

The early Catholics knew it as **Saint Sylvester**; Caesius said that it might represent the prophet **Amos**, the Herdsman, or Shepherd Fig-dresser, of Tekoa; but Weigel turned it into the **Three Swedish Crowns**.

Proctor asserted that Boötes, when first formed, perhaps included even the Crown, as we know that it did the Hunting Dogs; and that, so constituted, it exhibits better than most constellations the character assigned to it. One can readily picture to one's self the figure of a Herdsman with upraised arm driving the Greater Bear before him.

The drawing by Heis, after Dürer, is of a mature man, with herdsman's staff, holding the leash of the Hounds; but earlier representations are of a much younger figure: in all cases, however, well equipped with weapons of the chase, or implements of husbandry; the earliest form of these probably having been the winnowing fan of Bacchus.

The Venetian *Hyginus* of 1488 shows the Wheat Sheaf, Coma Berenices, at his feet; Argelander's *Uranometria Nova* has different figures on its two plates—one of the ancient form, the other of the modern holding the leash of the Hounds in full pursuit of the Bear.

This constellation and the Bear, Orion, the Hyades, Pleiades, and Dog were the only starry figures mentioned by Homer and Hesiod; the latter's versifier, Thomas Cooke, giving as a reason therefor—"the names of which naturally run into an hexameter verse"; but the general assumption that these great poets knew no other constellations does not seem reasonable, although it will be noticed that all those alluded to are identical with each author.

Boötes is a constellation of large extent, stretching from Draco to Virgo, nearly 50° in declination, and 30° in right ascension, and contains 85 naked-eye stars according to Argelander, 140 according to Heis.

Poises Arcturus aloft morning and evening his spear.

Emerson's translation of Hafiz' *To the Shah*.

α , 0.3, golden yellow.

Arcturus has been an object of the highest interest and admiration to all observant mankind from the earliest times, and doubtless was one of the first stars to be named; for from Hesiod's day to the present it thus appears throughout all literature, although often confounded with the Greater Bear. Indeed Hesiod's use of the word probably was for that constellation, except in two cases, already quoted, where he unquestionably referred to this star, mentioning its rising fifty days after the winter solstice, the first allusion that we have to that celestial point. And it is popularly supposed that

our Arcturus is that of the *Book of Job*, xxxviii, 32 ; but there it merely is one of the early titles of Ursa Major, the Revised Version correctly rendering it "the Bear." Still, even now, the *Standard Dictionary* quotes for the star the Authorized Version's

Canst thou guide Arcturus with his sons ?

But, like other prominent stars, it shared its name with its constellation—in fact, probably at first, and as late as Pliny's day, was a constellation by itself. Homer's *Βούτης* doubtless was this, with, possibly, a few of its larger companions ; and Bayer cited **Bootes** for the star ; but in recent times the latter has monopolized the present title.

It was famous with the seamen of early days, even from the traditional period of the Arcadian Evander, and regulated their annual festival by its movements in relation to the sun. But its influence always was dreaded, as is seen in Aratos' *δεινοῦ Ἀρκτοῦροιο* and Pliny's *horridum sidus* ; while Demosthenes, in his action against Lacritus 341 B. C., tells us of a bottomry bond, made in Athens on a vessel going to the river Borysthenes—the modern Dnieper—and to the Tauric Chersonese—the Crimea—and back, that stipulated for a rate of $22\frac{1}{2}$ per cent. interest if she arrived within the Bosphorus "before Arcturus," i. e. before its heliacal¹ rising about mid-September ; after which it was to be 30 per cent. Its acronycal² rising fixed the date of the husbandmen's *Lustratio frugum* ; and Vergil twice made allusion in his 1st *Georgic* to its character as unfavorably affecting the farmers' work. Other contemporaneous authors confirmed this stormy reputation, while all classical calendars³ gave the dates of its risings and settings.

Hippocrates, 460 B. C., made much of the influence of Arcturus on the human body, in one instance claiming that a dry season, after its rising,

agrees best with those who are naturally phlegmatic, with those who are of a humid temperament, and with women ; but it is most inimical to the bilious ;

and that

diseases are especially apt to prove critical in these days.

¹ This was its first perceptible appearance in the dawn after emergence from the sun, then about 10° or 12° away.

² The latest rising visible at sunset.

³ Copies of these calendars, called *ἡμερολόγια*, engraved on stone or brass, were conspicuously exposed in the market-places, and two are supposed to have come down to us,—that of Geminus, 77 B. C., and of Ptolemy, A. D. 140. While these probably in the main were accurate, the allusions to their subjects by the poets and authors generally seem to be as often wrong as right, being based upon observations taken on trust from earlier writers, or from tradition, although by various causes, and especially by the effect of precession, they had become incorrect. Hesiod's statement, in the *Works and Days*, of the heliacal rising of Arcturus is regarded as fixing his own date in history at about 800 B. C.

