



Continuing research on the Syriac Galen Palimpsest

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Continuing research on the Syriac Galen Palimpsest:
Collaborative Implementation within the Framework of Two European Projects

Naima Afif, Corneliu Arsene, Siam Bhayro, Irene Calà, Jimmy Daccache, Robert Hawley, Grigory Kessel, Peter E. Pormann, William I. Sellers, Natalia Smelova

Interest in the Syriac Galen Palimpsest (henceforth SGP) has increased since 2009, when it was deposited by its owner in the Walters Art Museum (Baltimore, MD) for conservation and imaging. Following Sebastian Brock's identification of the undertext as containing Sergius of Rēš 'Aynā's Syriac translation of Galen's *On Simple Drugs*, a large-scale collaboration between imaging scientists and philologists has resulted in a number of articles.¹

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1. In chronological order: S. Bhayro, R. Hawley, G. Kessel and P. E. Pormann, "Collaborative Research on the Digital Syriac Galen Palimpsest", *Semitica et Classica* 5, 2012, pp. 261-264; S. Bhayro and S. P. Brock, "The Syriac Galen Palimpsest and the Role of Syriac in the Transmission of Greek Medicine in the Orient", in *Ancient Medical and Healing Systems: Their Legacy to Western Medicine*, ed. by R. David (*Bulletin of the John Rylands University Library of Manchester* 89 Supplement), Manchester, Manchester University Press, 2012/2013, pp. 25-43; S. Bhayro, R. Hawley, G. Kessel and P. E. Pormann, "The Syriac Galen Palimpsest: Progress, Prospects and Problems", *Journal of Semitic Studies* 58, 2013, pp. 131-148; S. Bhayro, P. E. Pormann, W. I. Sellers, "Imaging the Syriac Galen Palimpsest: Preliminary Analysis and Future Prospects", *Semitica et Classica* 6, 2013, pp. 299-302; S. Bhayro and R. Hawley, "La littérature botanique et pharmaceutique en langue syriaque", in *Les sciences en syriaque*, ed.

We are now at a crucial time in the study of SGP, as one major project is drawing to a close while another has just begun. The overlap between the two projects, and collaboration between its members, has facilitated the most recent advances. While focussing on the wider history of Near Eastern “herbals” as a text genre, Robert Hawley’s ERC-funded Floriental project,² based in Paris, has produced a searchable transcription of the partly parallel manuscript London, British Library, MS Add. 14661 (henceforth BL).³ This valuable research tool has greatly facilitated the numerous identifications of leaves from SGP that have been made by members of the new AHRC-funded project, which is based in Manchester under the auspices of Peter Pormann.⁴ The significance of the Paris transcription of BL is that it permits identifications of those leaves from SGP that contain portions of books six to eight of Galen’s *On Simple Drugs*, as it contains virtually the entire text of these three books. Where no parallel text exists in BL,

by É. Villey (Études syriaques 11), Paris, Geuthner, 2014, pp. 285-318; R. Hawley, “More Identifications of the Syriac Galen Palimpsest”, *Semitica et Classica* 7, 2014, pp. 237-272; G. Kessel, “Membra Disjecta Sinaitica I: A Reconstitution of The Syriac Galen Palimpsest”, in *Manuscripta Graeca et Orientalia: Mélanges monastiques et patristiques en l’honneur de Paul Géhin*, ed. by A. Binggeli, A. Boud’hors and M. Cassin, Leuven, Peeters, 2016, pp. 469-496.

2. Full title: FLORIENTAL—From Babylon to Baghdad: Toward a History of the Herbal in the Near East (September 2011 to August 2017); ERC-2010-StG-263783.
3. See already Hawley, “More Identifications” (*supra*, n. 1), p. 237.
4. Full title: The Syriac Galen Palimpsest: Galen’s *On Simple Drugs* and the Recovery of Lost Texts through Sophisticated Imaging Techniques (September 2015 to February 2020); AH/M005704/1.

one can be fairly confident that the leaf in question contains portions that lie outside these three books,⁵ and therefore may potentially belong to books one to five and nine to eleven (or even another text altogether).

