

The New Patterns in the Sky

Myths and Legends of the Stars

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Cygnus

The Swan

During the Summer months and early in Autumn, Cygnus, the Swan—also known as the Northern Cross—can be seen fairly high overhead in the Northern Hemisphere. Cygnus, looking like a giant cross lying against the background of the silvery light of the Milky Way, is easy to recognise. To see a swan in this cross does not demand a great deal of imagination. The upright of the cross is the long stretched body of the Swan in flight, with α -Cygni (Deneb) in its tail. I-Cygni is the Swan's heart and β -Cygni, or Albireo, is the head. The cross bar, made up by the stars ζ , ϵ , δ , ν , κ -Cygni, forms the outspread wings of this swan in flight (Figure 95).

There are various stories about the Swan. One legend says that Cygnus was the friend of Phaethon, the mortal son of Helios, who tried to drive the Sun Chariot for one day. Phaethon could not manage the fiery steeds and became a menace along the celestial highway, endangering the heavenly vault and the palaces of the gods as well as the Earth and its inhabitants. Finally, Phaethon was catapulted out of the Sun Chariot by Jupiter himself, and he fell to Earth like a shooting star where he landed in the river Eridanus.

Cygnus could not believe that his faithful friend was dead and did all he could to collect the charred bones from the river bed, so that he could give Phaethon a proper burial. In those days it was believed that, unless the human remains were given a proper resting place, the soul would not have peace in the Underworld but, instead, would roam as a ghost in the Upperworld. So again and again Cygnus dove into the waters of Eridanus until he had collected all the remains of his friend's body. Jupiter and his heavenly host were very moved by the devotion Cygnus showed for his dead friend Phaethon. So, eventually, when Cygnus had given his friend a proper resting place, Jupiter performed a miracle. Cygnus' voice grew thin and reedy; white feathers began to sprout all over his body and webbed membranes started to grow between his toes. Wings came forth from his arms and, where his lips once were, a long beak now protruded. His name was changed from Cygnus to Cygnus, and so the Swan was created. This particular swan was placed in the stars by Jupiter amidst the Milky Way, the scorched path of Phaethon's disastrous ride. The offspring of this swan, however, shunned fire and always stayed in tranquil pools and lakes.

Another story involving the swan is that of the love scene between Jupiter and Leda, the wife of Tyndareus, King of Sparta. One evening,



Figure 95. Cygnus, Cygnus, the Swan, and the Summer Triangle. (B28; Flamsteed, English, ca. A.D. 1729.)

as Leda took a bath in a pool, Jupiter—watching from on high—fell desperately in love with her. He could not wait a moment longer, so he changed himself into a swan and sailed gracefully from Olympus down to the lake and swam up to Leda. He looked to be a magnificent swan of iridescent whiteness. Leda stroked the friendly creature. After a while, Jupiter discarded his disguise and lay with Leda, from which union were born Pollux and Helen. The same night, however, Leda also lay with her own husband, Tyndareus, by whom she became the mother of Castor and Klytannestra. So Castor and Pollux were brothers, but Pollux was immortal whereas Castor was mortal; the difficulties this caused were described under the legend of Castor and Pollux.

In ancient Greece the constellation we now know as Cygnus was known as the Bird (*Opus*). The Romans gave it the more specific title of the Swan. There are other variants of the name of this constellation,

such as the Duck and the Hen. The Swan was Venus' personal bird. In this sense, the Swan could represent the disguised Jupiter who made love to Leda or the boy Cygnus who was transformed into a swan by Jupiter. Early Christians saw in the stars of Cygnus the Cross of Calvary, now known to astronomers as the Northern Cross.

How the Swan provided the down and feathers for Antenteh's tub was described in the story of the Fishes. In the Oriental stories of the Swan described under Lyra, the first stars of Aquila and Lyra, called Altair and Vega, were considered two gods in love. These gods were separated by the Milky Way because they thought more about their own love-making than taking care of their divine duties. Only once a year were they allowed to meet each other, this when the Swan—who in the Far East is called the Magpie—formed a bridge by which the lovers could cross the stream of the Milky Way.

