

Magic and Medicine

Gems and the Power of Seals

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A number of recent studies have explored the fluidity of the boundaries between medical, religious, and magical therapies in Classical antiquity,¹ but the implications of this interplay have yet to be fully investigated. In this paper, I would like to pursue reflections on these interactions. I will more specifically focus on the notion of *sphragis* (seal), common to both practices, and explore the double meaning of the word which casts light on an important aspect of the cultural context of magical gems and could elucidate one of their operating modes.

Material evidence of the relationship between ancient magic and medicine is manifold. On the one hand, medical instruments may show divine or magical devices ensuring the success of the practitioner. Besides Asclepios, the figure of Heracles is common. His presence is partly explained by his fame for his courage and endurance, partly by his competence as *alexikakos*, 'evil's averter', partly by the genealogy of Hippocrates. Some believed that Hippocrates was descended from Asclepios through his father, and from Heracles through his mother. An apocryphal letter to Artaxerxes compares Hippocrates, who defeats 'wild' and 'bestial' diseases, with Heracles, the champion of dangerous animals. Divinised, Hippocrates allegedly received in Greece the same honours as Heracles and Asclepios.² Roman period coins from Cos depict on the obverse a seated Hippocrates, inscribed with his name, and on the reverse the bust of Heracles holding a club.³ It is thus no surprise to find allusions to Heracles on medical instruments, especially on items used for painful operations requiring great skill; some handles of surgical knives from Pompei depict his bust, the knotty handles of embryo hooks and needles for cataract couching imitate the hero's club, whereas retractors end in the shape of a lion's head, possibly of the Nemean lion.⁴ Heracles thus helped 'taming' pain as he mastered wild animals, also promoting the patient's resistance and chances of survival. *Collyrium* stamps for eye-salves too can bear divine or magical figures, such as the stars and moon also found on magical gems (Pls 1–2).⁵

On the other hand, magical gems often refer to medical practices. They share a common imagery of the body, displayed on gems. Uterine gems are thus carved with a cupping device,⁶ a visual metaphor for the womb used in medical texts, such as

the Hippocratic treatise on *Ancient Medicine*:

Again, cupping instruments, which are broad and tapering, are so constructed on purpose to draw and attract blood from the flesh. [...] Of the parts within the human frame, the bladder, the head, and the womb are of this structure. These obviously attract powerfully, and are always full of a fluid from without.⁷

The image of a cupping vessel is also the conventional emblem of the medical profession during the Graeco-Roman period. The device thus possessed a supplementary value; it added medical authority to the efficacy of the magical procedure. Other literary medical metaphors can be detected on gems, such as the image of the octopus, representing the womb in medical texts and on uterine gems.⁸ These interactions are no coincidence: they reflect a wide therapeutic system which could combine magical and medical remedies without antagonism, and in a complementary way.

Sphragis

The double meaning of the word *sphragis* throws an interesting light on the nature and function of healing stones, pointing to other possible connections between medical and magical therapies. *Sphragis* usually designates a seal ring or stamp.⁹ Physicians also had stamps: oculists used to impress solid sticks of eye ointments with a stamp, usually made of greenish-black steatite, carved with a text, cut in reverse, on the flat face of each edge. The content of the inscription provides the name of the person who probably invented the salve, the name of an affliction, and the name of the salve for its treatment, sometimes adding how to use it.¹⁰

The word *sphragis* also has another meaning for practitioners: it denotes the result of stamping, namely not just the impression of the stamp, but the remedy itself. A *sphragis* is thus a stamped pill, called in Greek *trochiscos*, in Latin *pastillus*.¹¹ In the reign of Tiberius, Celsus describes the famous *sphragis* or pill of Polyidus, perhaps named after the legendary seer and healer Polyidus:

But the pastil of Polyidus called the 'seal', *sphragis autem nominatur*, is by far the most celebrated. It contains split alum 4.66g, blacking 8g, myrrh 20g, lign aloes the same, pomegranate heads and ox-bile, 24g each; these are rubbed together and taken up in dry wine.¹²



Plates 1a-b Steatite or green serpentine (46 x 20 x 12mm). Avignon, Palais du Roure



Plate 2 Red jasper (15 x 13 x 4mm). London, British Museum, PE 1849,1127.16

Similarly, the physician Galen uses *sphragis* as a synonym for *collyrium* (eye-salve): ‘For inflamed eyelids, apply a *collyrium* mixed with water, that some call a *sphragis*’.¹³

An oculist stamp from Reims in France confirms that the word *sphragis* could designate a remedy: it names the impressed dried salve stick not *collyrium*, as expected, but *sfragis* in Latin transliteration, demonstrating that the Greek term was well understood in 2nd–3rd century AD Roman Gaul.¹⁴

D GALLI (S)FRAGIS AD ASPRITUDIN(EM).

