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the direction of visible [pole]. On that day, the [Sun] will be at the zenith. and no shadow falls. In all other times that a shadow falls, it is in the direction of visible pole. When that solstice is at mid-heaven and at the zenith, the zodiacal circle coincides with the circle of the initial azimuth. Therefore, in these localities, every point whose day-circle is between the two poles of the equinoctial and the zodiacal orb is permanently visible or permanently invisible, while all other day-circles have both [periods of] visibility and invisibility.

[6] These characteristics, and other ones that we are going to mention, are common for the northern habitations and southern habitations. The winter and summer of these two sides alternate, i.e., when it is summer in the north, it is winter in the south and vice versa. The other two seasons are like this too. Places in the south whose latitude is equal to the obliquity are hotter than the ones whose latitude is equal to the obliquity in the north, because of the [place of] apogee and perigee, as we have mentioned. Some of the practitioners of this science call such localities the “combust way,” because there is no place hotter than those on the surface of the Earth. These are the characteristics of these localities—and God is all-knowing.

#### CHAPTER FOUR

##### On the Characteristics of Localities Whose Latitude Is Greater than the Obliquity, up to Where It Is Equal to the Complement of the Obliquity

[1] In these localities, all the day-circles of the zodiacal orb pass on one side of the zenith, and no part of the zodiacal orb reaches the zenith. The two poles of the zodiacal orb have two day-circles, one visible and one invisible. The [visible] pole in its day-circle has two extreme altitudes: one the highest altitude and the other the lowest altitude, at both of which times it will be on the meridian circle; the

invisible pole is the same. The Sun's greatest altitude will be at [one] solstice point, and its lowest [altitude] at the other solstice. All other conditions pertaining to day and night, the[ir] length and shortness, the circumstances of shadows, and the revolution of the equinoctial are as were stated in the previous chapter. The intersection of the zodiacal orb and the horizon is never at right angles.

[2] The greater a town's latitude, the higher the visible pole of the equinoctial and the larger the permanently visible and permanently invisible day-circles, up to where the town's latitude is equal to the complement of the obliquity. Thus, the permanently visible day-circle will be tangent to one solstice, and the permanently invisible day-circle will be tangent to the other solstice. The pole of the zodiacal orb reaches the zenith once every revolution, and that is when the solstice is tangent to the horizon. Thus, one solstice is permanently visible, and one solstice is permanently invisible. [Then] daylight increases until it is the entire day, and for one nychthemeron the Sun will not set, but will become tangent to the horizon at the point of intersection between the meridian and the horizon, and [then] it will rise again. Likewise, nighttime increases until [the day] becomes entirely night, and for one nychthemeron the Sun will not rise, but will become tangent to the horizon, and [then] it will go back [down]. Once every nychthemeron the horizon circle and the circle of the zodiacal orb coincide with one another, and in one stroke half of the zodiacal orb [i.e., its equator] rises, and the other half sets. Therefore, one half of the zodiacal [equator] rises in a nychthemeron, and one half in one stroke. If the visible pole is northerly, that half between Capricorn and Cancer will rise in one stroke; and if the visible pole is southerly, [then] the other half [will rise in one stroke]. The [celestial] parts that rise and set are those parts whose distance from the equinoctial is less than the obliquity. Other celestial parts neither rise nor set—God is all-knowing.