Points of Interest in Cygnus

A-Cygni is a double star with a very high surface temperature, estimated to be approximately 10,000° K. This is a fine white coloured star, called Deneb by the Arabians, but also sometimes called Arided. The distance between this star and Earth is not known for certain, but is estimated to be about 1500 light years. B-Cygni is also a double star, and is called Albireo.

Near the tail of the Swan, in the Milky Way, is a bright cloud of ionised hydrogen with obscured regions, shaped somewhat like the continent of North America. Consequently, this area is referred to as the North American Nebula.

The stars α -, γ -, ϵ -Cygni form three corners of a parallelogram. The fourth corner is the star 61-Cygni. 61-Cygni became famous after 1837 when the Prussian astronomer Friedrich Wilhelm Bessel of Königsberg, for the first time in history, measured the distance of a star from Earth. Bessel reasoned that if you look at, say, a tree, you will see this tree against the background of, perhaps, a distant church. If you now walk to another point a few hundred yards away from your first observation point and look again at the same tree, you will find that the tree is not seen any more against the background of the church but has shifted to, let us say, the background of a distant hilltop. This *apparent* change in the position of an object is called parallax. Bessel attempted to use the parallax of several stars to determine their distance from Earth. The distance of most stars from Earth is so great, however, that a difference of only a few hundred yards between observation points on Earth will produce no apparent shift in the position of the distant stars. Nor will there be any visible shift even if one were to observe a star first from one side of the Earth and then from a point diametrically opposite it on the other side of the Earth. Even the diameter of the Earth's orbit—186,000,000 miles—will not produce an apparent shift in the position of

some stars. Bessel did, however, detect a very small apparent shift in the placement of 61-Cygni. This shift was only 1/260th part of the width of the full Moon, but from this parallax the distance of 61-Cygni from Earth was calculated at about 11 light years.

Meteor showers may be seen coming from κ -Cygni between 9–25 August. There is also another stream in July and August coming from α -Cygni. These streams are named the Cygnids.

Aquila The Eagle

South of the Swan on the eastern bank of the Milky Way lie the stars of the Eagle. The Eagle has always been a bird of kings, and is found frequently on heraldic signs, shields of warriors, banners, and flags. Aquila was Jupiter's bird, the one that can rise highest of all. Aquila's brightest star is α -Aquilae, or Altair, "the Rising One" (Figure 96).

Aquila has carried out many a difficult task for Jupiter. For example, it was the Eagle who swooped down upon Ophiuchus and killed him with one of Jupiter's arrows. On another occasion, when one day Hebe twisted her ankle and could not be hostess at the table of the gods, Jupiter ordered Aquila to fly down to Earth and select the most handsome youth he could find to serve as cup bearer and wine pourer. Aquila

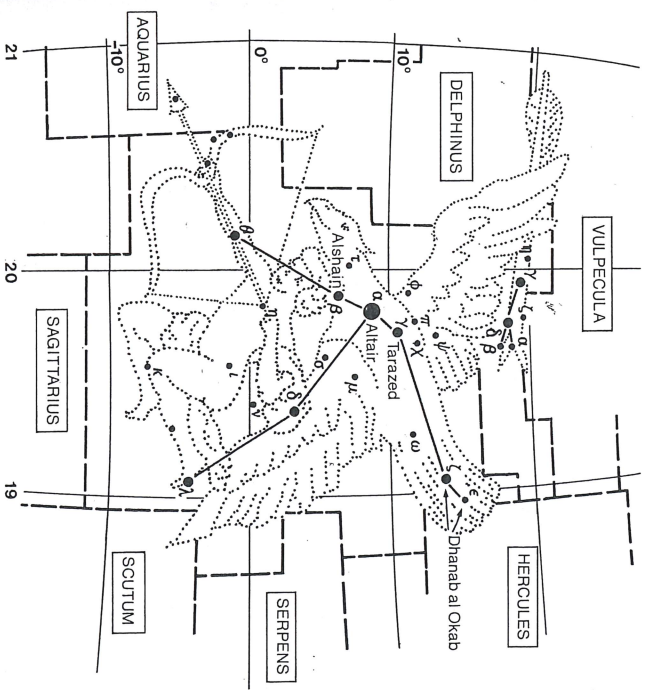


Figure 96. Aquila and Sagitta. Aquila, the Eagle, abducting Ganymede, and Sagitta, the Arrow. (Aquila: A10; Hevelius, Polish, ca. A.D. 1690; Sagitta: A8; Dürer, German, ca. A.D. 1515.)

