



**Digital edition of P.Strasb. inv. 1187: between the  
papyrus and the indirect tradition**

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## **Digital edition of P.Strasb. inv. 1187: between the papyrus and the indirect tradition\***

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### 1. Introduction

The present paper presents the new digital edition of P.Strasb. inv. 1187 (TM 59968 = LDAB 1080), encoded in Leiden+ markup language in the framework of the project “Corpus of the Greek Medical Papyri Online”, based upon the SoSOL platform and conducted at the University of Parma by Professor Isabella Andorlini with funding from the European Research Council.<sup>1</sup> The project aims at creating a digital library of ancient medical texts on papyrus and is merging with the Digital Corpus of Literary Papyri (DCLP).<sup>2</sup>

Alongside the relevance of this new digital edition, P.Strasb. inv. 1187 is also significant for its editorial history and its lexical content. The text, which has had three previous editions, preserves the description of a bone surgery to the skull, or to the ribs, carried out with three of the main ancient surgical tools, i.e. ἔκκοπεύς (‘chisel’), σμιλιωτὸς ἔκκοπεύς (‘sharp chisel’), and τρύπανον (‘drill’). Furthermore, it presents strong similarities with literary excerpts of Heliodorus as conveyed by Oribasius. Being *adespoton*, the papyrus cannot be attributed to Heliodorus with certainty; however, the digital edition offers the chance to highlight textual affinities with the latter’s manuscript tradition. Generally speaking, what will be pointed out here is how the digital edition can be an occasion to critically rethink the entire text and its main features.

### 2. Previous editions and description of the content

Kept at the Cabinet Numismatique of the Bibliothèque Nationale Universitaire at Strasbourg, the papyrus preserves two fragments of a volume in a bad state of preservation.<sup>3</sup> The text was the object of three complete editions and a number of critical notes. The *editio princeps* was made by Naphtali Lewis in 1936; subsequently, the text was republished by Daniela Fausti in 1989 and Marie-Hélène Marganne in 1998. Some comments were provided by Alfred Körte in 1938 and by Isabella Andorlini in 1993.<sup>4</sup>

As noticed by the *editor princeps*, the text contains «a number of words and phrases of a decidedly medical character»<sup>5</sup> and, despite its fragmentary state, it could be identified as the description of operative surgery with technical instruments such as an ἔκκοπεύς (‘chisel’), a

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\* The present paper falls into the ERG-AdG-2013-DIGMEDTEXT project, Grant Agreement No. 339828 (principal investigator Prof. Isabella Andorlini), funded by the European Research Council at the University of Parma (Italy) [<http://www.papirologia.unipr.it/ERC>].

<sup>1</sup> ERC-2013-AdG DIGMEDTEXT.

<sup>2</sup> <http://litpap.info/dclp/59968>. See Reggiani (2017) § 8.7.

<sup>3</sup> Fr. A preserves two columns of text and measures 10.5 x 5.7 cm; fr. B measures 5.5 x 1.6 cm; no margin survives.

<sup>4</sup> Lewis (1936); Körte (1938); Fausti (1989); Andorlini (1993); Marganne (1998).

<sup>5</sup> Lewis (1936) 90.

σμιλιωτὸς ἔκκοπέυς(‘very sharp chisel’), and a τρύπανον (‘trephine’), in order to eliminate a fistula in the rib area or in the cranium.<sup>6</sup>

In fr. A. col. i it seems likely that instructions are given to find a hole (ἐφόρασεν τρήμα, l. 2) and then to use a chisel (τῶν ἔκκοπέων, l. 4) in order to lift (the edges of a wound?) (ἐπιτέλει τὸν βαστά[[ζοντα], ll. 5-6). Two copulative particles μὲν and δὲ (ll. 6 and 7) may indicate the two consecutive phases of the surgery (‘on the one hand... on the other...’), showing that the text «ha una struttura espositiva ben delineata»,<sup>7</sup> as can also be seen by the use of three sequential adverbs τότε (‘then’, l. 1), εἶτα (‘next’, l. 3) and αἰφνίδιον (‘sudden’, l. 19). Subsequently, the surgeon had to go forward in trepanning until he had found a hollow (π]ροσεπιτρέπει τῷ τρυ[[πάνω . . . ἕως κενεμβατεῖν, ll. 9-10); in the following line the name of a sharp chisel is legible (σμιλιωτὸς ἔκκοπέυς, l. 11), although the very bad state of preservation of the lines which follow does not allow us to identify with certainty its appropriate use; however, in this case, parallels with indirect tradition are crucial for supplementing the text (see infra). Alongside a diplography (τῶν σιναρῶν, «of the damaged...», l. 14) and a reference to the patient (ὁ παθὼν, l. 14), lines 14-18 explain the post surgery protocol: there is a recommendation to put some lint over the wound and to continue with a suppurative therapy ([διαμό]τωσις ἐνκρείνεται καὶ ἡ πνοποιὸς [[θεραπ]εία, ll. 15-16), considering that (ἐκεῖνο δὲ εἰδέναι δεῖ ὅτι ἐπὶ τοῦ [[ ], l. 16) the abscesses ([ τῶ]ν ἀποστημάτων μετὰ ὀλίγας, l. 17), we may infer, if not satisfactorily healed, would cause a new wound in a short time and increase the depth of the wound ([ ] αἰφνίδιον ὀράται τὸ βάθος, l. 18).

In fr. A. col. ii very few terms are clearly legible, nevertheless we may suppose that the text deals with a fistulous sore (σῦριγξ, l. 5) that has a ‘mouth’, a cavity (στόμιον, l. 4) and has grown in depth (τῷ βάθει, l. 5) as in Heliod. ap. Orib. 44.20.65,<sup>8</sup> in which the three terms recur together as well.

In fr. B, two treatments of διόρθωσις (ll. 3 and 6) are possibly discussed: such a technical term may indicate a ‘reduction’ of a dislocation, but also a more generic ‘settlement, restoration’, as suggested by Fausti (1989) 159.

### 3. Lexical notes

The content of the papyrus could be of some interest considering its similarities with the indirect literary medical tradition;<sup>9</sup> this paragraph is going to point out some parallels, especially with Heliodorus<sup>10</sup> ap. Oribasius, because in some cases they are crucial for supplementing the text.

<sup>6</sup> For details of the content, see the French version of Marganne (1998) 73-74.

<sup>7</sup> Fausti (1989) 159.

<sup>8</sup> CMG 6.2.1, 140.33-36 Raeder.

<sup>9</sup> Fausti (1989) 163: «Il lessico di P.Strasb. 1187 trova pienamente riscontro con quello dei medici del I/II secolo d.C. quali Eliodoro e Galeno ed anche con il molto più tardo Paolo Egineta».

<sup>10</sup> Information about Heliodorus is scarce and uncertain. He presumably *floruit* in the second half of the 1<sup>st</sup> century CE and allegedly belonged to the pneumatic school; he is mentioned by Iuv. 6.373 as a *castrator*, but his specialization was probably in surgery. He was author of various treatises, including the *Χειρουργούμενα*, known by indirect tradition mainly through Oribasius' *Collectiones medicae*, except for the *explicit* of book 4, preserved by direct tradition in P.Münch. II 23, in which a *subscriptio* with Heliodorus' name is clear legible; on P.Münch. II 23 see the main editions by Manetti (1986) and Marganne (1988) 96-109, and the comment by Marganne (1992). For a basic bibliography on Heliodorus see Crönert (1903); Deichgräber (1965); Diels (1908); Früchtel (1949); Gossen (1912); Kudlien (1967); Michler (1968) and (1986); Sigerist (1912); Tafuro (2004-2005); Wellmann (1895).