In the initial stages of the Manchester project, William Sellers undertook a computational analysis of the previously obtained multispectral images. This permitted an estimation of the degree of spectral separation between the overtext, undertext and background. Interim results suggested that the application of Canonical Variate Analysis (henceforth CVA) could provide further separation of the above-mentioned classes and thus enhance the legibility of the undertext.⁶ The sets of 8-bit multispectral images of the first fifty-two SGP folios were processed using a Matlab function. The resulting images provided an improvement of up to 50% in the readability of the undertext, which enabled the newly appointed Research Associates, Naima Afif and Natalia Smelova, to begin to identify and transcribe the undertext in earnest. Further technical support was provided by Corneliu Arsene, who improved the implementation of the algorithm such that the CVA processing took less than one minute per page.

Our codicological understanding has been greatly increased by Grigory Kessel, particularly on account of his discovery of six folios of SGP in other collections and his reconstruction of the secondary manuscript on the basis of the

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5. The only exceptions are SGP 166r-171v and (very probably) 214r-221v that contain passages from book eight which are absent from BL (owing to a short lacuna in the latter). See already Hawley, “More Identifications” (*supra*, n. 1), pp. 268, 271-272.
 6. See Bhayro, Pormann and Sellers, “Imaging the Syriac Galen Palimpsest” (*supra*, n. 1).

overtext.⁷ The present manuscript consists of 231 folios (225 bound as SGP and six loose leaves) measuring 175 mm x 127 mm. It has twenty-nine quires, each containing eight single folios (four bifolia, sometimes separated). Quire numbers are indicated in Syriac and Greek. The writing area is typically 135 mm x 90 mm, and consists of a single column of between eighteen and twenty-two lines. The manuscript is a palimpsest throughout. The undertext is present on all pages, while the overtext is blank on SGP fols. 225 and 226 and partially blank on Vat. sir. 623, fol. 227. The final leaf is missing.⁸

Kessel identified the overtext as a Syriac Melkite (Chalcedonian, or Rum Orthodox) translation of the Greek liturgical book *Paraklētiké*, “Book of Supplication”—a collection of canons for ferial days arranged in eight sets according to the structure of the ecclesiastical *Oktōēchos*, “Eight Modes”.⁹ Natalia Smelova has recently demonstrated that the SGP overtext (circa eleventh century) is an early example of the incorporation of Byzantine liturgy and hymnography into the Syriac Melkite milieu—a process which probably started soon after the Byzantine reconquest of Syria in 960s. In terms of content and structure, another comparable manuscript is London, British Library, MS Add. 14510, which was completed in 1056 at the Monastery of the Prophet Elia.¹⁰ It seems likely that the

7. See Kessel, “*Membra Disjecta Sinaitica I*” (*supra*, n. 1).

8. Kessel “*Membra Disjecta Sinaitica I*” (*supra*, n. 1), p. 473.

9. Kessel “*Membra Disjecta Sinaitica I*” (*supra*, n. 1), pp. 471–3.

10. Also known as the Monastery of the Virgin and the Prophet Elia, or of St Pan-teleimon. It is located on the Black Mountain, or the Boar’s Head, to the west of Antioch; see S. P. Brock, “Syriac Manuscripts Copied on the Black Mountain, near Antioch”, in *Lingua restituta orientalis. Festgabe für Julius Assfalg*, ed. by

SGP overtext was left unfinished, as it lacks both a colophon and a hymnographic appendix, both of which are appropriate for a manuscript of this type and included in BL Add. 14510.

Building on the contributions made by R. Hawley and the Paris project,¹¹ the Manchester project has attempted to ascertain the extent to which books six to eight are represented in SGP and whether it can be used in the preparation of a critical edition of the Syriac text. With the help of BL, two types of analysis are possible. The first relates to the translation of the Galenic text, for which we have both the Greek and Syriac versions (see Example 1). The second relates to those elements added by Sergius, for which we have only the Syriac text (see Example 2).¹²

R. Schulz and M. Görg, Wiesbaden, Harrassowitz, 1990, pp. 59-67; N. Smelova, “‘After the Order of Melchizedek’: Materials for the Study of the Melkite Syriac Octoechos”, in *Studies in the Cultural Traditions of the East: Hebrew-Greek-Syriac-Slavonic*, ed. by C. von Buettner and N. Smelova, St Petersburg, St Petersburg Institute of Jewish Studies, 2016 (forthcoming).

