

TLG^{®1} Unicode Proposal (draft 8/13/02)

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Introduction

The TLG[®] Project

The following document was created by the *Thesaurus Linguae Graecae Project*[®] (TLG[®]) at the University of California, Irvine. The TLG is a digital library containing more than 10,000 Greek literary texts (now in excess of 80 million words) from Homer to the end of Byzantium in AD 1453. TLG texts have been disseminated in CD-ROM format since 1985 and have recently become available online (<http://www.tlg.uci.edu>). The TLG is a major research tool used by thousands of scholars and students of Greek worldwide.

TLG texts are entered in Beta Code—a character and formatting encoding convention developed by David W. Packard and his team at the *Packard Humanities Institute* in the late 1970s. Each of the twenty-four Greek letters has an assigned ASCII position, and diacritics are indicated by non-alphabetic characters following the accented vowel. Beta Code was necessitated by the absence of a standard, cross-platform font table and keyboard for ancient (polytonic) Greek, a problem to be addressed by the establishment of a complete Unicode polytonic Greek set. Beta Code has been used by the TLG and a number of other electronic Greek corpora, such as the *Perseus Project*, the *Duke Databank of Documentary Papyri* (containing documentary Greek papyri) and the *Epigraphy Project* (carried out by the Ohio State University and Cornell University) under the aegis of the *Packard Humanities Institute*. An annotated list of the TLG Beta Code symbols can be found at: <http://www.tlg.uci.edu/BetaCode.pdf>.²

² Where discrepancies between the Beta Code Manual and the current document arise, the current document is to be considered authoritative.

Notes on the proposal

Summary

This proposal represents the majority of—mostly non-alphabetic—characters required in the electronic scholarly representation of Greek texts and currently missing from the Unicode Standard.

Every effort has been made to identify and document the use of these characters as completely as possible. To this end, extensive research has been conducted so that the information included in this document may serve as a future reference. Information from the TLG corpus as well as epigraphical and papyrological evidence has been consulted. It should be noted, however, that the TLG works exclusively from printed modern scholarly editions, therefore, it is possible that characters exist—for example, medieval punctuation—which have not yet been entered into the TLG corpus and are not presented in this proposal.

Organization

The proposal is broken down into seven sections:

- I. Additional Ancient Greek Letters
- II. Ancient Greek Editorial Characters and Punctuation
- III. Ancient Greek Numerical Characters
- IV. Ancient Greek Musical Characters
- V. Ancient Greek Metrical Characters
- VI. Ancient Greek Abbreviations
- VII. Modern New Testament Editorial Characters

Each section (apart from section VI) has an introduction which outlines the characters proposed, places them in context and explains the rationale behind the proposed characters. Also discussed are any difficulties or other issues involved in the encoding of each of these characters.

Each section is broken down into two subsections: (a) characters new to the Unicode Standard; and (b) characters which already exist in the Unicode Standard but with different semantics. In such cases it is proposed that further definition be appended to the current character.

The characters are discussed individually in sections a and b of the proposal. Each character has one table devoted to it. See below for an outline of the table format.

Explanation of Character Tables

Graphic of character

Character reference number and name of character

Where one exists, we include possible Unicode equivalents

Beta Code equivalents

Number of times a glyph has appeared in the TLG canon and other projects using Beta Code (see note p. 12)

V.b.1 Greek Vocal Notation Symbol 25

Sign 	Unicode 03A9	Beta Code #641	Count 4 instances, 1 author
Definition and comments This represents the vocal f.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			

Definition of the character, together with any further information required, such as information on glyph variants.

Examples to show how a character appears in text and glyph variants.

Editions used as the basis for the digital TLG text, where possible.

Naming Conventions

We have adopted, where possible, the standard ancient Greek terms for proposed characters. Where this has not been possible, we have adopted the standard modern term which has developed in its stead. On the rare occasion where this has not happened, we have developed an appropriate name for the character; these instances are made clear below.

Notes on Beta Code Counts in the Proposal

TLG counts of character occurrences in the present corpus are offered to provide some idea as to the frequency of the symbols. These counts are not indicative of the actual occurrence of the symbols because:

1. the TLG works out of printed editions
2. rendering has not always been consistent. Therefore counts should not be taken as authoritative.

We have occasionally given Beta Code counts taken from corpora other than the TLG. This is done to give some idea about the frequency of certain glyphs rarely attested in the TLG corpus.

Notes on Text Samples

Occasionally, when a ‘clean’ copy of a text is not available, we offer a ‘marked-up’ copy from our archives. We trust that these are still clear enough to read.

Occasional references to sample texts which may be too long to fit in the running text of the proposal can be found in Appendix 1.

Abbreviations

- DNP eds. Cancik, H. & Schneider, H., *Der Neue Pauly* (Stuttgart & Weimar, 1996-onwards)
- Inscr The *Cornell Greek Epigraphy Project*. The data is included in PHI CD-ROM 7. References to Beta Code counts taken from inscriptions are indicated by (Inscr) in the 'Count' field.
- LSJ Liddell, Scott & Jones, *Greek English Lexicon with a supplement* 9th ed. (Oxford, 1968)
- OCD³ eds. Hornblower, S. & Spawforth, A., *The Oxford Classical Dictionary* 3rd ed. (Oxford, 1996)
- Papyri The *Duke Databank of Documentary Papyri*. Most of its data is included in PHI CD-ROM 7. Beta Code counts from papyrological texts are indicated by (Papyri) in the 'Count' field.

I. Additional Greek Letters

Introduction and Overview

Table of Characters Proposed or Discussed in this section

Character	Name	Similar Unicode
Ϛ	Greek Capital Letter Lunate Sigma	
ϛ	Greek Capital Letter San	
Ϝ	Greek Small Letter San	

Introduction

Greek Small Letter Lunate Sigma is already present in Unicode Standard 3.2 and has the codepoint 03F2. The space in the Greek and Coptic code table would indicate that Greek Capital Letter Lunate Sigma would be assigned the code 03A2.

Earlier versions of this document included the Greek Capital Letter San and Greek Small Letter San. San does not appear in modern editions and, therefore, it may not be necessary for it to be represented in the Unicode Standard. A discussion of the character is still included in this document for the sake of completeness and in order to avoid confusion with earlier drafts of the proposal.

a. Additional Greek Letters: New Characters

I.a.1 Greek Capital Letter Lunate Sigma

Sign	Similar Unicode	Beta Code	Count
Ϛ		*S3	1,470 instances, 50 authors ³
<p>• Greek vocal notation symbol 31 (see Musical section below)</p> <p>Definition and comments</p> <p>Capital Lunate Sigma (uppercase version of 03F2). This character is a widely used version of the Greek letter Sigma, employed over many centuries and in many contexts (e.g. epigraphical, papyrological, modern typesetting).</p> <p>The lowercase lunate sigma is conventionally written as a distinct character from the uppercase (see Example 1 below). The uppercase lunate sigma is currently not present in the current Unicode Standard.</p> <p>It is also the case that both types of sigma—lunate and non-lunate—may be required in the same text. For instance, a recent edition of Theodorus Metochites’ <i>Carmina XIV-XX</i> attempts to reproduce an accurate printed edition of exactly what appears in the codex and the editor preserves the original scribe’s use of both lunate and non-lunate sigmas.⁴ Example 2 below shows another modern printed edition which employs both types of sigma in the same text.</p> <p>This character is required for the correct and accurate representation of ancient and medieval Greek texts and is necessary to complement the Greek Small Letter Lunate Sigma which already exists in the Unicode Standard.⁵ For reasons of consistency and accuracy, it is important that this character be included in the Unicode Standard.</p>			

³ The TLG abandoned use of the lunate sigma (upper and lower case) in the 80’s. Therefore the count offered is an underestimate.

⁴ See Featherstone (2000)

⁵ See also Haralambous (2002) 18: “The Lunate sigma U+03F2 GREEK LUNATE SIGMA SYMBOL, which is not actually a “symbol” (in the sense that it is used for Greek text only and *not* for mathematics), but the traditional way of representing a *context free sigma* (neither initial nor final), requires an uppercase version.⁵ Therefore, it is necessary to include its uppercase version as an additional character in the Unicode standard.”

Example 1**Aëtius Med., *Iatricosum liber i*. Chapter P**

καὶ τὸ πύρρον αὐτῶν ἐβέννυσι καὶ τὸ ἐπιρρέον ἀναστέλλει καὶ
 τὸ περιεχόμενον διαφορεῖ.
 Καταπηγνόν. Ὅπως ἐστὶ θερμὸς καὶ λεπτομερής, ὡς οἱ ἄλλοι ὀποί. τμηθ
 ἔχει δὲ τι καὶ ῥυπτικόν, ψ καὶ τὰς ἐν ὀφθαλμοῖς οὐλὰς ἀποκαθαίρει
 καὶ λεπτύνει· οὐ μὴν ἀλλὰ καὶ ὑποχύσει καὶ ἀμβλυωπίας ταῖς διὰ 15
 πάχος ὑγρῶν γιγνομέναις ἀγαθὸν φάρμακον.
 Κάμψυχον λεπτομεροῦς ἐστὶ καὶ διαφορητικῆς δυνάμεως· Ἐπραίνει τῶν
 τε γὰρ καὶ θερμαίνει κατὰ τὴν τρίτην τάξιν.
 Καπρότης ἔυλων, καὶ μάλιθ' ὅσα μετέχει στυψείως τε ἅμα καὶ ῥύψεως, τῶν
 ὡς περὶ ἢ πτελέα, καθαίρει καὶ ἀναπληροῖ τὰ ὑγρά τῶν ἐλκῶν κάλλιστα. 20
 Καρκοκόλλα δάκρυόν ἐστὶ δένδρου περσικοῦ, μικτὸν τὴν δυνάμιν τῶν
 ἐν ἐμπλαστικῆς τέτινος οὐσίας καὶ βραχείας πικρᾶς, ὅθεν ἀδήκτως
 Ἐπραίνει καὶ διὰ τοῦτο τραύματα κολλᾷ.


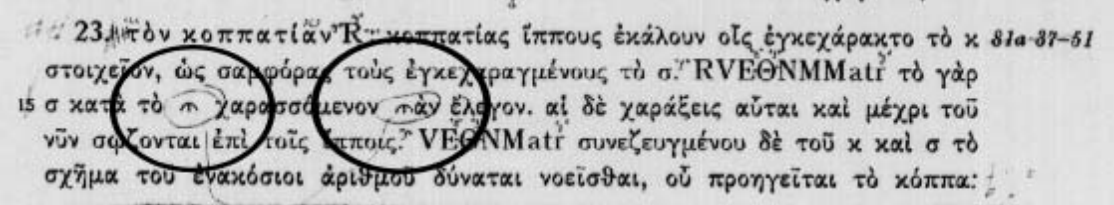
Olivieri, A., *Aëtii Amideni libri medicinales i-iv* (Teubner, Leipzig, 1935) 129**Example 2****Synesius Phil., *Hymni*. Hymn 1 line 12**

<p>* Ἄγε μοι, ψυχά, ἱεροῖς ὕμνοις ἐπιβαλλομένα, ὕληγενέας 5 εὐνασον οἴστρους, θώρησσε νόου ζαμενεῖς ὀρμάς. Βασιλῆι θεῶν πλέκομεν στέφανον, 10 θῦμα (τ') ἀναιμον, ἐπέων λοιβάς. Σε μὲν ἐν πελάγει, σε δ' ὑπὲρ νάσων, σε δ' ἐν ἀπείροις,</p>	<p>15 ἐπὶ τε πτολίων, κραναῶν τ' ὀρέων, καὶ κατὰ κλεινῶν ὀπτόταν πεδίων στάσω διδύμους 20 γυίων ταρσούς, σε, μάκαρ, μέλπω, γενέτα κόσμου. Κοί νύ με φέρει τὸν ἀοιδόν, ἀναξ· 25 σοὶ δ' ὀμπερίους, σοὶ δ' ἀφούς, σοὶ δ' ἔσπερίους ὕμνους ἀνάγω.</p>
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Dell'Era, A., *Sinesio di Cirene. Inni* (Tumminelli, Rome, 1969) 7

The letter San was included in earlier drafts of this proposal. San does not appear in modern editions and, therefore, it may not be necessary for it to be represented in the Unicode Standard.

I.a.2 Greek Capital Letter San, Greek Small Letter San

Sign	Similar Unicode	Beta Code	Count
		#711	4 instances, 3 authors
<p>Definition and comments</p> <p>San is an Archaic letter attested in early inscriptions. It derives from the Phoenician script and occupies the position following the letter <i>pi</i>. Several but not all Greek cities used it.⁶ San looks similar to the later <i>mu</i> (different from archaic <i>mu</i> which has a shorter leg) but represents a sibilant, which later became a sigma. Greek cities which used San did not simultaneously use Sigma. By the second half of the fifth century BC, San was replaced by sigma (except in Crete where it appears to have been used after the fifth century, or as an emblem on the coins of Sikyon, and as a brand for a breed of horses called 'samforae' (see Aristophanes, <i>Eq.</i> 603, Example 1 below). In modern texts the convention is to use sigma in representing the archaic San. San does not receive a special representation in modern texts and therefore it may not be necessary for it to be included in Unicode.</p> <p>Sampi is another archaic letter which is already represented in Unicode as 03E0 and 0301. Sampi should not be confused with San. It represents a compound sibilant later spelt by <i>xi</i> or double <i>sigma</i>. For the variants and discussion see Jeffery, pp. 38-39, and p. 428 (in the revision by Alan Johnston). Sampi eventually was abandoned in favor of <i>xi</i> or double sigma but it survives in the Milesian numeral system, which goes back to the sixth century. It follows omega in this system, representing 900. In transcribing archaic inscriptions Jeffery gives it its proper character.⁷ In modern texts it is used for the numeral.⁸ Sampi is already included in Unicode as 03E0 and 0301.</p>			
<p>Example 1 Scholia in Aristophanem, Scholia in nubes (scholia vetera) verse 23</p>  <p>Holwerda, D., <i>Prolegomena de comoedia. Scholia in Acharnenses, Equites, Nubes</i> (Bouma, Groningen, 1977) 13</p>			

⁶ Jeffery (1961) 33





⁷ e.g. see Jeffery (1961) 324 and 414, no. 53 and plate 66

⁸ Smyth (1920) 103-104B.

II. Ancient Greek Editorial Characters and Punctuation

Introduction and Overview

Table of Characters Proposed

Number	Character	Name	Unicode	Comment
Section and Pause Markers, Word Separators				
II.a.1		Greek Coronis		
II.a.2		Greek Paragraphos		
II.a.3		Greek Forked Paragraphos		
II.a.4		Greek Reversed Forked Paragraphos		
II.a.5	·	Greek Ano Stigme		
II.b.1	·	Greek Mese Stigme	0387	
II.b.2	.	Greek Kato Stigme	002E	
II.b.3	:	Greek Dicolon	003A	
II.b.4	∴	Greek Tricolon	250A	See also Metrical proposal below
II.a.6	∴∴	Greek Pentonkion		
II.a.7	⸸	Greek Papyrological Hypodiatole		
Word Joiner				
II.a.8	⸸	Greek Papyrological Hyphen		
Text Highlighters and Markers				
II.b.5	>	Greek Diple	003E	
II.b.6	<	Greek Reversed Diple	003C	
II.a.9	⊖	Greek Antisigma		
II.b.7	—	Greek Obelos	2014	
II.a.10	⸸	Greek Dotted Obelos		
II.a.11	↙	Greek Downward Ancora		
II.a.12	↘	Greek Upward Ancora		
Amended Accents				
II.a.13	⸸	Greek Combining Dotted Acute		
II.a.14	⸸	Greek Combining Dotted Grave		
Aristarchean Editorial Notation				
II.b.8	•	Greek Aristarchean Stigme	2022	
II.a.15	⸸	Greek Diple Periestigmene		
II.a.16	⊖	Greek Sigma Periestigmenon		
II.a.17	⊖	Greek Antisigma Periestigmenon		

Introduction

When writing, the ancient Greeks generally wrote in continuous uppercase letters with no space between words. On occasion the scribe—or more commonly a later hand—added in punctuation to make the meaning of the text more transparent. For instance, symbols were added to indicate the end of a sentence, change of speaker or, that two words which could be read as one word, were in fact separate words.

In modern languages, there are very clear rules of punctuation. In this, ancient Greek punctuation is rather different as there is no universally acknowledged system of punctuation in ancient texts⁹ and so one symbol may, for example, be used to represent a word break in one text, but a sentence end or speaker change in another. It is, however, possible to draw some general rules as to how these characters were used.¹⁰ For example, a Dicolon is always used to represent a break in the text, perhaps between letters, words, sentences or sections. Furthermore, most of the time the characters are used consistently in any one papyrus.

When punctuation is present, it falls into one of two kinds: (1) marginal or semi-marginal characters which mark the end of a section of text (e.g. Coronis, Paragraphos);¹¹ (2) characters mixed in with the text to mark pauses, end of sense, or separation between words (e.g. Stigme, Hypodiastole).

Often two of these characters will be used in conjunction with one another. For example a Coronis is conventionally written next to a Paragraphos to mark the end of a poem; a Paragraphos is often used with a Mese Stigme or a Dicolon to indicate a change of speaker in a drama.

⁹ Turner & Parsons (1987) 8

¹⁰ See Flock (1908)

¹¹ They always mark the end of a section, never the beginning. So, for instance, a Coronis may occur at the end of a poem, but may not introduce one.

Introduction to Aristarchean Editorial Notation

Aristarchos of Samothrace (c. 216-144 BCE),¹² fifth head of the Library at Alexandria, provided a major edition of the works of Homer, which forms the basis of our modern editions. In his edition, he made use of the standard ancient critical characters—to which he occasionally applied new definitions—together with a series of new characters. This edition of the text was intended for professional scholars.¹³ These additional characters are necessary for a full scholarly discussion of the Homeric corpus as well as for new editions of the text. For a complete list of the extant papyri containing these symbols, please see McNamee (1992) 28-9.

There are four signs whose characters are identical to the standard Greek punctuation symbols but with a different meaning. Their definitions have been appended to the appropriate characters¹⁴ and not included in this section of the proposal:

Antisigma	Marks a line which is out of place.
Asteriskos	Here it is always marginal. It is also commonly used in combination with the Obelos to indicate lines regarded as transposed.
Diple	Indicates that there is a note on this line in Aristarchus' accompanying commentary.
Obelos	Indicates lines regarded as spurious. See also Asteriskos above.

Please note that all the following signs are all marginal. They appear mostly in editions of Homer's *Iliad*, *Odyssey* and the *Homeric Hymns* unless otherwise stated. However, Diogenes Laertius (first half of the 3rd century AD) notes the use of the same sigla in editions of Plato.¹⁵

¹² Lockwood, J.F., Browning, R. Wilson, N.G. "Aristarchus" in *OCD*³ (1996) 159

¹³ Wace, A.J.B. & Stubbings, F.H. (1962) 224

¹⁴ Except for the Asteriskos which is satisfactorily represented in the current Unicode Standard with 203B REFERENCE MARK.

¹⁵ Diogenes Laertius 3.65-6

Notes on the Editorial and Punctuation Proposal

Problems of representation

Editorial and punctuation characters appear abundantly in surviving papyri (and modern editions) but it has not always been possible to render them satisfactorily with modern typesetting. For instance, the ancient symbol ‘Ano Stigme’ and the modern symbol 0387 GREEK ANO have routinely and misleadingly been conflated in modern typography. This use, however can harm or destroy the sense of punctuation in a text.

Notes on this section of the proposal





Discussions on ancient punctuation can be found in the works of ancient grammarians. We have avoided referring to them since, as Turner puts it, “it seems that the critical signs did not always have the same meaning or the meaning assigned to them by our authorities.”¹⁶ We have concentrated instead on references to modern scholarship and the extant papyri themselves.

Given the current problems of representing these symbols we have on occasion included extracts from the original papyri together with modern transcriptions to enable a more precise depiction of certain characters than simple reference to a modern edition would allow.

¹⁶ Turner & Parsons (1987) 14





a. Ancient Greek Editorial Characters and Punctuation: New Characters

Table of New Characters Included in this Section

Number	Character	Name	Unicode	Comment
Section and Pause Markers, Word Separators				
II.a.1		Greek Coronis		
II.a.2		Greek Paragraphos		
II.a.3		Greek Forked Paragraphos		
II.a.4		Greek Reversed Forked Paragraphos		
II.a.5	·	Greek Ano Stigme		
II.a.6	∴	Greek Pentonkion		
II.a.7	⸸	Greek Papyrological Hypodiasole		
Word Joiner				
II.a.8	⸸	Greek Papyrological Hyphen		
Text Highlighters and Markers				
II.a.9	⊖	Greek Antisigma		
II.a.10	∕	Greek Dotted Obelos		
II.a.11	↙	Greek Downward Ancora		
II.a.12	↗	Greek Upward Ancora		
Amended Accents				
II.a.13	◌̇	Greek Combining Dotted Acute		
II.a.14	◌̈	Greek Combining Dotted Grave		
Aristarchean Editorial Notation				
II.a.15	⸶	Greek Diple Periestigmene		
II.a.16	⸷	Greek Sigma Periestigmenon		
II.a.17	⸸	Greek Antisigma Periestigmenon		

Section and Pause Markers, Word Separators

II.a.1 Greek Coronis

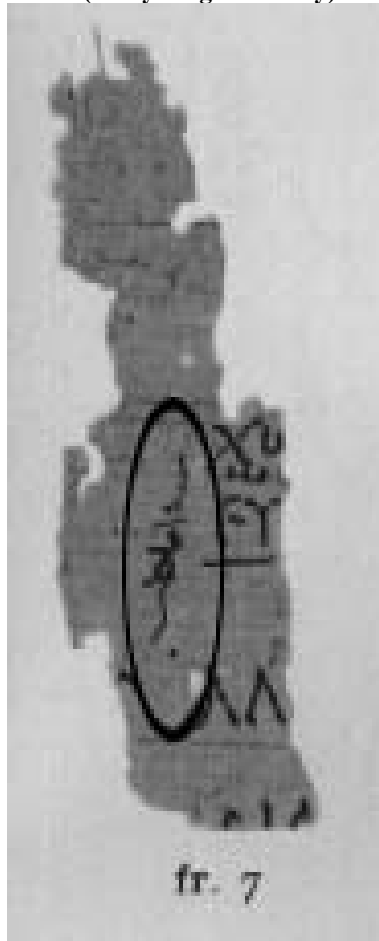
Sign	Similar Unicode	Beta Code	Count
		#310 et al, see below	80 instances, 27 authors
<p>Definition and comments</p> <p>A mark of termination.</p> <p>The Coronis is conventionally used to mark the end of an important section of a piece of text in poetry or prose, most commonly the end of a poem or the end of a section of text.¹⁷ This character is used abundantly in extant papyri.</p> <p>The Coronis is frequently but not always accompanied by a Paragraphos. Examples 1a-b and 2a-b below show the Coronis together with the Paragraphos; example 3a-b below shows the Coronis alone.</p> <p>The Coronis is always marginal. The central line lines up with the bottom of the line it refers to. The character is two rows in height. However, in papyri, it may stretch up to four or five lines in either direction.</p> <p>There are three basic glyph variants for the Coronis: (1) The early form:  which was the dominant form until the first century BC; (2) The standard form:  (this is the most common glyph variant); (3) a glyph which looks similar to the Forked Paragraphos (see below) and appears in later papyri: .¹⁸</p> <p>Given the difficulties in typesetting this character in modern editions, it has often been the case that pre-existing ASCII characters have been combined to create something approximating the character (see Example 3a-b below). Alternatively, it has on occasion be resolved to a Forked Paragraphos, something which destroys the meaning of the original punctuation since the Forked Paragraphos has a different semantic meaning (see below).</p> <p>The Coronis is an extremely common piece of punctuation (it is in no way a textual ornament)¹⁹ and, therefore, necessary for the accurate representation of ancient Greek texts. Beta code, the TLG encoding standard uses 14 different escapes to represent variations of the Coronis. This fact alone, attests to the wide use of the Coronis.</p>			

¹⁷ Stephen (1959) 5

¹⁸ Beta Code includes different escapes for each of the main variant forms of the Coronis, as well as special escapes for Coronides which have only partially been preserved (for instance, only the upper half remains). A complete list of the 14 escapes is: Variant Early Coronis (#302); J-form Coronis (#304); Double-J Coronis (#305); Late Coronis (#308); Elaborate Coronis with Double Circle Center (#310); Elaborate Coronis with Cross Center (#313); Small Elaborate Coronis (#315); Early Flattened Coronis (#451); Early Standard Coronis (#456); Triple-Barred Coronis (#504). Partial Coronides: (#300); (#307); (#311); (#312).

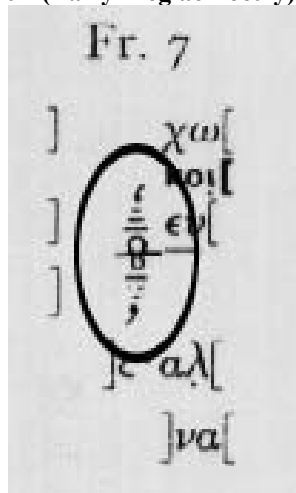
¹⁹ Stephen (1959) 11

Example 1a (Standard Coronis in papyrus)
Oxyrhynchus Papyrus 2327 Fragment 7 (Early Elegiac Poetry)



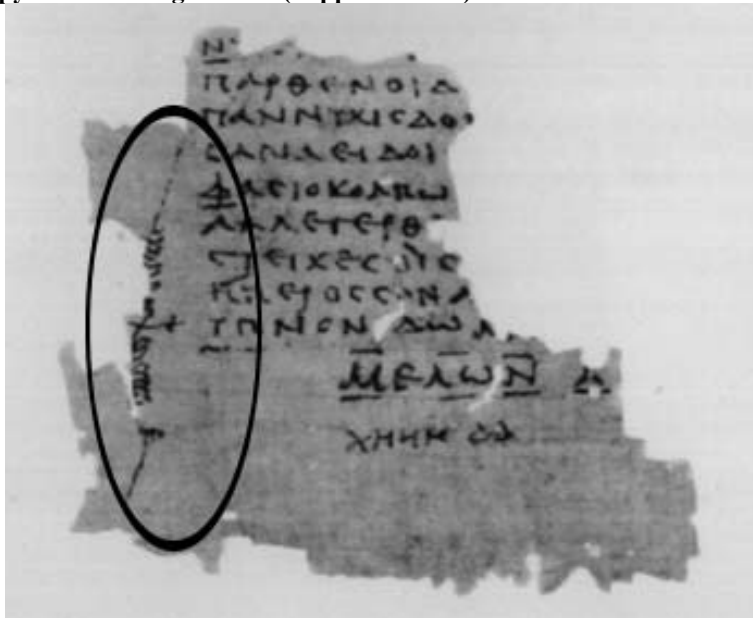
Lobel, E. & Roberts, C.H., *The Oxyrhynchus Papyri XXII* (London, 1954) Plate X

Example 1b (Standard Coronis transcribed)
Oxyrhynchus Papyrus 2327 Fragment 7 (Early Elegiac Poetry)



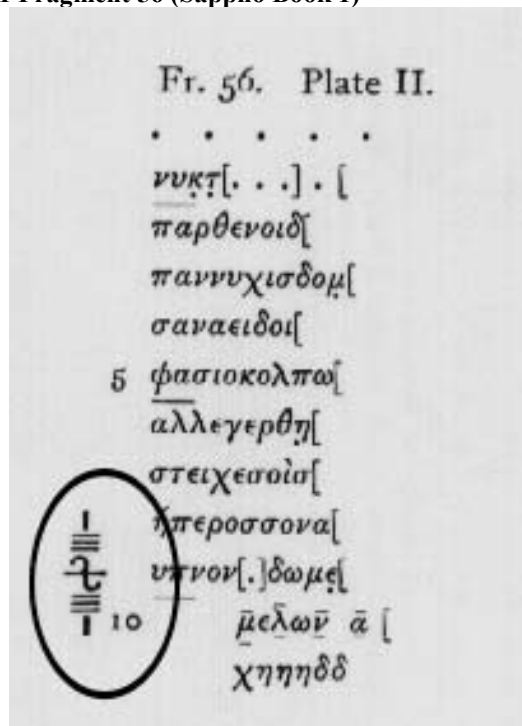
Lobel, E. & Roberts, C.H., *The Oxyrhynchus Papyri XXII* (London, 1954) 70

Example 2a (Long Coronis in papyrus)
Oxyrhynchus Papyrus 1231 Fragment 56 (Sappho Book 1)



Grenfell, B.P. & Hunt, B.P., *The Oxyrhynchus Papyri X* (London, 1914) Plate II

Example 2b (Long Coronis in transcription)
Oxyrhynchus Papyrus 1231 Fragment 56 (Sappho Book 1)



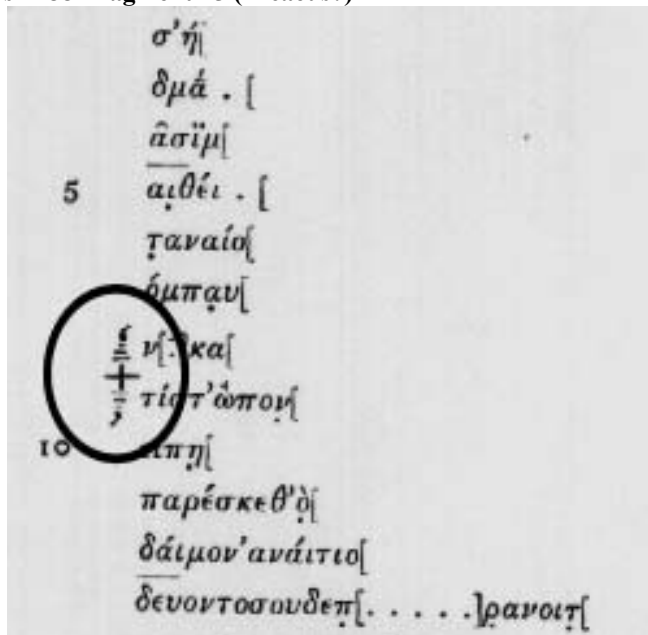
Grenfell, B.P. & Hunt, B.P., *The Oxyrhynchus Papyri X* (London, 1914) 38

**Example 3a (Simplified Coronis without Paragraphos²⁰ in Papyrus)
Oxyrhynchus Papyrus 1788 Fragment 15 (Alcaeus?)**



Grenfell, B.P. & Hunt, B.P., *The Oxyrhynchus Papyri XV* (London, 1921) Plate II


**Example 3b (Simplified Coronis without Paragraphos in Papyrus)
Oxyrhynchus Papyrus 1788 Fragment 15 (Alcaeus?)**



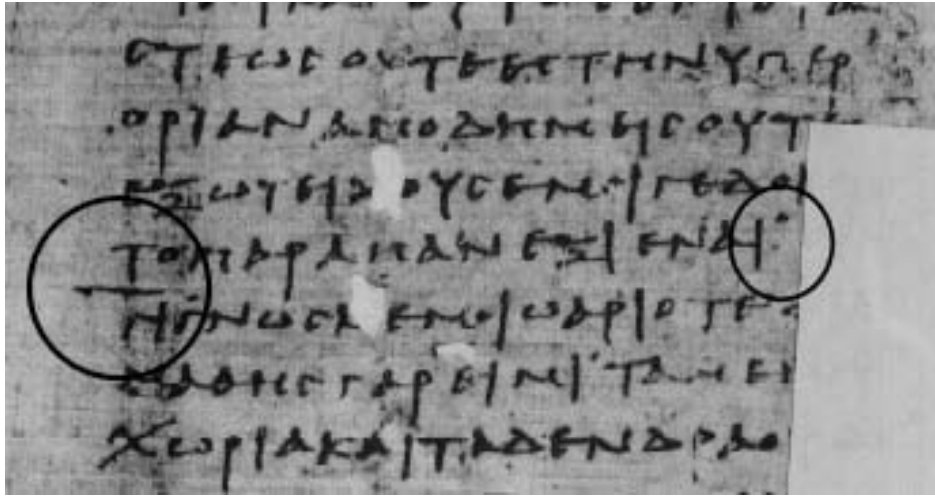
Grenfell, B.P. & Hunt, B.P., *The Oxyrhynchus Papyri XV* (London, 1921) 56

²⁰ Note how the Paragraphos is used on the second from the last line of the same papyrus (with the word ΔΑΙΜΟΝ¹) to indicate a different sort of division.

II.a.2 Greek Paragraphos

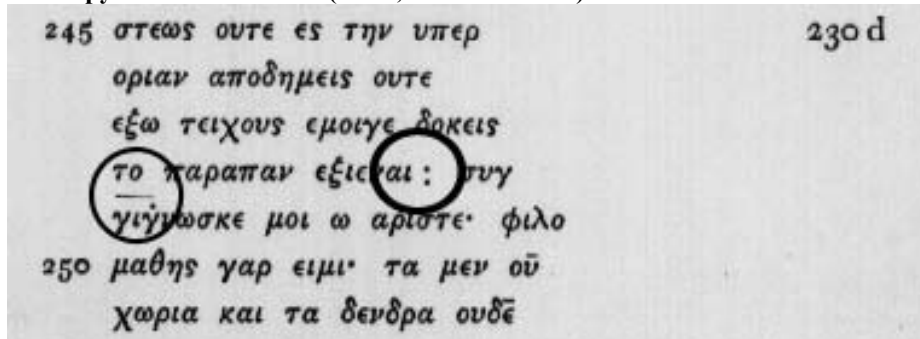
Sign	Similar Unicode	Beta Code	Count
		#6	3,525 instances, 61 authors; (Papyri) 24 instances, 11 authors; (Inscr) 25 instances, 1 author
<p>Definition and comments</p> <p>A mark of termination.</p> <p>This character marks the end of a section in text. It underlines the first one or two letters in the line in which the break occurs and usually extends into the left margin by one to one-and-a-half letter widths. See Example 1a below. See Example 4 for a counter-example where the character does not extend into the left margin.</p> <p>This character may be used with a Coronis to indicate a transition point in a text. Please see discussion in the section Coronis above.</p> <p>The Paragraphos is also used without the Coronis to indicate a break or sub-division in a text. For instance, it may indicate a change of speaker in dramatic texts. It may also indicate the end of a stanza, a new paragraph, or end of a sentence.</p> <p>In this second case, the Paragraphos may be used by itself, or in conjunction with another piece of punctuation—usually mid-line—to indicate specifically where the break occurs. So, in examples 1a-b, a Dicolon has been used in conjunction with the Paragraphos to indicate a speaker change. In examples 2a-b the Paragraphos is being used in conjunction with a short blank space.</p> <p>Example 1c is included to provide a reference to a modern edition in which the editor uses brackets to translate the ancient punctuation to modern). Note examples 3 and 4 where the editor has preserved the Paragraphos in the text.</p> <p>The Paragraphos is one of the most common and distinctive signs of ancient Greek punctuation. Editors are often keen to preserve them in their modern editions</p>			

Example 1a (Paragraphos used with Dicolon to indicate speaker change. Papyrus)
Oxyrhynchus Papyrus 1016 column 6 (Plato, *Phaedrus* 230d)



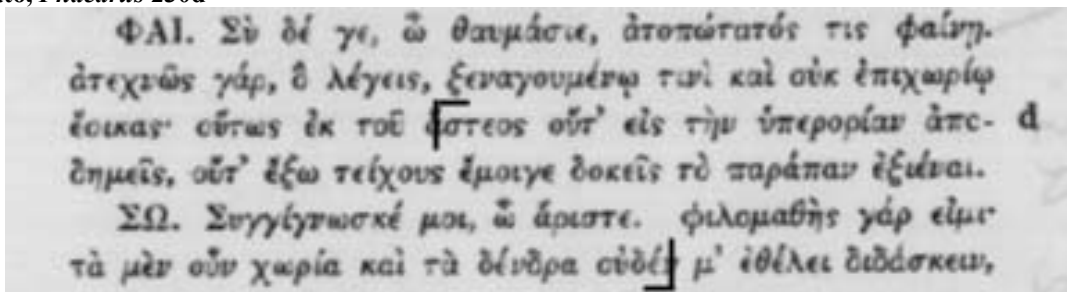
Hunt, A.D. *The Oxyrhynchus Papyri VII* (London, 1910) Plate V

Example 1b (Paragraphos used with Dicolon to indicate speaker change. Transcription)
Oxyrhynchus Papyrus 1016 column 6 (Plato, *Phaedrus* 230d)



Hunt, A.D. *The Oxyrhynchus Papyri VII* (London, 1910) 124

Example 1c (Modern edition of Plato's *Phaedrus* using modern punctuation. For comparison. Brackets mark the start and end of the extract of papyrus above)
Plato, *Phaedrus* 230d



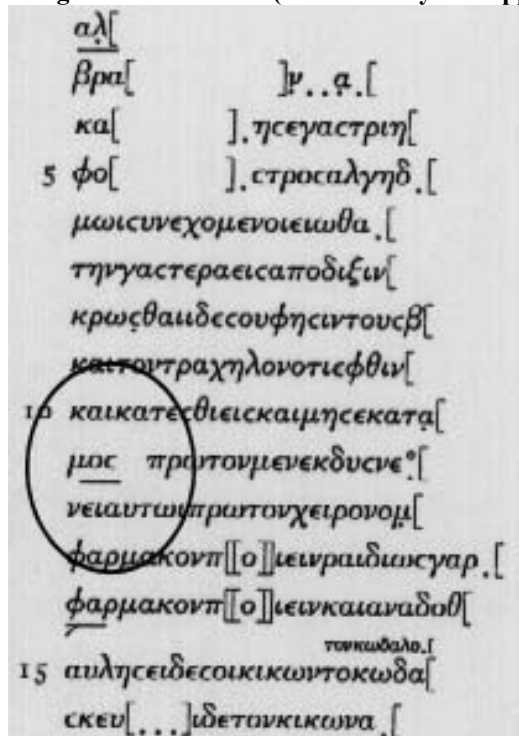
Burnett, J. *Platonis Opera. Tomis II* (Oxford, 1901) 230d

Example 2a (Paragraphos with blank space. Papyrus)²¹
Oxyrhynchus Papyrus 2176 Fragment 1 Column 2 (Commentary on Hipponax)



Lobel, E., Roberts, C.H. & Wegener, E.P., *The Oxyrhynchus Papyri XVIII* (London, 1941) Plate XII

Example 2b (Paragraphos with blank space. Transcription)
Oxyrhynchus Papyrus 2176 Fragment 1 Column 2 (Commentary on Hipponax)



Lobel, E., Roberts, C.H. & Wegener, E.P., *The Oxyrhynchus Papyri XVIII* (London, 1941) 88

²¹ We have adjusted the contrast of this graphic in order to make it more legible.

Example 3 (Speaker change)Cratinus Comic., *Fragmenta (Austin)*. Fragment 70

29 τὸν Ἀλέξανδρον). τὴν μὲν οὖν Ἑλένην
 30 εἰς τάλανον ὡς τράχητα
 κρήνας, ἑαυτὸν δ' εἰς κριδῶν
 μ(ε)τ(α)σκευάσας ὑπομένει
 τὸ μέλλον. παραγενό-
 35 μένος δ' Ἀλέξανδρος καὶ φαρμά-
 κας ἑκάτερον ἄγειν ἐπὶ τὰς
 ναῖς προ(σ)τάττει ὡς παραδώσων
 τοῖς Ἀχαιοῖς(c). ὀκνοῦσης δ(έ) τῆς
 Ἑλένης(c) ταύτην μ(έν) οἰκτεῖρας
 ὡς γυναῖχ' ἕξων ἐπικατέχ(ει),
 40 τὸν δ(έ) Διόνυσον ὡς παραδοθη-
 σόμενον ἀποστέλλει, συν-
 ακολουθούσῃ δ' οἱ σάτυροι παρακαλοῦν-
 τέσ τε κ(αί) οὐκ ἂν προδώσειν
 αὐτὸν φάσκοντες. κωμικ-
 45 δεῖται δ' ἐν τῷ δράματι Περ-
 κικλῆς μάλα πιθανῶς δι'



Austin, C., *Comicorum Graecorum fragmenta in papyris reperta* (De Gruyter, Berlin, 1973) 70**Example 4 (Non-spacing glyph variant in an epigraphical fragment)**Diogenes Phil. *Oenoandensis, Fragmenta*. Fragment 29

Fr. 29 (HK fr. 60)



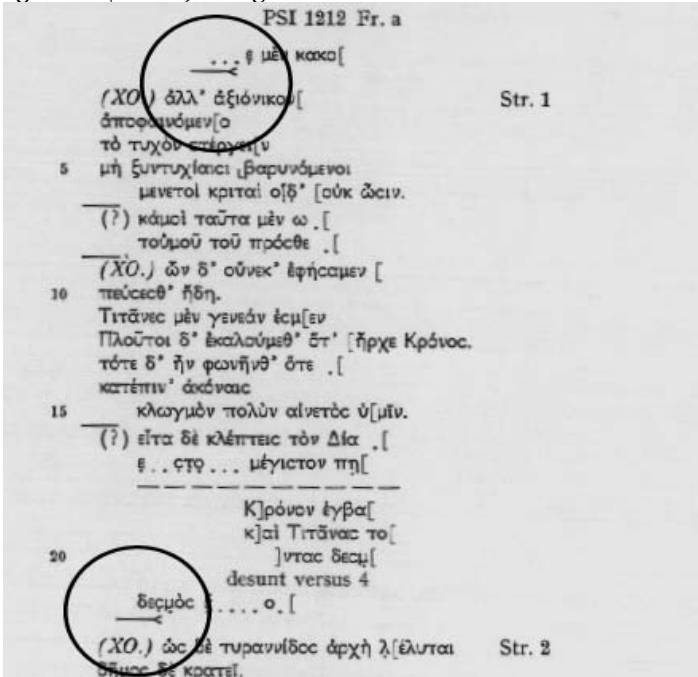
I [πολλοὶ γὰρ πλοῦτου καὶ δό-
 [σης] εἵνεκεν τὸ φιλο-
 σοφῆν μεταδιώκου-
 5 σιν, ὡς ἦτοι παρ' ἰδι-
 ωτῶν ποριούμενοι
 ταῦτα ἢ βασιλέων, οἷς
 μέγα τι καὶ τίμιον
 κτήμα φιλοσοφία
 10 πεπίστευται. οὐχ ἵ-
 να οὖν τι τῶν εἰρη-
 μένων καὶ ἡμεῖν γέ-
 νηται, πρὸς τὴν αὐ-
 τὴν ὠρμήσαμεν πρά-
 ξιν, ἀλλ' ὅπως εὐδαι-
 μονήσωμεν τὸ ἐπι-

Smith, M.F., *Diogenes of Oenoanda: the Epicurean inscription* (Bibliopolis, Naples, 1993) 193

II.a.3 Greek Forked Paragraphos

Sign 	Similar Unicode	Beta Code #8, #452, #454	Count 306 instances, 28 authors
<p>Definition and comments</p> <p>A mark of termination.</p> <p>The Forked Paragraphos takes a variety of forms. It usually consists of a Paragraphos with an additional short line rising from the lower left and meeting the Paragraphos some way to the left of its midpoint. Another common glyph variant is with what appears to be a Diple (see below) added to the left hand side: </p> <p>This character is used in much the same way as a standard Paragraphos, namely either by itself, or with another piece of punctuation.</p> <p>The Forked Paragraphos conventionally appears in texts together with the Paragraphos, indicating subdivisions within a text, with the Paragraphos indicating the main divisions. Alternatively, it may be used to indicate a different sort of termination: this is the case in example 1 (see Appendix 1), where the Forked Paragraphos indicates the end of an antistrophe, while a Paragraphos indicates the end of a strophe.</p> <p>On occasion the Forked Paragraphos may appear in texts without the Paragraphos, as in Example 2 below, where it indicates quotations from Homer.</p> <p>There are also occasions where a Coronis may have been resolved in modern editions to a Forked Paragraphos. This is on account of the later form of the Coronis taking a shape very similar to that of the Forked Paragraphos.</p>			
<p>Example 1 (Denoting stanzas) See Appendix 1</p>			
<p>Example 2 (Marking quotations from Homer. Note: the quotations are marked in boldface) Scholia in Homerum, <i>Scholia in Iliadem (scholia vetera)</i>. Book of Iliad 21 verse 230</p> <div data-bbox="391 1304 1227 1629" style="border: 1px solid black; padding: 5px;"> <p>32 ἡ κατὰ τὸ σιωπώμενον οἰητέον 33 τὴν ἐ[.]ντ[ο]λήν γεγενῆσθαι, ὅθεν 34 καὶ „αὐτὰρ Ἀπόλλων οἶος ἐδύσσετο 35 Ἴλ[ι]ον ἱρήν· / βέμβλετο γὰρ οἱ τείχος 230 36 ἐϋδμήτοιο π[ό]λῃος“ εἰρύσαο<: > πρὸς σε- 37 / αὐτὸν ἐπιρήσω, ἐφύλαξας δ[ε] {σα} τοι<: > ὅς 232 38 / σοι δείλος ὄψε δύων: ἔτ[ι] ἀν[τ]ί τοῦ</p> </div> <p>Erbse, H., <i>Scholia Graeca in Homeri Iliadem (scholia vetera)</i>, vol. 4 (De Gruyter, Berlin, 1975) 99</p>			

II.a.4 Greek Reversed Forked Paragraphos

Sign 	Similar Unicode	Beta Code #453	Count 3 instances, 2 authors
<p>Definition and comments A mark of termination.</p> <p>This character the Forked Paragraphos reflected in the y-axis. A glyph variant is: .</p> <p>This character seems to serve the same function as the Forked Paragraphos (see above), however, unlike the Forked Paragraphos, this character is comparatively rare in the papyri. In the example below, it is used to indicate the termination of strophes in a choral ode, while the Paragraphos proper is used to indicate the end of a section of speech.</p>			
<p>Example 1 Cratinus Comic., <i>Fragmenta (Austin)</i>. Fragment 73</p>  <p>Austin, C., <i>Comicorum Graecorum fragmenta in papyris reperta</i> (De Gruyter, Berlin, 1973) 40</p>			

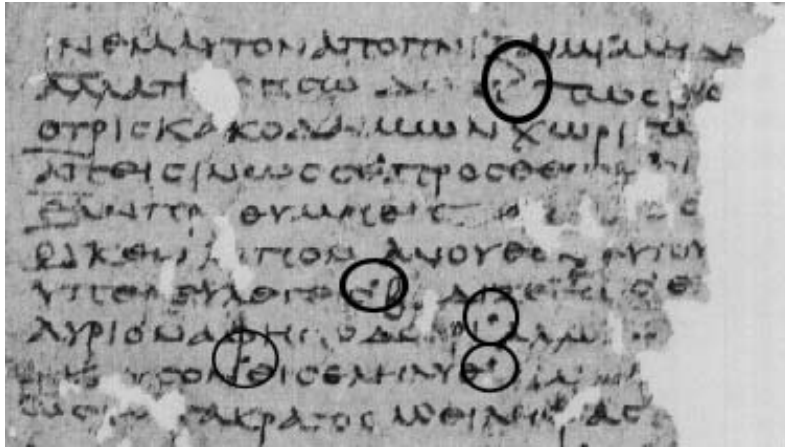
II.a.5 Greek Ano Stigme

Sign	Similar Unicode	Beta Code	Count
.		#72	(Papyri) 44 instances, 11 authors
<p>Definition and comments</p> <p>Mark of termination of sentence or section or mark of pause.</p> <p>Turner and Parsons: “Two kinds of stop may be seen in texts of the late ii. B.C. and of i. B.C.: one is placed high in the line [Greek Ano Stigme], the other in a middle position [Greek Mese Stigme]... Normally the high stop... marks period end. The stop in the middle position serves as a subdivision inside the period, with the effect of a modern comma.”²²</p> <p>While this character is used abundantly in the papyri, it has often—and incorrectly—been rendered as a 0387 GREEK ANO TELEIA. Example 1b shows the position of the Stigme in the original papyri and the transcription. The conflation of the two symbols has the effect of destroying the intentions of the ancient scholar. It is also misleading, since in this transcription, the other punctuation marks have been preserved from the original papyrus and the modern user who does not necessarily have access to the original written medium (in this case a papyrus) will incorrectly assume that all information related to the punctuation of the ancient text has been preserved in the modern edition. This practice to conflate the two characters (in the absense of other means to render them) accounts for the relatively low count this fairly common character has in the <i>Duke Databank of Documentary Papyri</i>.</p> <p>In Example 2 below, ano stigme is used in conjunction with the Mese Stigme. An example using modern Greek punctuation is given on the right-hand side which shows how the Mese Stigme is commonly being used as a full stop while the Ano Stigme is a semi-colon.</p> <p>Ano stigme is used in combination with the Mese Stigme or the Kato Stigme. Papyri preserving all three exist.</p> <p>Please see Appendix 1 for a longer example of a text which includes all three Stigmes.</p>			

²² Turner and Parsons (1987) 9

Example 1a (Ano Stigme in papyrus. In order to avoid cluttering the graphic, we have not circled all instances)

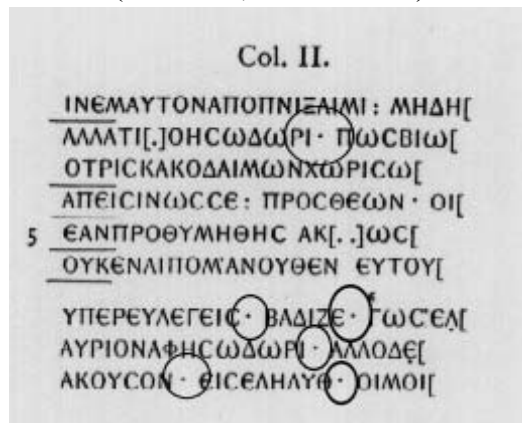
Oxyrhynchus papyrus 211 column 2 (Menander *Perikeiromene*)



Grenfell, B.P. & Hunt, A.S, *The Oxyrhynchus Papyri II* (London, 1899) Plate III

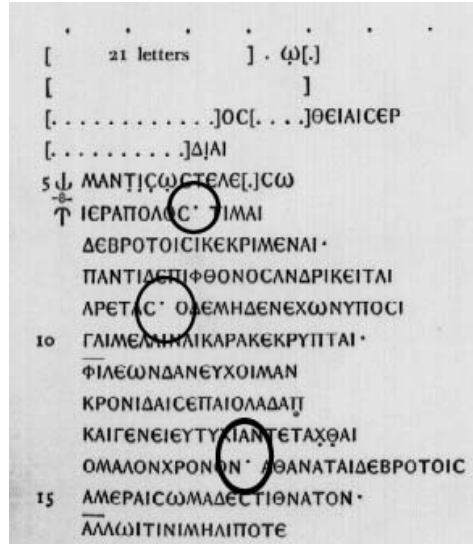
Example 1b (Transcription of 1a)

Oxyrhynchus papyrus 211 column 2 (Menander, *Perikeiromene*)



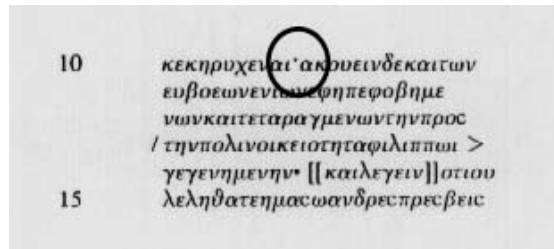
Grenfell, B.P. & Hunt, A.S, *The Oxyrhynchus Papyri II* (London, 1899) 13

**Example 2 (Ano Stigme used in conjunction with the Mese Stigme)
Oxyrhynchus Papyrus 659 Column 1 (Pindar, *Partheneion* and ode)**



Grenfell, B.P. & Hunt, A.S, *The Oxyrhynchus Papyri IV* (London, 1904) 53

**Example 3 (Note: the Ano Stigme is here used in conjunction with the Mese Stigme)
Demosthenes Orat, *De Falsa Legatione* 11-32. B.M. Add MS. 34473, art. 1**



Turner, E.G. & Parsons, P.J., *Greek Manuscripts of the Ancient World* 2nd ed. (Institute of Classical Studies, London, 1987) 140

II.a.6 Greek Pentonkion

Sign ∴	Similar Unicode See below	Beta Code #55	Count (Inscr) 5 instances, 2 authors
<p>Definition and comments</p> <p>Mark of termination of sentence or section or mark of pause.</p> <p>This character occurs on inscriptions, albeit rarely. As with other characters of punctuation, the meaning is fluid. Unlike other characters, the meaning here is rather ill-defined. Nonetheless, it is a character which appears often enough to warrant consideration.</p> <p>It could be argued that this character is similar to 003A + 0387 + 003A. However, this is not quite accurate since the upper dots of 003A do not appear at the top of the line, but rather two thirds of the way up and the spacing of the characters would not serve the formation of the Pentoklion.</p> <p>Example 1a below is a direct transcription of an Attic inscription. The Pentonkion symbol appears here at the end of the 12th line. Example 1b shows an attempted reconstruction of the text. Note how the Pentonkion has been resolved into 0387 GREEK ANO TELEIA. Later editors appear to have regarded this resolving of the character as rather rash and editions of the 20th century have shown a trend towards preserving the Pentonkion symbol.²³ It is important that this symbol is present in order for epigraphists to be able to accurately discuss and represent Greek inscriptions.</p>			

²³ See for instance Kirchner, J., *Inscriptiones Graecae* II/III.1 (1913) 168

Example 1a

Inscriptiones Graecae II/III.1 404

Ι <
 Α √
 < Ι Ω Ν
 Σ Ε Κ Κ Ε Α Μ Ε
 < Κ Ι Α Δ Η Σ Π Ε 5
 Ι Ε Ν Ο Ι Υ Π Ο Τ Ο Υ Δ Η Ψ . Υ Λ
 Ε Π Ι Σ Κ Ε Υ Η Ν Τ Ο Υ Α Γ Γ Μ Α
 < Τ Η Ξ Ν Ι Κ Η Ξ Η Ν Α Ν Ε Ε Ξ Α Ν
 Α Μ Β Ρ Α Κ Ι Ω Τ Ω Ν Κ Α Ξ Ε Ν
 Ι Α Σ Κ Α Ι Τ Ω Ν Ε Ρ Α Ν Α Μ Τ 10
 Ω Ι Κ Ε Ρ Κ Υ Ρ Α Ι Ω Ν
 Ο Χ Θ Α Ι Τ Η Ι Β Ο
 Α Ι Γ Ε Ι Ν Α Υ Τ Ο Υ Σ Ε Ι Σ Μ Ο Ι
 Ε Σ Τ Η Ν Ρ Ρ Ω Τ Η Ν Ε Κ Ι Α Ν
 Ξ Α Ι Γ Ν Ω Μ Η Ν Δ Ε Ξ Υ Ι Ϊ Ε Σ 15
 Ϊ Σ Ε Ι Σ Τ Ο Ν Δ Η Μ Ο Ν Ο Κ Ε
 Ρ Ι Τ Ε Τ Η Ξ Ο Υ Σ Ι Α Ι Ο Ε
 Ι Α Ν Τ Η Σ Λ Ο Η Ν Α Σ Τ Ο Α Ρ Ε
 Η Μ Ο Υ Γ Ρ Ε Ι Η Ο Ε Ξ Η
 Ξ Α Ρ Γ Υ Ρ Ι Ο Ν Τ Ο Υ 20
 Η Ο Υ Δ Ο
 Α Λ Ι Σ
 Α Ν
 Ο Ι Α

Köhler, U., "Zur Geschichte des amphiloichischen Krieges" in *Hermes* XXVI (1891) 43

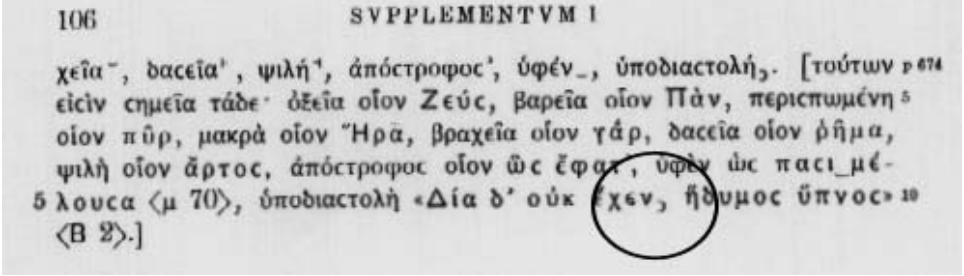
Example 1b

Inscriptiones Graecae II/III.1 404 (Reconstruction)

ε
 α
 ς τ]ων [προέδ]-
 [ρων ἐπιψηφίσει]ς ἐκ Κε[ρ]αμεί[ω]-
 5 [ν]ς Λακιάδης [εἰ]πε[ν].
 [περὶ ὧν οἱ ἡρημένοι ὑπὸ τοῦ δήμου λ.
 [. τήν] ἐπισκευήν τοῦ ἀγ[άλ]μα-
 [τος τῆς Ἀθηνᾶ]ς τῆς Νίκης, ἣν ἀνέ[θ]ισαν
 [Ἀθηναῖοι ἀπὸ] Ἀμβρακιωτῶν κα[ὶ τῆ]ς ἐν
 10 [Ὀλπαις στρα]τῆς καὶ τῶν ἐπ[ὶ] Ἀν . . . α[γ]τ-
 [α ἐν τῇ ἡπειρ]ῳ Κερκυραίων αν
 [. δεδ]όχθαι τῇ βδ[υλῆ].
 [. . . . προσ]α[γα]γεῖν αὐτοὺς εἰς [τὸ δῆ]μον

Behr, A., "Der amphiloichische Krieg und die kerkyraeischen Optimaten" in *Hermes* XXX (1895) 447

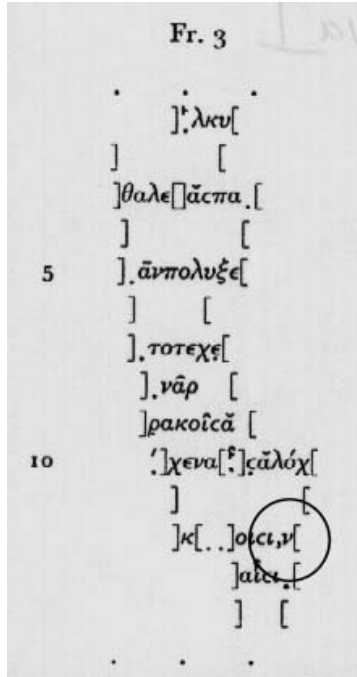
II.a.7 Greek Papyrological Hypodiatole

Sign	Similar Unicode	Beta Code	Count
ϋ		#532	9 instances, 3 authors
<p>Definition and comments</p> <p>Mark used to separate words.</p> <p>This character is similar to 002C COMMA in terms of positioning relative to the line and general shape. Given typographical limitations, editors have frequently used a comma (see Example 2 below) or even a space instead of Hypodiatole. However, the Hypodiatole is shaped like the even right-hand of a semi-circle. While using a comma might be a possible typographical solution for this character, it will cause confusion in texts where editors wish to employ both (as in Example 1 below) and, given how common the use of the comma is, this issue will certainly arise.</p> <p>Hypodiatole is a character necessary for the transcription of papyri because in the papyri there is no spacing between words and in those instances, the Hypodiatole is employed.²⁴</p>			
<p>Example 1 (Compare with use of comma in this example)</p> <p>Anonymi Grammatici Gramm., <i>Supplementa artis Dionysianae vetusta</i>. Part 1 volume 1 page 106</p>  <p>Uhlig, G., <i>Grammatici Graeci</i>, vol. 1.1 (Teubner, Leipzig, 1883) 106</p>			

²⁴ See Turner and Parsons (1987) 11

Example 2

Oxyrhynchus Papyrus 2803 Fragment 3 (Stesichorus?)





