

Provisional translation of Ptolemy's *Phaseis*.
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Phases of Fixed Stars and Collection of Weather Changes

In the specialized composition on this subject we have worked out at length:

- [1] how many distinctions subsist concerning the phases of the fixed stars, and
- [2] on account of what causes, and
- [3] what kind of observations we ought to presuppose for the particular demonstrations and
- [4] by means of which theorems [we ought] to work out the rest, that is:
 - [4a] with which degrees of the circle through the middle of the signs each of the fixed stars in question has its simultaneous culmination for all localities and has its simultaneous rising and simultaneous setting for each of the habitations, and moreover
 - [4b] how great are the arcs by which must the sun be distant below the earth [i.e. the horizon] at the phases both on the great circle described [through the poles of the horizon?] and on the circle through the middles [of the signs], and how many degrees [along the ecliptic] it [i.e. the sun] must be from it [i.e. the horizon], on the basis of which the times for each are obtained.

We first set out for each *clima* all the aforesaid quantities of the different [arcs] that produce risings and settings of fixed stars of the first and second magnitude in the 5 *climata* that we have assumed, which are about the middle of our *oikoumene* and differ from one another by half-hour [gradations of longest day].

The first of these [counting] from the south we take as the one described through Syene and Berenike and generally through those places where the longest day is 13 ½ hours. Second, the one described through Aelius [?] Egypt, which is also a little south of Alexandria and Cyrene and in general through those places where the longest day is 14 equinoctial hours. Third *clima*, the one described through Rhodes and in general through those places where the longest day is 14 ½ equinoctial hours. Fourth *clima*, the one described through the middle of the Hellespont and in general through those places where the longest day is 15 equinoctial hours. Fifth *clima*, the one described through Aquileia and Vienna and in general through those places where the longest day is 15 ½ equinoctial hours.

Here for convenience we will set out those times of phases that have practical application, for which sake it was necessary to make a prior working out of the computations also of all those other [phases], and [this] only for the more noteworthy bright fixed stars, along with the weather-changes that have been observed by our

predecessors at the phases. First, we will say a few words about the phases themselves and the application of the particular comparative observations.

By "phase" of a fixed star we mean its first or last apparent configuration taken with respect to the sun and the horizon, and it gets this name from this [i.e. *phasis* etymologically derived from *phaino*]. Among the configurations assumed in this manner, there are four kinds that are more significant; for they all involve positions of the sun and the star relative to each other and to the two semicircles of the horizon, the one to the east and the one to the west. The position of the fixed stars on either of the semicircles is signified more commonly as "east" and "west," and that of the sun [is signified] according to the particular character of the times exhibited by it as "morning" and "evening." Hence whenever we find both the star and the sun at the eastern semicircle, we call such a configuration commonly morning rising; and again whenever [we find] both at the western [semicircle], we call this configuration evening setting. And if they are conversely situated, whenever we conceive of the star at the eastern semicircle and the sun at the western one, we call such a configuration evening rising, and whenever contrariwise [we conceive of] the sun at the eastern [horizon] and the star at the western one, we call this configuration morning setting.

Again for each of the four configurations with which we are concerned there are two primary kinds. We call some of them "true," and others "apparent." And in more general terms, true ones are all those that have not only the star but also the sun right at the horizon precisely, whereas apparent ones are all those that have the star right at the horizon but the sun below the earth, but not simply so but either before the actual rising or after the actual setting. More specifically for each of the configurations, they call it a true morning rising whenever the star and the sun simultaneously rise, and a true evening rising whenever the star rises simultaneously with the sun setting, and true morning setting whenever the star sets simultaneously with the sun rising, and true evening setting whenever the star and the sun simultaneously set. And again [they call it] an apparent morning rising whenever the star is seen rising before the rising of the sun, and apparent evening rising whenever the star is seen rising after the setting of the sun, and apparent morning setting whenever the star is seen setting before the rising of the sun, and apparent evening setting whenever the star is seen setting after the setting of the sun.

In the case of the true configurations it was the case that one pays attention to the positions not only of the stars but also of the sun, since [the sun] too is situated right on the horizon. But in the case of the apparent ones, insofar as we use this terminology without qualification, [one does] not any longer [pay attention to] the sun's [positions] at all; for it is possible for morning and evening risings and settings of the stars to be seen on many days at different intervals of the sun below the earth, as if the times in question are subject to some variation. For this reason neither of the configurations that have been described so far ought to be called "phases." For a phase is a revelation of a configuration that is at the same time well defined and visible, but among those under consideration the true ones result in the times themselves being invisible, and the apparent ones [result in] the positions of the sun [being invisible]. Hence when we no longer take the apparent ones in this careless and random manner but further define them as the first or last of the risings and settings, then they will possess the characteristic of a phase since now the position for the sun is also unique, where it is when the stars can first or last be seen rising and setting. And according to this sort of definition, on the parallels that we have

specified and generally so long as the horizon intersects the tropics, the morning rising phase is the first of the visible risings, and the evening rising phase is the last of the visible risings of the star, and again the morning setting phase is the first of the visible settings of the star, and the evening setting phase is the last of the visible settings of the star.

In the case of the fixed stars near the circle through the middles of the signs itself, the order of the phases follows the described pattern. In the time from the morning rising until the evening rising the stars are seen rising and not setting; [in] the [time] between the evening rising and the morning setting they are seen, but not rising or setting; [in] the [time] from the evening setting until the morning rising they are not seen at all. These stars, when they disappear for some time, we call "rising" and "hidden," and we call their morning rising simply "rising," and the evening setting simply "hiding." But when they are visible for some time without either rising or setting, they call them "curtailed-travelling."

In the case of the stars that are a sufficient distance from the [circle] through the middles [of the signs] to the north or south, sometimes there is a permutation of the described order at one of the syzygies, and one of the aforesaid characteristics is observed after its place, and the opposite [characteristic] is simultaneously permuted into its place. Thus for [stars] that have their position south of the [circle] through the middle [of the signs] the evening setting is observed anticipating the morning rising, and the property of "risings" and "hidings", [which is] again that they totally disappear for the time between these two phases, [no longer applies to them]. And the morning setting conversely sometimes anticipates the evening rising, so that the property of the "curtailed-travelling" [stars] no longer applies to them; but the [property] of what are called "night-travelling" [applies to them], since for the time from the morning setting until the evening rising they are seen both rising and setting and travelling the whole of the hemisphere above the earth since they rise after the setting of the sun and set before its rising.

Contrariwise, for stars that have their position north of the [circle] through the middles [of the signs] the evening rising is observed anticipating the morning setting and the property of the "curtailed-travelling" [stars], [which is] again that for the time between these two phases they are seen, but not rising or setting, [no longer applies to them]. And the morning rising often anticipates the evening setting by the fact that the property of the disappearing and rising and hiding [stars] does not apply any longer to them, but [rather] the [property] of the [stars] that are called "year-visible," since they for the time from the morning rising until the evening setting they can be seen setting after the setting of the sun, and rising before its rising; such [stars] are also called "both-sides-visible."

Hence it should be noticed in the list that the [stars] reported as rising and setting belong to the "disappearing" [stars], while those [that are reported as] merely having morning rising or evening setting [belong to] the "year-visible" and "both-sides-visible" [stars], and likewise those [that are reported as] having evening rising anticipating morning setting [belong to] the "curtailed-travelling" [stars], and conversely those [that are reported as having] morning setting [anticipating] evening rising [belong to] the "night-travelling" [stars].

