

Tips on Learning the Constellations of the Night

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If you learn the constellations of the night sky through mythology and photography it becomes much easier to remember them and their relationship to each other. Instead of random specks of light in the dark backdrop of space, the heavens become an interrelated tapestry of gods, heroes, monsters, animals and other mythological creatures. Go anywhere on the earth, and feel at home when you look up at the night sky. Imagine what it must have been like for the sailors crossing uncharted waters in search of new lands and how the night must have brought comfort to see familiar constellations.

It took me two years to learn the 37 major constellations that grace the northern skies. However, with the right approach it could be done in two weeks. Knowing the constellations allows one to see the hidden tapestry behind the stars. It becomes much easier to locate the planets, the nebulas and star clusters. This is especially helpful if you want to use a telescope.

Notice how different the stars look in the movie Titanic as opposed to the 'stars' of bubbles in glycerin that you see in Star Trek. If the starry backdrop were accurate, one could tell the direction of the Titanic, the time of night and the latitude. In early April the passengers would see Virgo rising from the stern and the night watch at the bow would be looking out for icebergs with the backdrop of the starry giant Orion sinking into the western Atlantic. Passengers gazing out the portholes on the starboard would see the overturned constellation of the Great Bear (Ursa Major) and those on the port side would see the starry sea serpent Hydra rising out of the southern sea almost to zenith.

How does one go about learning the constellations? There are several ways I have found to be quite helpful. Learn the mythological stories that tie groups of constellations together for each of the four seasons. For example, the constellations of Perseus, Andromeda, Pegasus, Cassiopeia, Cepheus and Cetus are high in the sky on winter evenings. They are all related to the famous story of Perseus coming back victorious with the head of Medusa and responding to the cries of help from Andromeda who was chained to a rock near the sea to appease the sea monster Cetus. Perseus slays the sea monster and flies off with Andromeda on the back of Pegasus the horse. This of course drew a sigh of relief from her parents Cepheus and Cassiopeia, the king and queen of Ethiopia.

The second secret in learning the constellations is to become familiar with the three starry pathways in the sky: the Milky Way, the circle of the Zodiac and the ring of the circumpolar stars. Most people don't realize these three rings of constellations cross each other in certain portions of the sky and contain the majority of the constellations (save for a few heroes like Hercules and monsters like Hydra that seem to be caught off the beaten path.) For example, it is best to learn the constellations of the Milky Way in the late summer and fall when an arch appears high overhead starting with Scorpius in the south, then Sagittarius the Archer, Aquilla the Eagle, Cygnus the Swan, Cepheus, Cassiopeia and to Perseus and Auriga rising in the northeast. The month of May on the other hand is not a good time since the Milky Way is not overhead but skirts the horizon in all directions.

The constellations of the Zodiac are learned season by season as they appear. For summer these would include Sagittarius, Scorpio, Libra and Virgo. Note that Sagittarius and Scorpio are also members of the Milky Way. They are located where the circle of the zodiac (the ecliptic) crosses the circle of the Milky Way. The same is true of the constellations of Taurus and Gemini, which are located where the circle of the Zodiac again crosses the Milky Way. For the Fall season, early evening viewing would reveal Capricorn, Aquarius and Pisces. For winter: Aries, Taurus and Gemini. For spring you would see the constellations of Cancer, Leo and Virgo. It is helpful to note that the signs of the Zodiac repeat as Air, Water, Fire and Earth signs. For example Aquarius (air), Pisces (water), Aries (fire), Taurus (earth), Gemini (air) etc.

The circumpolar constellations* are fewer in number than the constellations in the other rings. Included are the constellations Perseus, Cepheus, Cassiopeia (these three are also in the Milky Way group), then Draco the Dragon, Ursa Major and Camelopardus. If you look at Pegasus it appears to be galloping upside down along the Milky Way with Andromeda holding on to its tail. Heroes like Hercules, Orion and Ophiuchus seem to be caught between Heaven (Milky Way) and Earth (Zodiac), saving mankind from Hydras, Dragons, Serpents and raging bulls.

The third secret is to have a set of good books on learning the constellations. I recommend the following books:

365 Starry Nights by Chet Raymo

Peterson First Guides – Astronomy

Sky Phenomena by Norman Davidson

The Secret Language of the Stars and Planets by Geoffrey Cornelius

The Star lore Handbook by Geoffrey Cornelius

The Labors of Hercules by Alice Bailey

Star Names: Their Lore and Meaning by Richard Allen

The fourth secret is to use the camera as a tool to capture associated constellation groups on film in the same frame. With the right lens and film a camera on a tripod can reveal the stars much better than the naked eye. I have included a couple of examples of astrophotography with a 35mm or 20mm wide-angle lens that show mythological scenes of constellation groups. It is nice to be able to view slides of the constellations, especially the winter constellation, in the comfort of your home at a later time.

The fifth secret is to be aware that the constellations appear to move over the course of the evening and during the course of the year because of the rotation of the earth and the movement of the earth around the sun, respectively. Each night the constellations in the east rise four minutes sooner. In four or five months the constellations that were rising in the east in the early evening will be setting the west. Even the polar star gradually changes position due to the slow wobble of the Earth's spin. In 10,000 years, the polar star will no longer be Polaris but closer to Deneb in the constellation of Cygnus the Swan. It would also be possible to see the Southern Cross from what is now New York City. It takes a lifetime, about 72 years, for the stars to shift 1 degree due to the wobble of the Earth's axis, one day due to the Earth's rotation around the Sun, but only 4 minutes for the stars to shift one degree due to the Earth's rotation around its own axis. The great telescopes of the world have to take all these movements into account when they track distant stars for hours at a time.

Learning the constellations, their stories and secret treasures of nebulas, star clusters, variable and double stars is a journey worthy of years of study. Change is an important part of understanding the night sky. I highly recommend getting one of the rotating star guides that show how the sky changes with the seasons and the time of night. Look especially at the Milky Way and the Big Dipper to see how differently they appear in the sky in May compared to October.

Don't lose the magic of the night to the facts and gadgets of 20th century astronomy. Here is an American Indian poem from the book *Sky Phenomena*:

*We are the Stars which sing.
We sing with our light.
We are the birds of fire.
We fly over the sky.
Our light is a Voice.
We make a road
For the Spirit to pass over.*

* The circumpolar constellations are the constellations closest to the north star and never go below the horizon for latitudes north of 60 degrees N.

Here is a passage from my favorite book: *The Little Prince* by Antoine de Saint Exupery.

“Tonight, it will be a year.... My star, then can be found right above the place where I came to the Earth, a year ago... And at night you will look up at the stars. Where I live everything is so small that I cannot show you where my star is to be found. It is better, like that. My star will just be one of the stars, for you. And so you will love to watch all the stars in the heavens... They will all be your friends. And, besides I am going to make you a present... All men have the stars, but they are not the same things for different people. For some, who are travelers, the stars are guides. For others they are no more than little lights in the sky. For others, who are scholars, they are problems, for my businessman they were wealth. But all these stars are silent. You – you alone—will have stars that can laugh!”

And he laughed again. “And when your sorrow is comforted... you will be content that you have known me. You will always be my friend. You will want to laugh with me. And you will sometimes open your window, so, for that pleasure.. And your friends will be properly astonished to see you laughing as you look up at the sky! Then you will say to them, ‘Yes, the stars always make me laugh! And they will think you are crazy. It will be a very shabby trick that I shall have played on you.... It will be as if, in place of the stars, I had given you a great number of little bells that knew how to laugh....”