Lobel, E., *The Oxyrhynchus Papyri XXXVII* (London, 1971) 6

This character may be removed from the final proposal. It may be possible to represent the papyrological Hyphen with Unicode 00A0 + 203F

Word Joiner

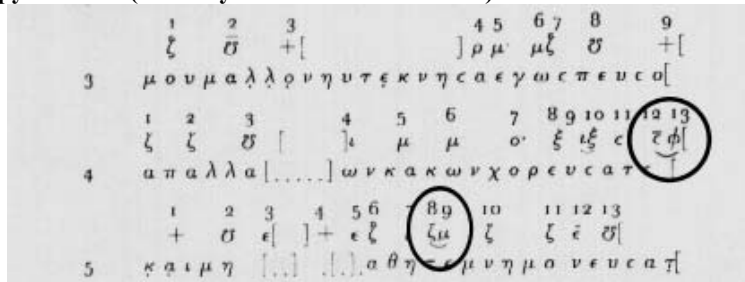
II.a.8 Greek Papyrological Hyphen

Sign 	Similar Unicode 00A0 (+ 203F)	Beta Code %96	Count 9 instances, 4 authors
<p>Definition and comments</p> <p>Mark used to make clear link between two parts of a compound word. Also a musical character.</p> <p>This is a curved symbol, placed below the line (see Examples 1 and 3a-b) to indicate when two words in a papyrus are actually linked and should be read as one word. As most modern editions introduce spaces between words, this character usually does not appear in modern editions. However, on occasions when it has not been, the lack of a character has caused problems: for instance, in Example 2 below, the typographer have not been able to combine the character with the normal text. This character is essential for the correct representation of papyrological texts.</p> <p>This character is also used in standard Greek musical notation (see section below) to indicate when a single syllable is sung on two notes, as in Example 1a-b below.</p> <p>It will be noted that in Example 2 below, a space is introduced between the two parts of the word. This spacing version can currently be encoded using the Unicode Standard with 203F UNDERTIE. This character is not, however, adequate for the Greek Papyrological Hyphen. The currently proposed character may be regarded visually as a non-spacing 203F.</p>			
<p>Example 1a (Musical symbol. Papyrus. In order to avoid cluttering the graphic, we have not circled all instances)²⁵</p> <p>Oxyrhynchus Papyrus 2436 (Monody with musical notation)</p>  <p>Turner, E.G. & Parsons, P.J. <i>Greek Manuscripts of the Ancient World</i> (London, 1987) 71</p>			

²⁵ We have increased the contrast and brightness of this graphic in order to make it more legible.

Example 1b (Musical symbol. Papyrus. In order to avoid cluttering the graphic, we have not circled all instances)

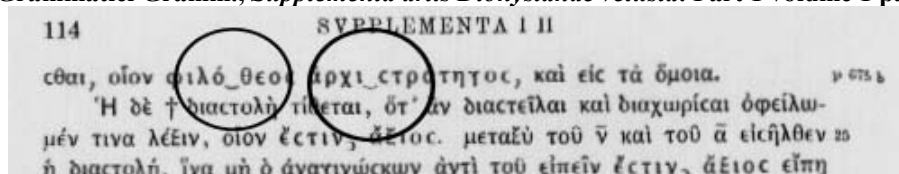
Oxyrhynchus Papyrus 2436 (Monody with musical notation)



Turner, E.G. & Parsons, P.J. *Greek Manuscripts of the Ancient World* (London, 1987) 70

Example 2 (Non-combining form)

Anonymi Grammatici Gramm., *Supplementa artis Dionysianae vetusta*. Part 1 volume 1 page 114



Uhlig, G., *Grammatici Graeci*, vol. 1.1 (Teubner, Leipzig, 1883) 114

Example 3a (Papyrus)

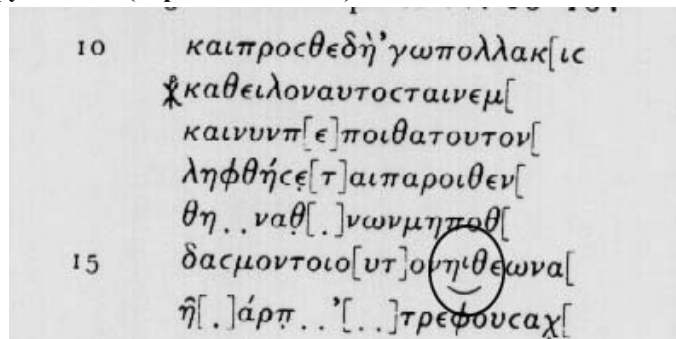
British Museum Papyrus 3036 (Sophocles, *Theseus*)



Turner, E.G. & Parsons, P.J. *Greek Manuscripts of the Ancient World* (London, 1987) 57

Example 3b (Transcription)

British Museum Papyrus 3036 (Sophocles *Theseus*)



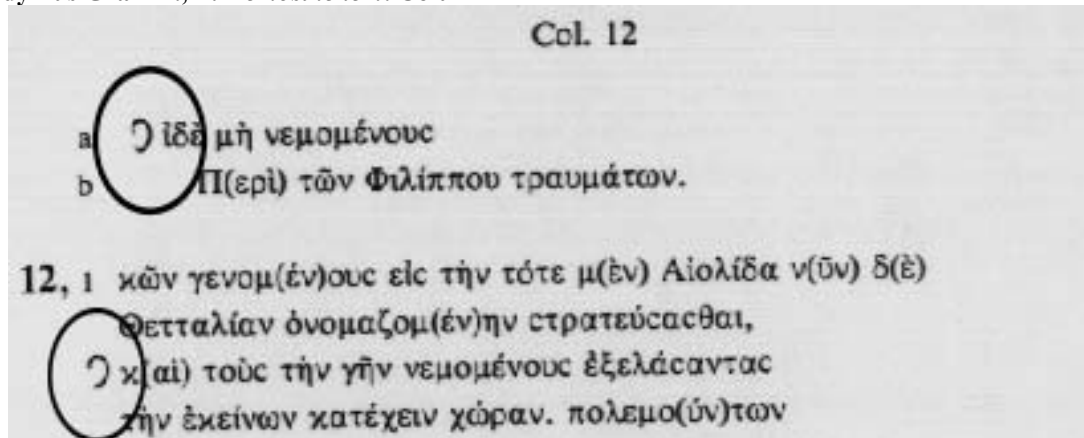
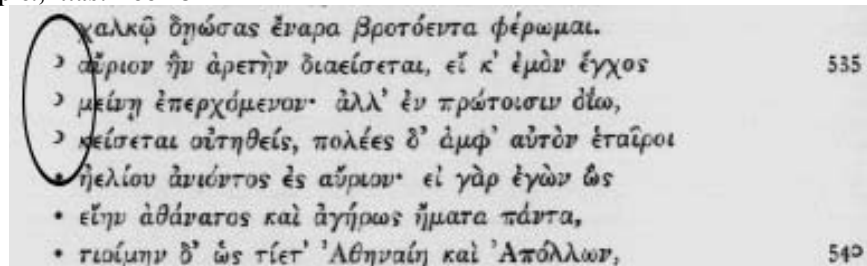
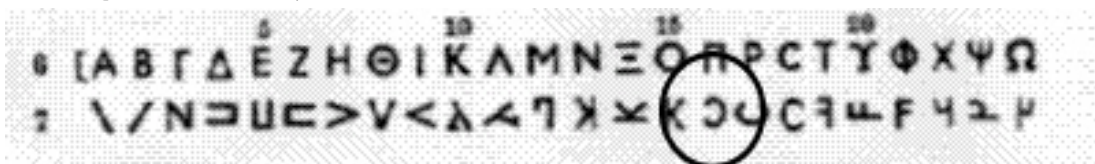
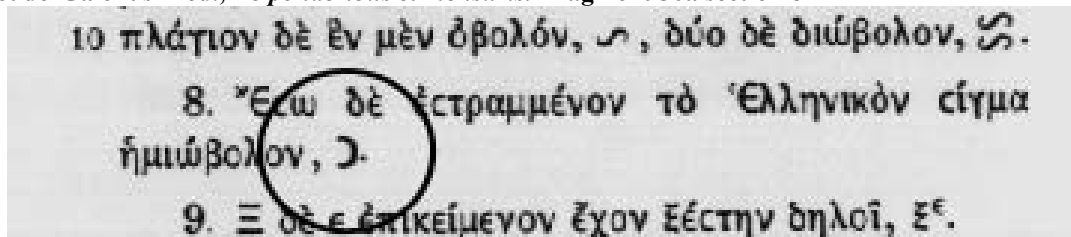
Turner, E.G. & Parsons, P.J. *Greek Manuscripts of the Ancient World* (London, 1987) 56

Text Highlighters and Markers

II.a.9 Greek Antisigma

Sign	Similar Unicode	Beta Code	Count
Ϝ	See below	#10, #114, #512	22 instances, 11 authors
<p>· Greek Instrumental Notation Symbol 33 (See Example 4 below and musical notation section below)</p> <p>Definition and comments</p> <p>Editorial character, marking omissions, errors, variants, corrections, etc..</p> <p>A musical sign.</p> <p>A sign for a Hemiobolon (half an Obol, see numerical section below).</p> <p>This character is similar, but not identical to 0186 LATIN CAPITAL LETTER OPEN O.</p> <p>McNamee writes: “The antisigma and a handful of lunate sigmas possibly intended for antisigmas were the appropriate marks for introducing textual revisions, especially variants and textual comments. ... An antisigma beside the text may be matched by a similar sign beside the revision. Typically, then, the sign was a sort of localized reference mark, guiding the reader’s eye elsewhere in the vicinity of the column. ... the work of the antisigma extended beyond the flagging of textual variants. It sometimes accompanies errors or corrections or even informational notes, and at least once (in <i>P. Oxy.</i> 1.12) it marks factual errors. ... most antisigmas that we find with corrections or errors seem to be the work of the original scribe, while those accompanying variants or other notes are usually in a different hand, and were undoubtedly written by the book’s owner.”²⁶</p> <p>As an editorial character, Antisigma is a marginal sign. For most common use, see Example 1.</p> <p>Antisigma is also used as a sign for the Aristarchean edition of Homer (see Aristarchean Editorial Signs below for a fuller description). This is a marginal sign (see Example 2).</p> <p>For use of Antisigma as musical symbol see Musical Notation below for a fuller explanation and Example 3. This is not a marginal sign.</p> <p>A fourth and final use is as a character representing a Hemiobolon, for this use, see Example 4 below.</p>			

²⁶ McNamee (1992) 14

Example 1 (footnote marker)**Didymus Gramm., *In Demosthenem*. Column 12**Pearson, L. & Stephens, S., *Didymi in Demosthenem commenta* (Teubner, Stuttgart, 1983) 43**Example 2 (Aristarchean editorial sign),****Homerus Epic., *Ilias*. Book 8**Allen, T.W., *Homeri Ilias*, vol. 2 (Clarendon Press, Oxford, 1931) 234-235**Example 3 (musical notation)****Aristides Quintilianus Mus., *De musica* 1.11**Winnington-Ingram, R.P., *Aristides Quintiliani de musica libri tres* (Teubner, Leipzig, 1963) 25**Example 4 (Hemiobolon)****Pseudo-Galenus Med., *De ponderibus et mensuris*. Fragment 56a section 8**Hultsch, F., *Metrologicorum scriptorum reliquiae*, vol. 1 (Teubner, Leipzig, 1864) 226

II.a.10 Greek Dotted Obelos

Sign	Similar Unicode	Beta Code	Count
⋄	See below	#523	154 instances, 9 authors

Definition and comments

Editorial character, marking errors, marginal notes, restorations, variant readings and corrections. It is also used as an abbreviation for the Greek word *esti* ('it is'). For more on this latter use see Appendix 2 below.

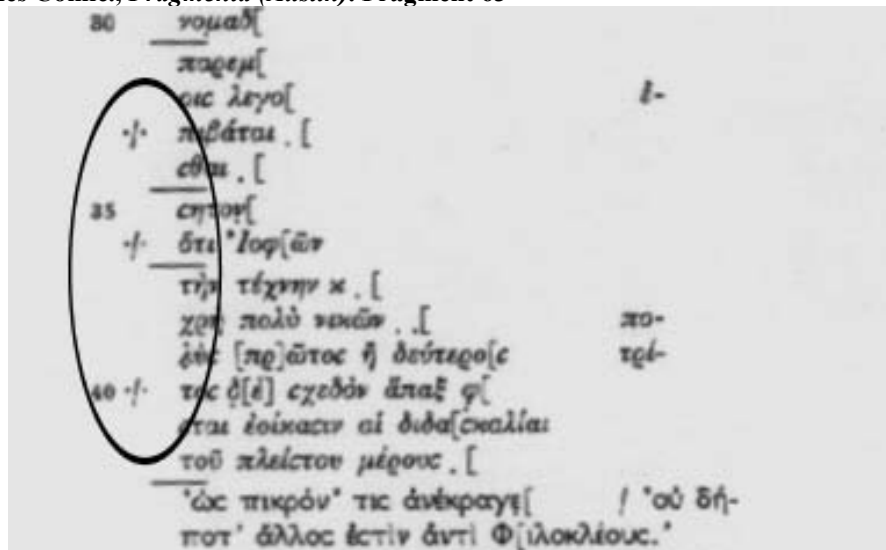
Turner writes: "sometimes used as a caret to indicate an omission to be made good... sometimes acts as a reference mark for a marginal note... and sometimes may have a quite separate signification."²⁷ According to McNamee: "its meaning is unclear in the majority of cases ... there are indications, not individually persuasive but suggestive in combination, that it too served as a reference mark linking commentaries and literary texts."²⁸ This character is comparatively rare. It is a marginal sign.

This character has a series of glyph variants, the most common of which is ⋄ (which may be encoded using 00F7 DIVISION SIGN). The other glyph variants usually occur only once or rarely (e.g. ⋄̄). See McNamee 37 for a complete list.

This symbol is not the same as e.g. 1D10E MUSICAL SYMBOL REPEATED FIGURE-2 because there are various glyph variant.

Example 1

Aristophanes Comic., *Fragmenta (Austin)*. Fragment 63

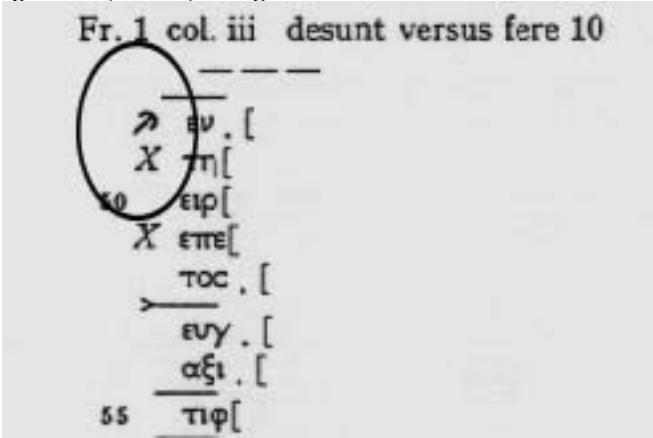


Austin, C., *Comicorum Graecorum fragmenta in papyris reperta* (De Gruyter, Berlin, 1973) 29

²⁷ Turner and Parsons (1987) 14

²⁸ McNamee (1992) 18

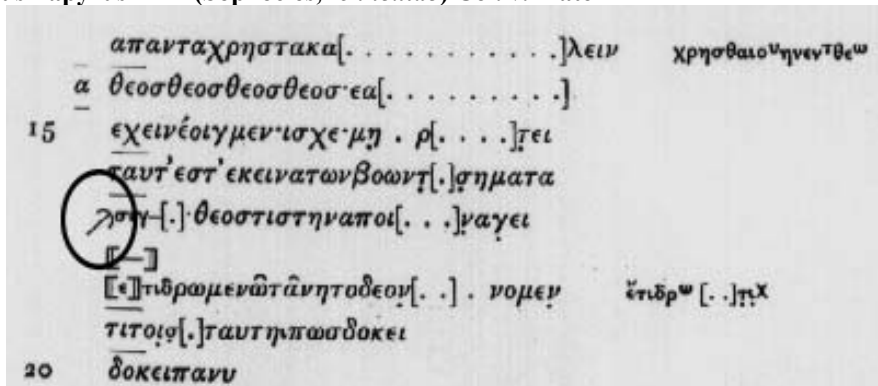
II.a.11 Greek Downward Ancora

Sign ↗	Similar Unicode	Beta Code #506	Count 2 instances, 2 authors
<p>Definition and comments</p> <p>Editorial character, marking, for instance, omissions, variant, restorations and errors.</p> <p>This character is usually written with a diagonal line, but glyph variants with an upright line are also common. Please see Example 3 below.</p> <p>McNamee writes: “The ancora ... was used almost exclusively to mark a place where text had been omitted and (or) to draw attention to the necessary restoration in the top or bottom margin. It may appear with a diagonal penstroke, particularly to mark the two lines between which an omission has occurred. ... Interestingly, although the sign may strike the eye as having the shape of an arrow, its ‘business end’—the directional pointer—was normally the open part of its central shaft. Thus ↙ typically served as a pointer upward, ↗ down. Only one papyrus preserves a complete pair... Nor did the conventional role of the symbol as a caret mark keep scribes from dragooning it for other purposes when they saw a parallel need. Thus ancorae occasionally mark errors and variant readings.”²⁹</p>			
<p>Example 1 Menander Comic., <i>Fragmenta</i> (Austin). Fragment 157</p>  <p>Austin, C., <i>Comicorum Graecorum fragmenta in papyris reperta</i> (De Gruyter, Berlin, 1973) 158</p>			

²⁹ McNamee (1992) 11. See also Turner and Parsons (1987) 16

Example 2

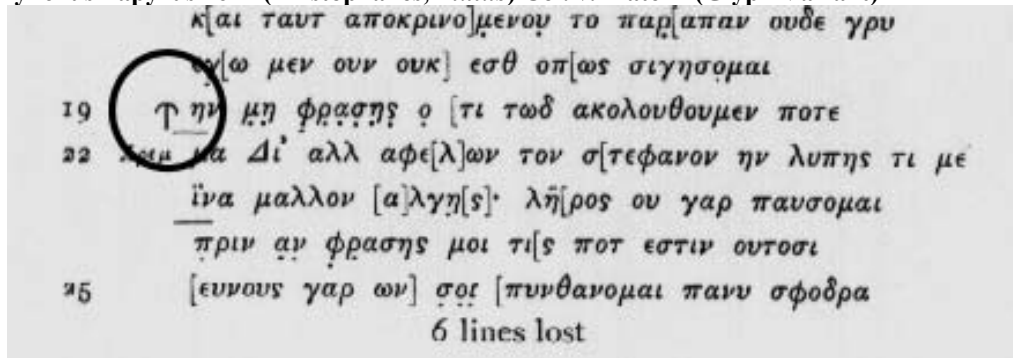
Oxyrhynchus Papyrus 1174 (Sophocles, *Ichneutae*) Col. v. Plate II



Grenfell, B.P. & Hunt, A.S., *The Oxyrhynchus Papyri*, Part 9 (London, 1912) 142


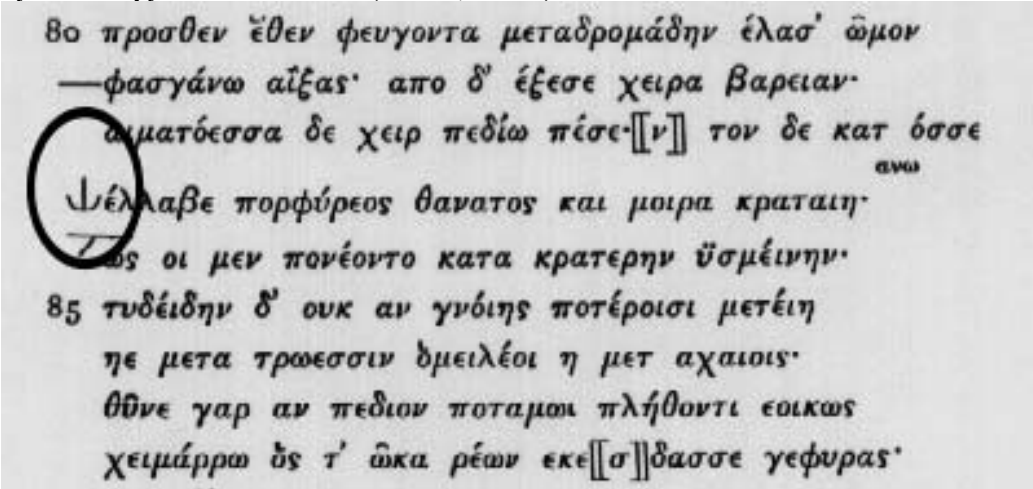
Example 3 (Glyph variant)

Oxyrhynchus Papyrus 1617 (Aristophanes, *Plutus*) Col. v. Plate II (Glyph Variant)



Grenfell, B.P. & Hunt, A.S., *The Oxyrhynchus Papyri*, Part 13 (London, 1919) 166

II.a.12 Greek Upward Ancora

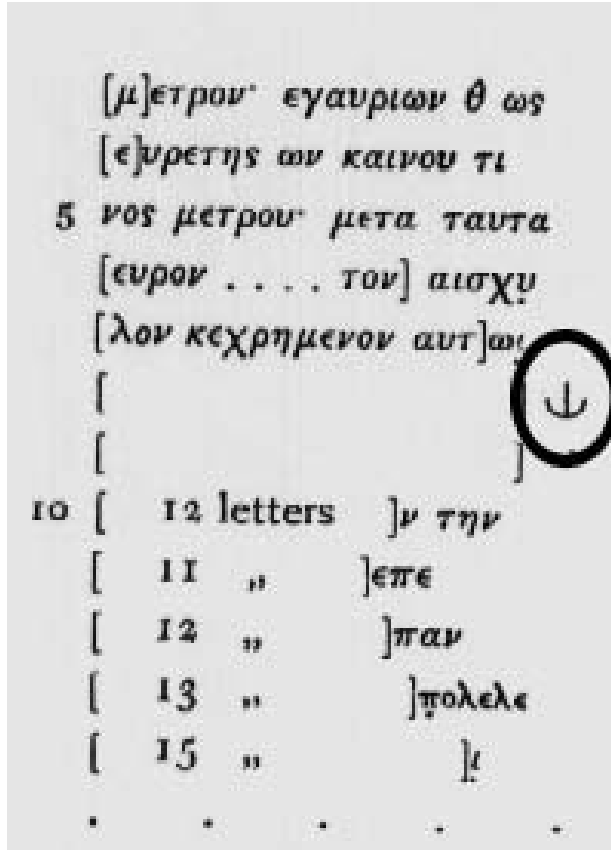
Sign	Similar Unicode	Beta Code #506	Count 2 instances, 2 authors
			
	<p>Definition and comments</p> <p>Editorial character, marking, for instance, omissions, variant, restorations and errors.</p> <p>This character is usually written with a diagonal line, but glyph variants with an upright line are also common. Please see Example 2 below.</p> <p>McNamee writes: “The ancora ... was used almost exclusively to mark a place where text had been omitted and (or) to draw attention to the necessary restoration in the top or bottom margin. It may appear with a diagonal penstroke, particularly to mark the two lines between which an omission has occurred. ... Interestingly, although the sign may strike the eye as having the shape of an arrow, its ‘business end’—the directional pointer—was normally the open part of its central shaft. Thus ↖ typically served as a pointer upward, ↗ down. Only one papyrus preserves a complete pair... Nor did the conventional role of the symbol as a caret mark keep scribes from dragooning it for other purposes when they saw a parallel need. Thus ancorae occasionally mark errors and variant readings.”³⁰</p> <p>McNamee regards this character as being more common than the Downward Ancora. She also regards the diagonal form as more common³¹</p> <p>Note that in Example 2 below, the Ancora occurs in the right-hand margin. However, it is impossible here to tell what it signifies, since the rest of the line is lost.</p> <p>Example 1 (Glyph variant) Oxyrhynchus Papyrus 223 Column 4 (Homer, <i>Iliad</i> 5)</p>  <p>Grenfell, B.P. & Hunt, A.S., <i>The Oxyrhynchus Papyri</i>, Part 2 (London, 1899) 101</p>		

³⁰ McNamee (1992) 11. See also Turner and Parsons (1987) 16

³¹ McNamee (1992) 11

Example 2

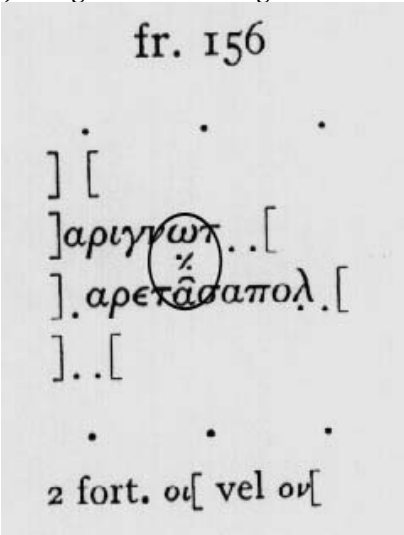
Oxyrhynchus Papyrus 223 Column 6 (Treatise on metres)



Grenfell, B.P. & Hunt, A.S., *The Oxyrhynchus Papyri*, Part 2 (London, 1899) 45

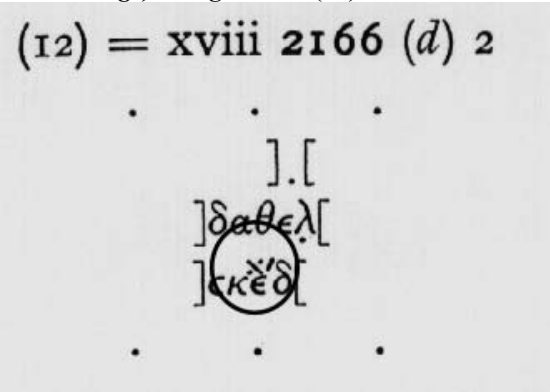
Amended Accents

II.a.13 Greek Combining Dotted Grave

Sign ◌̈́	Similar Unicode	Beta Code %95	Count 5 instances, 4 authors
<p>Definition and comments Amended grave accent.</p> <p>This is the standard way in papyri for drawing attention to inserted accents or marking them as deleted. McNamee writes: “The papyri in question tend to be heavily encrusted with diacritical signs, which naturally were subject to revision just like regular text. An individual scribe, therefore, might reasonably have added dots to draw attention to a diacritical mark that was adding or to expunging an erroneous one.”³²</p> <p>In the example below, the Dotted Grave can be seen printed above a circumflex. In modern editions, this character is usually resolved—the editor keen only to include the correct accent—however, in cases such as this, where it is not possible to distinguish which accent is correct, some editors have chosen to preserve the papyrological punctuation.</p>			
<p>Example 1 Simonides Lyr., <i>Fragmenta (Page)</i>. Fragment 14 subfragment 156</p>  <p>Page, D.L., <i>Poetae melici Graeci</i> (Clarendon Press, Oxford, 1962) 271</p>			

³² McNamee (1992) 18

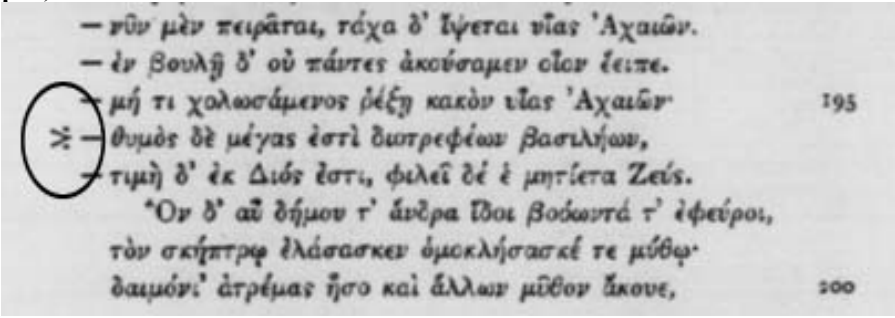
II.a.14 Greek Combining Dotted Acute

Sign ◌̣	Similar Unicode	Beta Code %93	Count 1 instance, 1 author
<p>Definition and comments Amended acute accent.</p> <p>This is the standard way in papyri for drawing attention to inserted accents or marking them as deleted.</p> <p>McNamee writes: “The papyri in question tend to be heavily encrusted with diacritical signs, which naturally were subject to revision just like regular text. An individual scribe, therefore, might reasonably have added dots to draw attention to a diacritical mark that was adding or to expunge an erroneous one.”³³</p> <p>In the example below, the Dotted Acute can be seen printed to the left of a grave. In modern editions, this character is usually resolved—the editor keen only to include the correct accent—however, in cases such as this, where it is not possible to distinguish which accent is correct, some editors have chosen to preserve the papyrological punctuation.</p>			
<p>Example 1 Sappho Lyr., <i>Fragmenta</i> (Lobel & Page). Fragment 87(12)</p> <div style="text-align: center;">  </div> <p>Lobel, E., Page, D.L., <i>Poetarum Lesbiorum fragmenta</i> (Clarendon Press, Oxford, 1955) 63</p>			

³³ McNamee (1992) 18

Aristarchean Editorial Notation

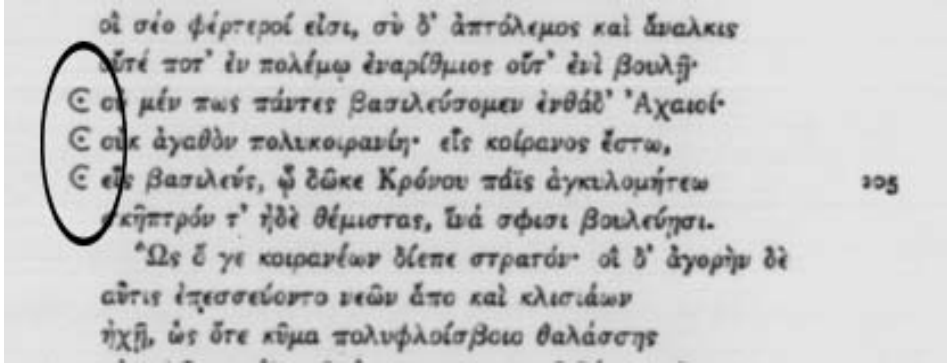
II.a.15 Greek Dipole Periestigmene

Sign	Similar Unicode	Beta Code	Count
⋈		#14	299 instances, 2 authors
<p>Definition and comments</p> <p>Wace & Stubbings write that, with this sign, Aristarchus indicates “a line in which his text differed from Zenodotus’s”.³⁴</p> <p>This character has the glyph variants of >• and >•³⁵</p>			
<p>Example 1 – Aristarchean editorial sign Homerus Epic., <i>Ilias</i>. Book 2.</p>  <p>Allen, T.W., <i>Homeri Ilias</i>, vol. 2 (Clarendon Press, Oxford, 1931) 39</p>			

³⁴ Wace & Stubbings (1962) 224. See also Du Cange (1688) 3 and Gardthausen (1913:2) 411. Zenodotus (b. c. 325 BC) first head of the Library at Alexandria, also produced an edition of Homer. See Lockwood, J.F., Browning, R. Wilson, N.G. “Zenodotus” in *OCD*³ (1996) 1653-6.

³⁵ McNamee (1992) 28-9

II.a.16 Greek Sigma Periestigmenon

Sign	Similar Unicode	Beta Code	Count
Ⲛ		#16	3 instances, 1 author
Definition and comments			
Wace & Stubbings write that this character marks a line or lines which are incorrectly placed in the current text and need to be moved to a new position. ³⁶			
Example 1 (Aristarchean editorial sign)			
Homerus Epic., <i>Ilias</i>. Book 2			
			
Allen, T.W., <i>Homeri Ilias</i> , vol. 2 (Clarendon Press, Oxford, 1931) 40			

³⁶ Wace & Stubbings (1962) 224

II.a.17 Greek Antisigma Periestigmenon

Sign Ϝ	Similar Unicode	Beta Code #11	Count 2 instances, 1 author
<p>Definition and comments</p> <p>Wace & Stubbings write that this character “indicates a line after which a re-arrangement should be made.”³⁷ Du Cange specifies that this refers to variant readings over the priority of which there is uncertainty.³⁸</p> <p>This character may also be used as a mark of abbreviation, please see section VI below.</p>			
<p>Example 1 (Aristarchean editorial sign) Homerus Epic., <i>Ilias</i>. Book 2</p> <p>Allen, T.W., <i>Homeri Ilias</i>, vol. 2 (Clarendon Press, Oxford, 1931) 39</p>			

³⁷ Wace & Stubbings (1962) 224

³⁸ Du Cange (1688) 3. See also Gardthausen (1913:2) 412

b. Ancient Greek Editorial Characters and Punctuation: Additional Definition of Preexisting Characters

Table of Characters Included in this Section

Number	Character	Name	Unicode	Comment
Section and Pause Markers, Word Separators				
II.b.1	·	Greek Mese Stigme	0387	
II.b.2	.	Greek Kato Stigme	002E	
II.b.3	:	Greek Dicolon	003A	
II.b.4	∴	Greek Tricolon	250A	See also Metrical proposal below
Text Highlighters and Markers				
II.b.5	>	Greek Diple	003E	
II.b.6	<	Greek Reversed Diple	003C	
II.b.7	—	Greek Obelos	2014	
Aristarchean Editorial Notation				
II.b.8	•	Greek Aristarchean Stigme	2022	

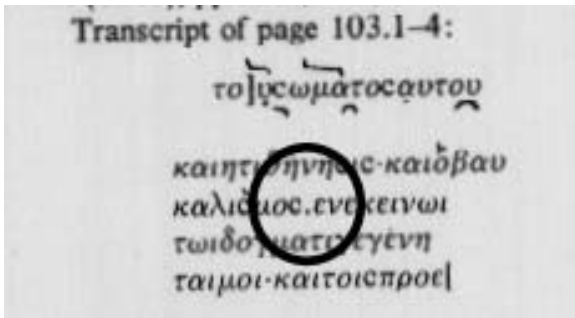
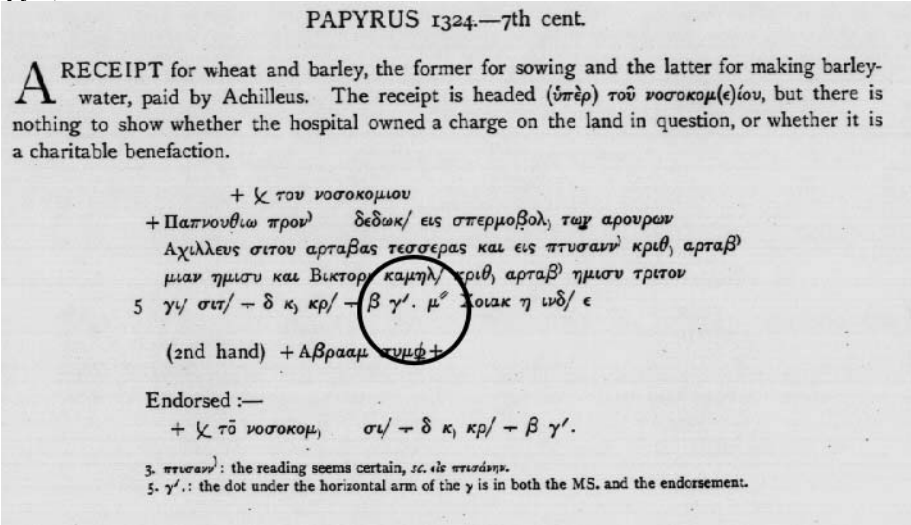
Section and Pause Markers, Word Separators

II.b.1 Greek Mese Stigme

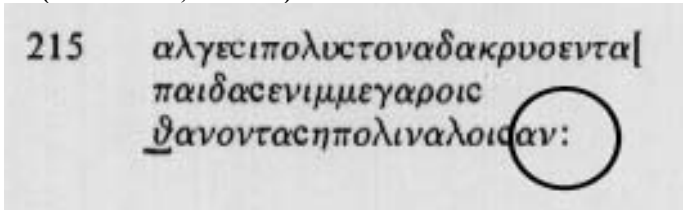
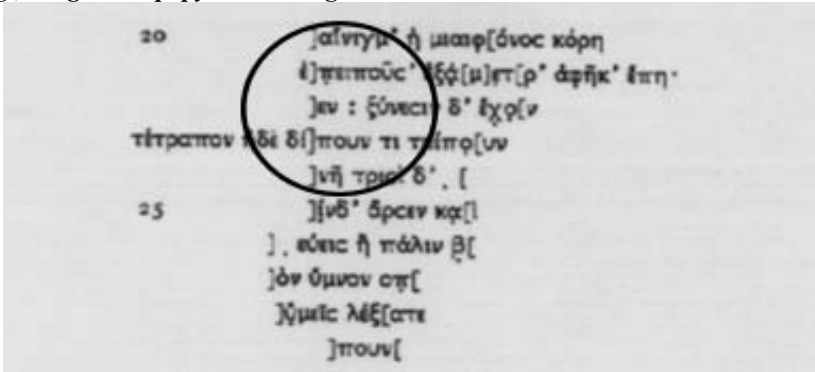
Sign	Unicode	Beta Code	Count								
.	0387	#71	(Papyri) 108 instances, 15 authors								
<p>Definition and comments</p> <p>Mark of termination of sentence or section, or mark of pause.</p> <p>Turner and Parsons: “Two kinds of stop may be seen in texts of the late ii. B.C. and of i. B.C.: one is placed high in the line [Greek Ano Stigme], the other in a middle position [Greek Mese Stigme]... Normally the high stop... marks period end. The stop in the middle position serves as a subdivision inside the period, with the effect of a modern comma.”³⁹</p> <p>This character is identical to 0387 GREEK ANO TELEIA, however it usually has, as explained in the section Ano Stigme above, a different semantic meaning.</p> <p>Please see Appendix 1 for a longer example of a text which includes all three Stigmes.</p>											
<p>Example 1 (Note: the Mese Stigme is here used in conjunction with the Ano Stigme)</p> <p>Demosthenes Orat, <i>De Falsa Legatione</i> 11-32. B.M. Add MS. 34473, art. 1. ii C.E.</p> <p>Transcript of col. v 1–15:</p> <table border="0"> <tr> <td style="vertical-align: top;">1</td> <td style="vertical-align: top;">δεκαίπλεταιἄσσοικίζομενας τῶι θεω^τ δεταχρηματαεἰςπραττομενα συπαραφωκεωναλλαπαραθηβαιῶ τωνβουλευεαντωντηνκαταληψιν</td> <td style="vertical-align: top;">10</td> <td style="vertical-align: top;">κεκηρυχεναι' ακουεινδεκαίτων ευβοειωνενιωνεφηπεφοβημε νωνκαιτεταραγματωντηνπρος τηνπολινφικειεστηαφιλιππει ></td> </tr> <tr> <td style="vertical-align: top;">5</td> <td style="vertical-align: top;">τουιερου·διδαξαιγαραυτοςεφητον φιλιππονοτιουδειητηγονησεβη κασινοιβεβουλευκοτεςτωνταις χερσιπραξαντων· και διατουτο χρηματ' αυτωι τουσθηβαιουσεπι</td> <td style="vertical-align: top;">15</td> <td style="vertical-align: top;">λεληθατεημασιν ανδρεςπρεσβεις</td> </tr> </table>				1	δεκαίπλεταιἄσσοικίζομενας τῶι θεω ^τ δεταχρηματαεἰςπραττομενα συπαραφωκεωναλλαπαραθηβαιῶ τωνβουλευεαντωντηνκαταληψιν	10	κεκηρυχεναι' ακουεινδεκαίτων ευβοειωνενιωνεφηπεφοβημε νωνκαιτεταραγματωντηνπρος τηνπολινφικειεστηαφιλιππει >	5	τουιερου·διδαξαιγαραυτοςεφητον φιλιππονοτιουδειητηγονησεβη κασινοιβεβουλευκοτεςτωνταις χερσιπραξαντων· και διατουτο χρηματ' αυτωι τουσθηβαιουσεπι	15	λεληθατεημασιν ανδρεςπρεσβεις
1	δεκαίπλεταιἄσσοικίζομενας τῶι θεω ^τ δεταχρηματαεἰςπραττομενα συπαραφωκεωναλλαπαραθηβαιῶ τωνβουλευεαντωντηνκαταληψιν	10	κεκηρυχεναι' ακουεινδεκαίτων ευβοειωνενιωνεφηπεφοβημε νωνκαιτεταραγματωντηνπρος τηνπολινφικειεστηαφιλιππει >								
5	τουιερου·διδαξαιγαραυτοςεφητον φιλιππονοτιουδειητηγονησεβη κασινοιβεβουλευκοτεςτωνταις χερσιπραξαντων· και διατουτο χρηματ' αυτωι τουσθηβαιουσεπι	15	λεληθατεημασιν ανδρεςπρεσβεις								
<p>Turner, E.G. & Parsons, P.J., <i>Greek Manuscripts of the Ancient World</i> 2nd ed. (Institute of Classical Studies, London, 1987) 140</p>											

³⁹ Turner and Parsons (1987) 9

II.b.2 Greek Kato Stigme

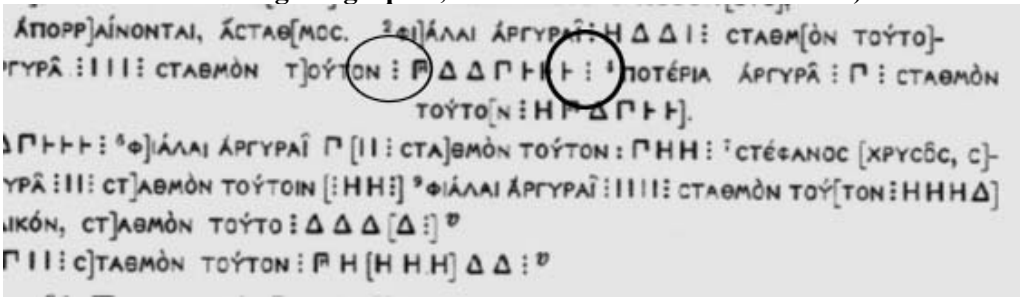
Sign	Unicode	Beta Code	Count
.	002e	#70	(Papyri) 10 instances, 5 authors
<p>Definition and comments</p> <p>Mark of termination of sentence or section, or mark of pause.</p> <p>This character performs the same function as the Greek Ano Stigme and Greek Mese Stigme. While it is a less common form of punctuation, it is still found in papyri using the Greek Ano Stigme and the Greek Mese Stigme or in papyri where it combines with one or the other or both of them (see Turner and Parsons 1987: 9).</p> <p>This character is identical to 002E FULL STOP, however, it has a different semantic meaning.</p> <p>Please see Appendix 1 for a longer example of a text which includes all three Stigmes.</p>			
<p>Example 1 (Note: the Kato Stigme is here used in conjunction with the Mese Stigme) <i>Life of Mani</i>, Cologne, P. Colon. Inv. 4780. iv or iv/v C.E.</p>  <p>Transcript of page 103.1-4: το ἰσχωμάτος αὐτοῦ καί η̄ τὴν ἡν̄η̄σ̄· καὶ ὀβ̄αυ καλιόμοσ.ενε κεινω τωιδόματι· ἐγένη ταιμοι· καί τοις προε </p> <p>Turner, E.G. & Parsons, P.J., <i>Greek Manuscripts of the Ancient World</i> 2nd ed. (Institute of Classical Studies, London, 1987) 129</p>			
<p>Example 2 London Papyrus, document 1324 v 7</p>  <p>PAPYRUS 1324.—7th cent.</p> <p>RECEIPT for wheat and barley, the former for sowing and the latter for making barley-water, paid by Achilleus. The receipt is headed (ὑπὲρ) τοῦ νοσοκομ(ε)ίου, but there is nothing to show whether the hospital owned a charge on the land in question, or whether it is a charitable benefaction.</p> <p>+ ζ του νοσοκομιου + Παπνουθιω προν¹ δεδωκ/ εις σπερμοβολ, των αρουρων Αχιλλευσ σιτου αρταβας τεσσαρας και εις πτυσαν² κριθ, αρταβ³ μιαν ημισυ και Βικτορ⁴ καμηλ⁵ κριθ, αρταβ³ ημισυ τριτου 5 γι/ σι/ + δ κ, κρ/ + β γ'· μ⁵ Σουακ η υδ/ ε (2nd hand) + Αβρααμ· τυμφ+</p> <p>Endorsed :— + ζ τῶ νοσοκομ, σι/ + δ κ, κρ/ + β γ'.</p> <p>3. πτυσαν²: the reading seems certain, i.e. ἐκ πτυσάνηκ. 5. γ'·: the dot under the horizontal arm of the γ is in both the MS. and the endorsement.</p> <p>Kenyon F.G. & Bell H.I., <i>Greek Papyri in the British Museum. III, (Nos. 485—1331)</i> (London, 1907) 276</p>			

II.b.3 Greek Dicolon

Sign	Unicode	Beta Code	Count
:	003A	#73	25 instances, 7 authors; (Papyri) 6 instances, 4 authors
<p>Definition and comments</p> <p>Mark of termination of sentence or section or mark of pause.</p> <p>Turner and Parsons: “The double dot : , often called Dicolon, is another mark which can certainly be traced back to iv B.C.... and is probably a simplification of the common older row of three vertical dots... Its function also is to divide. We are especially familiar with its employment (usually coupled with the paragraphus [see above]) in dramatic texts, especially those of comedy, to mark changes of speaker, both at the end of a line and inside a line, and to mark a change of speakers in a Platonic dialogue. But in both genres scribes may employ it also as a strong stop... We may also note its use as a stop... at colon- and period-end... and in commentaries to distinguish notes from lemmata”⁴⁰</p> <p>This character may be used in the same way as—and in conjunction with any or all of—the Ano, Mese and Kato Stigme above. In Example 1, for example, it is used to indicate the end of a sentence and verse in Stesichorus. For its use in combination with the Paragraphos, please see the section “Paragraphos” above. See also Example 2 below.</p> <p>This character is identical to 003A COLON, however it has a different semantic meaning.</p>			
<p>Example 1 Lille Papyri inv 76a+73 (Stesichorus, <i>Thebaid</i>)</p>  <p>Turner, E.G. & Parsons, P.J. <i>Greek Manuscripts of the Ancient World</i> (London, 1987) 124</p>			
<p>Example 2 See Appendix 1</p>			
<p>Example 3 Euripides Trag., <i>Fragmenta papyracea</i>. Fragment 83</p>  <p>Austin, C., <i>Nova fragmenta Euripidea in papyris reperta</i> (De Gruyter, Berlin, 1968) 61</p>			

⁴⁰ See Turner and Parsons (1987) 9

II.b.4 Greek Tricolon

Sign	Unicode	Beta Code	Count
⋮	22EE	#74	1,138 instances, 11 authors
<p>Definition and comments</p> <p>Mark of termination of sentence or section or mark of pause. Also used to separate words from numbers in inscriptions and as a metrical character (see metrical section below).</p> <p>As a mark of termination, this character has a similar meaning to the Dicolon. This form is earlier than the Dicolon and eventually the Dicolon becomes the dominant form.⁴¹ This character may be used in the same way as—and in conjunction with any or all of—the Ano, Mese, Kato Stigme and Dicolon above.</p> <p>This character is also used to separate text from numbers. Example 1 below shows an inscription with acrophonic numerals (see numerical section below).⁴²</p> <p>This character is identical to 22EE VERTICAL ELLIPSIS, however it has a clearly different semantic meaning.</p>			
<p>Example 1 (In order to avoid cluttering the graphic, we have not circled all instances)</p>  <p>Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 151</p>			

⁴¹ Turner and Parsons (1987) 7, 9 & 14

⁴² See also Gardthausen (1913:2) 360

Text Highlighters and Markers

II.b.5 Greek Diple

Sign	Unicode	Beta Code	Count
>	See below	#15, #1512	5,203 instances, 14 authors; (Papyri) 27 instances, 1 author; (Inscr) 27 instances, 1 author
<p>Definition and comments</p> <p>Editorial character, marking, for instance, quotations, divisions in text, marginal notes and textual variants. Line filler.</p> <p>This character has a series of glyph variants, the most common of which is 7 (the others usually occur only once).⁴³</p> <p>McNamee writes: “Papyri... provide abundant evidence for the use of the Diple as a punctuator marking new sections in texts of prose as well as poetry. Presumably the rightward point of the usual form made it a convenient divider. It was also the standard symbol for marking quotations, and when so used it appears at the left of each line quoted. Once or twice, like antisigma, it marks erroneous text. Occasionally it introduces or concludes a marginal note.”⁴⁴ This is a marginal sign. McNamee⁴⁵ and Wattenbach⁴⁶ also note the tendency in Herculaneum to use Diplae where Egyptian scribes used Paragraphoi. Example 1 shows the Diple as a marker of quotations.</p> <p>A second use is as an Aristarchean sign for his edition of Homer (see Introduction: Aristarchean Editorial Signs above for a fuller description). This is a marginal sign. Please see Example 2.</p> <p>A third use of this character is as a line filler. In papyri where one line is slightly too short, this character is inserted at the end to make it appear the same length as the other lines. This character is not marginal. Please see Example 3a-b below.</p> <p>The most common glyph is identical to 003E GREATER-THAN SIGN, however it has a different semantic meaning.</p>			

⁴³ See McNamee (1992) 32-4 for a complete list

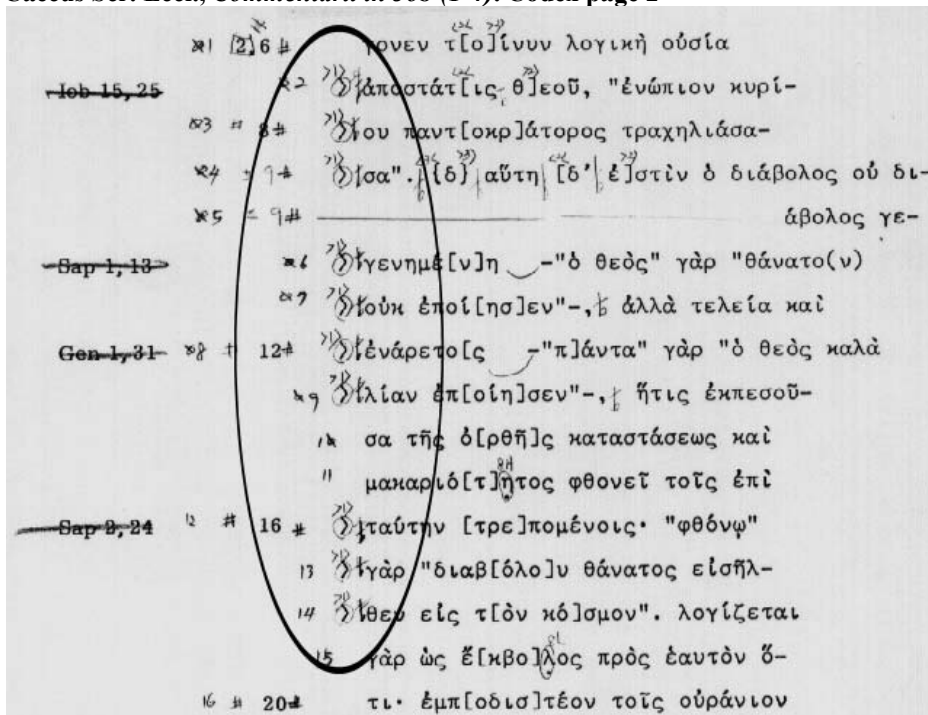
⁴⁴ McNamee (1992) 16. See also Gardthausen (1913:2) 406 & 411

⁴⁵ McNamee (1992) 24-25

⁴⁶ Wattenbach (1895) 120

Example 1 (Biblical quotations)

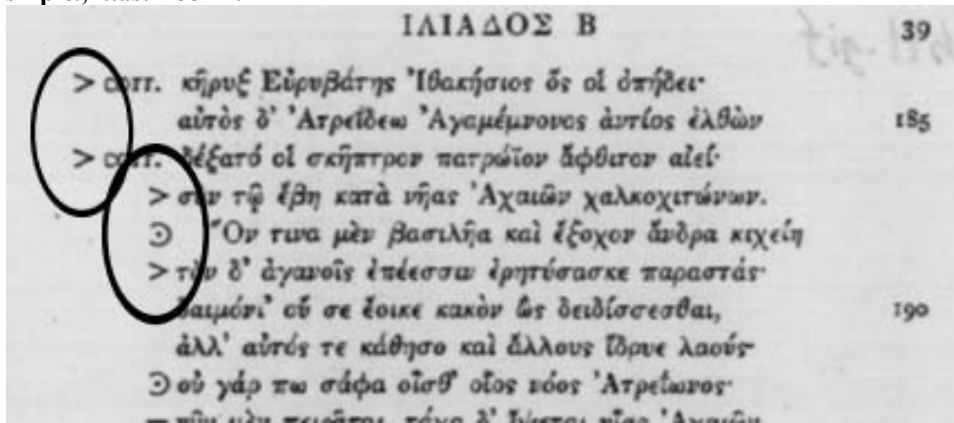
Didymus Caecus Scr. Eccl., *Commentarii in Job (1-4)*. Codex page 2



Henrichs, A. *Didymos der Blinde. Kommentar zu Hiob*, pt. 1 (Habelt, Bonn, 1968) 28

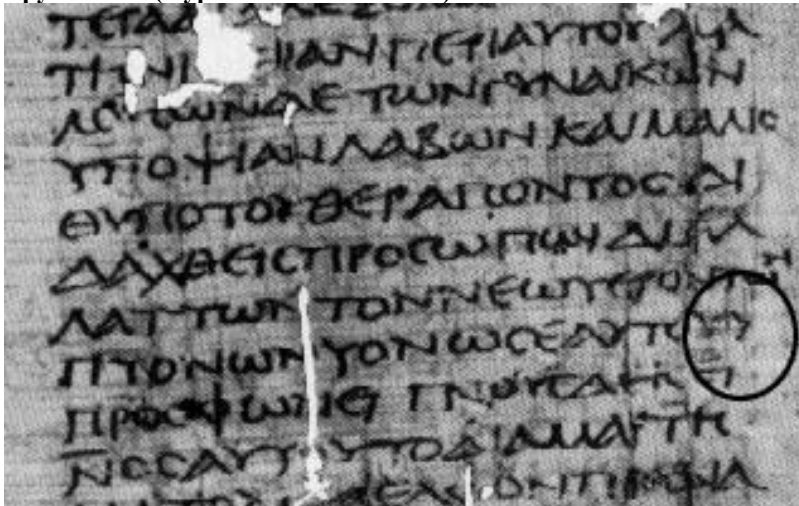
Example 2 (Aristarchean editorial sign)

Homerus Epic., *Ilias*. Book 2.