This would be a more or less sufficient coverage of the topic of the variations and order of the phases for our present purpose. We have used our local calendrical system

for the year [i.e. the civil Egyptian or "Alexandrian" calendar] because of the fact that the annual surplus [of the year over a whole number of days] is provided in the intercalary days [occurring] every four years so that [this calendar] can represent the same phases on the same-numbered days for the most part for a long time. Hence we set out each of the days [counting] from the first day of Thoth, and we subscribe in the appropriate order, so far as possible, the phases effected on them for certain of the established *climata*, writing before each phases the number of equinoctial hours comprised in the longest day or night on the parallel on which [the phase] occurs to indicate the *clima*. We also subscribe the weather-changes of the environment observed by the ancients at the solar positions [that are in effect] on the days in question, not however supposing that these are free from variation and certain to happen, but for the most part and insofar as none of the other causes, which are numerous, obstructs. For we must consider that the conditions of the airs are affected indeed by the stated configurations of the fixed stars relative to the sun, just as [they are affected] by the course of the sun by itself at the solstices and equinoxes, but the total causation of what occurs does not reside in them, but the moon and the five planets also contribute a great deal to the outcome of the things that are going to be effected. The moon assumes control for the most part of the weather-changes instead of the days of the [stellar] phases themselves at its own configurations relative to the sun, while again the five planets work together with the qualities of the predictions in accordance with the mixtures and commensurabilities of their specific natures, just as one can see that the stages of the seasons themselves also sometimes turn out punctually and sometimes tardily on account of the intervals of the syzygies of the sun and moon and their qualities more the most part extend more or less on account of the supervenient courses of the planets.¹

Hence it is well to approach investigations of the weather-changes and in general of such predictions, in the first place guessing at the causation arising from them and not attributing everything to them, moreover considering that the weather-changes among the records prove to have been observed differently in different lands, and in many places not occurring in similar circumstances, either because of the very character of the lands or because of the fact that the same phases do not take place on the same days everywhere. Secondly, so far as is possible [one should] take into account also the other causes, and inspect the courses of the planets that are set out in the ephemerides, so that we can adjust the dates of the weather-changes in accordance with the [dates] of the approximate half-moon phases and especially with the [dates] before conjunction and full moon and furthermore with the [dates] of the crossings of the sun into the twelve zodiacal signs around these same phases. [And we should adjust] the qualities in accordance with the nature of [whichever] of the five planets is most in significant configuration, [i.e.] the star of Venus contributing towards warming the circumstances, that of Saturn towards cooling, that of Jupiter towards moistening, that of Mars towards drying, and that of Mercury towards setting in motion and windiness, taking into consideration also their opposing influences with respect to oppositions in the mixtures.

But one should pardon the fact that we have not incorporated some of the dimmer stars that are named by the more ancient [authorities] either in the treatise on this subject itself or here, e.g. Sagitta, the Pleiades, the Haedi, Vindematrix, Delphinus, and any

¹ Omitting *tautas*.

other such [constellation], since the fault is not grave, especially since the last and first appearances of such small stars are absolutely difficult to judge and observe, and one might remark that our predecessors handled them more by guesswork than by observation of the actual phenomena. Moreover [one should forgive this omission] because, given that our initial intention extended as far as the fixed stars of the first and second magnitude for the reason given, the use of such only of the [stars] of lower magnitude rather than all seems to me at least to be hard to justify, since the weather-changes recorded for them [i.e. in connection with their phases] have an unclear causation because of the instability of their dates, and they should [therefore] more appropriately be transferred to the phases of the brighter stars around the same time, e.g. those [associated with] Sagitta and Delphinus to the [phases] of the bright star in Aquila, those [associated with] Vindemiatrix to those of Arcturus and Spica, those [associated with] the Pleiades and Haedi to Capella and the Hyades, since each of these [brighter stars] has a magnitude such that one could believe that it can effect some change in the environment, and the time of the phase is secure and has a definite determination, and these are things that would not appear, at least to people who prefer not to make up stories, to exist for the dim [stars], though some might chance to arise out of [the combined effect of] many [dim stars]. Rather, one would not even properly call their first or last appearances "morning" or "evening," since the distance of the sun below the horizon is much greater for them than the [distances] projected at the times themselves of morning and evening.

Now that these supplementary remarks have been made, we shall at this point set down by itself the list, which is as follows:

Thoth.

1. 14 ½ hours: the one on the tail of Leo rises. Hipparchus: Etesians cease. Eudoxus: rains, thunders, Etesians cease.
2. 14 hours: the one on the tail of Leo rises, and Spica is hidden. Hipparchus: weather-change.
3. 13 ½ hours: the one on the tail of Leo rises. 15 hours: the one called Capella rises in the evening. Egyptians: Etesians cease. Eudoxus: shifting winds. Caesar: wind, rain, thunders. Hipparchus: Apeliotes blows.
4. 15 hours: the last one of Eridanus sets in the morning. Callippus: stormy and etesians cease.
5. 13 ½ hours: Spica is hidden. 15 ½ hours: the bright one of Lyra sets in the morning. Metrodorus: bad condition of air. Conon: Etesians diminish.
6. 15 ½ hours: the bright one of the southern claw [of Libra] is hidden. Egyptians: mist and scorching or rain or thunder. Eudoxus: wind, thunder, bad condition of air. Hipparchus: wind, southerly.
7. Metrodorus: bad condition of air. Callippus, Euctemon, Philippus: bad condition of air and disorder of air. Eudoxus: rain, thunders, shifting wind.
8. Egyptians: rains, storm at sea or Notos. Caesar: shifting winds, rains, and Etesians cease.
9. 14 hours: the bright one of Cygnus sets in the morning. Egyptians: Zephyros or Argestes blows.

10. 13 ½ hours: the bright one of Perseus rises in the evening. Philippus: bad condition of air. Dositheus: stormy.
11. Egyptians: weather-change.
12. 15 hours: the bright one of the southern claw [of Libra] is hidden.
13. Dositheus: unwholesome condition of airs.
14. 14 ½ hours: the one called Canopus rises. Caesar: northerlies cease blowing.
15. Eudoxus: southerly winds.
16. Callippus and Conon: weather-change.
17. 14 ½ hours: the bright one of Cygnus sets in the morning, and the bright one of the southern claw [of Libra] is hidden, and the last one of Eridanus sets in the morning. Eudoxus: northerlies cease. Metrodorus: weather-change. Democritus of Abdera: weather-change, and the swallow vanishes.
18. 15 ½ hours: the one at the knee of Sagittarius is hidden. Egyptians: rains, weather-change, beginning of autumn, the swallow vanishes. Dositheus: southerlies. Euctemon: beginning of autumn.
19. 15 ½ hours: the bright one of Piscis Australis rises in the evening. Hipparchus: bad condition of air and rains at sea and beginning of autumn.
20. Caesar: beginning of autumn, and the swallow vanishes. Metrodorus: rains at sea and bad condition of air.
21. 14 hours: the bright one of the southern Claw [of Libra] is hidden. 15 hours: the one on the trailing shoulder of Auriga rises in the evening. Egyptians: Zephyros or Lips, late in the day Apeliotes. Eudoxus: middle of autumn.
22. 14 ½ hours: the one called Antares is hidden. Egyptians: Zephyros or Argestes and showers. Eudoxus: southerlies.
23. 14 ½ hours: the one called Capella rises in the evening. 15 ½ hours: Arcturus rises in the morning. Egyptians: showers and wind, weather-change. Callippus and Metrodorus: rains.
24. 13 ½ hours: the one common to Pegasus and Andromeda sets in the morning.
25. 13 ½ hours: the bright one of the southern claw [of Libra] is hidden. 15 hours: the bright one of Cygnus sets in the morning. Egyptians: Zephyros or Notos and thunderstorm through the day.
26. 15 hours: Arcturus rises in the morning. Eudoxus: rain. Hipparchus: Zephyros or Notos.
27. 14 hours: the one common to Pegasus and Andromeda sets in the morning, and the last one of Eridanus sets in the morning.
28. Autumnal equinox. Egyptians and Eudoxus: weather-change.
29. 14 hours: the one called Antares is hidden. 14 ½ hours: Arcturus rises in the morning. Euctemon: weather-change. Democritus: rain and disorderliness of winds.
30. 14 ½ hours: the one common to Pegasus and Andromeda sets in the morning. Euctemon and Philippus and Conon: weather-change.

Phaophi.

