Aegyptus et Pannonia VII.

Acta Symposii anno 2021

BUDAPEST

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Editor: Hedvig Győry

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Contents

Plants and Health Conference 2021, and the Proceedings

Dr. Hedvig Győry PhD

HEFT AEC president

In 2021, the HEFS Ancient Egyptian Committee, in partnership with the HNM Semmelweis Museum of Medical History, organised an international conference entitled "*Plants and Health from Ancient Egypt to the Present Day*". The three-day conference focused on topics related to the application of plant material in medicine, but also included other topics connected to the use of plants in any practical or theoretical area of human life. We planned four sections with the following keywords:

History of healing and nutrition from the time of ancient Egypt to the present day
Which plants were used for healing, how, where, by whom and when, which plants were used to maintain health, or prevent disease in different parts of the world; what did people eat in everyday life, what were the festive foods/drinks, what were the expected results; and what are the related issues raised by ethnographic research.

Medicines and pharmaceutical science in historical periods in the light of sources
Who, how and why recorded knowledge of medicine in each period; what principles were used to treat patients or maintain health; what were/are the popular explanations of these issues or principles.

Herbal medicine and contemporary medicine
According to our current knowledge, what can we assess about the active ingredients of a given plant, the mechanism of action and its intensity, and what biochemical relationships can be discerned from their interactions.

Religious views and beliefs about plants
By whom, where, when, and what special magical properties have been attributed to plants, what is the role of plants in the social context, how is it explained, and how have plants been incorporated into everyday life/celebrations or healing practices

The conference was held between 14 and 16 October 2021 with 40 presentations. Due to the COVID pandemic, circumstances did not allow for a face-to-face meeting, so the event was entirely online. However, the possibilities offered by the Internet also allowed for smaller group discussions. The topics presented included the appearance and use of plants in different times and places, from ancient Egypt to contemporary Europe. They were divided into thematic and language (English and Hungarian) sessions, led by recognised scholars. After the lectures, it was possible to discuss the issues raised in front of the general public, and topics of narrower interest could be further discussed in separate rooms created within the Zoom system. Valuable contacts were made and new research ideas were generated. A small exhibition was also organised by the HNM Semmelweis Museum of Medical History for the occasion, as we had hoped until the last minute that the pandemic situation would change. However, it was only available to personal visitors.

During the conference it was possible to learn about new methods, we exchanged ideas and heard about research results and ongoing projects. A significant part of the presentations were given in English, the other part in Hungarian, but the papers included in the proceedings are all in English. The first part of the proceedings, as a result of the presentations and discussions, is published in this volume; the other part can be read in the next volume of the Aegyptus et Pannonia series.

Although not all the presentations are published, most of the aspects we covered are included in the volumes. The programme covered a wider range of topics: We were able to learn about plant finds from recent Egyptian archaeological excavations, the identification and use of plants in textual sources, religious connotations, and even the possibility of reconstructing perfumes. We could also look at the trade in plants between the Hittite Empire and Egypt, and learn which plants were used by the Copts in the Middle Ages. The latest research on Roman herbaria was discussed, and hitherto unknown ancient Egyptian texts were presented. Other presentations were devoted to the reproduction of some medicines based on ancient recipes. In one of the lectures we saw on video the process of preparation and examination of an ancient Egyptian medicine. Several papers dealt with temporal and spatial changes in the everyday and liturgical use and interpretation of a given plant, e.g. pomegranate in Greece. In India, Soma. In Hungary, thorn apple. In Estonia, pelargonium. In Finland and the Arctic, roseroot. And in the Arabian desert of Egypt, the apple of Sodom. The role of plants in religious ceremonies and concepts was also discussed, as well as the variety and significance of the scent they produce.

The lectures presented a wide range of the application of herbs in ancient and medieval medical methodology, with the help of Egyptian, Greek, Anatolian, and Hungarian herbariums. The conference participants were the first to hear that many ancient Egyptian medicines can still be found in the medieval Welsh medicinal knowledge. We also learned that a significant part of Dioscorides' usage of herbs could also be observed in Anatolian folk medicine. Lectures were given on the wide range of magical effects attributed to plants, spanning from antiquity to the Renaissance, in terms of iatromagic, iatromathematics, and iatromythology.

In separate sections, the participants were introduced to Hungarian ethnobotanical research, where, in addition to the methods of the way of collecting ethnobotanical data throughout Transylvania, the lecturers presented both the botanical aspects and the therapeutic potential of the plants included in the various Hungarian medicinal herbariums and pharmacopeias. In addition to the knowledge of plants preserved in the Hungarian witch-trial documents of the 15th to 19th centuries, the possibilities of historical and folk use against various diseases – such as tuberculosis and cholera – were also presented, and in connection with diabetes and surgery we also visited India and China. We got again an idea of how wound care has changed over the centuries, how plants have influenced the toolkit of surgeons, and which plants are still used in modern wound management. In connection with the Székesfehérvár Pharmacy Museum, an overview of the museum's extensive educational activities was presented in addition to its history. We have got acquanted also with the the most important medical tariff book of Hungary in the 18th century and the drawer labels of five apothecary furniture of the same period.

The approach to the flora of ancient Egypt is also diverse, and the study of the Ancient Near Eastern relations encompasses several scientific fields, such as Assyriology, Hittiteology and Biblical studies. The classical Greco-Roman world is also included in the next volume to facilitate comparison. In addition to history, interdisciplinarity also extends to other branches of the humanities, such as – among others – archaeology, history, linguistics, ethnography, philology, the history of religion and magic or iatromathematics.

In recent decades, the development of the sciences has moved in the direction of interdisciplinary cooperation, not only between related sciences, but also between seemingly distant branches of science. In addition to textual and material sources, the results and methods of the natural sciences are of fundamental importance for a more precise understanding of the past. The role of analyses and investigation of the various materials is thus becoming increasingly important, complementing traditional descriptive studies. As we also wanted to play a role in this process, several areas of natural science, such as archaeobotany, phytogenetics, types of data investigation and plant breeding, or various facets of medicine and medical history are also represented in the proceedings.

