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Laval théologique et philosophique

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Volume 3, Number 2, 1947

URI: https://id.erudit.org/iderudit/1019794ar
DOI: https://doi.org/10.7202/1019794ar

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Publisher(s)

Laval théologique et philosophique, Université Laval

ISSN

0023-9054 (print)
1703-8804 (digital)

Explore this journal

Cite this article

Coleman-Norton, P. (1947). Cicero's Doctrine of the Great Year. *Laval théologique et philosophique*, *3*(2), 293–302. https://doi.org/10.7202/1019794ar

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Cicero's Doctrine of the Great Year

Among ancient authors M. Tullius Cicero appears to have the most separate references to the Great Year (*annus magnus*), as this celestial configuration commonly is called.[1] Since mention of this theory is made only in his philosophical treatises, we may suppose not unreasonably that for Cicero this phaenomenon possessed a philosophical significance. But, on the other hand, even a casual scrutiny of Cicero's philosophical works will show that in these there are not a few topics for which a philosophical connexion can not be claimed. If our inquiry will have supported this supposition, we shall inquire then what this doctrine meant to Cicero and how effective was Cicero's employment of this tenet, — a subject not hitherto investigated.

The origin of the tradition of the Great Year is *adhuc sub iudice*: scholars are divided between an oriental and an occidental provenience for it.[2] While our knowledge of the contribution of eastern speculation to western thought in antiquity is still somewhat scanty in spite of sweeping statements slavishly borrowed from book to book, yet especially in the astrological sector of the celestial arena is our information incomplete. From the ancient assertions, which are not likely to be augmented, until more textual treasures have been assembled, we may assume conjectures; certainty we can not attain, until more tractable testimony has been

1 So CICERO, *Arati Phaenomena*, 232; *De Natura Deorum*, II. 20. 51 and in another place of this dialogue according to SERVIUS (*Commentarii in Vergilii Aeneida*, III. 284); in *Hortensius* according to SERVIUS (*op. cit.*, I. 269), but according to TACITUS (*Dialogus de Oratoribus*, 16. 7) *magnus et verus annus*; *De Re Publica*, VI. 22. 24, *vertens annus*; *Timaeus*, 9. 33, *absolutus annus perfectusque*.

Other variants for *annus magnus* are these: *annus maximus* (CENSORINUS, *De Die Natali*, 18. 11), which apparently represents *μέγιστος ἐνιαυτός* in an unknown work of ARISTOTELES; *annus mundanus* (MACROBIUS, *Commentarii in Somnium Scipionis*, II. 11. 8, 10 (*bis*), 11, 12, 13 (*bis*), 14, 17).

So far as we know, CICERO was the earliest Latin author who used this expression, for its appearance in his metrical version of the *Phaenomena* of ARATUS (*c.* 86) antedated its adoption by his younger contemporaries, LUCRETIUS (*De Rerum Natura*, I. 1029, V. 644) and VERGILIUS (*Aeneis*, III. 284, which, however, refers only to the ordinary year; in *Eclogae*, IV. 5, on the other hand, the majestic verse *magnus ab integro saeclorum nascitur ordo* shows that the poet was not ignorant of the idea).

On the Greek side we have of course *ὁ μέγας ἐνιαυτός* from PYTHAGORAS OF SAMOS according to AETIUS (*De Placitis*, II. 32. 2). *Μέγας ἐνιαυτός* (*sine articulo*) stands as part of the title of a work ascribed to DEMOCRITUS OF ABDERA by DIOGENES LAERTIUS (*De Vitis et Dogmatibus et Apophthegmatibus Clarorum Philosophorum*, IX. 48 *ad init.*). H. DIELS in his *Die Fragmente der Vorsokratiker*, 5th ed., Berlin 1934, I. 147. 1-5 conjectures that HERACLITUS OF EPHESUS used *Θεοῦ ἐνιαυτός* on the basis of what AETIUS (*op. cit.*, II. 32. 3) and CENSORINUS (*op. cit.*, 18. 10) report. From PLATO (*Timaeus*, 39 D) comes *ὁ τέλεος ἐνιαυτός*. ARATUS OF SOLI (*Phaenomena*, 458) uses *μακρὸς ἐνιαυτός*, but also offers (*op. cit.*, 741) *μέγας ἐνιαυτός*, each without the article. DIODORUS SICULUS (*Bibliotheca Historica*, XII. 36. 2) has *τὶς μέγας ἐνιαυτός*. ARIUS DIDYMUS (*Epitomes Fragmenta Physica*, 37) furnishes *ὁ μέγιστος ἐνιαυτός*. Cf. HESIODUS, *Theogonia*, 799, for the earliest use of *μέγας* with *ἐνιαυτός*.

