central passage[1] of the Great Pyramid of Cheops (Knum Khufu) at Ghizeh, in 30° of north latitude, as also from the similar points in five other like structures; and the same fact is asserted by Sir John Herschel as to the two pyramids at Abousseir.

Herschel considered that there is distinct evidence of Thuban formerly being brighter than now, as its title from its constellation, and its lettering, would indicate; for with Bayer it was a 2d-magnitude,— in fact the only one of that brilliancy in his list of Draco,— and generally so in star-catalogues previous to two centuries ago. It culminates on the 7th of June.

β, probably Binary, 3 and 14, yellow.

Rastaban and **Rastaben** are from **Al Rās al Thu'bān,** the Dragon's Head,—Schickard's **Raso tabbani.**

In early Arab astronomy it was one of **Al 'Awāīd,** the Mother Camels, γ, μ, ν, and ξ completing the figure, which was later known as the **Quinque Dromedarii.** From the Arabic word comes another modern name, **Alwaid,** unless it may be from a different conception of the group as **Al 'Awwād,** the Lute-player. Still other Desert titles were **Al Rāḳis,** the Dancer, or Trotting Camel, now given to μ; and it formed part of **Al Ṣalīb al Wāki',** the Falling Cross, β and ξ forming the perpendicular, γ, μ, and ν the transverse; and thus designated as if slanting away from the observer to account for the paucity of stars in the upright.

Asuia, current in the Middle Ages and since, was from Al Shujā', and often has been written **Asvia,** the letter *u* being mistakenly considered the early *v*. The companion, 4″ away, at a position angle of 13°.4, was discovered by Burnham.

β and γ, 4° apart, near the solstitial colure, have been known as the **Dragon's Eyes,** incorrect now, although Proctor thought them so located in the original figuring of a front view of Draco. Modern drawings place them on the top of the head.

In China they were **Tien Kae.**

γ, Double, 2.4 and 13.2, orange.

Eltanin, also written **Ettanin, Etannin, Etanim, Etamin,** etc., is from Ulug Beg's **Al Rās al Tinnin,** the Dragon's Head, applied to this, as it also

[1] This passage, 4 feet by 3½ feet in diameter and 380 feet long, was directed northward to this star, doubtless by design of the builder, from a point deep below the present base, at an inclination of 26° 17′ to the horizon. At the time of its building, perhaps four millenniums before our era, the Southern Cross was entirely visible to the savage Britons.

is to *a*; Riccioli wrote it **Ras Eltanim.** The word Tinnin is nearly synonymous with Thu'bān, and Bayer mentioned **Rastaben** as one of its titles, the Alfonsine **Rasaben,** and now **Rastaban** in the *Century Cyclopedia*; but in early Arabic astronomy it was one of the Herd of Camels alluded to at *β*.

Firuzabadi referred to a Rās al Tinnīn and Dhanab al Tinnīn in the heavens, the Dragon's Head, and Tail; but these have no connection with our Draco, reference being there made solely to the ascending and descending nodes in the orbits of the moon and planets known to Arabian astronomers under these titles. Primarily, however, these were from India, and known as Rahu and Kitu. This idea seems to have originated from the fact that the moon's undulating course was symbolized by that of the stellar Hydra: and had the latter word been used instead of "Dragon," the expression would now be better understood. But it was familiar to seamen as late as the 16th century, for "the head and tayle of the Dragon"[1] appears in Eden's *Dedication*, of 1574, to Sir Wyllyam Wynter; and even now the symbols, ☊ for the ascending node and ☋ for the descending, are used in text-books and almanacs.

γ has been a notable object in all ages. It was observed with a telescope by Doctor Robert Hooke in the daytime in 1669 while endeavoring to determine its parallax, but his result afterwards was found to be due to the effect of aberration. Subsequently this star was used by Bradley for the same purpose, although unsuccessfully; but, on the other hand, it gave him his great discovery of the aberration of light,[2] of which Hooke of course was ignorant.

Millenniums before this, however, it was of importance on the Nile, as it ceased to be circumpolar about 5000 B. C., and a few centuries thereafter became the natural successor of Dubhe (*a* Ursae Majoris), which up to that date had been the prominent object of Egyptian temple worship in the north. *γ* was known there as **Isis,** or **Taurt Isis,**—the former name applied at one time to Sirius,—and it marked the head of the Hippopotamus that was part of our Draco. Its rising was visible about 3500 B. C. through the central passages of the temples of Hathor at Denderah and of Mut at Thebes; Canopus being seen through other openings toward the south at the same date. And Lockyer says that thirteen centuries later it became the orientation point of the great Karnak temples of Rameses and Khons at Thebes, the passage in the former, through which the star was

[1] The nodical month also is called the Dracontic, or Draconitic.

[2] The date of this discovery has been variously given as from 1726 to 1729, although it was first called to Bradley's attention on the 21st of December, 1725, by an unexplained discordance in his observations; but it took some time for him to complete this explanation.

observed, being 1500 feet in length; and that at least seven different temples were oriented toward it. When precession had put an end to this use of these temples, others are thought to have been built with the same purpose in view; so that there are now found three different sets of structures close together, and so oriented that the dates of all, hitherto not certainly known, may be determinable by this knowledge of the purpose for which they were designed. Such being the case, Lockyer concludes that Hipparchos was not the discoverer of the precession of the equinoxes, as is generally supposed, but merely the publisher of that discovery made by the Egyptians, or perhaps adopted by them from Chaldaea.

He also states that **Apet, Bast, Mut, Sekhet,** and **Taurt** were all titles of one goddess in the Nile worship, symbolized by γ Draconis.

It is interesting to know that the Boeotian Thebes, the City of the Dragon, from the story of its founder, Cadmus, shared with its Egyptian namesake the worship of this star in a temple dedicated, so far as its orientation shows, about 1130 B. C.: a cult doubtless drawn from the parent city in Egypt, and adopted elsewhere in Greece, as also in Italy in the little temple to Isis in Pompeii. Here, however, the city authorities interfered with this star-worship in one of their numerous raids on the astrologers, and bricked up the opening whence the star was observed.

γ lies almost exactly in the zenith of Greenwich, in fact, has there been called the **Zenith-star**; and, being circumpolar, descends toward the horizon, but, without disappearing, rises easterly, and thus explains the poet's line:

the East and the West meet together.

It was nearer the pole than any other bright star about 4000 years ago.

Its minute companion, 21″ distant, at a position angle of 152°, was discovered by Burnham.

δ, 3.1, deep yellow,

is the **Nodus secundus** of several catalogues, as marking the 2d of the four Knots, or convolutions, in the figure of the Dragon.

Al Tizini called it **Al Tāis,** the Goat, as the prominent one of the quadrangle, δ, π, ρ, and ε, which bore this title at a late period in Arabic indigenous astronomy; although that people generally gave animal names only to single stars. The **Jais,** which is found in various lists, maps, and globes, would seem to be a typographical error, or an erroneous transliteration of the original Arabic. δ also may have been one of Firuzabadi's two undetermined stars **Al Tayyasān,** the Two Goatherds.