1. Egyptians: Zephyros or Notos. Hipparchus: weather-change.

2. 15 hours: the one common to Pegasus and Andromeda sets in the morning. 15 ½ hours: the bright one of the northern claw [of Libra] is hidden. Eudoxus and Euctemon: weather-change. Hipparchus: Notos or Zephyros.
3. 14 hours: Arcturus rises in the morning. 15 ½ hours: the bright one of Cygnus sets in the morning.
4. 15 hours: the bright one of the northern claw [of Libra] is hidden. Egyptians and Callippus: stormy, bad condition of air. Euctemon and Philippus: rain.
5. 15 ½ hours: the one common to Pegasus and Andromeda sets in the morning. Eudoxus: rain. Euctemon: stormy. Metrodorus: rain.
6. 13 ½ hours: Arcturus rises in the morning, and the last one of Eridanus sets in the morning. 14 ½ hours: the bright one of the northern claw [of Libra] is hidden, and the one called Antares is hidden. 15 ½ hours: the bright one of Corona Borealis rises in the morning. Egyptians and Caesar: storm, rain, thunders, lightnings.
7. 13 ½ hours: Spica rises. 14 hours: the one called Capella rises in the evening, and the bright one of the northern claw [of Libra] is hidden. Egyptians: rains, stormy. Eudoxus: rain and changing wind. Dositheus: weather-change.
8. 13 ½ hours: the bright one of the northern claw [of Libra] is hidden. 14 ½ hours: the one on the trailing shoulder of Auriga rises in the evening, and Spica rises. Democritus: stormy, season of sowing.
9. 15 ½ hours: Spica rises. Egyptians: Borrás blows.
10. 15 hours: the bright one of Corona Borealis rises in the morning. Hipparchus: Notos.
11. 15 hours: the one at the knee of Sagittarius is hidden.
12. 15 hours: the one called Antares is hidden. Egyptians: Zephyros or Lips. Eudoxus: weather-change. Hipparchus: Apeliotes.
13. [no entries]
14. Dositheus and Eudoxus: weather-change.
15. Egyptians: Argestes, rain.
16. 14 ½ hours: the bright one of Corona Borealis rises in the morning. Eudoxus: northerlies or southerlies. Dositheus: changing wind. Callippus: weather-change. Caesar: disorderly wind, rain, thunders.
17. 13 ½ hours: the one called Antares is hidden. Egyptians: Boreas or Lips. Eudoxus: weather-change.
18. 13 ½ hours: Arcturus sets in the evening.
19. Eudoxus: changes of winds, thunders.
20. 14 hours: the one on the trailing shoulder of Auriga rises in the evening. Hipparchus: Notos or Boreas.
21. 13 ½ hours: the one called Capella rises in the evening.
22. 14 hours: the bright one of Corona Borealis rises in the morning. Egyptians: Zephyros or Notos through the day, rain. Dositheus: weather-change.
23. [no entries]
24. 14 ½ hours: the one called Canopus sets in the morning.
25. Egyptians: disorderly winds.
26. 14 hours: Arcturus sets in the evening. Eudoxus: weather-change. Caesar: Boreas blows.

27. 13 ½ hours: the bright one of Corona Borealis rises in the morning. 14 ½ hours: the one at the knee of Sagittarius is hidden. Egyptians and Callippus: weather-change.

Euctemon and Callippus: unwholesome condition of air, at sea great storm.

28. 13 ½ hours: the one on the trailing shoulder of Auriga rises in the evening.

Metrodorus: weather-change [?]. Euctemon and Callippus: mixture of air, and at sea stormy.

[no entry for 29.]

30. Egyptians: strongly stormy.

Hathyr.

1. 13 ½ hours: the bright one of the southern claw [of Libra] rises.

2. 14 ½ hours: the bright one of the southern claw [of Libra] rises. 15 hours: the same.

Egyptians: weather-change. Dositheus: stormy. Democritus: chill or frost. Hipparchus: dense Notos.

3. 13 ½ hours: the bright one of the northern claw [of Libra] rises. 15 ½ hours: the bright one of Lyra rises in the morning. Euctemon and Philippus: great wind blows.

4. 14 hours: the bright one of the northern claw [of Libra] rises. 14 ½ hours: Arcturus sets in the evening. Egyptians: Notis or Lips. Callippus and Euctemon: strong winds. Caesar and Metrodorus: winds, stormy.

5. 14 ½ hours: the bright one of the northern claw [of Libra] rises.

6. 14 hours: the one at the knee of Sagittarius is hidden. Conon and Eudoxus: unwholesome condition of winds. Callippus: unwholesome condition of airs. Caesar and Hipparchus: Notos or chilly Borrás.

7. 14 hours: the bright one of the Hyades rises in the evening. Egyptians: furious Notos. Meton: Zephyros. Eudoxus: Boreas or Notos. Metrodorus: unwholesome condition of air. Euctemon and Philippus and Hipparchus: rain.

8. 13 ½ hours: the bright one of the Hyades rises in the evening. Callippus: rains. Euctemon: weather-change.

9. 15 ½ hours: the one common to Eridanus and the foot of Orion sets in the morning. Egyptians: storm, rain.

10. 14 hours: the one called Canopus sets in the morning. Egyptians: Notos or Zephyros. Dositheus: storm.

11. 15 hours: the bright one of Lyra rises in the morning. Meton: squally rain.

Hipparchus: chilly Argestes.

12. 15 hours: Arcturus sets in the evening, and the one common to Eridanus and the foot of Orion sets in the morning.

13. 13 ½ hours: the one at the knee of Sagittarius is hidden. Egyptians: Notos or Euros through the day, drizzly. Metrodorus: stormy, squalls. Euctemon: rains, stormy.

14. 14 ½ hours: the one common to Eridanus and the foot of Orion sets in the morning. Philippus and Euctemon: storm, squalls. Hipparchus: Boreas or chilly Notos and rain.

15. 13 ½ hours: the bright one of Perseus sets in the morning, and the bright one of Corona Borealis sets in the evening. 15 ½ hours: the bright one of the Hyades sets in the morning. Egyptians and Hipparchus: beginning of winter. Metrodorus and Callippus and Conon: weather-change.

16. 13 ½ hours: the bright one of the Hyades sets in the morning. 14 ½ hours: the same. 15 hours: the same. Euctemon and Dositheus: stormy.
17. 14 hours: the one common to Eridanus and the foot of Orion sets in the morning. 15 ½ hours: the one on the head of the leading twin [of Gemini] rises in the evening. Eudoxus: beginning of winter and weather-change. Democritus: storm both on land and at sea.
[no entry for 18.]
19. 14 ½ hours: the bright one of Lyra rises in the morning. Egyptians: Notos or Euros through the day. Caesar: stormy.
20. 13 ½ hours: the one common to Eridanus and the foot of Orion sets in the morning. 14 hours: the bright one of Perseus sets in the morning. 15 ½ hours: the one on the leading shoulder of Orion sets in the morning, and the middle one of the belt of Orion sets in the morning. Caesar: storm.
21. 15 hours: the one on the leading shoulder of Orion sets in the morning, and the middle one of the belt of Orion sets in the morning. 15 ½ hours: Arcturus sets in the evening. Egyptians: Boreas through day and night. Eudoxus: rain. Caesar: storm.
22. 14 ½ hours: the one on the leading shoulder of Orion sets in the morning.
23. 13 ½ hours: the one called Canopus sets in the morning. 14 hours: the bright one of Corona Borealis sets in the evening, and the one on the leading shoulder of Orion sets in the morning. 15 hours: the one on the head of the leading twin [of Gemini] rises in the evening. Eudoxus: wintry condition.
24. 13 ½ hours: the one on the front right hoof of Centaurus rises. 14 ½ hours: the middle one of the belt of Orion sets in the morning. 15 ½ hours: Sirius sets in the morning. Egyptians: wintry condition. Eudoxus: chilly Boreas.
25. 13 ½ hours: the one on the leading shoulder of Orion sets in the morning, and the one called Antares rises. 14 ½ hours: the bright one of Perseus sets in the morning. Euctemon and Dositheus: storm and rains. Caesar: unwholesome condition of air.
26. 13 ½ hours: the one on the leading shoulder of Orion rises in the evening, and the last one of Eridanus rises in the evening. 14 hours: the bright one of Lyra rises in the morning, and the middle one of the belt of Orion sets in the morning, and the one called Antares rises. Eudoxus: strong storm.
27. 14 ½ hours: the one called Antares rises. 15 hours: Sirius sets in the morning. 15 ½ hours: the bright one of Cygnus rises in the morning, and the one on the trailing shoulder of Orion sets in the morning. Egyptians and Hipparchus: dense Notos. Eudoxus and Conon: the air is wintry. Callippus: rains.
28. 14 hours: the one on the leading shoulder of Orion rises in the evening. 14 ½ hours: the one on the head of the leading twin [of Gemini] rises in the evening. 15 hours: the one on the trailing shoulder of Orion sets in the morning, and the one called Antares rises. Egyptians: showers.
29. 13 ½ hours: the middle one of the belt of Orion sets in the morning. 15 ½ hours: the one called Antares rises.
30. 13 ½ hours: the middle one of the belt of Orion rises in the evening. 14 ½ hours: the one on the trailing shoulder of Orion sets in the morning, and the one on the leading shoulder of Orion rises in the evening. 15 ½ hours: the one on the head of the trailing twin [of Gemini] rises in the evening.

Choeac.

