It was Galileo who first saw the phases of Venus through his telescope; Milton claimed to have visited Galileo in Italy.

Venus, named for the goddess of love, and the most striking of the planets, was generally thought to be beneficent, shedding sweet influence like the Pleiades. Chaucer gives her the charming title “the wel-willy planete” (*Troilus and Criseyde* 3.1257); his adjective translates the Latinate “benevolent” root by root.

If Coleridge made an astronomical mistake or two in the *Rime*, he was in good company, for Milton, perhaps the most erudite and careful of English poets, seems to have slipped up twice with regard to Hesperus, the evening star. In “Lycidas” he has the clause “till the star that rose at ev’ning bright / Toward heav’n’s descent had slop’d his westering wheel” (30-31). If this refers to *the* evening star, as it seems to, then it is mistaken, for that star never rises: it *appears*, as the weakening sunlight no longer blots it out, while it is “westering” or moving west, that is, while descending and then setting. In *Comus*, as we saw, Milton writes, “The star that bids the Shepherd fold,” and goes on, “Now the top of heav’n doth hold” (93-94). Spenser, perhaps Milton’s source here, has a similar expression: “now the golden Hesperus / Was mounted high in top of heaven sheen” (*Faerie Queene* 3.4.51). The evening star, however, is never at the top of heaven, if “top” means “zenith” or anywhere near it. Venus is never farther than about 48 degrees from the sun, that is, just over halfway up the western sky if the sun is just setting, or just over halfway up the eastern sky if the sun is just rising, and it is only briefly at that elongation during each half of its cycle around the sun; it is usually much closer. Of course scholars have tried to rescue Milton by offering other stars that behave like the ones Milton describes, but they are not very convincing. Students may decide if it matters very much that Milton was inaccurate: perhaps there are important meanings that he puts across despite the apparent conflicts with the facts.

A description of the position of the evening star in a poem by Shelley allows us to date the very day the events and thoughts of the poem took place. The title of “Lines Written among the Euganean Hills, October 1818,” gives us the month, and these lines give us the day:

Noon descends, and after noon  
Autumn’s evening meets me soon,  
Leading the infantine moon,  
And that one star, which to her  
Almost seems to minister  
Half the crimson light she brings  
From the sunset’s radiant springs[.]  
(320-26)

It is an evening in which the new-born moon, a slim waxing crescent, is setting behind the sun and very near it, still bathed in its crimson light; Venus is so close to the moon,

seemingly between the moon and the sun, that she seems to distribute the sun's light to the moon. There are records that easily establish that the evening was October 3. Not that knowing the date is useful for interpreting the poem, but if you want to know what a poet was doing and when he or she was doing it, astronomy is sometimes a help.

## Astrology

The *Oxford English Dictionary* tells us that in both Greek and Latin *astronomia* was a later and more scientific term than *astrologia*, which was eventually specialized to its modern sense, the art of prognostication or prediction through the position of stars (and planets) and their "influence." In English, however, "astronomie" was the term first used for the entire field of star lore; "astrologie" was introduced later, but not until the seventeenth century did the two terms differentiate into their modern meanings.

Astrology is not a science in the modern sense of "science," though it puts into play a good deal of information and resorts to diagrams and calculations. That there is no evidence for any of astrology's claims, and that for centuries the Catholic Church and most other branches of Christianity have been hostile to them, have not kept hundreds of millions of people in the West from believing in them, including European monarchs and American First Ladies. A recent poll by Pew showed that about a fourth of Americans believe in astrology, and no doubt many others toy with it, as they consult their horoscope in the daily papers or on the web.

Ancient literature made no distinction between descriptions of the heavens, in an account of a voyage at night, for instance, and mythical or magical events, such as the baleful arrival of a comet or the "stellification" of a Roman emperor. Astrology might be seen as a rationalizing or partial demythologizing of celestial myths, turning the original stories behind the constellations and the divine names of the planets into a system of interacting influences among the heavenly bodies and upon the earth below them.

The most important category is the zodiac, and all prognostications depend on which planet or planets are found in which "house" of the zodiac at which time.

