westward towards the Pleiades,— **Al Ḍaiḳā,** Growing Small, *i. e.* from its rapid setting, and **Kalb al Dabarān,** the Dog of Aldebaran,— asserting that it was considered a place of evil omen. But there seems to have been dispute as to its location, for he added that those authors were wrong who marked this Dog by the 21st and 22d stars of Taurus,— κ and υ.

Aldebaran is but slightly south of the ecliptic, and, lying in the moon's path, is frequently occulted, thus often showing the optical illusion of projection. As one of the lunar stars it is much used in navigation. It is the only star in the *Harvard Photometry* which is exactly of the 1st magnitude, although by the Estimates of that catalogue it is 1.2. It thus has three times the brilliancy of Polaris.

The parallax is given by Elkin as 0″.101, showing a distance from us of twenty-eight light years; or, if the interval between the earth and the sun, the astronomers' unit of stellar measurement, be considered as one inch, that between the sun and this star would be twenty-seven miles. It is receding from our system at the rate of thirty miles a second, and, next to ζ Herculis, seems to have the greatest velocity in the line of sight of any of the bright stars yet determined. The spectrum is Solar, and a beautiful example of the type.

Aldebaran comes to the meridian on the 10th of January. It has a 10th-magnitude companion, 109″ away, which has long been known, but Burnham recently divided this into 11 and 13.5, 1″.8 apart, at a position angle of 279°; and, in 1888, discovered a 14th-magnitude companion 31″.4 distant, at a position angle of 109°.

The **Taurids** of the 20th of November radiate from a point north of, and preceding, this star. These meteors "are slow, and fireballs occasionally appear among them."

*

The Hyades marked by the sailor.
Potter's translation of Euripides' "Ion."

As when the seaman sees the Hyades
Gather an army of Cimmerian clouds,
Auster and Aquilon with winged steeds.
Christopher Marlowe's *History of Doctor Faustus.*

The Hyades,

α, θ^1, θ^2, γ, δ, and ε Tauri, 10° southeast of the Pleiades,

Whitening all the Bull's broad forehead,

form one of the most beautiful objects in the sky, and have been famous for ages, especially with the classical authors.

Digitized by Google

Mythologically they were daughters of Atlas and Aethra, and hence half-sisters of the Pleiades, with whom they made up the fourteen Atlantides; or the Dodonides, the nymphs of Dodona, to whom Jupiter entrusted the nurture of the infant Bacchus, and raised them to the sky when driven into the sea by Lycurgus. Similarly they were said to be the Nysiades, the nymphs of Nysa, and teachers of Bacchus in India.

Anciently supposed to be seven in number, we moderns count but six, and Hesiod named only five,— Kleea, Eudora, Koronis, Phaeo, and Phaesula; but Pherecydes gave a complete list of them, although one of his names has been lost, and the rest, preserved by Hyginus, vary from those given by Hesiod, and doubtless are somewhat corrupted in form. These were Aesula or Pedile, Ambrosia, Dione, Thyene or Thyone, Eudora, Koronis, and Polyxo or Phyto.[1] Pherecydes probably took in β and ζ at the tips of the horns, omitting some of the fainter stars now included in the group; Thales, however, is said to have acknowledged but two,— α and ε in the eyes,— "one in the Northern Hemisphere, and the other in the South"; Hipparchos and Ptolemy named only α and γ as Ὑάδων; Euripides, in the *Phaëthon*, counted three; and Achaeus, four. Ovid used **Thyone** for the whole, but none of the sisters' names have been applied to the individual stars as in the case of the Pleiades.

They are among the few stellar objects mentioned by Homer,— and by him, Hesiod, Manilius, Pliny, and doubtless others, given separately from Taurus. Pliny called them **Parilicium,** from their *lucida*, Aldebaran.

The Greeks knew them as Ὑάδες, which became "Hyades" with the cultured Latins, supposed by some to be from ὗειν, "to rain," referring to the wet period attending their morning and evening setting in the latter parts of May and November; and this is their universal character in the literature of all ages. Thus we have *Hyades Graiis ab imbre vocat* of Ovid's *Fasti*; *pluviasque Hyadas* of the *Aeneid* and of Ovid again; and *pluviae* generally, which Manilius expressed in his

> Sad Companions of the turning Year.