11. See, in particular, Hawley, “More Identifications” (*supra*, n. 1).
12. These extra elements were first edited in A. Merx, “Proben der syrischen Uebersetzung von Galenus’ Schrift über die einfachen Heilmittel”, *Zeitschrift der Deutschen Morgenländischen Gesellschaft* 39, 1885, pp. 237–305; see also Bhayro and R. Hawley, “La littérature botanique” (*supra*, n. 1), pp. 296-297; and more generally on such “tables of contents” in pharmaceutical compendia of the Byzantine period, I. Calà and R. Hawley, “Transliteration versus translation of Greek plant names in the Syriac medical writings of Sergius of Reš ‘Aynā”, *Aramaic Studies* (special issue edited by M. Martelli, forthcoming).

Example 1: SGP f. 6r (= BL ff. 10r-10v)

Column A comes from book six, chapter one, and contains the entry Περί ἀβροτόνου τε καὶ ἀψινθίου καὶ τῶν ἐκατέρου εἰδῶν—equivalent to Kühn XI 802:12–18. Column B corresponds to Kühn XI 803:10–804:3. In comparison with BL, SGP provides at least one variant spelling: in A 14, SGP reads ܐܘܨܝܢܝܘܬܐ (as opposed to BL’s ܐܘܨܝܢܝܘܬܐ) and a variant reading: in B 16, ܘܢܝܘܬܐ is omitted in BL.

<Insert image of SGP f. 6r and give proper label and copyright statement.>

Col. B	Col. A
1 ܘܨܝܢܝܘܬܐ ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ]	1 ܘܨܝܢܝܘܬܐ ܘܨܝܢܝܘܬܐ ܘܨܝܢܝܘܬܐ
2 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ	2 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ
3 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ	3 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ
4 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ	4 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ
5 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ	5 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ
6 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ	6 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ
7 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ	7 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ
8 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ	8 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ
9 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ	9 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ
10 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ	10 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ
11 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ	11 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ
12 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ	12 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ
13 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ	13 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ
14 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ	14 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ ¹⁴
15 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ	15 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ
16 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ ¹³	16 ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ] ܘܨܝܢܝܘܬܐ

13. ܘܨܝܢܝܘܬܐ om. BL

14. ܘܨܝܢܝܘܬܐ [ܘܨܝܢܝܘܬܐ]

ܠܗܘܢ ܕܘܢܐ ܕܘܢܐ [ܘܢܐ ܘܢܐ] ܠܗ 32

Both the Manchester and the Paris projects have also focused on identifying folios of SGP that contain portions of text from outside books six to eight (see Example 3):

Book two	four identified bifolia
Book four	two identified bifolia
Book five	two identified bifolia
Book nine	eight identified bifolia ¹⁷

At present, no identifications have been made for books one, three, ten and eleven. However, over 120 bifolia have been identified as not corresponding to BL. These bifolia, therefore, may contain quite extensive material that lies outside books six to eight, or even from another text altogether.

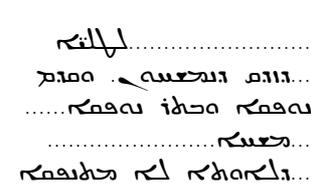
Example 3: SGP f. 10v–11r

In cases like this, in which SGP contains a text unattested in BL, the text has been collated with Kühn’s edition on the basis of specific sentences and words. In this example, column A was identified as corresponding to Kühn XI 476:13–15 on the basis of a few occurrences of ܠܗܘܢ “athletic; military exercise” (equivalent to

17. This list includes identifications made by Grigory Kessel during the workshop at the University of Manchester in 2012 and, subsequently, in the course of his individual work on the SGP; see Bhayro, Hawley, Kessel and Pormann, “The Syriac Galen Palimpsest: Progress, Prospects and Problems” (*supra*, n. 1); Kessel, “Membra Disjecta Sinaitica I” (*supra*, n. 1).