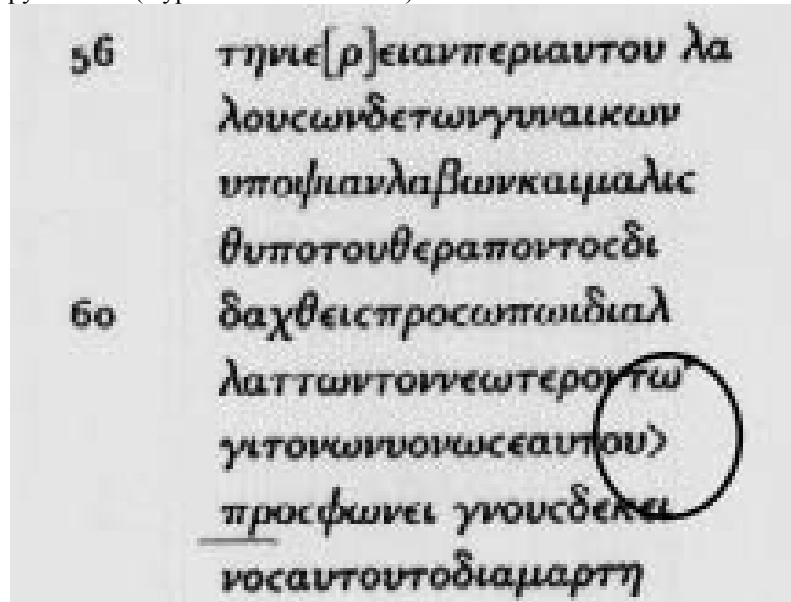
Allen, T.W., *Homeri Ilias*, vol. 2 (Clarendon Press, Oxford, 1931) 39

Example 3a (Papyrus)
Oxyrhynchus Papyrus 1235 (Hypothesis to Menander)



Turner, E.G. & Parsons, P.J. *Greek Manuscripts of the Ancient World* (London, 1987) 81

Example 3b (Transliteration)
Oxyrhynchus Papyrus 1235 (Hypothesis to Menander)



Turner, E.G. & Parsons, P.J. *Greek Manuscripts of the Ancient World* (London, 1987) 80

II.b.6 Greek Reverse Diple

Sign	Unicode	Beta Code	Count
<	003C	#18 , #323	20 instances, 4 authors

Definition and comments

Editorial character.

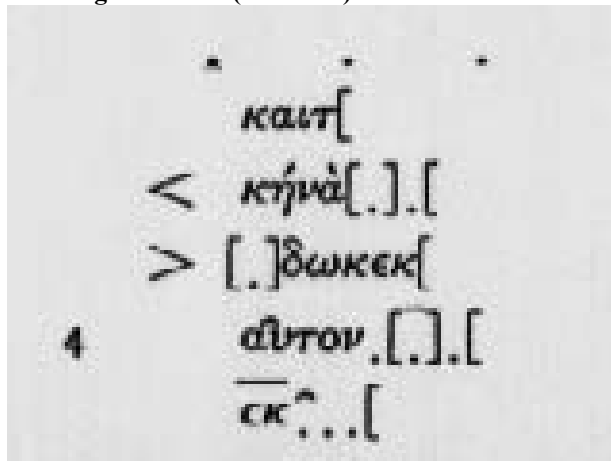
McNamee writes: “although the [Diple] is quite common in papyri, there are scarcely any examples of its opposite. Among poetic texts it appears only once in papyrus containing lyric (Alcaeus) and once in a text of tragedy... In its other rare appearances, its significance is unclear, and I suspect it is actually a carelessly written version of its more common counterpart >.”⁴⁷

Please see the example below for a fragment of Alcaeus where it is used in conjunction with a Diple proper. This is an extremely rare character. As Lobel writes: “What the meaning of the pair [Diple, reversed Diple] is when employed within one strophe with reference to one another, as they apparently are here, I do not know.”⁴⁸

This character is visually identical to 003C LESS-THAN SIGN. However, it has a different semantic meaning.

Example 1

Oxyrhynchus Papyrus 1788 fragment 128a (Alcaeus?)


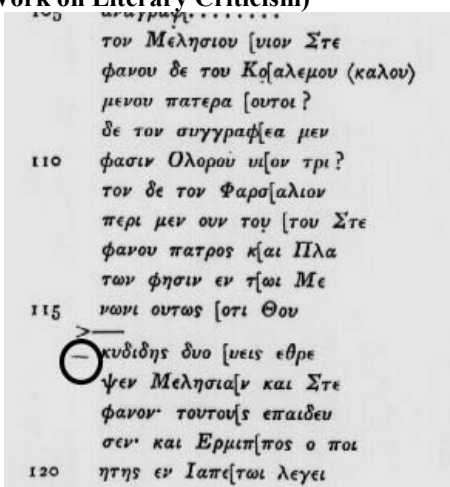


Lobel, E., *The Oxyrhynchus Papyri XXIII* (London, 1956) 105

⁴⁷ McNamee (1992) 16

⁴⁸ Lobel (1956) 104

II.b.7 Greek Obelos

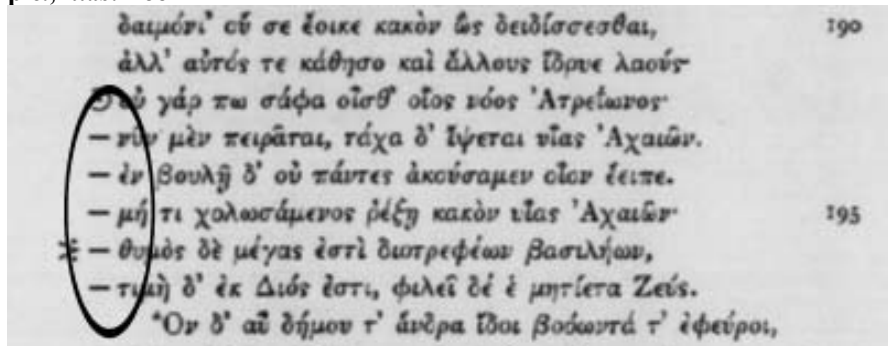
Sign	Unicode	Beta Code	Count
—	2014	#12	524 instances, 1 author
<p>Definition and comments</p> <p>An editorial character which marks restorations, variants, errors, omissions, corrections, quotations, marginal notes, etc.. Also used in the same manner as the Paragraphos to divide up text.</p> <p>This character has a series of glyph variants, the most common of which is  (the others occur rarely).⁴⁹</p> <p>McNamee writes: “It is the commonest of all signs encountered in literary papyri, occurring in more than a hundred texts. Its purpose is obvious about two-thirds of the time. Sometimes it serves as a simple check-mark, set in the left margin besides item in a list. In an extension of this function it also marks text containing variants or (much more frequently) errors, omissions, or restorations. In another role it commonly serves as a kind of divider, appearing like the paragraphus in the left margin at a break in sense, especially at the beginning or end of a speech... Similarly it may precede marginal notes or separate lemmata from comments... In a large number of papyri, however, its function is obscure. Often in those texts it appears beside intact and apparently flawless passages, and not at any natural break in the narrative. In such cases it presumably indicates a passage to be looked into.”⁵⁰ This is a marginal sign, please see Examples 1 below.</p> <p>A second use of the Obelos is as an Aristarchean sign (see Aristarchean Editorial Signs below for a fuller description). This is a marginal sign. See Examples 2 and 3 below.</p> <p>While 2014 EM DASH covers one glyph variant, it does not cover the second, equally as common, glyph variant.</p>			
<p>Example 1 (Note both of the main glyph variants appear in this papyrus) Oxyrhynchus Papyrus 1611 (Work on Literary Criticism)</p> 			
<p>Grenfell, B.P. & Hunt, A.S., <i>The Oxyrhynchus Papyri XIII</i> (London, 1919) 134</p>			

⁴⁹ See McNamee (1992) 34-6 for a complete list.

⁵⁰ McNamee (1992) 17-8

Example 2 (Aristarchean editorial sign)

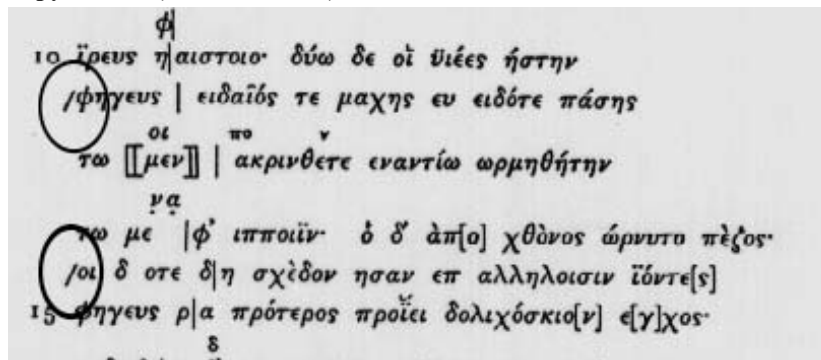
Homerus Epic., *Ilias*. Book 2



Allen, T.W., *Homeri Ilias*, vol. 2 (Clarendon Press, Oxford, 1931) 39

Example 3

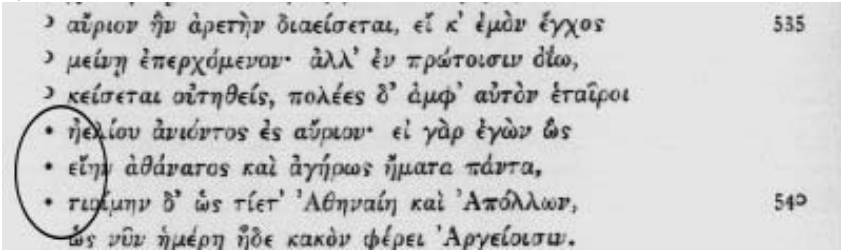
Oxyrhynchus Papyrus 213 (Homer, *Iliad* 5)



Grenfell, B.P. & Hunt, A.S., *The Oxyrhynchus Papyri II* (London, 1899) 9

Aristarchean Editorial Notation

II.b.8 Greek Aristarchean Stigme

Sign	Unicode	Beta Code	Count
•	2022	⌘11	57 instances, 5 authors; (Papyri) 28 instances, 17 authors ⁵¹
<p>Definition and comments</p> <p>Wace & Stubbings write that this indicates “a line which he [Aristarchus] suspected of being un-Homeric but was not prepared to obelize⁵² outright.”⁵³</p> <p>The current Unicode 2022 is satisfactory for the encoding of this character.</p>			
<p>Example 1 (Aristarchean editorial sign) Homerus Epic., <i>Ilias</i>. Book 8</p>  <p>Allen, T.W., <i>Homeri Ilias</i>, vol. 2 (Clarendon Press, Oxford, 1931) 234-235</p>			

⁵¹ These counts include the non-Aristarchean, non-marginal uses of this Beta Code, the use of which overlaps with Greek Mese Stigme above.

⁵² Zenodotus had introduced the meaning of the Obelos as a marker of doubt. See Lockwood, J.F., Browning, R. Wilson, N.G. “Zenodotus” in *OCD*³ (1996) 1656.

⁵³ Wace & Stubbings (1962) 224






III. Ancient Greek Numerical Characters

Introduction and Overview

Table of Characters Proposed

Number		Name	Unicode	Comment
Alphabetic Numerals – Fractions				
III.a.1	∠	Acrophonic $\frac{1}{12}$ Unit		2220 is identical to one glyph variant
III.a.2	ω	Acrophonic $\frac{1}{8}$ Unit		
Weights, Measures and Money: Standard Greek Weights and Money				
III.a.3	⚖	Greek Talent Sign		22BC and 2305 are similar
III.a.4	<	Greek Drachma Sign		22D6, 003C and 039B are similar to three of the glyph variants
III.b.1	>	Greek Half Drachma Sign		
III.a.5	~	Greek Obol Sign		007E, 223D, 005C and 2013 are similar to four glyph variants
III.a.6	≈	Greek Two Obols Sign		2248 is similar to one glyph variant
III.a.7	∩	Greek Three Obols Sign		0393, 03A4 and 223F are similar to three glyph variants
III.a.8	∪	Greek Four Obols Sign		
III.a.9	∩∪	Greek Five Obols Sign		
Weights, Measures and Money: Standard Greek Measures of Capacity				
III.a.10	⚖	Greek Metretes Sign		
III.a.11	κ	Greek Kyathos Base Sign		
Weights, Measures and Money: Greek Characters for Roman Weights and Measures				
III.a.12	⚖	Greek Litra Sign		
III.a.13	Ϟ	Greek Ounkia Sign		
III.a.14	ϙ	Greek Xestes Sign		
Weights, Measures and Money: Greek Characters for non-Graeco-Roman Measures				
III.a.15	÷	Greek Artabe Sign		00F7 is similar to one glyph variant
Weights, Measures and Money: Ancient Greek Medical Measures				
III.a.16	Γ ^ρ	Greek Gramma Sign		
III.a.17	ϙ ^ρ	Greek Tryblion Base Sign		
Acrophonic Numerals: Basic Characters				
III.b.2	/	Acrophonic $\frac{1}{12}$ Unit	002F	
III.b.3	×	Acrophonic $\frac{1}{8}$ Unit • Acrophonic 1,000 Units • Acrophonic 1,000 Drachmae	03A7	
III.a.18	∪	Acrophonic $\frac{1}{4}$ Unit		
III.a.19	∩	Acrophonic $\frac{1}{2}$ Unit		
III.b.4	I	Acrophonic 1 Unit • Acrophonic 1 Obol	0399	

III.a.20	𐌱	Acrophonic 1 Drachma		The character 22A6 is similar
III.a.21	𐌲	Acrophonic 5 Units • Acrophonic five Drachmae		
III.b.5	𐌳	Acrophonic 10 Units • Acrophonic 10 Drachmae	0394	
III.a.22	𐌴	Acrophonic 50 Units • Acrophonic 50 Drachmae		
III.b.6	𐌵	Acrophonic 100 Units • Acrophonic 100 Drachmae	0397	
III.a.23	𐌶	Acrophonic 500 Units • Acrophonic 500 Drachmae		
III.a.24	𐌷	Acrophonic 5,000 Units • Acrophonic 5,000 Drachmae		
III.b.7	𐌸	Acrophonic 10,000 Units • Acrophonic 10,000 Drachmae • Acrophonic 1 Mna	039C	
III.a.25	𐌹	Acrophonic 50,000 Units • Acrophonic 50,000 Drachmae • Acrophonic 5 Mnae		
Acrophonic Numerals: Additional Character for Depicting Talents				
III.b.8	𐌺	Acrophonic 1 Talent	03A4	
III.a.26	𐌻	Acrophonic 5 Talents		
III.a.27	𐌼	Acrophonic 10 Talents		
III.a.28	𐌽	Acrophonic 50 Talents		
III.a.29	𐌾	Acrophonic 100 Talents		
III.a.30	𐌿	Acrophonic 500 Talents		
III.a.31	𐍀	Acrophonic 1,000 Talents		
III.a.32	𐍁	Acrophonic 5,000 Talents		
III.a.33	𐍂	Acrophonic 10,000 Talents		
III.a.34	𐍃	Acrophonic 50,000 Talents		
Acrophonic Numerals: Additional Character for Depicting Staters				
III.b.9	𐍄	Acrophonic 1 Stater	03A3	
III.a.35	𐍅	Acrophonic 5 Staters		
III.a.36	𐍆	Acrophonic 10 Staters		
III.a.37	𐍇	Acrophonic 50 Staters		
III.a.38	𐍈	Acrophonic 100 Staters		
III.a.39	𐍉	Acrophonic 500 Staters		
III.a.40	𐍊	Acrophonic 1,000 Staters		
III.a.41	𐍋	Acrophonic 5,000 Staters		
III.a.42	𐍌	Acrophonic 10,000 Staters		
III.a.43	𐍍	Acrophonic 50,000 Staters		
Acrophonic Numerals: Additional Character for Depicting Mnae				
III.a.44	𐍎	Acrophonic 10 Mnae		
III.a.45	𐍇	Acrophonic 50 Mnae		
III.a.46	𐍈	Acrophonic 100 Mnae		

III.a.47		Acrophonic 500 Mnae		
III.a.48		Acrophonic 1,000 Mnae		
III.a.49		Acrophonic 5,000 Mnae		
III.a.50		Acrophonic 10,000 Mnae		
III.a.51		Acrophonic 50,000 Mnae		

Introduction

This section of the proposal is divided into three subsections.

1. Alphabetic Numerals
2. Weights, Measures and Money
3. Acrophonic Numerals

1. Alphabetic Numerals – Fractions

In order to display and discuss ancient Greek mathematical works accurately, two additional characters will need to be added to the Unicode Standard, the acrophonic $1/12$ and $1/8$ unit.

Heath writes: “The Greeks had a preference for expressing ordinary proper fractions as the sum of two or more submultiples... The orthodox sign for a submultiple was the letter for the corresponding number (the denominator) but with an accent instead of a horizontal stroke above it; thus $\gamma' = 1/3$... (γ' is in fact short for $\tau\rho\acute{\iota}\tau\omicron\varsigma$, so that it is used for the ordinal number ‘third’ as well as for the fraction $1/3$, and similarly with all other accented numeral signs);... There were special signs for $1/2$ namely λ' or \mathbf{C}' , and for $2/3$, namely $\mathbf{O}\theta'$. When a number of submultiples are written one after the other, the sum of them is meant, and similarly when they follow a whole number; e.g. $\lambda'\delta' = 1/2 \ 1/4$ or $3/4$...; $\kappa\theta \ \mathbf{O}\theta' \ \iota\gamma' \ \lambda\theta' = 29 \ 2/3 \ 1/13 \ 1/39$ or $29 \ 10/13$.”⁵⁴

In the descriptions given below, the half and two-thirds characters are given without the Keraia (or the ‘accent’ as Heath terms it) placed after it. The use of the keraia as a numeric (as opposed to fractional sign) is late. However, in modern use these symbols are normally written with the Keraia afterwards (unless the Keraia or double Keraia⁵⁵ appear over the character as in € below).

⁵⁴ Heath (1921:1) 41-2

⁵⁵ Ibid. 42: “A less orthodox method found in later manuscripts was to use two accents and to write e.g. ζ'' instead of ζ' for $1/2$.”

2. Weights, Measures and Money

Weights and Money

In order to display and discuss ancient Greek weights and money accurately, the following characters will need to be added to the Unicode Standard.

Ancient Greeks used the same terminology and abbreviations for weights and currency. Therefore both systems are discussed together in this section. The system had many local variations, but the Attic-Euboic system appears to have been dominant and this is the system presented in the table below:

Scale ⁵⁶	Nominal	Post-Hippias (standard)	Unicode
6000	Talent	<i>c.</i> 25.74kg	
200	(Large) Stater	<i>c.</i> 858.00g	03A3 or 03DE
100	Mna	<i>c.</i> 429.00g	
2	(Small) Stater/ Didrachmon	<i>c.</i> 8.58g	03A3 or 03DE
1	Drachme	<i>c.</i> 4.29g	
1/6	Obol	<i>c.</i> 0.72g	

Further, as a point of interest: the table shows that the ancient Greek weight and coin system unifies both sexagesimal (1 Talent = 30 Large Staters = 60 Mnas) and decimal (1 Mna = 50 Small Staters = 100 Drachmae) systems.

Mna (often called Mina in modern usage) is usually written by stacking a small capital nu over a capital mu ($\overset{N}{M}$). See Section VI below for the stacking letters proposal.

⁵⁶ This table is based on that in Viedebantt (1923) 38

Measures of Capacity

The ancient Greeks had two systems of measurement: one for wet, and one for dry products. The *kotyle*, which is the basic measure in both wet and dry systems, is made up of six *kyathoi* or four *oxybapha*. Its value is different depending on local variations, but it is roughly $\frac{1}{4}$ l.⁵⁷

The dry measures

Scale	Nominal	Approximate weight ⁵⁸	Unicode
$\frac{1}{6}$	Kyathos	c.40ml	
$\frac{1}{4}$	Oxybaphon	c.60ml	No standard character
1	Kotyle	c.240ml	
4	Choinix	c.1l	No standard character
32	Hekteus	c.30l	No standard character
192	Medimnos	c.180l	No standard character

The liquid measures

Scale	Nominal	Approximate weight	Unicode
$\frac{1}{6}$	<i>Kyathos</i>	c.40ml	
$\frac{1}{4}$	<i>Oxybaphon</i>	c.60ml	No standard character
1	<i>Kotyle</i>	c.240ml	
6	Hemichous	c.1.5l	No standard character
12	Chous	c.3l	03C7 + <superscript> 03BF
144	Metretes	c.35l	

⁵⁷ Pryce, F.N., Lang, M.L. & Vickers, M. in OCD³ (1996) 943

⁵⁸ For the sake of convenience, we will take the capacity 1 Kotyle= 240ml for this and the following table. This is for illustration only.

Characters for Roman Weights and Measures

Five characters are included in this sub-section. These characters are the Greek characters to represent weights (and occasionally also measures) in the Roman system. The Roman system is based on the *Libra* or *As*, of 327.45g. This is divided into 12 *Unciae*. The Greek translations for these terms are *Litra* for *Libra*, and *Ounkia*⁵⁹ for *Uncia*.

While the Greek character representing the Ounkia is settled, there are two main variants of the character for the Litra character: one based on either 039B GREEK CAPITAL LETTER LAMBDA or 03BB GREEK SMALL LETTER LAMBDA with either a slash or an iota subscript (the lambda for the l in Litra, the iota for the i); and a second which is quite distinct.

For the standard character for Keration (roughly a pint), please see Greek Vocal Notation Symbol 27 in the ancient Greek Musical section below.

⁵⁹ Also *Onkia*. See LSJ 1268

3. Acrophonic Numerals⁶⁰

This is the second system of Greek numeral notation. It is currently not possible to encode the majority of these using the current Unicode Standard. It is necessary to include them to facilitate correct and accurate representation of Greek inscriptions and other sources of texts, as well as to facilitate scholarly discussion.

This system was used widely across the Greek world, with local variations, primarily in inscriptions down to Roman times. The standard—and most widely used—variation was the Athenian, which is the standard proposed here. This variant was used in all public inscriptions until the first century BC and sporadically thereafter.⁶¹

The characters are based on the first letters of the full words for the numbers (with the exception of the character for 1, which is a vertical stroke and 100 where an Eta is used although the word for 100 begins with an Epsilon⁶²):

Number	Character	Greek Name	Transliterated Name	Notes
5	Γ	πέντε	Pente	Note this is the inscriptional form of the letter Pi
10	Δ	δέκα	Deka	
100	Η	ἑκατον	Hekaton	
1,000	Χ	χίλιοι	Chilioi	
10,000	Μ	μύριοι	Murioi	

The ‘half-way’ numbers 50, 500, 5,000 and 50,000 are expressed by combining Γ (5) with the other signs. So:

Number	Character
50	ΓΔ
500	ΓΗ
5,000	ΓΧ
50,000	ΓΜ

⁶⁰ A draft proposal for Greek Acrophonic Numerals was submitted to the UTC by Bruce Robertson on July 29, 1997. As no action was taken, the Acrophonic Numerals have been included in this proposal.

⁶¹ Heath & Toomer (1996) 1052

⁶² This presumably occurs because it is easier to write letters within an eta than it is an epsilon.

These characters are written with the higher numbers written before the lower. For example:

7 ΓΠ
 134 ΗΔΔΙΙΙΙ
 4,999 ΧΧΧΧϞΗΗΗΗΗϞΔΔΔΔΓΙΙΙΙ

To denote units of coinage or weight the same system was extended so that the first letter of the relevant weight was compiled with the acrophonic numeral. The weights involved are:

Number	Character	Greek Name	Translated Name	Notes
5	Τ	τάλαντον	Talent	
10	Σ	στατήρ	Stater	
100	Μ	μνᾶ	Mna	

So, for instance, we find Δ representing 10 Talents and Ϟ representing 500 Staters.

A single Drachma is represented by the character Ϟ and the Obol with Ι. All acrophonic numbers are assumed to be Drachmae unless otherwise stated. For example:

723 Drachmae Ϟ Η Η Δ Δ Ϟ Ϟ Ϟ
 30 Talents, 2 Drachmae, 1 Obol Δ Δ Δ Ϟ Ϟ Ϟ Ι
 207 Staters Η Η Ϟ Ϟ Ϟ Σ Σ
 20 Mnae Μ Μ

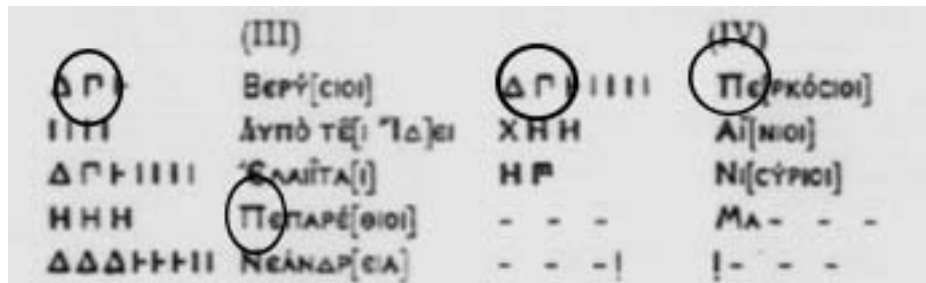
Fractions of the Unit/Obol are represented with the following characters:

Fraction	Character
$\frac{1}{12}$ Unit	/
$\frac{1}{8}$ Unit	Χ
$\frac{1}{4}$ Unit	Ϟ
$\frac{1}{2}$ Unit	Ϟ

For example:

1 Drachma, $3\frac{3}{4}$ Obols Ϟ Ι Ι Ι Ϟ

It will be noted that the character used to represent 5 is Γ and not Π. The form Γ is identical to the form of Pi used in Greek inscriptions. This form is conventionally used when writing out Acrophonic numerals. Note that in the example below, the form Γ is used for acrophonic numerals but the form Π is used for text.⁶³



No sample texts are given for a few of the higher acrophonic numbers. This is because the higher numbers are rare and locating instances of them in inscriptions can be difficult. However, they are a necessary and integral part of the acrophonic numeral system.

⁶³ Hiller von Gaertringen, F., *Inscriptiones Graecae I Editio Minor* (Berlin, 1924) 82

a. Ancient Greek Numerical Characters: New Characters

Table of Characters Included in this Section

Number		Name	Unicode	Comment
Alphabetic Numerals – Fractions				
III.a.1	∟	Acrophonic $\frac{1}{12}$ Unit		2220 is identical to one glyph variant
III.a.2	ω	Acrophonic $\frac{1}{8}$ Unit		
Weights, Measures and Money: Standard Greek Weights and Money				
III.a.3	⚖	Greek Talent Sign		22BC and 2305 are similar
III.a.4	<	Greek Drachma Sign		22D6, 003C and 039B are similar to three of the glyph variants
III.a.5	~	Greek Obol Sign		007E, 223D, 005C and 2013 are similar to four glyph variants
III.a.6	§	Greek Two Obols Sign		2248 is similar to one glyph variant
III.a.7	∩	Greek Three Obols Sign		0393, 03A4 and 223F are similar to three glyph variants
III.a.8	ƒ	Greek Four Obols Sign		
III.a.9	₣	Greek Five Obols Sign		
Weights, Measures and Money: Standard Greek Measures of Capacity				
III.a.10	ℓ	Greek Metretes Sign		
III.a.11	κ	Greek Kyathos Base Sign		
Weights, Measures and Money: Greek Characters for Roman Weights and Measures				
III.a.12	ⷀ	Greek Litra Sign		
III.a.13	ⷁ	Greek Ounkia Sign		
III.a.14	ⷂ	Greek Xestes Sign		
Weights, Measures and Money: Greek Characters for non-Graeco-Roman Measures				
III.a.15	÷	Greek Artabe Sign		00F7 is similar to one glyph variant
Weights, Measures and Money: Ancient Greek Medical Measures				
III.a.16	ⷃ	Greek Gramma Sign		
III.a.17	ⷄ	Greek Tryblion Base Sign		
Acrophonic Numerals				
III.a.18	∪	Acrophonic $\frac{1}{4}$ Unit		
III.a.19	∩	Acrophonic $\frac{1}{2}$ Unit		
III.a.20	⊢	Acrophonic 1 Drachma		The character 22A6 is similar
III.a.21	Γ	Acrophonic 5 Units • Acrophonic five Drachmae		
III.a.22	ⷆ	Acrophonic 50 Units • Acrophonic 50 Drachmae		
III.a.23	⷇	Acrophonic 500 Units • Acrophonic 500 Drachmae		
III.a.24	ⷈ	Acrophonic 5,000 Units • Acrophonic 5,000 Drachmae		

III.a.25	𐌱	Acrophonic 50,000 Units • Acrophonic 50,000 Drachmae • Acrophonic 5 Mnae		
III.a.26	𐌲	Acrophonic 5 Talents		
III.a.27	𐌳	Acrophonic 10 Talents		
III.a.28	𐌴	Acrophonic 50 Talents		
III.a.29	𐌵	Acrophonic 100 Talents		
III.a.30	𐌶	Acrophonic 500 Talents		
III.a.31	𐌷	Acrophonic 1,000 Talents		
III.a.32	𐌸	Acrophonic 5,000 Talents		
III.a.33	𐌹	Acrophonic 10,000 Talents		
III.a.34	𐌺	Acrophonic 50,000 Talents		
III.a.35	𐌻	Acrophonic 5 Staters		
III.a.36	𐌼	Acrophonic 10 Staters		
III.a.37	𐌽	Acrophonic 50 Staters		
III.a.38	𐌾	Acrophonic 100 Staters		
III.a.39	𐌿	Acrophonic 500 Staters		
III.a.40	𐍀	Acrophonic 1,000 Staters		
III.a.41	𐍁	Acrophonic 5,000 Staters		
III.a.42	𐍂	Acrophonic 10,000 Staters		
III.a.43	𐍃	Acrophonic 50,000 Staters		
III.a.44	𐍄	Acrophonic 10 Mnae		
III.a.45	𐍅	Acrophonic 50 Mnae		
III.a.46	𐍆	Acrophonic 100 Mnae		
III.a.47	𐍇	Acrophonic 500 Mnae		
III.a.48	𐍈	Acrophonic 1,000 Mnae		
III.a.49	𐍉	Acrophonic 5,000 Mnae		
III.a.50	𐍊	Acrophonic 10,000 Mnae		
III.a.51	𐍋	Acrophonic 50,000 Mnae		

Alphabetic Numerals – Fractions

III.a.1 Ancient Greek Half Sign

Sign	Similar Unicode	Beta Code	Count
∟	See below	#20, #21, #24, #25, #161, #171, #172, #689	9,772 instances, 73 authors

Definition and comments

This is the standard ancient Greek mathematical abbreviation for one half, and occurs highly frequently in extant sources.

The TLG has recorded several glyph variants: ∟, ∟̣, ∟̤, ∟̥, ∟̦, ∟̧, ∟̨, ∟̩, ∟̪, ∟̫ (each of which have been encoded separately, hence the various Beta Codes given above). The first is an angle, the second and third are curved variants. The fourth and the fifth show this symbol being read as a Lunate Sigma; the remaining three are variants which read the character as a non-Lunate Sigma. Friedlein notes two more variants: ∟̬ and ∟̭.⁶⁴

Four glyphs have pre-existing Unicode characters:

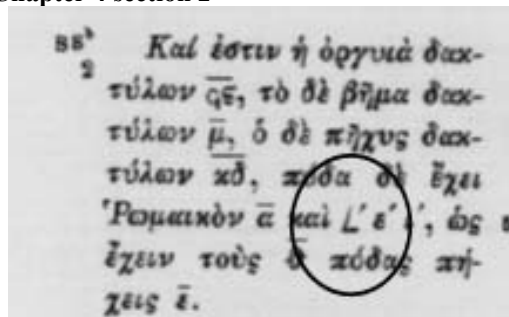
- ∟̣ - 221F
- ∟̤ - 2220
- ∟̥ - 25E1
- ∟̦ - 0073

A fifth glyph is identical to the Capital Lunate Sigma, proposed above.

However, no codepoint covers all of the glyph variants and it should be noted that while the TLG prefers to use the glyph variant identical to 2220, at least the first three above are in regular use.⁶⁵

Example 1

Heron Mech., *Geometrica*. Chapter 4 section 2

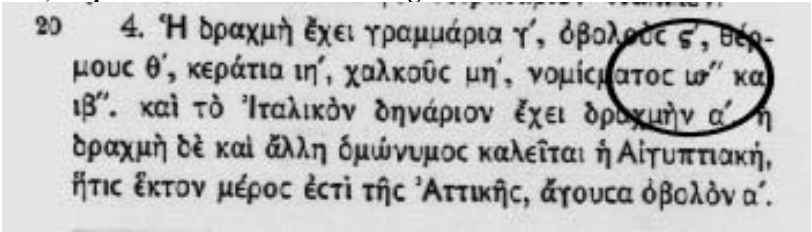


Heiberg, J.L., *Heronis Alexandrini opera quae supersunt omnia*, vol. 4 (Teubner, Leipzig, 1903) 184

⁶⁴ Friedlein (1869) Tafel 2

⁶⁵ See Oikonomides (1974) 130; Heath (1921:1) 42

III.a.2 Greek Two-Thirds Sign


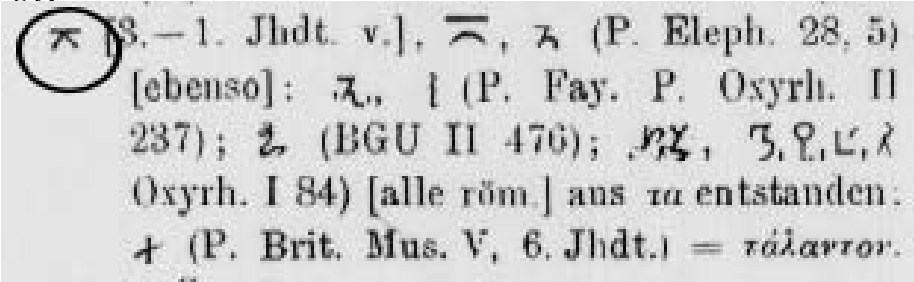
Sign	Similar Unicode	Beta Code	Count
Ω̣		#131, #132	112 instances, 6 authors
<p>Definition and comments</p> <p>This is the standard ancient Greek mathematical abbreviation for two thirds.</p> <p>This character is 03C9 GREEK SMALL LETTER OMEGA with a curl at the right hand side. Hultsch describes this symbol as a contraction of the symbol for a half (which he gives as C) together with the symbol for a sixth. So Cζ' becomes Ω̣.⁶⁶ Kenyon, however, regards this symbol as ο̣.⁶⁷ In any case, this is a distinct, commonly used mathematical symbol and should not be regarded as a ligature of other characters since it has developed its own distinct and independent form.</p> <p>This symbol has one main glyph variant. Hultsch records the use of 03B2 GREEK SMALL CASE BETA (β) to mean two thirds, and the TLG has recorded the use of 03B2 GREEK SMALL CASE BETA + 0338 COMBINING LONG SOLIDUS OVERLAY (β̄) for the same symbol. The omega-like symbol is the more common. The TLG records 81 instances of the Omega variant in four authors and 31 of the Beta variant in two authors.</p>			
<p>Example 1</p> <p>Cleopatra Alchem., <i>De ponderibus et mensuris</i>. Fragment 78 section 4</p>  <p>Hultsch, F., <i>Metrologicorum scriptorum reliquiae</i>, vol. 1 (Teubner, Leipzig, 1864) 154</p>			

⁶⁶ Hultsch (1864:1) 174

⁶⁷ Kenyon (1974) 130

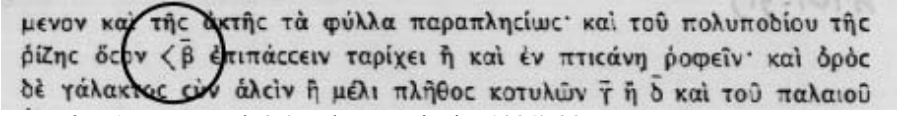
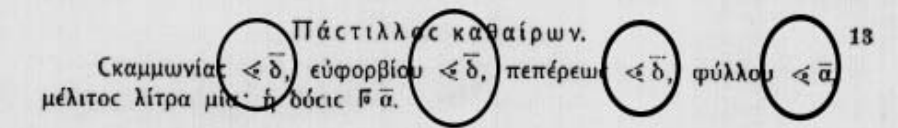
Weights, Measures and Money: Standard Greek Weights and Money

III.a.3 Greek Talent Sign

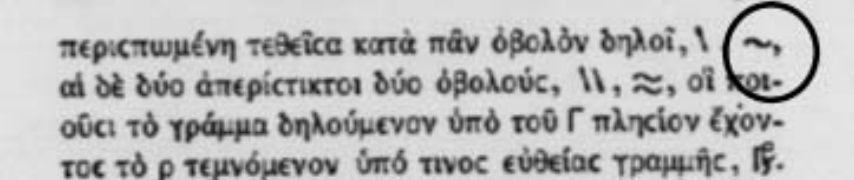
Sign 	Similar Unicode See below	Beta Code	Count
<p>Definition and comments</p> <p>A Talent consists of 6,000 drachmae and is a weight of approximately 25.74kg in the standard Attic system.</p> <p>This character is formed from the horizontal bar of 03A4 GREEK CAPITAL LETTER TAU placed over a slightly shortened 039B GREEK CAPITAL LETTER LAMBDA which are the first and third letters of the word Talent. Hultsch also records the abbreviation T^Λ for Talent.⁶⁸ Example 1 below shows the standard abbreviation as well as a series of further glyph variants.</p> <p>This character is similar but not identical to 22BC NAND and 2305 PROJECTIVE. However, with the Talent, there is no space in between the arrow and the horizontal line.</p>			
<p>Example 1 Talent and glyph variants</p>  <p>Bilabel, “Siglae” in <i>Pauly’s Real-Encyclopädie der classischen Altertumswissenschaft. Zweite Reihe. Zweiter Band</i> (Stuttgart, 1923) 2315</p>			

⁶⁸ Hultsch (1871:2) xxx

III.a.4 Greek Drachma Sign

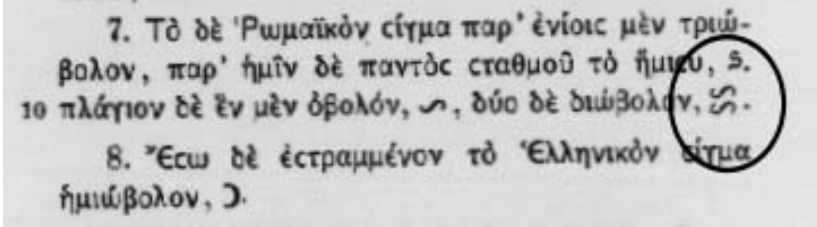
Sign	Similar Unicode	Beta Code	Count
<	See below	#101, #129	11,876 instances, 20 authors
<p>Definition and comments</p> <p>A Drachme, which consists of six Obols and is a weight of approximately 4.31g in the standard Attic system is a common character in extant Greek texts. The two examples below are extracts from medical texts giving weight measures.</p> <p>The TLG has recorded three glyph variants of this character: <, < and Λ̣. These three glyph variants are currently represented by the Unicode Standard:</p> <p style="margin-left: 40px;">< 22D6 LESS-THAN WITH DOT</p> <p style="margin-left: 40px;">< 003C LESS-THAN SIGN</p> <p style="margin-left: 40px;">Λ̣ 039B GREEK CAPITAL LETTER LAMBDA with 0325 COMBINING DOT BELOW.</p> <p>However, there is no single Unicode codepoint which unifies all these glyph variants. The TLG prefers the use of < over < because it is easier to see at first glance that this is a weight symbol not to be confused with the Greek Reverse Diple, for example.</p>			
<p>Example 1 Paulus Med., <i>Epitomae medicae libri septem</i>. Book 1 chapter 43 section 1</p>  <p>Heiberg, J.L., <i>Paulus Aegineta</i>, vol. 2 (Teubner, Leipzig, 1921) 29</p>			
<p>Example 2 (glyph variant) Oribasius Med., <i>Collectiones medicae</i> (lib. 1-16, 24-25, 43-50). Book 8 chapter 47 section 14</p>  <p>Raeder, J., <i>Oribasii collectionum medicarum reliquiae</i>, vol. 1 (Teubner, Leipzig, 1928) 299</p>			

III.a.5 Greek Obol Sign

Sign	Similar Unicode	Beta Code	Count
~	See below	#113, #116, #123	12 instances, 6 authors
Definition and comments			
<p>The Obol is the smallest standard Greek weight measure and weighs approximately 0.72g in the standard Attic system.</p> <p>The TLG has recorded three glyph variants: ~, ˇ and \. Kenyon also records a fourth: –.⁶⁹ All four of these glyph variants may currently be encoded in Unicode:</p> <ul style="list-style-type: none"> ~ 007E TILDE ˇ 223D REVERSED TILDE \ 005C REVERSED SOLIDUS – 2013 EN DASH <p>The first two and the fourth glyph variants are the most common. The TLG prefers the variant identical to 007E TILDE. While this character has glyph variants identical to four Unicode codepoints it cannot currently be encoded using one Unicode codepoint.</p>			
Example 1			
<p>Pseudo-Galenus Med., <i>De ponderibus et mensuris</i>. Fragment 52 section 4</p>  <p>Hultsch, F., <i>Metrologicorum scriptorum reliquiae</i>, vol. 1 (Teubner, Leipzig, 1864) 220</p>			


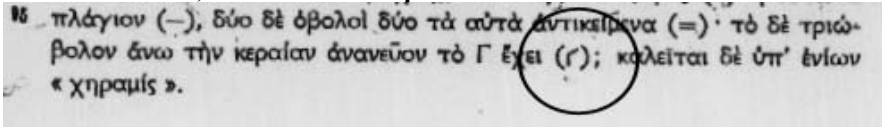
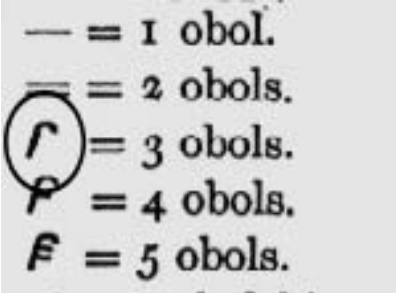
⁶⁹ Kenyon (1974) 129

III.a.6 Greek Two Obols Sign

Sign	Similar Unicode	Beta Code	Count
≈	See below	#119, #122	2 instances, 2 authors
<p>Definition and comments</p> <p>Two Obols weighs approximately 1.43g in the standard Attic system.</p> <p>The TLG has recorded two glyph variants: ≈ and ≈. Kenyon also records a third =.⁷⁰ The second of these glyph variants may currently be encoded in Unicode:</p> <p style="text-align: center;">≈ 2248 ALMOST EQUAL TO</p> <p>While this character has a glyph variant identical to one current Unicode codepoint all the glyph variants are not covered by a single Unicode codepoint</p>			
<p>Example 1</p> <p>Pseudo-Galenus Med., <i>De ponderibus et mensuris</i>. Fragment 56b section 7</p>  <p>7. Τὸ δὲ Ῥωμαϊκὸν εἶγμα παρ' ἐνίοις μὲν τριώ- βολον, παρ' ἡμῖν δὲ παντὸς σταθοῦ τὸ ἡμισυ, 5. 10 πλάγιον δὲ ἐν μὲν ὀβολόν, ≈, δύο δὲ διώβολον, ≈. 8. Ἐσω δὲ ἐστραμμένον τὸ Ἑλληνικὸν εἶγμα ἡμιώβολον, 3.</p>			
Hultsch, F., <i>Metrologicorum scriptorum reliquia</i> , vol. 1 (Teubner, Leipzig, 1864) 226			

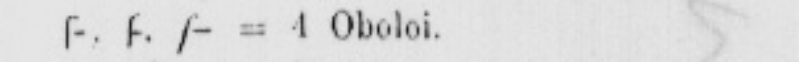
⁷⁰ Kenyon (1974) 129

III.a.7 Greek Three Obols Sign

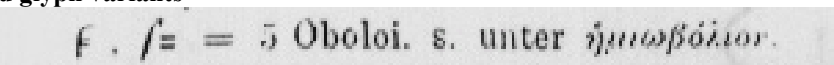
Sign	Similar Unicode	Beta Code	Count
	See below	#1338	1 instance, 1 author
<p>Definition and comments</p> <p>Three Obols weigh approximately 2.12g in the standard Attic system.</p> <p>The rare appearance of his character in the TLG corpus is not an indication of its use. The character is used mostly in inscriptional or papyrological texts not represented in the TLG (or it may have been resolved in modern editions).</p> <p>The TLG has recorded only one glyph variant (see Example 1 below); Bilabel records four further variants: Γ, ϸ, ϣ, Τ and ς.⁷¹ None of these can currently be encoded using Unicode. Three preexisting Unicode codepoints are similar but not suitable for the triobolon:</p> <p>Γ 0393 GREEK CAPITAL LETTER GAMMA. The three Obols sign may not have serifs, so cannot be considered unified with the gamma.</p> <p>Τ 03A4 GREEK CAPITAL LETTER TAU. The three Obols sign may not have serifs, so cannot be considered unified with Tau.</p> <p>ς 223F SINE WAVE. The three Obols sign takes up the whole line in terms of height.</p>			
<p>Example 1 Sextus Julius Africanus Hist., Cesti. Book 4 chapter 1</p>  <p>Vieillefond, J.-R., <i>Les "Cestes" de Julius Africanus</i> (Sansoni, Florence, 1970) 275</p>			
<p>Example 2</p>  <p>Kenyon, F.G. "Abbreviations and symbols in Greek papyri" in Oikonomides, A.N., (ed.) <i>Greek Abbreviations</i> (Chicago, 1974) 129</p>			

⁷¹ Bilabel (1923) 2308, 2314

III.a.8 Greek Four Obols Sign

Sign	Similar Unicode	Beta Code	Count
𐀀			
<p>Definition and comments</p> <p>Four Obols weigh approximately 2.86g in the standard Attic system.</p> <p>This character does not yet appear in the TLG corpus. However, it is discussed in Kenyon⁷² and Bilabel⁷³. Bilabel and Kenyon record glyph variants which are all virtually identical: 𐀀.⁷⁴</p> <p>The character cannot be encoded in the current Unicode Standard.</p>			
<p>Example 1</p> <p>Four Obols and glyph variants</p> <div style="text-align: center; background-color: #e0e0e0; padding: 5px;">  </div> <p>Bilabel, “Siglae” in <i>Pauly’s Real-Encyclopädie der classischen Altertumswissenschaft. Zweite Reihe. Zweiter Band</i> (Stuttgart, 1923) 2315</p>			

III.a.9 Greek Five Obols Sign

Sign	Similar Unicode	Beta Code	Count
𐀁			
<p>Definition and comments</p> <p>Five Obols weigh approximately 3.58g in the standard Attic system.</p> <p>This character does not yet appear in the TLG corpus. However, it is discussed in Kenyon⁷⁵ and Bilabel⁷⁶. Bilabel and Kenyon record glyph variants which are all virtually identical: 𐀁.⁷⁷</p> <p>This symbol does not currently exist in the Unicode Standard.</p>			
<p>Example 1</p> <p>Five Obols and glyph variants</p> <div style="text-align: center; background-color: #e0e0e0; padding: 5px;">  </div> <p>Bilabel, “Siglae” in <i>Pauly’s Real-Encyclopädie der classischen Altertumswissenschaft. Zweite Reihe. Zweiter Band</i> (Stuttgart, 1923) 2315</p>			

⁷² Kenyon (1974) 129

⁷³ Bilabel (1923) 2307 and 2314

⁷⁴ Bilabel (1923) 2308 & 2314 and Kenyon (1974) 129

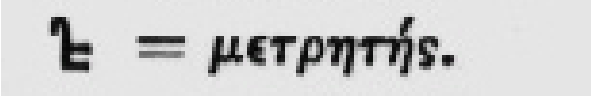
⁷⁵ Kenyon (1974) 129

⁷⁶ Bilabel (1923) 2307 & 2314

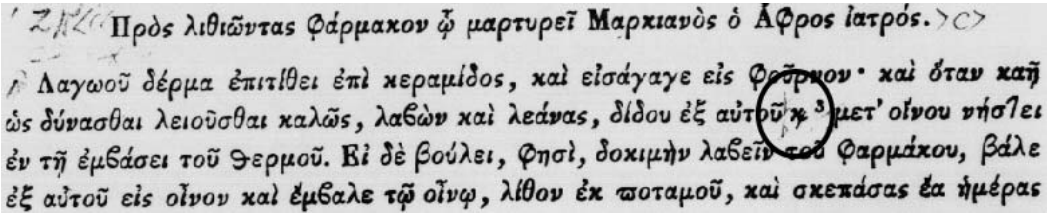
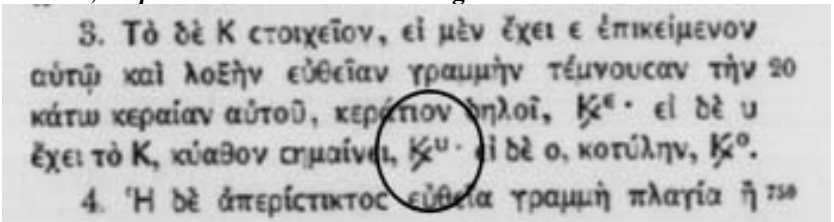
⁷⁷ Bilabel (1923) 2308 & 2314 and Kenyon (1974) 129

Weights, Measures and Money: Standard Greek Measures of Capacity

III.a.10 Greek Metretes Sign

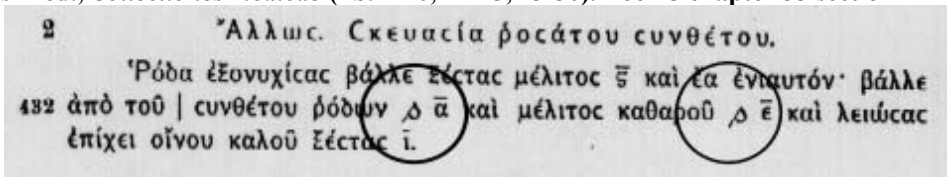
Sign Ⲙ	Similar Unicode	Beta Code	Count
<p>Definition and comments</p> <p>Kenyon records this as the standard symbol for the Greek liquid measure, the Metretes, which is approximately 35l.</p> <p>This character is 03DC GREEK DIGAMMA reflected in the x-axis.</p>			
<p>Example 1</p> <div style="text-align: center; background-color: #f0f0f0; padding: 10px;">  </div> <p>Kenyon, F.G. “Abbreviations and symbols in Greek papyri” in Oikonomides, A.N., (ed.) <i>Greek Abbreviations</i> (Chicago, 1974) 129</p>			

III.a.11 Greek Kyathos Base Sign

Sign	Similar Unicode	Beta Code	Count
Κ	See below	#111	17 instances, 3 authors
<p>Definition and comments</p> <p>“carat, 1/1728 of a pound” (LSJ 941).</p> <p>This character forms the first part of the characters used to form three measures: the Kyathos, the Kotyle and some glyph variants of the Keration. This character is conventionally followed by a superscripted epsilon (for the second letter of Kyathos) or omicron (the second letter of Kotyle) or epsilon (the second letter of Keration). These letters may also appear above this character. Please see Section VI for a discussion of stacking characters, and slashed characters.</p> <p>This is also an Archaic form of the abbreviation 03D7, for more on this see Appendix 5.</p>			
<p>Example 2</p> <p>Aëtius Med., <i>Iatricorum liber xi</i>. Chapter 11</p>  <p>Daremberg, C. & Ruelle, C.É., <i>Oeuvres de Rufus d'Éphèse</i> (Imprimerie Nationale, Paris, 1879) 571</p>			
<p>Example 2</p> <p>Pseudo-Galenus Med., <i>De ponderibus et mensuris</i>. Fragment 52 section 4</p>  <p>Hultsch, F., <i>Metrologicorum scriptorum reliquiae</i>, vol. 1 (Teubner, Leipzig, 1864) 218</p>			

Weights, Measures and Money: Greek Characters for Roman Weights and Measures

III.a.12 Greek Litra Sign

Sign	Similar Unicode	Beta Code	Count
ⲗ	See below	#103, #117, #118, #127	686 instances, 12 authors
<p>Definition and comments</p> <p>This is the base measurement for the Roman weights system. It weighs 327.45g. LSJ⁷⁸ also record the word <i>Litra</i> being used for a Sicilian silver coin (later, one third of a standard Roman <i>As</i>) and for the Italic version of the Kotyle (as a measure of capacity).⁷⁹</p> <p>The TLG has recorded this glyph variant: ⲗ. Bilabel notes⁸⁰ a further glyph variant, ⲗ̄. This character occurs with great frequency in the extant sources.</p>			
<p>Example 1</p> <p>Oribasius Med., <i>Collectiones medicae</i> (lib. 1-16, 24-25, 43-50). Book 5 chapter 33 section 2</p>  <p>Raeder, J., <i>Oribasii collectionum medicarum reliquiae</i>, vol. 1 (Teubner, Leipzig, 1928) 152</p>			

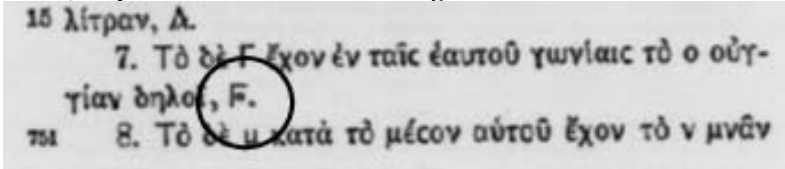
⁷⁸ LSJ 1054

⁷⁹ See Ancient Greek Measures of Capacity above.

