

## STARS IN THE *FASTI*: IDELER (1825) AND OVID'S ASTRONOMY REVISITED

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*Abstract.* Using astronomy software, this article provides a systematic re-examination of the astronomical references in Ovid's *Fasti* and reviews the previous authority on the question, Ideler (1825). The review finds that most (three out of four) of the more than fifty astronomical references in the poem are accurate and reflects on the negative reception of Ovid's handling of astronomy in light of these findings.

OVID'S CALENDAR POEM, the *Fasti*, weaves together the Roman civil calendar with astronomical observations, as the second line announces: "lapsaque sub terras ortaque signa canam" ("signs risen and set under earth I will sing," 1.2). Later, at the end of the *Fasti*'s long programmatic opening, Ovid expands on his astronomical project (1.295–310). After honoring the devotion and genius of pioneer astronomers in Lucretian fashion, Ovid concludes,

nos quoque sub ducibus caelum metabimur illis  
ponemusque suos ad vaga signa dies. (1.309–10)

We too will map out the sky under their guidance,  
and to wandering signs set down the proper days.

The very next couplet is the first of more than fifty such star references, or asterisms,<sup>1</sup> in the *Fasti* in which Ovid refers to the risings and settings of specific stars and constellations. To judge by their quantity, it would seem that Ovid took this strand of his project seriously; with good reason, since star lore provided Ovid and other ancient poets with one of the richest stores of traditional narrative plots, many of them alluringly

<sup>1</sup> Strictly speaking, the (rare) word "asterism" refers to a constellation, a configuration of stars. For the purposes of this paper, I have co-opted and extended it to mean simply one of Ovid's *references* to the stars. (In the end, this was a choice of convenience, and I hope it will not cause the reader any confusion.)

lurid, violent, and sexually risqué. Appealing to Ovid, too, for his *Fasti* project is the promising opportunity to link these stories with an objective time-space correlative: the shimmering, moving star map of the night sky. Like the time-structuring framework of the Roman calendar and the symbolic topology of Roman altars, temples, and monuments, the sky provided a structured map upon which to plot episodic storylines. The storied stars are both stories and stars: traditional tales well-known to Ovid from his poetic predecessors and his own previous works, as well as real presences in the nightly sky that come out to dance after Phoebus unhitches his steeds beneath the western waters, ceding the heavens to darkness, the planets, Luna, and the lesser mythic characters of constellational tales. Like a *puella* in erotic elegy, the stars are *vaga signa*, “wandering” signs, but also “inconstant” and “fickle.”<sup>2</sup> Heaven’s stars are inherently elegiac.<sup>3</sup>

Many modern classical scholars have acknowledged the key role that astronomical lore plays in Ovid’s literary enterprise.<sup>4</sup> Yet also pervading the scholarship are general doubts whether the poet had either the skill or the will to pin the wandering signs accurately to their proper days. In fact, almost all recent commentators on Ovid’s use of astronomy have characterized it in terms that discount the relevance of their calendrical situation.<sup>5</sup> Ovid is “wildly inaccurate,” and again, “both inac-

<sup>2</sup> Although Ovid never applies *vaga* directly to *puella*, cf. Propertius 1.5.7: *non est illa vagis similis collata puellis* (“compared with them, she is not like fickle girls”). Other things Ovid describes as *vagus* are feet, waves, birds, fame, and the exile. Interesting to note, *vaga sidera* occurs in line 17 of the Latin Aratus attributed to Germanicus (cf. Gain 1976, 21).

<sup>3</sup> By choosing to write his “serious” calendar poem in elegiac couplets, Ovid has already, at the very outset, suggested something along these lines. As Newlands 1995, 27–50, argues, the stars as poetic subject are also a marker of Hellenism, metonymic for the Roman appropriation of, and fascination for, Greek intellectual and artistic culture. Newlands argues further that the stars provide Ovid an elegiac counterpoint to imperial themes encoded in the civil calendar that Ovid, by his choice of subject, must negotiate. Gee 2000, 21–65, on the other hand, takes exception to this position because of the deep connection between empirical astronomy and the creation of workable civil calendars. But there is an important difference, I think, between seeing in Ovid’s eulogy to astronomy Stoic themes that take astronomy seriously (as Gee does) and denying (as Gee also does, against Newlands) that the traditional constellational stories, and the ways Ovid narrates them, very often have elegiac themes, and that these themes problematize readings of the *Fasti* that seek to isolate straightforward, or straight-faced, imperial panegyric.

<sup>4</sup> Among others, Newlands 1995, Barchiesi 1997a, Gee 2000, all in their different ways have many incisive observations and readings of how Ovid sets up and fulfills literary intentions, and implies ambiguous meanings, through his use of astronomical materials.

<sup>5</sup> R. Hannah 1997, 1998, is an exception for having challenged the prevailing wisdom concerning Ovid’s astronomical expertise; he has persuasively argued that in his treatment

curate and arbitrary”;<sup>6</sup> his observations are “often dubious,” revealing “technical carelessness and even ignorance of astronomy and thus cannot be relied upon as practical sources of information.”<sup>7</sup> Going back in time, we find earlier commentators on Ovid expressing this view. Frazer, discussing a proposed emendation at 1.311, argues against it on these grounds: “Ovid’s astronomical blunders . . . are too numerous and glaring to permit us to save his scientific credit at the expense of the unanimous testimony of the manuscripts.”<sup>8</sup> Later, Bömer, following Frazer’s lead, takes the opportunity at Ovid’s first asterism (1.313) to express his overall attitude to this dimension of the poem: “even greater astronomical inaccuracies by Ovid are hardly uncommon.”<sup>9</sup>

The ultimate authority on this matter, all concur, is Christian Ludwig Ideler (1825), otherwise known as Ludwig, who systematically catalogued and critiqued Ovid’s asterisms using contemporary astronomical calculation tables. There has been some confusion in Ovidian scholarship concerning Ideler’s identity, a fact brought to my attention by Robert Hannah’s work. Frazer and Bömer both cite Ludwig, but recent authors

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of May 12 Ovid is playing a skillful game with contemporary political astronomical symbolism surrounding the setting of Scorpio over the temple of Mars Ultor (1997, 531–35). The present work will, I hope, bolster arguments like Hannah’s that find deeper meanings in Ovid’s seemingly innocent, and inept, asterisms.

<sup>6</sup> Fantham 1998, 36, 264.

<sup>7</sup> Newlands 1995, 28, and again, 29: “Given Ovid’s frequent astronomical errors, however, such dating [of calendrical events] is only approximate.” Yet another example of the standard topos is Nagle 1995, 31: “with all its confusions and discrepancies, the astronomical data in the *Fasti* would not have been accurate and reliable even for its original audience.”

<sup>8</sup> Frazer 1929, v. 2, 137. As I will argue below, the supposed “error” in Ovid’s reference here is more plausibly a mistaken interpretation of the passage by modern commentators. See below, on Jan. 3. Ironically, both Frazer and Bömer on *F.* 1.311 follow not only Ideler’s technical critique, who said Ovid mixed up a morning with an evening setting, but also his editorial aside (*einen bei ihm nicht ungewöhnlichen Fehlgriff*, “a mistake not unusual for him”: 156), even though this is one of only a few places where Ideler expresses overt criticism of Ovid’s astronomy.

<sup>9</sup> Bömer 1957–58, v. 2, 38 (“auch grössere astronomische Ungenauigkeiten bei Ovid keine Seltenheit sind”). Citations of this negative stereotype could go on and on. Martin 1985, 262, seeking to defend Ovid against scholarly dismissal of the *Fasti*, yet defers to Wilkinson 1955, 265—who repeats the notion that Ovid and his audience did not look to the stars—and “concedes” to the traditional verdict: “The *Fasti*’s numerous technical inaccuracies prove the poet no astronomer.” Hannah 1997, 534, n. 36, similarly assessed the situation: “The apparent unreliability of Ovid’s astronomical notices in the *Fasti* has become a refrain of scholarship on the poem ever since Ludwig Ideler’s work on the subject in the early nineteenth century, and was forcefully perpetuated by J. G. Frazer.”

(e.g., Newlands, Fantham, and Gee) have cited *Julius Ideler*. Our (Christian) Ludwig Ideler (1766–1846) was the famous astronomical authority and presumably the author of the listed article. Although the article itself does not give the first name, Julius Ludwig Ideler (1809–1842)—perhaps Ludwig’s son, though I could not ascertain this—was certainly too young to be our author.<sup>10</sup>

Owing to the age and the general unavailability of Ideler’s work, Ovidian scholarship has long stood in need of a fresh consideration of the question of the relative accuracy, overall and in detail, of the *Fasti*’s asterisms. Such an undertaking is needed, since the current critical consensus effectively blocks avenues of literary interpretation that might wish to read Ovid’s asterisms as meaningful on an astronomical level, for example, as potential points of irony or skillful allusions to sources and predecessors or to contemporary astrological symbolism. But if Ovid is an inept astronomer, how do we separate clever artifice from mere bungling? Indeed, Carole Newlands, offering one response to this situation, has taken a logical final step and turned Ovid’s supposedly ubiquitous errors into evidence for *intentional* poetic license to arrange his material however he wants.<sup>11</sup>

But is the current consensus a fair appraisal of Ovid’s handling of astronomy? Indeed, the unspecific generality of the oft-encountered stereotype arouses suspicions. Is he just *sometimes*, or is he *usually* off the mark? Is there a pattern to his errors or does he seem to be just shooting in the dark? Is he conscientiously following available sources and sometimes making an “honest” mistake, or is he blatantly flouting all astronomical reality as it was understood in his time? Answering these relatively easy questions can make a big difference for other sorts of literary critical inquiries. In place of generic and vague claims of his unreliability, then, what is needed is a detailed reappraisal of Ovid’s astronomy, assessing where, how, and why it succeeds or fails. This paper provides, to my knowledge, the first systematic astronomical critique of the *Fasti* asterisms in the 175 years since Ideler’s widely cited, though (so it seems) commonly misread, work of the same sort.

First a note on my tools and methods. I have used a commercially

<sup>10</sup> Julius Ludwig Ideler (1809–1842) was, however, an important editor of classical texts, including *Physici et Medici Graeci Minores* (1841). Interestingly enough, there is a modestly sized crater in the southern hemisphere of the moon named “Ideler” in honor of our Ludwig. Ideler 1825 is hereafter cited with author and page numbers only.

<sup>11</sup> Newlands 1995, 31: “Ovid’s seeming carelessness about the dates of the stars’ appearances in the sky gives him the latitude to position Greek myths in his Roman poem where they best suit his poetic design.”

available computer software program meant for popular use by amateur astronomers, Expert Astronomer for Windows (1993, Etlon Software). With it, one can generate accurate views of the sky from any point on the planet (or in outer space) and at any time in the past or future. It provides a number of tools: a calendar, to set the month, day, and year; a clock for the time of day; a locator tool, using either major cities or specific latitude–longitude coordinates; a star-identifying and description function for all celestial bodies shown; and a time-lapse tool to enable viewing of celestial motions through different time periods (minutes, hours, days, years, etc.). One can also change the point of view by compass direction, line of sight, and scope of sight; in this way, one can view the sky as though facing any given direction, or as though lying down and gazing up, as well as focus in on narrow ranges of space or pan out to view the entire sky. In addition, visual aids such as constellation lines and labels, an opaque or solid horizon ground, and various sorts of grid lines are available to assist any visualization of stellar motion desired. It thus becomes very easy to generate moving visual images of the sky as it would have appeared to Ovid from Rome as he was writing the *Fasti* (or, just as easily, from Alexandria or Athens—or Tomi).<sup>12</sup>

My working method involved four steps. First, to avoid unwanted bias, before systematically reviewing Ideler's findings, I compiled Ovid's asterisms and decided in each case to which stars and motions he was, or was most likely to be, referring. Realizing that Ovid is a master of understatement, I consciously tried to avoid overinterpreting *prima facie* his star references. For example, if Ovid says a constellation is rising on a certain day, but without stating whether this occurs in the morning or the evening, my working interpretation would be "such and such star is rising," without assuming beforehand whether he means morning or evening (this turned out to be Ideler's method as well, though sometimes I disagree with his base-line interpretations of the text).