## The Zodiac

The "ecliptic," as we noted earlier, is the path through the sky the sun follows each year against the backdrop of the fixed stars. The sun appears to move eastward through them, about one degree per day, while also moving northward or southward with the changing seasons. Of course we cannot see the stars very near the sun, or any stars at all once the sun has risen, but just before it rises or just after it sets we can note the star positions and measure their shifts. (This is a major reason for noting the heliacal risings and settings of various stars.) Every month or so a different constellation will be blotted out at dawn.

Since the apparent path of the moon in its monthly march through the sky lies very close to the sun's path, eclipses of one by the other are common; hence the name "ecliptic." The planets (that is, in ancient terms, the "other planets") also move more or less along the ecliptic, deviating by only a few degrees, Mercury deviating the most, at seven degrees.

The ecliptic intersects the celestial equator at an angle of 23 degrees. We know this fact to be due to the tilt of the earth's axis of 23 degrees off perpendicular from the plane of the earth's orbit, but it looks as if the sun (with the other planets) has deviated by that much from the equator. (See the diagram on page 8.) The two points of intersection of the ecliptic and the equator are the equinoxes: when the sun reaches those points, midway in its northward or southward motions, the nights are equal to the days (hence *equinox*, Latin for "equal night"). They take place about March 21 (the vernal or spring equinox) and September 21 (the autumnal or fall equinox).

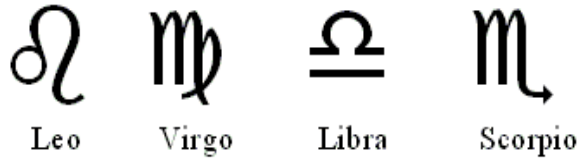
The path of the ecliptic leads the sun through a series of constellations, traditionally taken to be twelve, one for each conventional month. This series is called the zodiac. The word comes to us through Latin *zodiacus* from Greek *zodiakos*, which is an adjective understood to modify the noun *kyklos*: the *zodiakos kyklos* is the "circle of animals." *Zodiakos* comes from the noun *zodion*, the diminutive of *zoon*, "animal." Of the twelve constellations, seven are animals (ram, bull, crab, lion, scorpion, goat, and fish) and one is a half-animal (the centaur-archer).

Here is the list of constellations, in the order the sun passes through them beginning with the vernal equinox, with their Latin and English names. (Dates will vary slightly from year to year.)

<b>Aries</b>	<b>Ram</b>	<b>March 20 – April 19</b>
<b>Taurus</b>	<b>Bull</b>	<b>April 19 – May 20</b>
<b>Gemini</b>	<b>Twins</b>	<b>May 20 – June 21</b>
<b>Cancer</b>	<b>Crab</b>	<b>June 21 – July 22</b>
<b>Leo</b>	<b>Lion</b>	<b>July 22 – August 23</b>
<b>Virgo</b>	<b>Virgin</b>	<b>August 23 – September 22</b>
<b>Libra</b>	<b>Scales</b>	<b>September 22 – October 23</b>
<b>Scorpio</b>	<b>Scorpion</b>	<b>October 23 – November 22</b>
<b>Sagittarius</b>	<b>Archer</b>	<b>November 22 – December 21</b>
<b>Capricorn</b>	<b>Goat</b>	<b>December 21 – January 20</b>
<b>Aquarius</b>	<b>Water-Bearer</b>	<b>January 20 – February 18</b>
<b>Pisces</b>	<b>Fishes</b>	<b>February 18 – March 20</b>

There are various mnemonic devices for remembering the signs. One that I found on a website goes: "All the great constellations live very long since stars can't alter physics" (that is, ATGCLVLSSCAP). I made up another: "All the good crabs lie very low since silly children are present." Mine has a few minor merits: an English equivalent (crab), a sound echo (lie/lion), an association or two (low scales, capricious children, silly centaur-archer), and a spelling hint (the letter c in "since" and "scorpion"). Make up a mnemonic of your own if neither of these lodges easily in your mind.

