
Aratus and the Astronomical Tradition by Emma Gee

Oxford: Oxford University Press, 2013. Pp. xii + 299. ISBN 978-019978168-3.
Cloth \$65.00

Reviewed by
John Ryan
University of Cincinnati
ryanjj@mail.uc.edu

Emma Gee takes up an ambitious task: an explanation of the lasting importance of the *Phaenomena* of Aratus, who transferred into Homeric verse a fourth century astronomical prose treatise of the same name by Eudoxus of Cnidus in the 270's BC. Fusing traditions of technical astronomy and meteorology with the didactic poetry of the Archaic poet Hesiod, the *Phaenomena* was an immediate classic and remained widely read and imitated for centuries to come. Although the poem has begun to receive more attention from scholars in the past 50 years,¹ a general study of its reception has yet to emerge. Gee seeks to fill this void by inserting the *Phaenomena* into a larger tradition of astronomical thought spanning the seven centuries between Plato and the Roman emperor Julian. Although Aratus' importance as a poet generally goes unchallenged, Gee's is the broadest treatment of the *Phaenomena* and its translations by Cicero, Germanicus Caesar, and Avienus as an astronomical tradition referenced at length by several important Latin poets. In the end, the success of the arguments relies on an intricate array of detailed, close readings of text, which compel to varying degrees. Even where these arguments fail to be completely convincing, versions of Gee's theses nonetheless remain plausible. *Aratus and the Astronomical Tradition* constitutes a large step in the general study of Aratus' ancient reception. In what follows, I will summarize and describe the arguments of each chapter, commenting on Gee's argumentative strategy along the way. Gee divides the Introduction into six sections:

Aratus,
Popularity,

¹ Martin 1956, Ludwig 1963, Solmsen 1966, Sale 1966, Erren 1967, Pendergraft 1982, Lewis 1992, Hunter 1995, Schiesaro 1996, Kidd 1997, Martin 1998, Gee 2000, Fakas 2001, Possanza 2004, Volk 2012.

Phenomena,
 Debate,
 An Answer, and the
 Programme of the Book.

The section, 'Aratus', serves as a short reminder of how little there is of Aratus' biographical tradition at the time of the *Phaenomena's* composition that we can confirm. Under the heading of 'Popularity', Gee argues that our modern predisposition to marvel at Aratus' ancient popularity is a function of our own perspective. She would shift the discussion of Aratus' popularity by tracing *how* the *Phaenomena* came to be used in the ancient tradition. In the penultimate section, 'An Answer', Gee provides a condensed summary of one of the book's overall theses: Aratus' enduring popularity stemmed from his fusion of astronomical data with imaginative cosmology.

The section entitled 'Phenomena' argues that to understand 'phenomena' as referring to observable data privileges one ancient definition among several. Gee stresses the polyvalence of the term by juxtaposing Aristotle's antithesis of observations (φαινόμενα) and accounts (λόγοι), and Plato's comparison of phenomena to the experience in the Cave [*De caelo* 293a23–27; *Resp.* 7.514a–520a]. In the former instance, the term refers to observable, and implicitly factual, occurrences that can be contrasted with accounts subject to error; in the latter instance, the term can be used to describe what appears to be the case but is not. Contextualizing 'phenomena' within the field of astronomy, Gee then ties the ancient concept of 'saving the phenomena' by constructing regular models to account for seemingly irregular phenomena (planets, e.g.) to Plato's idea of 'saving myth' by turning it into cosmology. Gee's discussion of saving phenomena focuses on planetary motion, the most formidable *explanandum* of celestial motion. The brief treatment is aimed at fitting the concept of astronomical phenomena into her thesis but more background information might prove helpful.

Attitudes toward appearances and the truth that they indicate are of particular importance in astronomy. Certain limitations, such as daytime and the distance from which astronomical phenomena must be observed, compelled ancient astronomers to distinguish explicitly between appearances and reality. For example, Autolycus of Pitane begins his *On Risings and Settings* by differentiating between apparent (φαινόμεναι) and true (ἀληθιναί) morning and evening risings and settings of the fixed stars, which the Sun's

rays obscure [1.1]. Thus, the apparent morning rising, the first time a star is seen rising just before sunrise, is at once both insufficient and illuminating: although the star's appearance may not relate straightforwardly to its true phase, the knowledgeable astronomer of the time would understand that the Sun is 15 degrees along the ecliptic below the horizon and could estimate its true morning rising, when it will rise simultaneously with the Sun. Aratus' title demonstrates the importance of appearances as a concept and has parallels in Aratus' predecessors. It was attached to an astronomical treatise attributed to Euclid as well, and Aristotle speaks of phenomena (φαινόμενα) as the object of a discipline ancillary to astronomy (ἀστρολογία), implying that the subfield pertains to the collection and organization of astronomical observations [*An. post.* 78b39].