Second, using the software described above, I undertook an astronomical evaluation of his statements. As a null hypothesis, I based my calculations on sky views generated for Rome in the year 5 C.E. (more or less at random around the time Ovid was writing), expecting to have to modify this at times, mostly for latitude.<sup>13</sup> Alexandria (ca. 31° N) is ten

<sup>12</sup> Cf. screen shots of program, Figs. 1 and 2.

<sup>13</sup> Within certain limits, the exact year is not that important for fixed-star calculations, so long as one is in the general time span of interest. Ideler's calculations, based on 44 B.C.E. (the second year of Caesar's calendar), and my own for 5 C.E. would be virtually identical. Latitude is a far more important variable.

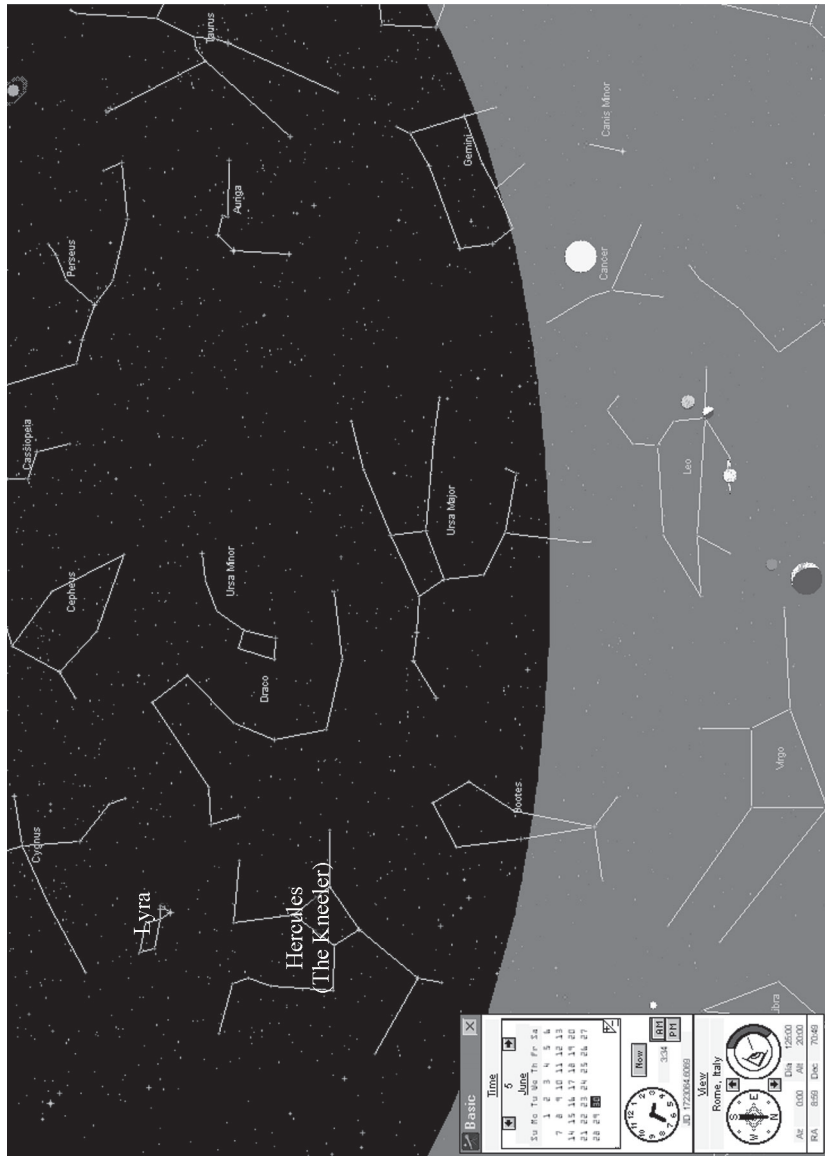


Fig. 1. *admit Alcides increputaque lyram* (Fasti 6.812): June 30, 5 C.E., from Rome, looking north, the constellation of Hercules the Kneeler with Lyra directly above, prominent and descending in the west as the sun rises. Screen shot using Astronomer for Windows (Etlon Software, 1993).



Fig. 2. May 12, 5 C.E., 7:05 P.M., from Rome. Orion is setting with the sun as Scorpio rises in the east. Scorpio and Orion are in astronomical “opposition” (cf. *Fasti* 5.417–18, 545–48). Screen shot using Astronomer for Windows (Etlon Software, 1993).

degrees of latitude south of Rome (ca. 41° N), and it is highly likely, as is generally agreed, that at least some of Ovid's astronomical sources would have given dates based on observations made from Alexandria rather than Rome. But at first, I simply worked from the sky over Rome to get a sense of how well Ovid's asterisms might represent stellar reality as he himself could have seen it night after night. If a star reference could be seen to represent an astronomical reality around the dates on which Ovid puts it, I judged it as a hit; if the constellation and the motion attributed to it had no perceivable relation to the night sky for that date, I counted it as a miss.<sup>14</sup> (The reasons that I have allowed for a wider "margin of error" than has usually been admitted by critics will be articulated below; see sec. 4.) To give a brief example where some interpreting is required in order to evaluate the astronomy: at *Fasti* 2.79–80, for February 3, Ovid says the Dolphin "will flee your sight the next night" (*is fugiet visus nocte sequente tuos*). Interpreting this to mean that the Dolphin *sets in the evening* (i.e., "flee," taken to indicate setting and "next night" as evening), with the computer program I then looked at the evening of February 3, 5 C.E. in Rome to see where the star cluster Delphinus happens to be. In this case, Delphinus is setting with the sun (the "true evening setting"), and Ovid's reference is confirmed as correct.

Third, having completed a preliminary survey of the astronomical accuracy of Ovid's asterisms, I then compared my results with Ideler's and reexamined with fresh eyes the reception of Ideler's findings in other modern commentators. Finally, I revisited my critical readings of *Fasti's* asterisms in light of this wider critical dialogue, tightening up my conclusions on Ovid's astronomy in general and in detail, facing dilemmas of textual interpretation, refining my readings, and getting a better handle on Ovid's relationships with sources.

Based on this analytical procedure, I came to the following general conclusions, which the subsequent presentation of findings will demonstrate. First, Ideler's astronomical method and conclusions appear to be sound; they usually turned out to be similar or identical to my own. Nonetheless, at times, Ideler seems a little too quick to judge ancient dates for apparent risings and settings erroneous vis-à-vis the astronomical tables he used, whose high degree of accuracy rested on centuries of observation subsequent to Ovid's own day. Second, and I think more

<sup>14</sup> In my calculations, I have used Pliny's statement that observations were normally taken at least three-quarters of an hour before sunrise or after sunset (*HN* 18.219, on which more below). Using this rule of thumb, I avoided calculating individual "visibility arcs" for every star observed.



importantly, modern classicists have tended to misrepresent both Ideler's findings and Ovid's astronomy (though a few of Ideler's passing comments have encouraged the traditionally negative stereotype). Finally, a more accurate overall characterization of the *Fasti* asterisms would be that, astronomically speaking, Ovid is *usually correct*, though with a small (but not statistically insignificant) number of evident errors and/or confusing references. These errors, of course, each pose problems of their own and deserve closer scrutiny. But statistically speaking, roughly three out of four (76%) of Ovid's star references are valid within a narrow range of days.<sup>15</sup>

Below I present my results in a series of tables and discursive analyses and follow this up with discussion and conclusions based on these findings.

## 1. MONTHLY DISTRIBUTION OF ASTERISMS

TABLE 1. The days of each month on which the *Fasti* asterisms appear

Month	Days when <i>Fasti</i> asterisms appear													Monthly totals	
January			3	5			9			17	23	24		6	
February		2	3	5			12		14	15				6	
March			3	5	7	8				16	17	23		7	
April	1	2			6	9			17	20		25		7	
May	1	2	3	5	6	10	12	13	14	20	22	25	26	27	14
June	1	2			7	10		15	17	18	19	20	25	30	11
															51

NOTE: Some dates refer to multiple signs or stars, and two date references (Mar. 17, May 12) are excluded from the final tally for reasons given below.

This calendrical distribution certainly seems nonrandom. But why does the number of references balloon in May and June? And why the breaking in May and June of a general pattern of near symmetry in the other months? Is it simply because as late spring and early summer comes on,

<sup>15</sup> Adding up Ideler's results, I found that, even with his somewhat stricter critique of Ovid and other ancient sources, he judged Ovid to be correct more than 60% of the time. A third of these errors include "incorrect" dates of motions that are nevertheless corroborated in other ancient sources, which, if removed from the count, raises Ideler's grade for Ovid to around 74%—that is, very nearly matching my own conclusions.

warmer weather affords more time for stargazing (and thus Ovid's sources would have offered more material to work with in these months)? Likewise, another factor would be the onset of the sailing season when sailors navigate primarily by the stars (Ovid situates more than one asterism in the context of onboard observations; cf. June 10: 6.471–72).

## 2. SEASONAL MARKERS AND ZODIAC SIGNS

TABLE 2. The monthly zodiac signs by date that appear in the *Fasti*, along with the other seasonal markers (astronomical and meteorological) indexed in the text

Zodiacal or seasonal marker	Date	<i>Fasti</i> reference
Midwinter	Jan. 10	1.459–60
Sun in Aquarius	Jan. 17	1.651–52
Spring begins	Feb. 10	2.149–52
Sun in Pisces	Feb. 15	2.457–58
Swallow returns	Feb. 24	2.853–54
Sun in Aries	Mar. 22	3.851–52
Vernal equinox	Mar. 26	3.877–78
Libra brings rain	Apr. 6	4.386
Sun in Taurus	Apr. 20	4.713–20
Mid spring / showers	Apr. 25	4.901–4
Orion sets/days grow longer	May 12	5.545–48
Summer begins	May 13	5.601–2
Sun in Gemini	May 20	5.693–94
West wind rises/sailing season	June 16	6.715–16
Sun in Cancer	June 19	6.727
Summer solstice	June 26	6.789–90

In addition to star references, Ovid also marks the passage of the seasons. These notices occur on January 10 (midwinter: 1.459–60); February 10 (beginning of spring: 2.149–52); February 24 (swallow returns: 2.853–54<sup>16</sup>); March 26 (vernal equinox: 3.877–78); April 6 (Libra brings and marks a rainy season: 4.386<sup>17</sup>); April 25 (middle of spring, forecast of showers: 4.901–4); May 12 (Orion sets and days grow longer: 5.545–48); May 13 (beginning of summer: 5.601–2); June 16 (rise of the west wind: 6.715–16); and June 26 (summer solstice: 6.789–90). Each month contains

<sup>16</sup> Good literary readings of the swallow reference in Newlands 1995, 162–68.

<sup>17</sup> I read this passage as a primarily meteorological reference, cf. Apr. 9 below.

at least one major seasonal marker of this sort, clear evidence that Ovid strove consistently to weave these into the structure of each month.

Similarly, each of the six months contains one regular asterism after the Ides, marking the sun's progress in its annual motion through the twelve ecliptical zodiac signs (familiar to modern readers from their use in traditional astrology): from Capricorn to Aquarius (Jan. 17: 1.651–52), to Pisces (Feb. 15: 2.457–58), to Aries (Mar. 22: 3.851–52), to Taurus (Apr. 20: 4.713–20), to Gemini (May 20: 5.693–94), to Cancer (June 19: 6.727). Astronomically these are unobjectionable (Columella gives similar or identical dates for all of them), and their regular occurrence is an obvious structuring element in the text. Further, Ovid displays his general understanding of this annual solar motion at 3.109: *signaque quae longo frater percenseat anno* (“the signs which the brother [i.e., Phoebus Apollo] traverses in the long year”).

