

## Chapter 2

# Asterisms, Single-Sourced Constellations, and “Rebrands”

The 28 constellations in Volume 1 of this book are grouped together on the basis of a particular defining characteristic: each was a more or less original invention that is sourced in more than one published text or chart. They are constellations that became at least somewhat popular and exhibited a kind of staying power that lasted from decades to centuries. Some even persisted nearly up to the last possible minute before being excised at the time of the International Astronomical Union’s definition of the “modern” canon of constellations in 1922 (see Chap. 1).

That leaves a separate set of 16 constellations that did not achieve such attention, although they have their own interesting histories. While they do not quite fit the “lost constellation” ideal exactly, they are worth something of an honorable mention. These constellations, which fall into one or more of three broad categories, are found in this volume.

### Asterisms

The modern definition of a constellation includes a figure delineated by several bright stars intended to represent an object, animal or person that typically alludes to an historical identity, surrounded by fainter stars disconnected to the depiction of that figure. The whole assembly of stars is enclosed by a precisely-defined set of boundaries that differentiate a particular constellation from its neighbors. However, the historical understanding of constellations lacked an objective set of boundaries and focused more distinctly on the figure represented by the bright stars. That figure is now referred to as an *asterism*. Prior to the twentieth century, “constellation” and “asterism” were essentially interchangeable terms that lacked proper definitions with which to differentiate them in everyday use.

Until the scientific method began to dominate and direct the work of observational astronomers in the seventeenth century, skywatchers had little need to repeatedly determine the association of any particular faint star with one widely recognized figure or another. That left many stars “unformed,” making use of a term introduced by the second century AD Greco-Egyptian astronomer Ptolemy to describe stars visible to the naked eye that were not historically ascribed to any constellation in the classical world. Over a 1000 years later, figures devised from Ptolemy’s unformed stars became the basis for dozens of newly-invented constellations. While some of those constellations are found on contemporary star charts, most were tossed into the rubbish bin of history and are the subject of this book and its companion Volume 1.

The current sense of the term “asterism” refers to any group of bright stars forming some recognizable pattern; many gained a popular definition of their own but never quite achieved constellation status. The prototypical example of an asterism is the “Big Dipper” or “Plough,” a subset of stars within the classical figure of Ursa Major. The Dipper asterism, along with other nearby stars forming an asterism that looked to the ancient Greeks like the profile of a bear, is contained within a set of boundaries recognized by the International Astronomical Union as defining a constellation called Ursa Major. However, neither the Dipper nor the figure of the bear holds any formal significance to the modern science of astronomy. Asterisms are therefore something of a folk notion that can be drawn arbitrarily on the night sky by anyone at any time.

Sometimes asterisms serve a navigational function. The bright stars Dubhe and Merak ( $\alpha$  and  $\beta$  Ursae Majoris) are colloquially known as “The Pointers;” a line drawn from  $\beta$  to  $\alpha$  and continued in the same direction for about  $30^\circ$  falls very near the north celestial pole and Polaris ( $\alpha$  Ursae Majoris). This helps the novice mariner distinguish between Polaris ( $V$  magnitude +1.98) and nearby Kochab ( $\beta$  Ursa Minoris,  $V$  magnitude +2.08). In the southern hemisphere, a line drawn between the “Southern Pointers” Rigil Kentaurus and Hadar ( $\alpha$  and  $\beta$  Centauri) points toward an asterism called the Southern Cross that stands in for the constellation Crux. In this way, the Southern Pointers show navigators the correct Cross and not the similar “False Cross” asterism composed of  $\delta$  Velorum, Markab ( $\kappa$  Velorum), Avior ( $\epsilon$  Carinae) and Aspidiske ( $\iota$  Carinae).

In a few cases asterisms were separated from historical figures to become constellations in their own right. Perhaps the most famous example is the division of the classical figure of Scorpius into two pieces, each of which became a zodiacal constellation during antiquity. Before the Classical period of ancient Greece, Scorpius was envisioned with two large *chelae*, or claws, extending into the space overlapping the eastern extreme of Virgo. The old notion of eleven members of the zodiac rather than the modern twelve is recorded in the first book of the biblical Old Testament<sup>1</sup>: “Then [Jacob] had another dream, and he told it to his brothers. ‘Listen,’ he said, ‘I had another dream, and this time the sun and moon and eleven stars were bowing down to me.’”