The ancient use of the phrase 'saving the phenomena' in astronomy has been brought to bear on discussions concerning ancient philosophical attitudes toward the nature of the science itself. Pierre Duhem suggested that 'saving phenomena', or producing models by which seemingly disparate phenomena (e.g., planetary motion) might be organized by regular mathematical principles, indicates the purely instrumentalist goal of mathematical astronomy. According to this view, the Greeks did not concern themselves with the physical reality of celestial motion, so long as they could mathematically account for what appeared to be the case [Duhem 1908]. G. E. R. Lloyd [1978] challenged this view by demonstrating that a closer examination of the evidence indicates concern with physical assumptions in the construction of mathematical models. The famous example of 'saving the phenomena' that Gee discusses from the fourth century Peripatetic Eudemus (quoted by Sosigenes in the second century AD and reported by Simplicius in the sixth) regarding planetary motion can be understood in the following terms: 'saving the phenomena' refers to the application of an explanatory system by which phenomena are correctly understood to reveal an underlying order in accordance with certain assumptions and cease to be insufficient or deceptive.

The section entitled 'Debate' concerns a conflict between the 'intelligent design' worldview and the Epicurean / atomist worldview. In the first category, Gee collects Aristotelian, Stoic, and geometrical astronomical models. In the second, lies the Epicurean atomist model embraced by Lucretius. The section purports to break apart monolithic views of ancient astronomy by presenting the reader with a debate between incommensurable positions.

Thus, Gee challenges the radicalism of the Copernican revolution as well as modern rationalism in general. Although she rightly combats positivist views of scientific progress that view ancient astronomy as monolithic, Gee does not provide an account of Epicurean astronomy to set its concerns or methods apart from mathematical astronomy. The suggestion raises interesting questions, nevertheless, since their doctrine calling for multiple explanations appears to have left Epicureans hostile to the construction of mathematical models.² Her construction of an ‘intelligent-design’ worldview encompassing all cosmologies not Epicurean, furthermore, may require some defense. The merit of Gee’s subsequent chapters on Lucretius does not depend on this introductory piece, however, since her argument itself focuses more on polemical poetics than broader scientific debate.

The final section of the Introduction, ‘The Programme of the Book’, weaves the individual chapters into the broader theses of the book. Gee argues that Aratus’ lasting influence was a function of his role as a symbol of an ‘intelligent-design’ worldview as well as its blend of imaginative cosmology and astronomical data. She devotes the remainder of the book to demonstrating how these features bear out in the *Phaenomena* and its Latin reception.

Gee’s first chapter, on the myth of Dike (Justice) and the tradition it exploits, argues that Aratus’ celebrated catasterism of Dike as the constellation Virgo [98–136] employs Hesiod’s Ages of Man myth, updated with Empedoclean cosmology, to establish poetry’s capacity to convey truth and knowledge. On the face of it, Aratus’ myth about Dike alludes to a famous pair of stories in Hesiod, one explaining a degenerative progression of the races of men, the Golden past to the Iron present [*Op.* 109–201], and another narrating the departure of Shame and Retribution [*Op.* 199–200], whom Aratus replaces with Dike. Aratus’ myth collapses Hesiod’s five races into three, Golden, Silver, and Bronze, and, by identifying the constellation Virgo with Dike, Aratus aligns her departure from the world of men in the *Works and Days* with her catasterism as Virgo in the *Phaenomena*. The nightly (seasonal) rising of Virgo, then, converts Dike’s final departure from Hesiod into a

² See *Ep. ad Pyth.* 113, where Epicurus challenges the attempts of astronomers to narrow down only one explanation that might best save the phenomena. Epicurus, as well as Lucretius [*De rerum nat.* 5.509–770], seems to have been more concerned with the physical causes of phenomena than with mathematically reconstructing celestial motion.

cyclical act: Dike comes and goes as part of a natural order reminiscent of the oscillations between Love and Strife found in Empedocles.