For both the Latin and the Greek I have given only the earliest citation in each instance. I may add that the phrase *magnus Platonicus annus* has no ancient ancestry, since it seems to date from the end of our sixteenth century; on its history J. ADAM in his critical edition of *The Republic of Plato*, Cambridge 1921, II. 304-305, has an illuminating instruction.

2 Since for CICERO this dilemma posed no difficulty and therefore was of no importance for him, it is necessary merely to refer the curious reader, who may rejoice in a roster of proponents, to the industry of P. BOYANCÉ, who has collected some of such names in his *Etudes sur le Songe de Scipion*, Bordeaux 1936, p.161, nn.2, 3.

acquired. But, even if we accept the pro-oriental proponents' position that the Greeks and through them the Romans received from the Chaldaeans their tradition about the Great Year, it can not be denied that this theory wended its way westward in time to be taken by Plato[1] for his *Timaeus*, where we find the first full account of it in Greek,[2] at least a century and perhaps two centuries ere its earliest authentic appearance east of the Aegaean.[3] On the other hand, we can not claim that Plato

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1 The Platonic *loci* concerning the Great Year are these: *Politicus*, 269 C – 273 E, *Politeia*, 546 BC, *Timaeus*, 38 B – 39 E.

While the chronology of PLATO's dialogues never has been settled to the satisfaction of all scholars, I adopt the order of these three as proposed by A. E. TAYLOR in his *Plato: The Man and His Work*, 2nd ed., New York 1927, pp.371, 437, where the *Politicus* precedes the *Politeia* and the *Politeia* precedes the *Timaeus*.

The clearest account of the Great Year is in the last, curiously enough, for the *Timaeus* is the most difficult of his dialogues to understand, even in English. We can claim with confidence that CICERO knew Greek better than any modern scholar and, while he knew what PLATO wrote, yet CICERO failed to give the readers of his version of the *Timaeus* a clear idea of what PLATO meant. CICERO himself may have considered his translation a failure, because in telling us that obscurity may be due to abstruseness of subject and not of style he proffers in testimony PLATO's *Timaeus* (*De Finibus Bonorum et Malorum*, II. 5. 15). This judgment is justified by ST. JEROME (SOPHRONIUS EUSEBIUS HIERONYMUS), who calls the *Timaeus* an *obscurissimus ...liber... qui ne Ciceronis quidem aureo ore fit planior* (*Commentarii in Amos*, II. 5. 283).

2 PLATO concludes a description of celestial mechanics begun in *Timaeus*, 37 D, to illustrate the conception of Time, which came into existence along with Heaven (38 B) and which is constituted by the wanderings of the planets (39 D), with the statement that it is possible to perceive that the complete number of Time (ὁ τέλεος ἀριθμὸς χρόνου) fulfills the Complete Year (ὁ τέλεος ἐνιαυτός) at the time when the relative speeds of all the eight circuits (περίοδοι: of Moon, Sun, Venus, Mercury, Mars, Jupiter, Saturn, Whorl of Fixed Stars [38 C with *Politeia*, X 616 D – 617 B]), having finished together, come to a head (ἔχειν κεφαλήν, after having been measured by the revolution (κύκλος) of the Same and Similarly-Moving (39 D). So also CICERO, *Timaeus*, 9. 33, in his version. That is to say, when all the planets, which move at various but definite speeds in one direction (36 D), and the circle of fixed stars, which surrounds these and moves in another direction (36 D), have returned simultaneously to the points whence they have started, the Great Year is accomplished.

Earlier PLATO appears to have considered the duration of the Great Year in his *Politeia*, VIII. 546 C, in a passage which not only has puzzled many commentators but also has defied some translators. But taken in conjunction with the myth of two cycles of equal and enormous duration in his *Politicus*, 269 C – 273 E, it seems that each of the two harmonies (one a square and one an oblong) of the *Politeia* (*loc. cit.*) represents a Great Year. From PLATO's matnematical maze the Great Year then may be calculated at 36,000 ordinary years. The evidence on this point is presented elaborately by ADAM, *op. cit.*, II. 206-208, 295-305. But, on the other hand, there is not sufficient testimony to connect this figure with the τέλεος ἐνιαυτός as found in the *Timaeus*, where the phrase is set in a purely planetary sense. On this observation one may consult A. E. TAYLOR'S *A Commentary on Plato's Timaeus*, Oxford 1928, pp.216-219.