1. 14 ½ hours: Sirius sets in the morning. 15 hours: the bright one of Perseus sets in the morning. Egyptians: Notos and rain. Eudoxus: unwholesome condition of air. Dositheus: weather-change. Democritus: heavens in disturbed condition as well as the sea for the most part.
2. 13 ½ hours: the one on the trailing shoulder of Orion rises in the evening, and the one common to Eridanus and the foot of Orion rises in the evening. 14 hours: the one on the head of the leading twin [of Gemini] rises in the evening, and the one on the trailing shoulder of Orion sets in the morning. 14 ½ hours: the bright one of Corona Borealis sets in the evening.
3. 13 ½ hours: the one on the trailing shoulder of Orion sets in the morning. 15 hours: the one on the leading shoulder of Orion rises in the evening.
4. 13 ½ hours: the bright one of Lyra rises in the morning. 14 hours: the one on the trailing shoulder of Orion rises in the evening, and the middle one of the belt of Orion rises in the evening. 15 hours: the one on the head of the trailing twin [of Gemini] rises in the evening. Egyptians: Zephyros or Notos through the day, raining. Conon: stormy.
5. 13 ½ hours: the one called Capella sets in the morning, and the one on the head of the leading twin [of Gemini] rises in the evening. 14 hours: Sirius sets in the morning. 15 ½ hours: the one on the leading shoulder of Orion rises in the evening. Caesar and Euctemon and Eudoxus and Callippus: storm.
6. 14 hours: the one on the front right hoof of Centaurus rises. 14 ½ hours: the one on the trailing shoulder of Orion rises in the evening. Metrodorus: wintry condition. Euctemon and Philippus and Callippus: unwholesome condition of winds.
7. 14 hours: the one common to Eridanus and the foot of Orion rises in the evening. 14 ½ hours: the one on the head of the trailing twin [of Gemini] rises in the evening, and the middle one of the belt of Orion rises in the evening. 15 hours: the bright one of Cygnus rises in the morning. Egyptians: showery. Caesar and Conon: stormy.
8. 15 hours: the one on the trailing shoulder of Orion rises in the evening. 15 ½ hours: the bright one of Perseus sets in the morning. Egyptians: showery. Caesar and Euctemon and Eudoxus: storm.
9. 13 ½ hours: Sirius sets in the morning. 14 hours: the one called Capella sets in the morning, and the one on the head of the trailing twin [of Gemini] rises in the evening, and the last one of Eridanus rises in the evening. Egyptians and Dositheus and Democritus: storm.
10. 15 hours: the bright one of Corona Borealis sets in the evening, and the middle one of the belt of Orion rises in the evening. Egyptians: Lips or Notos. Eudoxus and Dositheus: wintry air.
11. 13 ½ hours: the one on the head of the trailing twin [of Gemini] rises in the evening. Hipparchus: much Boreas. Eudoxus: rain.
12. 14 ½ hours: the one common to Eridanus and the foot of Orion rises in the evening. Caesar: southerlies. Euctemon and Eudoxus and Callippus: air of winter and rains.
13. 13 ½ hours: the one on the trailing shoulder of Auriga sets in the morning. 15 ½ hours: the middle one of the belt of Orion rises in the evening. Caesar: southerlies. Euctemon and Eudoxus and Callippus: air of winter and rains.

14. 14 ½ hours: the one called Capella sets in the morning. Metrodorus and Euctemon and Callippus: condition of winter. Democritus: thunders, lightnings, water, winds.
15. Egyptians: chilly Argestes or Notos and thunderstorm. Callippus: Notos and weather-change. Eudoxus: air of winter.
16. 14 ½ hours: the bright one of Cygnus rises in the morning. 15 hours: the one common to Eridanus and the foot of Orion rises in the evening. Egyptians: stormy.
17. Hipparchus: much Notos or Boreas.
18. 14 hours: the one on the trailing shoulder of Auriga sets in the morning. Egyptians: rains with winds. Eudoxus: stormy.
19. 15 hours: the one called Capella sets in the morning. 15 ½ hours: the bright one of Corona Borealis sets in the evening. Egyptians: chilly Boreas or Notos and rains.
20. 15 ½ hours: Procyon sets in the morning. Caesar: stormy.
21. 15 ½ hours: the one common to Eridanus and the foot of Orion rises in the evening.
22. 15 hours: Procyon sets in the morning. Hipparchus: Notos.
23. 14 ½ hours: the one on the trailing shoulder of Auriga sets in the morning, and the one on the front right hoof of Centaurus rises. 15 ½ hours: the bright one of Aquila rises in the morning. Egyptians and Eudoxus and Dositheus: Lips or Notos.
24. 14 ½ hours: Procyon sets in the morning, and the last one of Eridanus rises in the evening. Eudoxus: wintry air.
25. 13 ½ hours: Procyon rises in the evening. 14 hours: Procyon sets in the morning. 15 hours: the bright one of Aquila rises in the morning. Egyptians: weather-change.
26. Winter solstice. 13 ½ hours: Procyon sets in the morning, and Sirius rises in the evening. 15 ½ hours: the one called Capella sets in the morning.
27. 13 ½ hours: the bright one of Aquila is hidden. 14 hours: Procyon rises in the evening. 14 ½ hours: the bright one of Aquila rises in the morning.
28. 15 hours: the one on the trailing shoulder of Auriga sets in the morning. 15 ½ hours: the bright one of Piscis Australis is hidden. Egyptians and Caesar: storm. Hipparchus and Meton: weather-change, thunderstorm.
29. 14 ½ hours: Procyon rises in the evening. Egyptians and Conon and Meton and Callippus: storm. Caesar and Metrodorus: weather-change, unwholesome condition.
30. 14 hours: the bright one of Aquila rises in the morning, and the bright one of Aquila sets in the evening. Egyptians: Lips and unwholesome condition of the air. Eudoxus and Metrodorus: air of winter. Hipparchus: storm in the evening.

Tybi.

1. 14 hours: Sirius rises in the evening. 15 hours: Procyon rises in the evening. Eudoxus: weather-change. Democritus: moderate storm.
2. 13 ½ hours: the one on the head of the leading twin [of Gemini] sets in the morning. Dositheus: stormy.
3. 13 ½ hours: the bright one of Aquila rises. 15 ½ hours: Procyon rises in the evening. Euctemon and Philippus and Democritus: weather-change.
4. 13 ½ hours: the bright one of Cygnus rises in the morning, and the one on the head of the trailing twin [of Gemini] sets in the morning. 14 ½ hours: the bright one of Aquila sets in the evening. 15 hours: the bright one of Piscis Australis is hidden. Egyptians: storm at sea. Euctemon: weather-change.

5. 14 hours: the one on the head of the leading twin [of Gemini] sets in the morning. 15 ½ hours: the one on the trailing shoulder of Auriga sets in the morning.
6. 13 ½ hours: the one at the knee of Sagittarius rises. 14 hours: the one on the head of the trailing twin [of Gemini] sets in the morning. 14 ½ hours: Sirius rises in the evening.
7. 15 hours: the bright one of Aquila sets in the evening. Dositheus: weather-change.
8. 14 ½ hours: the one on the head of the leading twin [of Gemini] sets in the morning, and the one on the head of the trailing twin [of Gemini] sets in the morning, and the bright one of Piscis Australis is hidden. Egyptians: complicated condition.
9. 13 ½ hours: the bright one of Lyra sets in the evening. 15 ½ hours: the bright one of Aquila sets in the evening. Egyptians: weather-change. Democritus: Notos blows for the most part.
10. 15 hours: Sirius rises in the evening.
11. 15 hours: the one on the head of the trailing twin [of Gemini] sets in the morning. Euctemon and Philippus: moderate storm.
12. 14 hours: the one at the knee of Sagittarius rises. 15 hours: the one on the head of the leading twin [of Gemini] sets in the morning. Hipparchus and Eudoxus: stormy.
13. 14 hours: the bright one of Piscis Australis is hidden. 15 hours: the last one of Eridanus rises in the evening. Egyptians: Notos or Zephyros, storm both on land and at sea. Metrodorus and Euctemon and Philippus and Callippus: Notos.
14. 15 ½ hours: the one on the head of the trailing twin [of Gemini] sets in the morning, and the bright one of Hydra sets in the morning, and Sirius rises in the evening. Egyptians and Eudoxus: strong Notos and rain.
15. 15 hours: [text lost] Egyptians and Caesar: much Notos, and weather -change at sea, thunder, showers.
16. 15 hours: the bright one of Hydra sets in the morning. 15 ½ hours: the one on the head of the leading twin [of Gemini] sets in the morning. Eudoxus and Dositheus: Notos, weather-change. Hipparchus: unwholesome condition of winds.
17. 13 ½ hours: the bright one of Piscis Australis is hidden.
18. 14 hours: the bright one of Lyra sets in the evening. 14 ½ hours: the one at the knee of Sagittarius rises.
19. 14 ½ hours: the bright one of Hydra sets in the morning. Hipparchus: Notos or Boreas, stormy.
20. Egyptians: air of winter.
21. 14 hours: the bright one of Hydra sets in the morning. 15 hours: the one on the heart of Leo rises in the evening. Hipparchus: Apeliotes blows.
22. 13 ½ hours: the one on the heart of Leo rises in the evening, and the bright one of Hydra rises in the evening, and the one called Canopus rises in the evening. 14 hours: the one on the heart of Leo rises in the evening. 14 ½ hours: the one on the front right hoof of Centaurus sets in the morning. 14 ½ hours: the one on the heart of Leo rises in the evening. Caesar: strong winds.
23. 13 ½ hours: the bright one of Hydra sets in the morning. Euctemon and Philippus: storm. Metrodorus: disorderly state of air.
24. 14 hours: the bright one of Hydra rises in the evening. Egyptians: raining or stifling heat occurs. Caesar and Euctemon: storm.