The occurrence of two technical surgical instruments, namely ἔκκοπέυς and τρύπανον (fr. A. col. i. ll. 9-10 and 14), is not so frequent in medical literature. Just seven occurrences are recorded in all, three of which are in Heliodorus ap. Oribasius;<sup>11</sup> all of them deal with the very same type of surgery that is bone –especially skull– surgery.<sup>12</sup>

Furthermore, the occurrence of the adjective σμιλιωτός deserves attention because of its editorial, linguistic, and lexical relevance. At line 13, Lewis (1936) 91 read ]γϞ δεῖ λιω\ω\των ἔκκοπέω(v), accepting the scribal correction *supra lineam* as made «without erasure of the incorrect letter»; Lewis was thinking of a form of the adjective λειωτέων «to be smoothened». Nevertheless, that interpretation is problematic, since λειωτέων is quite a rare adjective, and it is never used with ἔκκοπέυς. Indeed, in the following critical edition, Fausti (1989) 160-162 transcribed τῶ]ν σμιλιω\ω\των ἔκκοπέω(v), based principally on Heliodorus ap. Oribasius. The word was thus read as an itacistic variant of σμιλιωτός (a very sharp chisel used for bone surgery, especially in case of injury of the head bones and in hand surgery), which is attested a few times in Greek literature, in three authors only: Dioscorides,<sup>13</sup> Heliodorus ap. Oribasius,<sup>14</sup> and Paulus of Aegina.<sup>15</sup> Given Dioscorides' and Heliodorus' chronological coincidence (both of them date back to the second half of the first century CE), it might be possible that the adjective was a linguistic neologism consequent to a technical innovation in the field of surgical instruments. The uncommonness of σμιλιωτός may have created some difficulties in the late copyists, as can be supposed from the phonetic variant in the text of the papyrus, and above all from the occurrences with different spellings in Paulus' tradition. Therefore, the spelling σμιλιωτός may be considered as the *lectio difficilior* and accepted for this reason.<sup>16</sup> The occurrence of σμιλιωτός in the text of P.Strasb. inv. 1187, which is dated to the second century CE, makes our papyrus the third earliest occurrence of such an adjective, and could have a crucial role in the attribution of the text to Heliodorus. On the other hand, the occurrence of the phrase σμιλιωτὸς ἔκκοπέυς in the literary excerpt of Heliodorus ap. Oribasius, which clearly refers to bone surgery, proves that the kind of

<sup>11</sup> The other occurrences are in Gal., Meth. med. 6.6 (10, 446.14-18–447.1-7 K.), Paul.Aeg. 6.77.3 (CMG 9.2, 119.26-30 Heiberg) and 6.88.5 (CMG 9.2, 132.17-22 Heiberg), and Paulus Nicaeensis, Liber medicus 106.7. In fact, there are some periphrastic expressions featuring the verb ἐκκόπτω in combination with τρύπανον, e.g. in Aët. 15.12.73-80 (37,11-18 Zervos).

<sup>12</sup> Heliod. ap. Orib., Coll. med. 46.11 (CMG 6.2.1, 220-222 Raeder) about the ῥωγμαί ('skull fractures'); Gal. ap. Orib., Coll. med. 46.21.15-16 (CMG 6.2.1, 229.18-22 Raeder) about the κατάγματα ('a certain type of fracture') and Heliod. ap. Orib., Coll. med. 46.29.8 (CMG 6.2.1, 239.27-31 Raeder) about ὀστώδους ἐπίφυσις ('bony excrescence').

<sup>13</sup> Dsc. 1.68: δευτερεύει [...] καὶ ὁ σμιλιωτός, ὃν ἔνιοι κοπίσκον καλοῦσι, μικρότερον καὶ κερρότερον ὄντα. In this case, σμιλιωτός is referred to a particular kind of incense, the λίβανος (*Boswellia Carterii*), also called κοπίσκος, less fine than the white one. The terms σμιλιωτός and κοπίσκον indicate the specific shape of the incense's leaves, sharp as a σμιλίον, 'scalpel', and pointy as a κοπίς, 'sting of a scorpion', see Ghiretti (2010) 65.

<sup>14</sup> Occurrences of σμιλιωτὸς ἔκκοπέυς in Heliodorus are found in Orib., Coll.med. 46.11.16-18 (CMG 6.2.1, 221.2-13 Raeder) and 46.12.2 (CMG 6.2.1, 222.24-32 Raeder) about a fracture, περὶ ἐγκοπῆς; 46.22.16 (CMG 6.2.1, 234.3-7 Raeder) about caries in the skull bones, τερηδών; 46.29.8-10 (CMG 6.2.1, 239.27-35 Raeder) about a bone excrescence, ἐπίφυσις; 47.15.5 (CMG 6.2.1, 259.2-5 Raeder) about a supernumerary finger; 47.17.4 (CMG 6.2.1, 259.33-35 Raeder), about removing a stuck ring.

<sup>15</sup> Three are the occurrences of σμιλιωτός in Paulus of Aegina: with *sigma* and *iota*, referred to an elliptical substantive e.g. ὄργανον (Paul.Aeg. 6.28.1 [CMG 9.2, 66.7-10 Heiberg]); with the different spelling μηλιωτός (see LSJ<sup>9</sup> 160 s.v.); Paul.Aeg. 6.90.4 (CMG 9.2, 139.16-20 Heiberg) and μηλιωτῶν ἔκκοπέων (Paul.Aeg. 6.90.5 [CMG 9.2, 140.6-10 Heiberg]). Nevertheless, Bliquez (2015) 193 provides a different interpretation of this adjective: «[g]omphoter suggests a bolt- or nail-like punch, which may be the same as the chisel mentioned by Paul as μηλιωτός, i.e. a chisel round and pointed like a simple probe», adding in footnote: «[t]his makes more sense than taking μηλιωτός as a variant of σμιλιωτός, as do LSJ».

<sup>16</sup> See Ghiretti (2010) 66.

surgery described in P.Strasb. inv. 1187 also dealt with a bone (skull?) surgery,<sup>17</sup> perhaps complicated by abscess and fistula, despite the lack of further specific information in the papyrus.

Also the second part of the papyrus text (fr. A. col. i. ll. 14-18) contains several parallels with Heliodorus' indirect tradition. The use of a linen bandage after a bone surgery performed with an ἔκκοπεύς as described in the papyrus is also attested in Paulus;<sup>18</sup> furthermore, the combined use of a διαμότωσις 'bandage' and a πυσσοπιός θεραπεία (or φάρμακος, or ἀγωγή) 'suppurative therapy' to help the regrowth of flesh after an operation is attested in Aëtius<sup>19</sup> and in three excerpts of Heliodorus ap. Oribasius.<sup>20</sup> In fr. A. col. ii the text deals with a case of fistula (σῦριγξ, l. 5; στόμιον, l. 4, 'mouth of the fistula', τῷ βάθει, 'in deep'), just as Heliod. ap. Orib. 44.20.65,<sup>21</sup> in which all the three terms recur together.