Gee finally argues that Dike is a sort of muse specific to astronomical poetry. On this view, Aratus alludes to the Muses when discussing Dike both by describing her as ἐννυχίη—as in *Theogony* 10—and by her use of gentle (μελιχίσιον) words at *Phaen.* 119, which Gee relates back to Aratus' proem where the Muses are described as gentle (μελίχια: *Phaen.* 17). Although both Hesiod's Muses and Aratus' Dike are 'shrouded in night', the Muses roam the world unobserved while Aratus' Dike shines in the darkness. So, whereas Hesiod's Muses boast an ability to conceal truth [*Theog.* 27], Aratus' Dike becomes the Muse of truth, so to speak.

Gee concludes by comparing Aratus' application of poetry to data in Dike's catasterism to Plato's application of philosophy to myth. Dike stands as a metaphor for an association between the mythical and the technical. Aratus offers Dike, she argues, as an answer to Plato's famous indictments of poetry.

Gee's chapter on Dike contains some interesting meditations and some compelling arguments but might schematize at the expense of exactness. The strict division between a Hesiodic / diachronic and an Empedoclean / synchronic notion of 'Ages', for instance, makes some unacknowledged leaps. First, synchrony and oscillation are not the same thing. Furthermore, Hesiod's Ages myth itself has famously been interpreted synchronically, notably in Vernant 1966. So Gee's description of these models as 'irreconcilable' seems an exaggeration, especially considering the paratactic transitions in the *Works and Days*, which makes its individual episodes malleable for reuse [see, e.g., Nelson 1998, 47]. The identification of Dike as a muse of astronomical poetry is compelling, and poetry's capacity to produce and disseminate knowledge is clearly of central importance to the Aratean tradition. Gee's argument might even find further support in Germanicus' translation of the *Phaenomena*, in which the poet addresses Virgo as one might typically address a muse or goddess [*Arat.* 98–102].

Gee's second chapter argues that Roman authors use Aratus' Dike myth as if through the lens of his predecessors, Empedocles and Plato, in order to map Aratus' adaptation of astronomical data to human development onto the narrative history of Roman 'discordia'. The argument progresses through three stages, first noting how Virgil uses Plato's *Politicus* to emphasize the cyclicity of the myth and to lay the groundwork for the incorporation of

Roman civil war narrative; then arguing for Germanicus' fascination with civil war; and finally arguing that Lucretius is the intermediary source for both Golden Age references and civil war motifs in Virgil and Germanicus. The chapter contains some interesting readings but Gee's basis for reading Virgil through a Platonic lens is questionable.

Her reading of the *Politicus* as a background for Virgil is perhaps the most controversial part of the chapter. Gee certainly demonstrates that Plato politicizes the Ages myth, aligning a myth of human political development with astronomy and cosmology. In doing so, Gee succeeds in tying the *Politicus* into a mythical tradition similar to some passages from the *Phaenomena*. But her goal to draw a direct line from the *Politicus* to Virgil is perhaps too ambitious: in the desire to do so, Gee finds direct allusions to Plato in seemingly unimpressive echoes (and several departures) in Virgil's *Eclogues* 4 and *Georgics* 2. So, for example, Gee's claim that Virgil's expansion on the Hesiodic κάρποι in his Golden Age narrative in *Georgics* 2.516–23 is a direct reference to the *Politicus*' Golden Age myth ignores that expansion on a theme—here, fruits—was a common Roman rhetorical exercise.³ Her observation that both *Georgics* 2.538 and *Politicus* 272b1–2 put Cronus / Saturn in charge of the Golden Age is inconclusive, since almost 500 years separate the two texts, which treat a traditional 'topos'. And Gee's reading of a reversal of Ages juxtaposed to the growth of the young Augustus in *Eclogue* 4 as an image of planetary retrograde set against fixed sphere prograde is ingenious but may not convert the skeptical.

Gee then asserts that Germanicus repurposes Aratus' Dike myth to address the political concerns with civil war that would be especially heightened in a Roman context. She argues that Germanicus' references to metallic mixture (reminiscent of *Republic* 10), invocations of 'discordia' (discord), and lines ending in 'ensis' ('sword') all combine to evoke the fearful image of civil war in the mind of the Roman reader. Gee's reading of metallic mixture

³ E.g., Quintilian, *De inst.* 10.5.11:

Illud virtutis indicium est, fundere quae natura contracta sunt, augere parva, varietatem similibus voluptatem expositis dare, et bene dicere multa de paucis.

