# David E. Falkner 



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## The Mythology of the Night Sky

Greek, Roman, and Other Celestial Lore
Second Edition
David E. Falkner

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This book is dedicated to my very supportive wife, Kathy, who showed love, patience and support throughout this project. I also want to thank my children and grandchildren who have supported my love of astronomy and the time I've put into this book. I would also like to thank all those members of my family who have supported my love of astronomy and my book projects. Finally, I would like to recognize those members of my family who have passed before me, for I know they, too, would have supported this work.

## Preface

If you have ever found yourself in an area far away from the bright city lights, you have experienced what it must have been like for the people of ancient cultures. It is a moving experience to go out on a clear, moonless night and look up at the stars. Ancient astronomers watched the stars and grouped them into the constellations and other patterns, called asterisms, that we know today. Many are familiar, such as the Big Dipper in the northern sky. In winter, Orion the Hunter is easily identified by the four bright stars that form a box for his body and his distinctive three-star belt.

For as long as humans have roamed Earth, people have gazed at the heavens on clear nights and wondered at the bright points of light. Surely there was some reason for their being there? As human civilization evolved and began to study and record their observations of the sky, people realized that there a was certain predictability to the starry sky.

This book is about the 48 constellations named by the first-century astronomer Ptolemy, as well as the Solar System planets and their moons, dwarf planets, and a few select asteroids. The constellations, asteroids, planets, and most of the planetary satellites were named for characters and objects associated with Roman mythology, which was derived from ancient Greek mythology. In more recent times, newly discovered moons around Saturn as well as dwarf planets and their moons have drawn their names from mythologies such as Norse, Hawaiian, Rapa Nui, and others.

Since we are talking about gazing at constellations in the sky, it also seemed pertinent to talk about how someone with a point-and-shoot digital camera or smartphone can be introduced to the world of astrophotography
by taking pictures of constellations. So, this book ends with a chapter on astrophotography using a simple digital camera or smartphone and processing software typically included with such a camera. I included a few pictures at the end of the chapter I took with my camera and smartphone.

Before delving into the details of the constellations and their mythology, I thought it would be helpful to devote a chapter on the origins of Greek and Roman mythology. The dozens of characters and numerous stories depicted in the constellations and Solar System can be quite confusing. We will try to provide some context and order for you to reference while enjoying the characters and stories. Additionally, since the names of characters from Norse, Hawaiian, and other mythologies may not be as familiar to the reader, introductions to those mythologies have been included in appendices at the end of this book.

The next several chapters talk about the constellations by season. In discussing the constellations, we first look at the placement of the constellation in the sky. If it happens that this constellation was chosen as an astrophotography opportunity, I include the picture and talk about my experience with that. Next, the constellation is discussed in some detail, starting with a star chart that includes the names of major stars and deep sky objects that can be seen with amateur telescopes with apertures of $6^{\prime \prime}$ or more in a reasonably dark sky location. Included is a table with any named stars in the constellation and their translation as well as a table of Messier objects in the constellation. A complete list of Messier objects is contained in Appendix C. Although New General Catalog/Index Catalog (NGC/IC) objects that are brighter than magnitude 10 are also shown on the star charts, only a few of the brighter and better known ones are discussed with the constellation. All of the NGC/IC objects on the charts are listed in Appendix D.

Finally, this book is about the Roman and Greek mythological stories that are the basis for ancient astronomers naming a pattern of stars after a person, animal, or object. This book is different from most in that instead of giving just a one- or two-sentence synopsis, the entire story is told. In doing so, the hope is that you will not only have an enjoyable read but also gain a better understanding of why the person, animal, or object deserved a place of immortality in the heavens.

Most of the stories are told as part of the constellation description. However, there are three legends that have a number of constellations associated with them: Jason and the Argonauts, Hercules, and Perseus. These legends have separate chapters and are told in their entirety, identifying the constellations as they are found throughout the myth.

This book is not intended to be a study in mythology although, out of necessity, we will delve into it at some length. As you are reading, you
should keep in mind that these stories were passed down by word of mouth for many generations. Additionally, in Greco-Roman mythology there were over 30 Greek and Roman authors who recorded these stories. The result is that the same story may have several different versions. This is true of the other mythologies since many of the stories were also passed down orally from generation to generation. The main plot is usually consistent, but the details can vary quite a bit. Since the purpose of this book is to show how a character, animal, or object became immortalized in the heavens, the story or combination of stories that best illustrates this is provided. You may have heard other versions that are just as valid. Nevertheless, we hope this book will provide you with as much knowledge and entertainment as it has given the author. Even the non-astronomer should find the stories entertaining.