#### 4. The digital edition

Due to the borderline nature of the Greek medical papyri, mainly categorized in that unclear zone between documentary and literary texts, which is called paraliterary or subliterary,<sup>22</sup> they were not systematically included –except for very sporadic cases– in the main papyrological online database, the Duke Databank of Documentary Papyri, which has always been focused on documents. The project CPGM ("Corpus dei papiri greci di medicina") has tried to bridge this gap, as the paper by Nicola Reggiani in this volume shows.<sup>23</sup>

Digital editions are encoded in Leiden+,<sup>24</sup> which is a user-friendly markup language, by means of which a scholar can annotate the text with critical marks inspired by the Leiden editorial conventions and a set of labels indicating linguistic variants, scribal or modern corrections, alternative readings, and other textual features that are automatically transformed into TEI/EpiDOC-compliant XML strings by the SoSOL interface of Papyri.info.<sup>25</sup> This

<sup>17</sup> For the identification of this operation with a skull surgery see Bertonazzi (2018), in which, in addition to the discussion about P.Strasb. inv. 1187, the most relevant Greek medical texts dealing with skull surgery from the *Corpus Hippocraticum* and *Galenicum* are presented, showing how technical innovations in surgical instruments have been able to improve the performing of trepanning from fifth-fourth century BC to the second century AD. An unexpected evidence from Fidenae (near Rome), dated to the second century AD, showed in a 5-6 year-old-child's skull clear traces of a cranial surgery carried out with the same technique and tools explained in medical literature; in particular, the gouge (ἔκκοπεύς) probably used for this surgery is very similar to one model found in the *Domus 'del Chirurgo'* in Ariminum.

<sup>18</sup> Paul.Aeg. 6.90.5 (CMG 9.2, 140.6-10 Heiberg).

<sup>19</sup> Aët. 16.45.1-3 (62.8-10 Zervos).

<sup>20</sup> All the three passages belong to the paragraph about trauma therapy, in which some skull bone surgeries are described and the σμλιωτός ἔκκοπεύς is mentioned: 46.8.4-5 (CMG 6.2.1, 217.32-35– 218.1-4 Raeder); 46.8.10-11 (CMG 6.2.1, 218.16-26 Raeder). It is said that the suppurative therapy is the least dangerous healing method after an incision: μετὰ δὲ τὴν ἐπιδιαίρεσιν οἱ μὲν ῥαφαῖς ἐχρήσαντο, οἱ δὲ διαμοτώσει καὶ τῇ ἀκολούθῳ πυσσοπιῶν θεραπείᾳ. σύντομος μὲν οὖν ἐστὶν ἡ ἔναιμος ἀγωγή, ἄνευ βλάβης δὲ μᾶλλον ἢ ἀφλέγμαντος καὶ πυσσοπιός θεραπεία (Heliod. ap. Orib., Coll.med. 46.8.14 [CMG 6.2.1, 218.30-33 Raeder]), Fausti (1989) 165: «dopo l'incisione alcuni si servono di suturazioni, altri di tamponi e della successiva terapia suppurante; la più veloce è la terapia che prescrive di far uscire il sangue dalle ferite, ma quella antinfiammatoria e suppurante è meno dannosa».

<sup>21</sup> CMG 6.2.1, 140.33-36 Raeder.

<sup>22</sup> Cf. Huys / Nodar (2007).

<sup>23</sup> See also his monograph on methods and tools for digitizing ancient papyri, Reggiani (2017), providing further bibliography on the topics mentioned here. For other references to digital papyrology, online resources and new projects see e.g. Andorlini / Reggiani (2012); Bagnall (2010) and (2012); Delattre / Heilporn (2014); Reggiani (2012), (2015) and (2016).

<sup>24</sup> More specific guidelines can be found online: for the Leiden+ language see [http://papyri.info/docs/leiden\\_plus](http://papyri.info/docs/leiden_plus); for XML see EpiDoc <http://www.stoa.org/epidoc/gl/latest/intro-intro.html>.

<sup>25</sup> See Sosin (2010) and Baumann (2013).

markup language allows all registered users, even those who are not so skilled at information technology, to edit a papyrus online. The Leiden+ tags also automatically produce a critical apparatus, which contains the main philological information only –therefore it is not intended to replace the traditional printed editions, but rather to provide an updated and accessible first overview of the texts.<sup>26</sup> The texts are provided with integrated information metadata sourced from the Heidelberger Gesamtverzeichnis der griechischen Papyrusurkunden Ägyptens (HGV), Trismegistos (TM), the Advanced Papyrological Information System (APIS), and – for the only case of the literary and paraliterary papyri– the Leuven Database of Ancient Books (LDAB via TM).

The Parma project brings many benefits, starting from the possibility of having the texts available in an online, open-access platform, thus granting free access to any scholar; moreover, an online edition is much easier to update than a printed one: every text may be corrected, updated, revised, or improved in whichever manner by registered users, and an editorial board always supervises the editing process and controls that required standards are followed in order to ensure quality. All changes are saved into a history log, which is available to the users at all times. Some temporary drawbacks, such as a still imperfect display of some features tagged (e.g. in-line *ekthesis* or *eisthesis*), are of secondary importance as long as the text is correctly encoded in Leiden+/XML syntax. Last but not least, the digital edition of medical papyri stems from the collation of all available printed editions of each text, being therefore a commented, reasoned, and critical summary overview of the state of the art on each item.

There are four main sections in a typical digital edition of a medical papyrus as uploaded in the Papyrological Navigator. First comes the front matter (fig. 1), which precedes the text and explains physical characteristics of the papyrus, layout features, content, paleographical analysis and (hypothesis of) dating. The second part is the annotated text itself (figs. 2, 6 and 7), by which, through the appropriate tags, the *apparatus criticus* is created (third part, fig. 3). The fourth and last part is a line-by-line commentary (fig. 4), mostly used to annotate parallels with literary tradition and/or all notes that cannot be included in the text by means of tags. The most striking textual features, i.e. linguistic variants, alternative readings, ancient and modern corrections, etc. are noted in the apparatus through the specific tagging, as presented below.

#### a. Linguistic variants

Linguistic variants are important for evaluating the degree of literacy or other various sociolinguistic factors which influenced the ancient scribe. In our text, the most frequent cases are –as usual– the phonetic ones, which fall into well-known phenomena of the spoken Greek as attested in the papyri,<sup>27</sup> and are marked with the usual ‘regularization’ tag |reg|, e.g.:

Fr. A. col. i. l. 8 <:οὐκ|reg|οὐχ:>

<sup>26</sup> The fact that the *apparatus criticus* in digital editions on Papyri.info cannot replace entirely the printed version is true in case of (para)literary, and specifically medical papyri, due to the present difficulty in encoding some philological features, such as textual variants (see Reggiani [2018] 37 with footnote 146). Issues in the apparatus arise also in case of born-digital editions of documentary papyri as well: as Berkes (2018) 79-80 pointed out, it has not been possible, so far, to represent abbreviations in the apparatus as in the printed edition. Although the availability of high quality images could partially solve this issue, however the lack of suitable encoding of abbreviations is still preventing the full searchability of these.

<sup>27</sup> Cf. e.g. Gignac (GGP I 189-91) for the Roman age and Mayser (GGP I 87-94) for the Ptolemaic period. All types of textual irregularities in the documentary papyri are now recorded in the searchable database <http://www.trismegistos.org/textirregularities/>.