Both these seasonal markers and the zodiac sign references serve Ovid's poetic mimesis of times (*tempora*) by incorporating as a structural backdrop the rhythms of natural time, with the steady and orderly annual progression of the sun from one solstitial tropic to the other, which motion accounts for the varying length of days in latitudes north or south of the equator, as well as the changing weather patterns through the four seasons. Further, each month finds its own peculiar emblem in its zodiac sign and its own seasonal character marked by such phenomena as rain, snow, steady or capricious winds, lengthening or shortening days, equinoctial midpoints, or solstitial solar pauses. The zodiac and the seasons are the large-scale punctuation points in the multidimensional cycle of temporal change, and Ovid puts them to good use to structure his calendar poem.<sup>18</sup>

Taken together, the seasonal markers and the zodiac signs incorporate into Ovid's poetic *Fasti* the character of the *menologia rustica*, rural month calendars that noted, along with agricultural activities and major festivals, the month's sun-sign, the hours of daylight and darkness, and the seasonal nodes of solstice and equinox—but not (at least, not in our surviving examples) any other astronomical information.<sup>19</sup> Indeed, when

<sup>18</sup> Cf. Pliny *HN* 18.218–23 for a discussion of the zodiac and seasons as the celestial indexes of the year. Cf. Ideler, 150–51, for further discussion of the Roman seasonal markers and Ovid's use of them.

<sup>19</sup> For surviving *menologia rustica*, cf. Degrassi 1963, 284–98. So, for example, on the complete epigraphic *menologium rusticum Colotianum* for the month of June we learn that it has 30 days, the Nones is on June 5, there are 15 hours of daylight, and 9 of darkness, the solstice is on June 24, the sun is in Gemini, Mercury is the month's guardian (*tutela*), it is the

combined in tabular form, Ovid's zodiac and season markers sketch out an admirably complete seasonal *menologia* for the first six months of the year.

### 3. CONSTELLATIONS IN ORDER OF THEIR APPEARANCE

TABLE 3. The astronomical signs in their order of appearance in the text (numbers are ordinal, not dates of occurrence)

January	February	March	April	May	June
1. Cancer	7. Lyra	14. Pisces	22. Scorpio	29. Eagle/ Capella	42. Eagle
2. Lyra	8. Leo	15. Bootes	23. Pleiades	30. Hyades	43. Hyades/ Taurus
3. Dolphin	9. Dolphin	16. Vine- tender	24. Libra	31. Centaur (Chiron)	44. Bootes
4. Capricorn/ Aquarius	10. Aquarius	17. Pegasus	25. Orion	32. Lyra	45. Dolphin
5. Lyra	11. Bootes	18. Northern Crown (Ariadne)	26. Hyades	33. Scorpio	46. Hyades
6. Leo	12. Raven- Serpent- Bowl	19. Scorpio	27. Aries/ Taurus	34. Orion	47. Orion
	13. Aquarius/ Pisces	20. "Kite"	28. Aries/ Dogstar	35. Pleiades	48. Dolphin
		21. Aries		36. Taurus	49. Gemini/ Cancer
				37. Gemini	50. Ophiuchus (Aesculapius)
				38. Dogstar	51. Orion
				39. Eagle	52. Hercules/ Lyra
				40. Bootes	
				41. Hyades	

time for mowing hay and harrowing vineyards, and sacred festivals of Hercules and of Fors Fortuna are held. Newlands 1995, 29, notes that unlike the *Fasti*, the *menologia* "never provide mythical explanations for the constellations they cite," but Newlands does not observe (see also Gee 2000, 11) that in the *menologia*, "astronomy" is restricted to the utterly conventional information of monthly sun-signs and the seasonal progress, while no specific star's risings or settings are ever indexed—an important distinction.

Ovid has a pretty good coverage of *signa*: 28 different constellations (29 if the last line's reference to Hercules is accepted as an oblique asterism).<sup>20</sup> A pattern seems to emerge in which stars are first mentioned, repeated, then lapse, to reappear only later (recall 1.2, *lapsaque sub terras ortaque*). For instance, Lyra occurs in both January and February, is dismissed for March and April, then recurs in May and June (indeed, as the poem's last word). Various kinds of repetition link the end of one month to the beginning of the next; Lyra and Leo, for example, are noted at the end of January and again at the start of February, just as Ovid's interest in the Hyades, the Eagle, and Bootes serves in a similar manner to link May and June. Cancer, the sign mentioned in January as it is setting, only recurs near the very end of the poem in June when the sun enters the zodiac sign of Cancer. Astronomically, what this means is that the sun has traveled through half of its yearly circuit, from directly opposite Cancer in January to directly over it in June. Poetically, it creates another link for ring-composition. By June, the only new constellations that have not been mentioned in a previous month are Anguifer/Aesculapius (cp. his appearance at the end of the *Metamorphoses*, 15.497–546) and the (possible) oblique asterism of Hercules in the last line of the poem (see below).

#### 4. ASTERISMS EVALUATED BY MONTH

Ancient astronomers observed eight kinds of stellar motion. I have followed Ideler in using the terms “true” and “apparent,” and the four combinations of “morning” and “evening,” “rising” and “setting.”<sup>21</sup> A

<sup>20</sup> Ideler, 138–39, only counts 22 distinct asterisms, but he omits the mysterious “Kite” star, only counts Corvus-Anguis-Crater as one (Ovid speaks of it as three distinct constellations), omits Capricorn (Ovid only mentions it when the sun is leaving it and entering Aquarius), and omits both Gemini and Taurus, presumably because they are only referred to in connection with the solar zodiac progression. Gee 2000, 193–204, by yet another slightly different reckoning, counts 25 constellations. According to Ptolemy's treatment, there were 48 “canonical” constellations (cf. *OCD* [3d ed.] s.v. “constellations and named stars”).

<sup>21</sup> Gee's Appendix 2 (2000, 205–8) provides a useful discussion of the more technical terms for the different risings and settings. West 1978, 376–82, has a similar, and admirably clear, discussion of this material. Of course, Dicks 1970, 9–26, a treatise devoted to the subject, will provide all one needs to know; and now, Evans 1998 will take one even further into the subject, cf. 190–99. Furthermore, Evans, a specialist in archaeoastronomy, dismisses the “technical” terms sometimes encountered—e.g., in West and Gee—(heliacal and acronychal rising, etc.) as inconvenient, unnecessary, and not even particularly true to ancient usage. He uses simply “true,” “visible,” “morning,” “evening,” “rising,” and “setting” (197).

star's *true rising* and *setting* are readily understood: both the true morning rising and true evening setting occur when the star is directly with the sun as it rises or sets; thus the former occurs in the east, the latter in the west. Both the true evening rising and true morning setting, on the other hand, happen when the star is directly opposite the sun in the sky; again, the former occurs in the east, the latter in the west. These four situations are calculated, not observable, phenomena, since in all cases the sky is (either already or still) bright with sunlight when the star's motion is taking place.

An "apparent" rising or setting, on the other hand, *is* observable, but its dating is necessarily more subjective: it is a date on which a star *can be seen* rising or setting before sunrise or after sunset. Although there are ways to calculate this with a kind of precision (factoring in, among other things, the brightness of the star and its distance from the ecliptic), the spectra of dates given for appearances in ancient sources nonetheless seem to reflect their dependence on all sorts of empirical observational variables that modern, more mathematically precise calculations may fail to take into account.<sup>22</sup> James Evans makes this point emphatically in his discussion of this issue. After reviewing the many stable and variable factors that affect the observation of a star's risings and settings, he concludes: "A theory of visible star phases that took all these factors into account would be very complicated—too complicated, in fact, to be very useful" (Evans 1998, 193).

Instead, the ancients simplified by making general rules for how long after sunset or before sunrise an apparent rising or setting should be observed. As already mentioned (n. 14, above), Pliny's statement that observations are to be taken three-quarters of an hour before sunrise or after sunset (*HN* 18.219) is a practical rule of thumb that gets around the

<sup>22</sup> Hannah 1998, 329, countering Frazer's (naive) objection to multiple dates for observations in ancient sources, makes the same point about the subjectivity of star appearances. The point bears emphasizing, however, since in addition to objective factors affecting empirical observations (like local horizon and atmospheric conditions), it is highly probable that many more subjective, human elements would have factored into the complex and arcane traditions of the ancient star-"priests"; again, this is far from being a study in Mediterranean archaeoastronomy, but no doubt many features of ancient astronomical practice, had we the full picture, might from our point of view seem ad hoc, unsystematic, and perhaps irrational. Just to mention two: the stars and planets were gods (and therefore involved in religion) and were thought to cause both the weather and earthly fates; and the Greeks were heirs, active appropriators, of older and foreign systems of astronomy/astrology from the Near East and Egypt, making it probable that many things may have been lost, or misinterpreted, in translation. Cf. Evans 1998, 3–25; Barton 1994, 1–30.

need to take into account all the different variables that can affect apparent star motions; both for its convenience and because it gets us close to ancient practices, I have used Pliny's rule of thumb in my own calculations. Furthermore, compounding the degree of imprecision in ancient dating from the perspective of modern observers, it is *apparent* and not *true* dates that were more important for ancient practical astronomy, the main uses of which were to provide a handy seasonal calendar to coordinate time-sensitive human activities, primarily agriculture and seafaring, but also religious, military, and festival activities.<sup>23</sup> Nonetheless, different observers were likely to have used different standards for their observations; also, astronomical methods, assumptions, and standards were themselves still in flux in antiquity. The inevitable result is what must appear to us as a sloppy variety of dates for apparent star risings and settings. In the following, I try to offer phenomenologically simple descriptions of the celestial motions being observed in order to make the notes more readily accessible to novices in astronomy.

As his main cross-references for Ovid's dates, Ideler used Pliny's similar references in *Historia Naturalis* 18.200–320, given in connection with timing agricultural activities, and Columella's notices of the same sort in Book 11 of his *De Re Rustica*. Obviously, both of these authors are after Ovid and thus could not have been his sources. Indeed, Pliny mentions both Ovid and Columella in his list of authorities for Book 18 (*HN* 1.18) (though on this point we cannot be sure that he used Ovid specifically for star-dates).<sup>24</sup> Columella mentions Meton and Eudoxus as astronomical authorities (9.14.12). Presumably, one of Ovid's sources was Caesar's official calendar, promulgated in 45 B.C.E. (and described by Ovid at 3.155–66).<sup>25</sup> Although we have significant epigraphic remains of this calendar, we do not possess the astronomical information connected with it, which Pliny, for instance, seems to refer to when he cites Caesar. Other sources available to Ovid would have been Alexandrian astronomical

<sup>23</sup> Cf. Dicks 1970, 12, "the true risings and settings . . . play no part in practical astronomy, because . . . they are not observable." This point has not been sufficiently appreciated by modern critics, who often (uncritically) cite Ideler's dates for *true* risings and settings in their glosses on Ovid's star references, most often to point out discrepancies (and thus Ovid's "ignorance").

<sup>24</sup> Of course, the possibility that the no-nonsense and practical Pliny used Ovid as one of his authorities for astronomical dates cuts somewhat against the notion that (as Nagle 1995, 31, articulated it) "readers would not have turned to his poem primarily (if at all) for scientific information."

<sup>25</sup> For a succinct review of the Roman calendar before and after reform, cf. Herbert-Brown 1994, 15–26.

works, such as that of Eudoxus (ca. mid-fourth century, only extant in fragments) and Hipparchus (ca. mid-second century), transcripts of *parapegmata*, or Greek city-state calendars, which included star observations, and other works of this sort.<sup>26</sup> Important examples of these survive, especially in the text of Geminus;<sup>27</sup> Ideler mentions these, but only on occasion. I have limited the present study, however, to a reappraisal of Ovid's astronomy and a critical review of Ideler's older findings. For this purpose, I felt that Pliny's and Columella's dates provide a ready crosscheck for us to see where Ovid is in line with ancient tradition and where he is, instead, wide of the mark. I have added to this, too, cross-references to the important *parapegma* appended to the Geminus text (henceforward abbreviated *Gp* with the page number in Manitius' edition [1898] of Geminus).

Finally, Ideler organized his discussion of Ovid's star references by astronomical sign or constellation. In the interest of variation, and to retain a sense of Ovid's own narrative emplotment of constellation references, I will discuss them in the order they appear in the text.<sup>28</sup> The first sentence of each entry provides my interpretive summary of what Ovid's reference says (in most cases this is little more than a translation or literal summary of the relevant lines); this is followed by my astronomical evaluation and critique. Ovid's worst errors, ones that deserve to be counted as genuine mistakes, are marked with an asterisk. References with no asterisk have passed astronomical muster. Rather than simply leave these out of the discussion altogether, I choose to include them because each calls for its own explanatory comment; some deserve comparative cross-reference to Ideler's notes, others have ambiguous phrasing that needs attention. More importantly, in light of the persistent negative scholarly stereotype against Ovid's astronomy in the *Fasti*, I believe it is a worthwhile corrective to outline explicitly the many times Ovid's astronomy is cogent, comprehensible, and above reproach.

