Starry Gemini hang like glorious crowns
Over Orion's grave low down in the west.
Tennyson's *Maud*.

α, Binary, 2.7 and 3.7, bright white and pale white.

Castor, Ovid's **Eques,** the Horseman of the Twins, and the mortal one as being the son of Tyndarus, is the well-known name for this star, current for centuries; but in later Greek days it was Ἀπόλλων, and **Apollo** with the astronomers even through Flamsteed's time.

It will be remembered that till toward the Christian era this name for the god of day was the title of the planet Mercury when morning star,[1] its rapid orbital movement and nearness to the sun preventing its earlier identification with the evening star,[1] which was designated, as now, after the god of thieves and darkness. In Percy's *Reliques* Mercury is described as "the nimble post of heaven"; Goad, in 1686, called it

a squirting lacquey of the sun, who seldom shows his face in these parts, as if he were in debt;

while this same quick motion induced the alternative word of the chemists for quicksilver, as well as for the very uncomfortable human temperament that Byron described:

a mercurial man
Who fluttered over all things like a fan.

Notwithstanding, however, the supposed difficulty of seeing Mercury,— Copernicus died regretting that he had never observed it, although this was doubtless partly due to his high latitude and the mists arising from the Vistula at Thorn,— the canon Gallet, whom La Lande styled Hermophile, saw it 100 times, and Baily said that Hevelius observed it 1100 times! Indeed, it is easily visible in the latitude of New York City for several days, at its elongation, if one knows where to look for it.

But to return to our star Castor.

It was Ἀπέλλων in the Doric dialect, which degenerated into **Afelar, Aphellon, Aphellan, Apullum, Aphellar,** and **Avellar;** the **Avelar** of Apian[2] of the 16th century subsequently appearing as **Anelar,** the Alfonsine **Anhelar.**

1 As morning and evening star in Egypt it was Set and Horus; in India, Buddha and Rauhinya; and in Greece Ἑρμείς, the Lovely One, and Στιλβων, the Sparkling One. Its earliest observation, reported by Ptolemy as from Chaldaea, was on the 15th of November, 265 B. C., the planet then being between β and δ Scorpii.

2 This Apian was Pieter Bienewitz, whose surname was Latinized, after the fashion of his day, into Apianus; *apis*, our word *bee*, taking the place of the German *biene*.

Caesius had the synonymous **Phoebus**, and also cited **Theseus**, but this should rather be applied to β as another title of the original Hercules. Bayer gave **Rasalgeuze**; and Riccioli, **Algueze** *vel potius* **Elgiautzi**, but these also better belong to β.

The Babylonians used Castor to mark their 11th ecliptic constellation, **Mash-mashu-Mahrū**, the Western One of the Twins; while with Pollux the two constituted **Mas-tab-ba-gal-gal**, the Great Twins. In Assyria they were **Mas-mas** and **Tuāmu**, the Twins, although that country knew other twin stars here as well as elsewhere in the sky. As an object of veneration Castor was **Tur-us-mal-ma**χ, the Son of the Supreme Temple; but in astrology, everywhere, it has been a portent of mischief and violence.

When the Arabians adopted the Greek figures they designated this star as **Al Rās al Taum al Mukaḍḍim**, the Head of the Foremost Twin; but, according to Al Tizini, the early and indigenous term was **Al Awwal al Dhirā'**, the First in the Paw or Forearm. Reference was made by this to the supposed figure of the enormous early Lion, the nomads' **Asad**, the Outstretched Forearm of which α and β marked as **Al Dhirā' al Mabsuṭāt**. This extended still further over Gemini, the other, the Contracted one, **Al Maḳbūḍah**, running into Canis Minor. The rest of this monstrosity included Cancer, part of our Leo, Boötes, Virgo, and Corvus, as was mentioned by Kazwini, and commented on by Ideler, who sharply criticized mistakes in its construction. Al Bīrūnī also described this ancient figure, especially complaining of the many errors and much confusion in the Arab mind as to the nomenclature of the two stars, although he himself used titles for them generally applied only to Sirius and Procyon. Ideler and Beigel attributed this exaggerated and incongruous formation to blunders of misunderstanding and transcription by early writers and copyists. Indeed, the former asserted that the whole was the creation of grammarians who knew nothing of the heavens, and arbitrarily misrepresented older star-names.

The two bright stars were the 5th *manzil*, **Al Dhirā'**, and the 5th *nakshatra*, **Punarvasū**, the Two Good Again; Aditi, the sky goddess, mother of the Adityas, being the presiding divinity, and β marking the junction with Pushya, the next *nakshatra*. They also constituted the 5th *sieu*, **Tsing**, a Well, or Pit, anciently **Tiam**, although this was extended to include ε, d, ζ, λ, ξ, γ, ν, and μ, Biot making the last the determinant star.

α and β also were a distinct Chinese asterism, **Ho Choo**, and with γ and δ were **Pih Ho**.