(XML <choice><reg>οὐκ</reg><orig><unclear>ο</unclear>ὕχ</orig></choice>)

Fr. A. col. i. l. 11 <:σμιλιωτῶν|reg|σμιελι\ω/τῶν:>|subst|σμιελιοτῶν:>  
(for XML syntax see f. infra)

Fr. A. col. i. l. 15 <:ἐγκρίνεται|reg|ἐνκρίνεται:>  
(XML <choice><reg>ἐγκρίνεται</reg><orig>ἐνκρίνεται</orig></choice>)

Fr. A. col. ii. l. 3 <:καθίεται|reg|καθείεται:>  
(XML <choice><reg>καθίεται</reg><orig>καθείεται</orig></choice>)

Fr. B, l. 3 <:διορθώσει|reg|διορθώσει:>  
(XML <choice><reg>διορθώσει</reg><orig>διορθώσει</orig></choice>)

#### b. Outright scribal mistakes

Plain writing mistakes by the scribe, on the contrary, are marked by means of the ‘correction’ tag |corr|, such as the following verbal form:

Fr. A. col. i. l. 8 <:ἀποδίδοται|corr|ἀποδίδεται:>  
(XML <choice><reg>ἀποδίδοται</reg><orig>ἀποδίδ<unclear>ε</unclear>ται</orig></choice>  
>)

#### c. Previous and alternative readings

In digitizing medical (and, in general, literary and / or paraliterary) papyri, the deployment of the ‘alternative’ |alt| and ‘editorial’ |ed| tags is usually more frequent than in treating documentary texts, in order to emphasize all reading variants of philological interest across all the extant editions. For the purpose of stressing the stratification of editions and making them as clear as possible, the basic |ed| tag can be further specified with indications of responsibility (‘resp’ attribute) such as =ed.pr., =ed.alt., =ed.ter., or =editor’s name, which come to replace the default label ‘prev.ed.’ that is automatically displayed in the apparatus to indicate previous readings.

Fr. A. col. i. ll. 6-7 <:ἐργα.1  
7.- [.?] |ed|ἐργασ7.- μένα=ed.pr.:> <:αθων|ed||[ἐ]λθών=ed.pr.|[π]αθών=Fausti:>  
(XML <lem>ἐργα<gap reason="illegible" quantity="1" unit="character"/><lb n="7" break="no" xml:id="div1-div1-lb10"/><gap reason="lost" extent="unknown" unit="character"/></lem><rdg resp="ed.pr.">ἐργασ<lb n="7" break="no"/>μένα</rdg></app> <app type="editorial"><lem><unclear>α</unclear>θων</lem><rdg resp="ed.pr."><supplied reason="lost">ἐ</supplied><unclear>λ</unclear>θών</rdg><rdg resp="Fausti"><supplied reason="lost">π</supplied><unclear>α</unclear>θών</rdg></app>)

Fr. A. col. i. l. 14 <:v|alt|[τῶ]v:> σιναρῶν|ed|αισι ναίων=ed.pr.:>  
(XML <lem>v</lem><rdg><supplied reason="lost">τῶ</supplied>v</rdg></app> σιναρῶν</lem><rdg resp="ed.pr."> <unclear>α</unclear>ισι ναίων</rdg></app>)

Multiple nested tags are possible, i.e. complex syntax where one or more tags can be inserted into a similar or different tags to mark several annotation layers on the same textual string, as in the following case of an ‘alternative reading’ within a ‘regularization’:

Fr. A. col. I. l. 15 <:ἐγχρίεται|alt|ἐγχραίνεται:>|reg|ἐνχρίνεται:>  
(XML <lem>ἐγχρίεται</lem><rdg>ἐγχραίνεται</rdg></app></reg><orig>ἐνχρίνεται</orig></choice>)

## d. Abbreviations

The papyrus exhibits two cases of allegedly abbreviated words which have been the object of interpretative discussion. At ll. 11 and 14 two  $\nu$  overlined with a horizontal stroke (belonging to a plural genitive and a nominative respectively:  $-\omega\bar{\nu}$ ) are clearly legible; these strokes are abbreviation marks according to Fausti (1989) 158 *contra* Marganne (1998) 68, following the *editio princeps* for the latter, which supplies the  $\nu$  as omitted by the scribe, in angle brackets. The presence of the overline strongly suggests that we are indeed dealing with abbreviated words: therefore, although as a rule I rely on the more recent edition, I have in this case chosen to follow the *editio altera*, marking the abbreviations according to the current Leiden+ conventions, while at the same time preserving the reading of the *editio tertia* in an |ed| tag:

l. 11 <:(ἐκκοπέω(ν))|ed|ἐκκοπέω<v>=ed.alt.:>  
(XML <expan>ἐκκοπέω<ex>v</ex></expan>)

l. 14 <:(παθῶ(ν))|ed|παθῶ<v>=ed.pr., ed.alt.:>  
(XML <expan>παθῶ<ex>v</ex></expan>)

## e. Diplography

A single case of diplography occurs in the text at line 14; in Leiden+ language, it is expressed with the traditional Leiden braces, which generate the specific XML ‘surplus’ tag:

{τῶν σιναρῶν} (XML <surplus>τῶν σιναρῶν</surplus>).

## f. Final appearance

The final layout of the whole text marked with the Leiden+ language is shown in figs. 6 and 7. As can be noticed, simple tags, such as regularization (l. 8 <:οὐκ|reg|οὐχ:>) or previous readings (l. 10 <:.3 εως κενεμβατεῖν |ed|ομεστωσεν ἐμβατεῖ νε=ed.pr.:>) are perfectly clear in both their presentation and meaning. In the case of multiple nested tags, however, some problems may arise when encoding into a single string of text more and more information that would normally be conveyed by a traditional apparatus, as in line 15:

<:[διαμό]τωσις <:ἐγκρίνεται|reg|ἐνκρίνεται:> καὶ ἡ πνοποιὸς|ed|[μό]τωσις  
<:<:ἐγγρίεται|alt|ἐγγραίνεται:>|reg|ἐνγρίνεται:> καὶ .5 ποῖος=ed.pr.:>

In some (fortunately rare!) cases, the tags are so nested that the current stylesheet that manages the conversion from XML to HTML does not render a 100% correct display in the apparatus. The following example is telling: an ancient scribal correction with insertion of a letter *supra lineam* was read differently by two editors, so that they offer two different interpretations, one of which involves a regularization. The results shown in the previous platform Papyri.info, as illustrated in fig. 8, did not really make any sense. After the migration of all the digital editions of medical papyri into DCLP (hosted in the new platform Litpap.info) the stylesheet displays this line in the correct way.

<:<:σμιλιωτῶν|reg|σμιλιω/τῶν:>|subst|σμιλιοτῶν:>|ed|νω  
δει<:λιω/των|subst|λιοτων:>=ed.pr.:>  
(XML <lem><subst><add place="inline"><choice><reg>σμιλιωτῶν</reg><orig>  
<unclear>σμι</unclear>εἰλι<add place="above">ω</add>τῶν</orig></choice>  
</add><del rend="corrected"><unclear>σμι</unclear>εἰλιοτῶν</del></subst>  
</lem><rdg resp="ed.pr."><unclear>νω</unclear> δει<subst><add place="inline">  
λι<add place="above">ω</add>των</add><del rend="corrected">λιοτων</del>  
</subst></rdg> </app>)

As already envisaged and outlined by Reggiani (2015) and (2016), some further implementations of the digital editions of medical texts are under consideration, in order to take into account sets of information that «have been pointed out as potentially useful sources of information concerning Greek medical papyri»<sup>28</sup> but are, at present, poorly or not supported at all by the current platforms.