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<sup>1</sup>Genesis 37:9 (NIV). The “eleven stars” refer to the ancient houses of the zodiac.

In the Hellenistic era, the Greek association of Virgo with the agriculture goddess Demeter-Ceres gave way to a different understanding in the form of the virgin goddess Astraea, daughter of Astraeus and Eos. Astraea personified the ideals of purity and innocence, and became identified with Dike, the Greek goddess of justice. Depictions of Astraea often show her holding the scales of justice, so Greco-Roman astronomers appropriated the chelae of Scorpius to form the pans and suspension rod of a balance. By the time Ptolemy was writing in the second century AD, the Scales were held as a twelfth zodiacal constellation and became known to the Romans as Libra. To this day the two brightest stars in Libra retain Arabic names referring to their former role in Scorpius: Zubenelgenubi ( $\alpha$  Librae, “the southern claw”) and Zubeneshamali ( $\beta$  Librae, “the northern claw”). Lupus (the Wolf) was likewise carved off of Centaurus and given its own identity as an asterism by the Greek astronomer Hipparchos in the third century BC; it remains a modern constellation.

Similarly, the modern constellation Coma Berenices (Berenice’s Hair) gained a life of its own in antiquity after being separated from Leo. Conon of Samos (c. 280–c. 220 BC), court astronomer to the Egyptian king Ptolemy III Euergetes (r. 246–222 BC) at Alexandria, appropriated some faint stars historically counted as part of Leo’s tail to recognize his queen, Berenice II (c. 267–221 BC). According to legend,<sup>2</sup> Berenice promised the removal and dedication of her long tresses to the goddess Aphrodite provided that Ptolemy returned unharmed from a battle in the Third Syrian War.<sup>3</sup> Upon Ptolemy’s return to Alexandria, Berenice placed the hair in Aphrodite’s temple at Zephyrium,<sup>4</sup> but in short order it disappeared. Sensing an opportunity, Conon proposed that Aphrodite had interceded to place the hair in the heavens as an acknowledgment of Berenice’s sacrifice and a token of the goddess’ favor. The astronomer Ptolemy did not accept Conon’s invention of Coma Berenices, referring to its stars as “a nebulous mass, called the lock [of hair]” but otherwise considering them firmly part of the Lion. The tale of Conon and the hair gained favor in the sixteenth century and Coma Berenices was afforded constellation status by the German cartographer Caspar Vopel (1511–1561) as “Berenices Crinis” on a globe published in 1536. It gained further popularity on its inclusion in Tycho Brahe’s 1602 star catalog, and achieved enduring fame upon its appearance in Johann Bayer’s *Uranometria* (1603). It has been shown on star charts ever since.

The most extreme form of the breakup of one historical asterism to form others that later became part of the modern canon of constellations is the partition of Argo Navis into Carina, Puppis and Vela (see Volume 1). The division of Argo Navis<sup>5</sup>

<sup>2</sup>E.g., Aratus, *Phaenomena* 146; Hyginus, *Astronomica* 2.24.

<sup>3</sup>The War was waged between the Ptolemaic Kingdom of Egypt and the Seleucid Empire, two successor states of Alexander the Great’s empire, during the third and second centuries BC.

<sup>4</sup>The modern city of Mersin, Turkey.

<sup>5</sup>In 1843 the English astronomer Sir John Herschel proposed replacing Lacaille’s invented constellation Pyxis with a fourth constituent of Argo Navis he called Malus (the Mast); Herschel’s figure appeared on a few mid-century maps but was discarded before 1900.

was suggested in 1756 by the French astronomer Nicolas Louis de Lacaille as the result of observations he made from South Africa in 1751–1752. Argo Navis was once the largest widely-known asterism in the night sky, but many found its large figure unwieldy. While Argo Navis persisted on popular charts until the end of the nineteenth century, the International Astronomical Union accepted Lacaille’s proposed constituent constellations when it published a list of official constellations in 1922.

Asterisms can be functionally divided into four types: *aliases*, *sectional*, *non-sectional*, and *cross-border*. Some well-known examples of each are given below.

