

away. It will then recede in favor successively of γ , π , ζ , ν , and α of Cepheus, α and δ of the Swan, and Wega of the Lyre, when, marked by this last brilliant star, 11,500 years hence the pole will be about 50° distant from its present position and within 5° of Wega, which for 3000 years will serve as the pole-star of the then existing races of mankind. The polar point will thence circle past ι and τ Herculis, θ , ι , and α Draconis, β Ursae Minoris, and κ Draconis back to our α again; the entire period being from 25,693 to 25,868 years, according to different calculations.¹ Shakespeare did not know all this when he wrote in *Julius Caesar*:

constant as the Northern Star,
Of whose true fixed and resting quality
There is no fellow in the firmament.

Its distance from us has been variously estimated from 36 to 63 light years, and it is receding from our system at the rate of about 16 miles a second. The spectrum is Sirian.

The $9\frac{1}{2}$ -magnitude companion, $18''.6$ distant, is a good test for a $2\frac{1}{4}$ -inch glass with a power of 80. This was discovered by Sir William Herschel in 1779, and may be in revolution around its principal. Its present position angle is 215° . Other minute stars can be seen with a field-glass in the vicinity; and the Messrs. Henry of Paris have charted by photography 1270 stars, within 1° of the pole, where previously only about 80 were known by telescopic observation. α itself is slightly fainter than β .

While Polaris is the nearest naked-eye visible to the true pole, Smyth mentioned a nebula, now known as N. G. C. 3172, much nearer in 1843, and from its proximity called **Polarissima**; while nearer still was a 10th-magnitude star bearing the warlike title **Blücher**, then within $2'$ of the exact point. Poole's *Celestial Handbook* says of some unidentified star:

Anonyma — Double: magnitudes 7.5 and 9; distance $2'$; it is the nearest to the pole.

β , 2, reddish.

Kochab is from the Arabic title that it shared with α ; and it perhaps was this star that the Greek astronomers called Πόλος, for it was near the pole 1000 years before our era. Burritt has **Kochab**.

Alrucaba, variously written, is also common to it and Polaris, as well as to its constellation, Smyth saying that this was the *Alfonsine Reiochabba*.

¹ This uncertainty in the period of the cycle of precession mainly arises from the fact that the circle is not a strictly closed one, owing to the slight motion of the pole of the ecliptic due to the action of the planets upon the orbit of the earth.

Nā'ir al Farkadāin and **Anwār al Farkadāin**, the Bright One, and the Lights, of the Two Calves, were titles in the Desert for this star, from an early figure here, in the Fold, of these timid creatures keeping close to their mother. β was often designated by pre-Islamitic poets as the faithful and, from its ever visible position, the constant companion of the night traveler. Indeed the Badāwiyy claimed that they had a perpetual treaty with **Al Farkad** to this effect, and their poets made the **Two Pherkads**, β and γ , symbols of constancy. Chilmead cited **Alferkathan**.

α , β , γ^1 , γ^2 , δ , and ϵ constituted the group **Circitores, Saltatores, Ludentes, or Ludiones**, the Circlers, Leapers, or Dancers around the early pole, well known from classical times to late astronomy.

In China β was another **Ti**, the Emperor.

Its spectrum is Solar, and the star is receding from us at the rate of $8\frac{3}{4}$ miles a second.

$$\gamma^1, 3.3, \text{ and } \gamma^2, 5.8.$$

These were known by the Arabs as one star, **Alifā' al Farkadain**, the Dim One of the Two Calves, but by us as **Pherkad Major** and **Pherkad Minor**, 57 minutes of arc apart.

With β and others they were the **Dancers**, and with β alone the **Guards**, or **Wardens, of the Pole**, that old Thomas Hood said were

of the Spanish word *guardare*, which is to behold, because they are diligently to be looked unto, in regard of the singular use which they have in navigation ;

and Recorde,

many do call the **Shafte**, and others do name the **Guardas** after the Spanish tonge.

While Eden, in the *Arte of Navigation* which he "Englished out of the Spanyshe," in 1561, from Martin Cortes' communication to King Charles V, mentioned "two starres called the **Guardians**, or the **Mouth of the Horne**"; and still earlier, in his translation of Peter Martyr, "the **Guardens of the north pole**." Shakespeare, in *Othello*, wrote :

The wind-shak'd surge, with high and monstrous mane
Seems to cast water on the burning Bear,
And quench the guards of th' ever fixed pole.

Riccioli's title for them is **Vigiles**, to which he added

Italicē le **guardiole**, overso **guardiane**.

These Guards, like the stars in Charles' Wain, were a timepiece to the