In this volume, we publish 11 studies that approach the world of plants from different perspectives within the broad framework of the conference. The focus is on ancient Egypt, but the articles also look at other areas. In addition to the data found in the articles and the results obtained, the methodological and theoretical approaches raise many new ideas, give exciting results and draw attention to various possibilities. For example, the multifaceted role of medicinal plants in the museum world or their application from the perspective of medical history and ethnomedicine.

With this volume, we hope to arouse interest in the unique world of the past, especially Egypt, to bring closer the world of nature and its possible effects on human life, and to encourage the birth of further results that will make the ancient Egyptian world better known and our own world better understood.

MAGYAR–EGYIPTOMI BARÁTI TÁRSASÁG
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Plants and signs: healing with plants according the iatromathematica science during the Roman and Late Antique Egypt

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Abstract

During the period between the 1st to 3rd century AD, the Hermeticism became widespread in the Roman Empire, and the texts of the *Corpus Hermeticum* took shape. Their attribution to the god Thot, as the contexts and characters of these writings openly recall the Egyptian environment where they grew. Among the treatises of the *Corpus*, the works on astrological medicine, or iatromathematica, deserve particular attention. The latter discipline aims to explain the disease as the negative influence of a celestial body and to heal the illness by deleting the harmful effects of the star or planet. The iatromathematica constitutes a coherent set of knowledge in which the microcosm and the macrocosm are deeply connected: every part of the body, every plant, every stone, every animal finds its position in a precise pattern of correspondences with the celestial world. Within this frame, the purpose of this contribution is to investigate the reasons for the choice of some of the plants mentioned in the writings of "astrological botany" in the treatment of individual diseases, trying to understand the reason for their connection to individual stars, and, when possible, also highlighting the Egyptian background of the formation of these texts or their link with most recent innovations (such as the introduction of new plants in Egypt during the Graeco-Roman time). Furthermore, it will be underlined the connection, hitherto little or not at all recognized, of this type of writings with the Demotic, Greek, and Coptic herbaria that Roman Egypt has preserved, noting the singular coincidence of the common presence of some plants in both of these genres, and the significance of the iatromathematica in the formation and transmission of late herbaria.

Keywords: Graeco-Roman Egypt, iatromathematica, herbals, plants, *Corpus Hermeticum*, "*dove-plant*", "*scorpion tail*", σεληνόγονον, ἡλιόγονον, houseleek

Introduction

There is perhaps no more universal desire and transversal in time

than that of being healed. Healing methods, however, always change and will change according to places, times and the reference paradigm. In Roman and Late Antique Egypt, among other options, a patient could probably turn to the priests possessing a relatively new science, that of iatromathematica, which promised to ensure his recovery, by combining astrological and medical knowledge. Probably only in this period of Egyptian cultural melting pot could such a discipline fully develop. The ways that lead to its formation are difficult to reconstruct, but since it emerges, a thin thread seems to unite the sciences of "astrological botany" with the more traditional herbal sciences, which in Egypt had a longer, autonomous and more known tradition.

This thread can be followed through the common presence of some plants in both of these genres, which seems to suggest indeed a connection of this specific type of hermetic writings with the Demotic, Greek, and Coptic herbals that Roman Egypt has transmitted to us. In order to prove it, we take in account five plants as simple case studies, to investigate this way the reasons for their choice in the treatment of individual diseases, the motive for their connection to a specific celestial body, and, if possible, the relationships with the previous pharaonic tradition, or instead their extraneity to the Egyptian flora and their novelty in use.

Iatromathematica and Egypt: between hermeticism and scientific prose

It is now customary to attribute the formation of the texts of *Corpus Hermeticum* to the period between the end of the 1st and the beginning of the 4th century AD.[1] An epigram of Martial (V, 24, 15), where the name Hermes is repeated 15 times, at the beginning of each verse, perhaps suggests that the epithet *trismegistos* was widespread in the Empire by the end of the 1st century AD.[2] The epithet is of Egyptian origin, as Parlebas[3] has shown, and Hermes is none other than Thot in the *interpretatio graeca*, god of writing, to whom the Egyptians attributed the drafting of a series of writings on religious and magical subjects.[4] The oldest evidence of this epithet, however, dates back to the mid-second century BC, and is transmitted by two oracular Greek ostraca found at Saqqara.[5] It is therefore possible that the origin of the hermeticism must already be sought in the Ptolemaic period, and that it is therefore prior to the dating of the writings themselves, even if more consistent evidence is

1 Scarpi 2009, xxxiv-vii.

2 Scarpi 2009, xxxv.

3 Parlebas 1974.

4 Qaegebeur 1995, 167-77; Mahé 1982, 25.

5 Skeat – Turner 1968, 203-4, Text B and D.

missing.[6] Certainly, the theories and the elements that later come together in these texts are the result of centuries of cultural reflections and stratifications, not always recognized. The Egyptian background of hermeticism, was indeed initially denied by Kroll[7] or Festugière[8] who both considered Hermes nothing more than a mask for Greek ideas or a simple fashion, while more recently the Egyptian foundations of these writings have been better underlined.[9] However, elements of different origins accumulated on this cultural substratum, resulting in profoundly syncretistic texts. Examples of the latter are a series of treatises, which we will call here of "astrological botany". They can be defined as hermetic, as they are attributed from time to time to Hermes himself, or to the Egyptian king Nechepso or to the figure of Petosiris, or obtained through the revelation by Asclepius / Imhotep, a recurring character in *Corpus Hermeticum*, or sometimes by apparently more distant figures such as Alexander or Solomon. Beyond the individual pseudepigraphic attributions, the layout of these treatises is quite similar: each celestial element (whether it is planet, zodiacal constellation, decan, or fixed star) is associated with a vegetal element (in some cases also a mineral one), with purposes which can sometimes appear more "medical" (that is, to cure a certain disease) or more "magical" (like, to obtain luck, benevolence, love, etc.).