#### g. Technical terms

Annotation of special terms would be of the utmost relevance for medical papyri, which, as technical texts, exhibit a special vocabulary pertaining to the technical language of medicine. Currently, we proceed by just hyperlinking technical terms commented in the front matter of the line-by-line commentary to external pages, namely the *lemmata* of the Medicalia Online platform;<sup>29</sup> for a single example see the front matter of P.Ross.Georg. I 20 (fig. 5), in which technical terms like ἐρωταπόκρισις,<sup>30</sup> πτερύγιον and σταφύλωμα are linked to the relative lexical record.<sup>31</sup> In P.Strasb. inv. 1187 ἐκκοπεύς and τρύπανον are key-terms provided with specific *lemmata*.<sup>32</sup>

#### h. Linguistic annotation

Linguistic annotation of documentary papyri has recently been undertaken on a scale which is both systematic and collaborative thanks to the project Sematia conducted by Marja Vierros at Helsinki;<sup>33</sup> annotation of literary papyri had already been applied to the Herculaneum papyri by Daniel Riaño Rupilanchas and Holger Essler.<sup>34</sup> Annotating medical papyri linguistically, and especially from the syntactic viewpoint, would bring an invaluable improvement to the knowledge of the language and structure of ancient medical texts. Suffice it to recall the syntactic structure of P.Strasb. inv. 1187, which appears to be quite well delineated, by both correlatives (μὲν... δὲ..., ll. 6 and 7), and temporal adverbs (τότε, ‘then’, l. 1; εἶτα, ‘next’, l. 3; αἰφνίδιον, ‘sudden’, l. 19). In this case, for example, a syntactic analysis, facilitated by some sort of linguistic annotation like e.g. a treebank, might show the structure of the text more clearly and eventually help parallel the content of the papyrus against Heliodorus’ excerpts as preserved by both direct and indirect tradition (if not to support the authorial identification of the text itself, as suggested in the Introduction above).

<sup>28</sup> Reggiani (2015) 343.

<sup>29</sup> Medicalia Online is an electronic lexical database dealing with the technical terms of Greek medical papyri, linked to the main CPGM core; for the presentation of the online Medical Encyclopaedia, see the paper of Isabella Bonati in this volume.

<sup>30</sup> For a minimal bibliography on the genre of catechism, see at least Andorlini (1999); Hanson (2003); Ieraci Bio (1995); Leith (2009); Zalateo (1964), and papers of Bonati (forthcoming) and Reggiani (forthcoming) at the International Congress “Where Does it Hurt? Ancient Medicine in Question and Answers” (30-31 August 2016, Leuven), as well as the lemma ‘Catechism’:

<http://www.papirologia.unipr.it/CPGM/medicalia/vocab/index.php?tema=8&/catechism>

<sup>31</sup> <http://www.papirologia.unipr.it/CPGM/medicalia/vocab/index.php?tema=8> (ἐρωταπόκρισις),

<http://www.papirologia.unipr.it/CPGM/medicalia/vocab/index.php?tema=128> (πτερύγιον),

<http://www.papirologia.unipr.it/CPGM/medicalia/vocab/index.php?tema=21> (σταφύλωμα).

<sup>32</sup> See the newly created lemmata:

<http://www.papirologia.unipr.it/CPGM/medicalia/vocab/index.php?tema=189&/n> (ἐκκοπεύς),

<http://www.papirologia.unipr.it/CPGM/medicalia/vocab/index.php?tema=190&/yny> (τρύπανον).

<sup>33</sup> Vierros / Henriksson (2017). See also the website <http://sematia.hum.helsinki.fi>.

<sup>34</sup> Essler / Riaño Rupilanchas (2013). In general on linguistic annotation of papyri see Reggiani (2017) § 7.1.



## i. Literary references and parallels

At the present stage of development, it is not possible to specify literary references or parallels directly through tags in the text (except for a very basic way of indicating supplied parallels), so they are inserted in the line-by-line commentary (with future plans of hyperlinking them to the appropriate passages in literary databases such as TLG or other kinds of textual repositories like the Corpus Medicorum Graecorum online). As indicated by the guidelines of the Parma project, two cases only are currently to be added in the commentary: a) parallels useful to reconstruct the integrity of the text, e.g. the case of Fr. A. col. i. ll. 3-4, in which Marganne supplies a form of the verb διακόπτω ('cut through') based on Heliod. ap. Orib., Coll.med. 46.8.7 (CMG 6.2.1, 123.2-3 Raeder); b) excerpts that are relevant due to striking analogies between the papyrus and the manuscript/indirect tradition, as shown supra (fig. 4).

## 5. Conclusion

Being part of the digital Corpus of Greek Medical Papyri (CPGM) and having been merged to the platform of literary texts (DCLP), the digital critical edition of P.Strasb. inv. 1187 offers the possibility to rely on an open-access, peer-reviewed and constantly updated text online, which completes and summarizes the previous printed editions without replacing them completely, whilst providing a more integrated and mutual enrichment through currently developing features such as the links to the Medicalia Online platform and future improvements involving literary parallels and syntactic analysis. As discussed by Nicola Reggiani in his contribution here, significant work has been done to adapt the Leiden+ language, more suitable for documentary papyri, to literary ones; however, some points still need to be improved. The Digital Corpus of Greek Medical Papyri reached an important goal, but several challenges are still to be faced for future enhancement and knowledge.

## Bibliography

- Andorlini, I. (1993), *L'apporto dei papiri alla conoscenza della scienza medica antica*, ANRW II 37.1 (Berlin-New York).
- Andorlini, I. (1999), "Testi medici per la scuola: raccolte di definizioni e questionari nei papiri" in Garzya, A. / Jouanna, J. (eds.), *I testi medici greci. Tradizione e ecdotica. Atti del III Convegno Internazionale (Napoli 15-18 ottobre 1997)* (Napoli) 7-15.
- Andorlini, I. / Reggiani, N. (2012), "Edizione e ricostruzione digitale dei testi papiracei, con appendice di N. Reggiani" in Palazzolo, N. (ed.), *Diritto romano e scienze antichistiche nell'era digitale. Collectanea Graeco-Romana 10* (Torino) 131-146.
- Bagnall, R.S. (2010), "Integrating Digital Papyrology" in *Online Humanities Scholarship. The Shape of Things to Come* (March 26-28, 2010), <http://shapeofthings.org/papers/RBagnall.doc>.
- Bagnall, R.S. (2012), "The Amicitia Papyrologorum in a Globalized World of Learning" in *Pap.Congr. XXVI* (Genève) 1-5.
- Baumann, R. (2013), "The Son of Suda On-Line" in Dunn, S. / Mahony, S. (eds.), *The Digital Classicist 2013, BICS Supp. 122* (London), <http://ryanfb.github.io/papers-BICS/sosol-bics-draft.pdf>.
- Berkes, L. (2018), "Perspectives and Challenges in Editing Documentary Papyri Online. A Report on Born-Digital editions through Papyri.info" in Reggiani, N. (ed.), *Digital Papyrology II. New Methods and Tools for the Digital Edition of Ancient Greek Papyri* (Berlin-Boston) 75-85.
- Bertonazzi, F. (2018), "La trapanazione cranica nell'Antichità: alcuni casi nella letteratura medica e (forse) in un papiro greco" in Reggiani, N. / Bertonazzi, F. (eds.), *Parlare la medicina: fra lingue e culture, nello spazio e nel tempo. Atti del Convegno Internazionale (Parma, 5-7.9.2016)* (Firenze) 89-112.
- Bliquez, L.J. (2015), *The Tools of Asclepius. Surgical Instruments in Greek and Roman Times* (Leiden-Boston).
- Bonati, I. (forthcoming), "Definitions and Technical Terminology in the Erôtapokriseis on papyrus" in Gielen, E. / Meeusen, M. (eds.), "Where Does It Hurt?" *Ancient Medicine in Questions and Answers* (Leiden-Boston).