D GALLI (S)FRAGIS AD IMPET(UM) LIPPIT(UDINIS)

Sphragis of Decimus Gallus Sestus for trachoma

Sphragis of Decimus Gallus Sestus at the onset of inflammation

Terra Lemnia

The analogy between stamped pills and stone gems extends far beyond the common use of the word *sphragis*. Like gems, pills could bear pictures, some of them being very similar to those found on medical magical gems. The most famous, and the most ancient, *sphragis* of classical antiquity was sealed clay, made of earth collected on the island of Lemnos in north-eastern Greece. Lemnian earth was highly reputed as an antidote with wide-ranging healing properties, from eye-diseases to stomach pains and the bites of venomous animals. The pill was characterised by its reddish colour – and by a stamped image. Pliny defines the earth as a red ochre, *rubrica Lemnia*:

In medicine it is a substance ranked very high. Used as a liniment round the eyes it relieves defluxions and pains, and checks the discharge from eye-tumours; it is given in vinegar as a draught in cases of vomiting or spitting blood. It is also taken as a draught for troubles of the spleen and kidneys and for excessive menstruation; and likewise as a remedy for poisons and snake bites and the sting of sea serpents; hence it is in common use for all antidotes.¹⁵

Many ancient authors discuss the healing qualities of Lemnian earth that could also reduce inflammations, heal up recent and malignant wounds and soothe chronic pains.¹⁶ Its styptic properties are observed by Cassius Felix (5th century AD) who recommends Lemnian seals against blood spitting.¹⁷ Theodoros Priscianus (5th century AD) also prescribes it against haemorrhage as does Mustio (6th century AD) against gynaecological bleeding.¹⁸

Thanks to the recent analysis by two geologists, Hallas and Photos-Jones,¹⁹ we know today that the typical red colour of Lemnian clay is due to the presence of haematite, a powerful red pigment (c. 5%). They also found that Lemnian pills could work as a medicine because of its other components: montmorillonite (c. 40%), a clay with a strong absorbing power, very efficient for the removal of toxins, also used externally, and kaolin (35%), another healing clay efficient against soft tissue inflammation, and an absorbent when taken in case, for example, of gastro-enteritis. The earth also contains alum (20%) with well-known haemostatic and anti-bacterial properties.

The most intriguing fact about the Lemnian clay *sphragis* is that it looked like a gem because it was stamped with an image, that of a goat. Dioscorides underscores the role of the goat, and reports that the presence of its blood explained the colour of the earth:

What they call Lemnian earth is brought up from a certain cavernous underground passage and mixed with goat’s blood; the people there, after moulding it and stamping it with the figure of a goat, call it *sphragis*. It is an uncommonly effective antidote for deadly poisons when drunk with wine, and, when taken ahead of time, it forces one to vomit the poisons. It is suitable for the strokes of venomous animals and for their bites. It is mixed with antidotes.²⁰

We have a precious eye-witness in the person of the physician Galen himself who wrote a detailed account of his second journey to Lemnos.²¹ Lemnian earth was one of the 37 ingredients of his famous *mithridatium*. He wanted to see how the product was exploited and manufactured before buying it for his own practice :

I also sailed to Lemnos and for no other reason than to get the Lemnian earth or ‘seal’ (*sphragis*) whichever it is called. This has been thoroughly described in the ninth book of my treatise *On the Properties of the Simple Drugs*.²²

Galen first describes the ritual performed by the priestess of Artemis, and confirms that she stamped an image on the clay:

The priestess collects [the earth], to the accompaniment of some local ceremony, no animal being sacrificed, but wheat and barley being given back to the land in exchange. She then takes it to the city, mixes it with water so as to make moist mud, shakes this violently and then allows it to stand [...]. She takes small portions and imprints upon them the seal of Artemis [the goat]; then again she dries these in the shade till they are absolutely free from moisture [...]. This then becomes what all physicians know as the Lemnian Seal.²³

Galen was intrigued by the description of Dioscorides:

I had once read in the works of Dioscorides and others that the Lemnian earth is mixed with goat’s blood, and that it is out of the mud resulting from this mixture that the so-called Lemnian seals are moulded and stamped. Hence I conceived a great desire to see for myself the process of mixture [...] in order to see in what proportion blood was mixed with the earth.²⁴