The same texts fit also well into the so-called iatromathematica, the discipline that makes astrology available to medicine (ἰατρός, "*doctor*", and μαθηματική, "*astrology or astronomy*", for which certain attestations are documented in the Graeco-Egyptian context at least from the 2nd century AD (Ptolemaeus, see further). The idea of the influence of the astral bodies on the human one in Greek environment is certainly older, as Hippocrates did not reject the thesis according to which the environment, the climate, the seasons, but also the stars themselves influenced the humors of the body and therefore the onset of diseases,[10] but evidence of such system is also found in Pharaonic and Late Egyptian texts (see below). Nevertheless, Hellenistic iatromathematica has its own peculiarities, such as a complex system of astrological interpretations and a more precise and narrower astro-body causality, the presence of the zodiacal band, the theory of μελοθεσία (the latter possibly of Babylonian influence[11]) and the knowledge of the decans, of Egyptian derivation, which make this discipline characteristic and different from

6 Scarpi 2009, xxxiii-iv.

7 Kroll 1914, 804.

8 Festugière 2006 (1944), 85-6.

9 Derchain 1962; Mahé 1978, 33-8; Mahé 1982, 37; Fowden 1986; Kákosy 1992; Bull 2018, 12-5 and 398-460.

10 Greenbaum 2020, 358-64.

11 See Greenbaum 2020, 356-7.

the notions of Hippocrates. It is clear as well, as such ideas could probably only develop in the cultural melting pot of Graeco-Roman Egypt, and Ptolemaeus already noted this Egyptian peculiarity when he wrote: "*The Egyptians have completely united medicine and astronomical prediction*" (*Tetrabiblos*, I, 3, 15). Just as hermeticism includes theories and texts of a different nature from those of "astrological botany", equally the field of iatromathematica is not only covered by the botanical topic or the treatment of a pathology. Astrology can be also linked indeed to the moment of birth to indicate, which diseases the individual may incur, or to discover the causes of the disease in progress and its possible course (glorious or nefarious). In the iatromathematic literature, therefore the writings of Hermes / Nechepso play an important role but they are not the only ones.[12]

We can divide the texts of "astrological botany", following Festugière, into four different groups:

The first consists of a single text, the "*Holy Book of Hermes to Asclepius*", published by Pitra[13] and by Ruelle[14] who use different manuscripts, in which for each of the thirty-six decans, their appearance and their associated body part or disease are described, as the preparation of an amulet formed from the stone and plant associated with the decan himself and a prescription to abstain from a specific food are reported.

The second group instead includes two different texts. Both refer to the twelve zodiac signs as a frame of reference. The first is attributed differently to Thessalus / Harpocration or to Hermes,[15] and is known from a shorter version,[16] and a more detailed one,[17] which presents real medical prescriptions with the quantities for individual ingredients. They only differ in the plant attributed to the Virgin. The second text, on the other hand, is attributed to Solomon or Hermes,[18] and differs from the first one in a certain number of plants, and because it focuses on the preparation of amulets for magical purposes.

The third group, on the other hand, is perhaps the most complex. It concerns associations with the seven planets. The first version of this text

12 Bouché-Leclercq 1899, 517-542; Kroll 1914, 802-4; Gundel 1922, 275-300; Pfister 1938, 1449- 1455; Papathanassiou 1999.

13 Pitra 1888, II, 284-290.

14 Ruelle 1908, 247-277.

15 Festugière 2006 (1944), 143.

16 Pitra 1888, II, 291; CCAG, VII, 232-3.

17 Friedrich 1968, 43-190; CCAG, VIII, 3, 139-151; CCAG, VII, 29; Latin extracts in CCAG, VIII, 4, 258-59.

18 CCAG VIII, 2, 159-62; Festugière 2006 (1944), 145-6.

has various attributions (to Alexander or to Hermes or anonymously[19]), and it is known in three different subversions: a short one,[20] a first long[21] and a second long.[22] It exists a further second version, the one of Thessalus,[23] and a third version,[24] attributed to Solomon. The various versions differ both in the plants associated with each planet from time to time, and in the order of the planets themselves, and for the purpose and type of remedy recommended (Solomon's version indeed focuses only on the preparation of amulets and magical remedies).

Finally, a treatise in Latin,[25] attributed to Hermes / Enoch, offers a translation of the Arabic, which in turn is the translation of a Greek text about the fifteen fixed stars. Each of these stars is associated to a stone, a plant and a figure, used for the preparation of a talisman.

The operating principle of these associations or in Greek μελοθεσία is based primarily on the conception of man as a microcosm: each of his parts is made to correspond to a different celestial element.[26] The series of planets / zodiac signs / decans / fixed stars, although connected by a dense network of correspondences, can sometimes not form a completely coherent system. The basic dualism is perhaps, that between the system that assigns a part of the body to each planet and that which instead refers to the zodiac signs. Planets and zodiac signs are naturally connected by the fact that each planet has its own house in one or more signs, but the correspondences are not always perfect, as according to the traditions different plants are connected to the same star (for example, the περιστερεών (ὕπτιος) is associated with the sign of Gemini, but Mercury (the plant of Gemini) is associated with πενταδάκτυλον / πεντάφυλλον or the φλόμος[27]).

Between the decans and the zodiac signs, on the other hand, there is a more precise correspondence, since each decan represents the third part of a zodiac sign.[28] Indeed, the decan appears usually specialized in a

19 Festugière 2006 (1944), 146-147.

20 CCAG IV, 134-6 = VI, 83-84 and VIII, 3, p.36.

21 CCAG VII, 233-36.

22 CCAG VIII, 3, 159-165.

23 Friedrich 1968, 195-273.

24 CCAG VIII 2, 162-165.

25 Delatte 1942, 237-288.

26 For a table of these correspondences taken from different texts, see Papathanassau 1999, 366; Greenbaum 2020, 369-370 and 373.