Blaine, MN, USA
David E. Falkner

## About the Author

David Falkner first became interested in astronomy as a pre-teen when his father took him to a show at the Holcolm Planetarium in Indianapolis, IN. He became hooked and has loved astronomy ever since. When he was a teenager he inherited a homemade Newtonian telescope that needed the primary mirror. He ground a 6 -inch mirror and completed his first telescope, which gave him years of pleasure observing the heavens. In 1973 he joined the US Navy and became an officer in 1980. In 1986 as a Naval Officer stationed in Monterey, California, he became involved with the Friends of MIRA (Monterey Institute for Research in Astronomy), where he conducted outreach to local schools associated with the return of Halley's Comet. He retired from the navy in 1993 and settled in Minnesota, where he continues his love of astronomy and serves as president of the Minnesota Astronomical Society.

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## Chapter 1

# An Introduction to Greco-Roman Mythology 

## The Night Sky and Ancient Cultures

The sky we see at night has changed very little since the time of the ancient Greeks and Romans. It was easy for them to see that the stars moved through the night from east to west just as the Sun did. If you went out at the same time every night you would notice that there was a larger movement that progressed slowly from east to west over days, weeks and months. Yet, if you went out at 9 o'clock on the evening of March 7 every year, the same pattern of stars would greet you. It is this regularity in the stars that allowed the ancients to use them for predicting when to plant crops, when to harvest, when to expect colder weather, and when the warmth of spring was close at hand.

Uniformity about the night sky led ancient cultures to create images from star patterns. The stars never changed their position with respect to each other. By grouping certain stars together in a particular pattern, they created "animals," "people," and "things" in the heavens. These constellations were a part of every great civilization. Records of constellations can be found in the writings of the Egyptians, Japanese, Chinese, Babylonians, Incas, Aztecs, native American tribes, and - of course - the ancient Greeks and Romans.

In addition to the stars there were other celestial bodies that often had significance. The Moon and the Sun were worshipped. Meteors were known
as shooting stars but were seen more as an atmospheric phenomenon like lightning. Comets would appear in the heavens and would often be seen as bad omens. Then there were the "wanderers," the planets. They looked like stars but would change position in the star field. They would be named after the gods.

Today we recognize the constellations founded by the ancient Greeks and Romans. The legends and stories of Greek and Roman mythology were passed by word of mouth for generations before they were written down. In order to help them remember the stories, the Greeks and Romans would identify star groups they felt looked like a person, animal, or object of a legend, and then tell the story that explained how they were immortalized in the heavens. Ptolemy, a Greek astronomer who lived around 130 A. D., finally recorded 48 constellations that represented characters, animals, and items associated with ancient Greek and Roman mythology. These constellations, as well as the stories about how they came to be in the heavens, are both interesting and entertaining. This book takes you through the skies of the four seasons and points out the constellations of mythology and the stories of their creation.

## Greek or Roman?

The ancient Greeks originated the stories during the period of history lasting roughly from 1100 в. c. to the death of Alexander the Great in 323 в. с. Roman conquests were growing by this time, and by 146 B. с. Greece was part of the Roman Empire. Although the Romans embraced the stories of ancient Greece, the gods and key characters took on Roman (Latin) names. The 48 constellations identified in this book were originally named by the Greek astronomer Ptolemy in the first century.

Although the constellations may have had Greek names originally, it was the Latin names of the constellations that were passed on to modern day. Likewise, the planets have retained their Latin names.

Most of us who have had literature and ancient history classes can remember studying some ancient mythology. We remember that most of the time those stories used the Greek names for gods and heroes such as Zeus, Hera, Poseidon, Heracles, and so on. However, when you move to the heavens, these characters are referred to by their Roman counterparts - Jupiter, Juno, Neptune, Hercules, and so forth. So it was a bit of a dilemma to decide whether to relate stories using the more familiar Greek names or using names that are more familiar in an astronomical sense. Since the book is primarily an astronomy text, we will use the Roman or Latin names when
making mythological references. It's interesting to note that not all of the names in mythology were converted to Latin. Mortal characters, animals, and objects retained their original Greek names in Roman mythology.