3 High hopes have been pinned on the shadowy *savant* BEROSUS (*al.* BEROSSUS) CHALDAEUS, a Babylonian antiquarian, astrologist, astronomer, historian, mathematician, philosopher, priest, whose *floruit* was in the first half of the third century B. C. However, E. HAVET, who has made a special study of the subject, thinks that the writings which pass under the name of BEROSUS were fathered upon him by some unknown Hellenized Oriental toward the end of the second century B. C. or even later. HAVET'S opinion, which has not achieved universal acceptance, because it impairs the interest of the pro-orientalist party, is in his *Mémoire sur la date des écrits qui portent les noms de Bérose et de Manéthon*, Paris 1873, pp.49-51.

Testimonia about BEROSUS and 29 fragments of his writings are found in C. MUELLER'S *Fragmenta Historicorum Graecorum*, Paris 1848, II. 495-510, which seems to contain the latest collection of the literary remains of BEROSUS, for F. JACOBY'S *Die Fragmente der griechischen Historiker*, Berlin 1923—, not yet has included these.

The most useful arguments brought by BEROSUS appear in frgs. 6a and 21 on pp.500 and 510 in MUELLER'S edition. The first is from JOSEPHUS, *Antiquitates Judaicae*, I. 3. 9; the second is from SENECA, *Naturales Quaestiones*, III. 29. 1.

developed this doctrine *de suo*, because there exists ancient evidence ascribing a pre-Socratic adumbration of and even acquaintance with this dogma as high as the Pythagorean period, if we discard, as we must, its attribution to Linus and to Orpheus![1]

The precincts of this paper would be widened unduly, if I should try to trace the tradition of the Great Year from Plato through the Hellenistic *savants* to Cicero. While names here and there can be found, yet because of the exiguity of the evidence both beyond and within Cicero's writings it is chiefly a matter of conjecture to construct a *catena nominum* wherein we can place confidence. After an examination of the evidence I hold that it is hopeless to achieve a convincing argument about Cicero's conscious dependence upon any philosophical declaration on this subject subsequent to Plato as well as to decide that Cicero drew directly this proposition from Platonic doctrine. After all, the professed purpose of this inquiry is to consider Cicero's presentation of this idea.

Of the seven Ciceronian *loci* referring to the Great Year only three or at the most four now have any philosophical significance. Before discussion of these I shall clear the ground by dealing with the unimportant passages.

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[1] One difficulty in deciding about references to the Great Year is whether is meant the accordance only of lunar months and solar years in one period of whole numbers or the return of all the planets (including the sun and the moon) exactly to their same respective positions whence these first started on their revolving courses.

In his book *De Die Natali* a certain CENSORINUS, who composed it according to his own assertion (21. 6) in the consulate of Pius and Pontianus (A. D. 238), preserves a score of estimates of the period of the Great Year, which extended from two years to many thousands of years (18. 1) and which some imagined was infinite and others alleged never was accomplished (18. 11). Of the pre-Socratic scientists who dealt with this doctrine CENSORINUS collects these calculators and their calculations: ORPHEUS: 120,000 (18. 11); LINUS: 10,800 (18. 11); CLEOSTRATUS OF TENEDOS (*flor.* 525): 8 (18. 5); HERACLITUS OF EPHESUS (*flor.* 510): 10,800 (18. 11); HARPALUS (*flor. saec.* V.): 8 (18. 5); PHILOLAUS OF CROTON OF OF TARENTUM (*flor. saec.* V.): 59 (18. 8); DEMOCRITUS OF ABDERA (*c.* 460-361): 82 (18. 8); METON OF ATHENS (*flor.* 420): 19 (18. 8). Of these DEMOCRITUS alone appears to have written a special study on this subject, Μέγας Ἐνιαυτὸς ἢ Ἀστρονομίη Παράπηγμα, according to the report preserved by DIOGENES LAERTIUS (*op. cit.*, IX. 48 *ad init.*). The low estimates of CLEOSTRATUS, HARPALUS, METON are due to their attempts to arrive at a period which could satisfy the triple requirement of an exact number of days and of lunar months and of solar years (Cf. T. L. HEATH, *Greek Astronomy*, London 1932, pp.xvi-xvii.