On the spot, the enigma was soon solved: ‘All who heard this question of mine laughed’.²⁵ No goat’s blood was added, the red colour was natural. As we know thanks to Hallas and Photos-Jones, it is due to the presence of haematite. A book providing a respected medical authority was brought to Galen:

I got a book from one of them, written by a former native, in which all the uses of the Lemnian earth were set forth. Therefore I had no hesitation myself in testing the medicine, and I took away twenty thousand seals.²⁶

Galen then goes on describing the astringent and dessicative action of Lemnian earth on animal bites, ulcers, persistent pains and swellings, and explains how to employ the seals for external and internal use. They had to be dissolved in a liquid, such as vinegar, wine, or oxymel, until it has a mud-like consistency, ‘like these pastilles (*trochisci*) which are made in various ways’.²⁷ Mixed with vinegar it was applied to a wound. As an antidote against poisoning, it had to be drunk, added to a special preparation. The long-lasting fame of Lemnian clay, used as a kind of panacea, extended beyond antiquity. In post-medieval and modern times, it was no longer collected by the priestess of Artemis, but blessed by the church.²⁸

No clay *sphragis* from Lemnos is preserved, but we find a reflection of it on a gem from the Seyrig collection in the Cabinet des médailles in Paris (Pls 3a–b).²⁹ A she-goat is carved, not on a reddish clay, but on a haematite, a stone which produced a red colour too. On the reverse, we find the



Plates 3a–b Haematite, 13 x 9mm. Paris, Cabinet des médailles (Seyrig collection)

expression *pauson*, ‘stop, put an end to’, which could refer to the bleeding stopped by the power of haematite, or to the relief of any pain. The formula *pauson ponon* occurs on other medical gems, such as a haematite gem from the Skoluda collection addressing Chnoubis ‘ΠΑΥΣΟΝ ΠΟΝΟΝ ΤΟΥ ΣΤΟΜΑΧΟΥ’ (Pl. 4).³⁰

The choice of the stone carved with the goat is not a coincidence: haematite, or ‘bloodstone’, was credited with qualities very similar to those of Lemnian earth. It was highly reputed as a blood-stauncher; it could also cure eye diseases and venomous bites, says the *Orphic Lapidary*.³¹ Dioscorides has a similar description, arguing that:

It has properties that are astringent, that warm somewhat, that thin, and that wipe off scars and roughness in the eyes with honey. With a woman’s milk it is good for ophthalmia, for rents, and for bloodshot eyes.³²

The manner of using it provides another parallel between haematite stone and Lemnian clay. Like Lemnian pills, it was advised to drink the stone broken and mixed with a liquid, such as water, or applied with other ingredients, such as honey or human milk.³³ This procedure explains why a large number of haematite gems are found broken: they were taken as a medicine, as were other stones with medical properties, but in lesser quantities.³⁴ In a medical context, brittleness was even regarded as a quality for haematites. Dioscorides thus asserts that:

Haematite is of excellent quality when it breaks easily as if of its own accord and when it is hard, uniformly strong, and free of any dirt or veins.³⁵

In sum, the picture on Lemnian seals has a revealing parallel on a magical medical gem. The stone in the Seyrig collection could be identified as a kind of Lemnian seal, not impressed, but carved with a she-goat, not in red clay, but in a stone with similar qualities.³⁶ Did gem carvers intend to imitate the famous clay pill? They may have followed the more general custom of stamping precious medical products.



Plate 4 Haematite, 46.2 x 24.9 x 5.8mm. Skoluda Collection M085



Plate 5 Pot fragment, from Aquinum (size of the printed gem: 19 x 14mm). Present location unknown



Plates 6a–b Brown agate, 22.5 x 18 x 3.5mm. London, British Museum, PE G21

Medical *sphragides*

How widespread were medical *sphragides*, apart from the Lemnian one, and do other magical gems look like them? A number of remedies with pictures can be traced, some presenting images also found on magical gems.