## The Creation of the World

Roman mythology is a soap opera with a myriad of characters and all the elements that make for great and lasting stories: love, hate, jealousy, deceit, corruption, lust, war, incest, murder, punishment, and reward, to name a few attributes. Keeping track of who's who can be as confusing as modern day soap operas.

To assist the reader in sorting out these relationships, we are going to review some Roman god genealogy. Part and parcel to that, however, is the story of the creation of the world, which involves the creatures that preceded the familiar Roman gods and goddesses of Olympus fame.

The Roman Olympian gods didn't just materialize out of thin air. They were the children of the Titans, whom the gods would later overthrow to gain control of the world. The Titans were the children of the deities that created the world and all that is around it. The story of creation is rather bizarre since it involves beings created from seeming nothingness, others born without sexual relations or from incestuous relations, which perhaps is inevitable in the beginning.

First, there was Chaos. This Chaos did not represent random disorder; rather, Chaos was a great, dark abyss, a black void that stretched to infinity. Today Chaos would be considered the universe before the Big Bang.

From this nothingness came black-winged Night and Erebus, where death dwells. Then something marvelous happens. Night plants an egg in Erebus and, after a period of time, from death and darkness gold-winged Love is born. With Love came Light with its companion, Day.

Next, again from nothingness, Terra (Earth) appears, and she creates for herself Uranus (the Heavens) to surround her, along with Mountains and Seas. The 12 children of Terra and Uranus were the race of divinities known at the Titans. The male Titans were Oceanus, Hyperion, Coeus, Saturn, Crius, and Iapetus. The female Titans were Moneta, Tethys, Thea, Phoebe, Ops, and Themis.

The Titans were huge monsters. Uranus attempted to hide them from Terra by throwing them into a deep cave, presumably so he could continue to have uninterrupted intercourse with Terra. The Titans eventually found the courage to rebel. As Uranus was spreading himself onto Terra for yet another act of intercourse, the Titan Saturn emerged from the cave and cut
off Uranus's genitals. The drops of blood from this event sprang up to become yet another race of monsters known as the Giants, as well as the Furies and the Nymphs.

The separation of Terra and Uranus allowed the Titans to emerge from hiding and wield their power to rule the world. Saturn was their leader and lord of the universe. By his side was Ops, his sister-queen of the universe. The children of the Titans are the more familiar gods of mythology. They eventually banded together and overthrew the Titans to become the rulers of the universe.

These gods became known as the Olympians, for the Greeks believed that Mt. Olympus, the tallest mountain in Greece, had the gods' home atop it. In later writings, however, Olympus became a place even higher than the mountains, above the clouds. There were 12 major Olympians who succeeded the Titans. These were Jupiter, Juno, Mercury, Venus, Mars, Neptune, Apollo, Diana, Minerva, Ceres, Liber, and Vulcan. The children of these gods as well as the lesser gods of Olympus, along with the offspring from the unions of gods and mortals, produced most of the characters we find in the mythological stories, constellations, planets, and satellites.

## Astronomical Family Trees

The stories associated with the constellations, planets, and satellites in this book will include a brief narrative on the genealogy of the character. However, a picture or diagram really helps to identify where the character fits in the overall scheme of Roman mythological genealogy. The next few pages will diagram the Roman mythology family tree as it relates to characters found in the night sky. The complete family tree of Roman mythology would be massive and confusing, which is why we have confined the family trees to those related to characters in the sky. Significant characters, such as names of constellations or planets, will be bold-faced and underlined for easier identification. In some cases the constellation depicting the character will be in parentheses under the name.

Figure 1.1 shows the genealogy of the gods of Creation and the Primeval gods. Since the Primeval gods begat the Titans, Fig. 1.2 has the genealogy of the Titans. The Titans begat the Olympian gods, so Fig. 1.3 shows the genealogy of the Olympian gods.

Jupiter was a very promiscuous and persuasive god, and it stands to reason that many of the characters were the direct result of his amorous adventures. Figure 1.4 shows those celestial characters that had Jupiter in their lineage. Finally, several of the characters were the result of unions between gods, mortals, and nymphs. These can be found in Fig. 1.5.