27 See Festugière 2006 (1944), 143, 147 and 153.

28 The zodiacal circle measures 360 degrees in all, divided equally between the 12 zodiac signs (30 degrees each). Each sign is further divided into 3 decans of 10 degrees each.

disease or a smaller part of the body than the body area governed by the corresponding zodiac sign (for example, Taurus presides over the throat area, and its three decans preside respectively over the tonsils, the throat, and the mouth-pharynx[29]). The fixed stars live instead in a sort of duality: on the one hand, each of them is made to correspond by the treatise to two planets, on the other hand, the correspondences of these with the zodiac signs are also known.[30] Here, too, the mechanism of associations is only partially consistent with the entire system (for example, one would expect that the stars made to correspond to Taurus correspond to Venus as a planet, but it is not only so).

If every celestial body, therefore, is responsible for a part of the human body or for one of its affection, this can be treated using the series of natural elements (plants, animals, stones) that represent a direct affiliation with that same star or planet. In this way, if the celestial body is disturbed by the passage of a second negative one or is in an adverse pattern, the plant or the other elements applied to the diseased or simply carried with the patients, strengthen the energy against the disturbed star. At the base there is therefore a mechanism of sympathy, or as Festugière[31] notes, of antipathy towards the opponent star. For the remedy to take effect, however, it is not enough to collect the right plant, it is also necessary to collect it at a precise moment. This varies depending on the treatise, but usually corresponds to the moment (month, day of the week, hour) in which the specific star to which the plant is connected reigns. Traditions, however, are not all unanimous in this regard and additional astrological requirements may be compulsory. For example, for the group of zodiac plants, the short sub-version of the first version emphasizes that each plant must be harvested when the sun is in the sign of Aries, and then immediately contradicts itself in the end by stating that the sun must be in the sign of the corresponding planet and the Moon in trine with the sun.[32] The long version, on the other hand, in addition to the exaltation of the sun, adds as requisites: depression of Saturn, home of Mars and trine of Jupiter.[33]

The astrological botanical treatises represent then a sort of crossroads between astrology, medicine / magic, and knowledge (and beliefs) on the plant world. In the Egyptian and then Graeco-Roman world, the latter had already found their place in the herbarium genre. By herbarium in antiquity, a subject for which Singer's work[34] is still fundamental, we certainly do not mean a collection of suitably dried plants, identified, and preserved on generally paper supports,

29 See Festugière 2006 (1944), 142.

30 Festugière 2006 (1944), 170.

31 Festugière 2006 (1944), 132-133.

32 CCAG VII, 232-233.

33 Friedrich 1968, 65-66.

34 Singer 1927.

but texts, sometimes accompanied by images, in which the individual plants were described and whose medical uses were reported. The structure of these "rubrics", has already been well described by Betrò,[35] and it included, after the name and its possible synonym, the habitat of the plant, the description of its individual parts (stem, leaf, flower, fruit, and seed, however never present all together), time and methods of collection, medical use, and any side effects.[36]

The first attestations of herbal texts were highlighted by Dawson[37] and then by Betrò.[38] These texts consist of chapters on the use of castor, which the scribe says to be extracted from an older text and which Dawson hypothesizes to have been an herbarium (P. Ebers §251: 47,15-48,3) and a gloss inserted in a more ancient medical text probably with the aim of the editor to clarify the name and identity of the plant unknown to him (P. Ebers §294: 51,15-19). In both cases, these first traces are in the Ebers papyrus and therefore date back latest to the early New Kingdom (18th Dynasty, approximately in the middle of the second millennium BC). To find further evidence of herbals, according to the present state of research, one must wait at least for the end of the Pharaonic era (30th Dynasty) or the beginning of the Ptolemaic one, when glosses quite similar to those of the Ebers papyrus appear in the Brooklyn ophiological papyrus (§66a and §99a[39]), also of a mainly medical topic.

A direct tradition for herbaria, both in Demotic and Greek, exists only in Roman times. Two copies of an indexed herbal, rather incomplete, have survived in Demotic, both from Tebtunis. Their fragments are scattered among different European collections. The first consists of the fragments of the Carlsberg 230 papyrus,[40] those of P. Tebt. Tait 20,[41] of P. Mich. inv. 6398f and PSI inv. 4160.[42] The second is instead composed by P. Carlsberg 310 + 311, PSI inv. I 91 + 110, P. Firenze ME 11922+11925 and P. Berlin P 23251 and was recently published by Ryholt.[43] Both are dated to the 2nd century AD. Two examples of Greek herbaria are equally known. The "*Illustrated Herbal from Tebtunis*", the fragments of which were edited over the years as they were recognized,[44] also from Tebtunis and datable to the 2nd century AD; and the herbarium of Antinoopolis (P. Johnson and P. Ant. III 124), dated instead to 4-6th

35 Betrò 1988; Betrò 2001, 147; Betrò 2015, 50 and 55-56.

36 Betrò 2001, 147; Betrò 2015, 50 and 55-56.

37 Dawson 1929, 52-7.

38 Betrò 1988, 74-76; Betrò 2001, 145.

39 Sauneron 1989, 91-2 and 120-121; Betrò 2001, 145; Betrò 2015, 52-53.

40 Tait 1991, 47-92.

41 Tait 1977, 67-69, pl. V.

42 Unpublished, see Ryholt 2019, 364.

43 Ryholt 2019.

44 Tait 1977, 94-6; Hanson 2001, 585-604; Ryholt 2013.

century AD, in the form of a code and published by Barns and Zilliacus.[45] Both are illustrated as opposed to the Demotic ones. There is finally an herbarium in Coptic language, on a parchment code, perhaps coming from Middle Egypt and dated to the 4th century AD, first published by Erichsen,[46] with new fragments added by Richter.[47] To this production we must add a series of glosses to which Betrò has dedicated attention,[48] and also attributable to herbaria (with perhaps some exceptions, see below). They are those of the Demotic magical papyrus of London-Leiden (col. XIV, 31-2; XXIV. 22-5, in Demotic language; verso, I, 1-6; verso, II; verso, IV, 10-9; verso, V, 14.6, with Greek and Demotic names and Demotic description; edition by Griffith and Thompson[49]). To this we can add the Greek gloss within a magical text, again highlighted by Betrò[50], on the plant κεντρῖτις, which has a similar structure to the others. More glosses will surely be published and discovered over time.