Galen reports a remedy from a lost treatise of Asclepiades the Younger (1st century AD): ‘The yellow remedy of Antigonos, called little lion because it was printed with the image of a lion.’³⁷ In the same treatise, Asclepiades also mentions a crow seal, *korakinè sphragis*, a remedy good for mouth or throat troubles;³⁸ the name may refer to its black colour or to the image of a crow. Another example occurs in a 1st-century AD Egyptian papyrus where Servilius explains to Nemesion, a wealthy man from Philadelphia, that he bought for him a ‘stone’ (*litharion*) of silphium, printed with the image of Harpocrates,³⁹ a very common iconographic type on magical gems.⁴⁰ In the same period, the Pliny the Elder tells us that: ‘Now indeed men also are beginning to wear on their fingers Harpocrates and figures of Egyptian deities’.⁴¹

Remedies prepared in a magical context could also be stamped, like normal drugs, with an image, but this time explicitly magical. One of the *Greek Magical Papyri* offers a description of the preparation of a *collyrium* made of animal and plant material (field mouse, dappled goat, dog-faced baboon, ibis, river crab, moon beetle, wormwood, and a clove of garlic), duly stamped, like regular remedies, but with a ring bearing the image of Hecate and a magical name:

Blend with vinegar. Make pills, *kolluria*, and stamp them with a completely iron ring, completely tempered, with a Hecate and the name Barzou Pherba.⁴²

Apart from solid sticks of salve, containers of precious medicine were also impressed with an image certifying its authenticity, such as the famous *lykion* pots, miniature jars around 2–3cm high, containing a much valued liquid extracted from a shrub from the buckthorn family, originally from Lycia in Asia Minor. The most ancient jars seem to be as early as the 3rd or 2nd century BC and are stamped with the word ‘*Lykion*’, occasionally with the name of the druggist or owner, sometimes also with the head of Asclepius with or without a radiating diadem.⁴³ The label proved that the druggist was selling the genuine product, an alleged wonder drug, effective as an astringent, good against ophthalmic inflammation, ulcerations, and bleeding.

The image of Asclepius and Hygieia impressed on a pot found in Aquinum (Pl. 5) could indicate that the vessel was



Plate 7 Carnelian, 19 x 16mm. London, British Museum, PE 1859,0301.118

also a container for a medicine.⁴⁴ Unfortunately, it is so fragmentary that no conclusion can be drawn, but it is interesting to note that the image was made with a gem, perhaps magical, as the type exists, as on a dark brown agate from the British Museum (Pl. 6a) showing Chnoubis on the reverse (Pl. 6b).⁴⁵

Two gems demonstrate the intertwining between medical and magical *sphragides*. A deep orange carnelian gem, carved with a retrograde inscription, was thus used as a stamp to mark a *collyrium* for the eyes (Pl. 7).⁴⁶ The inscription is short, but typical of *collyrium* stamps: HEROPHILI/ OPOBALSAMVM. The name Herophilus may designate the druggist who invented the salve. It is also the name of the famous Alexandrian physician who worked on the anatomy of the eye and carried out the first dissection of the eye.⁴⁷ The druggist may have attributed the salve to him in order to increase the fame of its product, or a physician himself took the name of his famous predecessor. The second term, *opobalsamum* (*opobalsaminum*), is a well-attested drug from the balsam-tree efficacious against eye diseases.⁴⁸

Eyesight is central in the scene, carved with the image of Athena seated, looking at a tragic mask, as if it were an active *persona*. As M. Pardon-Labonnelie demonstrated,⁴⁹ the image contains several references to the power of eyesight. First the eyes of Athena were reputed for their special colour, *glaukos*, greenish-blue, but also, according to Plutarch and Pausanias, she saved Lycurgus from losing a wounded eye. Lycurgus in return introduced in Sparta the cult of Athena *Ophthalmitis* or *Oplitetis*.⁵⁰

A round jasper from Wroxeter with a name and a prescription, but no image, provides another example of a gem-like (or pill-like?) stamp for dried salve sticks.⁵¹

Sphragis Theou

The word *sphragis* occurs not only on regular medical stamped pills or *collyria*, but is carved on magical gems. We find it on the well-known 4th–5th century AD series of so-called ‘Solomon’ gems. The type depicts on one side a horseman, often labelled ‘Solomon’, spearing a prostrate female figure (Pl. 8a). The reverse usually bears the inscription SPHRAGIS THEOU, ‘Seal of God’ (Pl. 8b).⁵² The motif of the rider may derive from Horus stabbing a crocodile personifying evil, or the hunting emperor struck on coins, though Solomon is not in military costume.⁵³ The device is nearly always carved on haematite, a choice so far unclear.

The expression *sphragis theou* is traditionally interpreted as referring to the magic seal-ring which Solomon received from Iahweh to repel the vampire-like demons assaulting him during the construction of the Temple of Jerusalem. The gems are usually explained as depicting how Solomon masters a female demon harmful to women and children, present in all Mediterranean folklores. Different names are proposed for the woman, such as Gello, Gylou, or Abyzou.⁵⁴ The role of Solomon, however, was not limited to women and children’s protection; as Spier points out, he controlled all evils.⁵⁵ Thus, the reverse of a haematite in the British Museum is carved with the inscription STOMACHOU designating his power over pains of the belly (Pl. 9b),⁵⁶ which fits well with the haematite’s potency for or against internal bleeding, like Lemnian earth.