That is an indication of virtue, spreading out those things which are short by nature, expanding small things, giving variety to similar things and charm to what has been set out, and speaking well and at length about little.

in the Ages myth in Cicero and Germanicus leaves her in an awkward but not impossible, position—she claims simultaneously that Cicero’s insertion of an Iron Race into his translation of the *Phaenomena* and Germanicus’ attribution of the discovery of iron to the Bronze Race in his version both constitute mixture. Whereas Cicero reallocates features of Aratus’ Bronze Race to his Iron Race, Germanicus attributes more to his own Bronze Race. Thus two seemingly antithetical literary processes entail the same outcome. Gee’s claim that lines ending in ‘ensis’ are sufficient to evoke the notion of civil war strains credibility; but, as I have already stated, her broader point about Germanicus is certainly correct. As a Latin poet writing in the early first century BC, he weaves the motif of civil war—and lack thereof—into his poem throughout. One might caution, however, that familial strife, the strongest image of Roman *discordia*, is present in the Ages myth in both Hesiod and Aratus as well [*Op.* 182, 184; *Phaen.* 125].⁴ She concludes the chapter by arguing that Lucretius serves as an intermediary through which Virgil and Germanicus reference Aratus.

In the third chapter, Gee argues that Lucretius uses Ciceronian astronomical terminology in order to engage the Stoic ‘intelligent design’ model. She attributes reluctance among scholars to accept Cicero as a model for Lucretius primarily to their insistence upon Cicero’s poetic ineptitude, despite allusions in the *De rerum natura* indicating Lucretius’ debt. The chapter concludes with Gee’s strongest case for an intertextual relationship, an echo at *De rerum nat.* 5.694–95 of *Aratea* 162–66. Lucretius uses the same language to describe the intellectual activity of the Stoics as Cicero uses to narrate the naming of the constellations by an unnamed observer. In attributing Lucretius’ use of Ciceronian / Aratean language to his desire to use the language of ‘intelligent design’, Gee claims that Lucretius is using a dominant poetic discourse to engage polemically with that discourse. Gee demonstrates Lucretius’ engagement with Cicero as a prominent poetic opponent, even if she falls short of demonstrating the prevalence of a broader, binary scientific debate between atomist and intelligent-design astronomy.

In the fourth chapter, Gee sets out to demonstrate Lucretius’ programmatic interaction with Cicero’s *Aratea* as a poetic model beyond the strictly astro-

⁴ West 1978, 199: The breakdown of familial ties is a typical scene in oriental prophecies of doom as well. Kidd 1997, 227. Gee does acknowledge the implication of familial bloodshed in Aratus’ Bronze Race in an endnote.

nomical material. She argues that his program of allusion aims to establish a polemical stance against what she calls the ‘intelligent design’ worldview, namely, that of the Stoics. Gee argues that three structural Epicurean proems in books 1, 3, and 5 all prepare the reader to look for Ciceronian intertext through scattered verbal and thematic allusion. Thereafter, Gee traces four allusive themes in Lucretius, that of impossibility, namelessness, the shipwreck of the universe, and topsy-turvy land, wherein, she argues, Lucretius recalls specific Ciceronian / Aratean topics in order to espouse the atomist worldview using the poetic discourse of Aratean intelligent design. The chapter succeeds in demonstrating pointed polemical references to Cicero’s *Aratea* conveyed through verbal allusion, though Gee makes perhaps excessively strong claims about what constitutes a clear allusion as well as the argumentative capacity of allusion.

Gee’s claims about Ciceronian allusion in the three ‘Epicurean’ proems of the *De rerum nat.* are difficult to prove. First, Latin didactic poetry before Lucretius has been almost completely lost aside from Cicero’s *Aratea* and so it is unclear how prominently Lucretius’ use of Cicero in particular stands out. Second, Gee’s strategy of making her case through an accumulation of evidence, some circumstantial, might be vulnerable to the objection that the allusions she discusses vary in strength. In the proem of *De rerum nat.* 1, for instance, ‘tereti cervice reposta’ at line 35 is reasonably called an allusion to Cicero’s ‘tereti cervice reflexum’ in fr. 9.5. Whether the use of the word ‘labentia’ to describe celestial motion in *De rerum nat.* 1.2 can usefully be called an allusion to Cicero’s ‘labuntur’ in fr. 3.1 is less certain. In what other contemporary Latin work about astronomy could we check for such a usage? There is none. On the other hand, Gee admirably brings to light the echo ‘fortis equi vis’ in *De rerum nat.* 3.8 of ‘fortis Equi’ in *Aratea* line 54 and ‘Equi vis’ of line 57 in reference to the constellation Equus. Thus, Lucretius’ ‘enim contendat hirundo | cycnis, aut quid nam tremulis facere artubus haedi | consimile in cursu possint et fortis equi vis?’ (translated by Gee ‘For how can the swallow contend with swans or kids use their tremulous limbs in the same career as a powerful horse?’) recalls two lines in the *Aratea*. ‘Cursu’, one might add, could refer to the celestial path of the constellation Horse, which the Kids do, in fact, nearly follow. Thus, Lucretius may compare himself to the Kids as faint followers of a far brighter light—Epicurus / Equus.