<sup>26</sup> Cf. Gee 2000, 9–20, for more on Ovid's possible astronomical sources.

<sup>27</sup> Cf. Kidd 1997, 47; Aujac 1975, xix–xxiv, Evans 1998, 199–201. The *parapegma* text preserved in the Geminus corpus can be found in Manitius 1898, 211–33, and Aujac 1975, 97–108. While Neugebauer 1975, 579–81, dates Geminus to the first century C.E., he confirms that the *parapegma* is earlier, ca. late third, early second century B.C.E. This important *parapegma* collates star observations and weather predictions by Euctemon, Eudoxus, Callippus, and a few from other authorities.

<sup>28</sup> My procession through Ovid's star references also supplements, and has profited from, Gee's Appendix 1 (2000, 193–204) where she analyzes, in order of appearance, the intertextual relationships of Ovid's constellation references to their treatment in Aratus' *Phaenomena*.



*January*

*January 3:* (1.311–14) Ovid says that Cancer sets. 1.311 states evening (*nox aderit*), but the description of dewy ground in 312 more precisely suggests early morning. At this time, the sign of Cancer is low on the western horizon and is setting at dawn. Columella also dates the setting of Cancer on January 3 (11.2.97). This is a perfectly accurate date for the true morning setting of delta Cancer (*Asellus australis*), the center star of that constellation. Ideler, strangely enough, thought that Ovid unambiguously refers to an evening setting and thus concluded that Ovid has made the mistake “not uncommon to him” of confusing morning and evening.<sup>29</sup> But he ignores Ovid’s description of dewy ground in 1.312, a standard poetic marker of early morning in Latin poetry.<sup>30</sup> Even more strangely, both Frazer and Bömer also ignore the *rore madebit humus* (“the ground will be wet with dew”) and instead parrot Ideler’s critique of Ovid’s “mistake.”<sup>31</sup> Newlands (1995, 36) has now taken this one step further and, citing Ovid’s “mistake,” makes this reference a perfect example of Ovid’s arbitrary approach to astronomical observations.

\**January 5:* (1.316) *exoriente Lyra* (“Lyra rising”). Lyra is a small but bright constellation situated close to the northern celestial pole, which means that in the northern hemisphere it is visible at some time every night of the year, and when it sets, it does so only briefly (on average about six hours per day).<sup>32</sup> Ovid’s date here for a “rising Lyra” also occurs in Pliny (*HN* 18.234), who cites Caesar and Columella (11.2.97), whose reference also agrees with Ovid’s in mentioning Lyra side by side with meteorological advice: *tempestas varia* (“weather variable”); however,

<sup>29</sup> Ideler, 155–56: “der Dichter durch einen bei ihm nicht ungewöhnlichen Fehlgriff zwei Erscheinungen mit einander verwechselt hat.”

<sup>30</sup> Cf. Virgil *Geo.* 1.288, *cum sole novo terras inrorat Eous* (“when with the new sun Dawn dewes the lands”); Ovid *Am.* 1.6.55–56; also Prop. 1.16.22–23. The latter two texts, closely connected elegiac laments to the *ianua*, both establish at the very least that the time of night meant here is not right after sunset but *mediae noctes* (“midnight”), in full view of the stars (*plena sidera*), and when the whole city is silent (*urbe silent tota*)—that is, not 6 P.M., when an evening setting would be observed in early January, but more like 4 or 5 A.M.

<sup>31</sup> Ideler, 155. Cf. Frazer 1929, v. 2, 137; Bömer 1958, v. 2, 38.

<sup>32</sup> Put simply, imagine the sky as an upside-down bowl; the central pivot is Polaris, the North Star; the closer a star is to this center point, the smaller the circumference of its rotational orbit. Stars very close to the pole never set at all, while others further removed from the polestar, and depending on the observer’s latitude, will set but just barely. For Rome’s latitude, Lyra is one such star cluster.

for Lyra's morning rising, a date in early January is very late, as Ideler correctly noted, since this would occur back in November (*Gp* 221 gives three dates: Nov. 4, 7, 15). Ideler, 145, suggests that Caesar mistook an evening setting at Alexandria for a morning rising, and my own calculations confirm the plausibility of this explanation (*Gp* 225 puts Lyra's evening setting on Jan. 24). Pliny's mention of Caesar seems to give us an independent witness that this observation date for Lyra rising was current before Ovid was writing (and that Pliny is not just repeating Ovid's mistake). It seems, then, that here Ovid has faithfully followed a mistaken authority.

*January 9:* (1.457–58) Dolphin rises (with no reference to morning or evening). The Dolphin (between Pegasus and Cygnus in the northern celestial hemisphere) is rising in the morning at this time. Ovid seems to follow a source similar to Pliny, who cites Caesar with January 4 (18.234), while Columella noted the Dolphin beginning to rise on December 27 (11.2.94). *Gp* 223 gives December 25 and January 4. Ovid's date, though later than the ones given in these other texts, is still within a reasonable spectrum not uncommon for ancient dates of star appearances.<sup>33</sup> In any case, my own calculation shows that on January 9 the stars of Dolphin rise around 5:30 A.M. and would still be quite low on the eastern horizon when the sun rose around 7:30 A.M.<sup>34</sup>

*January 17:* (1.651–52) The sun leaves Capricorn and enters Aquarius. This is the first of the monthly zodiac markers discussed above (section 2). Columella dates this to January 16 (11.2.4). The important aspect of these zodiac markers is not whether Ovid's dates are "valid" but rather that he puts one in each month, has the signs exited and entered correctly, and spaces them pretty close to a month apart. No doubt, he is following a specific source or sources, and the dating of these motions is, astronomically speaking, beyond reproach.

*January 23:* (1.653–54) Lyra does not appear after sunset. At this time of year, the constellation of Lyra sets just after sunset. Ovid's date accords within a day with Columella, who gives four different dates for the progressive setting of Lyra—January 22, January 30, February 1, February

<sup>33</sup> E.g., Columella's four dates for Lyra's setting (cf. Jan. 23 below) and his three dates for Pleiades morning rising, Apr. 22, May 7, May 10 (cf. May 13 below).

<sup>34</sup> At Pliny's prescribed three-quarters of an hour before sunrise, the constellation of Delphinus is 14° above the horizon.

3 (11.2.4–5, 14; cf. Ideler, 145). So too, Ovid repeats the reference to the evening setting of Lyra on February 2 (2.73–78). This spectrum of dates may reflect the time over which all the stars of the constellation set; more likely, it reflects different sources. *Gp.* 225–27 refers to Lyra’s evening setting on January 24, citing Euctemon, and again on February 1, citing Eudoxus. Here Ideler takes Ovid to task for repeating references to Lyra’s setting: “one encounters such things in him not seldom; they serve as evidence of how little he had reflected upon this subject matter.”<sup>35</sup> But nothing in Ovid’s use of these multiple dates—also found in other ancient sources and understandable in astronomical terms, as Ideler many times acknowledges—warrants this negative characterization of Ovid’s astronomical knowledge.

*January 24:* (1.655–56) The star in the middle of Leo’s chest will set. Here Ovid correctly refers to the true morning setting of the front half of the constellation Leo. Pliny dates this January 25 (18.235), Columella January 27 (11.2.5; cf. Ideler, 156); *Gp.* 225 cites Callippus for Leo beginning to set on January 23. Ovid will repeat a reference to Leo’s setting on February 2.

*January summary:* Five of six references in this month make sense astronomically and/or agree with known sources. The questionable reference on January 5 seems, on evidence, to derive from an error in Ovid’s authorities. Ideler, however, faults Ovid for January 3, January 5, and nitpicks at January 23 (cf. his complaint quoted there); moreover, with his citation of Columella and Pliny with December 27 and January 4, respectively, for the morning rising of Dolphin, he leaves open the interpretation that Ovid’s date of January 9 is also an error, a position I oppose for reasons argued above.

### *February*

\**February 2:* (2.73–78) Lyra and Leo are mentioned together: (1) Lyra is not to be found in the evening, and (2) Leo has also set (presumably in the evening?). As mentioned above, Lyra has completely set after sunset at this time, an astronomically correct notation and concordant within a day or two with Columella (Feb. 1 and 3: 11.2.14), Pliny (Feb. 4: 18.235), and *Gp.* 227 (Feb. 1).

<sup>35</sup> Ideler, 145: “Solche Sachen begegnen ihm nicht selten; sie dienen zum Beweise, wie wenig er über diese Gegenstände nachgedacht hat.”

The Leo reference is problematic, in that Ovid links it very closely with an observer looking for Lyra at *sundown*, when his reference to Leo only makes sense for a morning setting (as mentioned above, Jan. 24). Here it seems that Ovid has indeed slipped and conflated the evening setting of one star with the morning setting of the other (Ideler's interpretation, 156). Columella also dates the setting of *Leo medius* on February 3 (11.2.14).

*February 3:* (2.79–80) The Dolphin will have set in the evening. As both Ideler and my own calculation attest, this is a reasonably accurate date for the real evening setting of Delphinus; Columella puts it at January 30 (11.2.5). Pliny says the Dolphin sets in the evening on January 8 (18.235), which is an early date for the apparent evening setting. *Gp* 225 gives January 19 to 25.

*February 5:* (2.145–56) Half of Aquarius (referred to as Ganymede) is visible. Neither the time of day nor the motion is specified. This oblique reference makes sense as the morning rising of the first half of Aquarius' stars. Columella's date agrees with Ovid's (11.2.14). *Gp* 227 marks the rise of half of Aquarius on February 7.

*\*February 12:* (2.153–54) Rising of Bootes' "feet" (evening suggested). Ideler calculated his own dates for Arcturus, the major star in Bootes, and refers to Columella (11.2.21) and Pliny (18.237), who give dates of February 21 and 23, respectively, explicitly for Arcturus' evening rising. *Gp* 227 also dates Arcturus' rising later, on February 24 and March 4. But in another place, Columella puts Arcturus' rising on the Ides of February (9.14.17), which is close to Ovid's date here. Most of the constellation Bootes rises before Arcturus, including Beta and Gamma Bootes, in line with Ovid's, and Columella's earliest, date—although as Bootes was traditionally figured, Arcturus was his belt and his feet were beneath this, pointing toward Virgo.<sup>36</sup> This would mean that Bootes' "feet," in the traditional image of this figure, would rise later, not sooner, than Arcturus. Ovid's date for an observation of Bootes' rising, then, is not unreasonable, but he has inverted the traditional image of the constellation (as Ideler, 141, notes).

<sup>36</sup> Cf. Aratus *Phaen.* 92–97; especially cp. Ovid's *geminis pedes* with Aratus' *amphoteri possin*.

*February 14:* (2.243–45) The triple constellation cluster of Corvus-Crater-Anguis will rise, evening implied: *oriuntur nocte sequenti* (“they rise on the following night”). Anguis is the long constellation of Hydra; between it and Virgo to the east lie the stars of Crater and Corvus (Bowl and Raven). At this time, these latter stars are rising after sunset, along with the later stragglers of Hydra; this reference is to the evening rising. Columella gives the evening rising of Crater as February 14 (11.2.20). Ideler reproves Ovid here for referring to the rising of such a large cluster of constellations as though it would occur all on one day; indeed, later in his conclusion he adduces this as the most glaring example of astronomical ignorance on Ovid’s part (165, 169). But, if Columella’s reference is any indication, Ovid seems to be following his sources for Crater rising (though in this case we cannot be sure if Columella is not himself citing Ovid); second, his mention of all three associated constellations is motivated by his narrative interests, as he goes on to tell their story here. These lines hardly evince gross astronomical ignorance in their author.

*February 15:* (2.457–58) The sun moves from the sign of Aquarius into Pisces. This is the monthly zodiac reference. Columella also gives February 15 (11.2.21).

*February summary:* Seven references this month (two constellations referred to for Feb. 2). Five of these are valid and comprehensible references to astronomical realities, but the clever dual reference on February 2 to Lyra and Leo appears to harbor a confusion between an evening and a morning setting, and the reference to Bootes’ feet inverts the traditional image of the constellation. Ideler’s evaluations agree with this tally, except that he is, I think, too severe on Ovid’s reference to the Raven-Bowl-Serpent, failing to take into account other narrative considerations influencing Ovid’s choice of diction and details.