### *Alias Asterisms*

Each modern constellation takes its name and identity from a widely recognized figure composed mainly of bright stars; alias asterisms are alternate names or ‘nicknames’ for these figures. Such asterisms include:

- **The Ice Cream Cone**, or **The Kite**—a roughly quadrilateral group of bright stars forming the body of Boötes (the Herdsman) consisting of Arcturus, Seginus, Princeps, and Izar ( $\alpha$ ,  $\beta$ ,  $\gamma$  and  $\delta$  Boötis), and the combination of nearby stars  $\rho$  and  $\sigma$  Boötis.
- **The Frying Pan**—an asterism of Australian origin repurposing the brighter stars of Chamaeleon for use as an aid in finding the south celestial pole.
- **The Northern Cross**—a representation of the bright stars of Cygnus as a Latin cross. The long axis of the Cross spans the set of stars from Deneb ( $\alpha$  Cygni) to Albireo ( $\beta$  Cygni) and the short axis runs from Gienah ( $\epsilon$  Cygni) to Rukh ( $\delta$  Cygni), mirroring the body and wings of the Swan, respectively.

Alias asterisms may also refer to traditional, and in particular, non-Western representations of figures with counterparts among modern constellations; ethnographers have identified many such asterisms among various world cultures (see, e.g., Allen 1899; Selin 2000; Ruggles 2005; Aveni 2008). An example is the Polynesian identification of Scorpius with a fish hook, the body and head of the Scorpion forming an elongated, capped letter “J.” Further, the subset of lost constellations here referred to as “rebrands” (see below) also fall under the heading of alias asterisms.

### *Sectional Asterisms*

These are figures created from a subset of the brighter stars in a main constellation figure, which relate to the figure represented by the constellation and may or may not have an historical basis. Certain sectional asterisms such as Lupus later became constellations unto themselves, while others like Libra first changed identity before

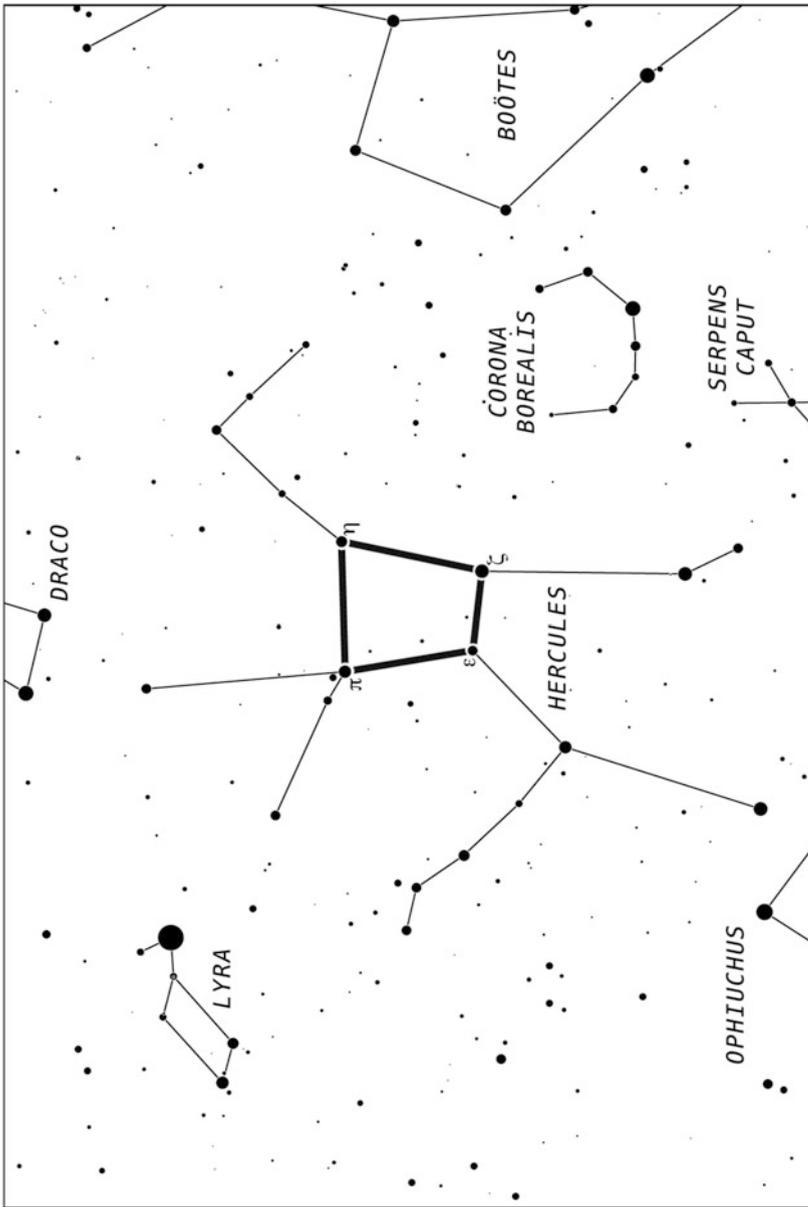
achieving independent recognition. On the other hand, figures like Caput Medusae (the Head of Medusa; Chap. 4) had long historical pedigrees and managed to win acceptance as constellations in their own right, but were ultimately demoted to asterism status when the modern canon of constellations was declared in 1922. Other historical sectional asterisms such as the “Great Square of Pegasus,” composed of Markab, Scheat and Algenib ( $\alpha$ ,  $\beta$  and  $\gamma$  Pegasi), and Alpheratz ( $\alpha$  Andromedae), have both ancient origins and modern folk appeal. Known as early as the second millennium BC to the Babylonians as MUL.AŠ.IKU (the Field), these four stars whose rising in the east in the early evening is an indicator of the oncoming northern hemisphere autumn are commonly taught to beginning amateur astronomers. Some other historical sectional asterisms are:

- **Orion’s Belt**—the three, evenly-spaced stars of similar brightness in the center of the figure of Orion identified as a belt around the Hunter’s waist from which hung his sword, imagined as the nebulosity and stars around the Orion Nebula (Messier 42). The three stars stood for various historical associations of three people, such as the three eastern kings of the Biblical New Testament and the Drie Susters (“Three Sisters”) among Afrikaans speakers in South Africa.
- **The Water Jar**—a group of four stars, Sadachbia ( $\gamma$  Aquarii), Seat ( $\pi$  Aquarii), and  $\eta$  and  $\zeta$  Aquarii, forming the urn or jar from which the Water Bearer pours forth his eponymous stream.
- **Cerberus et Ramus Pomifer**—a group of faint stars in eastern Hercules historically depicted as, alternately, the three-headed monster Cerberus and the Apple-Bearing Branch of the Hesperides in reference to two of the Herculean Labours. This asterism once held constellation status before being demoted in the late nineteenth century (see Volume 1 for details).

### *Non-sectional Asterisms*

In a similar fashion these asterisms are formed from a subset of bright stars in a constellation whose identification does *not* distinctly relate to the main constellation figure. They, too, often (but not exclusively) have historical origins. A prototypical example is the “Keystone” of Hercules (Fig. 2.1), consisting of  $\epsilon$ ,  $\zeta$ ,  $\eta$  and  $\pi$  Herculis, so named for its resemblance to the keystone that holds in place a stone arch. Examples of other non-sectional asterisms include:

- **The Sickle**—a group of six bright stars in western Leo ( $\epsilon$ ,  $\mu$ ,  $\zeta$ ,  $\gamma$ ,  $\eta$  and  $\alpha$  Leonis) resembling a backward question mark.
- **The Teapot**—eight stars defining the upper body and drawn bow of Sagittarius ( $\lambda$ ,  $\delta$ ,  $\gamma$ ,  $\epsilon$ ,  $\zeta$ ,  $\tau$ ,  $\sigma$  and  $\phi$  Sagittarii) that look strikingly like the profile of a teapot, complete with Milky Way clouds appearing as “steam” billowing from the spout.
- **Job’s Coffin**—a diamond-shaped arrangement of the stars  $\alpha$ ,  $\beta$ ,  $\gamma$  and  $\delta$  Delphini. The origin of this asterism’s name appears lost to history.



**Fig. 2.1** The Keystone, a non-sectional asterism in Hercules. *Heavy black lines* connect the bright stars  $\epsilon$ ,  $\zeta$ ,  $\eta$  and  $\pi$  Hercules. In this view, north is *up* and east is *left*

- **Terebellum**— $\omega$ , 59, 60, and 62 Sagittarii, forming a small quadrangle on the hindquarters of the Archer, known to Ptolemy as the τετράπλευρον (*tetrápleuron*, ‘quadrilateral’).
- **The Diamond Cross**—four bright stars in Carina ( $\beta$ ,  $\nu$ ,  $\theta$ , and  $\omega$ ) forming an almost perfect, upright diamond shape.
- **The Circlet**—a pentagon formed by the bright stars  $\theta$ ,  $\gamma$ ,  $\kappa$ ,  $\lambda$  and  $\iota$  Piscium that represents the head of the western fish in Pisces.