The double meaning of the word *sphragis* introduces a new reading of the ‘Solomon’ series which could explain the preference for haematites: *sphragis theou* could also mean ‘the medicine of god’. ‘Solomon’ haematites are often found broken, most likely because they were used as a drug, as we saw above. One may guess that, like pills, the broken part of the gem was pulverized and drunk mixed with a liquid.⁵⁷

It may be noted that the iconography of the horseman subduing the female demon appears when the figure of Heracles mastering the lion disappears. Solomon seems to have taken over the capacity of the hero. Like Heracles, who controlled the roaming of the womb (compared with a wild animal), variants depict Solomon with the *hystera* formula.⁵⁸ Solomon had power over all diseases inflicted by demons,⁵⁹ including the fear of poisoning, mastered by haematites, like the red Lemnian earth.⁶⁰



Plates 8a-b Haematite (25 x 15 x 4mm). London, British Museum, PE G 47



Plates 9a-b Haematite (20 x 12 x 2 mm). London, British Museum, PE G 439

Conclusion

In conclusion, I suggest that magical medical gems could be conceived as *sphragides*, that is, as stone remedies. The practice of carving this category of gems with images can be understood in the light of the custom of stamping costly medical drugs. For both medical and magical *sphragides*, the image certified the authenticity and quality of the medicine. It also increased the value of the gems, as we should not forget that medical gems without any device did also exist. Carved medical gems were luxury products as were precious stamped products. A chronological coincidence is worth noting: references to stamped remedies begin in the Hellenistic period and intensify with trade and exportation in the early Empire, when magical gems with a specific iconography develop.⁶¹ The emergence of both genres may be interrelated. Stone and clay pills may also have had a similar destiny: manufactured in one place, sold or used by itinerant practitioners in another.

Notes

1 See e.g. C. Nissen, *Entre Asclépios et Hippocrate. Etude des cultes guérisseurs et des médecins en Carie* (Kernos suppl. 22), Liège, 2009; V. Nutton, 'From medical certainty to medical amulets: three aspects of ancient therapeutics', in W.F. Bynum and V. Nutton (eds), *Essays in the History of Therapeutics* (Clio Medica 22), Amsterdam, 1991, 13–22; V. Nutton, *Ancient Medicine*, London, 2004. On gems, see e.g. M.G. Lancillotti, 'Médecine et religion dans les gemmes magiques', *Revue de l'histoire des religions* 218 (2001), 427–56; A. Mastrocinque, 'Medicina e magia. Su alcune tipologie di gemme propiziatorie', in A. Marcone (ed.), *Medicina e società nel mondo antico. Atti del convegno di Udine (4–5 ottobre 2005)*, Grassano, 2006, 91–100; S. Michel, *Die magischen Gemmen. Zu Bildern und Zauberformeln aufgeschnittenen Steinen der Antike und Neuzeit*, Berlin, 2004, 146–202; Á.M. Nagy, 'Daktylios pharmakites. Magical healing gems and rings in the Graeco-Roman world', in I. Csepregi and Ch. Burnett (eds), *Ritual Healing in Antiquity and in the Middle Ages*, London, 2011 (in press).

2 Hippocrates, *Letter II* (9.314–5L. = E. Littré, *Oeuvres complètes d'Hippocrate*, Paris, 10 vols, 1839–1861); see also Pliny, *Nat. Hist.* 7.123 (trans. H. Rackham), London, 1952; J. Jouanna, *Hippocrate*, Paris, 1992, 32–3.

3 E.g. A. Verbanck-Piéard (ed.), *Au temps d'Hippocrate. Médecine et société en Grèce antique*, Mariemont, 1998, 221, I. 22 (fig.).

4 E.g. L.J. Bliquez, 'The Hercules motif on Greco-Roman surgical tools', in A. Krug (ed.), *From Epidaurus to Salerno, Symposium held in Ravello, April 1990*, (PACT 34), Rixensart, 1992, 35–50; *idem*, *Roman Surgical Instruments and Other Minor Objects in the National Archaeological Museum of Naples. With a Catalogue of the Surgical Instruments in the «Antiquarium» at Pompei by Ralph Jackson*, Mainz, 1994, 83–4, 99–106, nos 40–1, fig. 20.