Against the Censorine ascription of Orphic antiquity to this tenet must be set, if only for fairness, the lower claim of OENOPIDES OF CHIOS, a younger contemporary of ANAXAGORAS OF CLAZOMENAE (*c.* 500-428), who was considered by some to have been the first to discover the cycle of the Great Year (ἡ τοῦ μεγάλου ἐνιαυτοῦ περίστασις) on the authority of EUDEMUS OF RHODES, the pupil of ARISTOTELES (384-322), as reported by DERCYLLIDAS (*flor. saec.* I, A. C.), whose comments on PLATO's philosophy served as a source for the ultimate recorder, the mathematician THEON OF SMYRNA (*flor.* A. D. 130). *Testimonia* about OENOPIDES are assembled by DIELS, *op. cit.*, I. 393-395, where frg. 1 (cf. also frgs. 2 and 3) asserts his association with ANAXAGORAS and frg. 7 *ad init.* contains the claim of his primacy in the discovery of the doctrine. But frg. 9 *ad fin.*, advanced by AETIUS the doxographer (*flor.* A. D. 100), attributes to both OENOPIDES and PYTHAGORAS OF SAMOS (*flor.* 525) the calculation of 59 years for the cycle. If this is true, then OENOPIDES merely may have popularized what either PYTHAGORAS or PHILOLAUS, who was a Pythagorean (so CENSORINUS, *op. cit.*, 18. 8), previously had posited, especially since CENSORINUS (*loc. cit.*) confers upon the latter the invention of the interval of 59 years, a figure found only by these three.

When all has been said, it seems that before Plato's time there was no definite doctrine about the period of the Great Year.

1. The fact that Cicero translated the *Phaenomena* (and the *Prognostica*) of Aratus of Soli into hexametric verse is not sufficient to set the Ciceronian remains of this work beyond the pale of philosophy, for both in content and in form his version could have won ancient acceptance into philosophy's precincts on the ground that the subject stood well within the physical field of speculation and that the structure had a heritage as high as the *Theogonia* of Hesiodus, who had devoted himself to a different subject in the same department.[1]

In Cicero's translation vv.223-233 represent vv.451-459 of the poem of Aratus;[2] in the one is read *magnos... annos* (232) and in the other is read *μακροὶ... ἐνιαυτοί* (458). Without any attempt to point a moral or to draw an inference Cicero performs only the office of a translator in telling us that the five wandering stars [planets], [3] which are wont to glide through the orbit of the twelve signs [of the zodiac], can not be observed with the same calculation as those constellations which you will see traversing the sky in a regular course, because their trails are not always in the same space. Thus these wandering [planets] prefer to rove through the clouds of the sky and to measure their own orbits in varied motion.[4] These produce the Great Years of long-lasting time, when these return to the same sign under heaven's vault.

It was not courteous of Cicero to claim that Aratus was ignorant of astronomy, while at the same time he praised the poet's poetry (*De Oratore*, I. 16. 69), since Cicero like Aratus made no observations, so far as we know, and because each drew his knowledge from other writers on this science. Doubtlessly astronomy in the age of Aratus was not as advanced as it was

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1 Not to mention the few lines left from the *Astronomia* ascribed to him by ATHENAEUS (*Deipnosophistae*, XI. 491 CD).

Moreover, in Cicero's lifetime LUCRETIUS was to expound Epicureanism in hexameters and to leave some space for astronomical lore (*op. cit.*, e.g., V. 509-533, 564-770, 1182-1193, 1203-1225, 1436-1439; cf. VI. 43-534, 617-630).

2 One should not be misled on this Aratean numeration by reference to the count of C. F. W. MUELLER in his stereotyped edition of CICERO's translation (*M. Tulli Ciceronis Scripta Quae Manserunt Omnia*, Leipzig 1904, IV. III. 360-382, where he prints the Latin of CICERO and of GROTIUS for 764 lines from the beginning of ARATUS' poem, which extends to 732 Greek verses in the edition of E. MAASS (*Arati Phaenomena*, Berlin 1893). After he has embedded the more fragmentary parts of the Ciceronian version into the supplementary translation of GROTIUS (1583-1645), MUELLER begins (on p.367) the more consecutive Ciceronian remains at line 1 for CIRERO on the left of the page and at line 235 for ARATUS on the right of the page. By the time that he has reached line 232 for CICERO (the key-line containing *annus magnus*), MUELLER has arrived at line 476 for ARATUS (i.e., CICERO and GROTIUS), which represents line 458 in the Greek given by MAASS.

So far as I have examined the literature on the Great Year, this Aratean-Ciceronian *locus* has been neglected. In fact I found it only by searching references to *annus magnus* in the *Thesaurus Linguae Latinae*, Leipzig 1900-1906, II. 116. § 6, since in spite of PLUTARCHUS' profession that CICERO was the premier poet of Rome (*Vitae Parallelae: Cicero*, 2. 3) no one, not even a *Ciceronianissimus*, perhaps pays much attention to his activity in poetry and so off-hand would not consider that he could find anything of value there.