called down from the Olympus and noticed Ganyমেদে, the son of the King of Troy, who was peacefully tending his father's herds. Aquila hovered overhead and then with great skill dived down, lifted Ganyমেদে in his talons, and flew back to Olympus. So Ganyমেদে was promoted from a royal shepherd to a celestial waiter of the gods of Olympus, where he was accepted as their equal and pleased the eye of all by his manly beauty. Under Aquarius, the Water Carrier, was the story of how Jupiter eternalised Ganyমেদে in the stars of Aquarius, which are located just below the stars of the Eagle. So, the rape of Ganyমেদে is symbolised by these two constellations in the sky.

Aquila also was ordered to carry out the terrible punishment inflicted on Prometheus, one of the Titans, who had managed to conceal secretly a ray of sunlight in the hollow of a reed and take it to mankind. This act gave mortals fire and, of course, meant that mortals could now cook their food, warm their houses, and work iron into weapons. This act and its consequences displeased Jupiter very much. As punishment, the poor Prometheus was chained to the Caucasus Mountains, where the Eagle came to eat his liver every day. Prometheus' liver would grow back but, each day, Aquila came again. This went on until one day Hercules set Prometheus free by killing the Eagle with a poisoned arrow. Jupiter placed the Eagle among the stars in commemoration of his devoted service.

Aquila, the Eagle of Jupiter, frequently is depicted with either both wings closed or one wing stretched out, symbolising the fact that he is falling, mortally wounded.

In Hindu religion Brahma was the creator of the world, Shiva was the destroyer of the world, and Vishnu was the preserver of the world. Vishnu sent his messages to the world through mighty hero-teachers of which Rama, Krishna and Buddha were the greatest. In the stars of Aquila the Hindus saw the footprints of Vishnu, made as he strode through the heavens going about his business (Figure 97A). This asterism also represents Sravana, the Fig Tree, the 23rd Hindu lunar station.

The Jaina of India pictured within part of Aquila a pikolan, or shoulder yoke (β -, α -, γ -Aquila) with two baskets (σ -, μ -Aquila). This type of yoke and basket assembly (Figure 97B) was used to transport agricultural



Figure 97. Aquila. A. The Three Footsteps of Vishnu (F1). B. The Pikolan, or Shoulder Yoke and Baskets (F2).

goods and other merchandise to and from market. This asterism also represents the second Jaina lunar station.

Points of Interest in Aquila

A-Aquila, or Altair, is a brilliant star of approximately the first magnitude located at a distance of about 16 light years from Earth. B-Aquila lies below, and γ -Aquila lies above, Altair. This trio sometimes reminds the observer of the belt stars in Orion. H-Aquila is a variable star with a period of about seven days.

A line drawn from Deneb in the Swan, to Altair in the Eagle, to Vega in the Lyre forms a distinct triangle called the Summer Triangle (Figure 95). This triangle can be seen until late in the Autumn, over the western horizon, until it finally disappears below the horizon towards the end of November.

Sagitta The Arrow

The Arrow which killed Aquila is also to be found in the stars, slightly above the Eagle. Some see the Arrow pointing to the east, others to the west. In conjunction with the story of Aquila it should be seen pointing to the west, aimed at the Eagle. The stars α , β -Sagittae form the two-pointed arrow which was used in the Roman army (Figure 96).

In conjunction with Hercules, who lies west of Aquila, the Arrow is seen to point eastward. The stars α , β -Sagittae then become the feathers of the shaft.

In his *Phaenomena*, Aratus finished describing Sagittarius, the Archer, when he continued:

Further up there is another arrow shot . . . alone without
A bow. By it is the Bird (Cygnus) outspread nearer the
North, but hard at hand, another bird (Aquila) tosses in
Storm, of smaller size but cruel in its rising from the
Sea, when the night is waning and men call it the Eagle
Or storm-bird.