These texts represent the background on which we move. In trying to understand the points of contact between the "scientific" production of actual herbariums and the texts of a hermetic nature regarding astrological botany. Five short examples of plants have been selected below, whose names and uses are equally attested in both genera (although this may appear to be a fictitious modern distinction). These are: the "*dove-plant*", the "*scorpion tail*", the σεληνόγονον and its synonyms, the ἡλιόγονον and other plants associated with the sun, and the houseleek.

Case studies of plants

1. The dove grass (περιστερεὰ, περιστέριον/περιστερεών)

The rather curious name of this plant can be translated as "*dove plant*". The plant appears in the Coptic herbarium P. Carlsberg 500 (F vso, 5-14), where it is used crushed and mixed together with natron, sulfur, and incense to treat a skin disease that involves the formation of skin scales. The name, clearly of non-Egyptian origin, is a loan from the Greek term "περιστέριον / περιστερεών", literally "*dove*", but also used as a phytonym (Nicander, *Theriaka*, 860; Dioscorides, *De materia medica*, IV, 59-60). The attestations of the latter are not numerous (I have counted less than 80 attestations in the Greek medical authors in the TLG). The most complete description of the plant and its uses is certainly that of Dioscorides, who distinguishes two types of περιστερεών, described one after the other. In the first case (IV, 59) the plant (περιστέριον)

45 Barns – Zilliacus 1967, III, 182-183; Fausti 2004, 131-150; Leith 2006.

46 Erichsen 1963, 23-45.

47 Richter 2014, 154-194.

48 Betrò 1988; Betrò 2001, 145-6; Betrò 2015.

49 Griffith – Thompson 1904-1909.

50 Betrò 2001, 145-6; 2015, 54-55.

is described as an herbaceous plant with an unbranched stem and root and whitish leaves with dissected leaf margins. The plant is possibly the *Lycopus europeus* L.[51] In the second case (IV, 60), the name (περιστερεών) is used as a synonym for ἱερά βοτάνη, probably the verbena (*Verbena officinalis* L.), and it is what Nicander must have in mind, as he recommended it, among other things, against the bites of reptiles, as Dioscorides does. A certain confusion between the two is possibly attested in Plinius (*NH*, XXV, 105-107). He describes the uses of the *hiera botane*, which "*nostri verbenacam vocant*", but he also specifies that there are two kinds of this plant, even if someone does not distinguish them. Both plants mentioned by Dioscorides have healing or drying properties, even if in different ways: the first is used in a poultice with vinegar for erysipelas, and with honey, against putrid humors, and to heal wounds, even if old. The second instead cleanses the filthy sores, and then particularly effective against tonsil scabies and mouth ulcers. It is difficult to say which of the two dove-grass the Coptic herbarium refers to, since both could correspond to the use indicated by it. In the list of synonyms of Ps.-Dioscorides, the first is indicated as περιστερεών ὀρθή (IV, 59; "*the standing one*"), while the second as περιστερεών ὕπτιον (IV, 60; "*the low one*"). Noteworthy, the Greek author also reports the Egyptian names for both: the plants πεμψεμπτέ for the περιστερεών ὀρθή and πεμφεμφθάμ for the περιστερεών ὕπτιον, although it is not easy to find the possible correspondences in the attested Egyptian plants' names.

This nomenclature (ὀρθή/ὕπτιον) is also the same used in the Hermetic writings. The περιστερεών ὀρθή is mentioned as plant of the sign of the Taurus,[52] and of the second decan of Libra,[53] while the περιστερεών ὕπτιον, as a plant of Gemini[54] and of the third decan of Libra.[55] It is less clear instead which of the two περιστερεών is understood as the plant of Aphrodites,[56] and of the first decan of Pisces.[57]

The περιστερεών ὕπτιον is mentioned as the Gemini plant in the text of Thessalus[58] for its healing and cleansing effect, which are useful against callous lumps, cancers, excrescences and mouth ulcers. It therefore coincides with the plant of Dioscorides. As the plant of the third decan of Libra,[59] it is also

51 Beck 2017, 270.
52 CCAG VII, 232; Friedrich 1968, 83-92.
53 Pitra 1888, 288; Ruelle 1908, 266.
54 Friedrich 1968, 93-7.
55 Pitra 1888, 288; Ruelle 1908, 266.
56 CCAG IV, 135; CCAG VII, 233; CCAG VIII, 3, 161.
57 Pitra 1888, 274; Ruelle 1908, 274.
58 Friedrich 1968, 93-97.
59 Pitra 1888, 288; Ruelle 1908, 266.

indicated for the treatment of affections produced in the anus, haemorrhoids, as well as reported in the text that associates the plant with Aphrodite. In the latter case, where the name of the plant is not accompanied by any adjective,[60] the περιστερεών is considered useful, also for the lungs, for all skin diseases and growths concerning the part of the neck, including parotids, tonsils, and buboes. Finally as a plant of the first decan of Pisces[61] (here also without adjective), which holds the feet, it is recommended for treating abscesses that appear in this part of the body. The περιστερεών ὀρθή instead is mentioned as useful for ophthalmias and for ocular problems in Thessalus,[62] and for the affections of the urinary tract as a plant of the second decan of Libra.[63]