5 *Collyrium* stamp: J. Voinot, *Les cachets à collyres dans le monde romain*, Montagnac, 1999, no. 240 (stars and moon); gem: S. Michel, *Die Magischen Gemmen im Britischen Museum*, London, 2001, no. 92 (stars and moon); see also, A. Mastrocinque (ed.), *Sylloge gemmarum gnosticarum*, vol. II, Rome, 2008, Ts 25 and 26 (stars and moon).

6 C. Bonner, *Studies in Magical Amulets, Chiefly Graeco-Egyptian*, Ann Arbor, 1950, 79–94; V. Dasen and S. Ducaté-Paarmann, 'Hysteria and metaphors of the uterus', in S. Schroer (ed.), *Images and Gender. Contributions to the Hermeneutics of Reading Ancient Art* (OBO 220), Fribourg and Göttingen, 2006, 239–61.

7 Hippocrates, *Ancient Medicine* 22 (I. 629 L.; trans. W.H.S. Jones, Loeb Classical Library, Cambridge, MA, 1868).

8 V. Dasen, 'Métamorphoses de l'utérus, d'Hippocrate à Ambroise Paré', *Gesnerus* 59 (2002), 167–86; *eadem*, 'Représenter l'invisible: la vie utérine sur les gemmes magiques', in V. Dasen (ed.), *L'embryon humain à travers l'histoire. Images, savoirs et rites*, Gollion, 2007, 41–64.

9 P. Chantraine, *Dictionnaire étymologique de la langue grecque. Histoire des mots, nouvelle édition avec un supplément sous la dir. de A. Blanc, Ch. de Lamberterie, J.-L. Perpillou*, Paris, 2009, 1041.

10 M.J. Roulière-Lambert, A.-S. de Cohën and L. Bailly (eds), *L'œil*

dans l'antiquité romaine. Exposition Lons-le-Saunier, Musée d'archéologie, 31 janvier-4 avril 1994, Lons-le-Saunier, 1994; R. Jackson, 'Eye medicine in the Roman Empire', in *Aufstieg und Niedergang der römischen Welt*, II, 37.3 (1996), Berlin-New York, 2228–51, at 2238–43; Voinot (n. 5), 1–49; M. Pardon-Labonnelie, 'La préparation des collyres oculistiques dans le monde romain', in F. Collard and E. Samama (eds), *Pharmacopoles et apothicaires: les "pharmaciens" de l'Antiquité au Grand Siècle*, Paris, 2006, 41–58.

11 D. Gourevitch, 'Collyres romains inscrits', *Histoire des sciences médicales* 32 (1998), 365–72; M.-H. Marganne, 'Les médicaments estampillés dans le corpus galénique', in A. Debru (ed.), *Galen on Pharmacology: Philosophy, History, and Medicine. Proceedings of the Vth International Galen Colloquium, Lille, 16–18 March 1995*, Leiden, 1997, 153–74; *eadem*, 'Les médicaments estampillés dans la littérature médicale latine', in P. Defosse (ed.), *Hommages à Carl Deroux, II, Prose et linguistique, médecine*, Brussels, 2002, 536–48.

12 *Celsus De medicina* 5.20.2 (trans. W.G. Spencer, Loeb Classical Library, Cambridge, MA, 1935). For further literary references to this *sphragis*, see Marganne 2002 (n. 11), 537–8.

13 *Galenus De compositione medicamentorum secundum locos* 4 (12.751 K. = C.G. Kühn, ed. and Latin trans., *Galenus opera omnia*, 20 vols, Leipzig, 1821–1833).

14 *CIL XIII* 76; Voinot (n. 5), no. 158; Marganne 2002 (n. 11), 546.

15 Pliny, *Nat. Hist.* XXXV.33–4.

16 H. Hasluck, 'Terra Lemnia', *Annual of the British School at Athens* 16 (1909–10), 220–31; L. Taborelli, 'A proposito della genesi del bollo sui contenitori vitrei. Note sul commercio delle sostanze medicinali e aromatiche tra l'età ellenistica e quella imperiale', *Athenaeum. Studi periodici di letteratura e storia dell'Antichità* 63 (1985), 198–217, at 202–5.

17 Cassius Felix, *De medicina* 39.7 (*Lemnias sfragitidos*) (ed. V. Rose, Leipzig, 1879).

18 Theodorus Priscianus, *Euporistes* 3.7.29 (*Lemnia sfragitide*) (ed. V. Rose, Leipzig, 1894); Mustio, *Sorani Gynaeciorum uetus translatio Latina*, 30.83 (*sfragitida*) (ed. V. Rose, Leipzig, 1882).