Fig. 1.1 Genealogy of the primeval gods

Fig. 1.2 Genealogy of the Titans


Fig. 1.3 Genealogy of the Olympian gods





The Pleiades


Fig. 1.5 Genealogy of other constellation characters

## Chapter 2

## The Winter Constellations

## Introduction

The clear, crisp evenings of winter often provide for excellent seeing conditions. The colder air doesn't have the capacity to hold water vapor, which means the atmosphere is more transparent on moonless nights and appears quite dark. Coupled with the dark skies are some of the brightest stars of any season, and the combination provides the stargazer with breathtaking views. Or maybe it's just the freezing cold temperatures! Be sure to dress in layers to keep warm. You will enjoy winter stargazing more if you participate with an organized star party that may have viewing areas with a warming house complete with red lights to preserve night vision. If you are using a telescope or binoculars you may need to invest in dew heaters for your eyepiece, finder scope, and secondary mirror to keep these items from frosting up. Of course, you could pack up your gear and head south to warmer climates to do stargazing!

The winter constellations provide some wonderful stories, so let's take a look at these constellations and the ancient Roman stories they depict.

## Orion - The Hunter

The constellations associated with the legend include Orion (The Hunter), Canis Major (The Great Dog), Canis Minor (The Lesser Dog), and Lepus (The Hare). Monoceros, while included in the modern-day star chart in Fig. 2.1, was not a member of Ptolemy's original 48 constellations. Scorpius (The Scorpion) is also a part of the legend. That may seem odd, but its location in the summer sky will become apparent when you read the legend.


Fig. 2.1 Star chart of Orion (courtesy Starry Night Education)

Named Stars of Orion

| Bayer designation | Mag. | Common name | Translation |
| :--- | :--- | :--- | :--- |
| ALPHA | 0.43 | Betelgeuse | "Hand of Al-Jazwa" |
| BETA | 0.15 | Rigel | "Foot" (west) |
| GAMMA | 1.62 | Bellatrix | "Warrioress" (west shoulder) |
| DELTA | 2.25 | Mintaka | "Belt" (west end) |
| EPSILON | 1.68 | Alnilam | "Arrangement" (of pearls; |
|  |  |  | middle of belt) |
| ZETA | 1.71 | Alnitak | "Belt" (east end) |
| IOTA | 2.75 | Na'ir al Saif | "Bright one of the sword" (tip) |
| KAPPA | 2.06 | Saiph | "Sword" |
| LAMBDA | 3.37 | Meissa | "Shining" (Orion's head) |

Messier Objects in Orion

| Messier | Mag. | Name | Type |
| :--- | :--- | :--- | :--- |
| 42 | 4.0 | The Great Orion Nebula | Bright nebula |
| 43 | 9.0 | de Mairan's Nebula - part of Orion Nebula | Bright nebula |
| 78 | 8.3 |  | Bright nebula |

By far the most prominent constellation in the winter sky - and in fact the entire sky - is Orion, the mighty hunter shown in Fig. 2.2. The star pattern of this constellation has been depicted as a hunter or warrior by most ancient civilizations. The four stars that make up his shoulders and feet along with the three stars of his belt are conspicuous in the southern sky along the celestial equator. The red giant Betelgeuse marks Orion's right shoulder and also marks one of the points of the Winter Triangle asterism (along with Sirius and Procyon). Betelgeuse is an irregular variable star and is occasionally brighter than Rigel. Normally, however, it is the second brightest star in Orion despite its designation as Alpha Orionis.

A group of stars extending above Betelgeuse and forming a "V" at the top is Orion wielding his sword. Bellatrix marks Orion's left shoulder. Apparently this star was once part of a different constellation, hence its unmanly name. To the west of Bellatrix is an arc of stars that depicts Orion holding his shield. Some depictions of Orion actually show him shooting an arrow, with this arc of stars being the bow. This is supported by the fact the Betelgeuse means "hand of Al-Jazwa" and is located where a hand would be when drawing back the bow. Between Betelgeuse and Bellatrix and slightly above them is Meissa, a much fainter star marking Orion's head.