The Prologue of the *Rudens* of Plautus, delivered by Arcturus in person, and "one of the early opinions of the presence of invisible agents amongst mankind," declares of himself that he is considered a stormy sign at the times of his rising and setting,—as the original has it :

Arcturus signum, sum omnium quam acerrimum.
Vehemens sum, cum exorior, cum occido vehementior.

And the passage from Horace's *Odes* —

Nec saevus Arcturi cadentis
Impetus aut orientis Haedi —

is familiar to all. This same idea came down to modern days, for Pope repeated it in his verse,

When moist Arcturus clouds the sky.

Astrologically, however, the star brought riches and honor to those born under it.

An Egyptian astronomical calendar of the 15th century before Christ, deciphered by Renouf, associates it with the star Antares in the immense sky figure **Menat**; and Lockyer claims it as one of the objects of worship in Nile temples, as it was in the temple of Venus at Ancona in Italy.

In India it was the 13th *nakshatra*, **Svati**, the Good Goer, or perhaps Sword, but figured as a Coral Bead, Gem, or Pearl; and known there also as **Nishtya**, Outcast, possibly from its remote northern situation far outside of the zodiac, whence, from its brilliancy, it was arbitrarily taken to complete the series of Hindu asterisms. Hewitt thinks that it, or Capella, was the **Āryamān** of the *Rig Veda*; and Edkins that it was the **Tistar** usually assigned to Sirius.

The Chinese called it **Ta Kiō**, the Great Horn, four small stars near by being **Kang Che**, the Drought Lake; Edkins further writing of it :

Arcturus is the palace of the emperor. The two groups of three small stars on its right [η , τ , ν] and left [ζ , ϕ , π] are called **She ti**, the Leaders, because they assign a fixed direction to the tail of the Bear, which, as it revolves, points out the twelve hours of the horizon.

The Arabs knew Arcturus as **Al Simāk¹ al Rāmih**, sometimes translated the Leg of the Lance-bearer, and again, perhaps more correctly, the Lofty

¹ This word Simāk is of disputed signification, and was a fruitful subject of discussion a century ago. It is from a root meaning "to raise on high," and is thought to have been employed by the Arabs when they wished to indicate any prominent object high up in the heavens, but with special reference to this star and to the other Simāk, Spica of the Virgin.

Lance-bearer. From the Arabic title came various degenerate forms: **Al Ramec**, **Aramec**, **Aremeah**, **Ascimec**, **Azimech**, and **Azimeth**, found in those queer compendiums of stellar nomenclature the *Alfonsine Tables* and the *Almagest* of 1515; **Somech haramach** of Chilmead's *Treatise*; and **Aramākh**, which Karsten Niebuhr heard from the Arabs 136 years ago. The **Kheturus** of their predecessors, already alluded to under Boötes, also was used for this.

The idea of a weapon again manifested itself in the *Kovrapá-oc*, Javelin-bearer, of the *Graeco-Persian Tables*; while Bayer had **Gladius**, **Kolanza**, and **Pugio**, all applied to Arcturus, which probably marked in some early drawing the Sword, Lance, or Dagger in the Hunter's hand. Similarly it took the title **Alkameluz** of the whole constellation.

Al Hāris al Samā, the Keeper of Heaven, perhaps came from the star's early visibility in the twilight owing to its great northern declination, as though on the lookout for the safety and proper deportment of his lesser stellar companions, and so "Patriarch Mentor of the Train." This subsequently became **Al Hāris al Simāk**, the Keeper of Simāk, probably referring to Spica, the Unarmed One.

Al Birūnī mentioned Arcturus as the **Second Calf of the Lion**, the early Asad; Spica being the First Calf.

It has been identified with the Chaldaeans' **Papsukal**, the Guardian Messenger, the divinity of their 10th month Tibitu; while Smith and Sayce have said that on the Euphrates it was the **Shepherd of the Heavenly Flock**, or the **Shepherd of the Life of Heaven**, undoubtedly the **Sib-zi-anna** of the inscriptions; the star η being often included in this, and thus making one of the several pairs of Euphratean Twin Stars.

The 1515 *Almagest* and the *Alfonsine Tables* of 1521 add to their list of strange titles *et nominatur* **Audiens**, which seems unintelligible unless the word be a misprint for *Audens*, the Bold One.

John de Wiclif, in his translation of *Amos* v, 8, in 1383, had it **Arture**, which he took from the *Vulgate's* Arcturus for Ursa Major; but John of Trevisa in 1398 more correctly wrote:

Arthurus is a signe made of vii starres, . . . but properly Arthurus is a sterre sette behynde the tayle of the synghe that hyght Vrsa maior.