### *March*

*March 3:* (3.399–402) One of the two fish in Pisces will be hidden (*conditus*) at night; they are accurately specified as southern and northern, but it is not said which one will have set or indeed if one is setting or if one has yet to rise. The sun, in Pisces at this time, conceals part of that constellation; Columella and Pliny speak of the (morning) rising of the northern fish

around this time—Pliny on March 8 (18.237), Columella on March 13 (11.2.24)—and so Ideler suggests that Ovid here mistakenly refers instead to an evening setting of the northern fish as mentioned by Pliny and Columella (but not specified by Ovid). As Ideler also notes, however, a glance at the stars shows that at sundown the *southern* fish is still visible above the horizon (matching Ovid’s description of one fish being “hidden” and, presumably, the other still visible), while at sunrise some stars of the northern fish will have risen (cf. Ideler, 161). *Gp* 229 refers to the rising of the *southern* fish (!) on March 9 and again on March 22. In sum, Ovid’s description of the two fish at night at this time makes perfect sense and can even be read, on the whole, as a virtuoso reference to Pisces’ current celestial situation.

\**March 5:* (3.403–7) Two constellations are referred to: (1) Arctophylax/Bootes sets at dawn, and (2) Vindemitor is still visible. Both references here count as Ovid’s first major blunder (Ideler, 141–43, devotes a good deal of discussion here). Vindemitor is Epsilon Virgo, to the celestial south of the constellation Bootes. Ovid very clearly indicates the morning, but this does not correspond to the location of these stars at dawn. Arcturus in Bootes sets in the morning at the end of May, at which time Vindemitor will have already set and thus could not be visible *after* Bootes’ own setting. Furthermore, the close proximity of these stars to one another precludes the possibility of Bootes setting in the morning while Vindemitor is still visible—the latter always sets first. Both Columella and Pliny accurately situate Bootes’ morning setting at the end of May and the beginning of June: Columella, May 22, 23, and June 7 (11.2.43, 45); Pliny, June 7 (18.255). The compound observation that Ovid seems to describe could only refer to Vindemitor being in the sky already as Arcturus rises in the evening, which indeed happens around this time in March. *Gp* 227, which Ideler cites also, certainly seems relevant here, as it links the evening rising of Arcturus with Vindemitor being visible (*ekphanēs*). Columella refers to Vindemitor’s rising on March 2 (11.2.24), and Pliny notes Arcturus’ evening rising on March 5 (18.237; cf. Ideler, 157). When we compare Ovid’s statement with the *Gp* reference, Ovid’s mistake is to confuse Arcturus/Bootes’ evening rising with its morning setting.

*March 7:* (3.449–50) The “neck” of Pegasus will be visible; no indication of morning or evening. This would refer quite accurately to the prominent morning rising of Pegasus at this time. Columella also gives March 7 for

Pegasus' morning rising (11.2.24); *Gp* 227 cites Euctemon for Pegasus' morning rising on March 6.

*March 8:* (3.459–60) The northern Crown (of Ariadne) is visible the next night. This is a correct reference to the apparent evening rising of the Northern Crown. It is worth noting that here Ovid seems to rely on accurate sources other than those that Columella and Pliny reflect, since the latter authors mention only the *morning* rising of the Crown (cf. Ideler, 143; e.g., Pliny refers to the Crown rising after the autumnal equinox, 18.224, Columella, on October 5, 8 and 13–14, 11.2.73–74). But *Gp* 229 cites Eudoxus for the evening rising of the Crown on March 13.

*March 16:* (3.711–12) At dawn, the first part of Scorpio will be visible; no motion, whether rising or setting, is explicitly stated. Ovid would be speaking here of the morning setting of Scorpio, a large constellation along the ecliptic that is also very low on the southern horizon. Columella says that Scorpio begins to set on March 15 and does set March 16 (11.2.30–1), and Pliny also notes Scorpio setting on the Ides of March (18.237). *Gp* 229 cites Euctemon for the first stars of Scorpio setting on March 21. As Ovid's later references to Scorpio's setting, in April and again in May, attest, the ancients studiously observed the progressive setting of this constellation's stars and used it as a celestial clock-hand for the passage of spring into summer (cf. May 6 and 12, below). Ideler took Ovid's *videndus erit* ("it will be visible") as clearly referring to a rising (159) and counted this as another of Ovid's errors; but I find this interpretation unnecessary, especially given the other sources that corroborate a reference to Scorpio at this time.

*March 17:* (3.793–94) The *stella Miluus*, or "Kite star," will become visible; Ovid connects it with Ursa Major. Ideler does not mention this asterism; Pliny cites Caesar for the kite appearing on March 18 (18.237). Robert Hannah (1998, 327–42) has fully reviewed the questions surrounding this peculiar reference, and I can add nothing further to the results of his careful research. As he shows, both Ovid and Pliny draw upon Greek calendars (i.e., *Gp* 229), which note the appearance of the kite (Gr. *iktinos*), though it is unclear whether they mean the arrival of a "kite" star, the return of migratory birds, or both. A similar situation exists in extant calendars referring to the swallow, and Hannah has turned up compelling evidence for an old Babylonian "swallow" star or constellation (in later Pegasus and Pisces) that later fossilized in Greek and Roman

star calendars. Hannah concludes by suggesting that the kite may have a similar history as a forgotten constellation, though this remains only an attractive speculation. Surely, Ovid dug this reference out of his sources, but since at present its astronomical accuracy can be neither confirmed nor denied, I leave this asterism out of subsequent statistics.<sup>37</sup>

*March 23:* (3.851–52) The sun leaves the zodiac sign of Pisces and enters Aries. Again, this is valid zodiac astronomy.<sup>38</sup> Columella puts this transfer on March 17 (11.2.31).

*March summary:* Eight asterisms this month, one to an unidentified star. Out of the remaining seven, five are unobjectionable, and the other two, combined in one complex reference (March 5), mistakenly describe an impossible morning stellar situation but one that is possible for the evening on that date. Furthermore, as the reference in *Gp* shows, there existed a traditional coupling of Vindemitor and Bootes that Ovid was probably drawing upon here. Ideler also found faults with the references on March 3 and March 17.

### *April*

*April 1:* (4.163–64) Setting of Scorpio (no indication of morning or evening). Here Ovid points again to the apparent morning setting of Scorpio (now further down along the southwestern horizon at dawn); Columella gives the same date for Scorpio's morning setting (11.2.34); *Gp* 229 cites Euctemon for the first stars of Scorpio setting on the morning of March 21.

\**April 2:* (4.165–70) Pleiades set in the morning. Unfortunately for Ovid's lovely lines here, he has mistaken an evening for a morning setting. Columella puts the Pleiades' evening setting on April 6 (11.2.34); Pliny, citing Caesar, dates it on April 5 (18.246); *Gp* 229 gives April 1 and 4.

*April 6:* (4.385–86) *Pendula Libra* ("Libra hanging down") causes a rainstorm, with no indication of time or where in the sky Libra is supposed

<sup>37</sup> Since Ovid uses the Kite-star to introduce a narrative, he clearly has poetic motivations beyond astronomical reporting, on which cf. Newlands 1995, 48–49.

<sup>38</sup> It bears mentioning that Nagle's translation of the *Fasti* (1995, 104) mistakenly renders this couplet to say that the sun is *leaving* Aries.



to be. The extreme ambiguity of this reference leads me to regard it as more a meteorological than astronomical signal. At this time, Libra is in almost direct opposition with the sun, meaning that it rises in the east as the sun sets in the west and vice versa. But Ideler, 158, takes *pendula* as a definite reference to a setting, in this case the morning setting; to this effect, he cites Pliny on April 8 (18.247) and Columella on April 10 (11.2.34). Therefore, though Ovid is not very specific about how he wants us to imagine Libra moving (and, as one reviewer for *AJP* noted, *pendula* is as much a visual image for the hanging scales as an indicator of celestial motion), he is in good company for mentioning Libra at this time. Like Ovid's lines here, Pliny's citation couples an observation of Libra with rain, *significatur imber librae occasu* ("a storm is ahead when Libra sets"), and Columella also forecasts storms on April 6–8 (11.2.34).

*April 9:* (4.387–88) Orion sets, but no indication of evening or morning is given. Ovid must be referring to the apparent evening setting of Orion, which at this time begins to set after sundown. This is a good date for the apparent evening setting of Rigel in the lower corner of Orion, while other higher stars, like bright red Betelgeuse, will set later around the end of May and the beginning of June. Ideler cites no ancient authorities on Ovid's behalf here. *Gp* 229 cites Eudoxus for the beginning of Orion's evening setting on April 4.

*April 17:* (4.678) The Hyades set in the evening. This is a valid date for the evening setting of the Hyades, a prominent cluster of stars just to the west of Taurus. Columella and Pliny give comparable dates, the former, April 18 (11.2.36), the latter, between April 16 and 20 (18.247). *Gp* 229–31 gives both April 12 and 14.

*April 20:* (4.713–20) The sun leaves the zodiac sign of Aries and enters Taurus. This is the monthly zodiac sign transition, for which Columella gives April 17 (11.2.36).

\**April 25:* (4.903–4) There is a double reference here: (1) one will "search in vain" (*frustra quaeres*) for Aries, and (2) the Dogstar is rising. Ideler, 149–50, is probably right to see an incorrect reference to Aries' evening setting, which had already occurred much earlier in the month. Better would have been a morning rising of Aries for this date, though even this seems a little late. Nevertheless, *Gp* 231 gives a similar date, citing Callippus for April 23 when Aries "ceases to rise" (*lēgei epitellōn*). Callippus' phrasing here indicates that Aries has now completed its

morning rising, just as the *parapegma* had noted its beginning to rise (*archetai epitellein*) back on March 25. Might this sort of terminology account for Ovid's confusion, inasmuch as he may have taken "cease to rise" to mean that the star is about to or has *set*? Ideler also cites "the old Calendar" for April 26: *Aries oritur heliace* ("Aries rises with the sun").<sup>39</sup>

As for the Dogstar rising, Fantham, following Ideler's lead, remarks that "this is perhaps the strangest of O.'s astronomical inaccuracies."<sup>40</sup> It has certainly stirred up its share of controversy in the commentaries.<sup>41</sup> This is, in fact, a fine date for Sirius' evening *setting*, which Columella dates April 30 (11.2.37), Pliny April 28 (18.285), and *Gp* 231 on April 26. Thus, his error involves reporting a rising instead of a setting.

*April Summary:* Eight constellation movements are mentioned, five of which are astronomically consistent. The morning setting of the Pleiades on April 2 ought to have been an evening setting. As for his dual reference to Aries (setting) and to Sirius (rising) on April 25, the motions of each ought to have been reversed: Aries rising, Sirius setting.

### *May*

*May 1:* (5.111–13) The star Capella rises or is simply visible—literally, as in many other asterisms, "to be seen" (*videnda*). This is a valid date for Capella's apparent morning rising. Ideler may be mathematically correct to say that Capella is on the morning horizon as early as April 7, but it is

<sup>39</sup> Ideler does not specify what document he is referring to here (150) and again concerning Libra (158). Both times, he calls it the "old Calendar" ("das alte Calendarium"). None of the epigraphic remains of Roman *Fasti* collected in the *Corpus Inscriptionum Latinarum* (*CIL* 1) contain these references to Aries and Libra. What could Ideler be citing?

<sup>40</sup> Fantham 1998, 265, commenting on 4.904. The poet's mention of Sirius the "Dogstar" is of course associated with the festival of Robigalia, also the focus of narrative here, when, as Ovid and Pliny (18.285) inform us, a puppy was sacrificed to appease the star's crop-damaging heat (sympathetic magic). In addition to the symbolic connection of the dog and the star of the same name—as Ovid relates: 4.941, *pro cane sidereo canis hic imponitur arae* ("for heaven's dog this dog is placed on the altar")—following the hint of Pliny's wording (*canis occidit . . . praeoccidere caniculam*), is it possible that the sacrifice also rested on another verbal pun, along the lines of *\*cane occidente canis occidendus est* ("when the dog is setting a dog is to be slain"), *vel sim?* (For more on the Robigalia's dog sacrifice, cf. Scullard 1981, 108–9.) But this thematic connection does not account for, or excuse, the poet's astronomical mix-up.