If we leave out the division into "ὀρθή" and "ὕπτιον", the association of the plant with these types of diseases, at least in the Hermetic writings, can find its explanation through a series of astrological correspondences. Venus, indeed, rules the sign of Taurus, which in turn is in charge of the neck area, but also rules the Libra, which instead is in charge of the kidneys and buttocks, so that the known medicinal properties of the plant are mainly employed to heal skin affections of these parts of the body. The other uses of the plant mentioned in the hermetic texts can instead be explained in other ways. Its employment for urinary tracts is because the second decan of Libra presides over this part of the body. Its use for the lungs is justified by the text itself, which associates the generating principle of breath with that of Aphrodite, goddess of birth,[64] while the use of the plant as a stimulant and aphrodisiac is easily understood with the fact that Aphrodite regulates the same aspects of life. Indeed the other versions (that of Thessalus and of the third series), although associate other plants to Venus planet, (the πανάκεια[65] and the σατύριον[66]), focus only on the aphrodisiac effects of the plants, and ignore others. The stimulating effect of the plant is also recognized by Dioscorides, who states that sprinkled on the banquet tables, it made the guests happier. The common euphoric effect and the cicatrizing use of the περιστερεών ὕπτιον and the plant of Aphrodites, leads us to consider the περιστερεών without the adjective mentioned for the latter, as identical to the ἱερά βοτάνη of Dioscorides and then to the plant of the third decan of Libra and of Gemini, a fact that is partly surprising as the latter is ruled by Mercury and not by Venus. A possible explanation is that the author of the text here assigned the first kind of περιστερεών to the sign of Taurus in

60 CCAG VIII, 3, 161.
61 Pitra 1888, 274; Ruelle 1908, 274.
62 Friedrich 1968, 83-92.
63 Pitra 1888, 288; Ruelle 1908, 266.
64 CCAG VIII, 3, 162.
65 Friedrich 1968, 239-254.
66 CCAG VIII, 2, 164.

accordance with the fact that they are both associated to Aphrodite, and then he assigned the second type just to next sign (Gemini), thus following an order possibly common also in herbals, like the one of Dioscorides. It is also difficult to explain the association of the plant (περιστερεών without adjective) as the first decan of Pisces, as neither the sign nor the part of the body (the feet) seem to be connected to Aphrodite. The indication against foot abscesses is aligned, however, with the cicatrizing or humor-cleansing use of this plant, of which a medical parallel is also known (Aetius XV, 17, l. 46).

The medicinal properties of the plant were then adapted to the system of correspondences between the astrological body and body part, while the latter added new applications (like for the lungs) unknown to the medical practices. Nevertheless, it is difficult to reconstruct the exact chain of these associations, which must not have been linear. A plant known as useful against skin diseases and mouth ulcers may have been firstly associated with the Taurus sign, which presides over this part. The latter is ruled by Venus, which also ruled Libra. The inputs of the associations may have followed also other ways: the euphoric properties of the plants also fit the field of life regulated by Aphrodite, while its cicatrizing activity may have also fitted the parts linked with the Libra sign. At the same time, the μελοθεσία system seems to have added to the properties of the plant the application for the lungs and the urinary tracts. The correspondences and possible reasons are summed in the table below.

Plant	**Text**	**Association**	**Use**	**Possible reasons**
περιστερεών ὀρθή	CCAG VII, 232 Friedrich 1968, 83-92	Sign of the Taurus	ophthalmias and ocular problems	Taurus is presided by Venus planet ?
περιστερεών ὀρθή	Pitra 1888, 288; Ruelle 1908, 266	Second decan of Libra	For the diseases of urethra and bladder	Libra is presided by Venus planet + parts of the body of the second decan of Libra

περιστερεών ὕπτιον	Friedrich 1968, 93-7	Plant of Gemini	Against callous lumps, cancers and excrescences and mouth ulcers	Medical reasons (?, correspond to Dioscorides's uses)
περιστερεών ὕπτιον	Pitra 1888, 288; Ruelle 1908, 266	Third decan of Libra	For the calluses and cracks Affections produced in the anus, haemorrhoids	Medical reasons (?, correspond to Dioscorides' uses) (See plant of Aphrodites)
περιστερεών	CCAG IV, 135; CCAG VII, 233; CCAG VIII, 3, 161	Plant of Aphrodites	For all skin diseases and growths concerning the part of the neck, including parotids, tonsils, and buboes Affections produced in the anus, haemorrhoids For the lungs	Medical reasons + parts associated with Taurus sign (sign of Aphrodites) Sexual parts (presided by Aphrodites) Aphrodites presides over the birth and breath
περιστερεών	Pitra 1888, 274; Ruelle 1908, 274	First decan of Pisces	Abscesses of the feet	Medical reasons + part of the body of Pisces

It would be interesting to know how the Greek name – among other things not too often attested in medical authors – had spread, and penetrated into Egypt, so as to end up being borrowed from the Coptic. Indeed, we do not know if the use of verbena spread only in the late period or was already earlier present in Egypt. Although the Egyptian name of the plant is not known,[67] and archaeobotanical remains of the plant are attested only for the predynastic period,[68] the species is part of the Egyptian flora,[69] and the names transmitted by that of Ps.-Dioscorides may reflect not just only a late use but also a previous one. Nevertheless, there is no yet direct evidence to affirm that the plant was, or was not in use already in the Pharaonic period. Even if present in a certain territory, indeed, a plant may be not necessarily exploited by the people living in it. In the end, it can be just observed that the way of employment of the plant in the Coptic herbal and the hermetic texts correspond to the Greek medical knowledge, as the name preserved in the herbal is of Greek origin.

2. The scorpion vetch (ⲥⲕⲟⲡⲣⲓⲟⲛ)

The Coptic herbarium also preserves a paragraph that has as its subject the "*scorpion plant*" (ⲥⲕⲟⲡⲣⲓⲟⲛ, with inversion of the pi and the rho, P. Carlsberg 500, E ro, 1-5), another name of animal inspiration and Greek origin. The remaining part of the text is unfortunately barely understandable: neither a real description can be reconstructed, nor a real medical indication, which allows us to make comparisons with other writings. The name, however, is quite explicit and permits us some considerations.