25. 14 ½ hours: the bright one of Lyra sets in the evening, and the bright one of Hydra rises in the evening. 15 hours: the one at the knee of Sagittarius rises. Egyptians and Callippus: storm, rain. Hipparchus: Borrás blows. Euctemon and Democritus: downpour.
26. 15 hours: the bright one of Hydra rises in the evening. Eudoxus: moderate storm.
27. Egyptians: Euros or Notos, weather-change.
28. 15 ½ hours: the bright one of Hydra rises in the evening. Egyptians: rains. Hipparchus: weather-change.
29. Callippus and Euctemon: downpour. Democritus: moderate storm.
30. Hipparchus: Apeliotes blows.

Mechir.

1. 15 ½ hours: the one at the knee of Sagittarius rises. Eudoxus: rains. Metrodorus: rains. Dositheus: storm.
2. Egyptians: moderate storm.
3. Egyptians: Lips or Notos, weather-change.
4. 13 ½ hours: the bright one of Cygnus sets in the evening. 15 hours: the bright one of Lyra sets in the evening. Hipparchus: Notos or Argestes.
[no entry for 5.]
6. 13 ½ hours: the one on the heart of Leo sets in the morning. 14 hours: the one called Canopus rises in the evening. 15 ½ hours: the one on the tail of Leo rises in the evening, and the one at the knee of Sagittarius rises. Eudoxus: rain.
7. 14 hours: the one on the heart of Leo sets in the morning. 15 hours: the one on the tail of Leo rises in the evening.
8. 14 ½ hours: the one on the heart of Leo sets in the morning, and the one on the tail of Leo rises in the evening. Egyptians: Notos or Zephyros, between hail.
9. 15 hours: the one on the heart of Leo sets in the morning. Eudoxus: fair weather, sometimes also Zephyros blows.
10. 14 hours: the one on the tail of Leo rises in the evening.
11. 15 ½ hours: the one on the heart of Leo sets in the morning. Egyptians: winter condition or inundation and unwholesome condition of winds. Dositheus: fair weather, sometimes zephyros blows.
12. 14 hours: the bright one of Cygnus sets in the evening. 15 hours: the last one of Eridanus is hidden. 15 ½ hours: the bright one of Perseus rises in the morning, and the bright one of Lyra sets in the evening. Egyptians: windy condition. Caesar: rains. Democritus: Zephyros begins to blow.
13. 13 ½ hours: the one on the tail of Leo rises in the evening. Egyptians and Eudoxus: beginning of spring, Zephyros begins to blow and sometimes storm.
14. Egyptians and Eudoxus: rains. Hipparchus and Callippus and Democritus: season for Zephyros to blow.
15. Caesar and Metrodorus: beginning of spring, and Zephyros begins to blow.
[no entry for 16.]
17. Egyptians and Eudoxus: zephyrs blow. Hipparchus: beginning of spring. Callippus and Metrodorus: storm.
18. Egyptians: Apeliotes blows. Hipparchus: Borrás or Apeliotes blows.

19. 14 hours: the one on the front right hoof of Centaurus sets in the morning. 15 ½ hours: the one common to Pegasus and Andromeda rises in the morning.
[no entry for 20.]
21. 14 ½ hours: the bright one of Cygnus sets in the evening. Egyptians: winds change. Hipparchus: Notos blows. Euctemon and Philippus and Dositheus: storm.
22. Egyptians: disordered condition of winds and thunderstorms.
23. 14 ½: the one called Canopus rises in the evening.
24. Egyptians: Zephyros or Notos and hail, rain.
25. 14 ½ hours: the last one of Eridanus is hidden. 15 hours: the one common to Pegasus and Andromeda rises in the morning. Hipparchus: chilly Boreas blows.
26. Egyptians: windy condition.
[no entry for 27.]
28. Hipparchus and Euctemon: chilly Ornithiai begin to blow, and season for the swallows to appear.
29. 13 ½: the one common to Pegasus and Andromeda is hidden. 15 hours: the bright one of Cygnus sets in the evening. Egyptians and Philippus and Callippus: swallows appear, and windy condition. Conon: chilly northerlies begin to blow. Eudoxus: rain at the time of the swallows, and for 30 days northerlies blow, the ones called Ornithiai.
30. Egyptians: northerly Ornithiai, between Argestes. Hipparchus: chilly northerlies. Metrodorus: swallows appear, and weather-change. Democritus: complicated days, the ones called Halcyon.

Phamenoth.

1. 14 ½ hours: the one common to Pegasus and Andromeda rises in the morning. 15 ½ hours: Arcturus rises in the evening. Caesar and Dositheus: storm, weather-change.
2. 14 hours: the one common to Pegasus and Andromeda is hidden.
3. 15 hours: the bright one of Perseus rises in the morning.
4. 14 ½ hours: the one common to Pegasus and Andromeda sets in the evening.
5. 14 hours: the one common to Pegasus and Andromeda rises. 15 hours: Arcturus rises in the evening. Hipparchus: Borrax or chilly Notos blows.
6. 14 hours: the last one of Eridanus is hidden. Egyptians: Lips or Notos, hail. Hipparchus: chilly Boreas blows.
7. 15 hours: the one common to Pegasus and Andromeda sets in the evening. 15 ½ hours: the bright one of Cygnus sets in the evening.
8. 14 ½ hours: Arcturus rises in the evening. Euctemon: chilly Borrax blows.
9. 15 ½ hours: the bright one of Corona Borealis rises in the evening, and the one common to Pegasus and Andromeda sets in the evening. Egyptians: winter chill. Caesar: swallow-winds blow for 10 days.
10. 13 ½ hours: the one common to Pegasus and Andromeda rises.
11. 13 ½ hours: the bright one of Piscis Australis rises, and the one on the front right hoof of Centaurus sets in the morning. Egyptians: disturbed condition. Democritus: chilly Ornithiai winds for 9 days.
12. 14 hours: Arcturus rises in the evening. Eudoxus: storm, and the kite appears, and weather-change. Metrodorus and Euctemon and Philippus: chilly Boreas blows. Hipparchus: beginning of spring.

13. 13 ½ hours: the one on the tail of Leo sets in the morning. Egyptians: drizzly. Metrodorus and Euctemon: Boreas blows. Dositheus: the kite begins to appear. Hipparchus: much Notos.
14. 15 hours: the bright one of Corona Borealis rises in the evening. Egyptians and Callippus: chilly Boreas blows.
15. 13 ½ hours: Arcturus rises in the evening.
16. 13 ½ hours: the last one of Eridanus is hidden. Callippus: reasonable Borrás blows.
17. 13 ½ hours: Spica rises in the evening. 14 ½ hours: Spica rises in the evening. Egyptians: windy condition. Euctemon and Philippus: Ornithiai begin to blow, and the season for the kite to appear.
18. 14 hours: the one on the tail of Leo sets in the morning. Egyptians: Zephyros or Notos blows. Euctemon: chilly Borrás blows. Dositheus: Ornithiai begin to blow. Hipparchus: Borrás or Argestes.
19. Egyptians and Euctemon: chilly Borrás blows.
20. 14 hours: the bright one of Piscis Australis rises. 14 ½ hours: the bright one of Corona Borealis rises in the evening.
21. 14 ½ hours: the bright one of Perseus rises in the morning. Callippus: Borrás blows, and the kite appears.
22. Egyptians and Democritus: storm, chilly wind.
23. Egyptians: chilly winds until equinox. Hipparchus: Borrás blows.
24. Caesar: the kite appears, and Borrás blows.
25. 14 ½ hours: the one on the tail of Leo sets in the morning. Eudoxus: the kite appears, and Borrás blows.
26. Vernal equinox. 14 hours: the bright one of Corona Borealis rises in the evening.
27. Caesar: Borrás blows. Hipparchus: rains.
28. Egyptians: thunders, weather-change. Philippus and Callippus and Euctemon: rain or drizzle. Hipparchus: weather-change.
29. 15 ½ hours: the one called Capella rises in the morning. Egyptians and Conon and Meton: equinox. Eudoxus: Borrás blows.
30. 13 ½ hours: Spica sets in the morning. Egyptians: Argestes wind blows. Callippus: rain or snowstorm.