As marking lunar stations, Brown thinks them the Akkadian **Supa**, Lustrous; the Coptic **Pimafi**, the Forearm; the Persian **Taraha**, the Sogdian **Ghamb**, and the Khorasmian **Jiray**,— these last three titles signifying the

Two Stars. Hyde wrote that the Copts knew it as Πμάι, or Πμάιντεκεων, the Forearm of the Nile; κεων being for Gihon, a name for that river.

Castor is 7° north of the ecliptic, but, although literally heading the constellation, is now fainter than its companion, and astronomers generally are agreed that there has been inversion of their brilliancy during the last three centuries. It culminates on the 23d of February.

It is among

> those double stars
> Whereof the one more bright
> Is circled by the other,

viewed by the Self-indulgent Soul of Tennyson's *Palace of Art;* and Sir John Herschel called it the largest and finest of all the double stars in our hemisphere; while the rapid revolution of its two components first convinced his father of the existence of binary systems. But Bradley had already noticed a change of about 30° in their angle of position between 1718 and 1759, and "was thus within a hair's breadth of the discovery of their physical connection," afterwards predicted, in 1767, by the Reverend John Michell, and positively made in 1802 by Sir William Herschel, who coined the word "binary" now applied to this class of stars. Burnham wrote in 1896 that we have only 36 pairs whose orbits can be said to be well determined, and about 230 other pairs probably binary systems; and there are 1501 other pairs, within 2″ of space between the components, from which the foregoing number may be increased; as well as other pairs now known only as having a common proper motion.[1] Of course the stars observed till now have been almost entirely in the northern heavens,— within 120° of the pole,—so that these numbers may be largely added to as astronomers turn their attention to the southern skies with this object in view.

The orbit of Castor is such, however, that the observations of even a century do not enable us to calculate its size or period with any certainty; but the period certainly is long,—probably between 250 and 1000 years. The components at present are about 5″.7 apart, equal to the angle subtended by a line an inch long at the distance of half a mile. Their position angle is about 227°.

The spectrum is of the Sirian type, and, according to the Potsdam observers, the star is approaching us at the rate of 18.5 miles a second. In 1895 Belopolsky announced that the larger star, like Spica, is a spectro-

[1] In a note from Professor Burnham, of the 19th of July, 1898, in regard to these figures, he says: "The statements I made a couple of years ago about binary systems will hold good generally at this time. . . . So far as well-determined orbits are concerned, I do not think anything could be added to the estimate I made."

scopic binary, completing its revolution in less than three days around the centre of gravity between it and an invisible companion, with a velocity of about 15½ miles a second.

Burnham thinks that the 9.5-magnitude star, 73″ distant, forms, with the two larger, one vast physical system.

In 1888 Barnard found five new nebulae within 1° of Castor.

β, 1.1, orange,

is **Pollux,** formerly **Polluces,** the Greek Πολυδευκής; Ovid's **Pugil,** the Pugilist of the Two Brothers, and the immortal one as being son of Zeus.

As companion of Ἀπόλλων, this was Ἡρακλῆς and Ἡρακλέης, descending to Flamsteed's day as **Hercules,** and degenerating, in early catalogues, into **Abrachaleus,** that Caesius derived from the Arabic Ab, Father, and the Greek word; this being contracted by some to **Aracaleus,** by Grotius to **Iracleus,** by Hyde to **Heraclus,** and by Riccioli to **Garacles.** All these are queer enough, as are some of Castor's titles; but what shall be said of Riccioli's **Elhakaac,** that he attributes to the Arabs for α and β jointly, and **Ketpholtsuman** for β alone, and with no clue to their origin!

It was the early Arabs' **Al Thānī al Dhirā',** the Second in the Forearm; but the later termed it **Al Rās al Taum al Mu'ah·h·ār,** the Head of the Hindmost Twin, and **Al Rās al Jauzā',** the Head of the Twin,—the Alfonsine **Rasalgense** and **Rasalgeuze,** that elsewhere is **Rasalgauze.** Riccioli cited **Elhenaat,** but this he also more properly gave to γ.

β was the determinant of the 12th Babylonian ecliptic asterism **Mash-mashu-arkū,** the Eastern One of the Twins; and individually **Mu-sir-kes-da,** the Yoke of the Inclosure.

It lies 12° north of the ecliptic, the zodiac's boundary line running between it and Castor; and Burnham has found five faint companions down to 13.5 magnitude.

Elkin gives its parallax as 0″.057; and Scheiner, its spectrum as Solar; its rate of recession from us being about one mile a second.

It is one of the lunar stars made use of in navigation; and, in astrology, differed from its companion in portending eminence and renown.

Ptolemy characterized β as ὑπόκιρρος, a favorite word with him for this star-tint, and generally supposed to signify "yellowish" or "reddish," Bayer correctly following the former in his *subflava;* but the *Alfonsine Tables* of 1521 translated it *quae trahit ad aerem, et est cerea.* Miss Clerke, somewhat strongly, says "fiery red."

The two *lucidae* probably bore the present title of the constellation long