19 A.J. Hall and E. Photos-Jones, 'Accessing past beliefs and practices: the case of Lemnian earth', *Archaeometry* 50/6 (2008), 1034–49.

20 Dioscorides, *De materia medica* 5.97 (= *Pedanius Dioscorides of Anazarbus, De materia medica*, trans. and ed. L.Y. Beck, Hildesheim, Zürich, New York, 2005). On the associations of goats with Artemis, girls and medicine, see P. Brulé, 'Héraclès à l'épreuve de la chèvre', in *idem*, *La Grèce d'à côté. Réel et imaginaire en miroir en Grèce antique*, Rennes, 2007, 255–81.

21 The date is debated, between AD 162 and 167.

22 *On Antidotes* 1.2 (14.8 K. = Kühn [n. 13]); A.J. Brock (trans. and ed.), *Greek Medicine. Being Extracts Illustrative of Medical Writers from Hippocrates to Galen*, London, 1929, 199.

23 *On Simple Drugs* 9.2 (12.169–70 K. = Kühn [n. 13]); Brock (n. 22), 192.

24 *Ibid.*, 9.2 (2.171 K.); Brock (n. 22), 192–3.

25 *Ibid.*, 9.2 (2.173–4 K.); Brock (n. 22), 194.

26 *Ibid.*, 9.2 (12.174 K.); Brock (n. 22), 194.

27 *Ibid.*, 9.2 (12.176 K.); Brock (n. 22), 195.

28 Hasluck (n. 16).

29 C. Bonner, 'Amulets chiefly in the British Museum', *Hesperia* 20 (1951), 301–45, at 342, no. 73 (not illustrated). I am very grateful to Attilio Mastrocinque for providing me with the image.

30 S. Michel, *Bunte Steine - dunkle Bilder: 'Magische Gemmen'*, Munich, 2001, no. 145.

31 R. Halleux and J. Schamp, *Les lapidaires grecs: lapidaire orphique, kérygmes lapidaires d'Orphée, Socrate et Denys, lapidaire nautique, Damigéron-Evax*, Paris, 1985; *lapidaire orphique* 21.

32 *De materia medica* (n. 20), 5.126.1.

33 Halleux and Schamp (n. 31); *lapidaire orphique* 21.645–76; *kérygmes lapidaires d'Orphée* 22; *Damigéron-Evax* IX.

34 Some are also burnt, see Pliny, *Nat. Hist.* 37.139 (*antagates*); Michel (n. 1), 151.

35 *De materia medica* (n. 20), 5.126.1.

36 I leave aside the question of the choice of the goat as the seal of Artemis, and the healing properties of the animal, but it may be noted that the she-goat was much appreciated in medicine and magico-medical treatments: see Pliny, *Nat. Hist.* 28.130 on the properties of her milk.

37 R.J. Durling, *A Dictionary of Medical Terms in Galen*, Leiden, 1993, 219; Marganne 1997 (n. 11), 165. On magical gems, see Michel (n. 5), no. 253 (red jasper with a lion in profile); no. 280 (yellow jasper