- Crönert, W. (1903), "Sprachliches zu griechische Ärzten, eine Untersuchung über den Verfasser des griechischen Papyrus Lond. Nr. 155", *Archiv* 2, 476-482.
- Deichgräber, K. (1965), *Die Griechische Empirikerschule. Sammlung der Fragmente und Darstellung der Lehre* (Berlin-Zürich).
- Delattre, A. / Heilporn, P. (2014), "Electronic Resources for Graeco-Roman and Christian Egypt: A Review of the State of the Net (March 2014)", *BO* 71, 308-331.
- Diels, H. (1908), Bericht über den Stand des Interakademischen Corpus Medicorum Antiquorum und Erster Nachtrag zu den in den Abhandlungen 1905 und 1906 Veröffentlichten Katalogen: die Handschriften der Antiken Ärzte (Berlin).
- Essler, H. / Riaño Rupilanchas, D. (2013), "'Aristarchus X' and Philodemus: Digital linguistic analysis of a Herculanean text corpus" in *Pap.Congr. XXVII (Warsaw)* 491-501.
- Fausti, D. (1989), "P.Strasb. inv. gr. 1187: testo chirurgico (Eliodoro?)", *AFLS* 10, 157-169.
- Früchtel, L. (1949), "Medizinisches bei Heliodoros von Athen", *Gymnasium* 56, 168-169.
- Ghiretti, G. (2010), *Luoghi e strumenti della professione medica antica. La testimonianza dei papiri greci d'Egitto* (Parma).
- Gignac, F.Th. (1976), *A Grammar of the Greek Papyri of the Roman and Byzantine periods, vol. I phonology* (Milano).
- Gignac, F.Th. (1981), *A Grammar of the Greek Papyri of the Roman and Byzantine periods, vol. II morphology* (Milano).
- Gossen, H. (1912), "Heliodoros" in *Pauly Real-Encyclopädie der Classischen Altertumswissenschaft* (Stuttgart) VIII 1, n. 18 col. 41-42.
- Hanson, A.E. (2003), "Text and Context in Papyrus Catechism on Afflictions of the Head" in Garzya, A. / Jouanna, J. (eds.), *Trasmissione e ecdotica dei testi medici greci. Atti del IV Convegno internazionale, Parigi, 17-19 maggio 2001 (Napoli)* 199-217.
- Huys, M. / Nodar, A. (2007), "A Catalogue of Paraliterary Papyri (CPP): Presentation of the Project", in *Pap.Congr. XXIV (Helsinki)* 453-461.
- Ieraci Bio, A.M. (1995), "L'erôtapokrisis nella letteratura medica" in Moreschini, C. (ed.), *Esegesi, parafrasi e compilazione in età tardoantica* (Napoli) 187-207.
- Körte, A. (1939), "III. Referate. no. 915", *Archiv* 13, 128.
- Kudlien, F. (1967), "Heliodoros", in *Kleine Pauly: Lexicon der Antike auf der Grundlage von Pauly's Realencyclopädie der klassischen Altertumswissenschaft unter Mitwirkung zahlreicher fachgelehrter* (Stuttgart) II 8 col. 998.
- Leith, D. (2009), "Question-types in Medical Catechism on Papyrus" in Taub, L. / Doody, A. (eds.), *Authorial Voices in Graeco-Roman Technical Writing* (Trier) VII 107-123.
- Lewis, N. (1936), "Greek Literary Papyri from the Strasbourg Collection", *Études de Papyrologie* 3, 46-92.
- Manetti, D. (1986), "23. Heliodoros, Chirurgumena" in Carlini, A. et al., *Papiri letterari greci della Bayerische Staatsbibliothek di Monaco di Baviera, Papyri der Bayerischen Staatsbibliothek München, Griechische Papyri, II* (Stuttgart) 19-25.
- Marganne, M.-H. (1988), "Le chirurgien Héliodore: tradition directe et indirecte", in Sabbah, G. (ed.), *Études de Médecine Romaine, Mémoires VIII, Centre Jean-Palmerie (Saint Étienne)* 107-111.
- Marganne, M.-H. (1992), "Un témoignage unique sur l'incontinence intestinale: P. Monac. 2.23" in Gourevitch, D. (ed.), *Maladie et maladies, histoire et conceptualisation. Mélanges en l'honneur de Mirko Grmek* (Genève) 109-121.
- Marganne, M.-H. (1998), *La chirurgie dans l'Égypte gréco-romaine d'après les papyrus littéraires grecs* (Leiden-Boston-Köln).
- Mayser, E. (1906-1938), *Grammatik der griechischen Papyri aus der Ptolemäerzeit* (Leipzig-Berlin).
- Michler, M. (1968), *Die Alexandrinischen Chirurgen. Eine Sammlung und Auswertung ihrer Fragmente* (Wiesbaden).
- Michler, M. (1986), "Zu einer Konjektur in Helios Verbandslehre bei Oribasios", *Hermes* 114.2, 252-255.
- Reggiani, N. (2012), "Le tavolette della mente. Risorse digitali e Antichistica: il caso della Papirologia" in Tammaro, A.M. (ed.), *Umanisti e risorse digitali* (Parma) 88-110.
- Reggiani, N. (2015), "A Corpus of Literary Papyri Online: the Pilot Project of the Medical Texts via SoSOL" in Lafer, R. / Strobel, K. (eds.), *Antike Lebenswelten Althistorische und papyrologische Studien* (Berlin-New York) 341-352.
- Reggiani, N. (2016), "The Corpus of Greek Medical Papyri and Digital Papyrology: New Perspectives from an Ongoing Project" in Berti, M. / Naether, F. (eds.), *Altertumswissenschaften in a Digital Age: Egyptology, Papyrology and beyond. Proceedings of a Conference and Workshop in Leipzig (November 2015)* (Leipzig), <http://nbn-resolving.de/urn:nbn:de:bsz:15-qucosa-201726s>.
- Reggiani, N. (2017), *Digital Papyrology. Methods, Tools and Trends* (Berlin-Boston).

- Reggiani, N. (2018), “The Corpus of the Greek Medical Papyri and a New Concept of Digital Critical Edition” in Reggiani, N. (ed.), *Digital Papyrology II. New Methods and Tools for the Digital Edition of Ancient Greek Papyri* (Berlin-Boston) 3-6.
- Reggiani, N. (forthcoming), “Digitizing Medical Papyri in Question-and-Answer Format” in Gielen, E. / Meeusen, M. (eds.), “Where Does It Hurt?” *Ancient Medicine in Questions and Answers* (Leiden-Boston).
- Sigerist, H.E. (1921), “Die ‘*Lectiones Heliodori*’”, *Archiv für Geschichte der Medizin* 13, 145-156.
- Sosin, J.D. (2010), “Digital Papyrology: A New Platform for Collaborative Control of DdbDP, HGV, and APIS Data”, edited version of a talk delivered at 26<sup>th</sup> International Congress of Papyrology, Geneva, August 19<sup>th</sup>, 2010, <http://www.stoa.org/archives/1263>.
- Tafuro, L. (2004-2005), “Osservazioni sulla metafora animale nel libro 49 delle *Collectiones Medicae* di Oribasio”, *Rudiae* 16-17, 457-467.
- Vierros, M. / Henriksson, E. (2017), “Preprocessing Greek Papyri for Linguistic Annotation” in *Journal of Data Mining and Digital Humanities*, Episciences.org, 2017, Special Issue on Computer-Aided Processing of Intertextuality in Ancient Languages, <https://jdm.dh.episciences.org/1385/pdf>.
- Wellman, M. (1895), *Die Pneumatische Schule bis auf Archigenes in ihrer Entwicklung Dargestellt von Max Wellman* (Berlin).
- Zalateo, G. (1964), “Papiri di argomento medico redatti in forma di domanda e risposta”, *Aegyptus* 44, 52-57.