⁸⁰ Bilabel (1923) 73

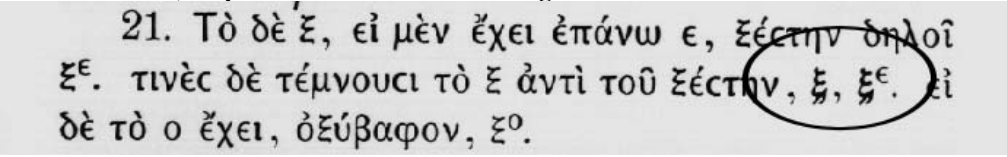
This character may not be included in the final proposal since some of its variants are already represented in Unicode.

III.a.13 Greek Ounkia Sign

Sign	Similar Unicode	Beta Code	Count
Γ̅		#106	4048 instances, 22 authors
<p>Definition and comments</p> <p>This character represents one-twelfth of a Litra on the Roman system, or 27.29g.</p> <p>This character is formed from the letters 0393 GREEK CAPITAL LETTER GAMMA and 03BF GREEK SMALL LETTER OMICRON.</p> <p>This character occurs frequently in extant sources. Note that while the Beta Code count is high, it is nonetheless an underestimate because—owing to difficulties of display—this character has often been spelled out as Γο, γο or γδ̅.</p> <p>The TLG has recorded three glyph variants: Γ̅, $\overset{\circ}{\gamma}$ and $\bar{\gamma}$. Bilabel⁸¹ also records ο', γ° and ουΥ. The first variant is the most common as well as being the hardest to represent in the current Unicode Standard. The second glyph variant is discussed in Section VI below. The remaining four glyphs can currently be encoded in the current Unicode Standard.</p>			
<p>Example 1</p> <p>Pseudo-Galenus Med., <i>De ponderibus et mensuris</i>. Fragment 52 section 4</p>  <p>Hultsch, F., <i>Metrologicorum scriptorum reliquiae</i>, vol. 1 (Teubner, Leipzig, 1864) 220</p>			

⁸¹ Bilabel (1923) 2307

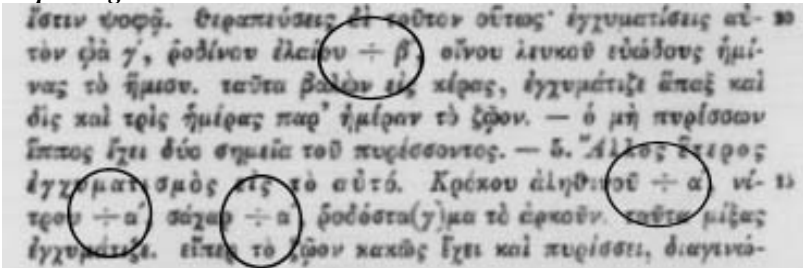
III.a.14 Greek Xestes Sign

Sign	Similar Unicode	Beta Code	Count
Ϡ		#121	430 instances, 8 authors
<p>Definition and comments</p> <p>The Greek <i>Xestes</i> is a translation of <i>Sextarius</i> which means sixth part and can refer to either a weight or a measure. However, it is most commonly used to refer to the liquid measure which is approximately 500ml.</p> <p>The TLG notes four glyph variants: Ϡ^{tr}, Ϡ^{sc}, Ϡ, Ϡ. Bilabel notes six glyph variants: ξ, ξ, Ϡ, Ϡ, Ϡ and Ϡ.⁸²</p>			
<p>Example 1</p> <p>Pseudo-Galenus Med., <i>De ponderibus et mensuris</i>. Fragment 56b section 21</p>  <p>Hultsch, F., <i>Metrologicorum scriptorum reliquia</i>, vol. 1 (Teubner, Leipzig, 1864) 228</p>			

⁸² Bilabel (1923) 2306

Weights, Measures and Money: Greek Characters for non-Graeco-Roman Measures

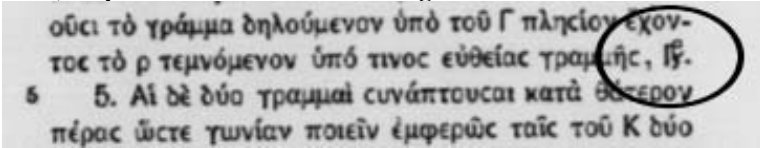
III.a.15 Greek Artabe Sign

Sign ÷	Similar Unicode See below	Beta Code #100	Count 269 instances, 3 authors
<p>Definition and comments</p> <p>This is used in both Persian and Egyptian measures systems. In the Persian it represented either one Medimnus or one Medimnus and three Choinikes (see ancient Greek Measures of Capacity above. One Choinix is approximately 1l). In the Egyptian it represented a measure of between 21-42 Choinikes.</p> <p>Kenyon records three glyph variants for the Artabe: <, ς, ◌◦◌.⁸³ However he deems the first two to be rare. Bilabel records 16 glyph variants which, excluding the variants of Kenyon’s rare glyphs, are: ◌◦◌, ÷, ◌◦◌, ◌◦◌ and ς.</p> <p>While the glyph ÷ can currently be encoded using the current Unicode Standard with 00F7 DIVISION SIGN, there is no single Unicode codepoint which unifies all these glyph variants.</p>			
<p>Example 1 Hippiatrica, Excerpta Lugdunensia. Section 4</p>  <p>Oder, E. & Hoppe, K., <i>Corpus hippiatricorum Graecorum</i>, vol. 2 (Teubner, Leipzig, 1927) 273</p>			

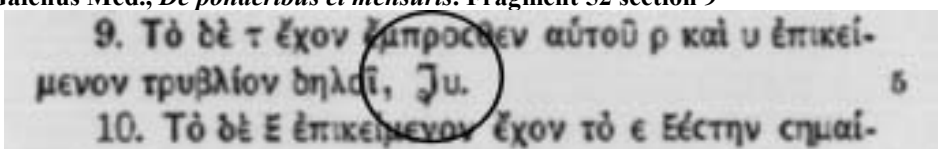
⁸³ Kenyon (1974) 129

Weights, Measures and Money: Ancient Greek Medical Measures

III.a.16 Greek Gramma Sign

Sign	Similar Unicode	Beta Code	Count
Γ̰		#112	18 instances, 1 author
<p>Definition and comments</p> <p>The <i>Gramma</i> translates the Roman <i>Scrupulus</i> which is $\frac{1}{24}$ of an <i>Ounkia</i> or 1.137g. This was a standard measure used by doctors.⁸⁴</p> <p>This character may be regarded as a joined 0393 GREEK CAPITAL LETTER GAMMA with a superscripted 03A1 GREEK CAPITAL LETTER RHO with a slash half-way down its vertical bar.</p>			
<p>Example 1</p> <p>Pseudo-Galenus Med., <i>De ponderibus et mensuris</i>. Fragment 52 section 4</p>  <p>Hultsch, F., <i>Metrologorum scriptorum reliquiae</i>, vol. 1 (Teubner, Leipzig, 1864) 220</p>			

III.a.17 Greek Tryblion Base Sign

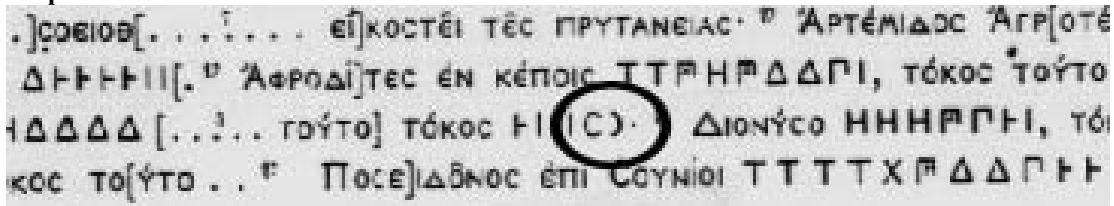
Sign	Similar Unicode	Beta Code	Count
Ϛ		#115	2 instances, 1 author
<p>Definition and comments</p> <p>The <i>Tryblion</i> was a receptacle often used by doctors to measure out prescriptions. As a measure it is exactly one <i>Kotyle</i> (see above). It also functions as a weight where it represents six <i>Drachmae</i>.</p> <p>The symbol for a <i>Tryblion</i> is formed with the character given above followed by 03C5 GREEK SMALL LETTER UPSILON. The character above may be regarded as being formed from a ligature of 03A4 GREEK CAPITAL LETTER TAU with 03C1 GREEK SMALL LETTER RHO. However these characters have been reflected in the y-axis so forming quite a distinct character.⁸⁵</p>			
<p>Example 1</p> <p>Pseudo-Galenus Med., <i>De ponderibus et mensuris</i>. Fragment 52 section 9</p>  <p>Hultsch, F., <i>Metrologorum scriptorum reliquiae</i>, vol. 1 (Teubner, Leipzig, 1864) 221</p>			

⁸⁴ See Hultsch (1912) 1708

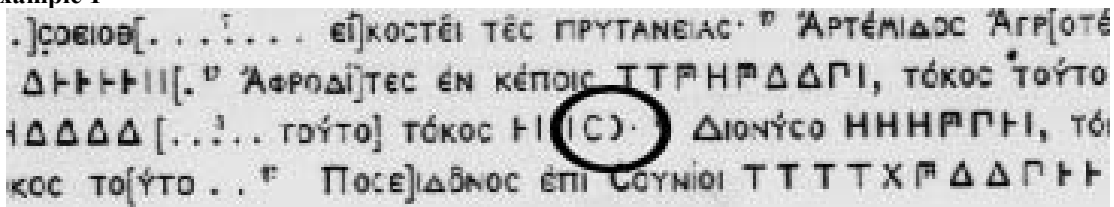
⁸⁵ See Radke (1939) 710-11

Acrophonic Characters

III.a.18 Acrophonic $\frac{1}{4}$ Unit

Sign	Similar Unicode	Beta Code	Count
)		#801	
Definition and comments			
Character for $\frac{1}{4}$ of a unit or Obol. This is a right-hand semi-circle.			
Example 1			
			
Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 151			

III.a.19 Acrophonic $\frac{1}{2}$ Unit

Sign	Similar Unicode	Beta Code	Count
⸀		#802	
Definition and comments			
Character for $\frac{1}{2}$ of a unit or Obol. This is a left-hand semi-circle.			
Example 1			
			
Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 151			

III.a.20 Acrophonic 1 Drachma

Sign ⊥	Similar Unicode	Beta Code #61	Count 2 instances, 1 author
Definition and comments Character for 1 Drachma.			
Example 1			

Hiller von Gaertringen, F., *Inscriptiones Graecae I Editio Minor* (Berlin, 1924) 82

III.a.21 Acrophonic 5 Units

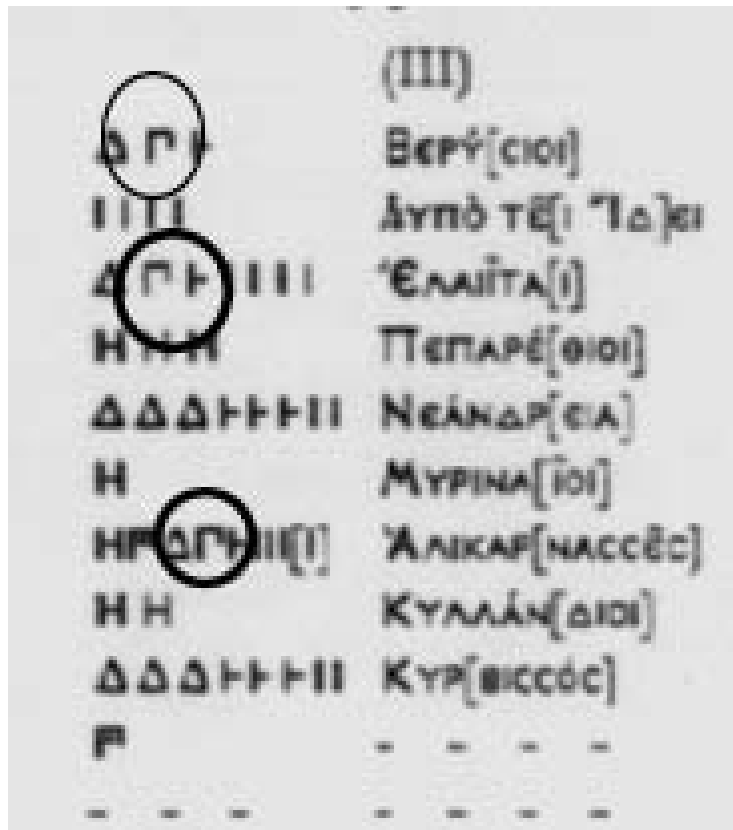
Sign	Similar Unicode	Beta Code	Count
𐀀		#62	2 instances, 1 author

- Acrophonic 5 Drachmae

Definition and comments

Character for 5 units or Drachmae. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI, the initial letter of the Greek word for five (*pentē*).

Example 1



Hiller von Gaertringen, F., *Inscriptiones Graecae I Editio Minor* (Berlin, 1924) 82

III.a.22 Acrophonic 50 Units

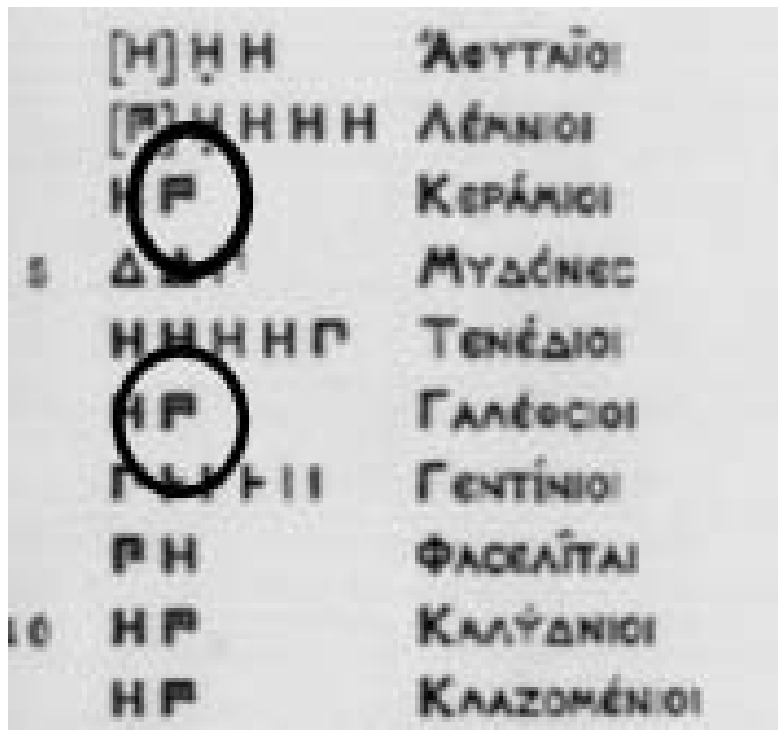
Sign	Similar Unicode	Beta Code	Count
𐀀		#64	12 instances, 2 authors

- Acrophonic 50 Drachmae

Definition and comments

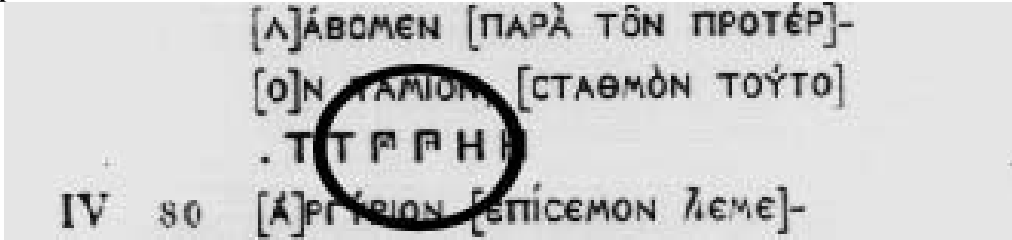
Character for 50 units or Drachmae. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the letter 0394 GREEK CAPITAL LETTER DELTA written inside it. Pi is the first letter of the Greek word for 5 (*pente*). Delta is the first letter of the Greek word for 10 (*deka*).

Example 1

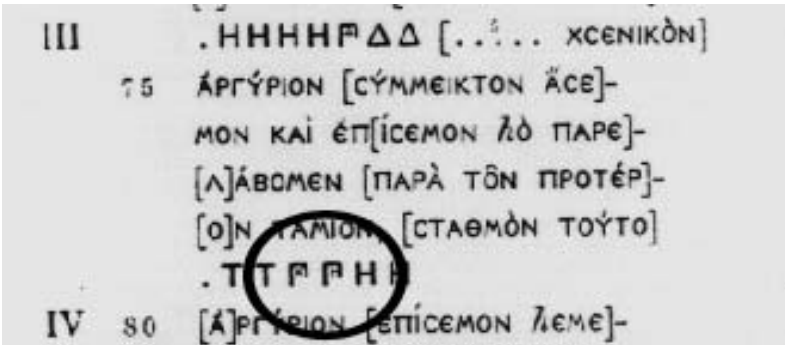


Hiller von Gaertringen, F., *Inscriptiones Graecae I Editio Minor* (Berlin, 1924) 82

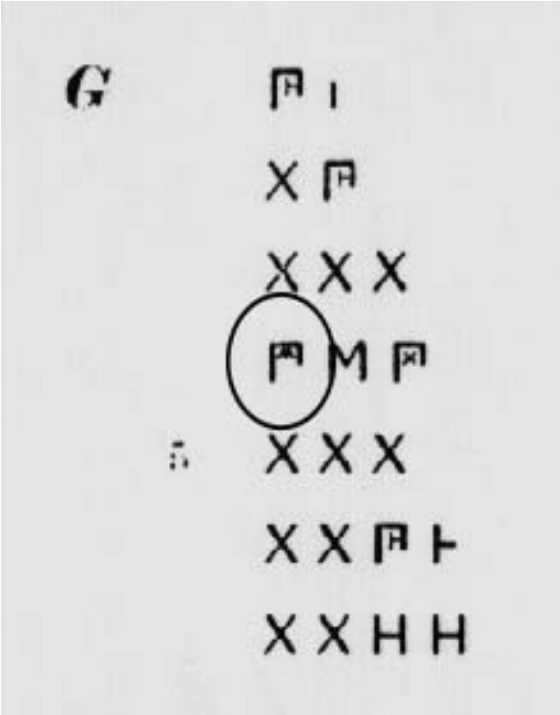
III.a.23 Acrophonic 500 Units

Sign	Similar Unicode	Beta Code	Count
Ϟ			
<ul style="list-style-type: none"> • Acrophonic 500 Drachmae <p>Definition and comments Character for 500 units or Drachmae. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the letter 0397 GREEK CAPITAL LETTER ETA written inside it. Pi is the first letter of the Greek word for 5 (<i>pentē</i>). Eta here represents the first letter of the Greek word for 100 (<i>hekatōn</i>).</p> <p>Example 1</p>  <p>Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 83</p>			

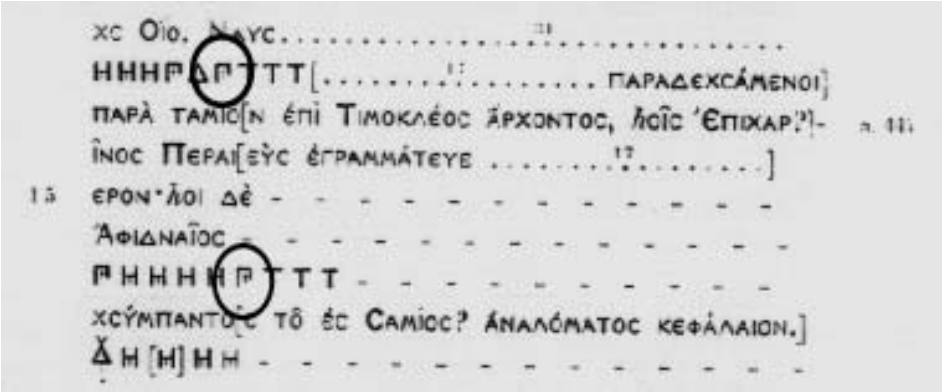
III.a.24 Acrophonic 5,000 Units

Sign	Similar Unicode	Beta Code	Count
Ϟ		#68	2 instances, 2 authors
<ul style="list-style-type: none"> • Acrophonic 5,000 Drachmae <p>Definition and comments Character for 5000 units or Drachmae. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the letter 03A7 GREEK CAPITAL LETTER CHI written inside it. Pi is the first letter of the Greek word for 5 (<i>pentē</i>). Chi is the first letter of the Greek word for 1000 (<i>chilioi</i>).</p> <p>Example 1</p>  <p>Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 83</p>			

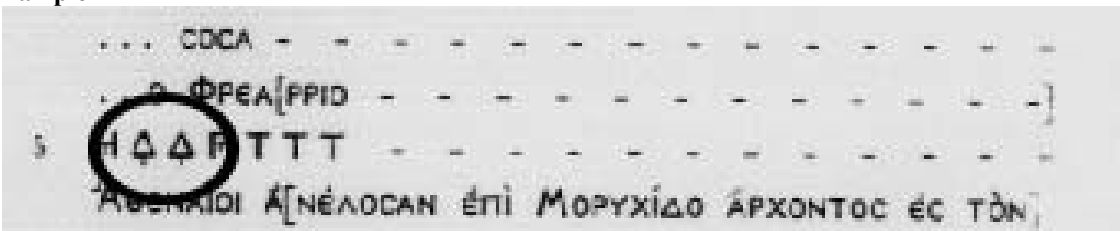
III.a.25 Acrophonic 50,000 Units

Sign 𐀓	Similar Unicode	Beta Code	Count
<ul style="list-style-type: none"> • Acrophonic 50,000 Drachmae • Acrophonic 5 Mnae <p>Definition and comments</p> <p>Character for 50,000 units or Drachmae. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the letter 039C GREEK CAPITAL LETTER MU written inside it. Pi is the first letter of the Greek word for 5 (<i>pentē</i>). Mu is the first letter of the Greek word for 10000 (<i>myrioi</i>).</p> <p>In the case of 5 Mnae, the Mu stands as the first initial of the word Mnae, rather than Myrioi.</p>			
<p>Example 1</p>  <p>Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 170</p>			

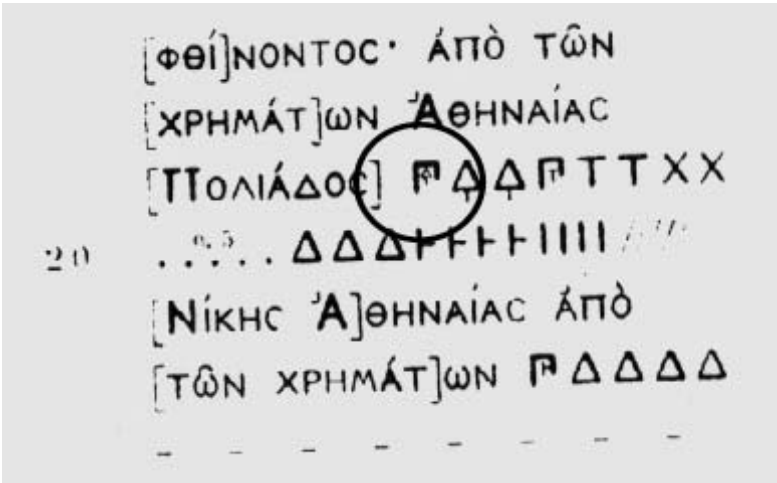
III.a.26 Acrophonic 5 Talents

Sign ⲱ	Similar Unicode	Beta Code #812	Count
Definition and comments Character for 5 Talents. This character is 03A0 GREEK CAPITAL LETTER PI with the letter 03A4 GREEK CAPITAL LETTER TAU written inside it. Pi is the first letter of the Greek word for 5 (<i>pentē</i>). Tau is the first letter of the Greek word Talent.			
Example 1  <p>Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 130</p>			

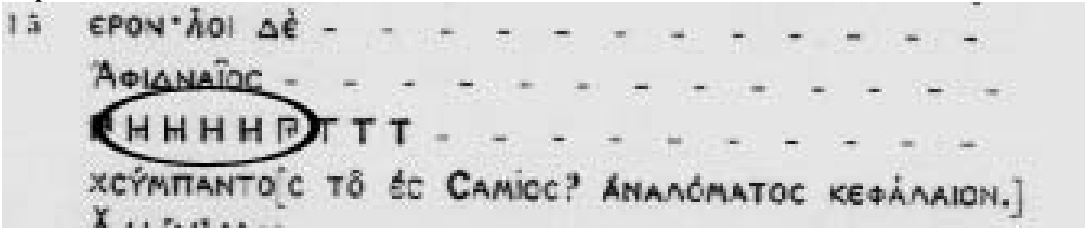
III.a.27 Acrophonic 10 Talents

Sign Ⲡ	Similar Unicode	Beta Code #813	Count
Definition and comments Character for 10 Talents. This character is 0394 GREEK CAPITAL LETTER DELTA with the letter 03A4 GREEK CAPITAL LETTER TAU written underneath it. Delta is the first letter of the Greek word for 10 (<i>deka</i>). Tau is the first letter of the Greek word Talent.			
Example 1  <p>Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 130</p>			

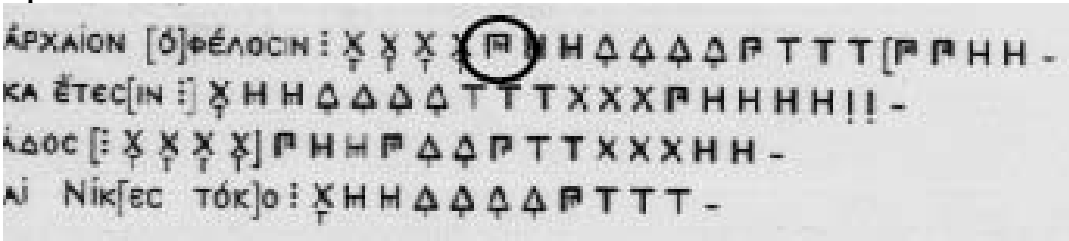
III.a.28 Acrophonic 50 Talents

Sign 𐀀	Similar Unicode	Beta Code #814	Count
Definition and comments Character for 50 Talents. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the characters for 10 Talents written inside it. Pi is the first letter of the Greek word for 5 (<i>pentē</i>).			
Example 1  <p>Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 132</p>			

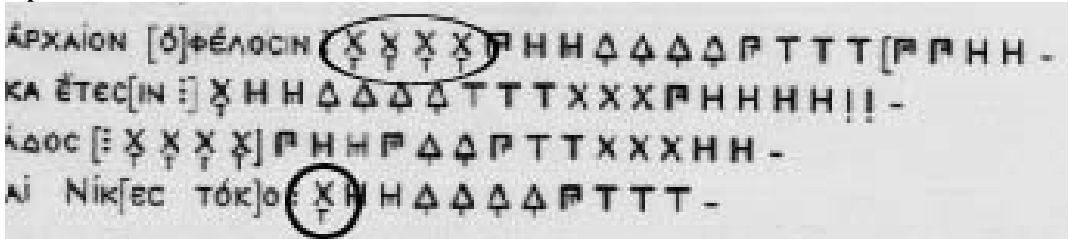
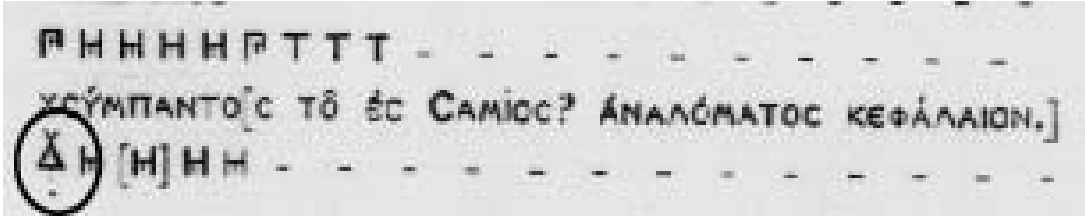
III.a.29 Acrophonic 100 Talents

Sign 𐀁	Similar Unicode	Beta Code #815	Count
Definition and comments Character for 100 Talents. This character is 0397 GREEK CAPITAL LETTER ETA with a vertical line descending from the center of the horizontal line which represents 03A4 GREEK CAPITAL LETTER TAU. Eta here represents the first letter of the Greek word for 100 (<i>hekatōn</i>). Tau is the first letter of the Greek word Talent.			
Example 1  <p>Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 130</p>			


III.a.30 Acrophonic 500 Talents

Sign	Similar Unicode	Beta Code	Count
Ϟ		#816	
Definition and comments			
Character for 500 Talents. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the characters for 100 Talents written inside it. Pi is the first letter of the Greek word for 5 (<i>pentē</i>).			
Example 1			
			
Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 152			


III.a.31 Acrophonic 1,000 Talents

Sign	Similar Unicode	Beta Code	Count
Ϡ		#817	
Definition and comments			
Character for 1,000 Talents. This character is 03A7 GREEK CAPITAL LETTER CHI with the letter 03A4 GREEK CAPITAL LETTER TAU written below it. Chi is the first letter of the Greek word for 1,000 (<i>chilioi</i>). Tau is the first letter of the Greek word Talent.			
Example 1			
			
Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 152			
Example 2			
			
Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 130			


III.a.32 Acrophonic 5,000 Talents

Sign	Similar Unicode	Beta Code	Count
		#818	
Definition and comments			
Character for 5,000 Talents. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the characters for 1,000 Talents written inside it. Pi is the first letter of the Greek word for 5 (<i>pentē</i>).			
Example 1			

III.a.33 Acrophonic 10,000 Talents

Sign	Similar Unicode	Beta Code	Count
			
Definition and comments			
Character for 10,000 Talents. This character is 039C GREEK CAPITAL LETTER MU with the letter 03A4 GREEK CAPITAL LETTER TAU written inside it. Mu is the first letter of the Greek word for 10,000 (<i>myrioi</i>). Tau is the first letter of the Greek word Talent.			
Example 1			

III.a.34 Acrophonic 50,000 Talents

Sign	Similar Unicode	Beta Code	Count
		#131, #132	
Definition and comments			
Character for 50,000 Talents. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the characters for 10,000 Talents written inside it. Pi is the first letter of the Greek word for 5 (<i>pentē</i>).			
Example 1			


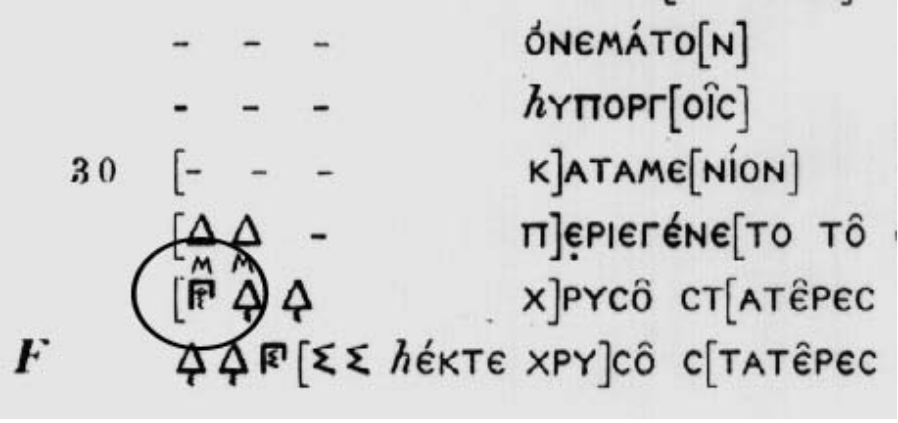
III.a.35 Acrophonic 5 Staters

Sign	Similar Unicode	Beta Code	Count
Ϝ		#131, #132	
Definition and comments			
Character for 5 Staters. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the letter 03A3 GREEK CAPITAL LETTER SIGMA written inside it. Pi is the first letter of the Greek word for 5 (<i>pente</i>). Sigma is the first letter of the Greek word Stater.			
Example 1			
Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 163			


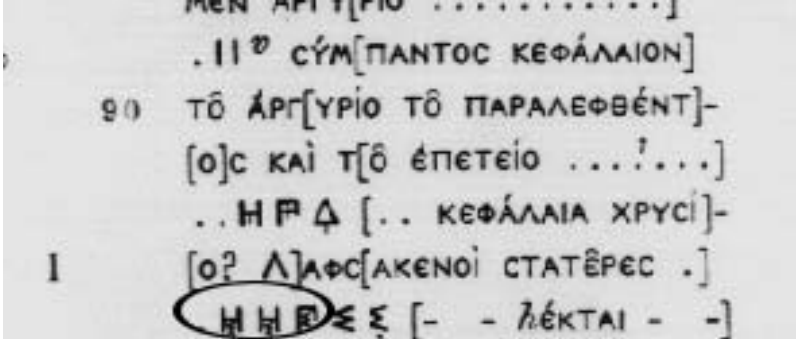
III.a.36 Acrophonic 10 Staters

Sign	Similar Unicode	Beta Code	Count
Δ		#823	
Definition and comments			
Character for 10 Staters. This character is 0394 GREEK CAPITAL LETTER DELTA with the letter 03A3 GREEK CAPITAL LETTER SIGMA written underneath it. Delta is the first letter of the Greek word for 10 (<i>deka</i>). Sigma is the first letter of the Greek word Stater.			
Example 1			
Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 163			


III.a.37 Acrophonic 50 Staters

Sign	Similar Unicode	Beta Code	Count
		#824	
Definition and comments			
Character for 50 Staters. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the characters for 10 Staters written inside it. Pi is the first letter of the Greek word for 5 (<i>pentē</i>).			
Example 1			
			
Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 163			


III.a.38 Acrophonic 100 Staters

Sign	Similar Unicode	Beta Code	Count
		#825	
Definition and comments			
Character for 100 Staters. This character is 0397 GREEK CAPITAL LETTER ETA with 03A3 GREEK CAPITAL LETTER SIGMA written underneath the horizontal line. Eta here represents the first letter of the Greek word for 100 (<i>hekatōn</i>). Sigma is the first letter of the Greek word Stater.			
Example 1			
			
Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 135			


III.a.39 Acrophonic 500 Staters

Sign	Similar Unicode	Beta Code	Count
		#826	
Definition and comments Character for 500 Staters. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the characters for 500 Staters written inside it. Pi is the first letter of the Greek word for 5 (<i>pentē</i>).			
Example 1 No example given. Please see <i>Introduction 3. Acrophonic Numerals</i> above.			


III.a.40 Acrophonic 1,000 Staters

Sign	Similar Unicode	Beta Code	Count
		#827	
Definition and comments Character for 1,000 Staters. This character is 03A7 GREEK CAPITAL LETTER CHI with the letter 03A3 GREEK CAPITAL LETTER SIGMA written below it. Chi is the first letter of the Greek word for 1000 (<i>chilioi</i>). Sigma is the first letter of the Greek word Stater.			
Example 1 No example given. Please see <i>Introduction 3. Acrophonic Numerals</i> above.			

III.a.41 Acrophonic 5,000 Staters

Sign	Similar Unicode	Beta Code	Count
		#828	
Definition and comments Character for 5,000 Staters. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the characters for 1,000 Staters written inside it. Pi is the first letter of the Greek word for 5 (<i>pentē</i>).			
Example 1 No example given. Please see <i>Introduction 3. Acrophonic Numerals</i> above.			

III.a.42 Acrophonic 10,000 Staters

Sign	Similar Unicode	Beta Code	Count
		#829	
Definition and comments Character for 10,000 Staters. This character is 039C GREEK CAPITAL LETTER MU with the letter 03A3 GREEK CAPITAL LETTER SIGMA written below it. Mu is the first letter of the Greek word for 10,000 (<i>myrioi</i>). Sigma is the first letter of the Greek word Stater.			
Example 1 No example given. Please see <i>Introduction 3. Acrophonic Numerals</i> above.			

III.a.43 Acrophonic 50,000 Staters

Sign	Similar Unicode	Beta Code	Count
		#832	
Definition and comments Character for 50,000 Staters. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the characters for 10,000 Staters written inside it. Pi is the first letter of the Greek word for 5 (<i>pentē</i>).			
Example 1 No example given. Please see <i>Introduction 3. Acrophonic Numerals</i> above.			


III.a.44 Acrophonic 10 Mnae

Sign	Similar Unicode	Beta Code	Count
		#834	
Definition and comments Character for 10 Mnae. This character is 0394 GREEK CAPITAL LETTER DELTA with the letter 039C GREEK CAPITAL LETTER MU written underneath it. Delta is the first letter of the Greek word for 10 (<i>deka</i>). Mu is the first letter of the Greek word Mna.			
Example 1			
Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 163			


III.a.45 Acrophonic 50 Mnae

Sign	Similar Unicode	Beta Code	Count
Definition and comments Character for 50 Mnae. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the characters for 10 Mnae written inside it. Pi is the first letter of the Greek word for 5 (<i>pentē</i>).			
Example 1 No example given. Please see <i>Introduction 3. Acrophonic Numerals</i> above.			


III.a.46 Acrophonic 100 Mnae

Sign	Similar Unicode	Beta Code	Count
			
Definition and comments Character for 100 Mnae. This character is 0397 GREEK CAPITAL LETTER ETA with 039C GREEK CAPITAL LETTER MU written underneath the horizontal line. Eta here represents the first letter of the Greek word for 100 (hekaton). Mu is the first letter of the Greek word Mna.			
Example 1 No example given. Please see <i>Introduction 3. Acrophonic Numerals</i> above.			


III.a.47 Acrophonic 500 Mnae

Sign	Similar Unicode	Beta Code	Count
			
Definition and comments Character for 500 Mnae. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the characters for 100 Mnae written inside it. Pi is the first letter of the Greek word for 5 (<i>pentē</i>).			
Example 1 No example given. Please see <i>Introduction 3. Acrophonic Numerals</i> above.			


III.a.48 Acrophonic 1,000 Mnae

Sign	Similar Unicode	Beta Code	Count
			
Definition and comments Character for 1,000 Mnae. This character is 03A7 GREEK CAPITAL LETTER CHI with the letter 039C GREEK CAPITAL LETTER MU written below it. Chi is the first letter of the Greek word for 1,000 (<i>chilioi</i>). Mu is the first letter of the Greek word Mna.			
Example 1 No example given. Please see <i>Introduction 3. Acrophonic Numerals</i> above.			


III.a.49 Acrophonic 5,000 Mnae

Sign	Similar Unicode	Beta Code	Count
			
Definition and comments Character for 5,000 Mnae. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the characters for 1,000 Mnae written inside it. Pi is the first letter of the Greek word for 5 (<i>pentē</i>).			
Example 1 No example given. Please see <i>Introduction 3. Acrophonic Numerals</i> above.			

III.a.50 Acrophonic 10,000 Mnae

Sign	Similar Unicode	Beta Code	Count
			
Definition and comments Character for 10,000 Mnae. This character is 039C GREEK CAPITAL LETTER MU 039C GREEK CAPITAL LETTER MU written below it. The first stands for the first letter of the Greek word for 10,000 (<i>myrioi</i>). The second Mu, stands for the first letter of the Greek word Mna.			
Example 1 No example given. Please see <i>Introduction 3. Acrophonic Numerals</i> above.			

III.a.51 Acrophonic 50,000 Mnae

Sign	Similar Unicode	Beta Code	Count
			
Definition and comments Character for 50,000 Mnae. Based on the inscriptional form of 03A0 GREEK CAPITAL LETTER PI with the characters for 10,000 Mnae written inside it. Pi is the first letter of the Greek word for 5 (<i>pente</i>).			
Example 1 No example given. Please see <i>Introduction 3. Acrophonic Numerals</i> above.			

b. Ancient Greek Numerical Characters: Additional Definition of Preexisting Characters

Table of Characters Included in this Section

Number		Name	Unicode	Comment
Weights, Measures and Money: Standard Greek Weights and Money				
III.b.1	>	Greek Half Drachma Sign		
Acrophonic Characters				
III.b.2	/	Acrophonic $\frac{1}{12}$ Unit	002F	
III.b.3	X	Acrophonic $\frac{1}{8}$ Unit • Acrophonic 1,000 Units • Acrophonic 1,000 Drachmae	03A7	
III.b.4	I	Acrophonic 1 Unit • Acrophonic 1 Obol	0399	
III.b.5	Δ	Acrophonic 10 Units • Acrophonic 10 Drachmae	0394	
III.b.6	H	Acrophonic 100 Units • Acrophonic 100 Drachmae	0397	
III.b.7	M	Acrophonic 10,000 Units • Acrophonic 10,000 Drachmae • Acrophonic 1 Mna	039C	
III.b.8	T	Acrophonic 1 Talent	03A4	
III.b.9	Σ	Acrophonic 1 Stater	03A3	

Weights, Measures and Money: Standard Greek Weights and Money

III.b.1 Greek Half Drachma Sign

Sign	Unicode	Beta Code	Count
>	003E	#1337	3 instances, 2 authors

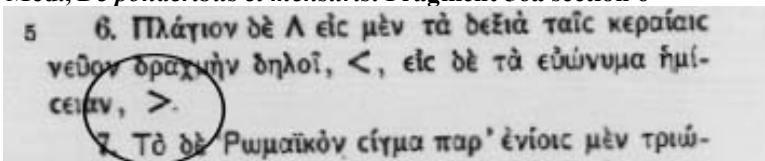
Definition and comments

A Half-Drachme consists of three Obols and is a weight of approximately 2.12g in the standard Attic system.

This character is almost identical to 003E GREATER-THAN SIGN. However, the mathematical sign will most likely be rather thin, whereas the Greek sign should be normal thickness.

Example 1

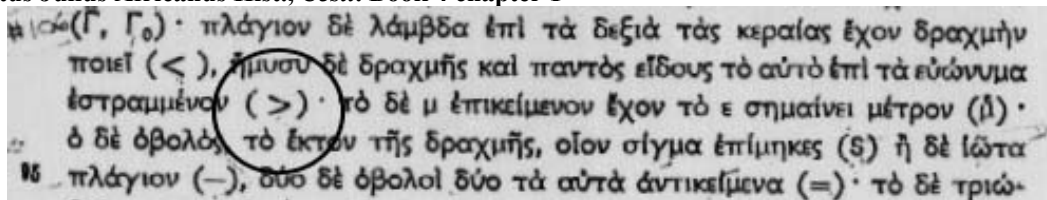
Pseudo-Galenus Med., *De ponderibus et mensuris*. Fragment 56a section 6



Hultsch, F., *Metrologicorum scriptorum reliquiae*, vol. 1 (Teubner, Leipzig, 1864) 228

Example 2

Sextus Julius Africanus Hist., *Cesti*. Book 4 chapter 1



Vieillefond, J.-R., *Les "Cestes" de Julius Africanus* (Sansoni, Florence, 1970) 275

Acrophonic Characters

III.b.2 Acrophonic 1/12 Unit

Sign	Unicode	Beta Code	Count
/		#804	
Definition and comments			
This character represents 1/12 of a unit or Obol. It is visually identical to 002F SOLIDUS.			
Example 1			
Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 143			

III.b.3 Acrophonic 1/8 Unit

Sign	Unicode	Beta Code	Count
X		#67	
<ul style="list-style-type: none"> • Acrophonic 1,000 Units • Acrophonic 1,000 Drachmae 			
Definition and comments			
This character represents 1/8 of a unit or Obol and 1,000 units or Drachmae. It is identical to 03A7 GREEK CAPITAL LETTER CHI.			
Example 1			
Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 85			

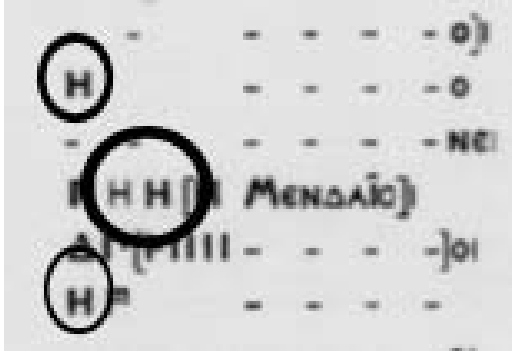
III.b.4 Acrophonic 1 Unit

Sign	Unicode	Beta Code	Count
Ι		#60	
<ul style="list-style-type: none"> • Acrophonic 1 Obol <p>Definition and comments This character represents 1 unit or Obol. It is visually identical to 0399 GREEK CAPITAL LETTER IOTA.</p>			
<p>Example 1</p> <p>Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 82</p>			

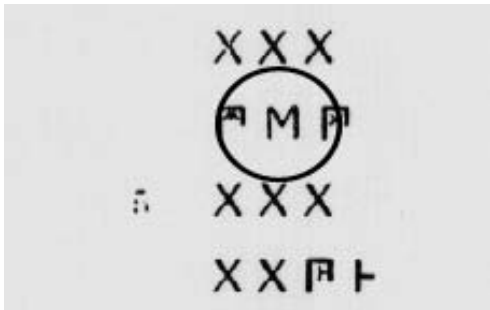
III.b.5 Acrophonic 10 Units

Sign	Unicode	Beta Code	Count
Δ		#63	
<ul style="list-style-type: none"> • Acrophonic 10 Drachmae <p>Definition and comments This character represents, 10 units or Drachmae. It is identical to 0394 GREEK CAPITAL LETTER DELTA.</p>			
<p>Example 1</p> <p>Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 82</p>			

III.b.6 Acrophonic 100 Units

Sign	Unicode	Beta Code	Count
H		#65	
<ul style="list-style-type: none"> • Acrophonic 100 Drachmae <p>Definition and comments This character represents 100 units or Drachmae. It is identical to 0395 GREEK CAPITAL LETTER ETA.</p> <p>Example 1</p>  <p>Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 82</p>			

III.b.7 Acrophonic 10,000 Units

Sign	Unicode	Beta Code	Count
M		#69, #833	
<ul style="list-style-type: none"> • Acrophonic 10,000 Drachmae • Acrophonic 1 Mna <p>Definition and comments This character represents 1,000 units or Drachmae. It is identical to 039C GREEK CAPITAL LETTER MU.</p> <p>Example 1</p>  <p>Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 170</p>			

III.b.8 Acrophonic 1 Talent

Sign	Unicode	Beta Code	Count
Τ		#811	
Definition and comments			
This character represents 1 Talent. It is identical to 03A4 GREEK CAPITAL LETTER TAU			
Example 1			
Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 132			

III.b.9 Acrophonic 1 Stater

Sign	Unicode	Beta Code	Count
Σ		#821	
Definition and comments			
This character represents 1 Stater. It is identical to 03A3 GREEK CAPITAL LETTER SIGMA.			
Example 1			
Hiller von Gaertringen, F., <i>Inscriptiones Graecae I Editio Minor</i> (Berlin, 1924) 135			

IV. Ancient Greek Musical Characters

Introduction and overview

Table of Characters Proposed

Number		Name	Unicode	Comment
Ancient Greek Vocal Notation				
IV.a.1	Ϝ	Greek Vocal Notation Symbol 1		
IV.a.2	ϝ	Greek Vocal Notation Symbol 2		
IV.a.3	Ϟ	Greek Vocal Notation Symbol 3 · Greek Instrumental Notation Symbol 3		
IV.a.4	ϟ	Greek Vocal Notation Symbol 4		
IV.a.5	Ϡ	Greek Vocal Notation Symbol 5		
IV.a.6	ϡ	Greek Vocal Notation Symbol 6 · Greek Instrumental Notation Symbol 21		
IV.a.7	Ϣ	Greek Vocal Notation Symbol 7 · Greek Instrumental Notation Symbol 9		
IV.a.8	ϣ	Greek Vocal Notation Symbol 8		
IV.a.9	Ϥ	Greek Vocal Notation Symbol 9 · Greek Instrumental Notation Symbol 44		
IV.a.10	ϥ	Greek Vocal Notation Symbol 10		
IV.a.11	Ϧ	Greek Vocal Notation Symbol 11		
IV.a.12	ϧ	Greek Vocal Notation Symbol 12		
IV.a.13	Ϩ	Greek Vocal Notation Symbol 13		
IV.a.14	ϩ	Greek Vocal Notation Symbol 14 · Greek Instrumental Notation Symbol 41		
IV.a.15	Ϫ	Greek Vocal Notation Symbol 15 · Greek Instrumental Notation Symbol 35		
IV.a.16	ϫ	Greek Vocal Notation Symbol 16		
IV.a.17	Ϭ	Greek Vocal Notation Symbol 17		
IV.a.18	ϭ	Greek Vocal Notation Symbol 18 · Greek Instrumental Notation Symbol 15		
IV.a.19	Ϯ	Greek Vocal Notation Symbol 19		
IV.a.20	ϯ	Greek Vocal Notation Symbol 20 · Greek Instrumental Notation Symbol 28		
IV.a.21	ϰ	Greek Vocal Notation Symbol 21		
IV.a.22	ϱ	Greek Vocal Notation Symbol 22		
IV.a.23	ϲ	Greek Vocal Notation Symbol 23		
IV.a.24	ϳ	Greek Vocal Notation Symbol 24		
IV.b.1	Ω	Greek Vocal Notation Symbol 25	03A9	
IV.b.2	Ψ	Greek Vocal Notation Symbol 26	03A8	
IV.b.3	Χ	Greek Vocal Notation Symbol 27	03A7	
IV.b.4	Φ	Greek Vocal Notation Symbol 28	03A6	
IV.b.5	Υ	Greek Vocal Notation Symbol 29	03A5	

IV.b.6	Τ	Greek Vocal Notation Symbol 30	03A4	
IV.b.7	Ϙ	Greek Vocal Notation Symbol 31		
IV.b.8	Ρ	Greek Vocal Notation Symbol 32	03A1	
IV.b.9	Π	Greek Vocal Notation Symbol 33	03A0	
IV.b.10	Ο	Greek Vocal Notation Symbol 34	039F	
IV.b.11	Ξ	Greek Vocal Notation Symbol 35	039E	
IV.b.12	Ν	Greek Vocal Notation Symbol 36 · Greek Instrumental Notation Symbol 46	039D	
IV.b.13	Μ	Greek Vocal Notation Symbol 37	039C	
IV.b.14	Λ	Greek Vocal Notation Symbol 38	039B	
IV.b.15	Κ	Greek Vocal Notation Symbol 39 · Greek Instrumental Notation Symbol 34	039A	
IV.b.16	Ι	Greek Vocal Notation Symbol 40	0399	
IV.b.17	Θ	Greek Vocal Notation Symbol 41	0398	
IV.b.18	Η	Greek Vocal Notation Symbol 42	0397	
IV.b.19	Ζ	Greek Vocal Notation Symbol 43	0396	
IV.b.20	Ε	Greek Vocal Notation Symbol 44 · Greek Instrumental Notation Symbol 16	0395	
IV.b.21	Δ	Greek Vocal Notation Symbol 45	0394	
IV.b.22	Γ	Greek Vocal Notation Symbol 46	0393	
IV.b.23	Β	Greek Vocal Notation Symbol 47	0392	
IV.b.24	Α	Greek Vocal Notation Symbol 48	0391	
IV.a.25	Ϛ	Greek Vocal Notation Symbol 49		
IV.a.26	ϛ	Greek Vocal Notation Symbol 50		
IV.a.27	Ϝ	Greek Vocal Notation Symbol 51		
IV.a.28	ϝ	Greek Vocal Notation Symbol 52		
IV.a.29	Ϟ	Greek Vocal Notation Symbol 53		
IV.a.30	ϟ	Greek Vocal Notation Symbol 54 · Greek Instrumental Notation Symbol 20		
Ancient Greek Instrumental Notation				
IV.a.31	Ϡ	Greek Instrumental Notation Symbol 1		
IV.a.32	ϡ	Greek Instrumental Notation Symbol 2		
IV.a.33	Ϣ	Greek Instrumental Notation Symbol 4		
IV.a.34	ϣ	Greek Instrumental Notation Symbol 5		
IV.a.35	Ϥ	Greek Instrumental Notation Symbol 7		
IV.a.36	ϥ	Greek Instrumental Notation Symbol 8		
IV.a.37	Ϧ	Greek Instrumental Notation Symbol 11		
IV.a.38	ϧ	Greek Instrumental Notation Symbol 12		
IV.a.39	Ϩ	Greek Instrumental Notation Symbol 13		
IV.a.40	ϩ	Greek Instrumental Notation Symbol 14		
IV.a.41	Ϫ	Greek Instrumental Notation Symbol 17		
IV.a.42	ϫ	Greek Instrumental Notation Symbol 18		
IV.a.43	Ϭ	Greek Instrumental Notation Symbol 19		
IV.a.44	ϭ	Greek Instrumental Notation Symbol 23		
IV.a.45	Ϯ	Greek Instrumental Notation Symbol 24		

IV.a.46	Რ	Greek Instrumental Notation Symbol 25		
IV.a.47	Ს	Greek Instrumental Notation Symbol 26		
IV.a.48	Ტ	Greek Instrumental Notation Symbol 27		
IV.a.49	Უ	Greek Instrumental Notation Symbol 29		
IV.a.50	Ფ	Greek Instrumental Notation Symbol 30		
IV.a.51	Ღ	Greek Instrumental Notation Symbol 32		
IV.a.52	Ყ	Greek Instrumental Notation Symbol 36		
IV.a.53	Შ	Greek Instrumental Notation Symbol 37		
IV.a.54	Ჩ	Greek Instrumental Notation Symbol 38		
IV.a.55	Ც	Greek Instrumental Notation Symbol 39		
IV.a.56	Ძ	Greek Instrumental Notation Symbol 40		
IV.a.57	Წ	Greek Instrumental Notation Symbol 42		
IV.a.58	Ჭ	Greek Instrumental Notation Symbol 43		
IV.a.59	Ხ	Greek Instrumental Notation Symbol 45		
IV.a.60	Ჯ	Greek Instrumental Notation Symbol 47		
IV.a.61	Ჰ	Greek Instrumental Notation Symbol 48		
IV.a.62	Ჱ	Greek Instrumental Notation Symbol 49		
IV.a.63	Ჲ	Greek Instrumental Notation Symbol 50		
IV.a.64	Ჳ	Greek Instrumental Notation Symbol 51		
IV.a.65	Ჴ	Greek Instrumental Notation Symbol 52		
IV.a.66	Ჵ	Greek Instrumental Notation Symbol 53		
IV.a.67	Ჶ	Greek Instrumental Notation Symbol 54		
Further Greek Musical Notation Symbols				
IV.a.68	Ჷ	Greek Musical Diseme		
IV.a.69	Ჸ	Greek Musical Triseme		
IV.a.70	Ჹ	Greek Musical Tetraseme		
IV.a.71	Ჺ	Greek Musical Pentaseme		
IV.a.72	᲻	Greek Musical Stigme		
IV.a.73	+	Greek Musical Unreadable Notation		
IV.a.74	᲼	Greek Musical Leimma		

Historical Background

Music played a central role in Ancient Greek and Roman societies.⁸⁶ We have surviving musical scores of all sorts, ranging from a fragment of Euripides' *Orestes* to Christian hymns.⁸⁷

This ancient system of musical notation was developed by the middle of the third century BC at the very latest⁸⁸ and was used consistently until the late third century CE, when our spring of papyri dries up.⁸⁹ The musical notation system, however, continues to be discussed long after this period, for instance in the *De instiutione musica* 4.3-4 of Boethius who lived from AD 480-524.⁹⁰ This system, then, had a life span of at least seven centuries. The system is still known to scholars in the sixteenth century, as Gioseffo Zarlino cites Gaudentius in his *Institutioni harmonici* (3.5).⁹¹

⁸⁶ See Landels (1999) 1-23

⁸⁷ Ibid. 218-263 for an in depth analysis of surviving scores. See also Mathiesen (1999) 12-13, 247-252.