Greek γυμνασία). The text comes from the end of book two, chapter five, and concerns the use of oil by athletes during and after physical exercise.

<Insert image of SGP f. 10v-11r, col. A, gutter region, and give proper label and copyright statement.>

<p>διὰ τὰ αὐτὰ δὲ ταῦτα καὶ οἱ παιδοτριβῆται τοὺς παῖδας ἀλείφειν ἐροῦσι καὶ πρὸ τῶν γυμνασίων καὶ μετὰ γυμνάσια. διὰ τί μέντοι τὸ ἔλαιον ἴαμα κόπων ἐστὶν οὐκ ἔτι οὔτε γυμναστής οὔτε παιδοτριβῆτης οὔτ' ἰατρὸς ἐμπειρικὸς ἐπίσταται.</p> <p>Kühn XI 476:12-16</p>	 <p>SGP f. 10v-11r, col. A</p>
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The top of column B contains the end of chapter five and the beginning of chapter six, in which Galen criticises Archidamus, as recounted by Diocles, for focusing on appearance rather than cause.¹⁸ The two first lines of column B correspond to Kühn XI 477:3–6: καὶ πιστεύουσι τοῖς ἐναργῶς φαινομένοις καὶ καταγελῶσι τῶν τῷ λόγῳ... (“and they have faith in visible phenomena clearly and they laugh at the words of...”). In the less legible part of the bifolium, some Syriac words match with the Greek, thus confirming our identification: ܟܥܘܢ ܟܥܘܢ for τὴν ξηρὰν τρίψιν (l. 12), ܟܥܘܢ ܟ for μετ’ ἐλαίου (l. 13) and ܟܥܘܢܗܘܢ ܟܥܘܢ for τοῖς (...) ἐργάζεται (l. 14).

<Insert image of SGP f. 10v-11r, col. B, beginning, and give proper

18. See P. J. van der Eijk, *Diocles of Carystus: a Collection of the Fragments with Translation and Commentary. Vol. 2: Commentary*. Leiden, Brill, 2001, pp. 365-368.

label and copyright statement.>

<p>... καὶ πιστεύουσι τοῖς ἐναργῶς φαινομένοις καὶ καταγελῶσι τῶν τῷ λογῷ τάναντία κατασκευαζόντων. Ἄλλ' Ἀρχίδαμος μὲν πρὸς τῷ καταφρονεῖν ἐν πολλοῖς τῶν ἐναργῶς φαινομένων, ἔτι μοι δοκεῖ καὶ ταύτη δικαίως ἂν ψέγεσθαι. λέγει μὲν γὰρ ἀμείνω τὴν ξηρὰν τρίψιν εἶναι τῆς μετ' ἐλαίου διότι τὸ σῶμα σκληρότερόν τε καὶ ξηρότερον τοῖς ἀλειφομένοις ἐργάζεται, μαλακώτερον δὲ τοῖς ξηροῖς τριβομένοις γίγνεται.</p> <p>Kühn XI 477:3-11</p>	<p>ܩܘܪܬܐ ܕܥܘܠܡܐ ܕܥܘܠܡܐ 1 ܩܘܪܬܐ ܕܥܘܠܡܐ [ܩܘܪܬܐ] 2 ... ܩܘܪܬܐ 8 ܩܘܪܬܐ 9 ܩܘܪܬܐ 10 ܩܘܪܬܐ 11 ܩܘܪܬܐ ܕܥܘܠܡܐ 12 ܩܘܪܬܐ ܕܥܘܠܡܐ 13 ܩܘܪܬܐ ܕܥܘܠܡܐ ܕܥܘܠܡܐ... 14</p> <p>SGP f. 10v–11r, col. B</p>
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Table 1 (below) gives all the new identifications made by participants in the Manchester and Paris projects over the past few months. It is arranged by SGP bifolia, with subsequent columns giving its location in Galen’s On simple drugs and details of who made the identification (IC = Irene Calà; JD = Jimmy Daccache; MW = Matthias Wernhard; NA = Naima Afif; NS = Natalia Smelova; RH = Robert Hawley), the equivalent reference in BL and Kühn, and the entry or topic.

