

Two-Page Bites of Astronomical Lore

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(Fig.1 is appended as 3rd page online. For paper-copy handouts it is this very page's flipside.)
[Basis of *Griffith Observer* 83.5:1-11, 2019 May.]

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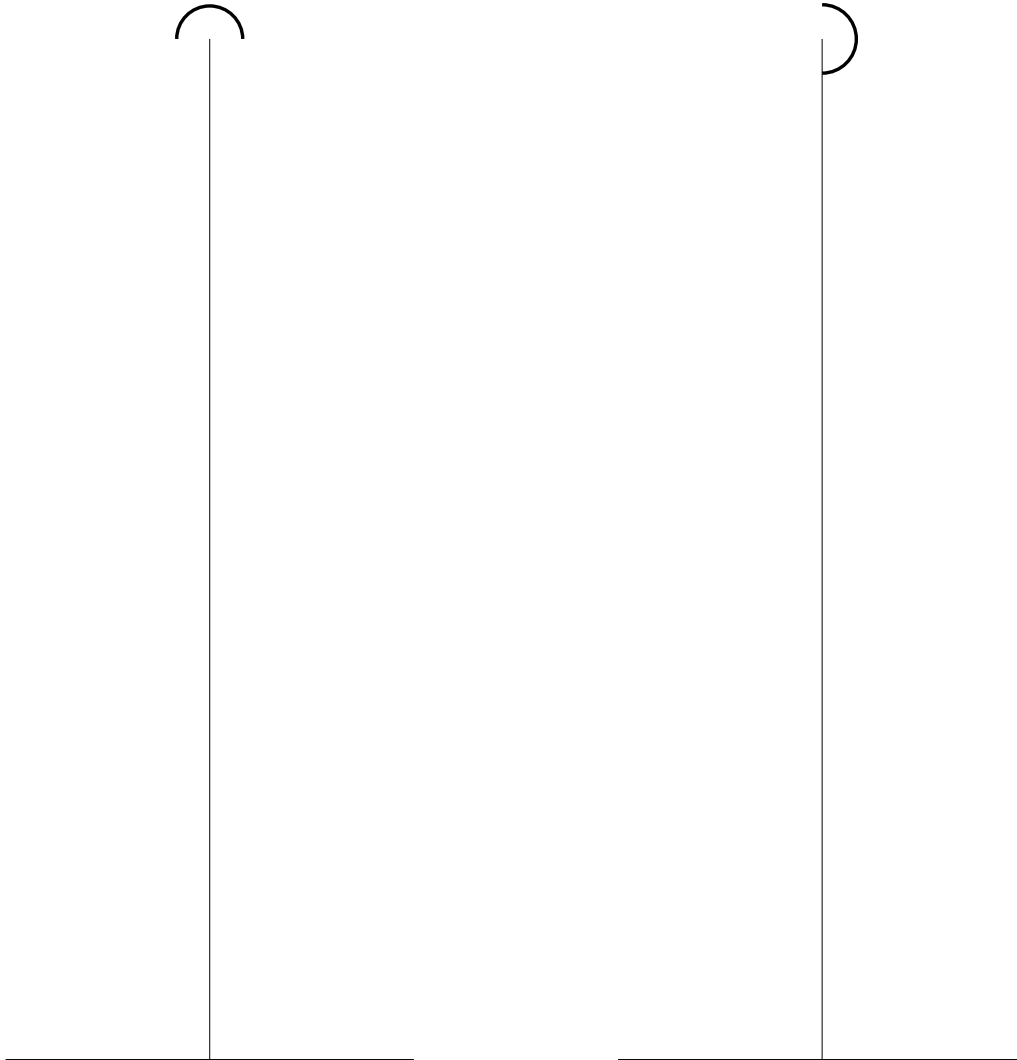


Figure 1: The Great Pyramid's geographical latitude L is $29^{\circ}58'.7$. So if we include the effect of $1'.7$ of atmospheric refraction, the Celestial North Pole as seen from the Great Pyramid (and both of the other two Giza pyramids) is above the horizon's North point (azimuth 0°) by $30^{\circ}00'$, within c.2 parts in 10000 (www.dioi.org/dr.pdf, §E2 considers if the coincidence is meaningful). In both left&right diagrams of the northern sky as seen from Giza at night, the horizon is the horizontal line at bottom. Perpendicular to the horizon in each diagram is 30° of the Giza meridian — from the horizon to the Celestial Pole. And each diagram bears a dark semi-circle centered on the Pole, depicting the counter-clockwise 12^{h} path of one of the two circumpolar stars here considered, whose respective start&endpoints obviously differ by 90° . The left diagram's half-circle marks the night path of star $10i$ Dra (magnitude 4.61) around the Pole from 18^{h} to 6^{h} Local Apparent Time on $-2612/1/10-11$, the Winter Solstice, when night's length is the year's greatest, and the interval cited is almost-entirely in full darkness or Astronomical Twilight. (Extremal solar altitude [18^{h} & 6^{h}] $h_S = -11^{\circ}.7$, near enough to Astron.Twilight's -12° bound.) The radius of $10i$ Dra's semi-circular arc is $0^{\circ}58'$, so (dividing by $\cos 30^{\circ}$) the star oscillates $1^{\circ}07'$ in azimuth. The diagram on the right shows the semi-circular night path of star 11α Dra or Thuban (magnitude 3.65) around the Pole 6^{d} later, $-2612/1/16-17$, from 18^{h} to 6^{h} LAT (extremal $h_S = -11^{\circ}.6$, again about -12°). The radius of 11α Dra's semi-circle is $1^{\circ}03'$, which swings it as far east as $1^{\circ}13'$ in azimuth, en route from $1^{\circ}03'$ below 30° altitude to same above. Both stars were visible from Giza throughout their semi-circular paths: see R.Tousey & M.Koomen, *Journal of the Optical Society of America* 43.3:177-183 (1953/3).