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of night is the complement of this arc up to half a revolution—God is all-knowing.

## CHAPTER EIGHT

### On Determining Degrees of Transit, Rising, and Setting

[1] The degree of transit of any [celestial] part is that degree of the zodiacal orb that transits the meridian along with that part. The degree of rising is that degree that rises with [that part], and the degree of setting is that degree that sets with it. When that part has no latitude, the degree of true position will be exactly the degree of transit, rising, and setting. However, if that part has latitude and is also on the solstitial colure, it transits the meridian circle at the degree of true position. If it is not on the solstitial colure, its degree is one of two kinds: it is either between the first of Capricorn and Cancer or between the first of Cancer and Capricorn.

[2] If [the part] is in the first half, at the time its degree [of transit] crosses [the meridian], the pole of the zodiacal orb is in the direction of the local latitude in the western half. Therefore, one half of the latitude circle that crosses through two parts of the zodiacal orb on the meridian is northwesterly, and one half is southeasterly. This being so, parts whose latitudes are northerly cross the meridian before the degree [of transit], and parts whose latitudes are southerly transit the meridian after the degree.

[3] In the second half [of the zodiacal orb], it will be the opposite: the pole of the zodiacal orb is on the eastern side, and [one] half of the latitude circles crossing parts on the zodiacal orb that are on the meridian is northeasterly and [the other] half is southwesterly. Thus, those whose latitudes are northerly cross after the degree, and those whose latitudes are southerly cross before the degree. It is likewise at the equator: of those between the first of Capricorn and Cancer, the

northerly cross before the degree and the southerly after the degree; for those between the first of Cancer and Capricorn, it is the opposite.

[4] As for degrees of rising and setting, wherever the pole of the zodiacal orb is on the horizon, at that time the degree of all that rise or set is its degree of rising or setting. When one pole of the zodiacal orb is above the Earth, the rising of every star in the direction of that pole is before the degree, and [its] setting is after the degree. This is because from that direction when a latitude circle is imagined passing through the two points of the ascendant and descendant, the half that is above the Earth will be in the direction of the visible pole; thus, every part in that direction either will have risen before the degree or will not yet have set. The half below the Earth will be in the direction of the invisible pole, and parts in that direction either will have set before the degree or will have not yet risen. The rising and setting of parts at the equator are like their transits of the meridian, because the horizon at the equator is one of the meridian circles—God is all-knowing.

## CHAPTER NINE

### On Determining Day and Night, Dawn and Dusk, Unequal and Equal Hours, etc.

[1] Since day and night arise from the motion of the equinoctial, and the Sun moves in the opposite direction, therefore the period of one nychthemeron, which is from the Sun reaching a given point until it reaches that point a second time by the diurnal motion, is one revolution of the equinoctial plus the Sun's motion. Since the Sun's motion is not uniform, and the rise of parts on the zodiacal orb with parts of the equinoctial are not in conformity, differences occur in the periods of nychthemérons from two aspects: one due to the difference in the diurnal courses of the Sun, and the other due to the difference between equal degrees and degrees of co-ascension. Therefore, a mean