3 CICERO names the wandering stars as Saturn, Jupiter, Mars, Mercury, Venus (*N. D.*, II. 20. 52-53).

I may add that no author in Latin before CICERO gives the full list.

4 CICERO elsewhere (*N.D.*, II. 20. 51) denies that these stars rightly can be called wandering, because that which preserves in all eternity constant and regular motions can not be errant. Their varied motions he admits, but he ascribes these to divine direction (*op. cit.*, II. 21. 54; cf. II. 16. 43, 21. 56).

in the Ciceronian period, for the greatest Greek astronomer, Hipparchus of Nicaea, intervened; but even so that fact fails to excuse Cicero, who was merely an amateur in astronomy, not only when he turned the *Phaenomena* from Greek into Latin about the age of 20, but also at the age of 51 when in his *De Oratore* he shot this shaft at the armor of Aratus.

2. Stripped of its context in the *De Natura Deorum*, to which dialogue it is assigned by Servius,[1] is the simple statement that the Great Year contains 3,000 years.[2] Elsewhere in the same treatise (II. 20. 52) Cicero says that there is a great question how long is this period, although he admits that it necessarily must be fixed and definite. If the ascription by Servius is correct, then it seems that Cicero (or the source which Cicero used) set somewhere in this dialogue the figure of 3,000, a figure which no other ancient author appears to have mentioned. It is obvious from the comments of Servius that no philosophical significance is attached to this statement.

3. The earliest extant witness to another Ciceronian reference to the Great Year is Tacitus,[3] who assigns it to the *Hortensius*,[4] when he claims that the era of Demosthenes [*c.* 384-322], which one ordinarily considers ancient, is as the same month in relation to his own generation [*c.* 55 – *c.* 117],[5] if one measures the interval by the standard of the Great Year, reported by Cicero to be that wherein the same position of the celestial constellations, as these at any moment happen to be placed, recurs after a period of 12,954 ordinary years.

While Tacitus appears to have paraphrased the Ciceronian definition of the Great Year in giving also the calculation of its interval, yet Servius, the only other ancient author who mentions this testimony from the *Hortensius*,[6] seems to have saved Cicero's *ipsissima verba*[7] in quoting

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1 *Locus* cited *supra* in p.293, n.1 *ad init.*

2 CICERO advances another estimate elsewhere. This will be noted later, when the passage from his *Hortensius* will be treated in the text *infra* in § 3.

3 *Locus* cited *supra* in p.293, n.1 *ad init.*

4 Of the 14 fragmentary treatises on philosophical subjects from CICERO's pen the *Hortensius* contains the largest number (almost 90) of non-consecutive fragments and ranks first among the more fragmentary treatises after the five great treatises surviving in an imperfect state.

On the *Hortensius* I venture to attract attention to my article "The Fragmentary Philosophical Treatises of Cicero" in *Classical Journal*, XXXIV (1938-1939) 213-228, where this dialogue is discussed in pp.226-227.

5 The dramatic date of the *terminus ad quem* in the Tacitean times is 74-75; cf. *Dial.*, 17. 3, where a speaker says that it is in the sixth year of the principate of Vespasianus [69-79].

6 *Locus* cited *supra* in p.293, n.1 *ad init.* SERVIUS' second citation is shorter than his first quotation.

7 So indicated by G. THILO and H. HAGEN, *Servii Grammatici Qui Feruntur in Vergilii Carmina Commentarii*, Leipzig 1881, I. 99. 19-20, and by MUELLER, *op. cit. supra* in p. 296, n.2 *ad init.*, IV. III. 316. 18-20, where it stands as frg. 35 of the *Hortensius* in its Servian context.

that of the years which we have in the calendar (*in fastis*) the Great [Year] embraces 12,954.[1]

Tacitus and Servius neither explain how this estimate was reached nor discover a philosophical use for this passage, although the former approaches one of the Hebraïc conceptions of the divine attitude toward time expressed in *Psalms*, XC. 4: "For a thousand ages in thy sight are but as yesterday when it is past, and as a watch in the night."[2]

4. A borderline case, philosophically speaking, occurs in *De Finibus*, II. 31. 102, where Cicero inveighs against Epicurus, who in his will enjoined upon his heirs the provision of sufficient money to celebrate his birthday annually in the month of Gamelion (§101).[3] Cicero makes the point that a philosopher, particularly a natural philosopher, which Epicurus considers that he is, must not think that any day is anyone's birthday. Cicero asks whether the same day which has occurred once can occur oftener and decides that it is impossible. Not even can a similar day recur, unless many thousands of years will have intervened, in such a way that a return of all the constellations is made simultaneously to the same point whence these started. Therefore, there is no birthday for anyone! While Cicero is willing to acknowledge, as he must, that birthdays are observed, yet he is opposed to their observance *post mortem* for two reasons: a *savant* ought not to wish that the memory of his name be celebrated after death by a banquet (§§ 101 and 103) and it is inappropriate for a man who like an oracle proclaimed that nothing after death concerns us to provide by his will for a celebration of his birthday (§ 102).