Pharmuthi.

1. 14 hours: Spica sets in the morning. Meton and Callippus and Eudoxus: rain. Euctemon and Democritus: weather-change.
2. 13 ½ hours: the bright one of Corona Borealis rises in the evening. 14 ½ hours: Spica sets in the morning, and the one called Canopus is hidden. 15 hours: the one on the tail of Leo sets in the morning. Dositheus and Meton and Callippus: rains.
3. 14 hours: the bright one of Perseus rises in the morning. 14 ½ hours: the bright one of Piscis Australis rises.
4. 15 ½ hours: the bright one of the northern claw [of Libra] rises in the evening. Egyptians and Conon: weather-change. Eudoxus: rains occur.
5. 15 hours: Spica sets in the morning.
6. 15 ½ hours: the bright one of the southern claw [of Libra] rises in the evening. Eudoxus: rain, weather-change.

7. 13 ½ hours: the bright one of the southern claw [of Libra] rises in the evening. 15 ½ hours: Spica sets in the morning.
8. 15 hours: the bright one of the northern claw [of Libra] rises in the evening. Egyptians: Zephyros and hail. Conon: weather-change. Eudoxus: rain.
9. 14 ½ hours: the bright one of the northern claw [of Libra] rises in the evening. Egyptians and Conon: Zephyros or Notos and hail.
10. 14 hours: the bright one of the northern claw [of Libra] rises in the evening. 15 ½ hours: the bright one of Lyra rises in the evening. Hipparchus: Notos and sudden storm of winds.
11. 13 ½ hours: the bright one of the northern claw [of Libra] rises in the evening. Hipparchus and Dositheus: weather-change.
12. 15 ½ hours: the one on the tail of Leo sets in the morning.
13. 13 hours: [gap in text] Egyptians: Notos or Lips. Eudoxus: rains.
14. 13 ½ hours: the bright one of Perseus rises in the morning. Egyptians: unwholesome condition of winds. Hipparchus: rains.
15. Egyptians: disordered condition of air and rain. Euctemon and Philippus: unwholesome condition of winds. Hipparchus: rains.
16. Eudoxus: Zephyros and unwholesome condition of air, between drizzly.
17. 15 ½ hours: the one common to Eridanus and the foot of Orion is hidden.
18. 15 hours: the one called Capella rises in the morning, and the bright one of Piscis Australis rises. Dositheus and Caesar: rains.
19. 15 hours: the bright one of Lyra rises in the evening. Egyptians: Leukonotos, thunders, drizzle.
20. 14 hours: the one called Canopus is hidden. Egyptians: confusion of winds. Eudoxus and Euctemon: rains and hail.
21. 15 hours: the one common to Eridanus and the foot of Orion is hidden. 15 ½ hours: the bright one of the Hyades is hidden. Metrodorus and Callippus: hail. Euctemon and Philippus: Zephyros.
22. 13 ½ hours: the bright one of Perseus sets in the evening. Egyptians and Conon: hail and Zephyros. Caesar and Eudoxus: rains.
23. 15 hours: the bright one of the Hyades is hidden. Egyptians: windy drizzle.
24. 14 ½ hours: the bright one of the Hyades is hidden, and the one common to Eridanus and the foot of Orion is hidden.
25. Egyptians: Lips or Notos or Argestes and unwholesome condition of air.
26. 14 hours: the bright one of Perseus sets in the evening, and the bright one of the Hyades is hidden. 15 ½ hours: the bright one of Cygnus rises in the evening, and the one on the leading shoulder of Orion is hidden. Hipparchus: Notos or chilly Aparktiás.
27. 13 ½ hours: the bright one of the Hyades is hidden, and the bright one of the southern claw [of Libra] sets in the morning. 15 hours: the middle one of the belt of Orion is hidden. Egyptians and Caesar: storm. Eudoxus: rain.
28. 14 hours: the one common to Eridanus and the foot of Orion is hidden. 14 ½ hours: the bright one of Lyra rises in the evening. Egyptians: Lips or Notos, rains.
29. 14 hours: the bright one of the southern claw [of Libra] sets in the morning. 15 hours: the one on the leading shoulder of Orion is hidden. Egyptians: Lips or Notos and rains. Metrodorus and Callippus: sometimes hail. Democritus: weather-change.
30. Egyptians and Eudoxus: drizzle, rain.

Pachon.

1. 14 ½ hours: the bright one of Perseus sets in the evening, and the middle one of the belt of Orion is hidden, and the bright one of the southern claw [of Libra] sets in the morning. Egyptians: Argestes or Zephyros, weather-change. Euctemon and Philippus: rains or hail.
2. 14 ½ hours: the one called Capella rises in the morning, and the one on the leading shoulder of Orion is hidden. Egyptians: windy condition. Metrodorus and Callippus: southerlies.
3. 13 ½ hours: the one common to Eridanus and the foot of Orion is hidden, and the one called Antares rises in the evening. 15 ½ hours: Sirius is hidden. Egyptians: winds. Eudoxus: rain.
4. 14 hours: the one on the leading shoulder of Orion is hidden, and the middle one of the belt of Orion is hidden, and the one called Antares rises in the evening. 14 ½ hours: the same. 15 hours: the same. Egyptians: calm or Notos and rains. Caesar: storm.
5. 13 ½ hours: the one called Canopus is hidden. 15 hours: the bright one of the southern claw [of Libra] sets in the morning. Egyptians: weather-change. Euctemon and Philippus: calm or Notos, drizzle.
6. 13 ½ hours: the one on the front right hoof of Centaurus rises in the evening. 15 hours: the bright one of Perseus sets in the evening. 15 ½ hours: the one on the trailing shoulder of Auriga rises in the morning, and the one on the trailing shoulder of Orion is hidden. Egyptians: drizzle.
7. 13 ½ hours: the one on the leading shoulder of Orion is hidden, and the middle one of the belt [of Orion] is hidden. 15 hours: Sirius is hidden.
8. 14 hours: the bright one of Lyra rises in the evening. 15 hours: the bright one of Cygnus rises in the evening, and the one on the trailing shoulder of Orion is hidden. 15 ½ hours: the bright one of the southern claw [of Libra] sets in the morning. Egyptians: Argestes and drizzle or Notos, thunder.
9. 14 hours: the one called Capella rises in the morning. 15 ½ hours: the bright one of Pisces Australis rises. Egyptians: drizzle. Eudoxus: rain.
10. 13 ½ hours: the bright one of the northern claw [of Libra] sets in the morning. Dositheus: rains.
11. 14 ½ hours: the one on the trailing shoulder of Orion is hidden. Egyptians: windy condition.
12. 13 ½ hours: the one called Capella rises in the morning. 14 ½ hours: Sirius is hidden. 15 ½ hours: the bright one of Perseus sets in the evening. Egyptians: windy condition.
13. Egyptians: Zephyros or Argestes and rains. Eudoxus and Dositheus: rains.
14. 14 hours: the one on the trailing shoulder of Orion is hidden, and the bright one of the northern claw [of Libra] sets in the morning. Egyptians: thunderstorm.
15. Egyptians: rain, beginning of summer. Euctemon and Philippus: weather-change.
16. 13 ½ hours: Arcturus sets in the morning, and the one on the trailing shoulder of Orion is hidden. Dositheus: weather-change.
17. 13 ½ hours: the one called Capella sets in the evening, and the bright one of Lyra rises in the evening. 14 hours: Sirius is hidden, and the one on the front right hoof of

Centaurus rises in the evening. Egyptians: Zephyros or Argestes. Caesar: rain. Metrodorus and Eudoxus and Hipparchus: weather-change. And beginning of summer.

18. 13 ½ hours: the one called Antares sets in the morning. 14 ½ hours: the bright one of Cygnus rises in the evening. 15 hours: the one on the trailing shoulder of Auriga rises in the morning. Egyptians: Zephyros or Lips, weather-change. Eudoxus and Conon: rains.

19. 14 ½ hours: the one called Antares sets in the morning. Egyptians and Eudoxus and Callippus: weather-change.

20. 14 hours: the one called Capella sets in the evening. 15 hours: the one called Antares sets in the morning. Caesar: weather-change, rains.

21. 15 ½ hours: the one called Antares sets in the morning. Caesar: weather-change.

22. Egyptians: Notos or Apeliotes. Eudoxus: rains. Hipparchus: Notos or Aparktias.

23. 13 ½ hours: the one on the trailing shoulder of Auriga is hidden, and Sirius is hidden. Egyptians: thunderstorm and thunder. Eudoxus: beginning of summer, rains.