In the Greek tradition there are several names of plants that have as their root that of the name of the scorpion: σκορπιοκτόνον (Ps.-Dioscorides, IV, 190), σκορπιοιδές (Dioscorides, *De materia medica*, IV, 192), σκορπίος (Theophrastus, *HP*, VI, 1, 3 and IX, 13, 6; Plinius, *NH*, XXII, 39; *NH*, XX, 8; *NH*, XXV, 122), σκορπίουρον (Ps.-Dioscorides, IV, 190; Dioscorides, *De materia medica*, IV, 190). These are then taken up by the Latin authors.[70] It would seem logical to correspond the plant of the Coptic herbarium to the Greek-Latin σκορπίος, which is described in various points by Plinius (*NH*, XIII, 116; *NH*, XXII, 39; *NH*, XXI, 91; *NH*, XXV, 122 and XVII, 9), but also present in the herbarium of Ps.-Apuleius (49, 9) and Dioscorides (*De materia medica*, IV, 150). The latter designated at least 6 different species.[71] Even if it is not a completely valid method for the species of the hermetic treatises, as some of these are certainly foreign to the Egyptian flora (see below), among those

67 Germer 2008, 359.
68 Vartavan et alii 2010, 272.
69 Täckholm 1974, 454.
70 André 1985, 232.
71 André 1985, 232.

distinguished by André, the ones not native to Egypt can be excluded: the *Doronicum pardalianches* Jacq. is a western European (sub-Atlantic) species, as is the *Ephedra distachia* L., found in the north-western Mediterranean and the *Genista acanthoclada* DC, which also does not belong to the Egyptian flora. Therefore, *Coronilla scorpioides* Koch, *Ecballium elaterium* Rich, and *Heliotropium europaeum* L. remain the possible hypotheses. The latter has been already considered by Betrò[72] the best candidate for the plant named in the Coptic herbarium. Indeed the synonymy among the "scorpion" plants is frequent, but among those mentioned above, except apparently the σκορπιοιδές, all indicated also or just the heliotrope.[73]

Beyond the exact identification, the presence of the ⲥⲕⲟⲡⲓⲟⲛ in the Coptic herbarium and that of the σκορπίουρον in the writings of astrological botany seem rather suggestive, since the two names are synonyms in Ps.-Apuleius. Singer[74] had demonstrated a commonality between the latter and the Johnson papyrus, which in turn reuses part of the text of the Hermetic treatise of Thessalus.[75] In the Hermetic writings the σκορπίουρον appears associated with Libra, in the version of Thessalus,[76] but also with the second decan of the Scorpio.[77] In the first case (where two types of σκορπίουρον are recognized, again to indicate the rather blurred boundaries of its identity), the leaves of the plant are used in pills against dropsy, against elephantiasis, but also as a remedy for poisonous or large mammals (bear, wolf) bites. In the second case, it is used for the preparation of an amulet against warts and carbuncles in the private parts of men. The latter association can be explained at different levels: firstly, the name of the plant recalls that of the zodiac sign of Scorpio, which presides over the genital parts; secondly, the fruits of the heliotrope, if this identification is correct, were in fact already said to be useful against warts by Dioscorides (IV, 190). Regarding the use of σκορπίουρον against dropsy or elephantiasis, there are no other significant medical parallels to my knowledge. However, the association of the plant with Libra and therefore the kidneys, would suggest that its juice would help remove excess fluids characteristic of dropsy. Instead, its use against bites, also mentioned by Thessalus, is well explained by the sympathetic mechanism with the name of the plant and has parallels also in Dioscorides (IV, 190). The Greek medical knowledge seems then to have been applied to the μελοθεσία system, both playing with the homophony between the plant name and the

72 Betrò 1988, 99.

73 André 1985, 232.

74 Singer 1927, 43-48.

75 See Leith 2006.

76 Friedrich 1968, 124-136.

77 Pitra 1888, 289; Ruelle 1908, 266.

zodiacal sign and matching the medical properties of the plant to the part of the body presided over by the sign. At the same time, the iatromathematical texts add or preserve also other applications of the plant, which are coherent with the μελοθεσία system, but unknown to the medical knowledge or not transmitted by it to us.

Further, as in the previous case, the Coptic assimilated the name of this plant from the Greek language, but we do not know how much comes from pharaonic practices and how much was introduced later, since the use of the plant in the herbal is lost. Among the plants whose name is a synonym of scorpion, *srḳ.t* is known, but this, attested only once for the 25th Dynasty, does not seem to have anything to do with the ⲥⲕⲟⲡⲣⲓⲟⲛ.[78] It is indeed necessary to search for the Coptic precedent, ⲟⲩⲟⲟⲭⲉ ("*scorpion*"), *wḥˁ.t*, which is mentioned only once as *sm wḥˁ.t* ("*plant of the scorpion*") in Pap. Tur. 31 + 77, 4-5.[79] Minced in beer or wine it is recommended as a valid remedy for scorpion stings. The evaluation of the significance of this last datum remains in any case difficult, since the shape that the plant or a part of it may have inspired its name and a similar use could have then developed independently in two different cultures – also considering that *Heliotropium europaeum* L. is part of the Egyptian flora.[80]

3. The plants of the Moon

Among the glosses of the Demotic papyrus of London-Leiden, whose origin has been traced back to herbarium texts,[81] the plant of the σεληνόγονον makes its appearance (vso, col. I, 5). Its name is probably to be understood as "*seed/progeny of the moon*". This term is also apparently Greek, but there are few other attestations and almost all of a magical nature (except Aetius XII, 63, l.110). The σεληνόγονον, which follows the ἡλιόγονον in the Demotic text, is mentioned by Ps.-Dioscorides (III, 157) as a synonym for the παιωνία ἄρρην ἢ γλυκυσίδη, to be identified according to the description of the Greek author with the *Paeonia mascula* (L.) Mill. (particularly fitting is the comparison of its grains with those of the pomegranate). The plant is described as an herb that can be up to two spans tall, with many ramifications, leaves similar to those of walnut, a finger-thick root, a span long, astringent to the taste and white in color. It is recommended for women after childbirth, for the pains of menstruation and as a stomachic.

Also, this plant is not alien to the astrological botanical treatises, where, however, it is mentioned with this name (σεληνόγονον) only as a plant

78 Charpentier 1981, 606, n. 981.
79 Bardinet 1995, 478.
80 Täckholm 1974, 442.
81 Betrò 1988, 78-92.

of the second decan of Cancer,[82] an association that is not surprising as this sign is governed by the moon (see below). As such it is used in an amulet for affections of the lungs, which is in charge of both the decan and the sign of Cancer itself. In a magical text is also the only other known mention of which we are aware, that is the one in Pap. Louvre 2391 of the 3rd century AD, in a spell to learn the future; curiously next to ἡλιόγονον.