All the constellations, or "houses," of the zodiac have signs, most of them looking like pictograms:



We should mention a complication here, even though it shows up only rarely in literature. If you look at a horoscope today, it says that March 20 or thereabouts is the beginning day of Aries, the Ram; that is, the sun moves across the vernal equinoctial point into the constellation Aries on that day and remains for a month before moving on into the next “house,” Taurus, the Bull, in late April. But in fact, if you check the sky carefully on March 20, you will see that the sun is not at the edge of Aries or anywhere near it. It is in fact on the far side of the preceding constellation, Pisces, the Fishes. Why the discrepancy? The astrological charts were established by the Babylonians at least 2500 years ago (some would say much earlier), when the sun did indeed enter Aries on March 20 or so. It no longer does. There is a slow westward slippage of the equinoctial points (and all points) on the ecliptic through the stars of the zodiac. It used to be called the precession of the equinoxes, though astronomers have come to call it the precession of the equator. Any point on the ecliptic, such as the vernal equinox (where the ecliptic intersects the celestial equator), moves westward against the stars at the rate of one degree every 72 years. This movement is barely perceptible in a lifetime except with modern equipment, so it seems not to have been discovered until the second century BCE by the Greek astronomer Hipparchus, who had records going back some centuries. (Some researchers think the Babylonians or Egyptians figured it out much earlier.) The precession makes a complete cycle in 25,772 years, according to modern calculations, or a little over 2000 years per zodiacal sign; Hipparchus estimated it at 36,000 years, a suspiciously neat number, but not wildly wrong. The ancients called it the Great Year or Platonic Year.

What causes it? The earth’s axis, like that of a spinning top, wobbles off the perpendicular in a slow circular motion in the opposite direction from its rapid spin. With a spinning top the wobble is due to gravity of the earth pulling downward; with the

rotating earth it is due to the gravity of the sun and the moon pulling outward, and to the shape of the earth, which is not a perfect sphere (it bulges in the tropics). A much smaller factor is the pull of the other planets. Of course Hipparchus and the other ancient astronomers assumed that the cause was a motion of one of the celestial spheres.

The sun is gradually drifting through Pisces, which it entered (on March 20-22) at about the beginning of the Christian era. Some have thought it significant that the fish is an important symbol of Christianity, though surely that is well enough motivated by Christ's telling three of his disciples, who were fishermen, "Follow me, and I will make you fishers of men" (Matthew 4.19). As for the next era, no one who has heard it can forget the song from the rock musical *Hair* with the refrain "This is the dawning of the Age of Aquarius." (We have a few hundred years to go, actually.)

Here is the chart of dates again, with the real astronomical dates added:

		traditional dates	real dates
Aries	Ram	March 20 – April 19	April 18 – May 13
Taurus	Bull	April 19 – May 20	May 13 – June 21
Gemini	Twins	May 20 – June 21	June 21 – July 20
Cancer	Crab	June 21 – July 22	July 20 – Aug 10
Leo	Lion	July 22 – August 23	Aug 10 – Sept 16
Virgo	Virgin	August 23 – Sept 22	Sept 16 – Oct 30
Libra	Scales	Sept 22 – Oct 23	Oct 30 – Nov 23
Scorpio	Scorpion	Oct 23 – Nov 22	Nov 23 – Dec 17
Sagittarius	Archer	Nov 22 – Dec 21	Dec 17 – Jan 20
Capricorn	Goat	Dec 21 – Jan 20	Jan 20 – Feb 16
Aquarius	Water-Bearer	Jan 20 – Feb 18	Feb 16 – March 11
Pisces	Fishes	Feb 18 – March 20	March 11 – April 18

Note: the real dates show varying lengths of the zodiacal periods. The traditional system evened up the twelve houses artificially to 29-31 days each, whereas the more astronomically correct dates seem to have made a closer estimate of the actual size of the constellations (inevitably somewhat arbitrary).

Modern astrologists, despite the precession, still maintain the anciently established convention that spring begins when the sun enters Aries. They have kept up-to-date in other respects, fitting in the recently discovered planets Uranus and Neptune, for instance. The recent demotion of Pluto must be causing headaches, but its "influence," since the (former) planet is so small and so distant, may be negligible.

Many English majors have had to memorize the opening lines of the "General Prologue" to Chaucer's *Canterbury Tales*. Those lucky ones will always remember that Aries begins the zodiac and the astrological year.

Whan that Aprill with his shoures soote  
 The droghte of March hath perced to the roote,  
 And bathed very veyne in swich licour  
 Of which vertu engendred is the flour;  
 When Zephirus eek with his sweete breeth  
 Inspired hath in every holp and heeth

The tender croppes, and the yonge sonne  
Hath in the Ram his halve cours yronne,  
And smale foweles maken melodye,  
That slepen all the nyght with open ye  
(So priketh hem nature in hir corages);  
Thanne longen folk to goon on pilgrimages . . .