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1 I can not explain the discrepancy between the Ciceronian estimates of 3,000 (cf. *supra* the text in § 2) and 12,954 years. For a third Ciceronian estimate cf. *infra* the text in p.301 *post* n.2.

It nowhere appears in CICERO's writings, moreover, that he was aware of the Platonic period of 36,000 years (cf. *supra* p.294, n.2 *ad fin.*).

Modern mathematicians have calculated that this phaenomenon occurs once in 25,816 solar years according to the note of A. GUDEMAN in his *P. Cornelii Taciti Dialogus de Oratoribus*, 2nd ed., Leipzig 1914, p.296. This estimate seems to be manufactured from manipulation of the siderial periods of the several planets known to the ancients. These periods are the times required for these bodies to complete their circuits and according to H. N. RUSSELL, R. S. DUGAN, J. Q. STEWART, *Astronomy*, Boston 1926, I. App. I-II, are as follows:

Moon	27.321661	days	in mean solar units
Sun	365.25636042	days	
Mercury	87.96926	days	in mean solar days
Venus	224.7008	days	
Mars	686.9797	days	
Jupiter	4332.588	days	
Saturn	10759.201	days	

From our knowledge of ancient astronomy it seems that the ancient mathematicians should have known that they had sufficient *data* to determine more precisely the period of the Great Year. If they did so, the tradition has not been transmitted.

2 This verse from the King James' Version has been expressed more recently and more poetically by ISAAC WATTS in his great hymn, "Our God, our Help in Ages Past" (1719), where we read:

"A thousand ages in Thy sight
Are like an evening gone;
Short as the watch that ends the night
Before the rising sun."

3 The seventh month of the Attic year, equivalent to our 15 January — 14 February.

This verbal arrow from Cicero's armory, aimed at Epicurus, who held that what had been annihilated by death was without sensation and that there remained nothing whatever which could affect us (§ 101), either falls short because of the weak string of his sophistic bow or strikes in the clout the inconsistency seen in his provision for the posthumous celebration of his birthday. If the latter interpretation is accepted despite the jocose quibbling of the assault, the argument is raised to a philosophical plane. *Suo cuique iudicio utendum est.*

We come now to passages which indubitably associate the concept of the Great Year with philosophical ideas.

5. Cicero's *Timaeus*, which is an incomplete translation of Plato's *Timaeus*, after a *lacuna* at 8. 28, which embraces what Plato has in 37 C — 38 C, resumes at 9. 29 after the beginning of the Platonic thesis that Time came into being along with Heaven, that, having been generated together, these might be dissolved also together, if ever a dissolution of these should occur, and [that Time was made] according to the pattern of the Eternal Nature, that it might be as like to it as possible (38 B). Wherefore, from such reasoning and intent of God respecting the creation of Time the sun and the moon and the other five stars, called planets,[1] were created for determination and preservation of numbers of Time (38 C). Then follows both in Plato's treatise and in Cicero's translation a description of the celestial mechanism and a subsequent explanation of how men can reckon time, not only by means of the moon and the sun but also through the revolution of the other planets, concluding temporarily (38 D and 9. 33) with the declaration (given by Cicero)[2] that it can be perceived and understood that the Complete and Perfect Year (*absolutus annus perfectusque*) then at last is fulfilled by the complete and perfect number of Time, when the eight circuits,[3] after their courses have been completed, have returned to the same head [i.e., their point of departure] and when the Same and the Ever-Uniform Circle has measured these.

Such is the explanation, which Cicero gives on Plato's authority, for the introduction of the notion of the Great Year, since men have not considered that the calculation of the circuits of the other planets (apart from the obvious orbits of sun and moon) also permit them to tell time.