<sup>41</sup> Cf. Frazer 1929, v. 3, 404; Bömer 1957–58, v. 2, 286.

unlikely to be very *visible* that early owing to the light of the morning sky; even as late as May 1 an observer staring straight into the brightening predawn eastern sky would still struggle to see Capella very low on the horizon. Ovid's date is between Columella's, who gives April 29 for Capella rising (11.2.37), and Pliny's, who dates it May 8 (18.248). *Gp* 231 gives April 29 and 30. (Later, Columella also gives May 25, 26, and 27 [11.2.43], which, as Ideler says, is probably a mistaken indication of Capella's evening setting).

But the discrepancy here between the ancient sources and Ideler's much earlier "correct" date of Capella's rising raises important questions. In cases like this, are we to fault ancient authors for having followed traditional dates for stars that were invalid for their time or latitude, as Ideler assumes (144)? Or is there perhaps a fundamental incongruity between the methods and practical purposes of ancient observational astronomy, on the one hand, and on the other, the strict degree of mathematical tolerance that Ideler applies to ancient dates? Granting that the true morning rising of Capella would have occurred around March 10 (though completely unobservable), after this time two motions impinge on the observation of Capella and other stars around it. The stars, as always, rise about four minutes earlier each morning, but the vernal sun itself is also rising earlier, reducing the stars' daily "net gain" to about half that time; in addition, as Capella rises in a *south*-easterly direction, the sun, day by day, is moving *north* along the horizon. Thus, in effect, even as Capella rises earlier—relatively slowly due to the seasonal solar motion—the sun and Capella move closer to one another.<sup>42</sup>

The overall effect on observation, as stated above, would be that even by May 1 (Ovid's date), Capella is still very low on the morning horizon. Even by the end of May (Columella's late dates, which Ideler reads as sheer mistakes), Capella is still low on the eastern horizon and now directly above the spot where the sun will rise. Ideler's point, that the dates given by the Roman authors are better suited to observations from Alexandria, may be valid. Still, the slow rising of Capella, continually drawing closer to the sun even as it rises, may very well have diminished the felt sense of inaccuracy of these late dates by such observers from Rome who might have been checking the sky against calendrical listings of star risings and settings. The question becomes, I suppose,

<sup>42</sup> By contrast, a star rising after the autumnal equinox, in November for example, because the sun is then rising *later* each day, has a net gain of over five minutes a day, and will thus seem to rise more quickly.

whether the Romans were more concerned with mathematically accurate astronomical data or with having a few handy stars by which to watch and take note of the progress of the seasons. If the latter, the references in Roman authors to Capella's morning rising might mean something like, "you'll see Capella in the eastern sky in the morning in April and May," which is perfectly the case—a kind of farmer's almanac reference rather than an expert astronomer's table.<sup>43</sup>

*\*May 2:* (5.163–66) All the Hyades will be visible at sunset. Ideler, 154, is correct to see this as a mistake;<sup>44</sup> Ovid must be erroneously referring to the true *morning* rising which Pliny (18.66) and Columella (11.2.39) both date on May 2. *Gp* does not mention the Hyades at this time. This is the first of five references Ovid will make to the Hyades in May and June.

*May 3:* (5.379–80) The Centaur Chiron will rise. This would refer to the evening rising of Centaurus, for which Columella gives the same date (11.2.39). As Ideler points out, what is meant is some star like Epsilon Centauri, a relatively minor star low in this southerly constellation; the more important fact is that Alpha (and Beta) Centauri would have *never* been seen by any observer in the latitude of Rome, whereas these stars were very important in Egyptian astronomy, from where bright Alpha Centauri's appearance on a flat desert horizon would have been quite striking.<sup>45</sup>

*May 5:* (5.415–16) Lyra rises in the evening. On May 5 from Ovid's Rome, just as the sun hit the western horizon, Lyra was directly visible in the darkening eastern sky. It is true that Lyra has been rising earlier, and

<sup>43</sup> Cf. also Gee 2000, 126–35, for Ovid's reference to Capella here.

<sup>44</sup> Here is another occurrence of Ideler's refrain about Ovid's lack of astronomical expertise that has so colored the question in later commentators: (154) "Durch einen besondern, bei ihm nicht ungewöhnlichen, Fehlgriff stellt er den Frühaufgang als den Spätaufgang dar" ("In an especial, *by him not unusual*, mistake he presents the morning rising as the evening rising" [emphasis added]).

<sup>45</sup> Cf. Allen 1899, 152–53. Actually, there is more to the story. Owing to the precession of the equinoxes (the ~26,000-year cycle that results in slowly shifting celestial poles), Alpha Centauri was continually heading further south throughout antiquity. As late as 400 B.C.E., it would have risen in the latitude of Rome; after 300 B.C.E., it would *never* have been seen. The effect of precession on certain stars can be so severe that today Alpha Centauri is not even visible from Cairo, situated more than 10° latitude south of Rome. It last rose in Cairo, but barely, in 1928, and will not do so again until sometime late in the sixty-fourth century C.E.

earlier dates would also be valid—Ideler, 146, says that Ovid is between thirteen and twenty-one days too late here—but May 5 is a good date for Gamma Lyra’s true evening rising. Ideler cites Columella with the date April 23 (11.2.36) and, at the other extreme, Pliny, citing Caesar, gives May 13 (18.255), while *Gp* 231 dated it April 18. I find no reason to take exception with Ovid’s date in between this spectrum, when he has described the proper motion and position for Lyra at this time.<sup>46</sup>

*May 6:* (5.417–18) Half of Scorpio will be noticed (*notatus erit*). Ideler reads this as a second reference to the morning setting of Scorpio and cites Columella’s date, May 6, and phrasing, which matches Ovid’s mention of “half” or the “middle” of Scorpio (11.2.39). This makes for three references to the morning setting of Scorpio (also March 16 and April 1), all three of which are corroborated in our two Roman comparanda texts. *Gp* 231 notes Scorpio beginning to rise on May 1 and completing its rise on May 13. The almost two-month stretch over which Scorpio was selected out by ancient observers as setting in the morning can be accounted for by the fact that by mid-March, Scorpio, a very low southern constellation, was already low in the southwest sky, yet for the next two months, due to the way the ecliptic moves in relation to the moving sunrise, it progresses only slowly downward.<sup>47</sup> By early May it would still be partly visible at dawn, as Ovid says. Alternatively, as Ideler suggests, both Ovid (correctly, since he does not indicate an explicit motion) and Columella (mistakenly, since he does indicate setting) are referring to the true morning *rising* of Antares in Scorpio that also occurs at this time.

*May 10:* (5.493–94) One looking for Orion will be in error and not find him. This is absolutely correct: at this time Orion travels with the sun and would therefore not be found, neither in the morning nor at any time during the night. In terms of risings and settings, as Ideler observes, Ovid refers here to the real evening setting of Orion.

*May 12:* (5.545–48) Ovid comments on the setting of Orion and that the days are growing longer. That Ideler did not include this passage in his discussion shows that it is not typical of the *Fasti*’s asterisms, in that it

<sup>46</sup> Ideler, 146, does not say, but he must be making his calculations for Vega (Alpha Lyra) without acknowledging that the rest of the constellation is “below” Vega and rises later than it does.

<sup>47</sup> The seemingly slow morning setting of Scorpio occurs for the same reasons as given under May 1 for the slow morning rising of Capella.

does not mark a specific sign's rising or setting. Indeed, Ovid's notice here, while true, is not of great astronomical depth:

Sed quid et Orion et cetera sidera mundo  
cedere festinant, noxque coartat iter?  
quid solito citius liquido iubar aequore tollit  
candida, Lucifero praeveniente, dies?

But why do Orion and other stars hasten to leave  
the sky, and night shortens its course?  
Why does radiance more quickly from running waters  
raise up dazzling day, the Morning Star in advance?

There is no stellar rising or setting here to evaluate in astronomical terms (beyond a repetition of Orion's setting from May 10). Ovid, it seems, is just observing (correctly) that the days are growing longer, the nights shorter, and the stars departing more quickly (on account of fewer hours of darkness), probably in order to add dramatic moment to his introduction of the temple dedication of Mars Ultor, which he commemorates on this date.<sup>48</sup>

*May 13:* (5.599–602) The Pleiades will be seen, marking the beginning of summer. Ovid must be referring to the apparent morning rising of the Pleiades that occurs around this time. Pliny dates this May 10 (18.248) and Columella on three different days, April 22, May 7, and May 10 (11.2.36, 39–40); *Gp* 231–33 gives the dates May 3 and May 14, on the former date noting also the beginning of summer. Also worth citing, the epigraphic *Fasti Venusini* (*CIL* 1<sup>2</sup>, 221 = Degraasi 1963, 56) on May 7 reads *Vergili exori* (“the Pleiades rise”). Ideler, 152, says that in Ovid's time and in Rome the Pleiades rise on the morning of May 28, which is a mistake as far as I can tell (he may have been thinking of the Hyades). On May 13 in Rome the sun rises at 4:49 A.M. and the Pleiades at 3:43 A.M., probably enough time for them to be high enough in the eastern morning sky for an observer to see them before sunrise.

<sup>48</sup> This passage has been the locus of much important recent literary criticism on the *Fasti*; cf. Hannah 1997; Newlands 1995, 38–50, 113–14, and Gee 2000, 200–202, who has a valuable analysis of Ovid's dependence on and reworking of Aratus' earlier linking of Scorpio and Orion. A slight correction is needed, however: it is not the “synchronicity of the settings of . . . Orion and Scorpio” (202) that Aratus is referring to; rather, it is the synchronicity of Orion's evening *setting* with Scorpio's evening *rising* (cf. fig. 2). That is, Scorpio does not chase Orion, setting right after him, but stands in astronomical opposition to him at 180° across the sky.

*May 14:* (5.603–4) Taurus is rising. The sun is in Taurus at this time and it would be rising as the sun rises—thus this refers to the true morning rising of Taurus, which would not be visible (Taurus would only appear in the predawn east later in May or in early June). Ideler discusses this passage under the Hyades (part of Taurus), where he cites Columella's date of May 21 (11.2.43). In *Gp* 231–33, Callippus dates the rise of Taurus' head on May 5 and the completed rise of Taurus on May 24.

*May 20:* (5.693–94) The sun leaves the sign of Taurus and enters Gemini. This is the monthly reference to the changing zodiac sign. Columella's date is May 19 (11.2.43).

\**May 22:* (5.723–24) Sirius comes out. As we saw above on April 25, this reference to the Dogstar is wrong, but it only adds to the mystery of Ovid's inability to get his references to Sirius right that here no narrative motivation presents itself—only a bare couplet that refers back to the discussion of Sirius on April 25! (The only situation of Sirius I can find that makes sense of this date is the true evening setting, not rising, of Sirius from the latitude of Alexandria. Ovid may have found this on some musty old papyrus roll and noted it here—but why?)

*May 25:* (5.731–32) The appearance of Aquila (Eagle) in the evening. This is a good date for the evening rising of Altair, or Alpha Aquila, the bright star in that constellation. *Gp* 233 cites Euctemon for the Eagle's evening rising on May 23. As Ideler notes, Ovid's repetition of Aquila's rising on June 1 agrees roughly with dates in Columella and Pliny (cf. June 1 below).

*May 26:* (5.733) Bootes sets at dawn. At dawn on this day, Bootes is quite prominently setting in the western sky. Ideler discusses the long, drawn-out setting of this constellation, dates the true setting of Arcturus (Alpha Bootes) to May 28, and cites Columella with May 22–23 and June 7 (11.2.43, 45), and Pliny with June 7 (18.255). *Gp* 233 gives May 24. (Ovid himself will later give June 7 for Bootes' setting.)

*May 27:* (5.734) The Hyades will appear (Ovid is as elliptical and nonspecific as he gets, saying no more than that the "star of Hyas will be"). This is a good date, just about the earliest possible date, for the apparent morning rising of the Hyades. Again, Columella's date of May 21 (11.2.43) is relevant, as is *Gp* 233, May 24, citing Euctemon, and May 29, citing Eudoxus. Ovid will refer to the same motion of Hyades, their morning rising, two more times in June.