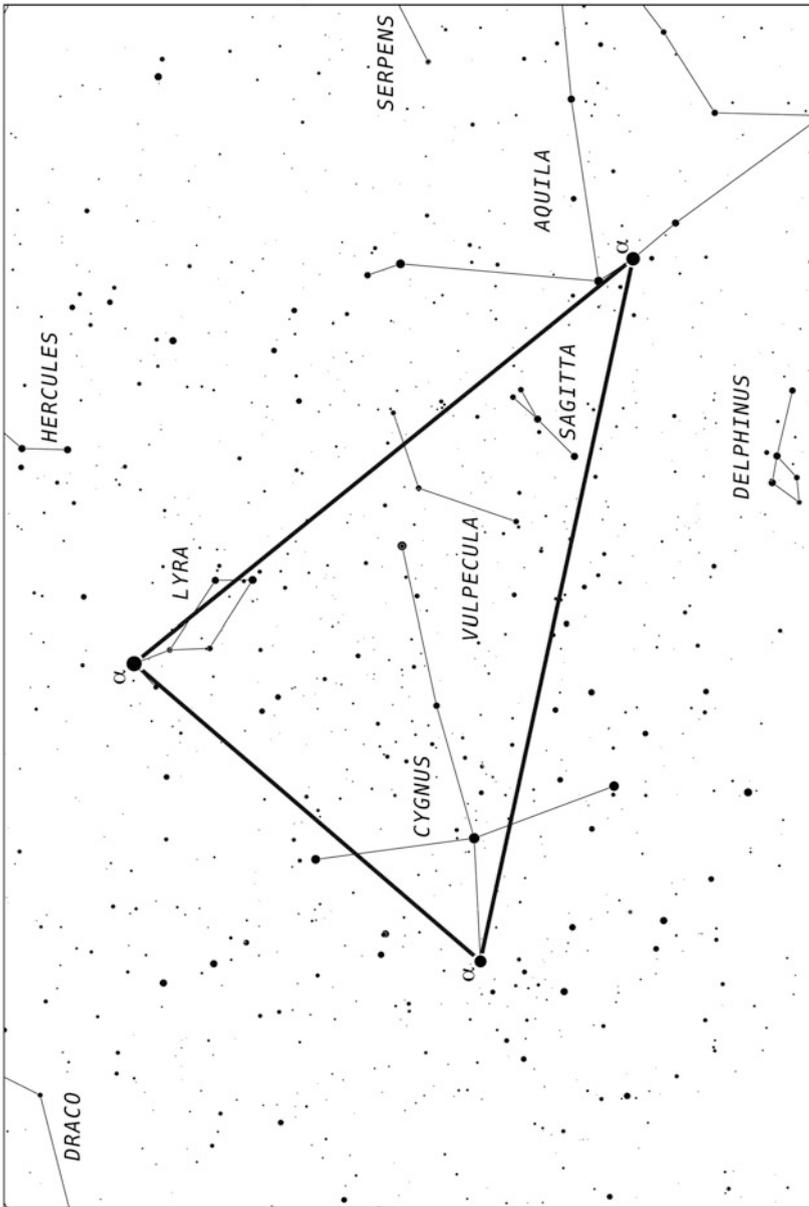
### ***Cross-Border Asterisms***

Some asterisms are composed of stars that span more than one official constellation and do not refer to the classical or historical definitions of those constellations. Perhaps the most familiar cross-border asterism to northern hemisphere observers is the Summer Triangle (Fig. 2.2), formed from the bright stars Vega ( $\alpha$  Lyrae), Deneb ( $\alpha$  Cygni), and Altair ( $\alpha$  Aquilae). The three stars form a near-perfect right triangle that rises on early summer evenings with its hypotenuse almost parallel to the eastern horizon. Other cross-border asterisms make use of stars from several constellations at once:

- **The Winter Triangle**—a northern hemisphere winter counterpart to the Summer Triangle consisting of the bright stars Sirius ( $\alpha$  Canis Majoris), Procyon ( $\alpha$  Canis Minoris) and Betelgeuse ( $\alpha$  Orionis).
- **The Egyptian X**—two inverted triangles meeting at Sirius to form a large Latin letter ‘X’ in the northern hemisphere winter sky. The upper half of the X is identical to the Winter Triangle; the southern half is composed of Sirius ( $\alpha$  Canis Majoris), Naos ( $\zeta$  Puppis) and Phact ( $\alpha$  Columbae). This asterism takes its name from the fact that its stars roughly border the celestial equator, and that traditionally it was more readily seen in its entirety from north Africa than Europe.
- **The Lozenge**—a small quadrilateral made up of the stars Etamin, Grumium and Rastaban ( $\gamma$ ,  $\xi$ , and  $\beta$  Draconis), and  $\iota$  Herculis, marking the head of Draco (the Dragon).
- **The False Cross** a compact, diamond-shaped figure marked by the bright stars  $\delta$  and  $\kappa$  Velorum, and Avior and Aspidiske ( $\epsilon$  and  $\iota$  Carinae) that is often mistaken for the Southern Cross.

The following figures discussed in this book are best described as asterisms:

- **Caput Medusae** (the Head of Medusa)—Chap. 4 (sectional; Perseus)
- **Gladii Electorales Saxonici** (the Crossed Swords of the Saxony Electorate)—Chap. 6 (cross-border; Virgo/Libra/Serpens Caput)
- **Lochium Funis** (the Log and Line)—Chap. 8 (non-sectional; Pyxis)
- **Norma Nilotica** (the Nilometer)—Chap. 10 (sectional; Aquarius)
- **Phaeton**—Chap. 11 (sectional; Eridanus)



**Fig. 2.2** The Summer Triangle, a cross-border asterism. *Heavy black lines* connect the bright stars Vega ( $\alpha$  Lyrae), Deneb ( $\alpha$  Cygni), and Altair ( $\alpha$  Aquilae). In this view, north is toward the *left* and east is at the *bottom*

- **Polophylax** (the Guardian of the Pole)—Chap. 12 (cross-border; Phoenix/Tucana/Indus/Pavo?)
- **Solarium** (the Sundial)—Chap. 16 (cross-border; Reticulum/Horologium)

## Single-Sourced Constellations

Certain constellations were introduced on surviving charts—some quite famous and influential—that do not seem to have been adopted or promoted by other authors or cartographers. These tend to be inventions that suited their creators’ need to attract or retain patronage to fund their professional activities. Often these constellations honored specific political figures seen as unpalatable by competitors in other countries and quickly disappeared; others found limited (*Pomum Imperiale*, Chap. 13, and constellations *Honores Frederici*, *Psalterium Georgianum*, *Robur Carolinum*, *Sceptrum Brandenburgicum* and *Taurus Poniatovii* in Volume 1) or even permanent persistence (the modern constellation *Scutum*).

The following figures discussed in this book are best described as single-sourced constellations:

- **The Battery of Volta**—Chap. 3
- **Leo Palatinus** (the Palatine Lion)—Chap. 7
- **Marmor Sculptile** (the Bust of Christopher Columbus)—Chap. 9
- **Pomum Imperiale** (the Imperial Orb of Emperor Leopold I)—Chap. 13
- **Sciurus Volans** (the Flying Squirrel)—Chap. 15

## “Rebranded” Figures

In other cases, some cartographers executed the most brazen move of all by poaching the inventions of others, introducing new figures to try to replace those already in circulation. Although there are a few instances in which these new constellations resulted from what appears to be genuine ignorance, it is clear that some mapmakers deliberately intended to displace existing constellations with new figures of their own creation. A few of the constellations originally introduced by Hevelius and Lacaille (e.g., *Lacerta*, *Pyxis*, *Reticulum*) were prime targets for this activity. These “rebrands” are in part defined by their inevitable failure to catch on. Carried to its logical extreme, the ultimate failed rebrand was Julius Schiller’s attempted Christianization of the night sky in *Coelum Stellatum Christianum* (1627).

The following figures discussed in this book are best described as rebranded constellations:

- **Corona Firmiana** (the Firmian Crown)—Chap. 5 (replacing Corona Borealis)
- **Sceptrum et Manus Iustitiae** (the Sceptre and Hand of Justice)—Chap. 14 (replacing Lacerta)

Finally, note that two special subsets of constellations appearing in the works of Petrus Apianus (sixteenth century) and John Hill (1754) are set off from the others in this book in their own Appendices.



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