It would be early April when “the young sun”—young because it is early in the year, which began when the sun passed the vernal equinox and now shines more than half the time—“Has run its half-course in the Ram,” that is, run half-way through the Ram. At least that is one way to take the lines. Elsewhere in the *Canterbury Tales* we learn the date is April 18, and if we think we must project it back onto the opening then the sun must be completing its second “half-course” in the Ram. In another work Chaucer himself calculated that the sun entered Aries on March 12, 1391 (I confess I don’t understand this); if that is so, then on April 18 the sun would be well into Taurus. I think it is best to keep these complications at a distance. It’s early April, the showers have restored the land, the west wind has “inspired” the plants, the sun is in Aries, the birds sing all night, and so, of course, people long to go on pilgrimages.

#### “The Fated Sky”

As an example of the uses to which the concepts of astrology and the Ptolemaic model of the heavens have been put, we may look briefly at Shakespeare’s *All’s Well That Ends Well*, which tells the story of Helen, a virtuous girl of humble rank, and Bertram, a proud count, whom she loves. She calls him “a bright particular star” (1.1.88) too far above her; she is “not in his sphere” (91). As one of “the poorer born, / Whose baser stars do shut us up in wishes” (184-85), she seems to have no hope. But she declares that “Our remedies oft in ourselves do lie / Which we ascribe to heaven. The fated sky / Gives us free scope, only doth backward pull / Our slow designs when we ourselves are dull” (218-21). To Bertram himself, when the king commands him to marry her, Helen acknowledges, “my homely stars have failed / To equal my great fortune” (2.5.77-78).

In her badinage with Paroles, a braggart soldier, she says, “you were born under a charitable star,” but he insists it was “Under Mars” (1.1.192-94). He later urges Bertram to play up to the noble courtiers and “move under the influence of the most received star” (2.1.52-53). Free scope eventually wins out; we are not confined to our natal spheres; virtue is the true nobility.



## Terms with Astronomical or Astrological Origins

While we are discussing the names of things, we might consider a few words common in English that originally had astronomical significance. One of them I have just used.

**consider** < Latin *considerare* “to observe carefully,” perhaps a term of augury or prophecy, “to observe the stars” < *sidus* “star,” though *sidus* originally had other meanings as well.

**disaster** < Latin *dis-* “bad” or “ill” + *astrum* “star” (< Greek *astron*): a disaster is an event doomed by a bad star. In the opening scene of *Hamlet* Horatio describes the omens that appeared before the murder of Julius Caesar, including “disasters in the sun,” which is a little vague: perhaps it means the sun itself became a bad star, or that other ominous bodies eclipsed it or passed before it.

**influence** < Latin *influentia* “a flowing-in,” in particular an ethereal fluid flowing in from stars and planets that affect one’s fate. Shakespeare’s Prospero explains to his daughter Miranda that “I find my zenith [itself an astronomical term] doth depend upon / A most auspicious star, whose influence / If now I court not, but omit, my fortunes / Will ever after droop” (1.2.181-84).

**sphere of influence**, a political concept, drawing from the Ptolemaic model of planetary “spheres” as well celestial “influence.”

**septentrional** (adjective) < Latin *septem* “seven” + *triones* “plow-oxen” (perhaps from a root meaning “turn,” which is what you must do when you plow). These seven are the stars found in either of the two “Dippers” or “Plows,” two of the most prominent constellations near the north pole. Hence Latin *septemtriones* could also mean “north.” In English “septentrional,” which means “northern,” is rather rare; the equivalent is more frequent in French or Spanish. A shorter form, “septentrion,” was used by Shakespeare and Milton; Milton spoke of “cold Septentrion blasts,” meaning “north winds” (*Paradise Regained* 4.31).

**arctic** < Greek *arktos* “bear,” i.e., the constellation Ursa Major. It is true that the arctic is the home of polar bears, but the “polar” bear in question is the constellation, which is in the far northern sky.

## Stellification

Several times in the *Iliad* or *Odyssey* Homer says the fame (*kleos*) of a person or thing “goes up to heaven.” Virgil has his hero Aeneas boast that his fame (*fama*) rises *above* the sky (*Aeneid* 1.378-89), while his lover Queen Dido hopes her former fame has gone up to the stars (4.322). It is but a step from this ascent of fame to the idea that great or famous people have become stars themselves. Today we hear so often of “movie stars” and the like that we are deaf to the metaphor behind the phrase. It is worth exploring the history of this “stellification” or, as it is sometimes known by its Greek name, “catasterism.”