With others it was **Arturis** and **Ariture**, or the **Carlwaynesterre** from the early confusion in applying the title Arcturus to Charles' Wain as well as to Boötes and its *lucida*.

Prominent as this star always has been, and one of the few to which Ptolemy assigned a name, yet its position has greatly varied in the draw-

ings; indeed in the earliest it was located outside of the figure and so described in the *Syntaxis*. It has been put on the breast; in the girdle, whence, perhaps, came Bayer's **Arctuzona**; on the leg; between the knees, — Robert Recorde, the first English writer on astronomy, in 1556 mentioning in the *Castle of Knowledge* the "very bryghte starre called Arcturus, which standeth between Boötes his legges"; and, as some of its titles denote, on the weapon in the hand. But since Dürer's time it has usually marked the fringe of the tunic.

Smyth asserted that this is the first star on record as having been observed in the daytime with the telescope, as it was in 1635 by Morin, and subsequently, in July, 1669, by Gautier and the Abbé Picard, the sun having an elevation of 17° . Schmidt has seen it with the naked eye twenty-four minutes before sunset. While these instances serve to show its brilliancy, yet this was still more evinced when, enveloped in the Donati comet of 1858, and on the 5th of October, only 20' from the nucleus, "it flashed out so vividly its superiority," visible for many hours. And it is somewhat remarkable that this same thing was seen 240 years before in the case of the comet of 1618; at least such is the record of John Bainbridge, "Doctor of Physicke," who wrote:

The 27th of November, in the morning, the comet's hair was spread over the faire starre Arcturus, betwixt the thighs of Arctophylax, or Bootes.

It is interesting to know that the first photograph of a comet was of Donati's, near this star, on the 28th of September, 1858.

Ptolemy specified its color as *ὑπόκιρρος*, rendered *rutilus*, "golden red," in the 1551 *Almagest*; but Schmidt observed, on the 21st of March, 1852, that the star had lost its usual tinge, which it did not regain for several years. This phenomenon was confirmed by Argelander and by Kaiser of Leyden; but generally it has "figured immemorially in the short list of visibly fiery objects." Its rich color, in contrast with the white of Spica, the deeper red of Antares, and the sapphire of Wega, is very noticeable when all can be taken in together, at almost a single glance, on a mid-summer evening.

The Germans know it as **Arctur**; the Italians and Spanish, as **Arturo**. Schiller wrote in the *Death of Wallenstein*:

Not every one doth it become to question
The far off high Arcturus;

but Elkin did so in 1892, his observations resulting in a parallax of $0''.016$,

i. e. insensible, the probable error being much greater than the measured parallax itself.

The star has a large proper motion,¹ given as $2''.3$ annually, which probably has shifted its position southwestward on the face of the sky by somewhat more than 1° since the time of Ptolemy; and great velocity in the line of sight was assigned to it by the earlier spectroscopists, even as high as seventy miles a second; but the later and accordant determinations, at Potsdam by Vogel and at the Lick Observatory by Keeler, reduce this to between 4 and $4\frac{3}{4}$ miles.

Its spectrum is Solar, of Secchi's second type, but with a remarkable mass of dark lines in the violet.

Arcturus culminates on the 8th of June.

β , 3.6, golden yellow.

Nakkar and **Nekkar** are from the Arabic name for the whole constellation.

The Chinese knew it as **Chaou Yaou**, or **Teaou**, words meaning "to beckon, excite, or move."

With γ , δ , and μ , it constituted the trapezium **Al Dhi'bah**, the Female Wolves, or, perhaps, Hyaenas, an early asterism of the Arabs before they adopted the Greek constellation; these animals, with others similar shown by stars in Draco and near it, lying in wait for the occupants of the ancient Fold around the pole.

β marks the head of the modern figure.

γ , 3.1.

Seginus appears on Burritt's *Atlas* from the Ceginus of the constellation.

Manilius termed it *prona Lycaonia*, "sloping towards, or in front of, Lycaon," referring to the Greater Bear, as the star marks the left shoulder of Boötes near to that constellation; and Euripides similarly wrote in his *Ion* of about 420 B. C.:

Above, Arcturus to the golden pole inclines.

Flammarion gives to it the **Alkalurops** that is better recognized for μ . The Chinese called it **Heuen Ko**, the Heavenly Spear.

It is interesting to know that the variable ν is in the telescopic field with γ .

¹ This proper motion of some of the stars, *i. e.* the angular motion across the line of sight, was first detected by Halley, in 1718, from examination of modern observations, especially those of Tycho, on Arcturus, Aldebaran, and Sirius, in comparison with the ancient records.