The three birds Cygnus, Aquila and the Vulture (Lyra) are sometimes seen as the Strymphaian birds which Hercules shot with the arrow Sagitta. Then again Sagitta is seen as the arrow which Hercules used to kill the Eagle of Jupiter who daily pecked out Prometheus' liver.

Lyra The Lyre or the Vulture

On the western edge of the Milky Way we find a small compact constellation called Lyra—the Lyre, the Harp, or the Vulture (Figure 98). This constellation includes Vega—a star of great beauty. Blue in colour, Vega is the fourth brightest star in the heavens.

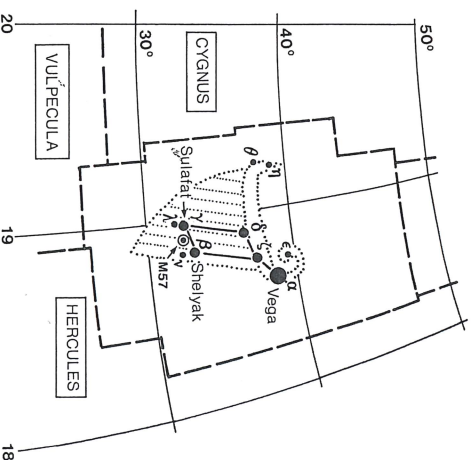


Figure 98. Lyra. The Lyre. (F49; al-Sufi, Persian, 10th Century A.D.)

Mythology tells us that one day Mercury rested by the banks of the Nile when he happened to see an empty tortoise shell. He picked up the shell and toyed with it for a while. Suddenly he noticed hollow echoes coming from the shell while he tapped it. These echoes gave him an idea. Mercury fastened several strings to the shell and, with his magic touch, produced the most exquisite sounds—sounds audible only to the ears of the immortals. Mercury took this lyre with him to Olympus where Apollo became very interested in the instrument. Apollo possessed a staff, called the caduceus, made from three shoots—one shaped into a handle, the other two twisted and intertwined at the top. This staff was an emblem of life and death; it also was supposed to bring wealth and prosperity to the owner and give the owner the power to

fly. Mercury exchanged the lyre for the caduceus. Ever since, with winged sandals and the caduceus in his hand, Mercury has been the swiftest messenger of the immortal gods.

Mercury taught Apollo to play the lyre. Later, Apollo passed the lyre on to his son, Orpheus, and it is always Orpheus with whom we associate the lyre.

On the day that Orpheus married Eurydice, a fatal accident happened. Eurydice stepped on a viper which bit her heel. She died instantly. Orpheus was inconsolable and decided to go to the Underworld and see Pluto, King of the Realm of the Dead, to see if he could retrieve his wife. Orpheus charmed Pluto with his lyre. Also Proserpina and all the spirits of the dead were unable to resist the wonderful music which expressed the sorrow of the bereaved husband. Eventually, they all agreed that Eurydice should be allowed to go to the Upperworld again with Orpheus. Pluto, however, imposed one condition. Orpheus was not to look back until they had left the dim realm of the dead. Agreeing to this condition, Orpheus and Eurydice set out on the journey back to the light of the Earth. But, when they had nearly reached the gate that would lead them to freedom, Orpheus panicked and glanced back for only a fraction of a minute to see if Eurydice was really following. It was too late. He just saw her slide back again into the doom and gloom of Hades, this time forever. No wooing with his lyre could now redeem Eurydice.

The story says that Orpheus roamed the hills and the woods playing his lyre, sweet but sad melodies flowing from the magic tortoise shell. Even the trees and the wild animals came to listen and gathered around him while he played. Many beautiful girls, brought under the spell of his music, tried unsuccessfully to enamour him with their charms. Finally, the rejected girls, furious at this denial of their beauty, swore that they would seek revenge by killing Orpheus. At first they did not succeed because every weapon they used against him, be it knife, arrow, or stone, stopped in midair on hearing the enchanting melodies of Orpheus' lyre. Only when the infuriated girls shrieked so awfully in their madness were the lyre's sweet tones overpowered. The girls then fell upon Orpheus and stabbed him to death. Thereafter they cast the lyre into the river, at which time it gave a discord.