Fig. 2.2 The constellations of the legend of Orion (courtesy Starry Night Education)

At the lower end of Orion lies the blue giant Rigel, designated as Beta Orionis although it is normally the brightest star in the constellation. The blue giant Saiph marks Orion's right foot. The distinctive three stars of Orion's belt from the viewer's left to right are Alnitak, Alnilam, and Mintaka. All are blue or blue-white giants, and Mintaka is actually a multiple-star system. Below Alnitak lie several more stars that form a sword sheath. The end star of this line is Na'ir al Saif and marks the tip of his sword. It is an eclipsing binary of two blue stars.

Orion is a hotbed of star formation and has one of the largest and brightest nebulae in the sky. Not surprising, the three Messier objects in Orion are
all nebulae. M78 is a diffuse reflection nebula that is part of the Orion nebula complex. It is located north of Alniatak about a sixth of the way to Betelgeuse. M42 is the "Great Orion Nebula" located among the stars of Orion's sword. At fourth magnitude the "haziness" of the stars can be seen by the naked eye, and the nebula is greatly enhanced by using binoculars or a telescope. Located next to M42 but divided by a dark dust lane is M43, which is also part of the Orion Nebula complex.

There are a number of NGC objects in Orion as well. More information on these objects can be found in Appendix D of this book.

Canis Major - The Great Dog


Fig. 2.3 Star chart of Canis Major (courtesy Starry Night Education)

| Named Stars of Canis Major |  |  |  |
| :--- | :--- | :--- | :--- |
| Bayer designation | Mag. | Common <br> name | Translation |
| ALPHA | -1.47 | Sirius | "Scorching" |
| BETA | 1.96 | Mirzam | "The herald" |
| GAMMA | 4.09 | Muliphein | "The two causing dispute and |
| the swearing of an oath" |  |  |  |


| Messier Objects in Canis Major |  |  |  |
| :--- | :--- | :--- | :--- |
| Messier | Mag. | Name | Type |
| 41 | 4.6 |  | Open cluster |

Canis Major, one of Orion's two hunting dogs, is located southeast of Orion. Canis Major, depicted in Fig. 2.3, appears to be standing on his tail with his feet pointing west. Its bright star, Sirius (magnitude -1.47) is about twice as luminous as our Sun and is located only 8.6 light-years away. As a result it is the brightest star in the night sky. Since it is located in Canis Major, Sirius is often called "The Dog Star," although the actual translation is "scorching." This refers to the ancient Greeks' belief that the presence of Sirius in the sky with the Sun, which occurs during the summer months, heralded a hot dry summer, which would scorch crops. It also marks one of the three points of the Winter Triangle asterism, along with Procyon and Betelgeuse.

Since most of the names used for stars in the sky are Arabic in origin, they often do not have translations that coincide with the constellation itself. Mirsam, a variable blue-white giant, likely received its name because it rises just before Sirius. Muliphein, another blue-white giant, gives no indication of how its name was derived. The remainder of the named stars appear to have some ancient significance regarding maidens. Adhara and Aludra are clearly related to maidens. Furud appears to be away from the others and hence its lonely name.

Finally, you will see a reference on the star chart to the Mexican Jumping Star. NGC 2362 is an open cluster with a bright foreground star, Tau CMa. Apparently under windy conditions when telescopic images can "jiggle,"

Tau CMa will appear to move in a different direction than the background stars of NGC 2362. Although the phenomenon is likely caused by the retinal persistence of the brighter star, the perception is that it is "jumping" around!

There is only one Messier object in Canis Major, M41, an open cluster. The Milky Way runs through part of this constellation as indicated by the shaded area in the star chart. As a result there are a number of NGC objects listed under CMa in Appendix D of this book.

## Canis Minor - The Little Dog

Figure 2.4 shows Canis Minor, a relatively small constellation east of Orion's right arm. Procyon marks the dog's head, while Gomeisa marks its hind quarters. Procyon's location in the sky farther to the north causes it to rise before Sirius in Canis Major, hence its Greek name meaning "before the dog." It is actually a double star consisting of a white main sequence star and a white dwarf. As noted earlier, it is also one of the vertices of the Winter Triangle asterism along with Sirius and Betelgeuse. Gomeisa comes from the Arabic and has no canine significance. It is a main sequence star about four times the size of our Sun.


Fig. 2.4 Star chart of Canis Minor (courtesy Starry Night Education)