**DCLP Transcription [xml]**

**Introduction**

Parts of a surgical treatise attributed to Heliodorus (P. Strab. inv. 1187). The two papyrus scraps (fr. A 10,5 x 5,7 cm; fr. B 5,5 x 1,6 cm), in a bad state of preservation, come from a roll and are written on the recto along the fibres (the verso is blank). Fr. A preserves two columns (19 and 8 lines long respectively) with an intercolumnium of 2 cm; fr. B preserves 7 lines. All margins are lost in both fragments. Lewis (ed.pr.) matched fr. B with fr. A from l. 14 to l. 20; Fausti (ed.alt.) and Marganne refuse this combination and put fr. B after fr. A, col. II. In the ed.pr., the beginning of fr. A, col. I, has two extra lines that Fausti removes in her edition, in which fr. A, col. II, has an initial line (ca. 16 vestiges characters), missing in the ed.pr. There is a scribal correction at l. 11, col. I fr. A, by superscription without erasure of the incorrect letter (ουαλο/ω/ωω) and a digraphy at l. 14 (συναρῶν τῶν συναρῶν). The content is divided into two sections: the first topic (fr. A, col. I, ll. 1-16) describes a surgery performed both with κοκοτεῖς ('chisel for excising') and ουαλοὶς κοκοτεῖς ('very sharp chisel'); the second one (fr. A, col. I, ll. 17-19 and col. II) deals with diseases that can be healed by surgery and therapy (e.g. ἄστυρια, 'abscess'); fr. B probably concerns two types of ἐκκοπῆσις ('treatment', cf. ll. 3-4 and 6) and it is independent from fr. A. The hand, elegant and slightly curved, with very small sized (1-2,5 mm), tied letters and line-spacing of 1,5 mm, is an informal round dated to the 2nd cent. A.D. (This papyrus has been digitally edited by Francesco Bertozzi as part of the Project 'DIGMEDTEXT - Online Humanities Scholarship: A Digital Medical Library based on Ancient Texts' (ERC-AdG-2013, Grant Agreement no. 339828) funded by the European Research Council at the University of Parma (Principal Investigator: Prof. Isabella Andorlini). The digital edition is mostly based on the previous editions (ed.pr. = N. Lewis, *Études de papyrologie III* (1936), 90-2; ed.alt. = D. Fausti, P. Strab. inv. gr. 1187; *testo chirurgico (Heliodoro?)*, *Annali della Facoltà di Lettere e Filosofia. Università di Siena* 10 (1989), 157-66; ed.ter. = M.-H. Marganne, *La chirurgie dans l'Égypte gréco-romaine d'après les papyrus littéraires grecs*, Leiden Boston Koeln 1998, 67-84.)

Fig. 1 Front matter commentary

**fragment a**

**column I**

-----

1 [-ca.?- ] . . . [σ]ιναράς τότε  
 [-ca.?- ] ἔφώρασεν τρήμα  
 [-ca.?- ] νων εἴτα διὰ τῆς  
 [-ca.?- ] τῶν ἐκκοπέων δια-

5 [-ca.?- ] ἐπιτέλει τὸν βαστα-  
 [-ca.?- ] τὰ μὲν τὰ ἔργα .  
 [-ca.?- ] αθων· ἐπὶ δὲ τῶν  
 [-ca.?- ] ν οὐχ ἀποδίδεται μα-  
 [-ca.?- ] πῖροσεπιτρέπει τῷ τρυ-

10 [πάνω -ca.?- ] . . . εως κενεμβατεῖν ε-  
 [-ca.?- τῶ]ν σμειλι\ω/τῶν ἐκκοπέω(v)  
 [-ca.?- ] . . . ιν δι' ἑνὸς τῶν βα-  
 [-ca.?- ] . . . γ . . . τω . . . ε βαστα-  
 [-ca.?- ] ν σιναρῶν {τῶν σιναρῶν} ὁ παθῶ(v)

15 [διαμό]τωσις ἐνκρίνεται καὶ ἡ πυσποιδὸς  
 [θερα]πεία· ἐκεῖνο δὲ εἰδέναι δεῖ ὅτι ἐπὶ τοῦ  
 [-ca.?- τῶ]ν ἀποστημάτων μετὰ ὀλίγας τα.  
 [-ca.?- ] αἰφνίδιον ὀρᾶται τὸ βάθος ἀνα-  
 [-ca.?- ] - ca.30 -

-----

**column II**

-----

1 - ca.16 - [-ca.?- ]  
 γων μετὰ τὸν οικε . . . [-ca.?- ]  
 τισμον καθεύεται . . . π . . . [-ca.?- ]  
 μα διὰ τ[οῦ] στομίου . . . [-ca.?- ]

5 γως τῷ βάθει τῆς σ[ύ]ριγγος -ca.?- ]  
 τὰ πεπονθότα τῆς [-ca.?- ]  
 γενομένης . . . [-ca.?- ]  
 [-ca.?- ] . . . [-ca.?- ]

-----

**fragment b**

-----

1 [-ca.?- ] των εντω . . . [-ca.?- ]  
 [-ca.?- ] νυ . . . τινωνας μὲν εἰ . . . [-ca.?- ]  
 [-ca.?- ] . . . εδωκέναι τῇ διορθώσει καὶ [-ca.?- ]  
 [-ca.?- ] - ca.9 - ε συντετημένας διορθω[-ca.?- -ca.?- ]

5 [-ca.?- ] θ . . . ητους· ἡμῖν δὲ ἀρέσκει π[-ca.?- ]  
 [-ca.?- ] οπτα . . . ειν [τ]ῆ διορθώσει . . . υ . . . εδ . . . [-ca.?- ]  
 [-ca.?- ] . . . [-ca.?- ]

-----

Fig. 2 Text

### Apparatus

- ^ a.l.2. ἐφώρησεν ed.pr.  
 ^ a.l.4. or [ἀκμῆς τῶν σμειλιωτῶν]  
 ^ a.l.4-5. or δια|κοπ- [-ca.?- ]  
 ^ a.l.5-6. βαστά|ζοντα ed.pr.  
 ^ a.l.6-7. ἐργασ|μένα ed.pr.  
 ^ a.l.7. [ἐ]λθῶν ed.pr. : [π]αθῶν Fausti  
 ^ a.l.8. or [λοιπῶν]  
 ^ a.l.8. l. οὐκ  
 ^ a.l.8. l. ἀποδίδοται  
 ^ a.l.10. ὑμεστῶσκεν ἐμβατεῖ νε ed.pr.  
 ^ a.l.11. corr. ex σμειλιωτῶν, γω δεῖλι\ω/των (ωλι\ω/των corr. ex λιοτων) ed.pr.  
 ^ a.l.13. ἐγατῶστού τὸ δὲ ed.pr.  
 ^ a.l.13-14. βάστα14.-[γμα] ed.pr.  
 ^ a.l.14. or [τῶν, αἰσι ναίων ed.pr.  
 ^ a.l.14. παθῶ<ν> ed.pr.  
 ^ a.l.15. l. ἐγκρίνεται, [μό]τῶσις ἐνχρείνεται (l. ἐγχρίεται (or ἐγχραίνεται) καὶ . . . . . ποῖος ed.pr.  
 ^ a.l.17. [-ca.?- ]ενα τι ὅστις λαγῶν μετὰ ὀλίγας ταῖς ed.pr.  
 ^ a.l.18. ἀνδ ed.pr.  
 ^ a.ii.2-3. οἰκέω[ν] ed.pr. : οἰκεῖ[τον σχημα]|τισμόν Fausti  
 ^ a.ii.3. l. καθιέται, τι ἐμόν καθεῖρται . . . . ed.pr.  
 ^ a.ii.4. τρῶς τομίους ed.pr.  
 ^ a.ii.5. εὐτι ed.pr.  
 ^ b.1. τῶν ἐν τῷ α ed.pr.  
 ^ b.2. στ . . . τῶν ἄς μὲν εἴτε ν . ed.pr.  
 ^ b.3. γμα . . . ιεν . ωκεναί ed.pr.  
 ^ b.3. l. διορθῶσει  
 ^ b.4. διορθῶ[σει] ed.pr.  
 ^ b.5. . . . ατητους prev. ed.  
 ^ b.6. . . . εἶπα . τειν ed.pr.  
 ^ b.6. . . . εἶδι ed.pr.  
 ^ b.7. εἶ ed.pr.