⁸⁸ On the earliest date possible: See Winnington-Ingram (1978) 237. Also, Pririe, J.W., Jeffery, L.H. & Johnston, A.W. in *OCD*³ (1996) 66: "The East Ionic alphabet was officially adopted by Athens in the archonship of Euclides (403-402 BC), but had infiltrated fully into private script by then." Winnington-Ingram, therefore, raises the possibility that the system of musical notation could have been developed earlier than 403-402 BCE. The latest possible date is shortly before our earliest surviving papyrus with musical notation, Pap. Zenon 59 533. See Pöhlmann (1970) 110-112. See also Winnington-Ingram (1978) 237. Barker, A.D. in *OCD*³ (1996) 1012 raises the possibility that we may have notation on a black-figure vase from c.500 BCE. See also Landels (1999) 206.

⁸⁹ See Barker, A.D. in *OCD*³ (1996) 1011-12 for a complete list of surviving musical scores.

⁹⁰ Other later authors include, for example, Alypius (AD 4th or 5th centuries), Aristides Quintilianus (AD 3rd or 4th centuries), Bacchius (AD 4th century or later), Gaudentius (AD 3rd or 4th century). See Mathiesen (1999) 292.

⁹¹ Mathiesen (1998) 67

The System of Notation

The Greeks had, in fact, two systems of musical notation which correspond note for note with each other:⁹² one for the vocal and one for the instrumental melody. Please see the diagram overleaf for a complete overview of the two systems of notation. The numbers given to the left of each column reflect the modern system of referring to the characters by name, e.g. “vocal notation symbol 5.” In this table—based closely on that of West⁹³—the numerical order has been reversed,⁹⁴ so the table moves from the highest pitch downwards.

The whole scheme covers a little over three octaves. The symbols form groups of three. The bottom symbol in each triad represents a ‘natural’ note on a diatonic scale. The modern notes shown in the boxes are the conventional equivalents used in most scholarly literature. The other two symbols in each triad represent successive sharpenings of the ‘natural’ note.⁹⁵

West also notes that the “degree of sharpening is not fixed but varies between a quarter-tone and a semitone, depending on the genus of the composition or the conventions of the key.”⁹⁶ There is no distinction in this system between enharmonic and chromatic scales.⁹⁷

⁹² Winnington-Ingram (1978) 237

⁹³ West (1996) 256

⁹⁴ As is conventional: see also Pöhlmann (1970) 144

⁹⁵ West (1992) 255

⁹⁶ Ibid.

⁹⁷ Alypius *Isagoge, genus chromaticum* 1—at Jan (1962) 384—does mark chromatic notes with a short line through them, but only in the Lydian scale. Boethius at *Inst. Mus.* 4.3-4 does likewise. However, this line is not attested in the musical documents and so is not proposed here.

Overview of Ancient Greek Musical Notation⁹⁸

Modern Equivalent	Notation Number	Vocal Characters	Instrumental Characters	Modern Equivalent	Notation Number	Vocal Characters	Instrumental Characters	Modern Equivalent	Notation Number	Vocal Characters	Instrumental Characters	Modern Equivalent	Notation Number	Vocal Characters	Instrumental Characters
					54	⊥	↘		33	Π	⊙		12	И	Ϡ
					53	∧	↗		32	Ρ	⊚		11	Ζ	ϡ
			<i>a'</i>		52	⊖	↙	<i>a</i>	31	Ϛ	Ϛ	<i>A</i>	10	ϙ	Η
					51	⋈	↖		30	Τ	ϣ		9	⊥	Ϝ
					50	⊕	↗		29	Υ	Ϟ		8	β	Ϟ
<i>g''</i>	70	Ϛ	⊥	<i>g'</i>	49	Ϛ	⊥	<i>g</i>	28	ϕ	Ϟ	<i>G</i>	7	Ϝ	Ϟ
	69	Α'	↘		48	Α	↘		27	Χ	ϣ		6	⊥	Τ
	68	Β'	↘		47	Β	↘		26	Ψ	ϣ		5	∧	Υ
<i>f''</i>	67	Γ'	Ν'	<i>f'</i>	46	Γ	Ν	<i>f</i>	25	Ω	ϣ	<i>F</i>	4	β	Ρ
	66	Δ'	⊥		45	Δ	⊥		24	∇	⊥		3	⋈	⋈
	65	Ε'	⊥		44	Ε	⊥		23	Ρ	⊥		2	ϣ	Ϟ
<i>e''</i>	64	Ζ'	Π'	<i>e'</i>	43	Ζ	Π	<i>e</i>	22	⊥	⊥	<i>E</i>	1	Ϛ	Ω
	63	Η'	∇		42	Η	∇		21	∇	⊥				
	62	Θ'	∇		41	Θ	∇		20	Ϟ	⊥				
<i>d''</i>	61	Ι'	∧	<i>d'</i>	40	Ι	∧	<i>d</i>	19	∇	Τ				
	60	Κ'	Δ		39	Κ	Δ		18	⊥	ϣ				
	59	Λ'	Δ		38	Λ	Δ		17	∇	Ε				
<i>c''</i>	58	Μ'	∇	<i>c'</i>	37	Μ	∇	<i>c</i>	16	↘	Ε				
	57	Ν'	⋈		36	Ν	⋈		15	Κ	⊥				
	56	Ξ'	Κ		35	Ξ	Κ		14	∇	Η				
<i>b''</i>	55	Ο'	Κ	<i>b</i>	34	Ο	Κ	<i>B</i>	13	∇	Τ				

⁹⁸ Not including combining characters.

Formation of the Characters

Greek Vocal Notation

The characters proposed here represent in the most part simple rotations or reflections of the characters of standard Greek alphabet. There are some exceptions to this, however, which will be discussed with the appropriate characters below. Greek Vocal Notation Symbols 1-24 are a set of variants on the whole Greek alphabet in reverse order. Greek Vocal Notation Symbols 49-54 are further variants of the last six letters of the standard Greek alphabet, again in reverse order.

Greek Instrumental Notation

The Instrumental set is rather more complicated in form and obscure in origin than the vocal notation.⁹⁹ The first two triads are variations on the last six letters of the Greek alphabet. The following twelve triads are formed thus: the first character is usually either a standard Greek letter or is a variant thereof; the second character in the triad is usually the first character rotated 90° counter-clockwise; the third usually the first character reflected in the y-axis. The final three triads proposed all have variants of 039D GREEK CAPITAL LETTER ETA as their first symbol. The second and third symbols in each are based on diagonal slashes.¹⁰⁰

⁹⁹ See Winnington-Ingram (1978) 237

¹⁰⁰ See Winnington-Ingram (1978) 241-248

Notes on the Musical Notation Proposal

Characters Excluded from this Proposal

It will be noted that the characters 55-70 in both the vocal and instrumental system repeat the characters 34-70 but with ticks by them. These characters are not proposed separately since they may be depicted by placing the character 2033 PRIME after them.

The Font Used in this Proposal

The vast majority of these characters are variant forms of standard upper case Greek letters. We have used a font without serifs to represent these characters, for reasons of clarity and because scholars usually type musical characters in fonts without serifs in order to distinguish them from the usually serified standard Greek font they are using. It is not, however, prescriptive that these characters are used in a font without serifs; for instance West uses a font with serifs.¹⁰¹

The Beta Code Field

Of the central ancient Greek musical treatises, only Aristides Quintilianus and Alypius are currently in the TLG Canon. Further, there are as yet, no musical scores in the TLG Canon. As a result, the Beta Code Counts should not be taken as representative, but rather perhaps as indicators, of the frequency these characters occur in Greek literature. See also the note on Greek Musical Diacritics below.

Naming Conventions

There is no standardized ancient system for naming these characters. For instance, while Alypius—our most extensive source¹⁰²—provides descriptive names for the characters, such as ‘inverted gamma’ for Vocal Notation Symbol 22, his scheme of naming is based on his own deductions from looking at the characters, rather than understanding how they developed and, on occasion his naming is misleading and his terminology inconsistent. For instance, Vocal Notation Symbol 20 is described as being a Digamma, however, given its position in the list of following a variant Delta and preceding a variant Zeta, it is much more likely that it is a variant Epsilon.¹⁰³ We propose the standard names widely used by modern scholars. The naming convention is simple: Vocal Notation Symbol 1, etc.¹⁰⁴

¹⁰¹ West (1996) 256

¹⁰² Landels (1999) 207

¹⁰³ For further discussion on this, and on the problems of naming these musical symbols based on ancient testimony, see Winnington-Ingram (1978) 237-248. See also Landels (1999) 207-208.

¹⁰⁴ An attempt to provide a revised system, which removed Vocal and Instrumental Notation Symbols 1-3 was proposed by Pöhlmann (1970) 144 (who in turn was following Chailley) on the argument that these were late additions. However, this revision has since been discarded since new papyri have now been published which include these characters. See Johnson (2001).

a. Ancient Greek Musical Characters: New Characters


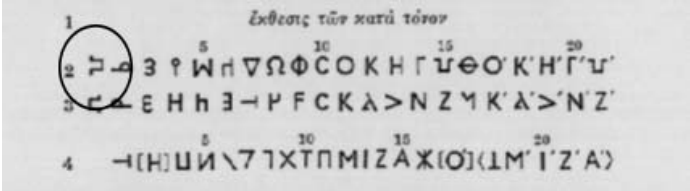
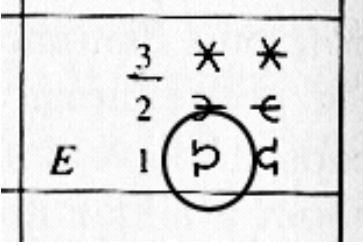
Table of Characters Included in this Section

Number		Name	Unicode	Comment
Ancient Greek Vocal Notation				
IV.a.1	Ϟ	Greek Vocal Notation Symbol 1		
IV.a.2	ϟ	Greek Vocal Notation Symbol 2		
IV.a.3	Ϡ	Greek Vocal Notation Symbol 3 · Greek Instrumental Notation Symbol 3		
IV.a.4	ϡ	Greek Vocal Notation Symbol 4		
IV.a.5	Ϣ	Greek Vocal Notation Symbol 5		
IV.a.6	ϣ	Greek Vocal Notation Symbol 6 · Greek Instrumental Notation Symbol 21		
IV.a.7	Ϥ	Greek Vocal Notation Symbol 7 · Greek Instrumental Notation Symbol 9		
IV.a.8	ϥ	Greek Vocal Notation Symbol 8		
IV.a.9	Ϧ	Greek Vocal Notation Symbol 9 · Greek Instrumental Notation Symbol 44		
IV.a.10	ϧ	Greek Vocal Notation Symbol 10		
IV.a.11	Ϩ	Greek Vocal Notation Symbol 11		
IV.a.12	ϩ	Greek Vocal Notation Symbol 12		
IV.a.13	Ϫ	Greek Vocal Notation Symbol 13		
IV.a.14	ϫ	Greek Vocal Notation Symbol 14 · Greek Instrumental Notation Symbol 41		
IV.a.15	Ϭ	Greek Vocal Notation Symbol 15 · Greek Instrumental Notation Symbol 35		
IV.a.16	ϭ	Greek Vocal Notation Symbol 16		
IV.a.17	Ϯ	Greek Vocal Notation Symbol 17		
IV.a.18	ϯ	Greek Vocal Notation Symbol 18 · Greek Instrumental Notation Symbol 15		
IV.a.19	ϰ	Greek Vocal Notation Symbol 19		
IV.a.20	ϱ	Greek Vocal Notation Symbol 20 · Greek Instrumental Notation Symbol 28		
IV.a.21	ϲ	Greek Vocal Notation Symbol 21		
IV.a.22	ϳ	Greek Vocal Notation Symbol 22		
IV.a.23	ϴ	Greek Vocal Notation Symbol 23		
IV.a.24	ϵ	Greek Vocal Notation Symbol 24		
IV.a.25	϶	Greek Vocal Notation Symbol 49		
IV.a.26	Ϸ	Greek Vocal Notation Symbol 50		
IV.a.27	ϸ	Greek Vocal Notation Symbol 51		
IV.a.28	Ϲ	Greek Vocal Notation Symbol 52		
IV.a.29	Ϻ	Greek Vocal Notation Symbol 53		
IV.a.30	ϻ	Greek Vocal Notation Symbol 54 · Greek Instrumental Notation Symbol 20		
Ancient Greek Instrumental Notation				
IV.a.31	ϼ	Greek Instrumental Notation Symbol 1		


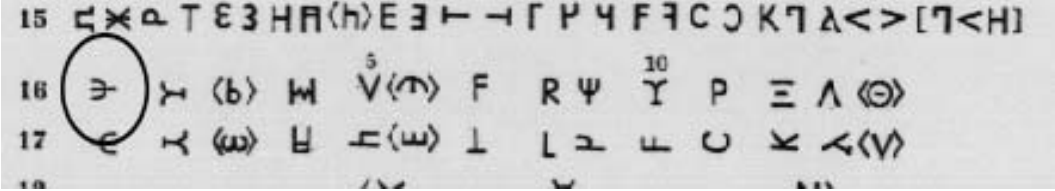
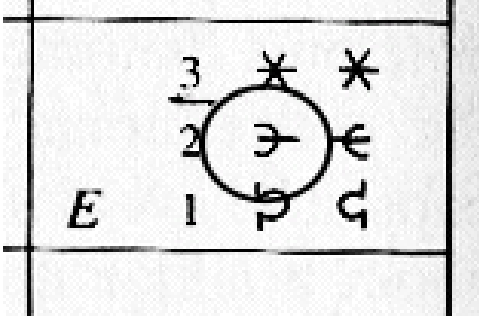
IV.a.32	€	Greek Instrumental Notation Symbol 2		
IV.a.33	ϐ	Greek Instrumental Notation Symbol 4		
IV.a.34	ϑ	Greek Instrumental Notation Symbol 5		
IV.a.35	ϔ	Greek Instrumental Notation Symbol 7		
IV.a.36	ϕ	Greek Instrumental Notation Symbol 8		
IV.a.37	ϑ	Greek Instrumental Notation Symbol 11		
IV.a.38	ϒ	Greek Instrumental Notation Symbol 12		
IV.a.39	ϓ	Greek Instrumental Notation Symbol 13		
IV.a.40	ϔ	Greek Instrumental Notation Symbol 14		
IV.a.41	ϕ	Greek Instrumental Notation Symbol 17		
IV.a.42	ϑ	Greek Instrumental Notation Symbol 18		
IV.a.43	ϒ	Greek Instrumental Notation Symbol 19		
IV.a.44	ϓ	Greek Instrumental Notation Symbol 23		
IV.a.45	ϔ	Greek Instrumental Notation Symbol 24		
IV.a.46	ϕ	Greek Instrumental Notation Symbol 25		
IV.a.47	ϑ	Greek Instrumental Notation Symbol 26		
IV.a.48	ϒ	Greek Instrumental Notation Symbol 27		
IV.a.49	ϓ	Greek Instrumental Notation Symbol 29		
IV.a.50	ϔ	Greek Instrumental Notation Symbol 30		
IV.a.51	ϕ	Greek Instrumental Notation Symbol 32		
IV.a.52	ϑ	Greek Instrumental Notation Symbol 36		
IV.a.53	ϒ	Greek Instrumental Notation Symbol 37		
IV.a.54	ϓ	Greek Instrumental Notation Symbol 38		
IV.a.55	ϔ	Greek Instrumental Notation Symbol 39		
IV.a.56	ϕ	Greek Instrumental Notation Symbol 40		
IV.a.57	ϑ	Greek Instrumental Notation Symbol 42		
IV.a.58	ϒ	Greek Instrumental Notation Symbol 43		
IV.a.59	ϓ	Greek Instrumental Notation Symbol 45		
IV.a.60	/	Greek Instrumental Notation Symbol 47		
IV.a.61	\	Greek Instrumental Notation Symbol 48		
IV.a.62	⌒	Greek Instrumental Notation Symbol 49		
IV.a.63	⌓	Greek Instrumental Notation Symbol 50		
IV.a.64	⌔	Greek Instrumental Notation Symbol 51		
IV.a.65	⌕	Greek Instrumental Notation Symbol 52		
IV.a.66	⌖	Greek Instrumental Notation Symbol 53		
IV.a.67	⌗	Greek Instrumental Notation Symbol 54		
Further Greek Musical Notation Symbols				
IV.a.68	⌘	Greek Musical Diseme		
IV.a.69	⌙	Greek Musical Triseme		
IV.a.70	⌚	Greek Musical Tetraseme		
IV.a.71	⌛	Greek Musical Pentaseme		
IV.a.72	⌜	Greek Musical Stigme		
IV.a.73	+	Greek Musical Unreadable Notation		
IV.a.74	⌝	Greek Musical Leimma		

Ancient Greek Vocal Notation


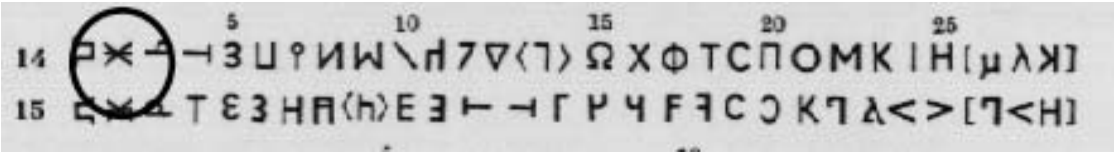
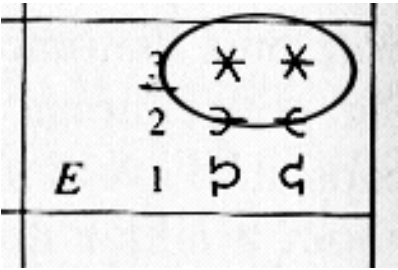
IV.a.1 Greek Vocal Notation Symbol 1

Sign 	Similar Unicode	Beta Code #635	Count 4 instances, 1 author
<p>Definition and comments</p> <p>This symbol is 03A9 GREEK CAPITAL LETTER OMEGA rotated 90° counter-clockwise.</p> <p>This represents the vocal E.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 24</p> <p>Example 2 West, M.L., <i>Ancient Greek Music</i></p>  <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p>			


IV.a.2 Greek Vocal Notation Symbol 2

Sign 	Similar Unicode	Beta Code #622	Count 5 instances, 1 author
<p>Definition and comments This symbol is 03A8 GREEK CAPITAL LETTER PSI rotated 90° counter-clockwise. This represents the vocal first sharp of E.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 24</p> <p>Example 2 West, M.L., <i>Ancient Greek Music</i></p>  <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p>			

IV.a.3 Greek Vocal Notation Symbol 3

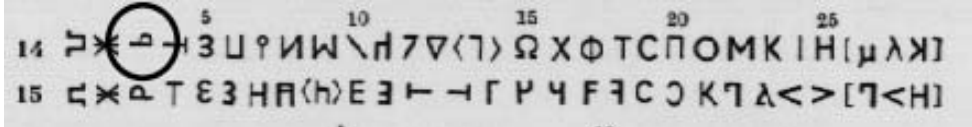
Sign 	Similar Unicode	Beta Code #655	Count 4 instances, 1 author
<p>• Greek Instrumental Notation Symbol 3</p> <p>Definition and comments This symbol is 03A7 GREEK CAPITAL LETTER CHI with a horizontal line through the center. This represents the vocal second sharp of E.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p> <p>Example 2 West, M.L., <i>Ancient Greek Music</i></p>  <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p>			

IV.a.4 Greek Vocal Notation Symbol 4

Sign	Similar Unicode	Beta Code	Count
		#636, #594	6 instances, 2 authors

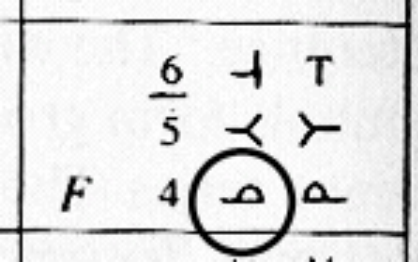
Definition and comments
 This symbol is a variant form of 03A6 GREEK CAPITAL LETTER PHI rotated 90° clockwise and with the right arm and lower semi-circle removed.
 This represents the vocal F.

Example 1
 Aristides Quintilianus Mus., *De musica* 1.11



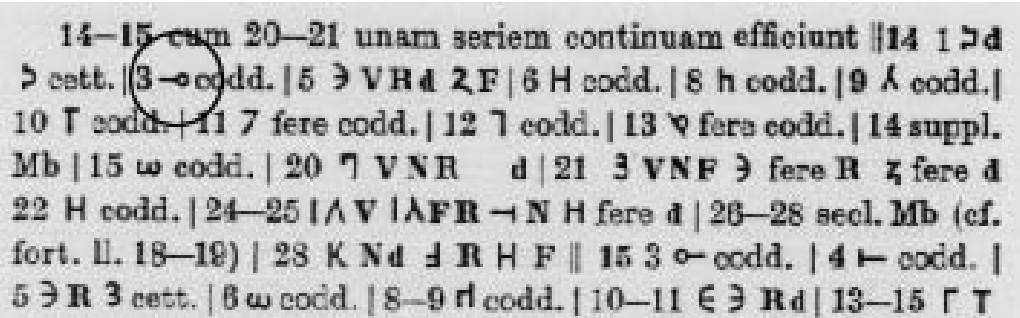
Winnington-Ingram, R.P., *Aristides Quintiliani de musica libri tres* (Teubner, Leipzig, 1963) 26

Example 2
 West, M.L., *Ancient Greek Music*




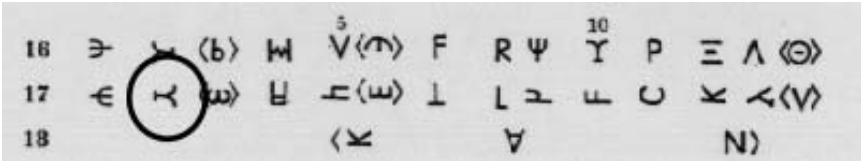
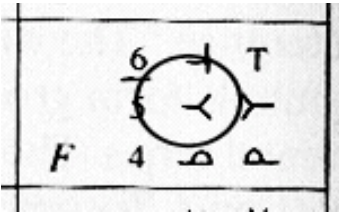
West, M.L., *Ancient Greek Music* (Clarendon Press, Oxford, 1992) 256

Example 3 (Glyph variant)
 Aristides Quintilianus Mus., *De musica* 1.11


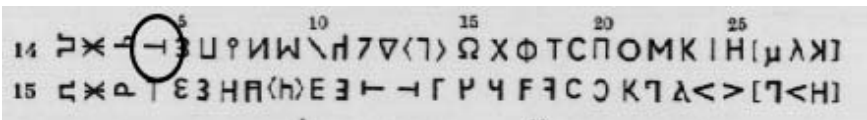
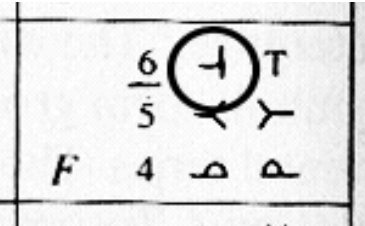


Winnington-Ingram, R.P., *Aristides Quintiliani de musica libri tres* (Teubner, Leipzig, 1963) 26 App. Crit.

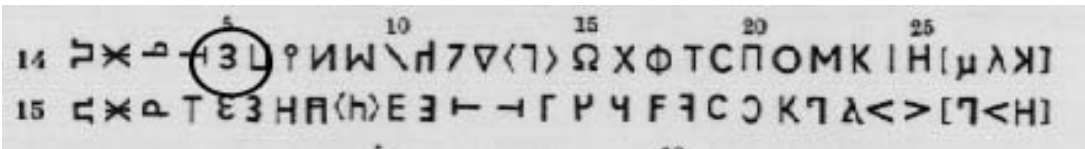
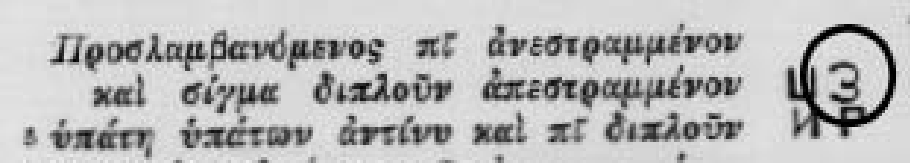
IV.a.5 Greek Vocal Notation Symbol 5

Sign	Similar Unicode	Beta Code #679	Count 2 instances, 1 author
			
<p>Definition and comments</p>			
<p>This symbol is a 03A5 GREEK CAPITAL LETTER UPSILON rotated 90° clockwise.</p>			
<p>This represents the vocal first sharp of F.</p>			
<p>In Aristides Quintillianus, this symbol is used for Greek Instrumental Notation Symbol 5.</p>			
<p>Example 1</p>			
<p>Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>			
			
<p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p>			
<p>Example 2</p>			
<p>West, M.L., <i>Ancient Greek Music</i></p>			
			
<p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p>			

IV.a.6 Greek Vocal Notation Symbol 6

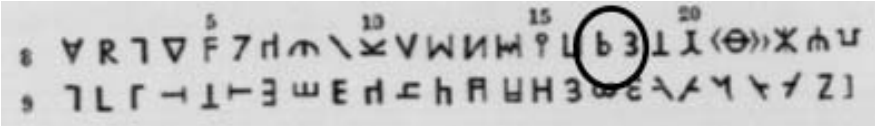
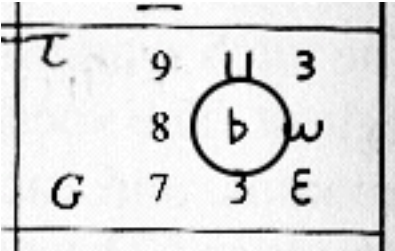
Sign 	Similar Unicode	Beta Code #621	Count 7 instances, 1 author
<p>• Greek Instrumental Notation Symbol 21</p> <p>Definition and comments This symbol is a 03A4 GREEK CAPITAL LETTER TAU rotated 90° clockwise. This represents the vocal second sharp of F.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p> <p>Example 2 West, M.L., <i>Ancient Greek Music</i></p>  <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p>			

IV.a.7 Greek Vocal Notation Symbol 7


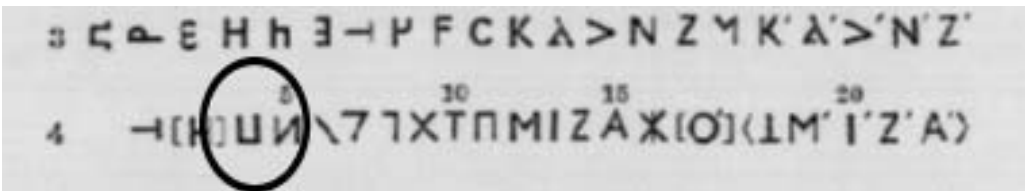
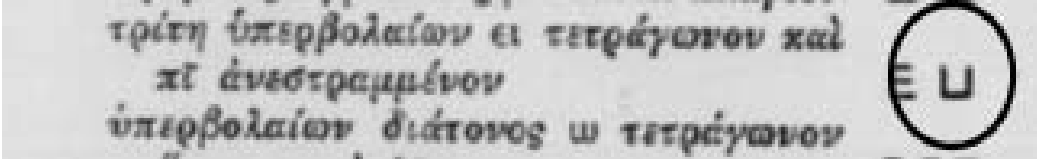
Sign	Similar Unicode	Beta Code	Count
3		#637	7 instances, 1 author
<p>• Greek Instrumental Notation Symbol 9</p> <p>Definition and comments This symbol is most probably 03A3 GREEK CAPITAL LETTER SIGMA rounded and reflected in the y-axis, or is possibly a doubled GREEK CAPITAL LUNATE SIGMA reflected in the y-axis.¹⁰⁵</p> <p>This represents the vocal G.</p>			
<p>Example 1 (Vocal notation) Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p>			
<p>Example 2 (Instrumental notation) Alypius Mus., <i>Isagoge</i> Diat. 5</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 373</p>			

¹⁰⁵ For discussion on the origins of this character see Winnington-Ingram (1978) 240-241 who convincingly argues that a rounded capital letter Sigma is the most plausible solution.


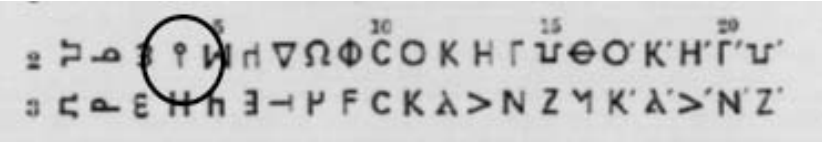
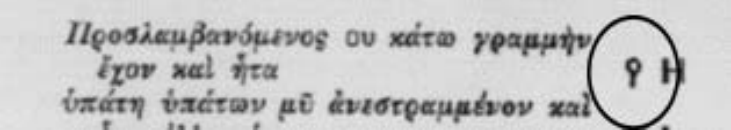
IV.a.8 Greek Vocal Notation Symbol 8

Sign b	Similar Unicode	Beta Code #670	Count 3 instances, 1 author
<p>Definition and comments This symbol is 03A1 GREEK CAPITAL LETTER RHO reflected in the x-axis. This represents the vocal first sharp of G.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p> <p>Example 2 West, M.L., <i>Ancient Greek Music</i></p>  <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p>			

IV.a.9 Greek Vocal Notation Symbol 9


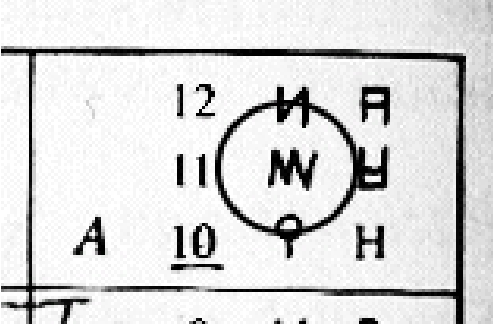
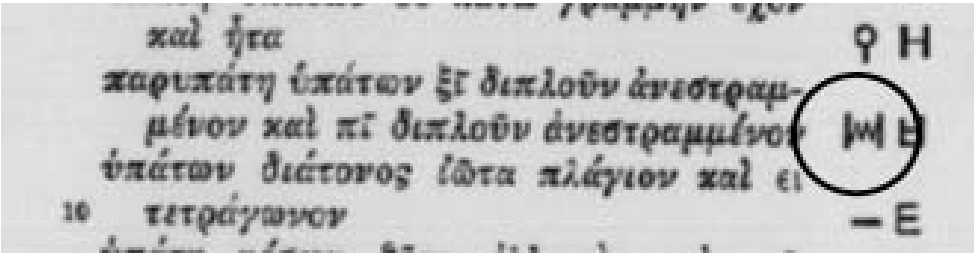

Sign 	Similar Unicode	Beta Code #588	Count 41 instances, 2 authors
<p>• Greek Instrumental Notation Symbol 44</p> <p>Definition and comments This symbol is 03A0 GREEK CAPITAL LETTER PI rotated 180°. This represents the vocal second sharp of G.</p>			
<p>Example 1 (Vocal notation) Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 24</p>			
<p>Example 2 (Instrumental notation) Alypius Mus., <i>Isagoge</i> Diat. 2</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 370</p>			

IV.a.10 Greek Vocal Notation Symbol 10

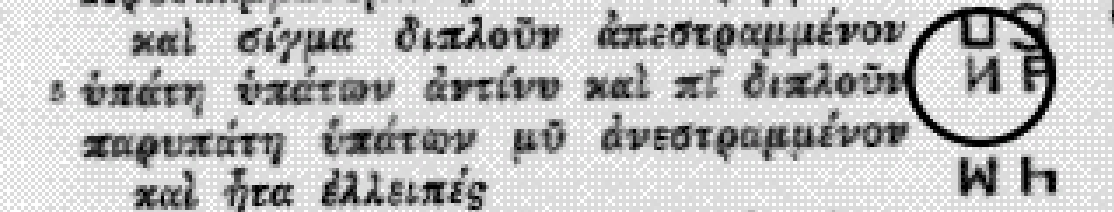
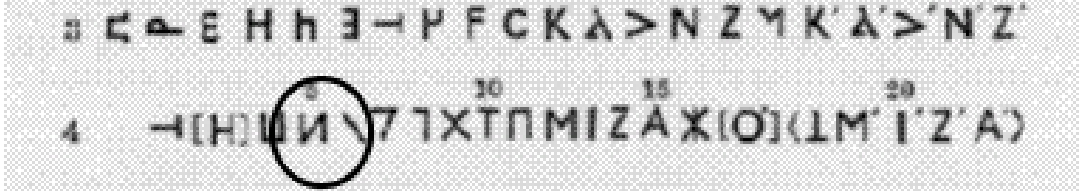
Sign 	Similar Unicode 03D8	Beta Code #638	Count 4 instances, 1 author
<p>Definition and comments</p> <p>This is a variant of 039F GREEK CAPITAL LETTER OMICRON: the character has been reduced in size, and a short bar is added below.¹⁰⁶</p> <p>This symbol is visually close to 03D8 ARCHAIC KOPPA although the origin of the letter is quite different.</p> <p>This represents the vocal A.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 24</p> <p>Example 2 Alypius Mus., <i>Isagoge</i> Diat. 2</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 370</p>			

¹⁰⁶ That this is a variant omicron not based on 03DE GREEK LETTER KOPPA can be seen by its position in the series: following the variant of Pi and preceding the variant of Xi.

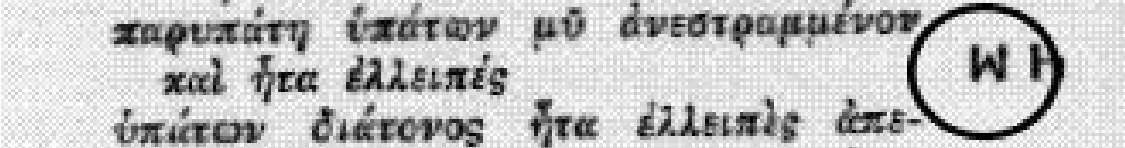
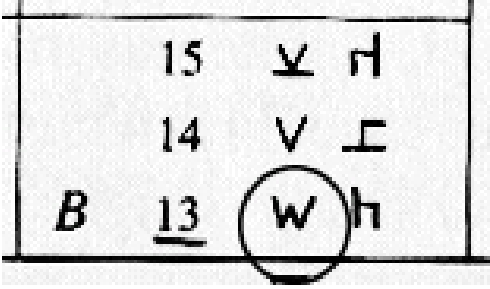
IV.a.11 Greek Vocal Notation Symbol 11

Sign	Similar Unicode	Beta Code #669	Count 3 instances, 1 author
			
Definition and comments			
<p>This symbol is 039C GREEK CAPITAL LETTER XI rotated 90° counter-clockwise.</p> <p>This represents the vocal first sharp of A.</p>			
Example 1			
<p>West, M.L., <i>Ancient Greek Music</i></p> 			
<p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p>			
Example 2			
<p>Alypius Mus., <i>Isagoge</i> Diat. 8</p> 			
<p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 376</p>			
Example 1			
<p>Aristides Quintilianus Mus., <i>De musica</i> 1.11</p> 			
<p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 24</p>			

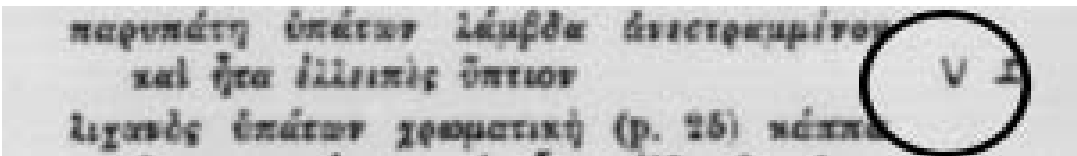
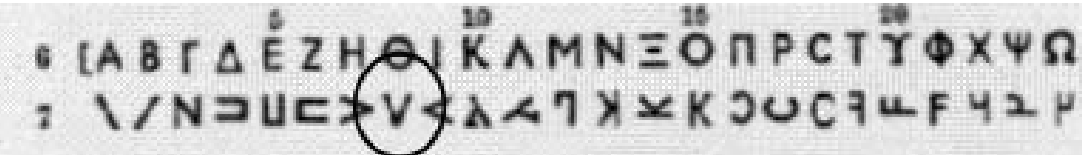
IV.a.12 Greek Vocal Notation Symbol 12

Sign И	Similar Unicode	Beta Code #649	Count 4 instances, 1 author
<p>Definition and comments This symbol is 039C GREEK CAPITAL LETTER NU reflected in the y-axis. This represents the vocal second sharp of A.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Diat. 5</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 373</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 24</p>			



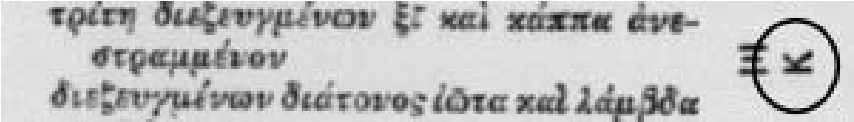
IV.a.13 Greek Vocal Notation Symbol 13

Sign W	Similar Unicode	Beta Code #639	Count 4 instances, 1 author
<p>Definition and comments This symbol is either 039C GREEK CAPITAL LETTER MU rotated 180°. This represents the vocal B.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Diat. 5</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 373</p> <p>Example 2 (Glyph variant) West, M.L., <i>Ancient Greek Music</i></p>  <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p>			

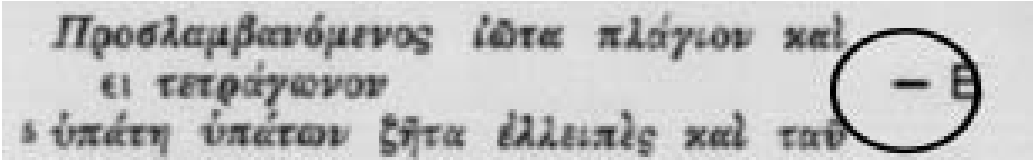
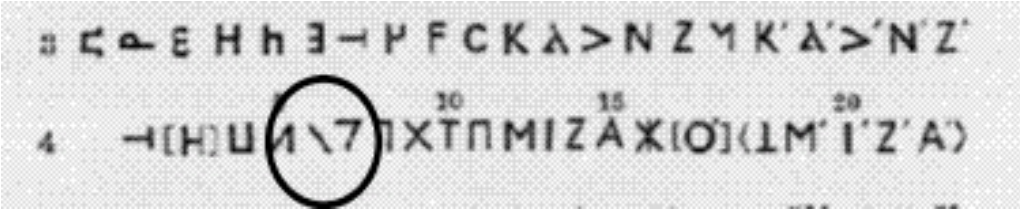
IV.a.14 Greek Vocal Notation Symbol 14

Sign V	Similar Unicode	Beta Code #582	Count 18 instances, 2 authors
<p>• Greek Instrumental Notation Symbol 41</p> <p>Definition and comments This symbol is 039B GREEK CAPITAL LETTER LAMBDA rotated 180°. This represents the vocal first sharp of B.</p>			
<p>Example 1 (Vocal) Alypius Mus., <i>Isagoge</i> Diat. 2</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 373</p> <p>Example 2 (Instrumental) Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p>			

IV.a.15 Greek Vocal Notation Symbol 15


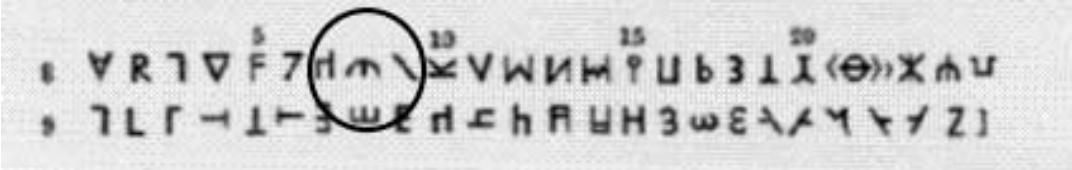
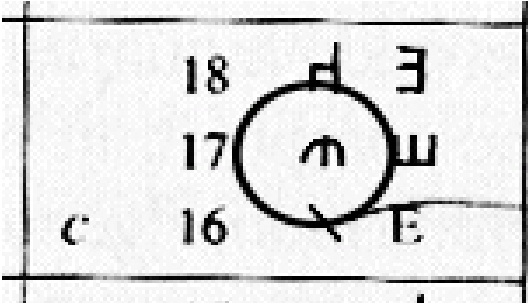
Sign 	Similar Unicode	Beta Code #632	Count 8 instances, 1 author
<p>• Greek Instrumental Notation Symbol 35</p> <p>Definition and comments This symbol is 039A GREEK CAPITAL LETTER KAPPA rotated 90° counter-clockwise. This represents the vocal second sharp of B.</p>			
<p>Example 2 (Vocal) Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p> <p>Example 1 (Instrumental) Alypius Mus., <i>Isagoge</i> Diat. 2</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 370</p>			

IV.a.16 Greek Vocal Notation Symbol 16


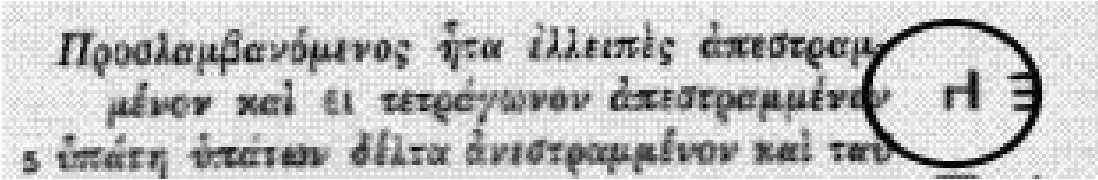
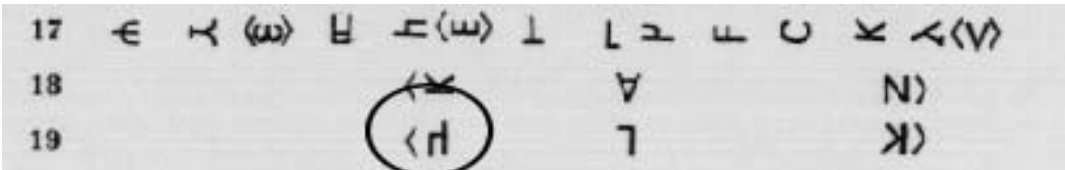
Sign	Similar Unicode	Beta Code	Count
—	See below	#650	9 instances, 1 author
<p>Definition and comments</p> <p>There are two glyph variants of this character: — and \, both forms seem to be widely used.¹⁰⁷</p> <p>Since this has a glyph variant of, —, it is not the same as Greek Instrumental Notation Symbol 48. While the codepoint 2014 covers one glyph variant, there is no single Unicode character which currently unifies these glyph variants.</p> <p>This symbol represents vocal c.</p>			
<p>Example 1</p> <p>Alypius Mus., <i>Isagoge Diat.</i> 7</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 375</p>			
<p>Example 2</p> <p>Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p>			

¹⁰⁷ See Winnington-Ingram (1973) 246-7


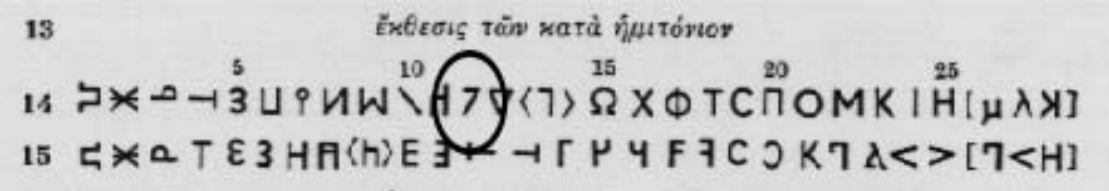
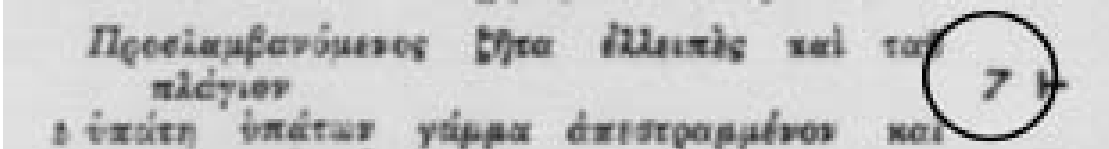
IV.a.17 Greek Vocal Notation Symbol 17

Sign 	Similar Unicode	Beta Code #668	Count 3 instances, 1 author
<p>Definition and comments This symbol is half of 0398 GREEK CAPITAL LETTER THETA with the open end face down. This symbol represents the vocal first sharp of c.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p> <p>Example 2 West, M.L., <i>Ancient Greek Music</i></p>  <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p>			

IV.a.18 Greek Vocal Notation Symbol 18

Sign 	Similar Unicode	Beta Code #640	Count 6 instances, 1 author
<ul style="list-style-type: none"> • Greek Instrumental Notation Symbol 15 			
<p>Definition and comments This symbol is 0397 GREEK CAPITAL LETTER ETA with the top half of the left hand vertical bar removed. This symbol represents the vocal second sharp of c.</p>			
<p>Example 1 (Vocal) Alypius Mus., <i>Isagoge</i> Diat 5</p> 			
<p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 373</p>			
<p>Example 1 (Instrumental) Aristides Quintilianus Mus., <i>De musica</i> 1.11</p> 			
<p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p>			

IV.a.19 Greek Vocal Notation Symbol 19

Sign 	Similar Unicode	Beta Code #573	Count 80 instances, 27 authors
<p>Definition and comments This symbol is 0396 GREEK CAPITAL LETTER ZETA with the lower horizontal bar removed. This symbol represents the vocal d.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p> <p>Example 2 Alypius Mus., <i>Isagoge Chrom.</i> 4</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 384</p>			

This character may not be included in the final proposal.

IV.a.20 Greek Vocal Notation Symbol 20

Sign	Similar Unicode	Beta Code	Count
F		#599	80 instances, 27 authors

• Greek Instrumental Notation Symbol 28

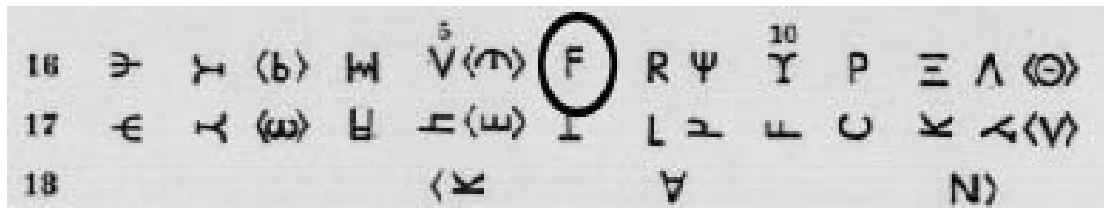
Definition and comments

This symbol is either 0395 GREEK CAPITAL LETTER EPSILON with its lower bar removed, or possibly is identical to 03DC GREEK LETTER DIGAMMA.

This represents the vocal first sharp of d.