Table 1: New identifications

SGP bifolia	Identification	BL MS Add. 14661	Kühn	Entry/topic
1r–4v	Book six (NS)	9r–9v	XI 800–802	Περὶ ἀβροτόνου τε καὶ ἀψινθίου καὶ τῶν ἑκατέρου εἰδῶν

1v–4r	Book six (NS)	8v–9r	XI 798–800	End of Galen's introduction to book six, beginning of <i>Περὶ ἀβροτόνου τε καὶ ἀψιθίου καὶ τῶν ἑκατέρου εἰδῶν</i>
2r–3v	Book nine (NS)		XII 203	Chapter one (on stones), entry <i>Περὶ γαγάτου καὶ θρακίου</i>
Vat. sir. 647, 39v–5r	Book seven (NA)	40r–40v	XII 24–27	<i>Περὶ κηκίδος</i> to <i>Περὶ κίστου</i>
Vat. sir. 647, 38v–6r	Book six (NA)	10r–10v	XI 802–804	<i>Περὶ ἀβροτόνου τε καὶ ἀψιθίου καὶ τῶν ἑκατέρου εἰδῶν</i>
Vat. sir. 647, 38r–6v	Book six (NA)	10v–11r	XI 804–805	<i>Περὶ ἀβροτόνου τε καὶ ἀψιθίου καὶ τῶν ἑκατέρου εἰδῶν</i>
7v–14r	Book five (IC, JD, RH)		XI 760–762	Chapter eighteen (on the nature of two kinds of antidotes)
8v–13r	Book two (IC, JD, RH)		XI 479–481	Chapter seven, refuting the theory of Archidamus, father of Diocles
10r–11v	Book two (NA)		XI 474–475	Chapter five (on rubbing the body with oil)
10v–11r	Book two (NA)		XI 476–478	End of chapter five, beginning of chapter six
17r–20v	Book six (NA)	7r–7v	XI 794–796	Galen's introduction to book six
17v–20r	Book six (NA)	7v–8v	XI 796–798	Galen's introduction to book six
40r–45v	Book four (IC, JD, RH)		XI 670–672	Chapter fifteen, on the nature of foods that are sweet
41r–44v	Book six (NA)	30r–(30v)	XI 887	<i>Περὶ θρίδακος</i> (top of col. A)
47r–54v	Book seven (NA)	50v–51r	XII 67	<i>Περὶ μαράθρου</i> and part of <i>Περὶ μαστίχης</i>

47v–54r	Book seven (NA)	51r–51v	XII 69–72	Περὶ μελανθίου to Περὶ μήκωνος
55r–60v	Book six (NA)	27v–(28r)	XI 876–877	End of Περὶ ἐπιμήλιδος and beginning of Περὶ ἐρεβίνθου (bottom of col. A)
57v–58r	Book eight (NA)	58r–59r	XII 89–92	Περὶ ὀνόνηδος to Περὶ ὄρχεως τοῦ κυνός
72r–75v	Book seven (NA)	52r–52v	XII 75–77	Περὶ μηλέας to Περὶ μηλέας Μηδικῆ
72v–75r	Book seven (NA)	51v–52r	XII 72–75	Περὶ μήκωνος to Περὶ μηλέας
73r–74v	Book nine (NA)		XII 172–173	Chapter two (on different kinds of earth as an element)
BnF syr. 382, 10v–88v	Book nine (IC, MW, RH)		XII 209–210	Chapter three (on metals), entries Περὶ κοινῶν τῶν μετάλλων λόγων τε καὶ συστάσεων καὶ δυνάμεων and Περὶ ἄλῶν
101r–108v	Book seven (NS)	52v–53r	XII 77–80	End of Περὶ μηλέας Μηδικῆς to Περὶ μυρίκης
101v–108r	Books seven and eight (NS)	53r–54r	XII 80–82	Περὶ μυρίκης to Περὶ μώλυος, Sergius’s introduction to book eight
118r–123v	Book seven (NA)	32v–33r		List of plants beginning with κ and λ
118v–123r	Book seven (NA)	31v–32v		Sergius’s introduction to book seven and the list of plants beginning with κ
136r–137v	Book eight (NA)	62v–63r	XII 109–111	Περὶ πτέριδος to Περὶ πυροῦ