While far back of all these, in the *She King:*

> The Moon wades through Hyads bright,
> Foretelling heavier rain.

Pliny wrote of them as being "a violent and troublesome star causing stormes and tempests raging both on land and sea"; in later times Edmund Spenser called them the **Moist Daughters**; Tennyson, in his *Ulysses*, said:

> Thro' scudding drifts the rainy Hyades vext the dim sea;

[1] Grotius has much information as to their titles in his *Syntagma Arateorum*.

Digitized by Google

and Owen Meredith has "the watery Hyades" in *The Earl's Return*. The queer old *Guide into Tongues* of John Minsheu, calling them the **Seven Stars,**—the only instance of this title that I have met for this group,—makes still more intimate their connection with the showers; for at its word *Hyades* the reader is referred to the word *Raine*, where we see:

Hyades, *ὑάδες*, dictae *stellae quaedam* in cornibus Tauri; *quae ortu occasuq.* sus pluvias largosque imbres *concitant.*

And in Doctor Johnson's *Dictionary* the word is defined as "a watery constellation." Thus they have always been considered most noteworthy by husbandmen, mariners, and all who were dependent upon the weather, even to the last two or three centuries.

Ovid called them **Sidus Hyantis,** after their earthly brother, Hyas, whose name, after all, would seem to be the most natural derivation of the title: and it was their grief at his death which gave additional point to Horace's *tristes Hyadas*, and, in one version of their story, induced Jove to put them in the sky.

But their colloquial title among the Roman country-people was **Suculae,** the Little Pigs, as if from *Sus*, Sow, the Greek Ὗς, Homer's Σῦς, which indeed might as well be the derivation of Ὑάδες as *ὗειν*. This name constantly occurs in astronomical literature from the time of Columella and Pliny to Kepler, Hevelius, and Flamsteed; Pliny accounting for it by the fact that the continual rains of the season of their setting made the roads so miry that these stars seemed to delight in dirt, like swine! And this idea, trivial though it seems, was sufficiently prevalent for Cicero, a century before Pliny, to think worthy of contradiction in his *De Natura Deorum*. Smyth said that the title might come from the resemblance of the group to a pig's jaws; or because Aldebaran and its companion stars were like a sow with her litter. Peck suggests, in his *Dictionary of Classical Literature and Antiquities*, that Suculae was the oldest Roman name, given before the Greek appellation was known, and to be compared with our popular stellar titles such as the Dipper, Charles' Wain, etc. Isidorus traced it to *sucus*, "moisture," a pleasanter derivation, and possibly more correct, than that held in ancient Italy. This will account for Bayer's **Succidae.**

Bassus and others knew the group as *ὑ-ψιλόν*, the symbol with Pythagoras for human life; and the **Roman V,** as it resembles those letters,—α and ε being the extremes, γ at the vertex. But Ulug Beg's translator wrote:

Quinque stellae quae sunt in facie, in forma Lambdae Graecorum et formā roi Dāl.

In the *Alfonsine Tables* we find **Lampadas,** the accusative plural of Lampada, a Torch.

Digitized by Google

Occasional Arabic titles were **Al Mijdaḥ**, a Triangular Spoon, and **Al Ḳilāṣ**, the Little She Camels, referring to the smaller stars in distinction from Aldebaran, the Large Camel; Al Ferghani wrote the word **Ḳalā'iṣ**. These Little Camels appeared in one Arabic story as driven before the personified Aldebaran, in evidence of his riches, when he went again to woo Al Thurayya, the Pleiades, who previously had spurned him on account of his poverty. Another author made the word **Al Ḳallāṣ**, the Boiling Sea, so continuing in Arabia the Greek and Roman ideas of its stormy and watery character. Generally, however, in that country, the Hyades were **Al Dabarān**, which was adopted in the 1515 *Almagest*, as well as in the *Alfonsine Tables* of 1521, where we read *sunt stellae aldebaran*, specially referring to the star γ "of those in the face." The Arabic title, therefore, was identical with that of the 2d *manzil*, which these stars constituted, as they also did the 2d *nakshatra*, **Rohinī**, Aldebaran marking the junction with the adjacent Mrigaçīrsha.