24. 14 ½ hours: the one called Capella sets in the evening, and the one on the trailing shoulder of Auriga rises in the morning. Egyptians and Hipparchus: drizzly and weather-change.

25. 14 hours: the one on the trailing shoulder of Auriga is hidden. 15 hours: the bright one of the northern claw [of Libra] sets in the morning.

26. 14 hours: Arcturus sets in the morning. Egyptians: Argestes or Zephyros. Dositheus: Notos. Caesar: stormy.

27. 15 hours: the bright one of Aquila rises in the evening. 15 ½ hours: Procyon is hidden.

28. 14 ½ hours: the one on the trailing shoulder of Auriga sets in the evening. 15 hours: the one called Capella sets in the evening.

29. 15 ½ hours: the one at the knee of Sagittarius sets in the morning. Egyptians: windy condition. Euctemon and Philippus: weather-change.

30. 14 hours: the bright one of Cygnus rises in the evening. Euctemon and Philippus and Hipparchus: weather-change.

Payni.

1. 13 ½ hours: the one on the trailing shoulder of Auriga rises. 15 hours: the one on the trailing shoulder of Auriga sets in the evening, and Procyon is hidden. 15 ½ hours: the bright one of the northern claw [of Libra] sets in the morning. Egyptians: strong Boreas. Callippus and Euctemon: weather-change.

2. 14 ½ hours: the bright one of Aquila rises in the evening. Egyptians: weather-change. Metrodorus and Callippus: southerlies.

3. 13 ½ hours: the bright one of the Hyades rises. 14 ½ hours: Procyon is hidden. Egyptians and Democritus: rains.

4. Hipparchus: Notos or Zephyros.

5. 14 ½ hours: the one on the front right hoof of Centaurus rises in the evening. 15 ½ hours: the one called Capella sets in the evening, and the one on the trailing shoulder of Auriga sets in the evening. Caesar: Notos blows.

6. 14 hours: Procyon is hidden, and the bright one of Aquila rises in the evening. 15 hours: the one at the knee of Sagittarius sets in the morning.

7. 14 hours: the bright one of the Hyades rises. 14 ½ hours: Arcturus sets in the morning. Egyptians: Zephyros. Eudoxus and Dositheus: southerlies.
8. Egyptians: Argestes or Zephyros blows.
9. 14 ½ hours: the one at the knee of Sagittarius sets in the morning. 15 ½ hours: the bright one of Hydra is hidden. Egyptians: Argestes and drizzle. Democritus: water occurs.
10. 13 ½ hours: the bright one of Cygnus rises in the evening. 15 ½ hours: the one on the head of the trailing twin [of Gemini] is hidden. Caesar: thunder and rain.
11. 13 ½ hours: the bright one of Aquila rises in the evening, and the one on the head of the leading twin [of Gemini] is hidden. 15 hours: the one on the head of the trailing twin [of Gemini] is hidden. Egyptians: drizzly. Caesar: thunder, rain.
12. 14 ½ hours: the one on the head of the trailing twin [of Gemini] is hidden.
13. 14 hours: the one on the head of the leading twin [of Gemini] is hidden, and the one at the knee of Sagittarius sets in the morning. 14 ½ hours: the one on the head of the leading twin [of Gemini] is hidden.
14. 14 hours: the one on the head of the trailing twin [of Gemini] is hidden. 14 ½ hours: the bright one of the Hyades rises. 15 hours: the one on the head of the leading twin [of Gemini] is hidden. 15 ½ hours: the one on the head of the leading twin [of Gemini] is hidden.
15. 13 ½ hours: the one on the head of the trailing twin [of Gemini] is hidden, and the one at the knee of Sagittarius rises in the evening, and the one at the knee of Sagittarius sets in the morning. 15 hours: the bright one of Hydra is hidden. Egyptians: Zephyros or Argestes, thunder.
16. 13 ½ hours: the bright one of Corona Borealis sets in the morning.
17. 15 hours: the bright one of the Hyades rises. Egyptians: drizzly through the day.
18. 14 hours: the one at the knee of Sagittarius rises in the evening. 15 hours: Arcturus sets in the morning.
19. Egyptians: Zephyros or Argestes, drizzly.
20. 14 ½ hours: the bright one of Hydra is hidden, and the one at the knee of Sagittarius rises in the evening.
21. 13 ½ hours: the one on the leading shoulder of Orion rises, and the last one of Eridanus rises. Egyptians: drizzly.
22. 15 ½ hours: the bright one of the Hyades rises.
23. Egyptians: burning heat. Dositheus: weather-change.
24. 15 hours: the one at the knee of Sagittarius rises in the evening. Egyptians: Zephyros or Notos and burning heat.
25. 14 hours: the one on the leading shoulder of Orion rises, and the bright one of Hydra is hidden. Egyptians: rain.
26. Egyptians: Zephyros, inundation, thunder.
27. 13 ½ hours: the one on the trailing shoulder of Orion rises. 14 hours: the bright one of Corona Borealis sets in the morning. 14 ½ hours: the one on the front right hoof of Centaurus is hidden.
28. 13 ½ hours: the one common to Eridanus and the foot of Orion rises. Democritus: weather-change.
29. 15 ½ hours: the one at the knee of Sagittarius rises in the evening. Hipparchus: Zephyros or Notos blows.

30. 13 ½ hours: the bright one of Hydra is hidden. 14 ½ hours: the one on the leading shoulder of Orion rises. 15 ½ hours: Arcturus sets in the morning.

Epiphi.

1. Summer solstice. 13 ½ hours: the middle one of the belt of Orion rises. 14 hours: the one on the trailing shoulder of Orion rises. Egyptians: Zephyros and burning heat.

2. 15 ½ hours: the bright one of Perseus rises in the evening.

3. Egyptians and Democritus: Zephyros blows.

4. Callippus and Dositheus: weather-change. Democritus: Notos and water in the morning, then northerlies the Prodrmoi for 7 days.

5. 14 hours: the one common to Eridanus and the foot of Orion rises. 15 hours: the one on the leading shoulder of Orion rises. Eudoxus: weather-change.

6. 13 ½ hours: the one on the head of the leading twin [of Gemini] rises. 14 hours: the middle one of the belt of Orion rises, and the last one of Eridanus rises, and the one on the head of the leading twin [of Gemini] rises. Egyptians: wind and unwholesome condition of air.

7. 14 ½ hours: the bright one of Corona Borealis sets in the morning.

8. 15 hours: the one on the head of the leading twin [of Gemini] rises. 15 ½ hours: the one common to Pegasus and Andromeda rises in the evening.

9. 15 ½ hours: the one on the head of the leading twin [of Gemini] rises. Egyptians and Caesar: Notos and burning heat.

10. 14 ½ hours: the one on the trailing shoulder of Orion rises. 15 ½ hours: the one on the heart of Leo is hidden. Egyptians: Argestes and rains.

11. 14 ½ hours: the middle one of the belt of Orion rises. 15 ½ hours: the one on the leading shoulder of Orion rises. Egyptians: Zephyros or Argestes and thunder.

Metrodorus: Argestes. Callippus: Notos. Hipparchus: Notos or Zephyros.

12. 13 ½ hours: the one on the head of the trailing twin [of Gemini] rises. 14 ½ hours: the one common to Eridanus and the foot of Orion rises. Egyptians: Zephyros or Argestes and burning heat.

13. 15 hours: the one on the heart of Leo is hidden. Egyptians: weather-change.

Hipparchus: the Prodrmoi of Sirius.

14. 14 ½ hours: the one on the head of the trailing twin [of Gemini] rises. Meton: southerlies.

15. 15 ½ hours: the one on the trailing shoulder of Orion rises. Egyptians: Argestes or Zephyros. Euctemon and Philippos: southerlies and beginning of the Prodrmoi.

16. 14 ½ hours: the one on the heart of Leo is hidden. Egyptians: weather-change, bad condition of air.

17. 15 hours: the one common to Pegasus and Andromeda rises in the evening, and the middle one of the belt of Orion rises. 15 ½ hours: the one on the head of the trailing twin [of Gemini] rises.

18. 14 hours: the one on the heart of Leo is hidden. 15 hours: the bright one of Corona Borealis sets in the morning, and the one common to Eridanus and the foot of Orion rises.

Egyptians: the Prodrmos blows at the first hour. Metrodorus: Zephyros or Argestes.

19. 13 ½ hours: Procyon rises. Hipparchus: confusion of winds.