6. In presenting the Stoic position on the Divine Nature in his dialogue *De Natura Deorum*, II. 17. 45 — 28. 72, Cicero affirms that the divine activity reveals itself in the orderly motions of the planets and the fixed stars (19. 49 — 21. 56). He thinks that most marvellous are the movements of the five stars [i.e., planets],[4] because now these are hidden, now these are disclosed, now these approach, now these retreat, now these precede, now these succeed, now these move more rapidly, now these move more

1 These are those named *supra* in p.296, n.3.

2 For PLATO's account, cf. *supra* p.294, n.2 *ad init.*

3 These are those listed *supra* in p.298, n.1 *ad fin.* with the addition of the circle of fixed stars mentioned in *Rep.*, VI. 17. 17, 18. 18; *N. D.*, II. 21. 55; *Tusculanae Disputationes*, V. 24. 69; *Arati Phaen.*, 223-225 with 235-236.

4 Named *supra* in p.296, n.3. Cf. *supra* p.296, n.4, p.298, n.1 *ad fin.*, p.299, n.3.

slowly, now these move not at all, but for a time stand still (20. 51). Cicero then tells us[1] that from the different movements of these [planets] the mathematicians have named [the phaenomenon of] the Great Year, which is accomplished at the time when the revolution of the sun and the moon and the five wandering [planets] has been brought to the same relative position, after the courses of all have been completed.[2]

After a description of the periods of the planets (20. 52-53) Cicero concludes that the stellar [i.e., planetary] regularity and the adjustment of times for so varied courses throughout all eternity can not be understood [as existing] without intelligence, calculation, design (21. 54). By this statement Cicero seems to provide a place for the doctrine of the Great Year in the divine economy.

7. Perhaps the most memorable place about the Great Year in Cicero's works occurs in the *Somnium Scipionis*, which closes his *De Re Publica* (VI. 9. 9 — 26. 29), as the *Mythos Eris* ends Plato's *Politeia* (X. 614B — 621 D), on which Cicero modelled his treatise on the State. Here the conception of the Great Year is used to illustrate the theme of the vanity of glory, on which Cicero perhaps discoursed in his lost dialogue *De Gloria*.[3]

In 149 at the onset of the Third Punic War (149-146) P. Cornelius Scipio Aemilianus (*c.* 185-129),[4] when visiting Masinissa (238-148), King of Numidia, dreamed that both his grandfather, P. Cornelius Scipio Africanus Maior (*c.* 234 — *c.* 183), and his father after the flesh, L. Aemilius Paulus Macedonicus (*c.* 230-160), who was also his grandfather's brother-in-law, appeared to him and to him revealed the celestial rewards in store for those who through faithful devotion in the service of their country had deserved well of their fatherland (9. 9 — 16. 16).

While his grandfather explains to the younger Africanus the celestial mechanics of the nine spheres and their musical harmony (17. 17 — 18. 19), the elder Africanus notices that his grandson repeatedly withdraws his gaze from the heavenly wonders and directs his eyes toward the earth (17. 17, 18. 19). This shift of interest serves as the introduction to the doctrine of the vanity of glory, when the senior Scipio shows how small is the earth in comparison with the spacious firmament and asks what

1 *Locus* cited *supra* in p.293, n.1 *ad init.*

2 For the length of this period, which CICERO refuses to reckon in the succeeding sentence, cf. *supra* the text in §§ 2 and 3.

3 This work consisted of two books, of which six or perhaps seven fragments remain (cf. my article, cited *supra* in p.297, n.4 *ad fin.*, where on p.223, n.28, the problem of the seventh fragment is posed) and which were known by PETRARCH (1304-1374). Otherwise CICERO's fullest surviving discussion of glory occurs in his *De Officiis*, II. 9. 31—14. 51, where, however, he is more concerned with the means of acquiring glory than with its disparagement, an attitude which he adopts briefly in his *De Fin.*, III. 17. 57. Cf. also *Cato Maior*, 23. 82; *T. D.*, I. 15. 33-34.

The latest study on CICERO's conception of glory seems to be that of C. CHARAUX, *Quid de Gloria Senserit Marcus Tullius Cicero*, Paris 1866, where one should see especially pp.37-64.