- with a lion, inscribed 1AW; on the reverse a woman, inscribed *pausia* perhaps derived from *pauson*?).
- 38 Asclepiades ap. Galen, *De compositione medicamentorum per genera* 5.11 (13.826, 4-7 K. = Kühn [n. 13]); Marganne 1997 (n. 11), 166.
- 39 H. Cuvigny, *Papyrus Graux II (P. Graux 9 à 29)*, Geneva, 1995, no. 10, 22-8, esp. lines 8-9; Marganne 1997 (n. 11), 153.
- 40 Michel (n. 5), no. 112 (dark green jasper with the child seated on a lotus flower, a hand to his mouth, the head crowned with the sun disc or the *pschent*).
- 41 Pliny, *Nat. Hist.* 33.41.
- 42 PGM IV 2691-2 = K. Preisendanz, *Papyri graecae magicae. Die griechischen Zauberpapyri*, 3 vols, Leipzig and Berlin, 1928, 1931, 1941 (Eng. trans. by N. O'Neil in H.D. Betz (ed.), *The Greek Magical Papyri in Translation, Including the Demotic Spells*, Chicago and London, 1992 (2nd edn), 88, n. 331).
- 43 See, E. Sjöqvist, 'Morgantina: Hellenistic medicine bottles', *American Journal of Archaeology* 64 (1960), 78-83, at 80, pl. 19, fig. 8.
- 44 I. Wellner, 'Aeskulapius és Hygieiát ábrázoló gemma Lenyomatával díszített edény Aquincumból (un vase orné de l'empreinte d'une gemme représentant Esculape et Hygie trouvé à Aquincum)', *Archaeologiai Értesítő* 92 (1965), 42-4.
- 45 Michel (n. 5), no. 319; see also, A. Delatte and Ph. Derchain, *Les intailles magiques gréco-égyptiennes*, Paris, 1964, 179, no. 235.
- 46 First published by C.W. King, *Antique Gems and Rings*, II, London, 1872, 20, and discussed by M. Pardon-Labonnelie, 'Les thérapeutiques oculistiques romaines, entre survivances et métamorphoses. L'exemple de la thérapeutique du vert', in H. Duchêne (ed.), *Survivances et métamorphoses*, Dijon, 2005, 111-32, at 130-1, fig. on 124. See also, R. Jackson, *Catalogue of Greek and Roman Medical Collections in the British Museum*, in preparation. I thank Ralph Jackson for providing me with the results of the stone analysis.
- 47 See H. von Staden, *Herophilus. The Art of Medicine in Early Alexandria, Edition, Translation and Essays*, Cambridge and New York, 1989.
- 48 On the drug, see Voinot (n. 5), 47-8, no. 87-8; Jackson (n. 10), 2240. For a similar inscription on a conventional stamp, see E. Esperandieu, 'Recueil des cachets d'oculististes romains', *Revue archéologique* 24 (1894), 58, no. 7: *Herophili opob(alsamum)*; Pardon-Labonnelie (n. 10), 45.
- 49 Pardon-Labonnelie (n. 46).
- 50 Pausanias, *Description of Greece* (trans. W.H.S. Jones and H.A. Ormerod), Cambridge, MA, 1926, 3.18.2; Plutarch, *Lycurgus* 11. See also Pausanias, *ibid.*, 2.2.4.2 (Athena *oxyderkes*).
- 51 Voinot (n. 5), no. 43. Two circular or cylindrical examples were also found in Enns and Ipswich: Voinot (n. 5), nos 216 and 247. I would like to thank Ralph Jackson for these references.
- 52 Michel (n. 5), no. 436. On the series, see Bonner (n. 6), nos 294-328; J. Spier, 'Medieval Byzantine magical amulets and their tradition', *Journal of the Warburg and Courtauld Institutes* 56 (1993), 25-62.
- 53 Bonner (n. 6), 210.
- 54 P. Perdrizet, *Negotium perambulans in tenebris. Etudes de démonologie gréco-orientale*, Strasbourg, 1922; I. Sorlin, 'Striges et Geloudes. Histoire d'une croyance et d'une tradition', *Travaux et mémoires du Centre de recherche d'histoire et civilisation de Byzance* 11 (1991), 411-36; Spier (n. 52), 33-9; S.I. Johnston, 'Defining the dreadful. Remarks on the Greek child-killing demon', in M. Meyer and P. Mirecki (eds), *Ancient Magic and Ritual Power*, Leiden-New York-Cologne, 1995, 361-87.
- 55 Spier (n. 52), 44.
- 56 Michel (n. 5), no. 447.
- 57 E. Zwierlein-Diehl, *Magische Amulette und andere Gemmen des Instituts für Altertumskunde der Universität zu Köln*, Opladen, 1992, 50. See PGM III (n. 42), 188: 'Grind up a magnet'; on ingesting magical powers: PGM I (n. 42), 231-248: 'Wash the papyrus and drink the water'.
- 58 On Heracles and Omphale on magical gems, see V. Dasen, 'Le secret d'Omphale', *Revue archéologique* 46 (2008), 265-81. See for example the inscriptions of the *hystera* formula on a silver pendant in Spier (n. 52), 30, nos 15-24, 33, pls 2a-b, 3a.
- 59 See the bronze pendant with Solomon on one side and the Evil Eye attacked by animals on the other side: Bonner (n. 6), nos 298-303; Spier (n. 52), 62.
- 60 I note that inscriptions relating to the belly or stomach occur on all types of haematite gems. The image of the reaper, for example, may be inscribed with ΠΕΡΤΕ (instead of ΣΧΙΩΝ, 'for the hips') or ΣΤΟΜΑΧΟΥ: Michel (n. 5), no. 427. In the *Orphic Lapidary* 21.675-679, haematite also secures success and victory.
- 61 Taborelli (n. 16), 216-17.