Gee's arguments concerning thematic allusions are generally of greater interest but again they range in strength. For instance, Gee claims that Lucretius uses the line 'quorum morte obita tellus amplectitu rossa' [*De rerum nat.* 4.734] in order to evoke the idea of 'hybridism' from Cicero's 'Nam quorum stirpes tellus amplexaprehendit', which describes plants not harmed by Sirius, the Dog Star. Gee's claim that Lucretius alludes to Cicero's description of the Dog Star in order to highlight the impossibility of hybridism (dog + star) does not make sense because there is no reason why Sirius should evoke the idea of 'hybridism' any more than other constellations. Stronger, however, is Gee's discussion of Lucretius' allusive use, when discussing the fixed stars, of Cicero's *recusatio* from treating the planets. While contrasting the fixed stars and the planets, Cicero writes at line 223 'haec sunt quae visens nocturno tempore signa' which Lucretius echoes while explaining that the fixed stars seem to wander when the wind blows the clouds past them [*De rerum nat.* 4.444 *tempore nocturno tum splendida signa videntur*]. Whereas Cicero contrasts the orderly motion of the fixed stars and the motion of the the planets, Lucretius attributes apparent planetary motion to the fixed stars as well. Gee's discussion brings to mind the relationship between astronomical phenomena and the spherical system inferred from them by mathematical astronomy. Epicurus' doubt regarding their reliability shines through Lucretius' use of Cicero's *Aratea*: the phenomena, correctly perceived by our eyes, may in fact deceive our minds.⁵ The image of planetary motion is a productive one in Latin literature more broadly, which makes Gee's description of Lucretian polemic particularly compelling in this instance.

In the fifth chapter, 'Planetary Motion', Gee traces the three Aratean themes of namelessness, planetary motion, and celestial change in Latin poetry so preoccupied with the turmoil of civil war. The passages from Aratus are all of thematic importance within the *Phaenomena* itself: *Phaen.* 367–385 narrates the process by which an ancient observer of the stars formed the constellations, applying names to all of them except for those that proved too difficult to render into shapes; in *Phaen.* 454–61, the poet recuses himself from treating the five planets on the grounds that the 'years' of their

⁵ This is the argument surrounding *De rerum nat.* 4.444. Cf. Epicurus *Ep. ad Pyth.* 113, which criticizes the pointlessness of arguing for one model of celestial movement over others.

orbits are too long for his capacities; in *Phaen.* 259–261, the poet tells us that no star has disappeared from the sky despite some disparity between the six observable stars forming the Pleiades and the seven recorded in tradition. Gee argues that namelessness, retrogradation, and celestial change are instances of disorder in the *Phaenomena*, whose theme is the stable, predictable order of the universe. The strongest arguments are brought forth in the discussion of planetary motion and celestial change. Gee traces the imagery of planetary motion in Cicero, Manilius, Lucan, Statius, and Seneca to demonstrate its application to the uncertainty of civil war in astronomical and non-astronomical contexts alike. Retrogradation, for instance, is compared to revolution by Manilius, whose planets ‘fight’ (*pugnantia*) the fixed stars [*Ast.* 1.805]. Although Gee does not provide a full discussion of the problem of celestial change in the *Phaenomena* itself, her discussion of this theme in the Latin tradition is quite rewarding: the death of Amphiarus in *Thebaid* 8, for instance, is compared to the obfuscation of a star of the Wagon, the guiding constellation circling the North Star. Gee’s acute reading of the text demonstrates how the loss of Amphiarus disrupts the stability of the hero’s foresight as the loss of a guiding star might impair the abilities of a navigator at sea.

The sixth chapter, ‘Late Antique Aratus’, innovatively explains how the tradition of the *Phaenomena* is used in the fourth century AD, primarily by Avienus, for Neoplatonist ends. Gee reads Avienus’ translation in its fourth century context alongside the roughly contemporary *Hymn to Helios* by the Roman emperor Julian. Her compelling argument that Avienus’ Jupiter is assimilated to the Neoplatonic Helios effectively elucidates some of Avienus’ more difficult collocations. Attached to the end of this final chapter is an epilogue suggesting that Copernicus uses Avienus’ language to justify heliocentrism with appeal to Neoplatonism. The chapter is generally informative and well argued.