Example 1

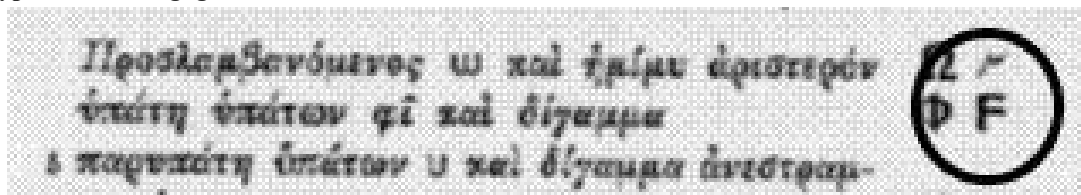
Aristides Quintilianus Mus., *De musica* 1.11



Winnington-Ingram, R.P., *Aristides Quintiliani de musica libri tres* (Teubner, Leipzig, 1963) 26


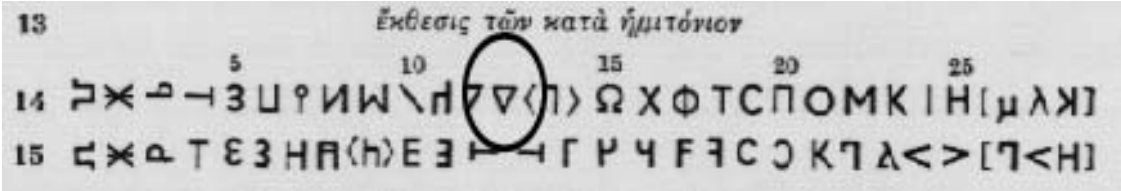
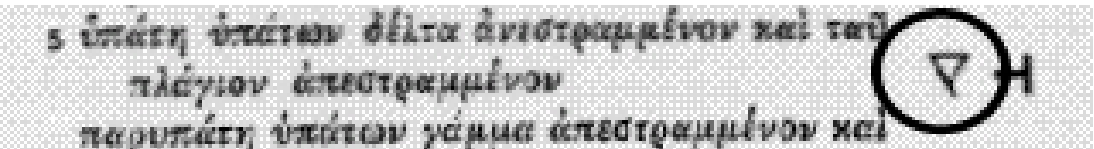
Example 2

Alypius Mus., *Isagoge* Diat. 9


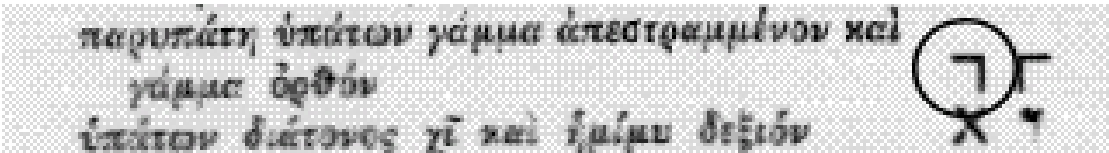
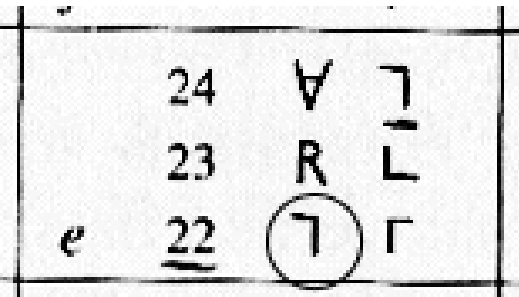


Jan, K., *Musici scriptores Graeci* (Georg Olms, Hildesheim, 1962) 377

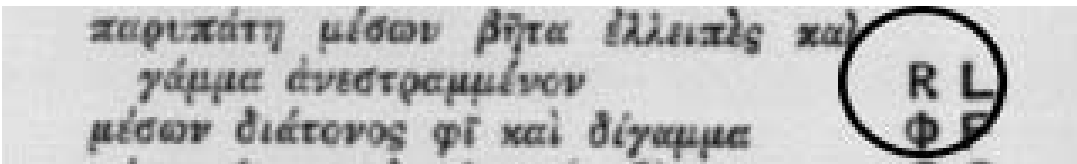
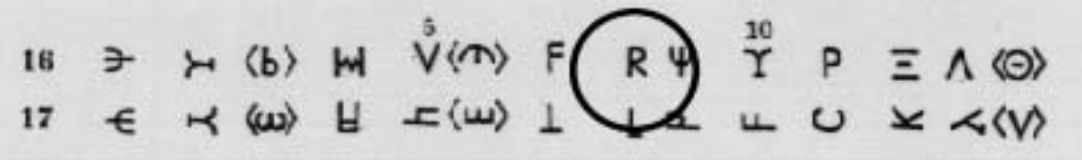
IV.a.21 Greek Vocal Notation Symbol 21

Sign 	Similar Unicode	Beta Code #599	Count 6 instances, 1 author
<p>Definition and comments This symbol is 0394 GREEK CAPITAL LETTER DELTA rotated 180°. This represents the vocal second sharp of d.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p> <p>Example 2 (Glyph variant) Alypius Mus., <i>Isagoge</i> Diat. 4</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 372</p>			


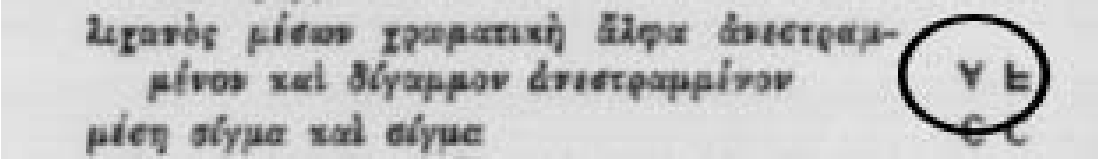
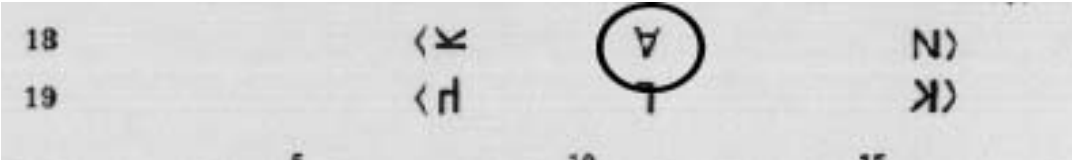
IV.a.22 Greek Vocal Notation Symbol 22

Sign 	Similar Unicode	Beta Code #575	Count 17 instances, 2 authors
Definition and comments This symbol is 0393 GREEK CAPITAL LETTER GAMMA reflected in the y-axis. This represents e.			
Example 1 Alypius Mus., <i>Isagoge</i> Diat. 4 			
Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 372			
Example 2 West, M.L., <i>Ancient Greek Music</i> 			
West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256			


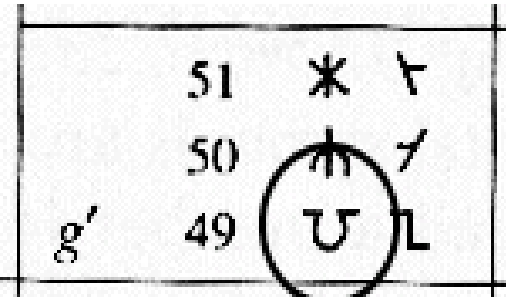
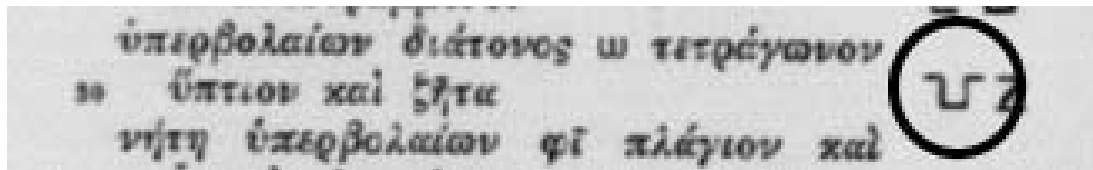
IV.a.23 Greek Vocal Notation Symbol 23

Sign R	Similar Unicode	Beta Code #576	Count 11 instances, 2 authors
<p>Definition and comments This symbol is a truncated form of 0392 GREEK CAPITAL LETTER BETA. This character is not an R although editors may print it as an R for convenience. This represents the vocal first sharp of e.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge Diat. 2</i></p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 370</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p>			


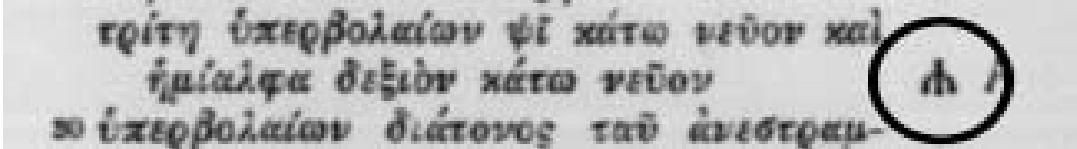
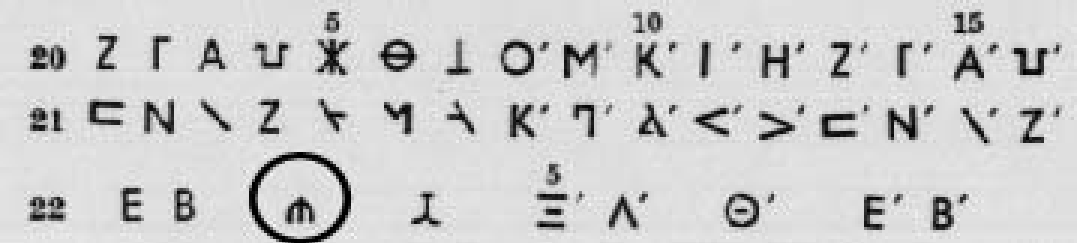
IV.a.24 Greek Vocal Notation Symbol 24

Sign 	Similar Unicode	Beta Code #627	Count 7 instances, 1 author
<p>Definition and comments This symbol is 0391 GREEK CAPITAL LETTER ALPHA rotated 180°. This represents the vocal second sharp of e.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge Chrom. 2</i></p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 385</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p>			


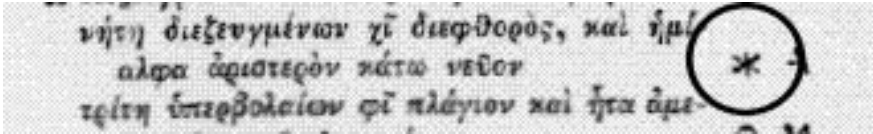

IV.a.25 Greek Vocal Notation Symbol 49

Sign 	Similar Unicode 2127	Beta Code #564, #623	Count 5 instances, 2 authors
Definition and comments This symbol is 03A9 GREEK CAPITAL LETTER OMEGA rotated 180°. This represents g'.			
Example 1 West, M.L., <i>Ancient Greek Music</i> <div style="text-align: center; margin: 10px 0;">  </div> West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256			
Example 2 (Glyph variant) Alypius Mus., <i>Isagoge Diat. 2</i> <div style="text-align: center; margin: 10px 0;">  </div> Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 370			


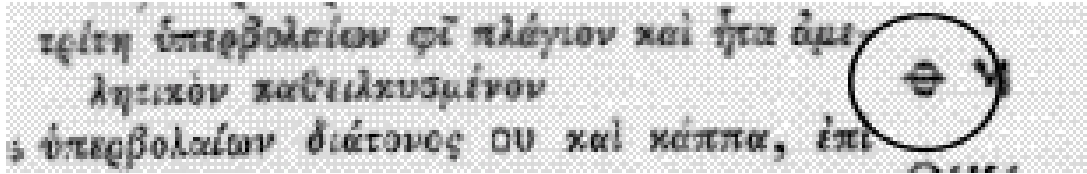
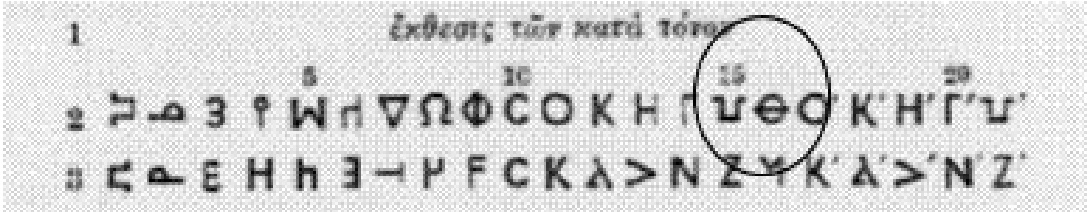
IV.a.26 Greek Vocal Notation Symbol 50

Sign 	Similar Unicode	Beta Code #672	Count 3 instances, 1 author
<p>Definition and comments This symbol is 03A8 GREEK CAPITAL LETTER PSI rotated 180°. This represents the vocal second sharp of g'.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Diat. 7</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 375</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p>			


IV.a.27 Greek Vocal Notation Symbol 51

Sign 	Similar Unicode	Beta Code #653	Count 4 instances, 1 author
<p>Definition and comments This symbol is 03A7 GREEK CAPITAL LETTER CHI with a vertical line through the center. This represents the vocal second sharp of g´.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Diat. 4</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 372</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p>			

IV.a.28 Greek Vocal Notation Symbol 52

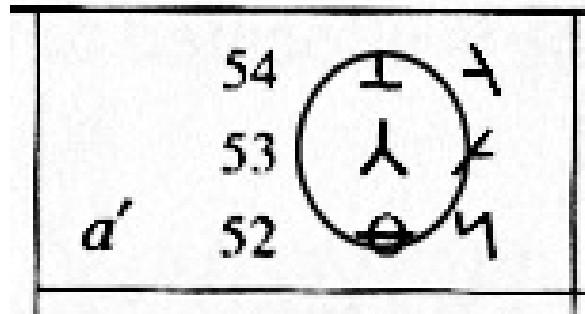
Sign	Similar Unicode	Beta Code #589	Count 9 instances, 2 authors
			
Definition and comments			
This symbol is 03A6 GREEK CAPITAL LETTER PHI rotated 90°.			
This represents a´.			
Example 1			
Alypius Mus., <i>Isagoge</i> Diat. 4			
			
Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 372			
Example 2			
Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 24			

IV.a.29 Greek Vocal Notation Symbol 53

Sign 	Similar Unicode	Beta Code #591, #671	Count 4 instances, 2 authors
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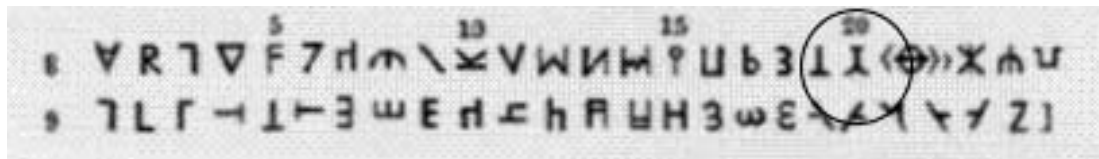
Definition and comments
 This symbol is 03A5 GREEK CAPITAL LETTER upsilon rotated 180°. This represents the vocal first sharp of a´.

Example 1
 West, M.L., *Ancient Greek Music*




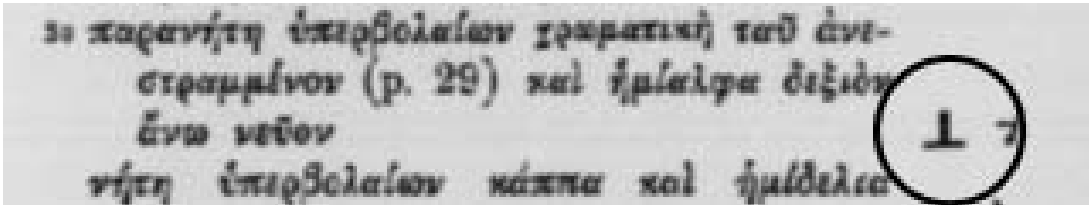
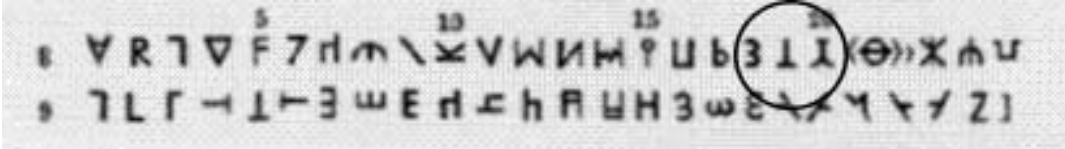
West, M.L., *Ancient Greek Music* (Clarendon Press, Oxford, 1992) 256

Example 2
 Aristides Quintilianus Mus., *De musica* 1.11




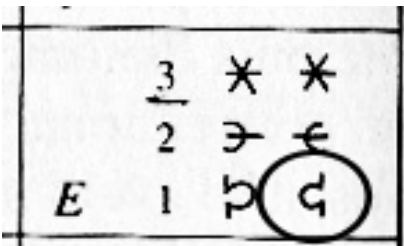
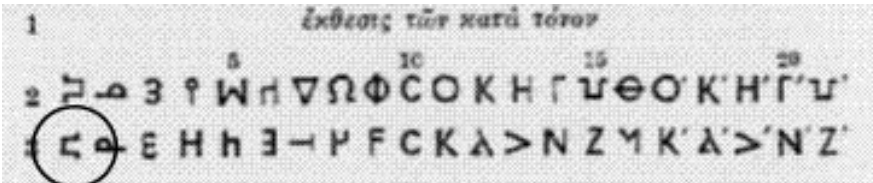
Winnington-Ingram, R.P., *Aristides Quintiliani de musica libri tres* (Teubner, Leipzig, 1963) 25

IV.a.30 Greek Vocal Notation Symbol 54


Sign 	Similar Unicode	Beta Code #654	Count 6 instances, 1 author
<p>• Greek Instrumental Notation Symbol 20</p> <p>Definition and comments This symbol is 03A4 GREEK CAPITAL LETTER TAU rotated 180°. This represents the vocal second sharp of a´.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Chrom. 3</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 386</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p>			

Greek Instrumental Notation


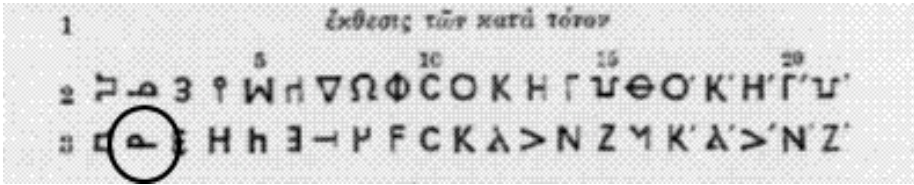
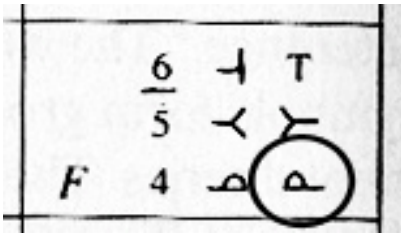
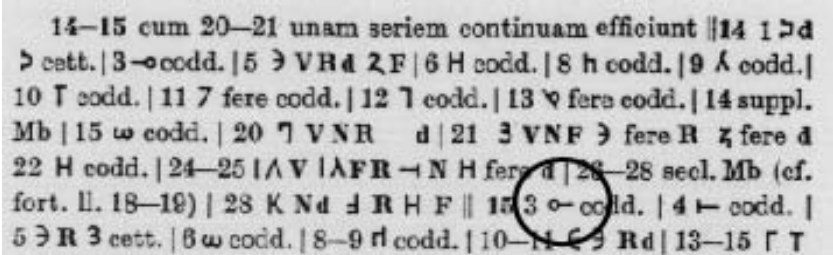
IV.a.31 Greek Instrumental Notation Symbol 1

Sign 	Similar Unicode	Beta Code #643	Count 3 instances, 1 author
<p>Definition and comments This symbol is 03A9 GREEK CAPTIAL LETTER OMEGA rotated 90° clockwise. This represents the instrumental E.</p>			
<p>Example 1 West, M.L., <i>Ancient Greek Music</i></p>  <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p> <p>Example 2 (Glyph variant) Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 24</p>			


IV.a.32 Greek Instrumental Notation Symbol 2

Sign 	Similar Unicode	Beta Code #616	Count 4 instances, 1 author
<p>Definition and comments This symbol is 03A8 GREEK CAPITAL LETTER PSI rotated 90° clockwise. This represents the instrumental first sharp of E.</p>			
<p>Example 1 West, M.L., <i>Ancient Greek Music</i></p> <div data-bbox="618 596 997 827" data-label="Image"> </div> <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p> <div data-bbox="386 978 1235 1129" data-label="Image"> </div> <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p>			


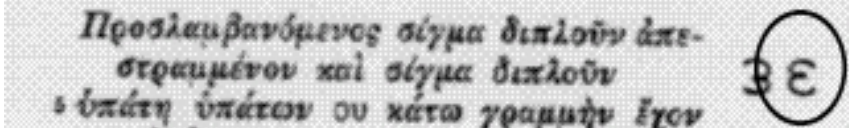
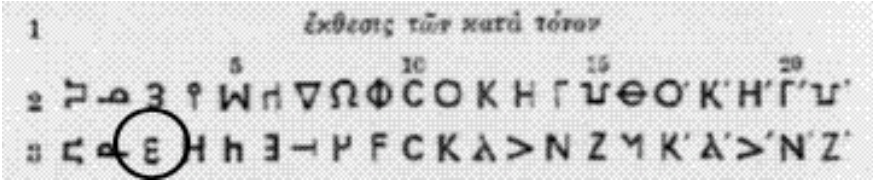
IV.a.33 Greek Instrumental Notation Symbol 4

Sign 	Similar Unicode	Beta Code #644, #594	Count 6 instances, 2 authors
<p>Definition and comments</p> <p>This symbol is a variant form of 03A6 GREEK CAPITAL LETTER PHI rotated 90° clockwise and with the left arm and lower semi-circle removed.</p> <p>This represents the instrumental F.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 24</p> <p>Example 2 West, M.L., <i>Ancient Greek Music</i></p>  <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p> <p>Example 3 (Glyph variant) Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26 App. Crit.</p>			

IV.a.34 Greek Instrumental Notation Symbol 5


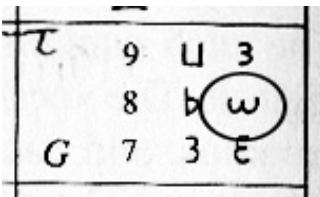
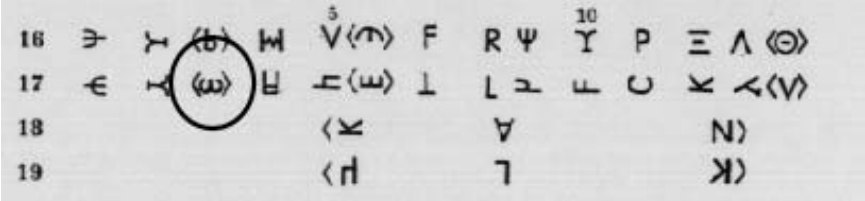
Sign 	Similar Unicode	Beta Code #678	Count 2 instances, 1 author
<p>Definition and comments</p> <p>This symbol is a 03A5 GREEK CAPITAL LETTER UPSILON rotated 90° counter-clockwise.</p> <p>This represents the instrumental first sharp of F.</p> <p>In Aristides Quintillianus, this symbol is used for Greek Vocal Notation Symbol 5.</p>			
<p>Example 1</p> <p>West, M.L., <i>Ancient Greek Music</i></p> <div data-bbox="630 638 987 856" data-label="Image"> </div> <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p> <p>Example 2</p> <p>Aristides Quintilianus Mus., <i>De musica</i> 1.11</p> <div data-bbox="375 1005 1240 1142" data-label="Image"> </div> <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p>			

IV.a.35 Greek Instrumental Notation Symbol 7


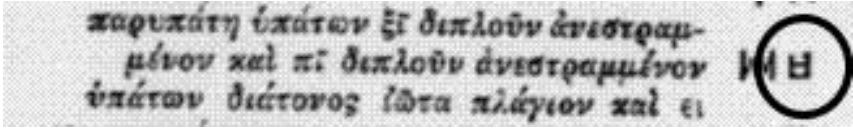
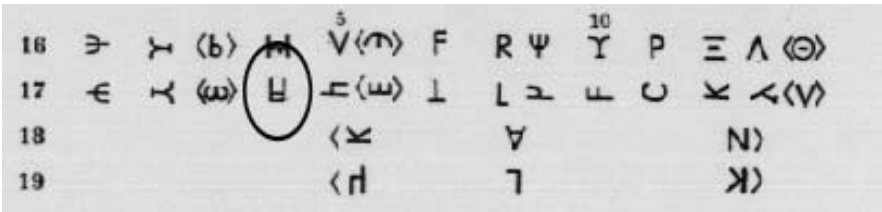
Sign 	Similar Unicode	Beta Code #645	Count 4 instances, 1 author
<p>Definition and comments</p> <p>This symbol is most probably a rounded form of 03A3 GREEK CAPITAL LETTER SIGMA, or is possibly a doubled GREEK CAPITAL LUNATE SIGMA reflected in the y-axis.¹⁰⁸</p> <p>This represents the instrumental G.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Diat. 8</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 376</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 24</p>			

¹⁰⁸ For discussion on the origins of this character see Winnington-Ingram (1978) 240-241 who convincingly argues that a rounded capital letter Sigma is the most plausible solution.


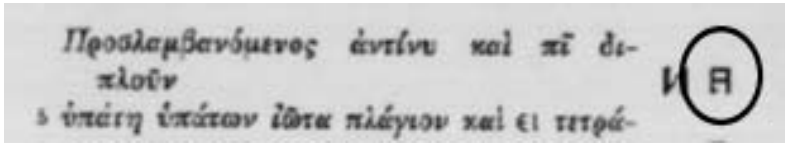
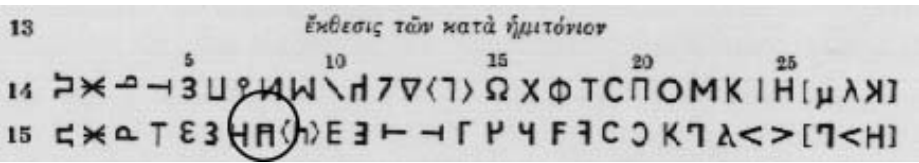
IV.a.36 Greek Instrumental Notation Symbol 8

Sign 	Similar Unicode	Beta Code #674	Count 2 instances, 1 author
<p>Definition and comments This symbol is GREEK INSTRUMENTAL NOTATION SYMBOL 7 rotated 90° counter-clockwise. This represents the instrumental first sharp of G.</p>			
<p>Example 1 West, M.L., <i>Ancient Greek Music</i></p>  <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p>			


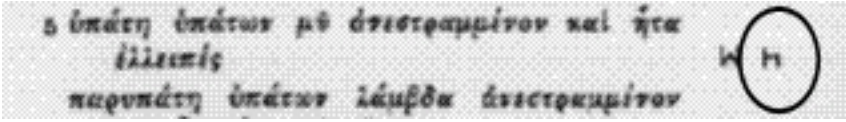
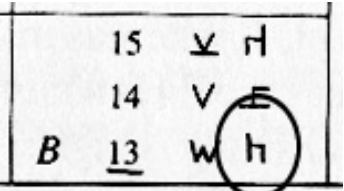
IV.a.37 Greek Instrumental Notation Symbol 11

Sign 	Similar Unicode	Beta Code #673	Count 3 instances, 1 author
<p>Definition and comments</p> <p>This symbol is either 0397 GREEK CAPITAL LETTER ETA with a horizontal at the bottom or possibly 03A0 GREEK CAPITAL LETTER PI with a horizontal bar half-way up and rotated 180°.</p> <p>This represents the instrumental first sharp of A.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Diat. 8</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 376</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p>			


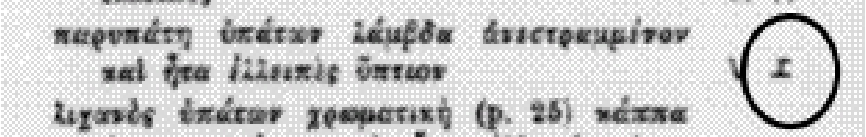
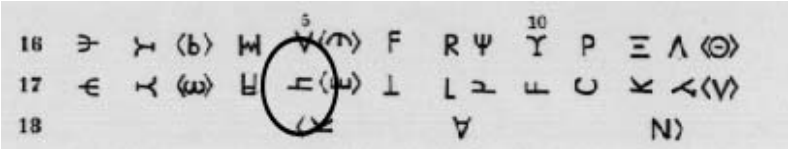
IV.a.38 Greek Instrumental Notation Symbol 12

Sign 	Similar Unicode	Beta Code #656	Count 4 instances, 1 author
<p>Definition and comments</p> <p>This symbol is either 0397 GREEK CAPITAL LETTER ETA with a horizontal at the top or possibly 03A0 GREEK CAPITAL LETTER PI with a horizontal bar half-way up.</p> <p>This represents the instrumental second sharp of A.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Diat. 13</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 381</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p>			


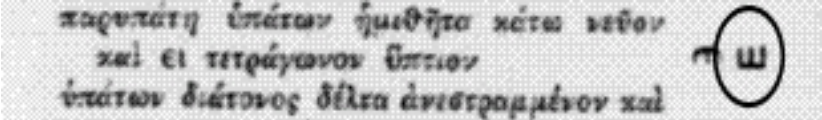
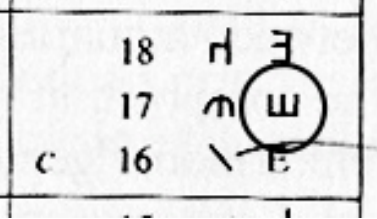
IV.a.39 Greek Instrumental Notation Symbol 13

Sign 	Similar Unicode	Beta Code #646	Count 4 instances, 1 author
<p>Definition and comments</p> <p>This symbol is 0397 GREEK CAPITAL LETTER ETA with the top half of the right hand vertical bar removed.</p> <p>This represents the instrumental B.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge Chrom. 2</i></p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 385</p> <p>Example 1 West, M.L., <i>Ancient Greek Music</i></p>  <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p>			


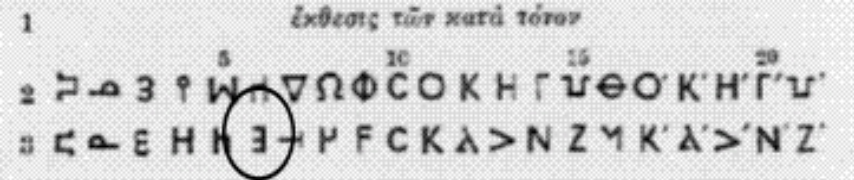
IV.a.40 Greek Instrumental Notation Symbol 14

Sign 	Similar Unicode	Beta Code #604	Count 2 instances, 1 author
<p>Definition and comments</p> <p>This symbol is Greek Instrumental Notation Symbol 13 rotated 90° counter-clockwise.</p> <p>This represents the instrumental first sharp of B.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge Chrom. 2</i></p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 385</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica 1.11</i></p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p>			


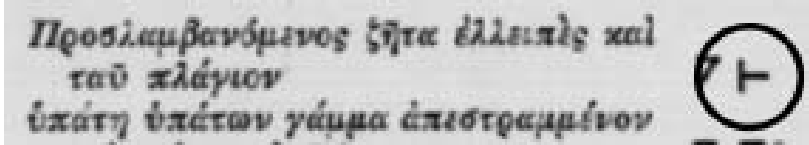
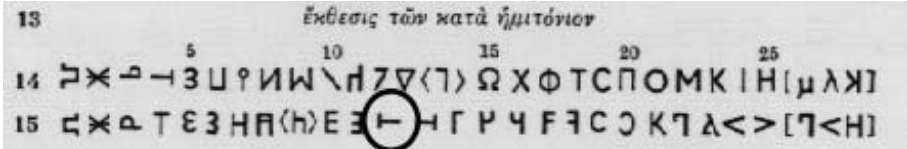
IV.a.41 Greek Instrumental Notation Symbol 17

Sign 	Similar Unicode	Beta Code #565	Count 6 instances, 2 authors
<p>Definition and comments This symbol is 0395 GREEK CAPITAL LETTER EPSILON rotated 90° counter-clockwise. This represents the instrumental first sharp of c.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Diat. 13</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 381</p> <p>Example 2 West, M.L., <i>Ancient Greek Music</i></p>  <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p>			


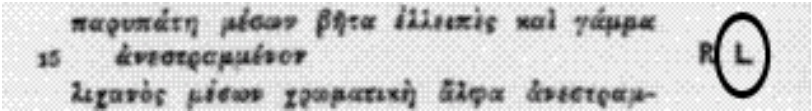
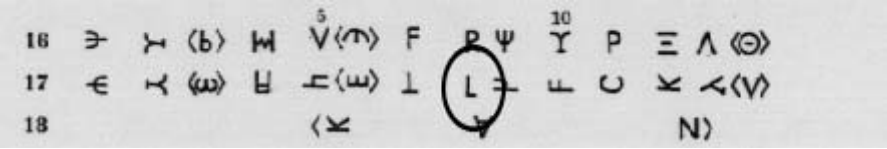
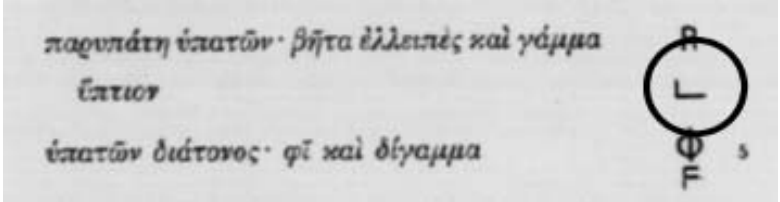
IV.a.42 Greek Instrumental Notation Symbol 18

Sign 	Similar Unicode	Beta Code #600	Count 6 instances, 1 author
Definition and comments This symbol is 0395 GREEK CAPITAL LETTER EPSILON rotated 180°. This represents the instrumental second sharp of c.			
Example 1 Alypius Mus., <i>Isagoge</i> Diat. 5  Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 373			
Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11  Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 24			


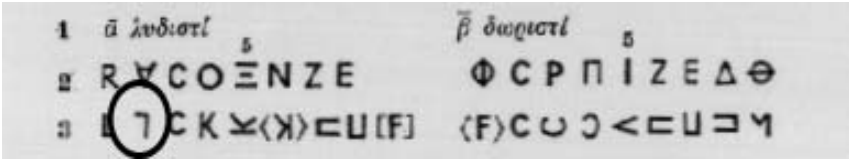
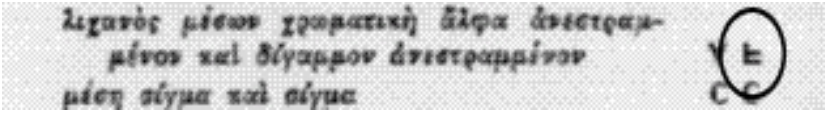



IV.a.43 Greek Instrumental Notation Symbol 19

Sign 	Similar Unicode	Beta Code #572	Count 44 instances, 2 authors
<p>Definition and comments This symbol is 03A4 GREEK CAPITAL LETTER TAU rotated 90° counter-clockwise. This represents the instrumental d.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Diat. 1</p> <div data-bbox="407 583 1211 726" style="text-align: center;">  </div> <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 369</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p> <div data-bbox="358 877 1260 1024" style="text-align: center;">  </div> <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p>			


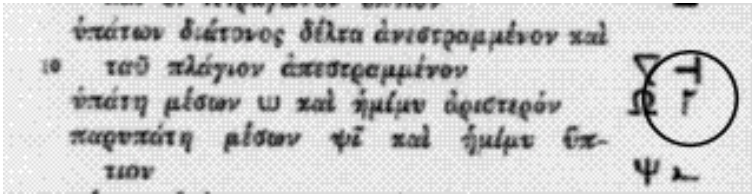
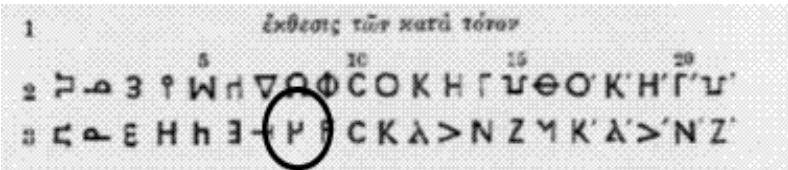
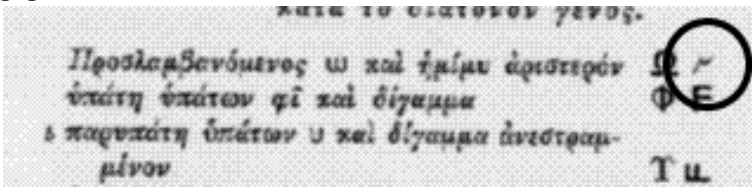
IV.a.44 Greek Instrumental Notation Symbol 23

Sign 	Similar Unicode	Beta Code #684	Count 9 instances, 1 author
Definition and comments This symbol is 0393 GREEK CAPITAL LETTER GAMMA reflected in the x-axis. This represents the instrumental first sharp of e.			
Example 1 Alypius Mus., <i>Isagoge Chrom. 2</i>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 385</p> Example 2 Aristides Quintilianus Mus., <i>De musica 1.11</i>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p> Example 3 Anonyma de musica scripta Bellermanniana, <i>Anonyma de musica scripta Bellermanniana. Section 67</i>  <p>Najock, D., <i>Anonyma de musica scripta Bellermanniana</i>. (Leipzig, Teubner, 1975) 20</p>			

IV.a.45 Greek Instrumental Notation Symbol 24

Sign 	Similar Unicode	Beta Code #575	Count 17 instances, 2 authors
<p>Definition and comments</p> <p>This symbol is 0393 GREEK CAPITAL LETTER GAMMA reflected in the y-axis.</p> <p>This character is not the same as Greek Vocal Notation Symbol 22 as this character has five glyph variants while Greek Vocal Notation Symbol 22 has only one.</p> <p>This represents e.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p> <p>Example 2 Alypius Mus., <i>Isagoge Chrom.</i> 2</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 385</p> <p>Example 3 West, M.L., <i>Ancient Greek Music</i></p> <p>54-53 and 51 - instr., see Winnington-Ingram, <i>Philol.</i> 122 (1978) 241-8. 24 instr.: Gaudentius and Boethius give  and  (chromatic F) respectively, Alypius </p> <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p>			


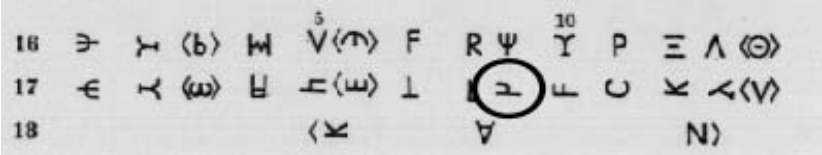
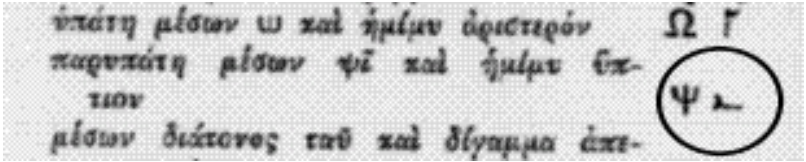
IV.a.46 Greek Instrumental Notation Symbol 25

Sign 	Similar Unicode	Beta Code #647	Count 4 instances, 1 author
<p>Definition and comments</p> <p>This symbol is described by Bellermann as being the left hand half of 039C GREEK CAPITAL LETTER MU,¹⁰⁹ however, Winnington-Ingram stresses that the origin is “quite uncertain.”¹¹⁰</p> <p>This symbol represents the instrumental f.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Diat. 13</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 381</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 24</p> <p>Example 3 Alypius Mus., <i>Isagoge</i> Diat. 9</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 377</p>			



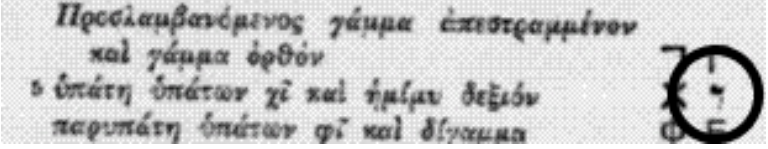
¹⁰⁹ Bellermann (1969) 42

¹¹⁰ Winnington-Ingram (1973) 247


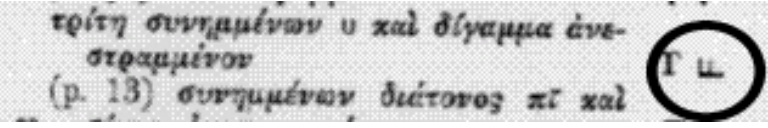

IV.a.47 Greek Instrumental Notation Symbol 26

Sign	Similar Unicode	Beta Code #667	Count 3 instances, 1 author
			
Definition and comments			
<p>This symbol is Greek Instrumental Notation Symbol 25 rotated 90° counter-clockwise.</p> <p>This is the instrumental first sharp of f.</p>			
Example 1			
Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
<p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p>			
Example 2			
Alypius Mus., <i>Isagoge</i> Diat. 13			
			
<p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 381</p>			


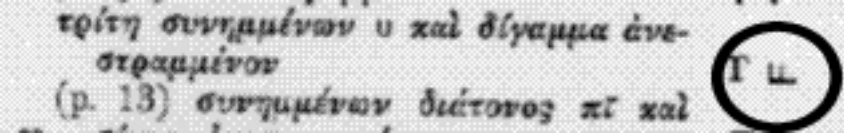

IV.a.48 Greek Instrumental Notation Symbol 27

Sign 	Similar Unicode	Beta Code #657	Count 4 instances, 1 author
Definition and comments This symbol is Greek Instrumental Notation Symbol 25 reflected in the x-axis. This is the instrumental second sharp of f.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11  Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25 Example 2 (Glyph variant) Alypius Mus., <i>Isagoge</i> Diat. 12  Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 380			


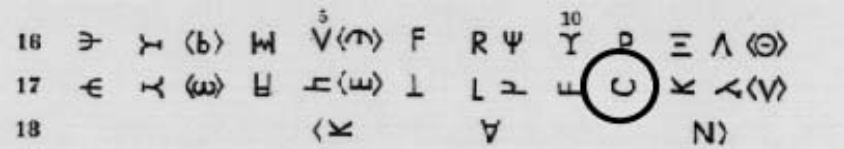
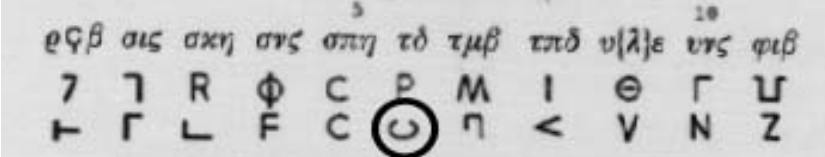
IV.a.49 Greek Instrumental Notation Symbol 29

Sign 	Similar Unicode	Beta Code #666	Count 3 instances, 1 author
<p>Definition and comments This symbol is either 0395 GREEK CAPITAL LETTER EPSILON with its lower bar removed and rotated 90° counter-clockwise, or possibly, 03DC GREEK LETTER DIGAMMA rotated 90° counter-clockwise. This symbol represents the instrumental first sharp of g.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Diat. 8</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 380</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p>			


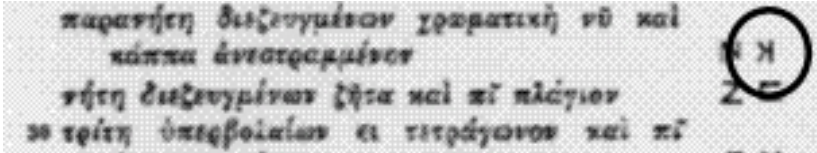
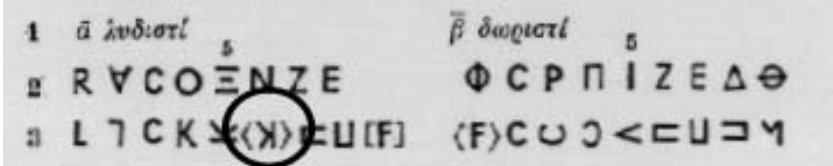
IV.a.50 Greek Instrumental Notation Symbol 30

Sign	Similar Unicode	Beta Code	Count
		#615	5 instances, 1 author
<p>Definition and comments</p>			
<p>This symbol is either 0395 GREEK CAPITAL LETTER EPSILON with its lower bar removed reflected in the y-axis, or possibly, 03DC GREEK LETTER DIGAMMA rotated reflected in the y-axis.</p> <p>This symbol represents the instrumental second sharp of g.</p>			
<p>Example 1</p>			
<p>Alypius Mus., <i>Isagoge</i> Chrom. 4</p>			
			
<p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 380</p>			
<p>Example 2</p>			
<p>Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>			
			
<p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p>			


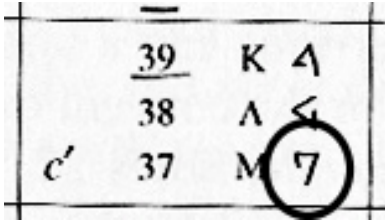
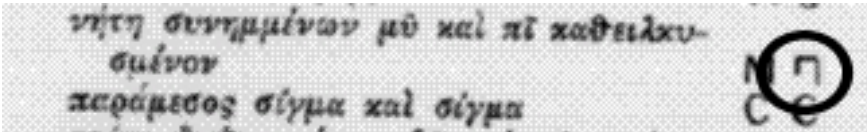
IV.a.51 Greek Instrumental Notation Symbol 32

Sign	Similar Unicode	Beta Code	Count
		#566	61 instances, 2 authors
Definition and comments			
This symbol is GREEK CAPITAL LETTER LUNATE SIGMA rotated 90° counter-clockwise.			
This represents the instrumental first sharp of a.			
Example 1			
Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			
Example 2			
Anonyma de musica scripta Bellermanniana, <i>Anonyma de musica scripta Bellermanniana</i> . Section 77			
			
Najock, D., <i>Anonyma de musica scripta Bellermanniana</i> (Leipzig, Teubner, 1975) 24			


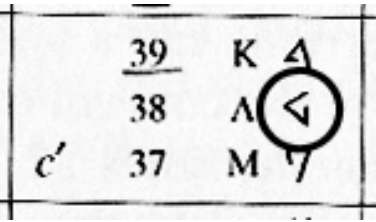
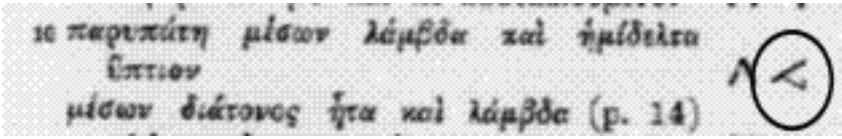
IV.a.52 Greek Instrumental Notation Symbol 36

Sign 	Similar Unicode	Beta Code #633	Count 6 instances, 1 author
<p>Definition and comments This symbol is 039A GREEK CAPITAL LETTER KAPPA reflected in the y-axis. This represents the instrumental second sharp of b.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Chrom. 2</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 385</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.9</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 19</p>			


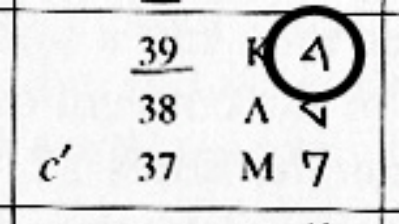
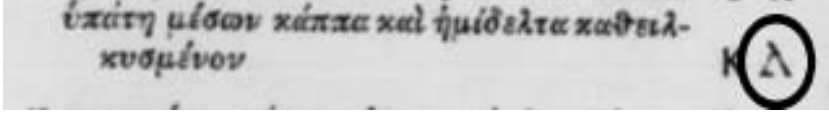
IV.a.53 Greek Instrumental Notation Symbol 37

Sign	Similar Unicode	Beta Code	Count
		#568	75 instances, 2 authors
<p>Definition and comments</p>			
<p>This symbol is Greek Instrumental Notation Symbol 39 rotated 90° clockwise.</p>			
<p>This symbol represents the instrumental c'.</p>			
<p>Example 1</p>			
<p>West, M.L., <i>Ancient Greek Music</i></p>			
			
<p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p>			
<p>Example 2 (Glyph variant)</p>			
<p>Alypius Mus., <i>Isagoge</i> Diat. 8</p>			
			
<p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 376</p>			


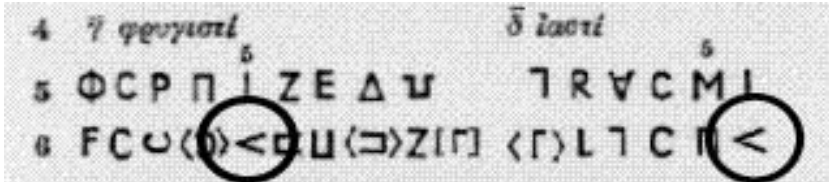
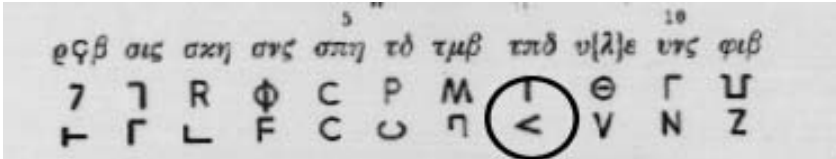
IV.a.54 Greek Instrumental Notation Symbol 38

Sign 	Similar Unicode	Beta Code #665	Count 4 instances, 1 author
Definition and comments This symbol is Greek Instrumental Notation Symbol 39 rotated 90° counter-clockwise. This symbol represents the instrumental first sharp of c'.			
Example 1 West, M.L., <i>Ancient Greek Music</i> <div style="text-align: center; margin: 10px 0;">  </div> West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256			
Example 2 Alypius Mus., <i>Isagoge Diat. 9</i> <div style="text-align: center; margin: 10px 0;">  </div> Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 377			


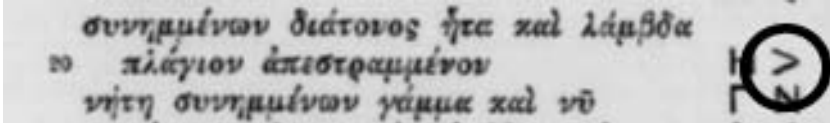
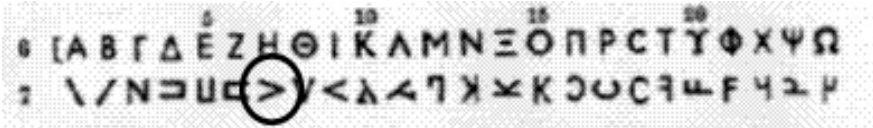
IV.a.55 Greek Instrumental Notation Symbol 39

Sign 	Similar Unicode	Beta Code #648	Count 5 instances, 1 author
Definition and comments This symbol is 0394 GREEK CAPITAL LETTER DELTA with the right hand half of its horizontal line removed. This symbol represents the instrumental second sharp of c'.			
Example 1 West, M.L., <i>Ancient Greek Music</i> <div style="text-align: center; margin: 10px 0;">  </div> West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256 Example 2 (Glyph variant) Alypius Mus., <i>Isagoge Diat. 6</i> <div style="text-align: center; margin: 10px 0;">  </div> Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 374			


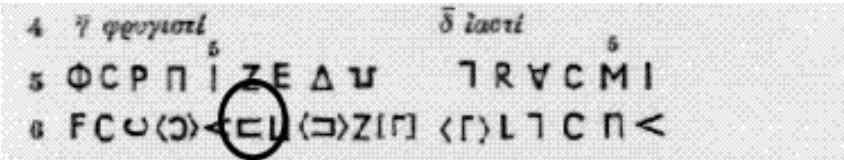
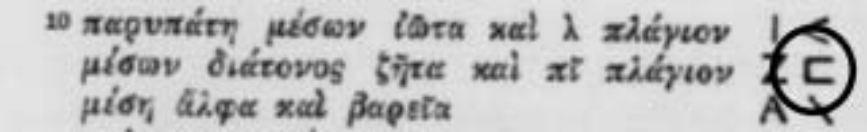
IV.a.56 Greek Instrumental Notation Symbol 40

Sign 	Similar Unicode	Beta Code #569	Count 76 instances, 2 authors
<p>Definition and comments This symbol is 039B GREEK CAPITAL LETTER LAMBDA rotated 90° counter-clockwise. This symbol represents the instrumental d'.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.9</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 19</p> <p>Example 2 Anonyma de musica scripta Bellermanniana, <i>Anonyma de musica scripta Bellermanniana</i>. Section 77</p>  <p>Najock, D., <i>Anonyma de musica scripta Bellermanniana</i> (Leipzig, Teubner, 1975) 25</p>			


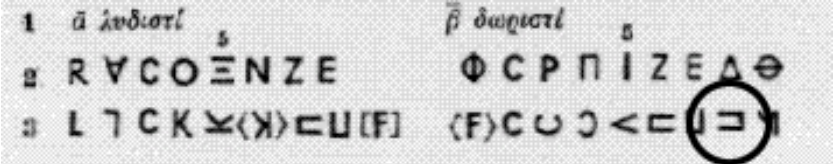
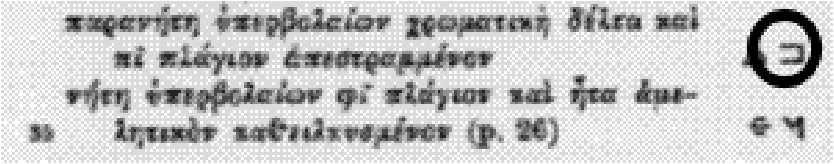
IV.a.57 Greek Instrumental Notation Symbol 42

Sign 	Similar Unicode	Beta Code #602	Count 9 instances, 1 author
<p>Definition and comments This symbol is 039B GREEK CAPITAL LETTER LAMBDA rotated 90° clockwise. This represents the instrumental second sharp of d'.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Diat. 7</p> <div data-bbox="396 594 1221 716" style="border: 1px solid black; padding: 5px; text-align: center;">  </div> <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 375</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p> <div data-bbox="375 869 1243 995" style="border: 1px solid black; padding: 5px; text-align: center;">  </div> <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p>			


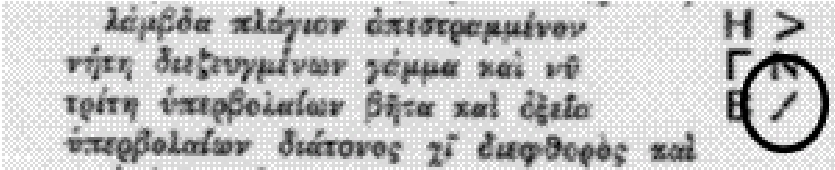
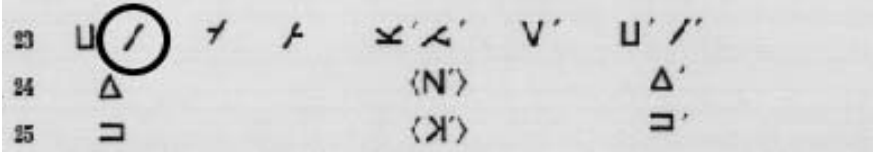
IV.a.58 Greek Instrumental Notation Symbol 43

Sign 	Similar Unicode	Beta Code #586	Count 30 instances, 2 authors
<p>Definition and comments This symbol is 03A0 GREEK CAPITAL LETTER PI rotated 90° counter-clockwise. This represents the instrumental e'.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.9</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 19</p> <p>Example 2 Alypius Mus., <i>Isagoge</i> Diat. 6</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 374</p>			


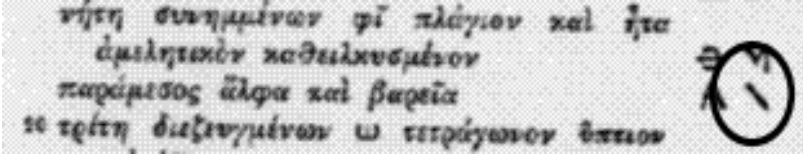
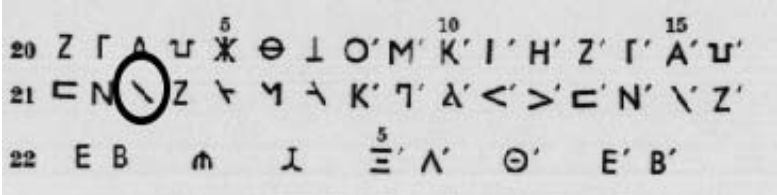
IV.a.59 Greek Instrumental Notation Symbol 45

Sign 	Similar Unicode	Beta Code #634	Count 6 instances, 1 author
<p>Definition and comments This symbol is 03A0 GREEK CAPITAL LETTER PI rotated 90° clockwise. This represents the instrumental second sharp of e´.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.9</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 19</p> <p>Example 2 Alypius Mus., <i>Isagoge Chrom.</i> 2</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 385</p>			


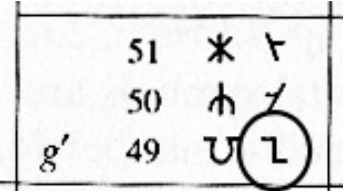
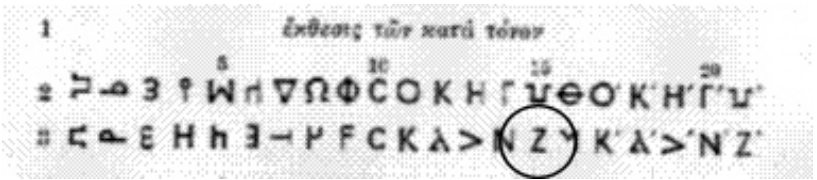
IV.a.60 Greek Instrumental Notation Symbol 47

Sign 	Similar Unicode	Beta Code #664	Count 4 instances, 1 author
Definition and comments This represents the instrumental first sharp of f'.			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Diat. 13</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 381</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 27</p>			


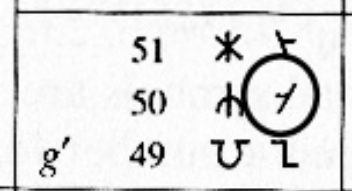
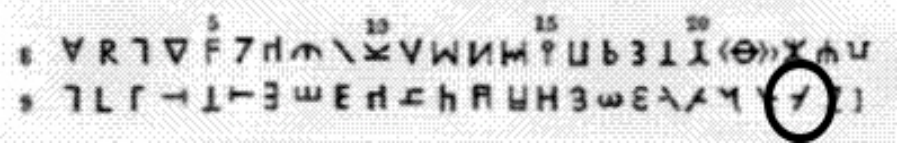
IV.a.61 Greek Instrumental Notation Symbol 48

Sign 	Similar Unicode	Beta Code #650	Count 9 instances, 1 author
<p>Definition and comments</p> <p>Note: this symbol has no glyph variants and is therefore not the same as GREEK VOCAL NOTATION SYMBOL 16.</p> <p>This represents the instrumental second sharp of f'.</p>			
<p>Example 1 Alypius Mus., <i>Isagoge</i> Diat. 12</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 380</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26</p>			


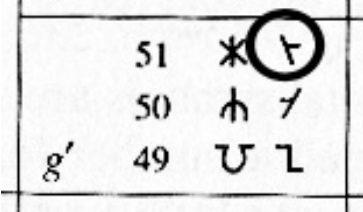
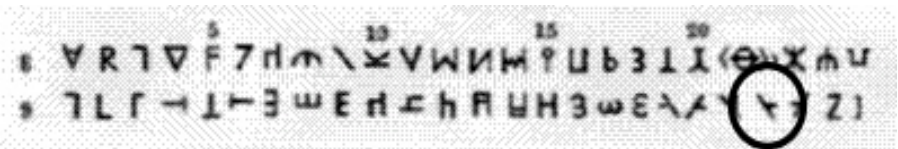
IV.a.62 Greek Instrumental Notation Symbol 49

Sign 	Similar Unicode	Beta Code #685	Count 1 instance, 1 author
<p>Definition and comments This character has two glyph variants, the one given above and one which is identical to 0396 GREEK CAPITAL LETTER ZETA. This represents the instrumental first sharp of g'.</p>			
<p>Example 1 West, M.L., <i>Ancient Greek Music</i></p> <div style="text-align: center;">  </div> <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p> <div style="text-align: center;">  </div> <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 24</p>			


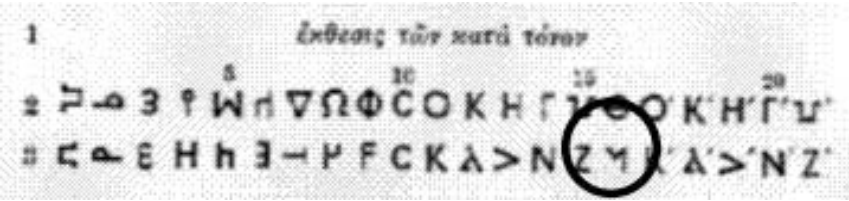
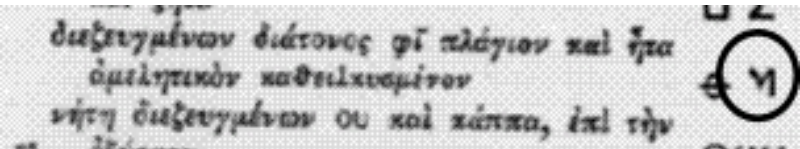
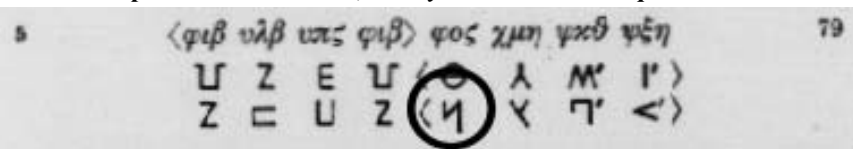
IV.a.63 Greek Instrumental Notation Symbol 50