20. Egyptians: burning heat. Caesar: much wind. Hipparchus: Boreas begins to blow.

21. 13 ½ hours: the one on the heart of Leo is hidden.
22. 13 ½ hours: Sirius rises. 14 hours: Procyon rises. 14 ½ hours: the last one of Eridanus rises. Egyptians: much wind and rains sometimes. Democritus: water, squalls.
23. 15 hours: the bright one of Perseus rises in the evening. 15 ½ hours: the middle one of the belt of Orion rises. Egyptians and Dositheus: Notos and burning heat.
24. 14 ½ hours: Procyon rises. 15 ½ hours: the one common to Eridanus and the foot of Orion rises. Hipparchus: the Etesians begin to blow.
25. Egyptians: Zephyros or Argestes and burning heat.
26. 14 ½ hours: the one common to Pegasus and Andromeda rises in the evening. 15 hours: Procyon rises. Egyptians: Argestes or Zephyros.
27. 13 ½ hours: the bright one of Aquila sets in the morning. 15 ½ hours: the bright one of Piscis Australis sets in the morning. Metrodorus and Euctemon and Philippus: the Etesians blow, and beginning of late summer. Caesar: the Prodrumoi blow.
28. 14 hours: Sirius rises. 15 ½ hours: the bright one of Corona Borealis sets in the morning, and Procyon rises. Egyptians: through the day Zephyros and burning heat. Euctemon and Philippus: bad condition of air, the Prodrumoi blow.
29. 14 hours: the one on the front right hoof of Centaurus is hidden. Egyptians: the Etesians begin to blow. Metrodorus and Callippus: windy condition. Euctemon: storm at sea.
30. Eudoxus: the Etesians blow. Metrodorus and Callippus: windy condition.

Mesori.

1. Egyptians: Zephyros or Notos. Eudoxus and Caesar: Notos.
2. 14 hours: the bright one of Aquila sets in the morning. 15 hours: the bright one of Piscis Australis sets in the morning. Metrodorus and Callippus and Conon and Democritus and Hipparchus: Notos and burning heat.
3. Euctemon and Dositheus: southerlies and stifling heat.
4. 13 ½ hours: the bright one of Lyra sets in the morning. 14 hours: the one common to Pegasus and Andromeda rises in the evening. 14 ½ hours: Sirius rises.
5. Egyptians: burning heat. Eudoxus: southerlies and beginning of late summer. Dositheus: the Etesians begin.
6. 14 ½ hours: the bright one of Aquila sets in the morning, and the bright one of Piscis Australis sets in the morning. Egyptians: Argestes or Zephyros and burning heat. Eudoxus: the Etesians blow.
7. Caesar: Notos blows.
8. Hipparchus: burning heat.
9. 14 hours: the bright one of Piscis Australis sets in the morning. 15 hours: Sirius rises.
10. 15 hours: the bright one of Aquila sets in the morning. 15 ½ hours: the one called Capella rises in the evening. Caesar: weather-change. Eudoxus and Dositheus: southerlies.
11. 14 ½ hours: the bright one of Perseus rises in the evening. 15 hours: the last one of Eridanus rises. Eudoxus: great burning heat.
12. 13 ½ hours: the bright one of Piscis Australis sets in the morning. Egyptians: burning heat. Dositheus: stifling heat and after that the Etesians.

13. 13 ½ hours: the one common to Pegasus and Andromeda rises in the evening. 14 hours: the bright one of Lyra sets in the morning.
14. 15 ½ hours: Sirius rises.
15. Egyptians: Argestes, great burning heat and stifling heat.
16. Egyptians: Argestes or Notos, misty air.
17. Egyptians: great burning heat and stifling heattos.
18. 13 ½ hours: the one on the heart of Leo rises. Egyptians: thunders. Eudoxus: very great wind. Hipparchus: disturbance of winds.
19. Beginning of Autumn. 13 ½ hours: the bright one of Piscis Australis rises in the evening. 14 ½ hours: the one on the heart of Leo rises. Egyptians: burning heat.
20. 15 hours: the one on the heart of Leo rises. Caesar: weather-change.
21. Caesar: weather-change, stifling heattos.
22. 13 ½ hours: the one on the tail of Leo is hidden, and the bright one of Hydra rises.
23. 13 ½ hours: the one on the front right hoof of Centaurus is hidden. 14 hours: the one on the tail of Leo is hidden. Caesar: veering around of winds.
24. 14 hours: the bright one of Hydra rises. Eudoxus: weather-change.
25. 15 ½ hours: the one on the tail of Leo is hidden.
26. 14 hours: the bright one of Piscis Australis rises in the evening. Egyptians: Notos or Zephyros. Democritus: weather-change with waters and winds.
27. 14 ½ hours: the bright one of Hydra rises. Egyptians: burning heat and mist.
28. 14 hours: the bright one of Perseus rises in the evening.
29. 15 hours: the bright one of Hydra rises. Egyptians and Caesar: weather-change, bad condition of air. Eudoxus: accustomed to thunder.
30. 15 ½ hours: the one on the trailing shoulder of Auriga rises in the evening. Egyptians: Zephyros or Argestes.

Epagomenae.

1. 15 hours: the bright one of Lyra sets in the morning. 15 ½ hours: the bright one of Hydra rises. Eudoxus and Metrodorus: weather-change.
2. 14 hours: the one called Canopus rises. 14 ½ hours: the bright one of Piscis Australis rises in the evening. Egyptians: burning heat. Eudoxus and Caesar: weather-change. Hipparchus: Notos, and the Etesians cease.
3. 14 ½ hours: Spica is hidden. 15 ½ hours: the one on the tail of Leo rises. Hipparchus: sudden storm of winds.
4. 15 hours: the one on the tail of Leo rises. Callippus: weather-change.
5. 13 ½ hours: the bright one of Cygnus sets in the morning. Egyptians: Zephyros or Argestes.

Now the record has obtained this [i.e. the foregoing] order of presentation for the sake of convenience. Perhaps it would not be out of place also to give a summary of the count of the recorded fixed stars together with the [count] of the collected phases for the purpose of checking those that have been missed through copying errors, and also [a summary of] the men who marked circumstances, and the lands where each happened to have made his

observations, so that we can perhaps more appropriately fit similar delineations to the [lands that lie] on the same parallel.

There are 15 stars of the first magnitude: the one called Capella, the bright one of Lyra, Arcturus, the one on the heart of Leo, the one on the tail of Leo, the bright one of the Hyades, Procyon, the one on the trailing shoulder of Orion, Spica, the one common to Eridanus and the foot of Orion, Sirius, the bright one of Piscis Australis, the last one of Eridanus, the one called Canopus, [and] the one on the front right hoof of Centaurus.

There are a further 15 of the second magnitude: the bright one of Perseus, the one on the trailing shoulder of Auriga, the bright one of Cygnus, the bright one of Corona Borealis, the one on the head of the leading twin [of Gemini], the one on the head of the trailing twin [of Gemini], the one common to Pegasus and Andromeda, the bright one of Aquila, the one on the leading shoulder of Orion, the bright one of Hydra, the bright one of the northern claw [of Libra], the middle one of the belt of Orion, the bright one of the southern claw [of Libra], Antares, [and] the one at the knee of Sagittarius.

Each of these makes four phases per year on one of the parallels where they rise and set. The one called Canopus and the one on the front right hoof of Centaurus both happen to make settings and risings on only the three first of the established parallels starting from the south. The bright [star] that is the last of Eridanus [makes settings and risings] on only the first four [parallels]. The remaining 27 [make settings and risings] on the five parallels. Thus the total amounts to 580 phases.

And I have recorded the weather changes of these and set them down according to the Egyptians and Dositheus, Philippus, Callippus, Euctemon, Meton, Conon, Metrodorus, Eudoxus, Caesar, Democritus, [and] Hipparchus. Of these, the Egyptians observed here, Dositheus in Cos, Philippus in the Peloponnese and Locris and Phocis, Callippus on the Hellespont, Meton and Euctemon at Athens and the Cyclades and Macedonia and Thrace, Conon and Metrodorus in Italy and Sicily, Eudoxus in Asia and Sicily and Italy, Caesar in Italy, Hipparchus in Bithynia, Democritus in Macedonia and Thrace. Hence one would particularly fit the weather-changes of the Egyptians to the lands around this parallel, that is, [the parallel] on which the longest day is 14 equinoctial hours; those of Dositheus and Philippus [to the parallel] on which the longest day is 14 ½ [equinoctial] hours; those of Democritus and Caesar and Hipparchus [to the parallel] on which the longest day is 15 equinoctial hours, those of Callippus and Eudoxus and Meton and Euctemon and Metrodorus and Conon generally [to the parallels] on which the magnitude of the longest days extends from 14 ½ equinoctial hours to 15.