136v–137r	Book eight (NA)	62r–62v	XII 106–108	Περὶ πολυγονάτου to Περὶ πταρμικῆς
160r–161v	Book eight (NA)	65v–66r	XII 121–123	End of Περὶ σιδηρίτιδος sq.
160v–161r	Book eight (NA)	66v–67r	XII 123–125	Περὶ σισυμβρίου to Περὶ σκορδίου
173r–180v	Book eight (NA)	61v–62r	XII 104–106	Περὶ πλατάνου to Περὶ πολυγονάτου
173v–180r	Book eight (NA)	60v–61r	XI 100–103	Περὶ πηγάνου to Περὶ πίτυος
176v–177r	Book six (NA)	26v	XI 872	Περὶ ἐλαίου
183r–186v	Book eight (NA)	71r–71v	XII 143–145	End of previous entry, then Περὶ τραγακάνθης to Περὶ τρύχου ἢ στρύχου
183v–186r	Book eight (NA)	70v–71r	XII 141–143	End of Περὶ τηλεφίου to Περὶ τιθυμάλλων
192v–193r	Book eight (NA)	57r–57v	XII 83–84	Galen’s introduction to book eight, then Περὶ νάρδου στάχυος (col. A)

Our research to date suggests that the undertext comes from one manuscript that contained a Syriac translation of Galen’s *On Simple Drugs*.¹⁹ In order to illustrate how much of Galen’s *On Simple Drugs* has been identified thus far in SGP, we have created a “skeleton” table based on Kühn’s edition (see Table 2). Our working hypothesis is that each single-sided bifolium of SGP (i.e. each page of the original medical manuscript) corresponds to roughly two pages of Kühn’s Greek text (with a 10 percent margin of error). Given that the Greek text occupies 890 pages in Kühn’s edition and that SGP has 231 folios (including sections that are

19. It remains possible that the undertext preserves material other than Galen’s *On simple drugs*.

not present in the Greek text), we estimate that SGP equates to around 450 pages in Kühn's edition, i.e. around 50% of the Greek text. This accords with Kessel's conclusion that "the original manuscript was twice the size of the SGP".²⁰

Table 2: The "skeleton" table

Book of Galen's <i>On simple drugs</i>	Kühn	SGP	Notes
One	XI 379–458		not represented
Two	XI 459–473		
	XI 474–475	10r–11v	
	XI 476–478	10v–11r	
	XI 478–481	8v–13r	
	XI 482–508		
	XI 509–510	225r	
	XI 511–539		
Three	XI 540–618		not represented
Four	XI 619–657		
	XI 658–659	Vat. sir. 623, 227v– Houghton Library syr. 172, 1r	
	XI 660–669		
	XI 670–672	40r–45v	
	XI 673–703		
Five	XI 704–759		
	XI 760–762	7v–14r	
	XI 763–785		
	XI 786–788	48r–53v (?)	the end of book five, first lines of book six?
Six		48v–53r	
		34v–34r	

20. Kessel "Membra Disjecta Sinaitica I" (*supra*, n. 1), p. 490.

		34r–34v	
		16r–21v	
	XI 789–791	16v–21r	
	XI 791–792	157r–164v	
	XI 792–794	157v–164r	
	XI 794–796	17r–20v	
	XI 796–798	17v–20r	
	XI 798–800	1v–4r	
	XI 800–802	1r–4v	
	XI 802–804	Vat. sir. 647, fol. 38v–6r	
	XI 804–806	Vat. sir. 647, fol. 38r–6v	
	XI 807–854		
	XI 855–856	109v–116r	
	XI 857–860	109r–116v	
	XI 861–869		
	XI 870–872	176r–177v	
	XI 872–874	176v–177r	
	XI 874–876		
	XI 876–878	55r–60v	
	XI 878–881	55v–60r	
	XI 882–884	104v–105r	
	XI 884–886	104r–105v	
	XI 887–892		
Seven		118r–123v	
		198r–203v	
	XII 1–4	198v–203r	
	XII 4–7	70r–77v	
	XII 7–9	70v–77r	
	XII 9–12	112r–113v	
	XII 12–14	112v–113r	
	XII 13–14	159v–162r	
	XII 14–17	159v–162r	
	XII 17–19	159r–162v	