Sign 	Similar Unicode	Beta Code #676	Count 3 instances, 1 author
<p>Definition and comments</p> <p>This symbol is Greek Instrumental Notation Symbol 54 reflected in the x-axis.</p> <p>This represents the instrumental first sharp of g'.</p>			
<p>Example 1 West, M.L., <i>Ancient Greek Music</i></p> <div style="text-align: center;">  </div> <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p> <div style="text-align: center;">  </div> <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p>			

IV.a.64 Greek Instrumental Notation Symbol 51



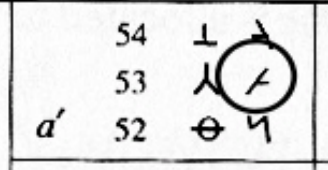
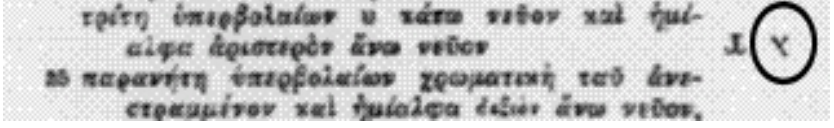
Sign 	Similar Unicode	Beta Code #658	Count 4 instances, 1 author
<p>Definition and comments This symbol is Greek Instrumental Notation Symbol 54 rotated 180°. This represents the instrumental second sharp of g'.</p>			
<p>Example 1 West, M.L., <i>Ancient Greek Music</i></p> <div style="text-align: center;">  </div> <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p> <p>Example 2 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p> <div style="text-align: center;">  </div> <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p>			

IV.a.65 Greek Instrumental Notation Symbol 52



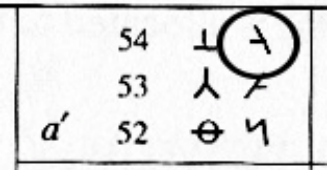
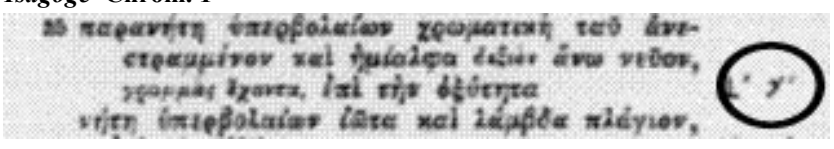
Sign 	Similar Unicode	Beta Code #590	Count 33 instances, 2 authors
<p>Definition and comments</p> <p>This symbol is probably a variant form of 039D GREEK CAPITAL LETTER NU, but may be a variation on 0397 GREEK CAPITAL LETTER ETA.¹¹¹</p> <p>This represents the instrumental a´.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 23</p> <p>Example 2 Alypius Mus., <i>Isagoge</i> Diat. 12</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 380</p> <p>Example 3 (Glyph variant) Anonyma de musica scripta Bellermanniana, <i>Anonyma de musica scripta Bellermanniana</i>. Section 77</p>  <p>Najock, D., <i>Anonyma de musica scripta Bellermanniana</i> (Leipzig, Teubner, 1975) 25</p>			

¹¹¹ See Winnington-Ingram (1978) 246


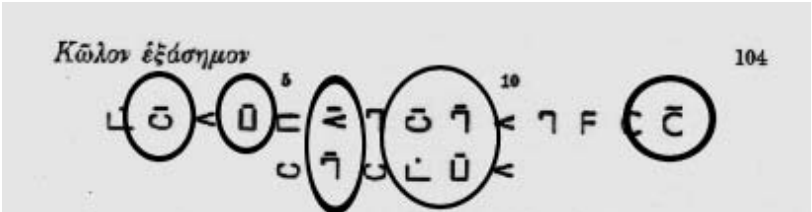
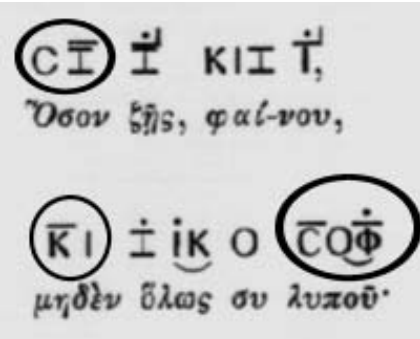
IV.a.66 Greek Instrumental Notation Symbol 53

Sign 	Similar Unicode	Beta Code #675	Count 3 instances, 1 author
<p>Definition and comments This symbol is Greek Instrumental Notation Symbol 54 reflected in the y-axis. This represents the instrumental first sharp of a´.</p>			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p> <p>Example 2 West, M.L., <i>Ancient Greek Music</i></p>  <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p> <p>Example 3 (Alypian glyph variant) Alypius Mus., <i>Isagoge Chrom.</i> 1</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 384</p>			






IV.a.67 Greek Instrumental Notation Symbol 54

Sign 	Similar Unicode	Beta Code #659	Count 4 instances, 1 author
Definition and comments This represents the instrumental second sharp of a´.			
<p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p> <p>Example 2 West, M.L., <i>Ancient Greek Music</i></p>  <p>West, M.L., <i>Ancient Greek Music</i> (Clarendon Press, Oxford, 1992) 256</p> <p>Example 3 (Alypian glyph variant) Alypius Mus., <i>Isagoge Chrom.</i> 1</p>  <p>Jan, K., <i>Musici scriptores Graeci</i> (Georg Olms, Hildesheim, 1962) 384</p>			


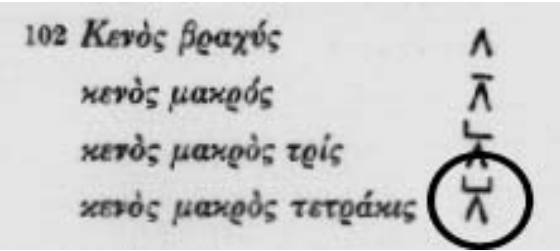
IV.a.68 Greek Musical Diseme

Sign	Similar Unicode	Beta Code	Count
			
<p>Definition and comments</p>			
<p>A long nonspacing overbar which marks two beats. This diacritic may also stretch over two characters.</p>			
<p>This form also combines with the Greek Musical Stigma, below.</p>			
<p>Example 1</p>			
<p>Anonyma de musica scripta Bellermanniana, <i>Anonyma de musica scripta Bellermanniana</i>. Section 104</p>			
			
<p>Najock, D., <i>Anonyma de musica scripta Bellermanniana</i>. (Leipzig, Teubner, 1975) 33</p>			
<p>Example 2 (Combining with Stigma)</p>			
<p><i>Sicili epitaphium</i></p> 			
<p>Jan, K., <i>Musici scriptores Graeci: Supplementum</i> (Georg Olms, Hildesheim, 1962) 38</p>			


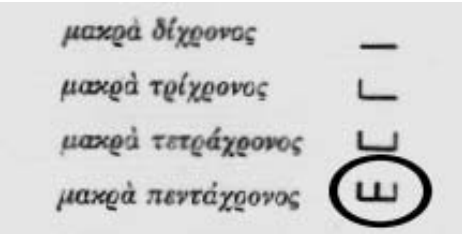
IV.a.69 Greek Musical Triseme

Sign 	Similar Unicode	Beta Code #563	Count 57 instances, 1 author
<p>Definition and comments</p> <p>A long nonspacing overbar with a small upright at the right which marks three beats.</p> <p>There are three glyph variants in antiquity: examples of  may be found in Winnington-Ingram (1975) 1, examples of  may be found in Jan (1962 Supp) 38, an example of  may be found in Johnson (2000) 76.</p> <p>The form  is the TLG's preferred glyph as it appears to be the more common.</p> <p>This form also combines with the Greek Musical Stigme, below.</p> <p>See also Greek Metrical Triseme below.</p>			
<p>Example 1</p> <p>Anonyma de musica scripta Bellermanniana, <i>Anonyma de musica scripta Bellermanniana</i>. Section 102</p> <div data-bbox="586 867 1029 1062" data-label="Image"> </div> <p>Najock, D., <i>Anonyma de musica scripta Bellermanniana</i>. (Leipzig, Teubner, 1975) 32</p> <p>Example 3 (Combining with Stigme)</p> <p><i>Sicili epitaphium</i></p> <div data-bbox="594 1213 1024 1562" data-label="Image"> </div> <p>Jan, K., <i>Musici scriptores Graeci: Supplementum</i> (Georg Olms, Hildesheim, 1962) 38</p>			


IV.a.70 Greek Musical Tetraseme

Sign 	Similar Unicode	Beta Code #564	Count 4 instances, 1 author
<p>Definition and comments</p> <p>A long nonspacing overbar with a small upright at the left and right which marks four beats.</p> <p>This form also combines with the Greek Musical Stigme, below.</p> <p>See also Greek Metrical Tetraseme below.</p>			
<p>Example 2</p> <p><i>Anonyma de musica scripta Bellermanniana, Anonyma de musica scripta Bellermanniana. Section 83</i></p> <div data-bbox="532 646 1089 894" style="text-align: center;">  </div> <p>Najock, D., <i>Anonyma de musica scripta Bellermanniana</i>. (Leipzig, Teubner, 1975) 28</p>			

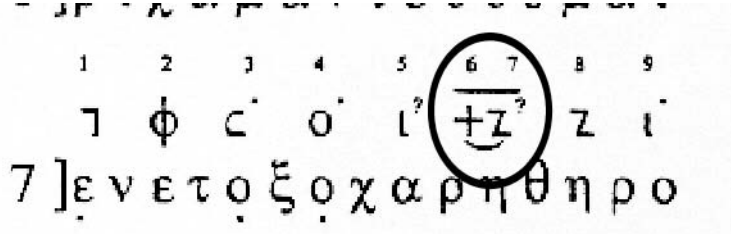
IV.a.71 Greek Musical Pentaseme

Sign 	Similar Unicode	Beta Code #310	Count 80 instances, 27 authors
<p>Definition and comments</p> <p>A long nonspacing overbar with a small upright to the left and to the right and at the center which mark five beats.</p> <p>This form also combines with the Greek Musical Stigme, below.</p> <p>See also Greek Metrical Pentaseme below.</p>			
<p>Example 1</p> <p><i>Anonyma de musica scripta Bellermanniana, Anonyma de musica scripta Bellermanniana. Section 83</i></p> <div style="text-align: center; border: 1px solid gray; padding: 5px; margin: 10px auto; width: fit-content;">  </div> <p>Najock, D., <i>Anonyma de musica scripta Bellermanniana</i>. (Leipzig, Teubner, 1975) 28</p>			

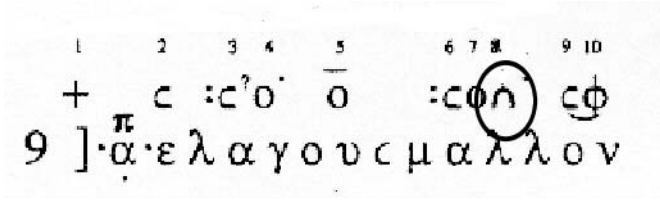
IV.a.72 Greek Musical Stigme

Sign 	Similar Unicode	Beta Code See below	Count
<p>Definition and comments</p> <p>This nonspacing dot appears above the musical letter, Diseme or Triseme. This diacritic may also stretch over two characters, in which case it appears above and in between the two characters it augments.</p> <p>The Unicode 0307 COMBINING DOT ABOVE is very similar to this character. The question of how this would combine with the other combining forms given above is unclear. The TLG is uncertain whether this is a matter for rendering or for Unicode.</p>			
<p>Example 1 <i>Anonyma de musica scripta Bellermanniana, Anonyma de musica scripta Bellermanniana. Section 100</i></p> <div data-bbox="565 741 1057 1205" data-label="Image"> </div> <p>Najock, D., <i>Anonyma de musica scripta Bellermanniana</i>. (Leipzig, Teubner, 1975) 32</p> <p>Example 2 <i>Sicili epitaphium</i></p> <div data-bbox="586 1356 1036 1724" data-label="Image"> </div> <p>Jan, K., <i>Musici scriptores Graeci: Supplementum</i> (Georg Olms, Hildesheim, 1962) 38</p>			

IV.a.73 Greek Musical Unreadable Notation

Sign	Similar Unicode	Beta Code	Count
+			
Definition and comments			
This character is used in modern publications to indicate that a note cannot be read, it appears as an outsized 002B PLUS SIGN.			
Example 1			
 <p>The image shows a line of musical notation with nine notes. Above the notes are numbers 1 through 9. The notes are: 1 (gamma), 2 (phi), 3 (sigma), 4 (omicron), 5 (iota), 6 (plus sign over a note), 7 (zeta), 8 (iota). Below the notes is the Greek text: 7] ε ν ε τ ο ξ ο χ α ρ η θ η ρ ο. The plus sign over the sixth note is circled in red.</p>			
Johnson, W.A., “Musical Evenings in the Early Empire” in <i>JHS</i> 120 (2000) 61			

IV.a.74 Greek Musical Leimma

Sign	Similar Unicode	Beta Code	Count
∩		#310 et al, see below	80 instances, 27 authors
Definition and comments			
This character is used as a mark of lengthening or rest. The TLG notes two glyph variants: ∩ and Λ.			
Example 1			
 <p>The image shows a line of musical notation with ten notes. Above the notes are numbers 1 through 10. The notes are: 1 (plus sign), 2 (sigma), 3 (sigma), 4 (omicron), 5 (omicron), 6 (sigma), 7 (sigma), 8 (leimma symbol over a note), 9 (sigma), 10 (phi). Below the notes is the Greek text: 9] α ε λ α γ ο υ ς μ α λ λ ο ν. The leimma symbol over the eighth note is circled in red.</p>			
Johnson, W.A., “Musical Evenings in the Early Empire” in <i>JHS</i> 120 (2000) 61			

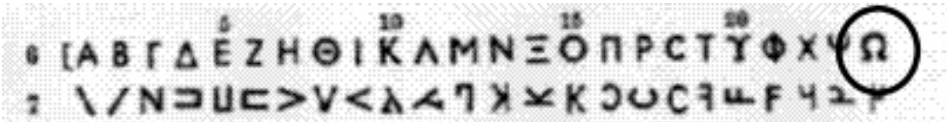
b. Ancient Greek Musical Characters: Additional Definition of Preexisting Characters

Table of Characters Included in this Section of the Proposal

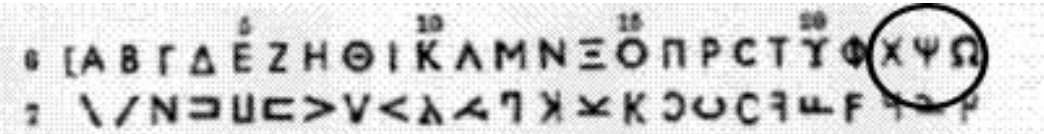
Number		Name	Unicode	Comment
Ancient Greek Vocal Notation				
IV.b.1	Ω	Greek Vocal Notation Symbol 25	03A9	
IV.b.2	Ψ	Greek Vocal Notation Symbol 26	03A8	
IV.b.3	Χ	Greek Vocal Notation Symbol 27	03A7	
IV.b.4	Φ	Greek Vocal Notation Symbol 28	03A6	
IV.b.5	Υ	Greek Vocal Notation Symbol 29	03A5	
IV.b.6	Τ	Greek Vocal Notation Symbol 30	03A4	
IV.b.7	Ϟ	Greek Vocal Notation Symbol 31		
IV.b.8	Ρ	Greek Vocal Notation Symbol 32	03A1	
IV.b.9	Π	Greek Vocal Notation Symbol 33	03A0	
IV.b.10	Ο	Greek Vocal Notation Symbol 34	039F	
IV.b.11	Ξ	Greek Vocal Notation Symbol 35	039E	
IV.b.12	Ν	Greek Vocal Notation Symbol 36 · Greek Instrumental Notation Symbol 46	039D	
IV.b.13	Μ	Greek Vocal Notation Symbol 37	039C	
IV.b.14	Λ	Greek Vocal Notation Symbol 38	039B	
IV.b.15	Κ	Greek Vocal Notation Symbol 39 · Greek Instrumental Notation Symbol 34	039A	
IV.b.16	Ι	Greek Vocal Notation Symbol 40	0399	
IV.b.17	Θ	Greek Vocal Notation Symbol 41	0398	
IV.b.18	Η	Greek Vocal Notation Symbol 42	0397	
IV.b.19	Ζ	Greek Vocal Notation Symbol 43	0396	
IV.b.20	Ε	Greek Vocal Notation Symbol 44 · Greek Instrumental Notation Symbol 16	0395	
IV.b.21	Δ	Greek Vocal Notation Symbol 45	0394	
IV.b.22	Γ	Greek Vocal Notation Symbol 46	0393	
IV.b.23	Β	Greek Vocal Notation Symbol 47	0392	
IV.b.24	Α	Greek Vocal Notation Symbol 48	0391	

Greek Vocal Notation


V.b.1 Greek Vocal Notation Symbol 25

Sign	Unicode	Beta Code	Count
Ω	03A9	#641	4 instances, 1 author
Definition and comments This represents the vocal f.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			

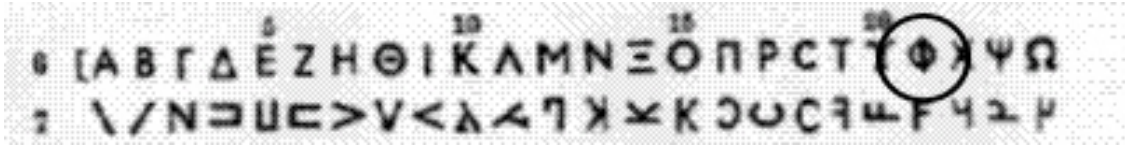
V.b.2 Greek Vocal Notation Symbol 26

Sign	Unicode	Beta Code	Count
Ψ	03A8		
Definition and comments This represents the vocal first sharp of f.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			

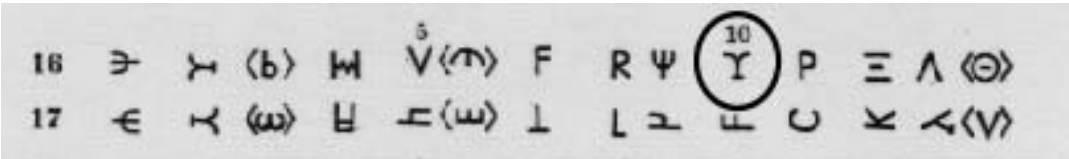
V.b.3 Greek Vocal Notation Symbol 27

Sign X	Unicode 03A7	Beta Code #651	Count 4 instances, 1 author
Definition and comments This represents the vocal second sharp of f.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			

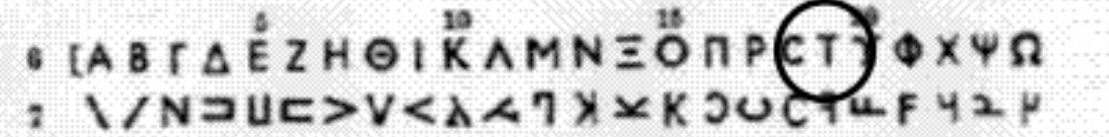
V.b.4 Greek Vocal Notation Symbol 28

Sign Φ	Unicode 03A6	Beta Code #577	Count 11 instances, 2 author
Definition and comments This represents the vocal g.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			

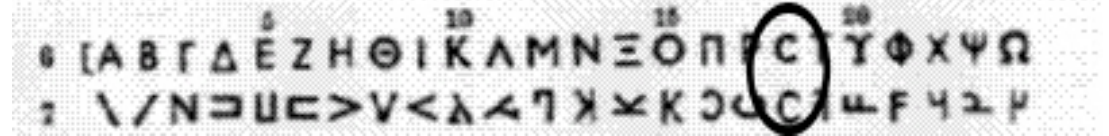
V.b.5 Greek Vocal Notation Symbol 29

Sign Υ	Unicode 03A5	Beta Code #662	Count 3 instances, 1 author
Definition and comments This represents the vocal first sharp of g.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26			

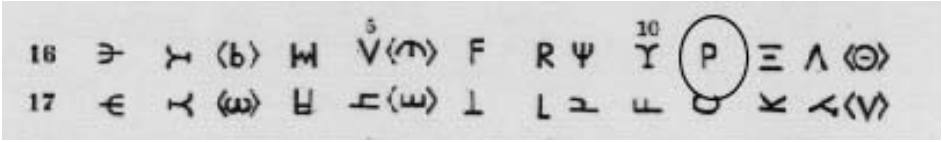
V.b.6 Greek Vocal Notation Symbol 30

Sign	Unicode	Beta Code	Count
T	03A4	#652	6 instances, 1 author
Definition and comments			
This represents the vocal second sharp of g.			
Example 1			
Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			


V.b.7 Greek Vocal Notation Symbol 31

Sign	Unicode	Beta Code	Count
C	See below	#570	103 instances, 3 authors
Definition and comments			
This represents the vocal a.			
This character is discussed with the proposal for the capital lunate sigma above.			
Example 1			
Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			

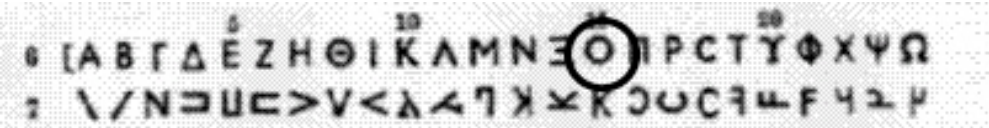
V.b.8 Greek Vocal Notation Symbol 32

Sign	Unicode	Beta Code	Count
P	03A1	#578	11 instances, 2 authors
Definition and comments			
This represents the vocal first sharp of a.			
Example 1			
Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			



V.b.9 Greek Vocal Notation Symbol 33

Sign	Unicode	Beta Code	Count
Π	03A0	#603	9 instances, 1 author
Definition and comments			
This represents the vocal second sharp of a.			
Example 1			
Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			



V.b.10 Greek Vocal Notation Symbol 34

Sign	Unicode	Beta Code	Count
O	039F	#628	8 instances, 1 author
Definition and comments			
This represents the vocal b.			
Example 1			
Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			


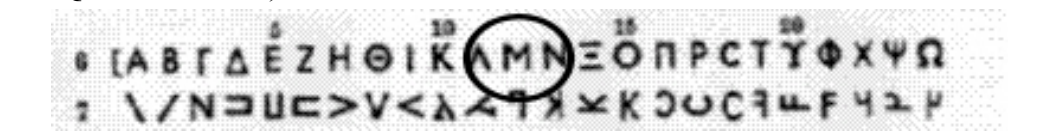
V.b.11 Greek Vocal Notation Symbol 35

Sign 	Unicode 039E	Beta Code #629	Count 5 instances, 1 author
Definition and comments This represents the vocal first sharp of b.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			


V.b.12 Greek Vocal Notation Symbol 36

Sign 	Unicode 039D	Beta Code #583	Count 13 instances, 2 authors
• Greek Instrumental Notation Symbol 46			
Definition and comments This represents the vocal second sharp of b.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			

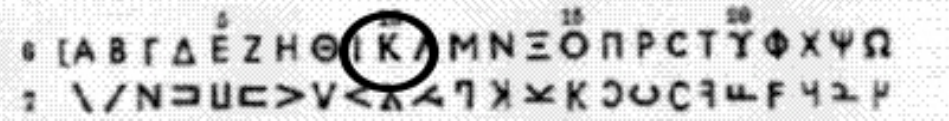
V.b.13 Greek Vocal Notation Symbol 37

Sign 	Unicode 039C	Beta Code #579	Count 16 instances, 2 authors
Definition and comments This represents the vocal c'.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			

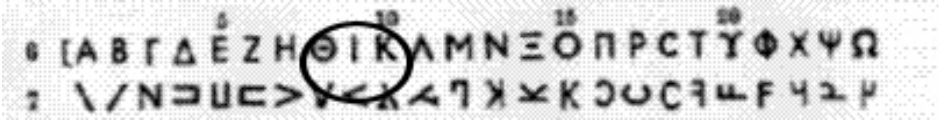
V.b.14 Greek Vocal Notation Symbol 38

Sign	Unicode	Beta Code	Count
Λ	039B	#593	25 instances, 2 authors
Definition and comments This represents the vocal first sharp of c'.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26			


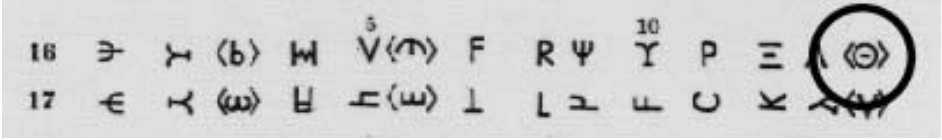
V.b.15 Greek Vocal Notation Symbol 39

Sign	Unicode	Beta Code	Count
K	039A	#631	13 instances, 1 author
• Greek Instrumental Notation Symbol 34			
Definition and comments This represents the vocal second sharp of c'.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			


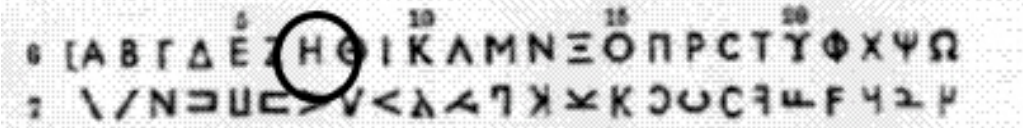
V.b.16 Greek Vocal Notation Symbol 40

Sign	Unicode	Beta Code	Count
	0399	#580	17 instances, 2 authors
Definition and comments This represents the vocal d'.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			


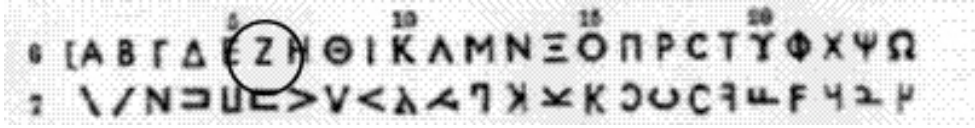
V.b.17 Greek Vocal Notation Symbol 41

Sign 	Unicode 0398	Beta Code #581	Count 7 instances, 2 authors
Definition and comments This represents the vocal first sharp of d'.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 26			

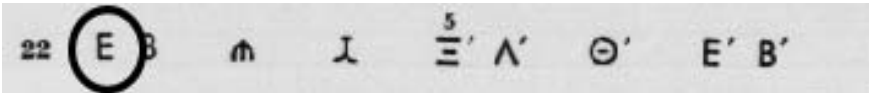
V.b.18 Greek Vocal Notation Symbol 42

Sign 	Unicode 0397	Beta Code #642	Count 11 instances, 1 author
Definition and comments This represents the vocal second sharp of d'.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			

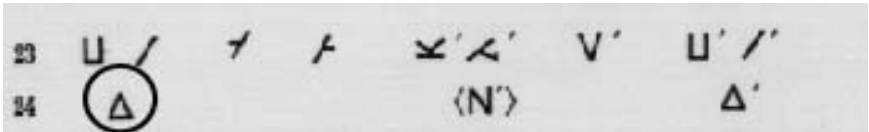
V.b.19 Greek Vocal Notation Symbol 43

Sign 	Unicode 0396	Beta Code #585	Count 52 instances, 2 authors
Definition and comments This represents the vocal e'.			
Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			

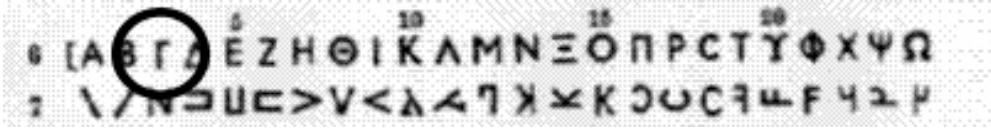
V.b.20 Greek Vocal Notation Symbol 44

Sign	Unicode	Beta Code	Count
Ε	0395	#587	16 instances, 2 authors
<p>• Greek Instrumental Notation Symbol 16</p> <p>Definition and comments This represents the vocal first sharp of e'.</p> <p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p>			

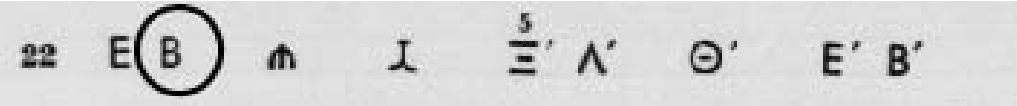
V.b.21 Greek Vocal Notation Symbol 45

Sign	Unicode	Beta Code	Count
Δ	0394	#598, #630	8 instances, 2 authors
<p>Definition and comments This represents the vocal second sharp of e'.</p> <p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 27</p>			

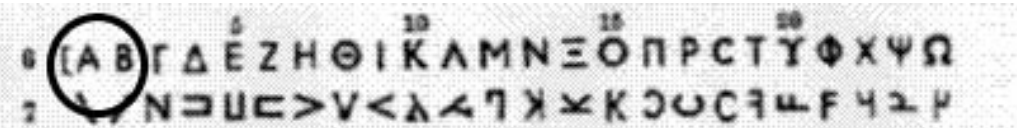
V.b.22 Greek Vocal Notation Symbol 46

Sign	Unicode	Beta Code	Count
Γ	0393	#574	58 instances, 2 authors
<p>Definition and comments This represents the vocal f'.</p> <p>Example 1 Aristides Quintilianus Mus., <i>De musica</i> 1.11</p>  <p>Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25</p>			

V.b.23 Greek Vocal Notation Symbol 47

Sign	Unicode	Beta Code	Count
B	0392	#661	4 instances, 1 author
Definition and comments			
This represents the vocal first sharp of f'.			
Example 1			
Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			

V.b.24 Greek Vocal Notation Symbol 48

Sign	Unicode	Beta Code	Count
A	0391	#660	6 instances, 1 author
Definition and comments			
This represents the vocal second sharp of f'.			
Example 1			
Aristides Quintilianus Mus., <i>De musica</i> 1.11			
			
Winnington-Ingram, R.P., <i>Aristides Quintiliani de musica libri tres</i> (Teubner, Leipzig, 1963) 25			

V. Ancient Greek Metrical Characters

Introduction and Overview

Table of Characters Proposed

Number		Name	Unicode	Comment
V.b.1	×	Anceps	00D7	
V.b.2	˘	Breve	02D8	
V.b.3	–	Longum	2012 or 2013	
V.a.1	⏏	Metrical Long Over Short	02D8 + 0305	
V.a.2	⏐	Metrical Short Over Long	02D8 + 0332	
V.a.3	⏏⏐	Metrical Long Over Two Shorts	02D8 + 0305 + 02D8 + 0305	
V.a.4	⏐⏐	Metrical Two Shorts Over Long	02D8 + 0332 + 02D8 + 0332	
V.a.5	⏏⏐	Metrical Two Shorts Joined	02D8 + 02D8	
V.a.6	⏏⏏	Greek Metrical Triseme		
V.a.7	⏏⏏⏏	Greek Metrical Tetraseme		
V.a.8	⏏⏏⏏⏏	Greek Metrical Pentaseme		

Introduction

A standard set of non-combining forms has been developed for the discussion of Greek and Roman meter. These forms are widely used in all aspects of scholarly works pertaining to ancient poetry and music. The Classical Greek metrical system was developed between the 8th and 4th centuries BC and is based on quantitative rhythm.

This system has been in use since Classical times: we possess papyri which contain this notation.¹¹²

The system for representing the Greek quantitative metrics is based on the two characters for short and long syllables: ∪ and – respectively. So the Dactyl—a long followed by two shorts—is represented as: –∪∪. A further character is the *Anceps* which represents a syllable which may either be short or long. So, an Iambic trimeter is written as:

x–∪–x–∪–x–∪–¹¹³

Two short syllables which may be resolved into a long is represented by the *biceps* ∪∪̄. So, the Dactylic hexameter is written out so:

–∪∪̄–∪∪̄–∪∪̄–∪∪̄–∪∪̄–

Similarly, there are long syllables which may be resolved into two shorts: ∪̄∪. In Aeolian metrics the symbol OO is used to represent a foot where one of the two syllables may be either long or short. So the Asclepiadeus is written:

OO–∪∪̄–∪∪̄–∪∪̄–

A syllable which is usually short but may be long is represented: ∪̄. A syllable which is usually long but may be short is represented: ∪̄. There are also symbols for Trisemes.: ∪̄. Also, characters for four and five beats are recorded—being ∪̄ and ∪̄ respectively.

Further characters include: position lost to syncopation or catalexis represented as ∪̄; frequent word end, ∪̄; word end, ∪̄; verse or period end, ∪̄; stanza end, ∪̄; poem end, ∪̄; hiatus, ∪̄; dovetail, ∪̄; respension, ∪̄; anacalasis, ∪̄; ictus, ∪̄. A final symbol is the bridge, ∪̄, which indicates that a word-end is forbidden at that point in the scheme, ∪̄.

¹¹² For example, Oxyrhynchus Papyrus 210 (Treatise on Metres) in Grenfell & Hunt (1899) 41-52

¹¹³ It will be noted that the typesetting of these symbols is rather inconsistent in this document. This is because we are relying partly on the current Unicode Standard and partly on graphic files to be able to represent these symbols more or less correctly.

There are a few other, rarely used symbols which are all stacked versions of the characters given above. For instance, a long which may be resolved into a short stacked on top of an Anceps.

Representation in the Current Unicode Standard (3.2)

All possible non-stacking characters used in the Greek metrical notation are given in the table *Overview of Greek Metrical Notation* below. The majority of characters required for the representation of Greek meter are already present in Unicode Standard 3.2. The characters which are already satisfactorily present in Unicode will not be discussed further. Eleven characters cannot currently be encoded satisfactorily in Unicode 3.2.

Overview of Greek Metrical Notation

	Name	Unicode	Comment
×	Anceps	00D7	
˘	Breve	02D8	
—	Longum	2012 or 2013	
⏏	Metrical Long Over Short		Similar to 02D8 + 0305
⏐	Metrical Short Over Long		Similar to 02D8 + 0332
⏏⏐	Metrical Long Over Two Shorts		Similar to 02D8 + 0305 + 02D8 + 0305
⏐⏐	Metrical Two Shorts Over Long		Similar to 02D8 + 0332 + 02D8 + 0332
oo	Aeolian Basis		Similar to 2218 + 2218
⏏⏐	Metrical Two Shorts Joined		Similar to 02D8 + 02D8
˘—	Breve Combining with Longum	02D8 + 0336	A second glyph variant may be encoded with 2312 + 0323
^	Catalexis indicator	0020 + 032D	
∴	Frequent Word-End Indicator	250A	
	Word End Indicator	007C	
	Period End Indicator	2016 or 2225	
	Stanza End Indicator	007C + 007C + 007C	
⊗	Poem End Indicator	2297	
ᵀ	Hiatus	<superscript> 0048	The character } may also be used to represent a hiatus ¹¹⁴ the Unicode of which is 2307.
∫	Dovetail	0283 or possibly 222B	
~	Responion	007E	
¨	Anaclasis	00A8	
'	Ictus	0301	
ᾱᾱ	Bridge	0361	
⏏	Greek Metrical Triseme		
⏏⏏	Greek Metrical Tetraseme		
⏏⏏⏏	Greek Metrical Pentaseme		

¹¹⁴ See Raven (1965) 13

Comments on Characters Proposed in Section a

This section contains eight characters. Approximations of characters 1-5 may be created using characters in the Unicode Standard; however there are several problems with these representations. For example,

- they are visually inaccurate;
- on occasion a character which is semantically one character may have to be encoded in such a way as to make into two characters (e.g., Long over two Shorts);
- it is necessary to occasionally stack metrical characters. So, for instance, it may be necessary to have Two Shorts over Long stacked over an Anceps. This becomes extremely difficult to effect were the Two Shorts over Long to be encoded as two separate characters.
- Further, in the specific case of the Double Short, to encode it with two Shorts would be visually confusing as the same meter will often contain both Shorts and Double Shorts (e.g. aeolo-chori-ambic and the dactylo-epitric).

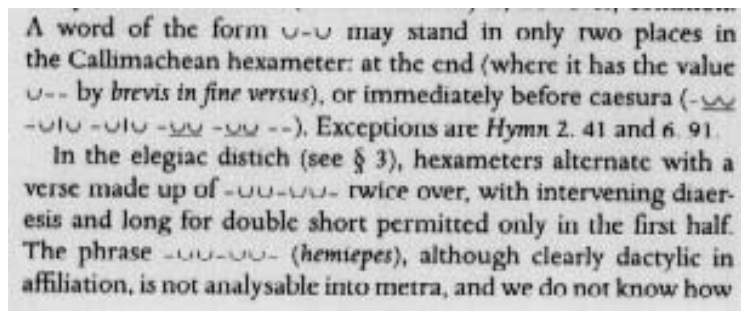
Characters 6-8 cannot currently be encoded in Unicode.

Comments on Characters Proposed in Section b

This section contains three characters. While there is a character 02D8 BREVE in Unicode 3.2, this character will not adequately represent the Greek Metrical Short because 02D8 is the non spacing version 0306 COMBINING BREVE, which is intended to be displayed above the letter. The characters discussed here, however, are typeset alongside the normal letters, as the following two examples from modern reference works show:

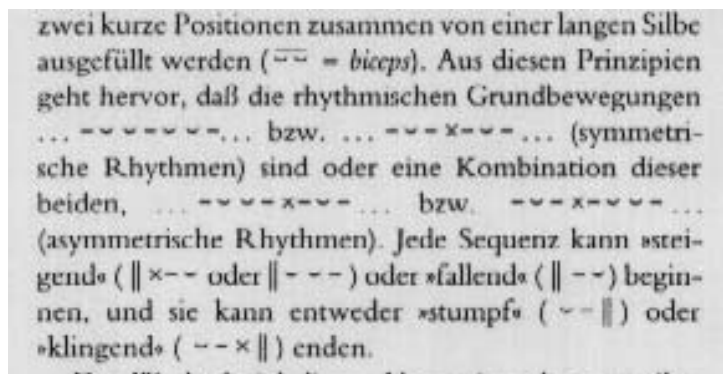
Example 1 Oxford Classical Dictionary 3rd Edition (1996) 972

In the OCD³ the preferred typesetting is to have the Breve line up with the bottom of the line, for the Breve to be approximately 0.5mm shorter than the lower case letters and to format the other characters around them.



Example 2 Der Neue Pauly Volume 8 (2000) 118

The DNP however lines up the Longum with the top of the lower case letters, and vertically centers the others on this point. The unadorned Breve here is raised 1.5mm above the line.



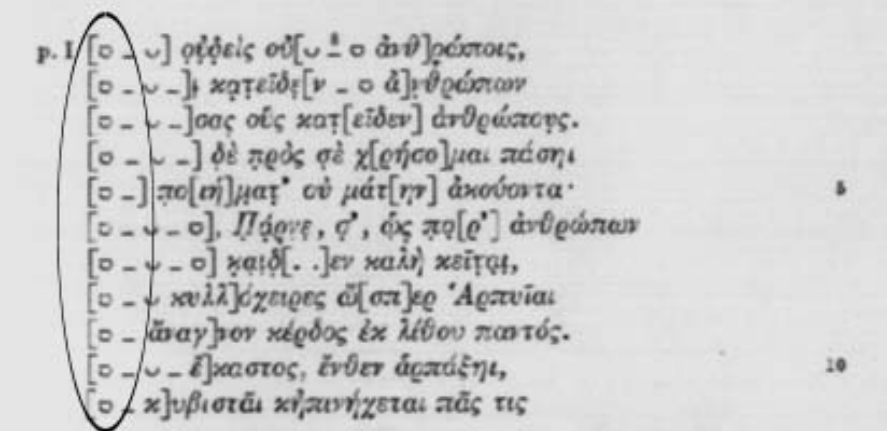
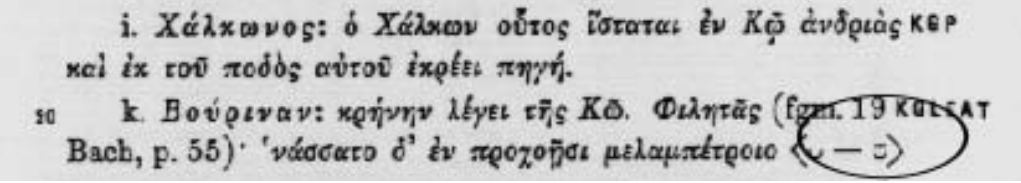
For this reason we have proposed 02D8 as a much closer alternative to the appearance of the actual Breve as used by scholars. Using the characters as currently present in Unicode gives an appearance much closer to that of DNP rather than the OCD.

a. Ancient Greek Metrical Characters: New Characters

Table of Characters Included in this Section

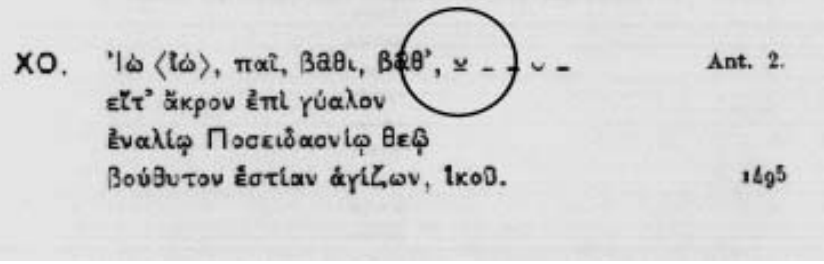
Number		Name	Similar Unicode	Comment
V.a.1	⏏	Metrical Long Over Short	02D8 + 0305	
V.a.2	⏎	Metrical Short Over Long	02D8 + 0332	
V.a.3	⏏⏎	Metrical Long Over Two Shorts	02D8 + 0305 + 02D8 + 0305	
V.a.4	⏎⏎	Metrical Two Shorts Over Long	02D8 + 0332 + 02D8 + 0332	
V.a.5	⏏⏎	Metrical Two Shorts Joined	02D8 + 02D8	
V.a.6	⏏⏏⏏	Greek Metrical Triseme		
V.a.7	⏏⏏⏏⏏	Greek Metrical Tetraseme		
V.a.8	⏏⏏⏏⏏⏏	Greek Metrical Pentaseme		

V.a.1 Metrical Long Over Short

Sign	Similar Unicode	Beta Code	Count
⏟	02D8 0304	%44	158 instances, 20 authors
Definition and comments A usually short Anceps. ¹¹⁵			
Example 1 Choliambica Adespota (ALG), <i>Anonymus in turpilucrum</i> .			
			
Diehl, E., <i>Anthologia lyrica Graeca</i> , fasc. 3, 3 rd ed. (Teubner, Leipzig, 1952) 131			
Example 2 Scholia in Theocritum, Scholia in Theocritum. 7, 5-9k			
			
Wendel, K., <i>Scholia in Theocritum vetera</i> (Teubner, Leipzig, 1914) 79-80			

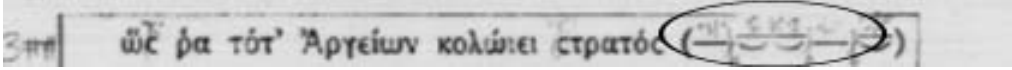
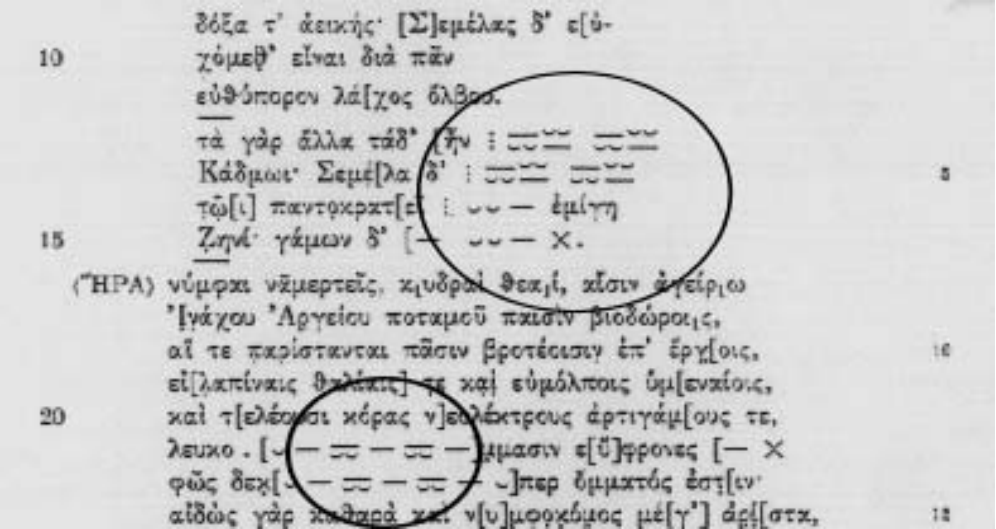
¹¹⁵ Maas (1962) 28

V.a.2 Metrical Short Over Long

Sign	Similar Unicode	Beta Code	Count
◡ —	02C9 0306	%45	111 instances, 26 authors
Definition and comments A usually long Anceps. ¹¹⁶			
Example 1 Sophocles Trag., <i>Oedipus Coloneus</i> .			
			
Dain, A., Mazon, P., <i>Sophocle</i> , vol. 3 (Les Belles Lettres, Paris, 1960) 139			


¹¹⁶ Maas (1962) 28

V.a.3 Metrical Long Over Two Shorts

Sign	Similar Unicode	Beta Code	Count
Ɱ		%46	80 instances, 27 authors
Definition and comments			
A part of the foot which may consist of either a long or two shorts, where the long is more frequent than the two shorts. ¹¹⁷			
Example 1			
Antimachus Eleg. et Epic., <i>Fragmenta</i> (Wyss). Fragment 43			
			
Wyss, B., <i>Antimachi Colophonii reliquiae</i> (Weidmann, Berlin, 1936) 23			
Example 2			
Aeschylus Trag. Atheniensis, <i>Fragmenta</i> (Mette). Tetralogy 34 play A fragment 355			
			
Mette, H.J., <i>Die Fragmente der Tragödien des Aischylos</i> (Akademie-Verlag, Berlin, 1959) 133			

¹¹⁷ Maas (1962) 25

V.a.4 Metrical Two Shorts Over Long

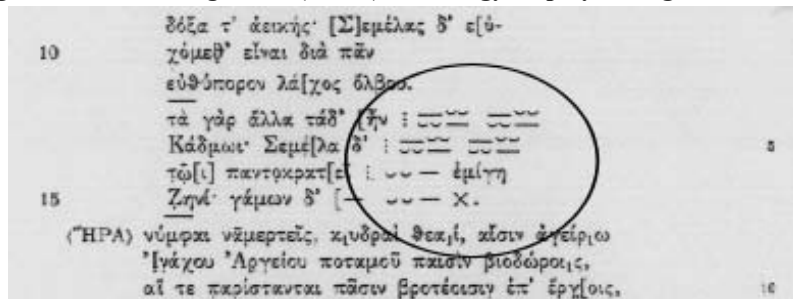
Sign	Similar Unicode	Beta Code	Count
		%42	55 instances, 13 authors; (Papyri) 10 instances, 2 authors; (Inscr) 29 instances, 4 authors

Definition and comments

A part of the foot which may consist of either a long or two shorts, where the two shorts are more frequent than the long.¹¹⁸

Example 1

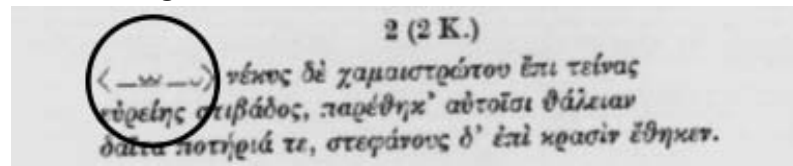
Aeschylus Trag. Atheniensis, *Fragmenta* (Mette). Tetralogy 34 play A fragment 355



Mette, H.J., *Die Fragmente der Tragödien des Aischylos* (Akademie-Verlag, Berlin, 1959) 133

Example 2

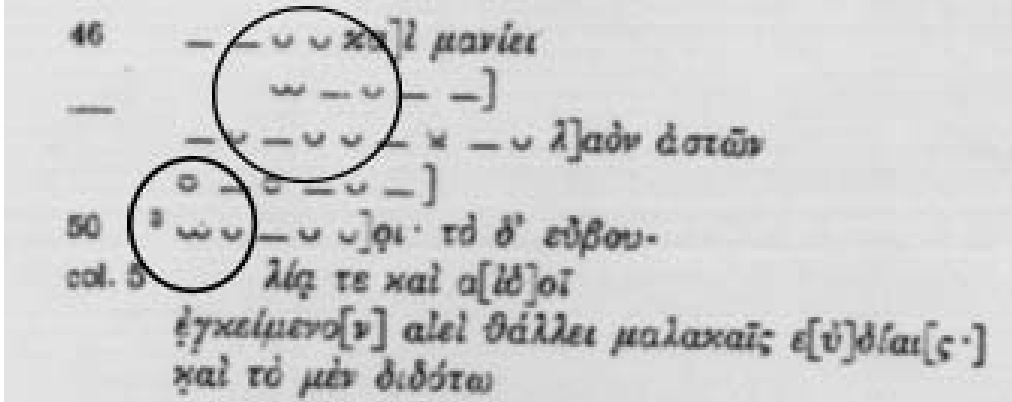
Alcmaeonis, *Alcmaeonis*. Fragment 2.



Bernabé, A., *Poetarum epicorum Graecorum testimonia et fragmenta*, pt. 1 (Teubner, Leipzig, 1987) 33





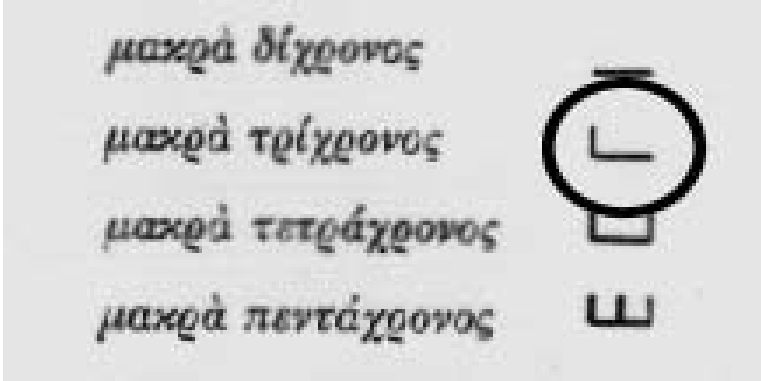
¹¹⁸ Maas (1962) 25

V.a.5 Metrical Two Shorts Joined

Sign ~	Similar Unicode	Beta Code %141	Count 8 instances, 1 author
<p>Definition and comments This character is used in certain meters (aeolo-chori-ambic and dactylo-epitric) to represent a long which may not be resolved into a double short. This is especially prevalent in Attic drama, notably comic spoken verse.¹¹⁹</p>			
<p>Example 1 (Note how this symbol is used here in conjunction with separate shorts) Pindarus Lyr., <i>Fragmenta</i>. Paian fragment 52b</p>  <p>Snell, B., <i>Pindari carmina cum fragmentis</i>, 3rd ed. (Leipzig, 1959) 122-3</p>			

¹¹⁹ See Parker, L.P.E., “metre, Greek” in *OCD*³ (1996) 970

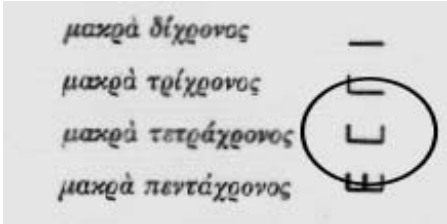
V.a.6 Greek Metrical Triseme

Sign 	Similar Unicode	Beta Code #563	Count 57 instances, 1 author
<p>Definition and comments</p> <p>A long nonspacing horizontal bar with a small upright at the right which marks three beats.</p> <p>There are two glyphs in antiquity: examples of  may be found in Winnington-Ingram,¹²⁰ examples of  may be found in Jan.¹²¹</p> <p>The form  is the more common.</p> <p>See also Greek Musical Triseme in the musical section above.</p>			
<p>Example 1 (Non-combining form)</p> <p>Anonyma de musica scripta Bellermanniana, <i>Anonyma de musica scripta Bellermanniana</i>. Section 83</p> <div data-bbox="435 743 1187 1121" style="text-align: center;">  </div> <p>Najock, D., <i>Anonyma de musica scripta Bellermanniana</i>. (Leipzig, Teubner, 1975) 28</p>			

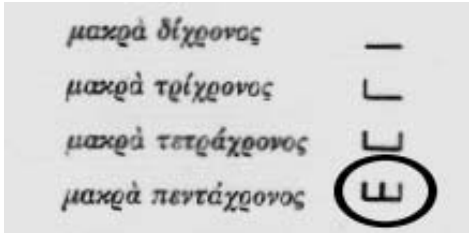
¹²⁰ Winnington-Ingram (1975) 1

¹²¹ Jan (1962:Supp) 38

V.a.7 Greek Metrical Tetraseme

Sign	Similar Unicode	Beta Code	Count
└┘		#564	4 instances, 1 author
<p>Definition and comments</p> <p>A long nonspacing horizontal bar with a small upright at the left and right which marks four beats. This symbol occurs in Najock (1975).</p> <p>See also Greek Musical Tetraseme in the musical section above.</p>			
<p>Example 1</p> <p><i>Anonyma de musica scripta Bellermanniana, Anonyma de musica scripta Bellermanniana. Section 83</i></p> 			
<p>Najock, D., <i>Anonyma de musica scripta Bellermanniana</i>. (Leipzig, Teubner, 1975) 28</p>			

V.a.8 Greek Metrical Pentaseme

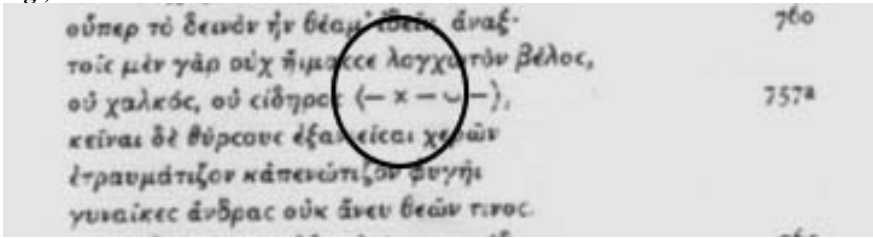
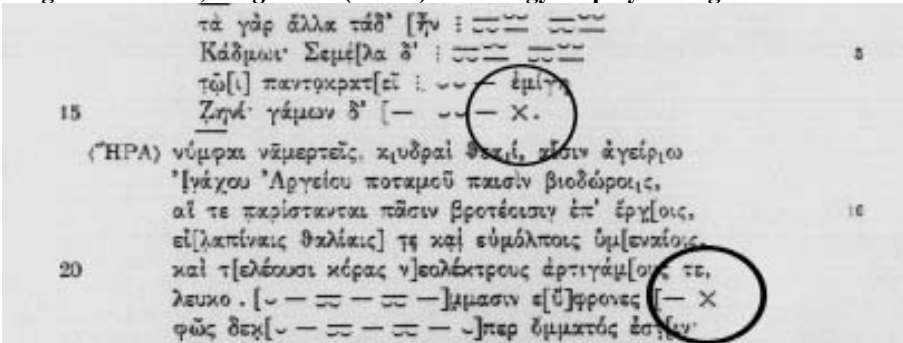
Sign	Similar Unicode	Beta Code	Count
└┘└┘			
<p>Definition and comments</p> <p>A long nonspacing horizontal bar with a small uprights at the left and right and the center which mark five beats. This symbol occurs in Najock (1975).</p> <p>See also Greek Musical Pentaseme in the musical section above.</p>			
<p>Example 1</p> <p><i>Anonyma de musica scripta Bellermanniana, Anonyma de musica scripta Bellermanniana. Section 83</i></p> 			
<p>Najock, D., <i>Anonyma de musica scripta Bellermanniana</i>. (Leipzig, Teubner, 1975) 28</p>			

b. Ancient Greek Metrical Characters: Additional Definition of Preexisting Unicode Characters

Table of Characters Included in this Section

Number		Name	Unicode	Comment
V.b.1	×	Anceps	00D7	
V.b.2	∪	Breve	02D8	
V.b.3	–	Longum	2012 or 2013	

V.b.1 Metrical Anceps

Sign	Unicode	Beta Code	Count
×	00D7	%43	1642 instances, 31 authors
Definition and comments Denotes a syllable ambiguous between long and short. ¹²² This character represents 00D7, however, METRICAL ANCEPS includes larger glyph variants. The glyph of the diacritic version already exists in Unicode as 033d COMBINING X ABOVE.			
Example 1 Euripides Trag., <i>Bacchae</i>			
			
Diggle, J., <i>Euripidis fabulae</i> , vol. 3 (Clarendon Press, Oxford, 1994) 323			
Example 2 Aeschylus Trag. Atheniensis, <i>Fragmenta</i> (Mette). Tetralogy 34 play A fragment 355			
			
Mette, H.J., <i>Die Fragmente der Tragödien des Aischylos</i> (Akademie-Verlag, Berlin, 1959) 133			

¹²² Maas (1962) 24

V.b.2 Metrical Breve

Sign	Unicode	Beta Code	Count
◡	02D8	%40	
Definition and comments			
This character represents a short syllable			
Example 1			
Euripides Trag., <i>Bacchae</i>			
Diggle, J., <i>Euripidis fabulae</i> , vol. 3 (Clarendon Press, Oxford, 1994) 323			

V.b.3 Metrical Longum

Sign	Unicode	Beta Code	Count
—	2012, 2013	%41	
Definition and comments			
This character represents a long syllable.			
Example 1			
Euripides Trag., <i>Bacchae</i>			
Diggle, J., <i>Euripidis fabulae</i> , vol. 3 (Clarendon Press, Oxford, 1994) 323			

VI. Ancient Greek Abbreviations in Inscriptions, Papyri and Manuscripts

Introduction and Overview

This section does not constitute a complete final proposal, rather it outlines the characters required to be able to correctly represent abbreviations in Greek texts. It also explains the reasons why this is a necessary addition to the Unicode Standard.