The Hindus figured this asterism as a **Temple**, or **Wagon**; and there are many astrological allusions to it in the *Siddhāntas*, the collective term for the various standard astronomical books of that people.

The Chinese utilized it for their 2d *sieu*, **Pi**, or **Peih**, anciently **Pal**, a Hand-net, or a Rabbit-net, but included λ and σ; although some limited this station to ε, the farthest to the north. The *She King* thus described it:

Long and curved is the Rabbit Net of the sky;

but with that people generally it was the **Star of the Hunter**, and, with the astrologers, the **Drought Car**. This title, however, was inappropriate, for the Hyades seem to have been as closely identified with rain in China as in Greece or Rome,—indeed were worshiped as **Yŭ Shĭ**, the General, or Ruler, of Rain, from at least 1100 B. C. Still this character was not native, but must have been derived from western Asia, where the early rains coincided with the heliacal rising of these stars, which was not the case in China by nearly two months. The adjacent small stars, with ξ, were **Tien Lin**, the Celestial Public Granary; and the whole group was known as the **Announcer of Invasion on the Border**.

The Hyades have been identified with the scriptural **Mazzārōth**, but there is little foundation for this; even less than for their identification, by Saint Jerome and by Riccioli, with the **Kīmāh** of the *Book of Job*, ix, 9.

Anglo-Saxon titles are **Raedgastran**, **Raedgasnan**, and **Redgaesrum**, whatever these may mean; and the **Boar-Throng** which that people saw in the sky may have been this group rather than Orion as generally is supposed.

It is thought that the Hyades have a united proper motion towards the

Digitized by Google

west. They are rich in doubles and full of interest to the owners of even small glasses.

β, Double, 2.1 and 10, brilliant pure white and pale gray.

El Nath is from **Al Nāṭiḥ,** the Butting One, because located on the tip of the northern horn, 5° from ζ, similarly placed on the southern. This title also appears for Aries and its star Hamal.

Bayer said that many included it and ζ in the Hyades group, but this seems improbable, although Pherecydes had it thus.

β Tauri is identical with γ Aurigae, and has been considered as belonging to either constellation; Burritt's *Atlas* calling it **Aurigae** or **El Nath.** As a member of Auriga it lies on the left ankle, and was the Arabians' **Ḳabḍ al 'Inān,** usually translated the Heel of the Rein-holder.

Smyth, who is often humorous amid his exact science, referring to the position of this star at the greatest possible distance from the hoof, says: "Can this have given rise to the otherwise pointless sarcasm of 'not knowing B from a bull's foot'?"

With Capella and other stars in Auriga it was the Chinese **Woo Chay,** a Fire-carriage.

In Babylonia it was **Shur-narkabti-sha-iltanu,** the Star in the Bull towards the North, or the Northern Star towards the Chariot,— not our Wain, but the Chariot of Auriga,— and marked the 6th ecliptic constellation. The sun stood near this star at the commencement of spring 6000 years ago.

Among the Hindus it represented **Agni,** the god of fire, and commonly bore that title; as also the similar **Hutabhuj,** the Devourer of the Sacrifice.

Astrologers said that El Nath portended eminence and fortune to all who could claim it as their natal star.

It has a Sirian spectrum, and is receding from us at the rate of about five miles a second.

Between it and ψ Aurigae was discovered on the 24th of January, 1892, the now celebrated *nova* Aurigae that has occasioned so much interest in the astronomical world.

γ, 4.2, yellow.

Hyadum I is generally seen for this, and, synonymously, **Primus Hyadum,** or, more correctly, as with Flamsteed, **Prima Hyadum;** but this was not original with him, for long before it evidently was an Arabic designation, as Al Achsasi had **Awwal al Dabarān,** the First of the Dabarān.

Hipparchos described it as ἐν τῷ ῥύγχει, "in the muzzle," still its location at the vertex of the triangle.

Digitized by Google