*May Summary:* Of thirteen asterisms this month (not including the reference to Orion on May 12, which is functionally equivalent to the seasonal markers discussed in section 2), eleven make good astronomical sense. On May 2, Ovid seems to be following available dates for Hyades morning rising (or evening setting, or both) but mistakes the position and very explicitly calls it an *evening* rising. His other blunder is his second mention of Sirius, again too early, since it is at that time just ahead of the sun and would appear neither in the morning nor in the evening.

### *June*

*June 1:* (6.195–96) Aquila (Eagle) is rising. As mentioned above on May 25, Aquila is rising in the evening at this time, which Columella dates June 1 and 2 (11.2.45) and Pliny June 2 (18.255); *Gp* 233 cites Eudoxus with May 31.

*June 2:* (6.197–98) Hyades appear in the morning (this is a good example of Ovid’s common—though not systematic—use of *lux* for dawn and as the opposite of *nox* for evening<sup>49</sup>). This is a valid repetition of the morning rising of Hyades that was first referred to on May 27; the Hyades are rising higher in the morning sky and becoming easier to observe before sunrise.<sup>50</sup>

*June 7:* (6.235–36) Bootes sets. This repeats the morning setting of Arcturus in Bootes that Ovid mentioned (the real setting) on May 26, here noting the apparent morning setting, in agreement with the date given in Pliny (18.255) and Columella (11.2.45); *Gp* 233 gives Eudoxus’ date of June 6.

*June 10:* (6.471–72) The Dolphin rises in the evening. This is a good date for the true evening rising of the Dolphin. As Ideler notes, Columella gives June 10 (11.2.45) and Pliny the same (18.256); Eudoxus’ date is June 11 (*Gp* 233).

<sup>49</sup> Ovid offers a kind of paradigm for his use of these words as opposites at 4.331–34, where he begins successive couplets with *nox aderat* and *lux aderat*.

<sup>50</sup> I am not sure why Ideler (155) finds Ovid’s description of the Hyades as being on Taurus’ horns “unusual” (*ungewöhnlich*), since that is in fact where they are—or at the least on the bull’s brow.



*June 15:* (6.711–12) Thyone (one of the Hyades) to be seen in the morning. This is the fourth and final time Ovid refers to what by now will seem to be his favorite stellar motion, the morning rising of the Hyades. He has placed it on May 14 (as Taurus), May 27, June 2, and now June 15. The Hyades are a little higher in the eastern sky each morning at this time, and Ovid, for whatever reason, has found it useful or fitting his other purposes to refer on four different dates—most likely available in different sources—to the rising of this stellar chorus of nymphs who ride the horns of the celestial bull and are next door neighbors to the Pleiades, that other chorus of stellar nymphs.

\**June 17:* (6.717–19) Orion’s arms rise in the evening. Ovid very clearly refers to an evening rising, though incorrectly, since Orion at this time is beginning to rise in the morning—in fact, his “arm” is the first thing to rise; Pliny says Orion’s sword rises on June 15 (18.256), and *Gp* gives Euctemon’s date of June 17 for the rising of Orion’s shoulder. Ovid will revisit Orion’s rising on June 25.

*June 18:* (6.720) The Dolphin will be visible on the next night. This repeats the evening rising of the Dolphin indexed on June 10. The Dolphin is rising higher in the eastern sky early in the evening. Again, Pliny, Columella, and *Gp* give dates in June for the evening rising of Dolphin (see June 10, above).

*June 19:* (6.727) The sun leaves the zodiac sign of Gemini and enters the region of Cancer. Ovid describes Cancer as “growing red,” which is an apt description of the constellation as it sets in the evening, since it is day-by-day coming closer to traveling with the sun itself. Columella also dates this on June 19 (11.2.49).

\**June 20:* (6.733–36) Ophiuchus is rising in the evening. Ophiuchus or Anguifer, the Snake-bearer, is identified by Ovid as Aesculapius, slain by Jupiter when he brought Hippolytus back to life. Here he is figured as himself rising from the dead. Ovid is far too late for a valid date for a rising; the case is that once the sun sets at this time, this large constellation will stretch out across the southeastern portion of the sky, with Lyra, Hercules, and the Northern Crown above it, and Scorpio below. As Ideler notes, this date is plausible for an apparent morning setting, which Columella places on June 21 (11.2.49). It is probable that Ovid is referring to this constellation here in order to end the month with the story of

Aesculapius and Hippolytus, one of his favorites, with which he also ends the *Metamorphoses* (15.497 ff.).<sup>51</sup>

*June 25:* (6.785–88) Rising of Orion’s belt. Ovid accurately refers to the morning rising of Orion’s three belt stars (perhaps just visible, but maybe not quite yet: the sun rises at 4:25 A.M., the belt stars between 3:50 and 3:58 A.M.). Pliny gives June 26 for Orion rising and July 4 for the belt (18.268). *Gp* 233 gives May 22 for Orion beginning to rise.

*June 30:* (6.812) The last line of the poem refers to Hercules playing his lyre: *adnuit Alcides increpuitque lyram* (“Hercules nodded assent and sounded his lyre”). Although to my knowledge nobody yet has made this observation, this line can also be read as an implicit asterism, since the constellation of Lyra is right next to Hercules and on this day both are prominent high in the northeast sky after sundown and all through the night, and Hercules is beginning to set at dawn (cf. fig. 1).<sup>52</sup> As we saw

<sup>51</sup> On Aesculapius in *Met.* 15 as one narrative marker of (open-ended) closure among many, see Barchiesi 1997b, 187–96, 201. Also good readings in Newlands 1995, 192–96, who notes, among much else, that Ovid’s identification of Ophiuchus with Aesculapius is a selection from among five variant candidates offered in Hellenistic literature.

<sup>52</sup> A hurdle stands before this seemingly innocent proposed asterism: in antiquity the constellation that we know as Hercules was usually known as the Kneeler (*en gonasin*, with numerous variants), an anonymous figure whom Aratus described as “toiling” (*mogeonti*), as being engaged in some unspecified labor (*hotini ponōi*), and, again, as “on his knees laboring” (*en gounasi kamnon*) (cf. Aratus *Phaen.* 63–70). The Latin Aratus translates these lines closely, including: *effigies . . . defecta labore. / non ulli nomen, non cognita causa laboris: / dextro . . . genu nixus* (“a figure, worn out with labor, nobody knows his name or the cause of his labor. He kneels on his right knee”; cf. Gain 1976, 23). This would seem to argue against Ovid referring in the last line to Hercules as a star-group. Yet, there is good evidence that the identification of the Kneeler with Hercules was made already in Hellenistic times; the so-called Pseudo-Eratosthenes *Katasterismoi*, a commentary on Aratus’ poem, comments on this figure: ὁ ἐν γόνασιν. οὗτος, φασίν, Ἡρακλῆς ἐστίν (“the one on his knees: this, they say, is Hercules”; text in Westermann 1843, 241). Though the authorship and date of this text has been debated, Neugebauer 1975, 577–78, maintains that its Hellenistic and Alexandrian provenance is well-established (cf. also Allen 1899, 238–40). In any case, even supposing that he lacked an authority for the identification, Ovid, who knew traditional myth inside and out (including, presumably, the traditions of the laboring hero Hercules both as a Mousagete and as a kneeling figure: cf. *LIMC* IV.1–2, pl. 23–47, 1066–73, for Hercules kneeling, and pl. 1438–82, for Hercules “mousikos”) was both clever and independent enough to draw his own conclusions. Given the Kneeler’s clear associations with *labors*, its celestial proximity to Lyra, and the tradition of Hercules as a kitharode, the identification of the two was not, after all, much of a stretch.

under January 5 above, the constellation of Lyra appeared towards the opening of the *Fasti* and would now appear again at the end, forming a ring-composition. Hercules also appears in Book 1 in Ovid's replay of Virgil's Hercules and Cacus story, which Ovid tells on the occasion of the Carmentalia, January 11 (1.543–84). But there is probably an even more significant intertext operating here: Ovid's extensive narration of Hercules' career of exploits in *Met.* 9.1–323. There, Ovid closed Hercules' heroic life with an equally heroic death. Jupiter declares his son's imminent immortality, and then, once Hercules' body burns on its pyre, Jupiter carries his soul aloft to the shining stars (*radiantibus intulit astris*, 9.272). Having told the fuller story of katasterism there, Ovid is free to be extremely allusive here in a poetic context where astronomical observation has become a generic expectation. The resulting combination, here in the last line of the *Fasti*, of traditional mythopoetic katasterism and the corresponding objective asterism visible in the night sky, forges a strong link between life and poetry, reality and imagination. Stars and poetry are analogous, parallel vehicles for perpetuating celebrity. Just as it did at the end of the *Metamorphoses*, the theme of immortal fame for a life of good deeds (whether heroic or poetic) brings Ovid's calendar poem—even if “unfinished”—to a fitting closure.<sup>53</sup>

*June summary:* Ten references (plus one possible implicit asterism at the end); two of these are manifestly erroneous as astronomical observations. On June 17, Ovid refers to Orion rising in the evening when this should be the morning. On June 20, Ovid refers rather freely to Aesculapius, not rising that night but already present in the sky at sundown, a passage with clear narrative and symbolic motivations. His possible source is a date for an apparent evening setting.

<sup>53</sup> For further readings of the complexly allusive reference to the temple of Hercules Musarum that ends *Fasti* 6, cf. Barchiesi 1997b, 203–7, and Newlands 1995, 209–36. My own reading of a (kat)asterism here adds yet another layer to the density of allusion and closed-mouthed implication that the aforementioned critics see operating in the *Fasti*'s last sixteen lines.

SUMMARY OF ASTERISMS IN THE *FASTI*TABLE 4. Tally reflecting the degree of accuracy of the star references in Ovid's *Fasti*

Month	Number accurate	Number of references	Accuracy rate
January	5	6	83%
February	5	7	71%
March	5	7	71%
April	5	8	63%
May	11	13	85%
June	8	10	80%
Total	39	51	76%

NOTE: This count excludes the unknown "Kite" star in March, the Orion reference at May 12, and the proposed implicit reference to Hercules/Lyra in the last line.

It is worth reviewing the twelve errors Ovid does make, which, after all, still constitute roughly a quarter of the star references.

1. January 5 has Lyra rising when this does not fit the date, but we seem to have evidence in Pliny that Caesar's calendar (for one) was a mistaken authority.
2. February 2 seems to say that Leo sets in the evening; this should be the morning.
3. February 12 apparently figures Bootes upside-down.
- 4 and 5. March 5 makes a compound mistake, marking an evening setting of Bootes while Vindemitor is still visible (an impossible situation); this should be an evening rising of Bootes when Vindemitor is already visible. Ovid mistakenly reports a rising as a setting.
6. April 2 says the Pleiades set in the morning; this should be evening.
- 7 and 8. April 25 refers to the setting of Aries and the rising of the Dogstar, which are either incorrect dates or mistaken motions: it should probably be the morning rising of Aries and the evening setting of Sirius.
9. May 2 reports the Hyades rising in the evening; this should be morning.

10. May 22 states that Sirius rises. Of the twelve, this seems to be the most egregious astronomical error: the date for this motion is nonsensical.
11. June 17 describes Orion rising in the evening; this should be morning.
12. June 20 refers to Ophiuchus as rising, though this constellation is simply in the sky when the sun sets. Columella refers to its setting at this time.

There is an obvious pattern here, consistent with all previous commentators on Ovid's asterisms, namely, that he mistakes mornings for evenings, risings for settings, etc. But while this description of the kinds of astronomical inaccuracies in the *Fasti* is indeed correct, the common characterization of Ovid's handling of astronomy as *generally* inaccurate and arbitrary is not. Instead, this generalization is misleading, as the record of mostly valid asterisms proves. In short, his use of astronomical material is not flawless or without difficulty, to be sure, but neither is it careless, clumsy, or inept.