Abbreviations in Inscriptions¹²³

Introduction

It is standard in Greek inscriptions to abbreviate words. This is done for reasons of brevity, something necessary on a piece of stone of defined length. Far from being idiosyncratic, these abbreviations were universally understood; indeed, that is their purpose since inscriptions placed in public spaces were intended to be read and understood by as many people as possible.

There are two standard methods of abbreviating on inscriptions

1. **Suspension.** (this accounts for 84.7% of all inscriptional abbreviations). This is where letters are dropped from the end of a word. E.g. ἀγαθός (good) becomes ΑΓΑ.¹²⁴
2. **Contraction** (this accounts of 15.3% of all inscriptional abbreviations). This is where letters are dropped from the middle of a word. E.g. Χριστός (Christ) becomes ΧC.

Furthermore abbreviations are indicated by certain abbreviation marks. Many of these may currently be encoded using the Unicode Standard, however a great many cannot. There are two methods of indicating an abbreviation:

1. Changing the position or shape or both of one or more of the letters in the word
2. Adding a special, conventional sign.

¹²³ This section is based closely on Avi-Yonah (1974)

¹²⁴ Note that inscriptions are written in block capitals and without spaces between words.

1. Changing the position or shape or both of one or more of the letters in the word

There are several forms that method (1) may take, many may be accommodated in the current Unicode Standard. The following cannot currently be encoded:

- a. Placing letters one over another. “This is the most common method of indicating abbreviation by a change in the position of the letters.”¹²⁵ Furthermore, if the final letter is an omega, then elongating it and placing it over the final two letters of the shortened word
- b. Placing letters under another
- c. Placing letters within the previous letter. This only occurs with the letters Γ, Λ, Ο and Π which allow space for another letter inside.
- d. There are several conventional and common ligatures. For example
 - i. Ϡ, for the letters Chi and Rho, which is used as an abbreviation for many words including chorus and Christ. A form of this ligature may currently be found in the Unicode Standard: 2627 CHI RHO (this is the form given here).
 - ii. Ϡ, for the letters Pi and Rho. Again this is an extremely common conventional ligature for very many words including πρός (at, to, towards) and πρεσβύτερος (elder, presbyter).

¹²⁵ Avi-Yonah (1974) 30

2. Adding a special conventional sign

There are several special conventional signs that may appear. Again several of these may be currently accommodated in the current Unicode Standard. The following cannot:

- a. A single stroke across a letter. While 0336 COMBINING LONG STROKE OVERLAY is similar, it is not placed correctly to accurately represent the original Greek and does not combine well with uppercase Greek letters.
- b. A diagonal stroke through a letter. While 0338 COMBINING LONG SOLIDUS OVERLAY is similar, it is not placed correctly to accurately represent the original Greek and does not combine well with uppercase Greek letters. The ‘letter’ in the current Unicode Standard, 03D7 GREEK KAI SYMBOL, is more correctly formed in this fashion. The ‘tail’ is in fact the standard diagonal stroke and far from representing $\kappa\acute{\iota}$ alone, it may represent any word which is abbreviated to a single letter kappa.
- c. Several other symbols are placed at the end of the abbreviated word to indicate an abbreviation. Most of these can be encoded using the current Unicode Standard: +, S, 8, < and ~ for example. However, the following cannot currently be encoded:
 - i The omicron-epsilon ligature. Latin versions of these already exist in the Unicode Standard: 0222 LATIN CAPITAL LETTER OU, 0223 LATIN SMALL LETTER OU. Only the capital letter would be required in the Greek
 - ii The Ivy leaf ♁ .
 - iii ♂ (Proposed as Greek Instrumental Notation Symbol 27 above).

Further uses of the stacking characters

An alphabet of combining stacking characters would be important not only in the representation of abbreviations, but also in the representation of certain numerical characters. For example, stacking characters are necessary to represent tens of thousands of units.

The following example¹²⁶ shows these characters in action in a sum in addition:

$$\begin{array}{r}
 \text{,}\alpha\upsilon\kappa\delta = 1,424 \\
 \text{ }\varrho\gamma \quad \quad \quad 103 \\
 \overset{\alpha}{\text{M}}\text{,}\beta\sigma\pi\alpha \quad \quad 12,281 \\
 \text{ } \quad \quad \quad \overset{\gamma}{\text{M}}\lambda \quad \quad \quad 30,030 \\
 \hline
 \overset{\delta}{\text{M}}\text{,}\gamma\omega\lambda\eta \quad \quad 43,838
 \end{array}$$

It is possible for very large numbers to be represented in this way. For instance:

$$71,755,875 = \overset{\zeta\theta\omicron\epsilon}{\text{M}}\text{,}\epsilon\omega\theta\epsilon$$

¹²⁶ Taken from Heath (1921:1) 52

The following characters are therefore proposed:

VI.1 GREEK CAPITAL LETTER OMICRON UPSILON

VI.2 GREEK IVY LEAF SYMBOL

VI.3 GREEK COMBINING HORIZONTAL STROKE

VI.4 GREEK COMBINING DIAGONAL STROKE

VI.5 GREEK PI RHO SYMBOL

VI.6-37 A complete alphabet of characters that will stack over other letters. This will also need to include the Stigma, Digamma, Koppa, Archaic Koppa, Roman Letter S, the Number 8, < and Greek Instrumental Notation Symbol 27.

VI.38-70 A complete alphabet—plus the same additional letters as for VI.6-37 above—which will appear below the previous letter.

VI.71-102 A complete alphabet—plus the same additional letters as for VI.6-37 above—which will appear in the middle of the previous letter.

VI.103-127 A complete lowercase alphabet of letters that will stack over other letters.

Abbreviations in Papyri

Summary

While papyri use the same method of abbreviation that inscriptions use, there are about 30 additional characters which are regularly found in papyri which would need to be included.

As with the inscriptions, these abbreviations are conventional and not the whim of any single scribe. Indeed, the abbreviations are intended to be understood by anyone reading the text.

These characters would include, for example, the following very common words:¹²⁷

∖	εἶναι	to be
∕∕	εἰσίν	they are
ϕ	φησίν	s/he says
☉	ἥλιος	sun
⊙	πόλις	city

Characters proposed

VI.127-c.160 Around 30 further characters used in papyri

¹²⁷ Examples taken from Kenyon (1974)

Abbreviations in Manuscripts

Summary

Manuscripts use a different type of abbreviation from inscriptions and papyri. Further, later manuscripts include miniscule letters and letter still mixtures of both upper case and miniscule letters as well as space between the words.

As with the inscriptions and papyri, these abbreviations are conventional and not the whim of any single scribe. Indeed, the abbreviations are intended to be understood by anyone reading the text.

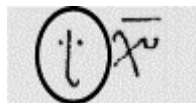
There are about 100 characters, many of them combining forms, which would need to be included. These characters would include, for example:¹²⁸



Alpha Iota Abbreviation



Gar Abbreviation



Tau Omicron Upsilon Abbreviation

Characters proposed

VI.c.160-c.260 Around 100 further characters used in papyri

¹²⁸ Examples taken from Allen (1974)

VII. Modern New Testament Editorial Characters

Introduction and Overview

Table of Characters Proposed

Number	Character	Name	Unicode	Comment
Modern New Testament Editorial Sigla				
VII.a.1	ᵀ	Substitution Marker		Similar to <superscript>231C and <superscript>250C
VII.a.2	ᵀ	Repeat Substitution Marker		
VII.a.3	ƒ	Opening Substitution Bracket		
VII.a.4	ƒ	Closing Substitution Bracket		
VII.a.5	ƒ	Repeat Opening Substitution Bracket		
VII.a.6	ƒ	Repeat Closing Substitution Bracket		
VII.a.7	ᵀ	Interpolation Marker		
VII.a.8	ᵀ	Repeat Interpolation Marker		
VII.a.11	ᵀ	Closing Transposition Bracket		
VII.a.9	ᵀ	Transposition Marker		
VII.a.10	ᵀ	Opening Transposition Bracket		

Introduction

The most widely used text of the New Testament in the original Greek is the Nestle Sr., Nestle Jr. and Aland edition published by United Bible Societies, currently in its 27th revised edition. In order to clearly and accurately represent and discuss the various textual variants in the New Testament while still leaving the text clear and readable, Nestle Jr. introduced a set of editorial characters into the United Bible Societies' edition.¹²⁹ In addition to the text edition, these editorial characters are also regularly used in a number of journals and other publications.¹³⁰

These editorial characters have become the recognized method of annotating the New Testament and are therefore required for accurate scholarly discussion. They are divided into two groups:

1. Modern New Testament Editorial Sigla,
2. Modern New Testament Editorial Abbreviations.

1. Modern New Testament Editorial Sigla

As the New Testament has held a central place in the West for 2,000 years, there exist myriad manuscripts with very many textual variants. While a 'Majority text' has largely been agreed upon, it is important for scholars to have access to these textual variants. The editorial system introduced by Nestle Jr. goes far beyond a standard system of critical apparatus: rather than simply referring the reader to the footnotes, the sigla in the text show the reader instantly exactly what sort of textual variants exist. So, for instance, there are sigla to show that a word or words have been substituted with others in the textual variants; there are sigla to show that there is extra text in the variants; there are sigla to show that a piece of text is missing from some or all of the textual variants. For a complete outline of the system please see below.

It will be noted that approximately half of these characters can currently be encoded without problem using the Unicode Standard. There are, however, 11 sigla which cannot currently be encoded. These are proposed below.

The TLG has encoded a different edition of the New Testament, therefore no TLG counts are provided in this section.

¹²⁹ Nestle, Nestle, Aland (1963) *64

¹³⁰ E.g. *New Testament Studies*, *Journal of Biblical Literature*, *Novum Testamentum*. See also Aland, Kurt, *Synopsis Quattuor Evangeliorum*, Stuttgart: Deutsche Bibelgesellschaft, 15th edition 1997; Aland, K. and B. Aland, *The Text of the New Testament: An Introduction to the Critical Editions and to the Theory and Practice of Modern Textual Criticism*. Grand Rapids: Eerdmans; Leiden: Brill. 2nd ed. 1989.

Overview of Modern New Testament Editorial Sigla

Character	Name	Unicode	Comment
Modern New Testament Editorial Sigla			
Ⲡ	Substitution Marker		Similar to <superscript> 231C and <superscript> 250C
ⲡ	Repeat Substitution Marker ¹³¹		
Ⲣ	Opening Substitution Bracket		
ⲣ	Closing Substitution Bracket		
Ⲥ	Repeat Opening Substitution Bracket		
ⲥ	Repeat Closing Substitution Bracket		
Ⲧ	Interpolation Marker		
ⲧ	Repeat Interpolation Marker		
Ⲩ	Omission Marker	00B0	also 02DA
ⲩ	Opening Omission Bracket	<superscript> 25A1	
Ⲫ	Closing Omission Bracket	<superscript> 002F	
ⲫ	Transposition Marker		
Ⲭ	Opening Transposition Bracket		
ⲭ	Closing Transposition Bracket		
Ⲯ	Alternative Punctuation Marker	<superscript> 003A	
ⲯ	Separation Marker	00A6	
Ⲱ	Textual Division Marker	002A	
ⲱ	Opening Interlinear Text Bracket	2035	
Ⲳ	Closing Interlinear Text Bracket	2032	

¹³¹ In cases when there are more than two instances of substitution in one verse, the pattern is Ⲡ² and so on. This also applies for the other characters.

2. Modern New Testament Editorial Abbreviations

The second set of special characters are the abbreviations for the groups of Biblical texts. For example, the ‘majority text’ is abbreviated to \mathfrak{M} . The Hebrew Old Testament text or the Egyptian groups of New Testament textual variants is abbreviated to \mathfrak{S} . These may currently be encoded with Unicode in the following manner:

\mathfrak{M} 004D

\mathfrak{S} 0048

A final character is the Hebrew Aleph (\aleph) which is the name of a manuscript. This may currently be encoded using 05D0.

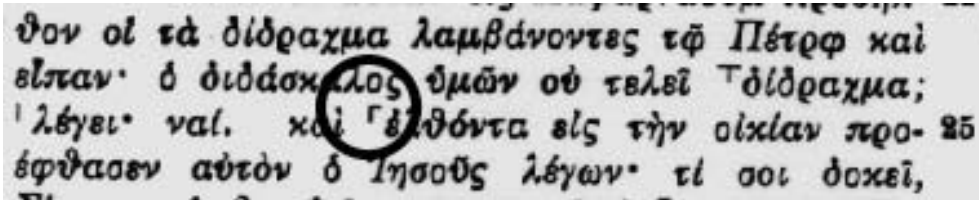
No characters from this sub-section are therefore proposed.

a. Modern New Testament Editorial Characters: New Characters

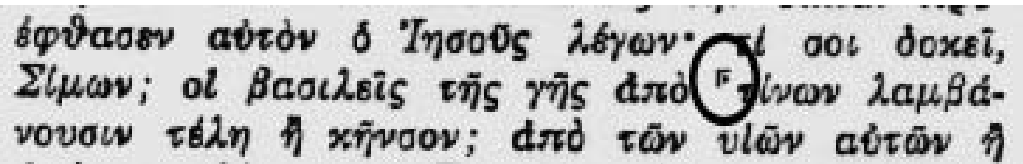
Table of Characters Included in this Section

Number	Character	Name	Unicode	Comment
Modern New Testament Editorial Sigla				
VII.a.1	ᵀ	Substitution Marker		Similar to <superscript>231C and <superscript>250C
VII.a.2	ᵀ	Repeat Substitution Marker		
VII.a.3	ƒ	Opening Substitution Bracket		
VII.a.4	ƒ	Closing Substitution Bracket		
VII.a.5	ƒ	Repeat Opening Substitution Bracket		
VII.a.6	ƒ	Repeat Closing Substitution Bracket		
VII.a.7	ᵀ	Interpolation Marker		
VII.a.8	ᵀ	Repeat Interpolation Marker		
VII.a.9	ᵀ	Closing Transposition Bracket		
VII.a.10	ᵀ	Transposition Marker		
VII.a.11	ᵀ	Opening Transposition Bracket		

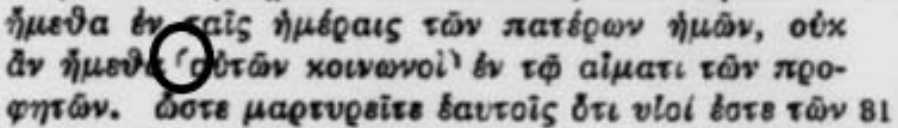
VII.a.1 Substitution Marker

Sign	Similar Unicode	Beta Code	Count
Ɔ	<superscript> 231C <superscript> 250C		
Definition and comments			
This character is placed at the start of a single word where an alternative reading is given in the <i>apparatus criticus</i> .			
While there are similar characters in existence in the current Unicode standard, none are placed high enough in the line to accurately represent the Substitution Marker.			
Example 1			
Matthew 17.25			
			
Nestle, E., Nestle, E. & Aland, K., <i>Novum Testamentum Graece</i> 25 th edn. (London, 1963) 46			

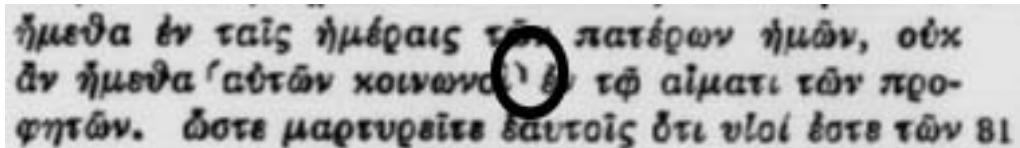
VII.a.2 Repeat Substitution Marker

Sign	Similar Unicode	Beta Code	Count
Ɔ			
Definition and comments			
This character is placed at the start of a single word where an alternative reading is given in the <i>apparatus criticus</i> . If there is a second alternative reading in one verse, this character is used instead of VII.a.1.			
Example 1			
Matthew 17.25			
			
Nestle, E., Nestle, E. & Aland, K., <i>Novum Testamentum Graece</i> 25 th edn. (London, 1963) 46			

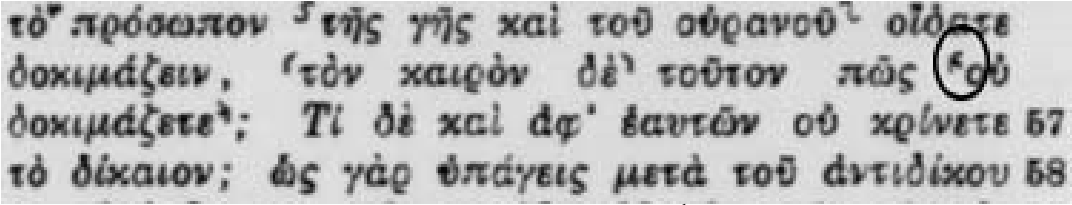
VII.a.3 Opening Substitution Bracket

Sign	Similar Unicode	Beta Code	Count
⸀			
Definition and comments			
This character is placed at the start of a sequence of words where an alternative reading is given in the <i>apparatus criticus</i> .			
Example 1			
Matthew 23.30			
			
Nestle, E., Nestle, E. & Aland, K., <i>Novum Testamentum Graece</i> 25 th edn. (London, 1963) 64			

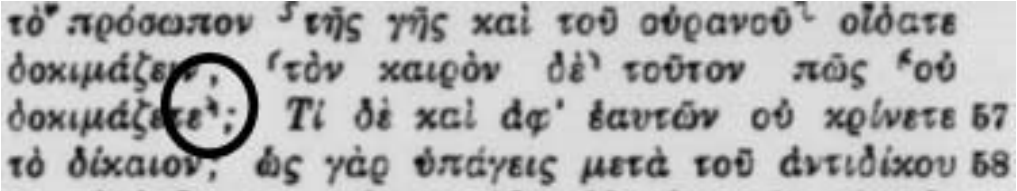
VII.a.4 Closing Substitution Bracket

Sign	Similar Unicode	Beta Code	Count
⸁			
Definition and comments			
This character is placed at the end of a sequence of words where an alternative reading is given in the <i>apparatus criticus</i> .			
Example 1			
Matthew 23.30			
			
Nestle, E., Nestle, E. & Aland, K., <i>Novum Testamentum Graece</i> 25 th edn. (London, 1963) 64			

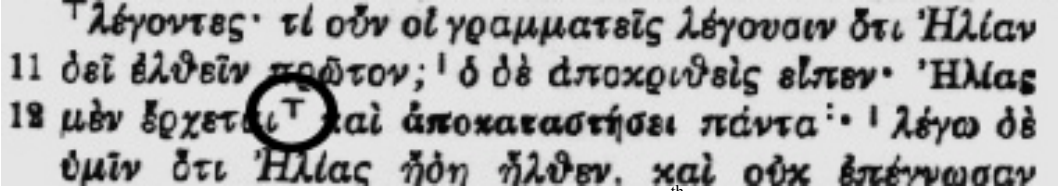
VII.a.5 Repeat Opening Substitution Bracket

Sign	Similar Unicode	Beta Code	Count
⸘			
Definition and comments			
This character is placed at the start of a sequence of words where an alternative reading is given in the <i>apparatus criticus</i> . If there is a second alternative reading in one verse, this character is used instead of VII.a.3.			
Example 1			
Luke 12.56			
			
Nestle, E., Nestle, E. & Aland, K., <i>Novum Testamentum Graece</i> 25 th edn. (London, 1963) 190			

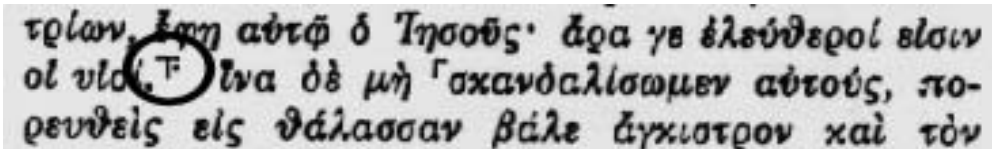
VII.a.6 Repeat Closing Substitution Bracket

Sign	Similar Unicode	Beta Code	Count
⸙			
Definition and comments			
This character is placed at the end of a sequence of words where an alternative reading is given in the <i>apparatus criticus</i> . If there is a second alternative reading in one verse, this character is used instead of VII.a.4.			
Example 1			
Luke 12.56.			
			
Nestle, E., Nestle, E. & Aland, K., <i>Novum Testamentum Graece</i> 25 th edn. (London, 1963) 190			

VII.a.7 Interpolation Marker

Sign ⲧ	Similar Unicode	Beta Code	Count
Definition and comments This character is placed at a point in the text where another version has a longer text. The further text is given in the <i>apparatus criticus</i> .			
Example 1 Mathew 17.11 			
Nestle, E., Nestle, E. & Aland, K., <i>Novum Testamentum Graece</i> 25 th edn. (London, 1963) 45			

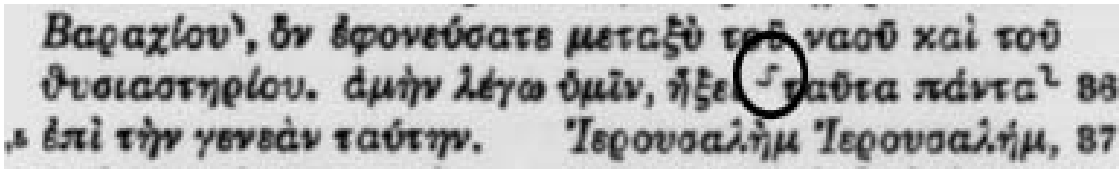
VII.a.8 Repeat Interpolation Marker

Sign ⲧ	Similar Unicode	Beta Code	Count
Definition and comments This character is placed at a point in the text where another version has a longer text. The further text is given in the <i>apparatus criticus</i> . If there is a second piece of interpolated text in one verse, this character is used instead of VII.a.7.			
Example 1 Matthew 17.26 			
Nestle, E., Nestle, E. & Aland, K., <i>Novum Testamentum Graece</i> 25 th edn. (London, 1963) 46			

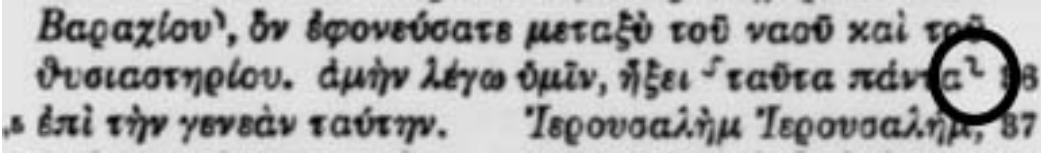
VII.a.9 Transposition Marker

Sign ϛ	Similar Unicode	Beta Code	Count
Definition and comments This character is placed at the start of a single word which has been transposed. The transposition is explained in the <i>apparatus criticus</i> . This character is new to this editorial system and will be introduced in the forthcoming new edition of the United Bible Societies <i>Novum Testamentum Graece</i> .			
Example 1 This character is not yet in use.			

VII.a.10 Opening Transposition Bracket

Sign ϛ	Similar Unicode	Beta Code	Count
Definition and comments This character is placed at the start of a sequence of words word which have been transposed. The transposition is explained in the <i>apparatus criticus</i> .			
Example 1 Matthew 23.36 			
Nestle, E., Nestle, E. & Aland, K., <i>Novum Testamentum Graece</i> 25 th edn. (London, 1963) 64			

VII.a.11 Closing Transposition Bracket

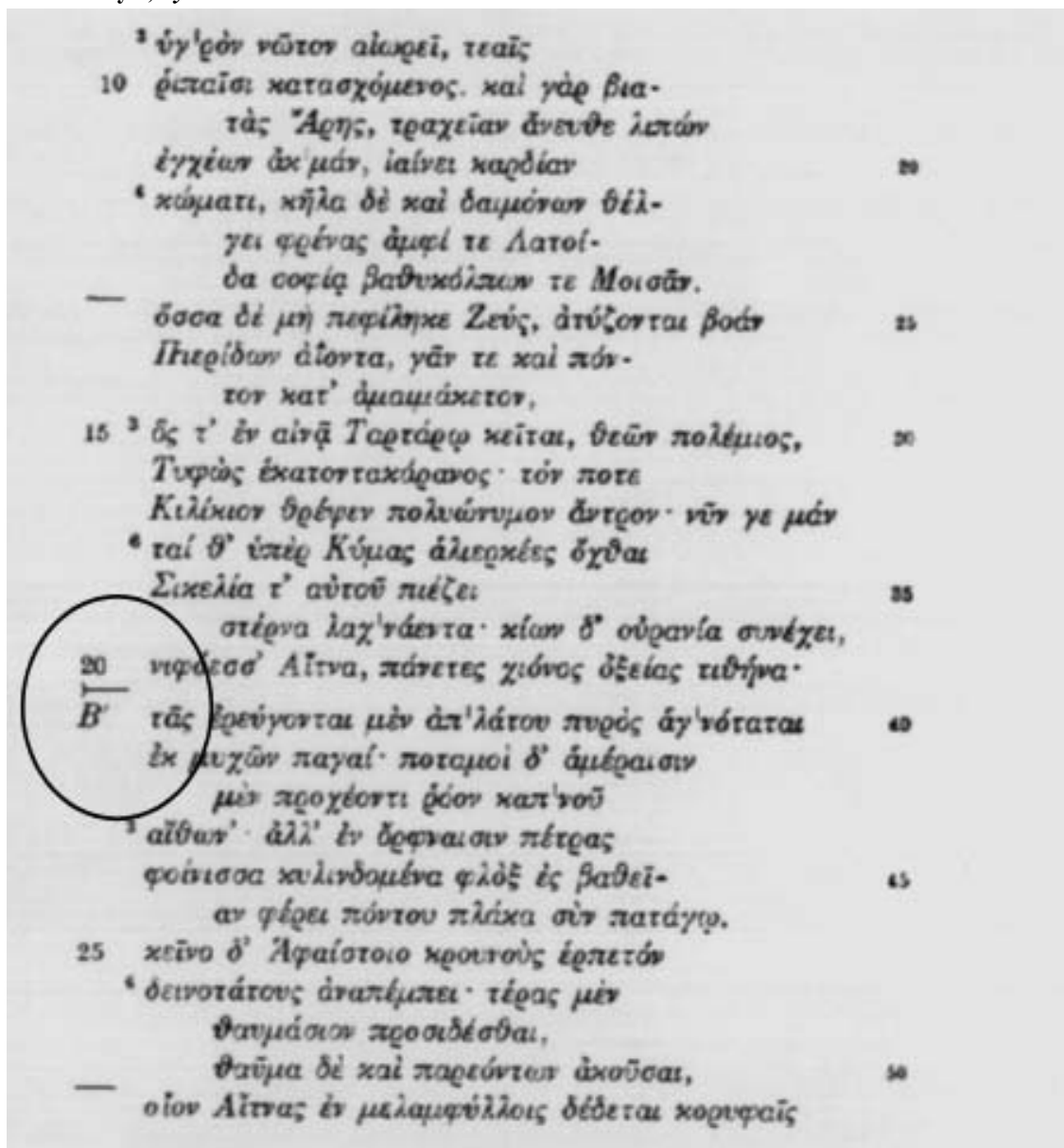
Sign ϛ	Similar Unicode	Beta Code	Count
Definition and comments This character is placed at the end of a sequence of words word which have been transposed. The transposition is explained in the <i>apparatus criticus</i> .			
Example 1 Matthew 23.36 			
Nestle, E., Nestle, E. & Aland, K., <i>Novum Testamentum Graece</i> 25 th edn. (London, 1963) 64			

Appendices

Appendix 1: Longer Sample Texts

Greek Forked Paragraphos: Example 1

Pindarus Lyr., *Pythia*. Ode 1



Maehler, H. (post B. Snell), *Pindari carmina cum fragmentis*, pt. 1, 5th ed. (Teubner, Leipzig, 1971) 60-1

Greek Ano, Mese And Kato Stigmes: Example 1a

Oxyrhynchus Papyrus 844 Columns 9-10 (Isocrates, *Panegyricus*)

(In order to avoid cluttering the graphic, we have not circled all instances)



Grenfell, B.P., & Hunt, A.S. *The Oxyrhynchus Papyri V* (London, 1908) Plate VII

Greek Ano, Mese And Kato Stigmes: Example 1b

Oxyrhynchus Papyrus 844 Columns 9-10 (Isocrates, *Panegyricus*) Transcription
(In order to avoid cluttering the graphic, we have not circled all instances)

Col. ix. Plate VII.		Col. x. Plate VII.
[β]αρους αναστατους ποι ησασης τους δ Ελληνας [ει]ς τοσαυτην ευπορι [αν] προαγ[αγο]υσης· ου τοι § 38		155 ραδειγμα ποι[η]σασα πρω τη γαρ και νομους εθε το· και πολιτειας κατε στησ[ατ]ο· δηλον δ ε > § 40
120 [νυν] επειδη τα μεγα[σ]τα [συν]διεπ[ρ]αξεν· των αλ λ[ων] ωλ[ι]γωρησεν· αλ λ' αρ[χη]ν μ[ε]ν εποιησατο τα[υ]την των ευεργεσι 125 ων [τροφ]ην τοις δεομε νοις ευρ[ε]ι[ν] ηνπερ χρη του[ς] μελλοντας και πε ρι τ[ων] αλ[λων] καλως διο[ικ]ησειν· ηγουμε 130 νη [δε] τον βιον τον επι του[τ]οις μονον ουπω του [ς]η επιθυμειν αξ[ι] ως ε[χειν] ουτως επ[ε] > με[ληθη] και των λο[ι] >		160 περι των φονικων > εγκαλε[σ]αντες και βο[υ] ληθεντες μετα λογ[ι]ου και μη μετα βιας δι αλευσθαι τας προς αλ 165 ληλους εχθρας εν τοις νομοις τοις ημετε ροις τας κρισεις επ[οι] ησαντο περι αυτω[ν] και μεν δη και τω[ν] τε 170 χνων τας προς ταναγ [κ]αια του βιου χρησι > [μ]ας και τας προς ηδο νην μεμηχανημε νας τας μεν ευρουσα 175 τας δε [δ]ρκιμασασα > χρησθαι τοις α[[νθρω]]
135 πων· ω[σ]τε των πα[ρο]ν των [τοι]ς ανθρωποις αγαθων [ο]σα μη παρα θειων εχομεν αλλα δι αλληλους ημιν γεγο 140 νεν· μηδεν μεν ανευ της πολ[ε]ως της ημε τερας ειναι· τα δε πλει στα δια ταυτην γεγεινη σθαι· παραλαβουσα γαρ § 39		[[λ]] [[π]]οις παρ[ε]δωκε· την § 41 τοιωνν αλλην διοικη σιν ουτως φιλοξενως 180 κατεσκευασατο και προς απαντας οικει ως· ωστε και τοις χρη ματων δεομενο[ι]ς και τοις απολαυσαι των 185 υπαρχοντων επιθυμου σιν αμφοτεροις αρμοτ πειν· και μητε τοις ευ δαιμονουσι· μητε τοις δυστυχουσιν εν ταις ε 190 αυτων αχρηστως εχειν αλλ εκατεροις αυτων ειναι παρ ημιν τοις μεν ηδιστας διατριβα[ς] τοις δε ασφαλεστατην κατα
145 τους Ελληνας ανομους ζωντας· και σποραδην και οικουντας· τους μεν υ πο δυναστειων υβριζο μενους· τους δε δι αναρ 150 χιαν απολλυμενους· > και τουτων των κακων αυτους απηλλαξεν· των μεν κυρια[[ι]] γενο μενη· τοις δ' αυτην πα		

Grenfell, B.P., & Hunt, A.S. *The Oxyrhynchus Papyri V* (London, 1908) 296-7

Greek Dicolon: Example 2

Oxyrhynchus Papyri 1248, Col. 1 lines 1-30, Col. 2 lines 52-80

130	<i>THE OXYRHYNCHUS PAPYRI</i>	
	Textually the papyrus is undistinguished; some small points of interest are found in ll. 7, 39, 53, 63, 68.	
	Col. i.	Col. ii.
	<p>θεισα[ν] α[μ]υντικην χει 280 ε [μ]ωνω[ν] ερεου προβλη ματος ε[ρ]γαστικην· ο > [ν]ομα δε υφαντικην. 5 λεχθεισαν· εοικεν γαρ· ουν αλλ ουκ εστιν πω > τελεον ω παι τ[ουτ]ο [τ]ο λελειμμενον· ο γαρ εν αρχη της των ιματιῶν 10 εργασιαις απομε[νο]ς τουναντιον υφη δραν 281 φαινεται· πως· το μεν της υφης συμπλοκη τις εστιν που· ναι· το δε 15 γε των συνεστωτων και συμπεπειλημενων διαλυτικη· το ποιον δη· το της του ξαινοντος τε χνης εργον· η την ξαν 20 τικην τολμησομεν υφαντικην και τον > ξαντην ως οντα υφαν την καλειν· ουδαμως· και μην την γε αυ στη 25 μονος εργαστικην > και κροκης ει τις υφαν τικην προσαγορευει παραδοξον τε και ψευ δος ονομα λεγει· πως 281 b 30 γαρ ου· τι δε γναφευτικῆν</p>	<p>εργα δοκειν χ[ρ]η το γε ^{ου} συναιτιας ειναι π[ρ]οσ ποιησασθαι π[α]ντος [υ 55 φασματος· ορθ[ο]γατα· ποτερον ουν ημιν ο περι της υφαντικης λο γος ου προειλομεθα μερους ικανως εσται 60 διαωρισμενος· εαν αρ αυ την των επιμελειῶν οποσαι περι την ερεαν εσθητα εισιν την καλ λιστην και μεγαστην 281 d 65 πασων τιθωμεν· η λε γομεν μεν αληθες· ου μην σαφες γε ουδε τε λεον πριν αυ και ταυ τας αυτης πασας περι 70 ελωμεν· ορθως· ουκου τα μετα ταυ ποιητεον ο λεγομεν εν εφεξης ημιν ο λογος ιη πως δ ου· πρωτον μεν τοι 75 νυν δυο τεχνας ουσας περι παντα τα δρωμε να θεασωμεθα· τινας· την μεν γενεσεως ουσαν συναιτιον την 80 δ αυτην αιτιαν· πως·</p>

Grenfell, B.P. & Hunt, A.S., *The Oxyrhynchus Papyri*, Part 10 (London, 1914) 130

Appendix 2: Cross Reference to TLG Author-Work Numbers

For purposes of cross reference, we here give the Author-Work numbers of works referred to in this proposal (If they only appear in papyri or inscriptions, they are omitted from this list). Please see the online canon (url: <http://www.tlg.uci.edu/>) or Berkowitz and Squitier (1990) for more information.

Aeschylus Trag. Atheniensis, <i>Fragmenta (Mette)</i>	0085.008
Aëtius Med., <i>Iatricosum liber i</i>	0718.001
<i>Iatricorum liber xi</i>	0718.011
Alcaeus Lyr., <i>Fragmenta (Lobel & Page)</i>	0383.001
Alcmaeonis, <i>Alcmaeonis</i>	0696.002
Anonyma de musica scripta Bellermanniana, <i>Anonyma de musica scripta Bellermanniana</i>	1127.001
Anonymi Commentarius in Platonis Theaetetus, <i>Commentarius in Platonis Theaetetus</i>	1128.001
Anonymi Grammatici Gramm., <i>Supplementa artis Dionysianae vetusta</i>	0072.001
Anonymus Londinensis Med., <i>Iatrica</i>	0643.001
Antimachus Eleg. et Epic., <i>Fragmenta (Wyss)</i>	0239.002
Antiphon Soph. <i>Fragmenta (Diels & Kranz)</i>	1147.003
Archilochus Eleg. et Iamb., <i>Fragmenta lyrica</i>	0232.002
Aristides Quintilianus Mus., <i>De musica</i>	2054.001
Aristophanes Comic., <i>Fragmenta (Austin)</i>	0019.016
Aritoxenus Mus.	0088
Athenaeus Soph.	0008
Bucolicum, <i>Fragmentum bucolicum</i>	1559.001
Callimachus Philol.	0533
Choliambica Adespota (ALG), <i>Anonymus in turpilucrum</i>	1797.001
Cleopatra Alchem., <i>De ponderibus et mensuris</i>	4335.001
Cratinus Comic., <i>Fragmenta (Austin)</i>	0434.004
Demosthenes Orat, <i>De Falsa Legatione</i>	{014.019
Didymus Caecus Scr. Eccl., <i>Commentarii in Job (1-4)</i>	2102.001
Didymus Gramm., <i>In Demosthenem</i>	1312.003
Diogenes Phil. Oenoandensis, <i>Fragmenta</i>	1321.011
Diophantus Math., <i>Arithmeti corum libri sex</i>	2039.001
Doctrina patrum, <i>Doctrina patrum</i>	7051.001
Epicharmus Comic. et Pseudepicharmea	0521
Eupolis Comic. <i>Fragmenta (Austin)</i>	0461.004
Euripides Trag., <i>Fragmenta papyracea</i>	0006.021
<i>Bacchae</i>	0006.050
Fragmenta Alchemica, <i>Tractatus alchemicus (fragmenta) (P. Holm.)</i>	1379.002
Fragmenta Anonyma (PsVTGr), <i>Fragmenta</i>	1817.001
Galenus	0057
Georgius Syncellus Chronogr., <i>Ecloga chronographica</i>	3045.001
Heron Mech., <i>Geometrica</i>	0559.009
Hierocles Phil., <i>In aureum carmen</i>	1429.001
Hippiatrica, <i>Appendices ad hippiatrica Berolinensia</i>	0738.002
<i>Excerpta Lugdunensia</i>	0738.008

Homerus Epic., <i>Ilias</i>	0012.001
<i>Hymni Homerici</i> ,	0013
Ibycus Lyr., <i>Fragmenta</i> (Page: <i>Supplementum lyricis Graecis</i>).	0293.002
Julius Africanus, Sextus, Hist., <i>Cesti</i>	2956.002
Lyrica Adespota (SLG), <i>Fragmenta</i>	1471.001
Menander Comic., <i>Fragmenta</i> (Austin).	0541.037
Oribasius Med., <i>Collectiones medicae</i> (lib. 1-16, 24-25, 43-50).	0722.001
Pappus Math., <i>Synagoge</i>	2032.001
Paulus Med., <i>Epitomae medicae libri septem</i>	0715.001
Pindarus Lyr., <i>Pythia</i>	0033.002
<i>Nemea</i>	0033.003
<i>Fragmenta</i>	0033.005
Pseudo-Galenus Med., <i>De ponderibus et mensuris</i>	0530.022
Romanus Melodus, Hymnograph, <i>Cantica genuina</i>	2881.002
Sappho Lyr., <i>Fragmenta</i> (Lobel & Page).	0009.001
Scholia in Aristophanem, <i>Scholia in nubes</i> (scholia vetera).	5014.003
Scholia in Euclidem, <i>Scholia in Euclidis elementa</i>	5022.001
Scholia in Homerum, <i>Scholia in Iliadem</i> (scholia vetera).	5026.001
Scholia in Theocritum, <i>Scholia in Theocritum</i>	5038.001
Septuaginta, <i>Job</i>	0527.032
Simonides Lyr., <i>Fragmenta</i> (Page).	0261.002
Sophocles Trag., <i>Oedipus Coloneus</i>	0011.007
Synesius Phil., <i>Hymni</i>	2006.010
Tragica Adespota. <i>Fragmenta</i> (Kannicht & Snell)	1738.003

Bibliography

- Allen, T.W., *Homeri Ilias*, vol. 2 (Oxford, 1931)
- Allen, T.W., “Abbreviations in Greek Manuscripts” in Oikonomides, A. N. (ed), *Abbreviations in Greek Inscriptions: Papyri, Manuscripts and Early Printed Books* (Chicago, 1974)
- Austin, C., *Comicorum Graecorum fragmenta in papyris reperta* (Berlin, 1973)
- Austin, C., *Nova fragmenta Euripidea in papyris reperta* (Berlin, 1968)
- Avi-Yonah, M., “Abbreviations in Greek Inscriptions (The Near East, 200 B.C.-A.D. 1100).” in Oikonomides, A.N. (ed.), *Abbreviations in Greek: Inscriptions, Papyri, Manuscripts and Early Printed Books*. (Chicago 1974)
- Barker, A., “Music” in *OCD*³ (Oxford University Press, Oxford, 1996) 1003-1012
- Barker, A., *Greek Musical Writings. Volume II: Harmonic and Acoustic Theory* (Cambridge, 1989)
- Behr, A., “Der Amphiloehische Krieg und die Kerkyraischen Optimaten” in *Hermes* XXX (1895) 447-455
- Bellermann, F., *Die Tonleitern und Musiknoten der Griechen* (Wiesbaden, 1969)
- Berkowitz, L. & Squitier, K.A., *Thesaurus Linguae Graecae: Canon of Greek Authors and Works* (New York, Oxford, 1990)
- Bernabé, A., *Poetarum epicorum Graecorum testimonia et fragmenta*, pt. 1 (Leipzig, 1987)
- Bidez, J. & Drachmann, A.B., *Emploi des Signes Critiques; Disposition de l'Apparat dans les éditions savantes de textes grecs et latins*. 2nd ed. (Brussels, 1938)
- Bilabel, “Siglae” in *Pauly's Real-Encyclopädie der classischen Altertumswissenschaft. Zweite Reihe. Zweiter Band* (Stuttgart, 1923) 2279-2315
- Dain, A., Mazon, P., *Sophocle*, vol. 3 (Paris, 1960)
- Daremberg, C. & Ruelle, C.É., *Oeuvres de Rufus d'Éphèse* (Paris, 1879)
- Dell'Era, A., *Sinesio di Cirene. Inni* (Rome, 1969)
- Denis, A.-M., *Fragmenta pseudepigraphorum quae supersunt Graeca* (Leiden, 1970)
- Diehl, E., *Anthologia lyrica Graeca*, fasc. 3, 3rd ed. (Leipzig, 1952)
- Diels, H. & Schubart, W., *Anonymer Kommentar zu Platons Theaetet (Papyrus 9782)* (Berlin, 1905)
- Diels, H., *Anonymi Londinensis ex Aristotelis iatricis Menoniis et aliis medicis eclogae* (Berlin, 1893)
- Diggle, J., *Euripidis fabulae*, vol. 3 (Oxford, 1994)
- Du Cange, C. du F., *Glossarium ad scriptores mediae et infimae Graecitatis*. (Graz, 1958 [1688])
- Erbse, H., *Scholia Graeca in Homeri Iliadem (scholia vetera)*, vol. 4 (Berlin, 1975)
- Featherstone, J.M., *Theodore Metochites' Poems on "Himself"* (Vienna, 2000)

- Flock, G., *De Graecorum interpunctionibus* (Diss. Greifswald, 1908)
- Friedlein, G., *Die Zahlzeichen und das elementare Rechnen der Griechen und Römer und des christlichen Abendlandes vom 7. bis 13. Jahrhundert* (Wiesbaden, 1869)
- Gardthausen, V., *Griechische Palaeographie*. 2 vols. (Lepizig, 1913)
- Grenfell, B.P. & Hunt, A.S. et al, *The Oxyrhynchus Papyri*, multiple volumes (London, 1898 - onwards)
- Halleux, R., *Les alchimistes grecs*, vol. 1 [Papyrus de Leyde, Papyrus de Stockholm, fragments de recettes] (Paris, 1981)
- Haralambous, Y. “Guidelines and Suggested Amendments to the Greek Unicode Tables” presented at *21st International Unicode Conference* (Dublin, 2002)
- Heath, T., *A History of Greek Mathematics* 2 volumes (Oxford, 1921)
- Heath, T. & Toomer, G.J., “Numbers, Greek” in *OCD*³(Oxford, 1996) 1052-3
- Heiberg, J.L., *Heronis Alexandrini opera quae supersunt omnia*, vol. 4 (Leipzig, 1903)
- Heiberg, J.L., *Paulus Aegineta*, vol. 2 (Leipzig, 1921)
- Henrichs, A. *Didymos der Blinde. Kommentar zu Hiob*, pt. 1 (Bonn, 1968)
- Hiller von Graetringen, F., *Inscriptiones Graecae I. Editio Minor* (Berlin, 1924)
- Holwerda, D., *Prolegomena de comoedia. Scholia in Acharnenses, Equites, Nubes* (Groningen, 1977)
- Hultsch, F., *Metrolagicorum scriptorum reliquiae*, 2 volumes (Leipzig, 1864)
- Hultsch, F., *Pappi Alexandrini collectionis quae supersunt*, vol. 2 (Berlin, 1877)
- Jan, K., *Musici scriptores Graeci* (Hildesheim, 1962)
- Jeffery, L.H., *The Local Scripts of Archaic Greece* (Oxford, 1961)
- Johnson, W.A., “Musical Evenings in the Early Empire” in *Journal for Hellenic Studies* 120 (2000)
- Kenyon F.G. & Bell H.I., *Greek Papyri in the British Museum III (Nos. 485—1331)* (London, 1907)
- Kenyon, F.G., *The Palaeography of Greek Papyri*. (Oxford, 1899)
- Kenyon, F.G., “Abbreviations and Symbols in Greek Papyri” in Oikonomides, A. N. (ed), *Abbreviations in Greek Inscriptions: Papyri, Manuscripts and Early Printed Books* (Chicago, 1974)
- Kirchner, J., *Inscriptiones Graecae II/III.1* (Berlin, 1913)
- Köhler, U., “Zur Geschichte des amphiloichischen Kreiges” in *HermesXXVI* (1891) 43-50
- Landels, J.G., *Music in Ancient Greece and Rome* (London, 1999)
- Larfeld, W., *Handbuch der griechischehn Epigraphik 2.2. Die attischen Inschriften* (Leipzig, 1902)
- Liddell, H.G., Scott R. & Jones, H.S., *Greek English Lexicon with a Supplement* 9th ed. (Oxford, 1968)
- Lobel, E. & Page, D.L., *Poetarum Lesbiorum fragmenta* (Oxford, 1955)
- Lockwood, J.F., Browning, R. Wilson, N.G. “Aristarchus” in *OCD*³ (1996) 159

- Lockwood, J.F., Browning, R. Wilson, N.G. “Zenodotus” in *OCD*³ (1996) 1653-6.
- Maas, P., *Greek Metre*. Tr. Lloyd-Jones, H. (Oxford, 1962)
- Maas, P., *Textual Criticism*. Tr. Flower, B. (Oxford, 1958)
- Maas, P. & Trypanis, C.A., *Sancti Romani Melodi cantica: cantica genuina* (Oxford, 1963) 276
- Maehler, H. (post B. Snell), *Pindari carmina cum fragmentis*, pt. 1, 5th ed. (Leipzig, 1971)
- Mathiesen, T.J., *Apollo’s Lyre: Greek music and music theory in Antiquity and the Middle Ages* (Lincoln & London, 1999)
- McNamee, K., *Sigla and Select Marginalia in Greek Literary Papyri*. (Papyrologica Bruxellensia 26) (Brussels, 1992)
- Mette, H.J., *Die Fragmente der Tragödien des Aischylos* (Berlin, 1959)
- Mosshammer, A.A., *Georgius Syncellus. Ecloga chronographica* (Leipzig, 1984)
- Najock, D., *Anonyma de musica scripta Bellermanniana*. (Teubner, 1975)
- Nestle, E., Nestle, E., & Aland, K., *Novum Testamentum Graece 25th edn.* (London, 1963)
- Oder, E. & Hoppe, K., *Corpus hippiatricorum Graecorum*, vol. 2 (Leipzig, 1927)
- Oikonomides, A. N. (ed), *Abbreviations in Greek Inscriptions: Papyri, Manuscripts and Early Printed Books* (Chicago, 1974)
- Olivieri, A., *Aëtii Amideni libri medicinales i-iv* (Leipzig, 1935)
- Packard Humanities Institute* (PHI) CD-ROM 7.0 (Packard Humanities Institute, 1996)
- Page, D.L., *Poetae melici Graeci* (Oxford, 1962)
- Page, D.L., *Supplementum lyricis Graecis* (Oxford, 1974)
- Parker, L.P.E., “Metre, Greek” in *OCD*³ (1996) 970
- Pauly, A.F. von *et al.* (eds.), *Paulys Realencyclopädie der classischen Altertumwissenschaft*. (Stuttgart, 1856-1972)
- Pearson, L. & Stephens, S., *Didymi in Demosthenem commenta* (Stuttgart, 1983)
- Pöhlmann, E., *Denkmäler altgriechischer Musik* (Nuremberg, 1970)
- Pririe, J.W., Jeffery, L.H. & Johnston, A.W., “Alphabet, Greek” in *OCD*³ (1996) 66
- Pryce, F.N., Lang, M.L. & Vickers, M. “Measures” in *OCD*³ (1996) 942-3
- Radke, G., “Tryblion” in *Paulys Realencyclopädie der classischen Altertumswissenschaft* 2.13 (1939) 710-11
- Raeder, J., *Oribasii collectionum medicarum reliquiae*, vol. 1 (Leipzig, 1928)
- Rahlfs, A., *Septuaginta*, vol. 2, 9th ed. (Stuttgart, 1935)
- Raven, D.S., *Latin Metre: An Introduction* (London, 1965)
- Smyth, H.W., *Greek Grammar* (Harvard Univ.Press, 1920)
- Smith, M.F., *Diogenes of Oenoanda: the Epicurean inscription* (Naples, 1993)
- Snell, B., *Pindari carmina cum fragmentis*, 3rd ed. (Leipzig, 1959)

- Stamatis, E.S. (post J.L. Heiberg), *Euclidis opera omnia*, vols. 5.1-5.2, 2nd ed. (Leipzig, 1977)
- Stephen, G.M., “The Coronis” in *Scriptorium* 13 (1959) 3-14
- Strunk, O. & Treitler, L., *Source Readings in Music History* (New York & London, 1998)
- Tannery, P., *Diophanti Alexandrini opera omnia*, vol. 1 (Leipzig, 1893)
- Thesaurus Linguae Graecae* (TLG) CD-ROM D (University of California, Irvine, 1992)
- Thesaurus Linguae Graecae* (TLG) CD-ROM E (University of California, Irvine, 1999)
- Thesaurus Linguae Graecae* (TLG) Website, <http://www.tlg.uci.edu/> (University of California, Irvine, 2002)
- Thesaurus Linguae Graecae, Beta Code Manual* (University of California, Irvine, 2002)
- Tod, M.N., “The Greek Numeral Notation” in *The Annual of the British School at Athens* XVIII (1911-12) 98-132
- Tod, M.N., “The Greek Acrophonic Numerals” in *The Annual of the British School at Athens* XXXVII (1936-7) 236-57
- Tod, M.N., “The Alphabetic Numeral System in Attica” in *The Annual of the British School at Athens* XLV (1950) 126-139
- Turner, E.G. with Parsons, P.J., *Greek Manuscripts of the Ancient World* 2nd ed. (London, 1987)
- Uhlig, G., *Grammatici Graeci*, vol. 1.1 (Leipzig, 1883)
- Unicode Consortium, *Unicode Standard 3.2.0* Website, <http://www.unicode.org> (2002)
- Viedebantt, O., *Antike Gewichtsnormen und Münzfüße* (Berlin, 1923)
- Vieillefond, J.-R., *Les “Cestes” de Julius Africanus* (Florence, 1970)
- Wace, A.J.B. & Stubbings, F.H., *A Companion to Homer* (London, 1962)
- Wattenbach, W., *Anleitung zur Griechischen Palaeographie*. 3rd ed. (Leipzig, 1987)
- Wendel, K., *Scholia in Theocritum vetera* (Leipzig, 1914)
- West, M.L. “Metrik. IV Griechisch” in *DNP* 8 (2000) 115-122
- West, M.L. *Greek Metre* (Oxford, 1982)
- West, M.L., *Ancient Greek Music* (Oxford, 1992)
- Winnington-Ingram, R.P., “The First Notational Diagram of Aristides Quintilianus”, in *Philologus* 117 (1973) 244-249
- Winnington-Ingram, R.P., “Two studies in Greek musical notation” in *Philologus* 122 (1978) 237-248
- Winnington-Ingram, R.P., *Aristides Quintiliani de musica libri tres* (Leipzig, 1963)
- Wyss, B., *Antimachi Colophonii reliquiae* (Berlin, 1936)
- Zimmermann, F., *Griechische Roman-Papyri und verwandte Texte* (Heidelberg, 1936)