Jupiter, having seen all of this, sent a vulture to scoop the lyre out of the river. The lyre was then placed in the heavens, where it can still be seen today.

The Arabs called part of this constellation Al Naar al Waki, the swooping "Stone Eagle of the Desert." The word Vega, the name of the brightest star in Lyra, derives from this Arab name and means the "Plunging One."

This little constellation is easily seen as a Harp, the four faintest stars just by Vega forming a nice parallelogram depicting the tortoise-shell

instrument. Lyra has also been seen as such diverse objects as a tortoise, clay tablet, vase, etc. (Figure 99).

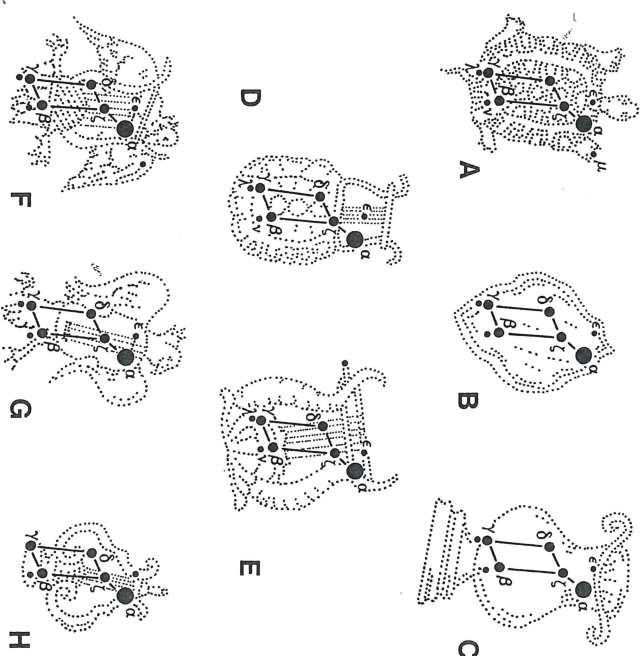


Figure 99. A. The Tortoise (F51; al-Sufi, Persian, 10th Century A.D.) B. The Clay Tablet. (F52; al-Kazwini, Persian, 13th Century A.D.) C. The Vase. (F53; Avenares, Roman.) D. A tortoise-shell lyre (F48). E. A lyre with bull's horns. (F50; Hyginus, Roman, ca. A.D. 1.) F. A lyre with vulture. (F55; Bayer, German, ca. A.D. 1603.) G. A bass viol with vulture. (F54; Dürer, German, ca. A.D. 1515.) H. A lyre. (F56; Flamsteed, English, ca. A.D. 1729.)

In Chinese mythology, Lyra and Aquila are represented by the famous stars of Tchi-niu, the Weaving Princess, and her cowherd lover, Kien-niou. Tchi-niu was the daughter of the Sun God and she was very deft at spinning and weaving. One day she happened to look out through one of the windows of the palace and see her father's herdsman Kien-niou driving the king's flock along the banks of the Milky Way. Their eyes met and, as is fabled to happen so often, they fell in love at first sight.

After a short courtship the king consented to their marriage. Tchi-niu and Kien-niou were very happy together. In fact, they were so happy that they neglected their duties. She forgot all about her loom and he

did not bother to care for the royal herd, which—as a result—strayed all over the heavens. After repeated warnings the king finally decided to banish Kien-niou to the other side of the Milky Way. Tchi-niu pleaded with her father to change his mind, but to no avail. The heavenly gods, however, took pity on the couple. It was decided that once a year, on the seventh day of the seventh month, all the magpies in China should fly to the Milky Way and make a bridge across it with their outspread wings. The lovers could then rush over this bridge, fall into each other's arms, and spend the remainder of the day together. On that day a soft rain—tears of happiness—would fall in the morning. But in the evening the soft rain would turn into a downpour caused by the couple's tears of sadness over having to part for another year. In Figure 100 the princess is seen on one side of the Milky Way and the Cowherd on the other, while the magpies are arriving to begin building the bridge.