Aratus and the Astronomical Tradition is outfitted with three appendices: the first is a text and translation of Aratus’ Dike myth with references to Hesiod; the second, a 42-page list of allusions to Cicero’s *Aratea* in Lucretius; and the third, a text and translation of the poems of both Aratus’ *Phaen.* 1–26 and Avienus’ (1–99), which are compared at length in the last chapter. The collection of allusions in the second appendix buttresses the third and fourth chapters.

Since Gee deals primarily in close, literary readings of Latin and Greek, the reader's acceptance of a proposed allusion will determine how convincing any given argument is found to be. Broadly speaking, Gee's *Aratus and the Astronomical Tradition* fills a considerable gap by detailing dynamic ways in which the *Phaenomena* was put to use in ancient intellectual traditions. Although readers may not assent to all of Gee's readings, the book nevertheless presents many brilliant insights in taking on the difficult task of drawing a large picture grounded in centuries of minute, textual detail. As stated above, even while disagreeing with some of Gee's precise claims, I often find that some more qualified version of her thesis is productive, which makes the book ultimately a success. In a word, *Aratus and the Astronomical Tradition* is a fruitful read for any scholar of Aratus and the rich tradition surrounding his lodestar poem.

BIBLIOGRAPHY

- Aujac, G. 1979. ed. *Autolykos de Pitane. La sphère en mouvement, Levers et couchers héliques, Testimonia*. Paris.
- Duhem, P. 1908. ΣΩΖΕΙΝ ΤΑ ΦΑΙΝΟΜΕΝΑ. *Essai sur la notion de théorie physique de Platon à Galilée*. Paris.
- Erren, M. 1967. *Die Phaenomena des Aratos von Soloi*. Hermes Einzelschriften 19. Wiesbaden.
- Fakas, C. 2001. *Der hellenistische Hesiod: Arats Phaenomena und die Tradition der antiken Lehrepik*. Wiesbaden.
- Gee, E. 2000. *Ovid, Aratus, and Augustus: Astronomy in Ovid's 'Fasti'*. Cambridge.
- Hunter, R. 1995. 'Written in the Stars: Poetry and Philosophy in the *Phaenomena* of Aratus'. *Arachnion* 2:1–34.
- Kidd, D. 1997. *Aratus: Phaenomena*. Cambridge.
- Lewis, A. 1992. 'The Popularity of Aratus: A Reevaluation'. Vol. 6, pp. 94–118 in C. Deroux ed. *Studies in Latin Literature and Roman History*. Brussels.
- Lloyd, G. E. R. 1978. 'Saving the Appearances'. *The Classical Quarterly* ns 28:202–222.

- Ludwig, W. 1963. 'Die *Phainomena* Arats als Hellenistische Dichtung'. *Hermes* 91:424–448.
- Manitius, C. 1894. *Hipparchi in Arati et Eudoxi phaenomena commentorium libri III*. Leipzig.
- Martin, J. 1956. *Histoire du texte des phénomènes d'Aratos*. Paris.
- 1998. *Aratos. Phénomènes*. Paris.
- Nelson, S. 1998. *God and the Land: The Metaphysics of Farming in Hesiod and Vergil*. New York.
- Pendergraft, M. 1982. *Aratus as Poetic Craftsman*. Diss. Chapel Hill.
- Possanza, M. 2004. *Translating the Heavens: Aratus, Germanicus, and the Poetics of Latin Translation*. New York.
- Sale, W. 1966. 'The Popularity of Aratus'. *Classical Journal* 61:160–164.
- Schiesaro, A. 1996. 'Aratus' Myth of Dike'. *Materiali e discussioni* 37:9–26.
- Solmsen, F. 1966. 'Aratus on the Maiden and the Golden Age', *Hermes* 94:124–128.
- Vernant, J. P. 1966. 'Le mythe hésiodique des races. Sur un essai de mise au point'. *Revue de philologie de littérature et d'histoire anciennes* 40:247–276.
- Volk, K. 2012. 'Letters in the Sky: Reading the Signs in Aratus' *Phaenomena*'. *American Journal of Philology* 133:209–240.
- West, M. L. 1978. *Hesiod: Works and Days*. Oxford.