	XII 19–21	200v–201r	
	XII 21–24	200r–201v	
	XII 23–24	Vat. sir. 647, 39v–5r	
	XII 29–41		
	XII 42–44	102r–107v	
	XII 44–46	102v–107r	
	XII 46–49	165r–172v	
	XII 49–51	165v–172r	
	XII 52–55		
	XII 56–59	96v–97r	
	XII 60–62	96r–97v	
	XII 63–66		
	XII 67–(68)	47r–54v	
	XII 69–72	47v–54r	
	XII 72–75	72v–75r	
	XII 75–77	72r–75v	
	XII 77–80	101r–108v	
Eight	XII 80–82	101v–108r	
	XII 83–84	192v–193r	
	XII 85–88		
	XII 89–92	57v–58r	
	XII 93–99		
	XII 100–103	173v–180r	
	XII 104–106	173r–180v	
	XII 106–108	136v–137r	
	XII 109–111	136r–137v	
	XII 112–120		
	XII 121–123	160r–161v	
	XII 123–125	160v–161r	
	XII 126–140		
	XII 141–143	183v–186r	
	XII 143–145	183r–186v	
	XII 145–148	166v–171r	
	XII 148–150	166r–171v	

	XII 150–153	214r–221v	
	XII 153–156	214v–221r	
	XII 157–158		
Nine	XII 159–171		
	XII 172–173	73r–74v	
	XII 174–185		
	XII 186–187	49v–52r	
	XII 188–197		
	XII 198–199	128v–129r	
	XII 200–203		
	XII 203–204	2r–3v	
	XII 204–206	2v–3r	
	XII 207–208		
	XII 209–210	BnF syr. 382, 10v–88v	
	XII 211–215		
	XII 216–217	206v–212r	
	XII 218–244		
Ten	XII 245–309		not represented
Eleven	XII 310–377		not represented

Thus far, no book is completely preserved in SGP. The following assessment can be offered in respect of those books preserved in BL:

Book six: twenty-three bifolia identified, approximately thirty bifolia missing

Book seven: twenty-four bifolia identified, approximately ten bifolia missing

Book eight: sixteen bifolia identified, approximately sixteen bifolia missing

In order to facilitate further identifications, the Manchester project is creating a bilingual corpus for books six to eight using Sketch Engine, a query system that

enables word searches of parallel texts and the assembling of concordances.²¹ Although there were no preloaded corpora for ancient Greek and Syriac, Sketch Engine was able to support these languages once the text patterns had been uploaded in character encoding UTF-8. The first trial was performed using samples taken from the Paris transcription of BL and Kühn's edition in HTML/webarchive format (available on the Digital Corpus for Graeco-Arabic Studies website).²² The initial results are promising, and it is hoped that this tool will greatly facilitate both our future research on SGP and the study of translation techniques. In addition to the Paris transcription of BL, which has been a crucial resource for our research into SGP, the Paris project is also preparing an edition and analysis of Hunayn's *On Medicinal Properties of Foodstuffs*, which contains excerpts from Galen's *On Simple Drugs*. Again, this resource may prove to be very useful in facilitating further identifications of SGP.

This clearly demonstrates the value of long term and extensive collaboration and cooperation between colleagues who have been involved in the study SGP for a number of years. From the initial work at the Walters Art Museum, to the Paris project, and now to the Manchester project, research into SGP has progressed very well. Our aspiration is that, over the next few years, more important discoveries will be made, which will shed new light on the Syriac translation of Galen's *On Simple Drugs*.

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21. <http://sketchengine.co.uk> [accessed 6 July 2016].

22. <http://www.graeco-arabic-studies.org/texts.html> [accessed 6 July 2016].

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