4 If he had not inherited the additional surname of *Africanus* from his adoptive father, P. Cornelius Scipio Africanus (*aug.* 180), Scipio earned the right to add *Africanus Minor* to his name, after he had conquered Carthage in 146. Another *cognomen*, that of *Numantinus*, fell to Scipio's lot, after he had received the capitulation of Numantia in 133.

glory that is worth search can be gained thence (19. 20), especially in view of the earth's socio-geographical conditions, which confine glory within narrow limits (19. 20 — 20. 22). Without awaiting an answer the elder Africanus enlarges this theme thus: But even if future generations of men should desire to transmit to their posterity our praises received from their fathers, yet because of periodic inundations on and conflagrations of the earth[1] we could acquire not only not everlasting but not even longlasting glory. Moreover, what matters it to be mentioned by those who will be born later, when no mention has been made by those who were born before our time, ... particularly since among those very persons, by whom our name can be heard, none can hold one's recollection for a single year (21. 23 — 22. 24)? This surprising statement gives the grandfather the chance to connect the tradition of the Great Year with glory, when he maintains that men commonly measure the year merely by the revolution of the sun, that is, of a single star (*astrum*); but when all the stars (*astra*) have returned to the same place, whence these once started, and when these have restored after long intervals the same configuration of the whole heaven, then that truly can be called a full year (*vertens annus*).[2]

How long is the Great Year here? Cicero with the help of Macrobius provides the answer. The elder Africanus declares that he hardly dares to say how many generations of men are contained in it; for, as once the sun appeared to men to be eclipsed and to be extinguished, when the soul of Romulus passed into the heavenly regions, and when the sun again shall have been eclipsed at the same point and in the same season, then one can consider that the year has been completed by the fact that all the planets (*signa*) and the stars (*stellae*) have been recalled to their original position. But not yet one-twentieth part of this year has been made to turn (22. 24). Macrobius calculates the time elapsed between the death of Romulus and Scipio's dream at 573 years, since Scipio triumphed over Carthage in Rome's 607th year, from which figure we must subtract 32 years for the duration of the reign of Romulus and 2 years for the interval between the vision and the victory.[3] If we accept this reckoning and multiply 573 ordinary years by 1/20th of the Great Year, we shall reach the result of 11,460 common years for the minimal duration of the Great Year. But, since Cicero has insisted that one-twentieth of the Great Year not yet has elapsed (22. 24), of course its length must be longer. Macrobius anticipates this assertion by accepting on the authority of anonymous natural philosophers an estimate of the period for the Mundane Year (as he calls it)[4] at 15,000 of our years.[5]

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1 A Stoic doctrine repeated in *N. D.*, II. 33. 85, 46. 118.

2 *Locus* cited *supra* in p.293, n.1 *ad init.* This is the only place in CICERO's writings where the phrase means the great cycle of the constellations or the Great Year. His other uses of it are in the sense of an ordinary year: *Pro P. Quinctio*, 12. 40; *Philippicae*, XIII. 10. 22; *N. D.*, II. 20. 53.

3 *Op. cit.*, II. 11. 16. His comments on the Great Year occupy chapter 11, which has 17 sections.

4 *Locus* cited *supra* in p.293, n.1 *post init.*

5 *Op. cit.*, II. 11. 11 (*bis*), 15. Cf. *supra* p.298, n.1 *ad init.*

Such, then, are the seven Ciceronian references to the Great Year. At this time, as I have suggested earlier,[1] not more than four of these have a philosophical importance. That I have not delved into too technical detail in this mathematical maze, which my colleagues among the astronomers consider of no practical importance today, I must thank Macrobius, who in a different connexion has written these words about a Ciceronian crux: *Nec... occasione hac eundum est per universos tractatus,.. quos, quantum mea fert opinio, terminum habere non aestimo... quia in re naturaliter obscura, qui in exponendo plura, quam necesse est, superfundit, addit tenebras, non adimit densitatem.*[2]

But some one may ask whether for Cicero speculation about the Great Year had any serious validity. This question is not easy to answer. Certainly nowhere in his writings Cicero considers this matter lightly. On the contrary, Cicero seems to hold the profound belief that by mathematical laws, which concern in part such calculation, were created and are directed the universe and all which it contains.[3] As a text for this truth we may take the ancient aphorism, ὁ Θεὸς ἀεὶ γεωμετρεῖ.[4]

P. R. COLEMAN-NORTON.

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1 Cf. *supra* the text on p.295 *post* n.1.

2 *Op. cit.*, II. 4. 12.

3 M. Y. HENRY in her dissertation, *The Relation of Dogmatism and Scepticism in the Philosophical Treatises of Cicero*, Geneva [N. Y.] 1925, has exploded successfully the nineteenth century's myth (instituted by DRUMANN and by MOMMSEN implemented) of Cicero's scepticism (see especially pp.1-5.)

4 Ascribed to PLATO in antiquity, although PLUTARCHUS says that students of PLATO'S works were at a loss to locate it in his writings. However, as PLUTARCHUS comments, it has a Platonic character (*Quaestiones Convivales*, VIII. 718 C).