At the end of his *Metamorphoses*, Ovid tells of the weird portents that filled the city of Rome on the eve of the Ides of March, 44 BCE, when Julius Caesar was killed by a group of Senators. Then

Venus stood

Within the senate-house, unseen of all,  
And snatched from Caesar’s corpse the new-freed soul  
Before it could dissolve into the air,  
And bore it up to join the stars of heaven,  
And, as she bore it, felt it glow and burn.  
She launched it from her bosom. Up it flies  
Above the moon, a tress of flaming fire  
Streaming behind, and shines as a bright star.

(15.843-51 trans. Melville)

What Ovid is describing is a comet, and indeed a bright comet did appear in the sky not long after the assassination and was widely taken to be a sign that Caesar had become a god. The word “comet” comes from the Greek adjective *kometes*, which meant “hairy”: an *aster kometes* was a “hairy star,” or, as Ovid put it, a star “with a tress of flaming fire / Streaming behind.” (“Comet” is thus comparable to “planet” in that they both modify “star” in their original Greek form.) Comets were taken as signs of a major change in regime and thus often a portent of war. According the Roman historian Tacitus, at the time of Nero “a comet blazed, of which vulgar opinion is that it portends a change in reigns (*mutationem regnis*)” (*Annals* 14.22). Shakespeare’s Bedford opens the *Henry VI* plays by calling on “Comets, importing change of times and states, / [To] Brandish your crystal tresses in the sky (*1 Henry 6*: 1.1.2-3).

The “star of Julius” (*sidus Iulium*) is the most prominent example in the classical world of the stellification of a mortal, but of course we have already seen the transporting of a hero (such as Orion), a group of girls (such as the Pleiades and Hyades), or even a bear or two to the heavens; a similar story seems to lie behind every constellation in the sky. As Chaucer puts it in *The House of Fame* (1001-08),

when thou redest poetrie,  
How goodes gone stellifye  
Bridd [bird], fissh, best [beast], or him or here,  
As the Raven, or eyther Bere,  
Or Arionis harpe fyn [Lyra],  
Castor, Pollux [the Gemini], or Delphyn,  
Or Athalantes doughtres sevene [Atlas’ daughters, the Pleiades],  
How alle these arn set in hevene[.]

Though the sky would seem crowded with named constellations, there always seems to room for poets to add a few more stars, not least the stars of fellow poets. Horace concludes his first ode, addressed to his patron Maecenas, by saying “if you enrol me among the lyric bards, / my soaring head will touch the stars” (1.1.35-36, trans. David West). Ben Jonson addresses Shakespeare: “I see thee in the hemisphere / Advanced, and made a constellation there! / Shine forth, thou star of poets” (“To the Memory of . . . Shakespeare” 75-77). Milton asks why Shakespeare needs “a Star-ypointing Pyramid” when his real monument is built in “our wonder and astonishment” (“On Shakespeare”). In his *Essay on Criticism* Pope calls Homer “the Maeonian Star” (648), for Homer was thought to have been born in Maeonia, part of Lydia, in Asia Minor. Milton is a star to Wordsworth: “Thy soul was like a Star, and dwelt apart” (“London 1802”). Wordsworth was a star to Shelley: “Thou wert as a lone star, whose light did shine / On some frail bark in winter’s midnight roar” (“To Wordsworth”). Keats still is a star, in Shelley’s estimation; he ends his elegy on Keats, *Adonais*, with these lines: “burning through the inmost veil of Heaven, / The soul of Adonais, like a star, / Beacons from the abode where the Eternals are” (493-95). Keats himself makes Thomas Chatterton a star in his sonnet “Oh Chatterton!” Tennyson calls Virgil a “Light among the vanish’d ages; / Star that gildest yet this phantom shore” (“To Virgil” 25-15).