Points of Interest in Lyra

A-Lyrae is a beautiful blue star located 25 light years from Earth. Slightly to the left of Vega is ϵ -Lyrae, which can be seen in a pair of binoculars to be a double star, but keen unaided eyesight will also reveal this! A more powerful telescope will show that each of the pair is also a double star; so, ϵ -Lyrae is really a foursome. Z- and δ -Lyrae are also double stars.

B-Lyrae is a double star and, like Algol in Perseus, it has a companion which causes fluctuations in the light of the star. These stars fluctuate with a period of about 13 days.

Between γ and β -Lyrae one can see a wonderful ring nebula, M57, which looks like a misty haze when observed with a small telescope. Very powerful telescopes have discovered a central star within this nebula. On account of their round appearance these ring nebulae are also called planetary nebulae. Study of many hundreds of these planetary nebulae has revealed that they are very large, sometimes a thousand times larger than our solar system. The central star usually is a very hot star (18,000° K or more) and seems to be responsible for the luminescence of the nebulae.

Between 20–22 April, in the early hours of the morning, the annual meteor showers called the Lyrids may be seen.

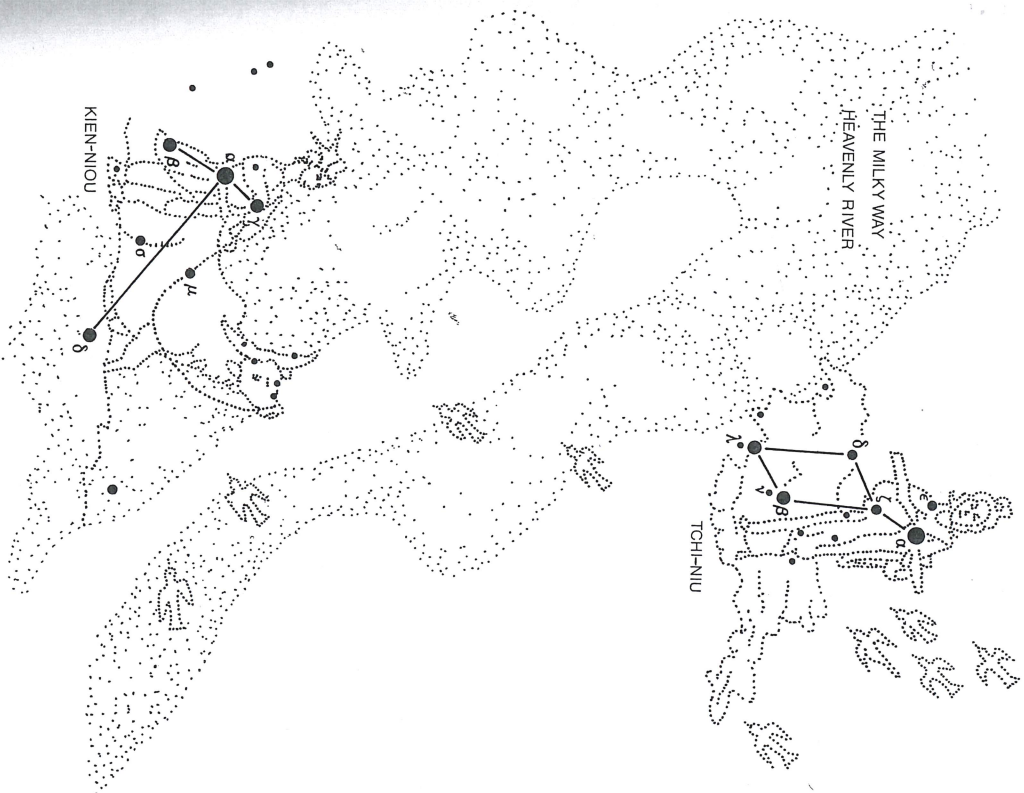


Figure 100. Aquila and Lyra. Tchi-niu, the Weaving Princess, and Kien-niou, the Cowherd, awaiting the annual return of the magpies (C30). Each year, the magpies build a bridge over the Milky Way with their wings so that Tchi-niu and Kien-niou may cross and spend one day together.