But why has Ideler's own meticulous and careful analysis of Ovid's asterisms given rise to an enduring negative portrayal that is itself inaccurate? In part, this may be due to the way Ideler concludes his paper. Instead of properly fulfilling his work with a straightforward quantitative summary of Ovid's successes and failures (a relatively easy task with the data he presents), he reverts to a vague qualitative summary, using "often" more than seems warranted by his own analysis: for example, "Quite often encountered is his confusion of *mane* and *vespere*" (169).<sup>54</sup> But Ideler only points to around five or six instances of this throughout his discussion—should this warrant the description "quite often" (*öfters*)? Better would it have been to know that, by Ideler's reckoning, Ovid is perfectly correct around 60% of the time, and only 11 or 12 references actually seemed to him clear mistakes of the motion or time of day (that is, almost exactly the same result as my own analysis).<sup>55</sup>

<sup>54</sup> Ideler, 162: "Öfter ist ihm die Verwechslung des *mane* und *vespere* begegnet."

<sup>55</sup> Ideler quibbles with the dates given for star observations on Jan. 5, Jan. 9, Feb. 11, Mar. 5, May 1, and May 5 but cites other ancient sources to corroborate Ovid's references. He finds fault with Ovid's dates, motion, or time of day on Jan. 3, Feb. 14, Mar. 3, Mar. 5, Mar. 16, Apr. 1, Apr. 9, Apr. 25, May 2, May 22, June 17, and June 20. Since Ideler does not always explicitly commit to a final opinion on whether a particular asterism seems to him correct or incorrect, this list represents my own reading of Ideler's conclusions. Though I tried to be objective, accurate, and thorough in compiling this summary, others might come up with slightly different assessments of Ideler's findings.

An even more important factor in the perpetuation of the negative judgment against Ovid's astronomy is Frazer's rather uninformed reading of Ideler's findings, as noted by Robert Hannah (cf. n. 9 above). In retrospect, it is worth citing Frazer's own unintentionally ironic disclaimer on this point: "I can only hope that, in turning into English the German astronomer's exposures of Ovid's many errors concerning the starry heavens, I have not been guilty of fresh blunders, for my ignorance of astronomy is as profound as that of my author appears to have been."<sup>56</sup> It is regrettable now, in light of Frazer's erroneous emphasis on this point and the effect it has had on Ovid scholarship, that despite his professed lack of authority on the matter he felt secure enough to project his own ignorance of astronomy onto Ovid himself. On another level, the negative stereotype of Ovid's astronomy in the *Fasti* is but of a piece with the generally negative reception the poem as a whole has had in modern scholarship up until the most recent decades.<sup>57</sup>

Some differences between my own method and Ideler's will have emerged from my points of disagreement with him. Ideler used his own calculations for the dates of risings and settings from nineteenth-century star tables, which postulate an ideal horizon, to criticize not only the dates given by Ovid but also those of Columella, Pliny, and Greek sources. Implicit in this method is the assumption that calculations based on an ideal horizon (with no regard for local topography and observational context) are inherently more valid than dates given by ancient authorities themselves that are around, but not identical to, those same ideal dates. First of all, I strongly doubt the soundness of this assumption, since it does not adequately take into account ancient observational procedures and contexts by which those dates may have been derived. But also, and this is more important, there is a risk, when reading Ideler's paper, of conflating his critique of *Ovid's* astronomy with his critical attitude toward the accuracy of ancient star observations *generally*. We

<sup>56</sup> Frazer 1929, vol. 1, xx. Newlands 1995, 28, repeats Frazer's contorted logic in stating that the "role of the stars in the *Fasti* has been neglected in part *because* Ovid's astronomical observations reveal his technical carelessness or even ignorance of astronomy" (emphasis added). But are we really to blame Ovid—and worse, project (our) ignorance onto him!—for an inability or unwillingness on the part of modern scholarship to come to terms with, and to understand, astronomy as a serious poetic theme? This seems to be a classic case of blaming the victim.

<sup>57</sup> Cf. Martin 1985, 261–62, who cites numerous examples of modern scholarly dismissals of the *Fasti* as a serious and/or quality literary work (thanks to an anonymous reviewer for calling my attention to Martin's fine article). Barchiesi 1997a, 47–51, also comments on the *Fasti's* generally poor reception up until very recent years.

should not, however, make the mistake of confusing the fuzziness of ancient astronomy in general with Ovid's own particular poetic application of that science's contemporaneous level of acumen and accuracy. Certain of Ovid's "errors," in Ideler's estimation, were also in his sources. Those sources often presented a spectrum of dates around what we might wish to consider *the* dates for true and apparent risings and settings; this spectrum represents the margin of significant error for a practical, observational astronomy. Nevertheless, as anyone who cares to repeat my calculations will find, most of the time I have not had to give Ovid, or the comparanda texts, a very generous margin of error. The dates in the *Fasti* are for the most part still verifiably valid dates for the motions of the stars observed. Ovid's own degree of accuracy supports the conclusion that he was reasonably well informed about the best astronomical expertise available to him.

What I have tried to integrate into my approach is an appreciation of the phenomenological context of ancient observations. Ancient observers relied on the naked eye,<sup>58</sup> whereas astronomers now can draw upon almost five hundred years of telescope-assisted observations and systematic, mathematically precise calculations (which, in turn, have built on the cumulative wisdom of centuries of observation going back into antiquity). Our time reckoning, too, has become much more abstract, mechanical, and precise, so much so that we now judge the stars by our time standards! In Ovid's time, by stark contrast, the stars were still actively being used to calibrate those very human standards that we now take for granted to such a great extent that very few, it seems, ever become acquainted with the nightly stellar spectacle that unfolds above them. A civil calendar better synchronized with the seasons was, of course, one of the feats of Caesar's calendar reform, and one gets a sense in Ovid's *Fasti* of the excitement—and perhaps ambivalence, too—that was generated by the new calendrical efficiency it brought to urban and agrarian life.<sup>59</sup>

<sup>58</sup> Dicks 1970, 9, begins his chapter "General Principles" by emphasizing strongly that "all ancient astronomy was based entirely on naked-eye observation." This point can really not be stressed enough. On the other hand, the lack of artificial light and the absence of industrial air pollution made the star-studded heavens a much more constant, and stunning, presence to the ancients that it is for most of us today—it was surely much less easy to ignore, even for ancient urban dwellers, than today when (alas) in some places on an average night, one is lucky to see dimly a mere handful of the brightest stars.

<sup>59</sup> Ovid comments on Caesar's project of calendrical reform more than once, most expansively at 3.155–66. On questions involving the *Fasti* and Caesar's calendar, cf. Gee 2000, 9–20.

A current myth seems to be that neither Ovid nor his contemporaries would have actually looked at the stars. Rather they relied on books and tables and sources and would have been unlikely to be able to, or care to, look up and see how those sources corresponded to empirical realities visible between the time the sun went down and came back up.<sup>60</sup> I get a different impression of Ovid's understanding of astronomy. Many of his asterisms are surprisingly apt depictions of observable stellar motions. He knows the stars' and signs' situations relative to one other, for example, that the Hyades sit on the horns of the bull and that the Pleiades are nearby. He knows how to describe Orion's arm rising, and then, at a later date, his belt. Similarly, he seems to know, when he repeats references to Scorpio setting, that he is talking about the setting of many different stars in a large constellation that, considered as a whole, takes a long time to set completely. The same is true of Bootes. Furthermore (as an *AJP* reviewer reminds me), Ovid sometimes speaks of himself and his readers as stargazers.<sup>61</sup> At the summer solstice on June 25, he embeds stargazing in the narrative by having a drunken reveler, returning from celebrating Fors Fortuna, look up and address Orion about the imminent rising of his belt (6.785–90).

Overall, I get the impression of a poet who had enough curiosity, interest, and intelligence to educate himself in the rudiments of practical astronomy. He could, I would imagine, go out on a given night and point out major constellations, the North Star, the Big and Little Bear, Orion, Leo, Bootes, and Lyra. He would have known the significant qualitative differences between the northern sky, where constellations move in a tight circle around the polestar, some of them never setting, and the southern sky, across which the sun, moon, planets, and the zodiac constellations, Scorpio, Capricorn, Taurus, Libra, Gemini, etc., rise in the east and set in the west. These are fairly easy skills of practical astronomy to acquire competence in. After all, the revolving heavens, as Cicero said,

<sup>60</sup> Cf., for example, Fantham 1998, 36: “[Ovid] brought the stars into his calendar for their mythical associations . . . neither he nor his readers were likely to check the sky. These notices are a decorative relic of a pre-calendar world.” This is true, no doubt, but only partly; it does not take into account that many of the mythical associations of stars brought into the *Fasti* are not (or not primarily) archaic but Hellenistic; cf. *OCD* (3d ed.) s.v. “constellations and named stars,” and Newlands 1995, 28–32, with whom I strongly concur that the stars in the *Fasti* are (also) markers of literary sophistication, erudite Hellenistic poetics, and even engagement (if, from our point of view, elusively) with politically charged discourses of power.

<sup>61</sup> Cf., e.g., 2.73–80, 2.153–54, 3.449–50, 3.459–60, 3.851–52, 4.903–5, 6.195–96, 6.471–72.



offered “a spectacle to humans; for no image is more insatiable to view, none more beautiful and extraordinary with respect to reason and ingenuity.”<sup>62</sup> Ovid was ever a lover of beautiful things—and of spectacles.

What is more difficult, for anyone with a layman’s interest in the stars, and where Ovid shows his status as a still-learning amateur, would be to comprehend fully and make sense of the often confusing, jargon-filled, and contradictory accounts of astronomically relevant numbers, dates, and observations that Ovid is likely to have been drawing on (many of them, we should bear in mind, written in a foreign and technical-scientific Greek<sup>63</sup>). The kinds of errors he does make attest to this occasional confusion. We may also reasonably doubt, I think, that he felt the need to verify by personal observation every citation he found in those sources he took to be credible.<sup>64</sup> But admitting this is quite different from saying he had no inkling whatsoever of the astronomical realities those sources were talking about. Indeed, his high marks for accuracy attest to the contrary. To be sure, there remains the roughly one in four of his star references that harbor some confusion and error, and these perhaps deserve closer attention in future studies. Some of them may hint at deeper explanations; some of them may just be errors pure and simple. But we can now justifiably begin to read the astronomical strand of the *Fasti* unblinkered by the unfair prejudice projected upon it, primarily by early twentieth-century commentators who did not faithfully summarize and apply Ideler’s able and, for the most part, fair analysis of Ovid’s astronomical references.

It is clear, in conclusion, that Ovid took pains to be accurate when referring to the risings and settings of stars. Rather than seeking intentional purposes in Ovid’s supposed errors, literary critics should feel fully justified in treated the *Fasti*’s references to star risings and settings as for the most part accurate astronomical observations, albeit subsumed to and shaped by Ovid’s ever allusive—and elusive—poetic ends. A perfect instance of this elusiveness is the last line of the poem as we have it, which, as I argued above, is plausibly one final oblique astronomical

<sup>62</sup> Cic. *DND* 2.155: “spectaculum hominibus praebent; nulla est enim insatiabilior species, nulla pulchrior et ad rationem sollertiamque praestantior”; the passage is cited and discussed for its relevance to the *Fasti* by Gee 2000, 62.

<sup>63</sup> For a sense of the high level of technical language involved in Greek astronomy, the reader may browse the “Lexique des Termes Techniques” in Aujac 1975, 169–215.

<sup>64</sup> Whoever these happened to be, Ovid thematized the process of selecting and evaluating his sources at 5.601: *mihi non dubiis auctoribus incipit aestas* (“summer begins, in authors I don’t doubt”).

reference. Already in the final lines, as recent critics have shown, Ovid employs many textual allusions to insinuate, and problematize, the ending of his half-finished calendar poem.<sup>65</sup> If we choose to see there also a pointer to Hercules Mousagete in the heavens, the final line manages to declare, without boasting too loudly, their author's understanding of, and control over, the traditional constellated configurations of stars that illuminate the night sky.<sup>66</sup>

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<sup>65</sup> Barchiesi 1997b (esp. 197–207) very cleverly points out and ties together many compelling allusions in *Fast.* 6.811–12 to other poetic closures, including the *Amores* (3.15.17) and the last line of Horace’s final book of *carmina* (4.15.1–2).

<sup>66</sup> I owe a large debt of gratitude to Denis Feeney for first proposing this line of research, encouraging me in it, and then reading the article through more than once in various stages of completion. The anonymous readers for *AJP* also deserve credit for subjecting the drafts to critical scrutiny from which it has greatly profited.

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