You might think this metaphor was played out by sometime in the nineteenth century, but John Ashbery revives it in his poem “Syringa” (1977) when he declares that most of us will not be stars: “Stellification / Is for the few, and comes much later / When all record of these people and their lives / Has disappeared into libraries, onto microfilm.” And Mick Imlah has this to say about forgotten poets:

though day’s glare or the northern night obscure them,  
 though nature has done with them, still through the void they hurtle their  
 wattage,  
 powered with the purpose of having been – being, after all, stars,  
 whose measure we may not take, nor know the wealth of their rays.  
 (from “Afterlives of the Poets” in *The Lost Leader*, 2008)

## Influence

The *OED* well defines “influence” as “The supposed flowing or streaming from the stars or heavens of an ethereal fluid acting upon the character and destiny of men, and affecting sublunary things generally.” “Sublunary” things are things under the moon, that is, on the earth or in its atmosphere. Chaucer was the first to use it in this sense:

Were it by destinee or aventure,  
 Were it by influence, or by nature,  
 Or constellacioun, that in swich estat  
 The hevене stood that time fortunate...

(*The Merchant’s Tale* 1967-70)

A lady in Spenser’s *Faerie Queene* asks, “Ah dearest Lord, what evil star / On you hath frowned, and poured his influence bad” (1.8.379-80). Shakespeare’s Prospero knows his stars: “by my prescience / I find my Zenith doth depend upon / A most auspicious star,

whose influence / If now I court not, but omit, my fortunes / Will ever after droop” (*Tempest* 1.2.180-84).

If a star or planet has an evil influence it is said to “strike.” Shakespeare was fond of this expression. A character in *Titus Andronicus* says, “If I do wake, some planet strike me down” (2.4.14). As Christmas approaches, Marcello says, “The nights are wholesome, no planet strikes” (*Hamlet* 1.1.167). Leontes, smitten with mistaken jealousy, likens faithlessness to “a bawdy planet, that will strike / Where ’tis predominant” (*Winter’s Tale* 1.2.201-02). We still use the word “moonstruck,” which seems to have been first used by Milton in the phrase “moon-struck madness” (*PL* 11.486).

### The Word “Star”

Our word “star” comes from way back, at least five thousand years, from the mother tongue linguists call Proto-Indo-European (PIE), and no doubt farther back than that. It shines frequently in various dialects of Old English: *stearra*, *steorra*, *stiorra*, *stýrra*, and other spellings (spelling was not yet standardized); plurals took an *-n*: *stiorran*, *steorran*, etc. In the languages closest to Old English we find Old Frisian *stēra*, Old Dutch *sterro* and *sterno*, and Old High German *sterro* and *sterno* (modern German *Stern*). A little farther afield but still in the Germanic family we see Old Icelandic *stjarne* and Gothic *stairno*. These variants with *-n-* between the root and the ending are not the plural ending in Old English but an extension of the root in the singular; it’s not clear how it came about, but it is found only in our Germanic cousins. In all these languages the noun is masculine.

The root shows up clearly in Latin *stella*, which comes from Proto-Latin *\*ster-la*. The ending *-la* makes the noun feminine, just as it does in *puella* “girl” which comes from *puer* “boy.” In Greek ἀστήρ (*astēr*) has the root with an odd prefix, which also appears in Armenian *astl*. The prefix puzzled linguists for a long time until Hittite was deciphered in the early twentieth century and “laryngeals” were revealed, a set of (probably) three similar but distinct sounds that the Indo-Europeans made in their throats. They disappeared by the time the daughter languages were recorded (except for Hittite) but left traces of “coloring” in vowels. The Hittite word for “star” is *haster*, with the initial consonant something like the German fricative sound *-ch* in *Bach* or perhaps deeper back in the pharynx or uvula. The PIE source of “star” and all its cognates is now postulated as *\*h<sub>2</sub>ster-*, a word beginning with the second of the three laryngeal sounds, the a-coloring one.

Latin *stella*, of course, became a common female name in many languages, and was favored by Sir Phillip Sidney in his sonnet sequence *Astrophel and Stella*, which means “Star-Lover and Star.” It also gave rise to English “stellar,” “interstellar,” and “stellification.” The Romance languages, daughters of Latin, have inherited the word but in most cases altered it as the languages evolved: Italian *stella*, Spanish *estrella*, Portuguese *estrela*, Old Occitan *estela*, Old French *estele* (> Modern French *étoile*), Romanian *stea*.

From Greek *aster*, and more particularly the combining form *astr-*, we get English *astronomy*, *astrology*, *astronaut*, *catasterism*, and *asterisk*.

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