Fig. 3 Apparatus

### Notes

- §1.1.  
 Cf. Aret. 3.7.10 (CMG 2, 46.28 Hude), 3.7.12 (CMG 2, 47.8 Hude), 4.9.11 (CMG 2, 78.5 Hude) and 5.4.3 (CMG 2, 103.10 Hude); Heliod. ap. Orib. *Coll.med.* 46.22.18 (CMG 6.2.1, 234.11-2 Raed.).  
 §1.3-4.  
 Marganne suggests a form of διακόττω ('cut through'): cf. Heliod. ap. Orib. *Coll.med.* 46.8.7 (CMG 6.2.1, 123.2-3 Raed.).  
 §1.7-8.  
 Marganne integrates λιοτων ('the rest') depending on Heliod. ap. Orib. *Coll.med.* 46.11.23 (CMG 6.2.1, 221.19-20 Raed.).  
 §1.9-10.  
 τρῶσιον (Τρεπσι) in close proximity to ἐκοκίσις ('chisel for excising') also in Heliod. ap. Orib. *Coll.med.* 44.8.1-2 (CMG 6.2.1, 122.21-9 Raed.), 46.11.7 (CMG 6.2.1, 220.6-7 Raed.), 46.21.15-6 (CMG 6.2.1, 229.18-22 Raed.), 46.29.8 (CMG 6.2.1, 239.27-31 Raed.), Gal. *Meth.med.* 6.6 (10, 446.14-8 - 447.7 K), Paul. *Aeg.* 6.77.3 (CMG 9.2, 119.26-30 Heib.) and 6.88.5 (CMG 9.2, 132.17-22 Heib.).  
 §1.10.  
 For κενεῖσθαι ('to reach a cavity') cf. Heliod. ap. Orib. *Coll.med.* 44.8.3 (CMG 6.2.1, 122.31 Raed.), 44.20.23 (CMG 6.2.1, 139.23 Raed.), 44.20.76 (CMG 6.2.1, 142.2-3 Raed.), 46.11.23 (CMG 6.2.1, 221.21-3 Raed.).  
 §1.11.  
 σμελιωτῶν (*lege* σμειλιωτῶν) is a scribal correction for σμελιωτῶν; Lewis (ed.pr.) supposed γω δεῖ λιοτων.  
 §1.15.  
 For διαμόττωσις ('bandage with a lint') cf. Heliod. ap. Orib. *Coll.med.* 46.8.4 (CMG 6.2.1, 217.33-7 Raed.) and Paul. *Aeg.* 6.90.5 (CMG 9.2, 140.6-10 Heib.).  
 §1.16.  
 For πινοκοῦς θεραπεία ('suppurative treatment') cf. Heliod. ap. Orib. *Coll.med.* 46.8.4-5 (CMG 6.2.1, 217.32-5 - 218.1-4 Raed.), 46.8.14 (CMG 6.2.1, 218.31 and 33 Raed.), *Ap.* XVI 45.1-3 (62.8-10 Zervos). With ἐγκρίνω ('to adopt, to use') see Heliod. ap. Orib. *Coll.med.* 46.29.10 (CMG 6.2.1, 239.34-5 Raed.).  
 §1.17.  
 For ἀποστημάτων ('abscess') cf. Heliod. ap. Orib. *Coll.med.* 46.8.8 (CMG 6.2.1, 218.13 Raed.).  
 §1.2-3.  
 Fausti suggests οἰκε[τον σχημα]|τισμόν depending on Paul. *Aeg.* 6.64.2 (CMG 9.2, 106.15 Heib.).  
 §1.4-5.  
 Cf. Heliod. ap. Orib. *Coll.med.* 46.20.31 (CMG 6.2.1, 137.28-9 Raed.) and 46.20.65 (CMG 6.2.1, 140.33-5 Raed.).  
 §.  
 For στόμιον ('mouth of the abscess, or fistula') in close proximity to βάθος ('depth') and στήνη ('fistula') cf. Heliod. ap. Orib. *Coll.med.* 44.20.65 (CMG 6.2.1, 140.33-6 Raed.).

Fig. 4 Line-by-line commentary

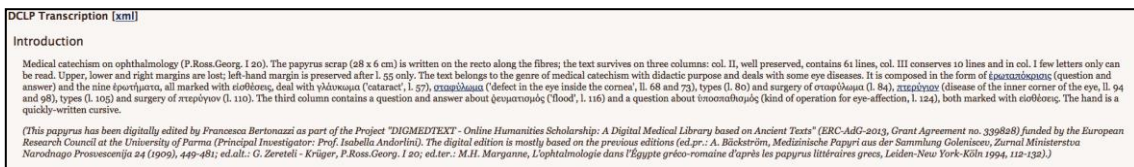


Fig. 5 Front matter of P.Ross.Georg. I 20, in which some technical terms are linked to the lemma in the lexical databank Medicalia Online.



Fig. 6 Final appearance of the Leiden+-marked text, Fr. A.

```

<D=.b.fragment
<=
1. lost.?lin
1. <:[?] των .1 εντω .2|ed|τῶν ἐν τῷ α=ed.pr.:> [?]
2. <:[?] .1 νυ .1 τινας μὲν εἰ .2|ed|στ .3 τῶν ἄς μὲν εἴτε ν .1=ed.pr.:> [?]
3. <:[?] .5 εδωκέναι|ed|γμα .1 μεν .1 ωκεναι=ed.pr.:> τῆ <:διορθώσει|reg|διορθώσει:> καὶ [?]
4. [?] .9 ε συντετρημένας <:διορθω[?]|ed|διορθώ[σει]=ed.pr.:> [?]
5. [?] <:θ .1 υ .1 τητους|ed|.3 ατητους:>· ἡμεῖν δὲ ἀρέσκει π[?]
6. [?] <:οπτα .1 ειν|ed|.1 επα .1 τειν=ed.pr.:> [τ]ῆ διορθώσει <:.2 υ .1 εδ .1|ed|.2 εξι=ed.pr.:> [?]
7. [?] <:.2|ed|εγ=ed.pr.:> [?]
7. lost.?lin
=>
=D>

```

Fig. 7 Final appearance of the Leiden+-marked text, Fr. B

⚠ a.l.11. corr. ex σημειώτων, γω δειλι\ω (λιτωνω corr. ex )των (ωλι\ω (λιτωνω corr. ex )των corr. ex λιωτων) ed.pr.

Fig. 8 Preview of a particularly nested tag, with display issues