Otherwise, the σεληνόγονον is rather mentioned in the Hermetic texts with its synonym of ἀγλαοφῶτις as a plant of Selene. In the version of Thessalus,[83] this association, which appears to us to be self-explanatory by the name ("*shining light*"), also appears to be a subject to a broader and more unusual explanation by the author. The ἀγλαοφῶτις, glossed also as γλυκυσίδη or peony, is indeed said to perform the same movements as the moon: it grows when the planetoid is growing and decreases when this is decreasing. In turn, therefore, its medical use is subject to the same actions: it must be collected on a waxing moon when one wants that its action on the disease "*increase*" a certain body component, while it must be collected on a waning moon if the effect desired is the opposite. In general, however, Thessalus prescribes its various parts for curing tertian and quartan fever, for epileptics and in fumigation, to cast out demons. Epilepsy is indeed generally considered as an influence of the moon or of demons (Antiochus, *Fragmenta* in CCAG VII, 112; Ptolemaeus, *Tetr*., III, 15, 3).

The γλαοφῶτις mentioned by CCAG VIII, 2, 165, is instead glossed with the Latin *lunaria*. Given that the text does not concern medical prescriptions, but that its use is limited to favoring luck and increasing money, we can well think that in this case we are talking about the *Lunaria annua* L.. Its fruits are similar to coins and to a full moon, a similarity which must have favored the sympathetic association of this plant both with the satellite star and with its ability to increase money.

The γλυκυσίδη, which we have already mentioned as a synonym of the γλαοφῶτις, and therefore of the σεληνόγονον, is further mentioned as the plant of the third decan of Scorpio,[84] which presides over the testicles. This association appears more difficult to explain, unless one thinks that it has influenced, as in a word play, its synonym "σεληνόγονον", where γόνος, can also indicate the genitals (LSJ 357).

On the whole, therefore, as for the others examined, the medical uses indicated in the botanical astrology treatises regarding the σεληνόγονον and its synonyms, do not correspond to those of the tradition of the "classical" Greek authors, who indicate the plant above all as an astringent, emmenagogue or

82 Pitra 1888, 287; Ruelle 1908, 258.

83 Friedrich 1968, 207-214.

84 Pitra 1888, 289; Ruelle 1908, 268.

useful for the stomach. The uses of astrological treatises, on the other hand, seem to respond to internal principles (such as that for the testicles) or to a tradition (magical-popular?) that have come down to us in different ways.

It must be also remembered here, in the end, a second tradition that associates the κυνόσβατος as Selene's plant.[85] Such a relationship between a kind of rose and the moon, is further shared by the list of plants of PGM XIII, 25, where the rose (ῥόδον) is associated with Selene, possibly because of the similarity of the rose and the peony. In PGM I, 249, the plant ἀγλαοφῶτις is indeed glossed as ῥόδον. The specific origin from Syria (or Arabia) that the text of Thessalus[86] mentions for the peony is also suggestive for some species of rose. Whether a rose or a peony, both genera are foreign to the Egyptian flora,[87] and the influence of external cultures that were changing and expanding knowledge of the plant world in Egypt is therefore evident here.

4. The plants of the Sun

As mentioned, in the glosses of the Demotic papyrus of London-Leiden, the σεληνόγονον is preceded by ἡλιόγονον (verso, col. I, 4), to be literally translated as the "*sun seed/progeny*" plant. The ἡλιόγονον is mentioned only here, as a gloss, and, as said, in only one other place: in Pap. Louvre 2391 dated to the 3rd century AD, in a spell to know the future, right next to the σεληνόγονον. Betrò[88] has further suggested to break down the term and to see in the γόνος ἡλίου, mentioned in PGM XII, 434, the same plant. The γόνος ἡλίου is made to correspond to the white hellebore by the ancient text, the latter identified today however not with the *Helleborus niger* L.[89], but with *Veratrum album* L.[90] The difference (black/white) consisted according to Theophrastus (*HP*, XI, 10) in the color of the root. However, the complete absence of the genera *Helleborus* and *Veratrum* in the Egyptian flora[91] is striking, which could indicate how the use was due to foreign or Greek influence.

Although a ἡλιόγονον never appears in the hermetic writings, there are a series of phytonyms composed with ἡλιό-, or plants associated with the sun composed with -γονον as the second element. The first includes ἡλιοσκόπος and ἡλιοτρόπιον, respectively Helios' plant[92] and Kronos' or Helios' plant.[93] The

85 CCAG IV, 6; CCAG VII, 235; CCAG VIII, 3, 160.

86 Friedrich 1968, 207-208.

87 Absent in Täckholm 1974.

88 Betrò 1988, 84-85.

89 Betrò 1988, 85.

90 LSJ 535; Beck 2017, 303 and the description of Dioscorides, *De materia medica* IV, 148.

91 Absent in Täckholm 1974.

92 CCAG VIII, 2, 163.

93 CCAG VIII, 2, 163; Friedrich 1968, 199-206.

first, whose name has also very few attestations, could be translated as "*which looks at the sun*". It appears in CCAG VIII, 2, 163, where it is glossed with the late Latin τζιρασόλεμ, sunflower, "*since when there is the sun, its stem turns*". The text does not report any medical indications, but only a series of amulets in which the flower and the fruits (seeds?) of the plant are wrapped – each time in a different animal skin to create an amulet that leads to discovering treasures or to obtain respect for kings and other great men. However, it seems that the hermetic text, as in the case of the *lunaria*, has made a shift in meaning with respect to the Greek medical authors, who used the name to designate an euphorbia (Galen XII, 143, l.4; Oribasius, *Coll. Medicae* VII, 26, 106).

The ἡλιοτρόπιον, on the other hand, is more widely attested in Greek medical literature. It appears as a plant of Helios in the version of Thessalus.[94] He states that there are several varieties, among which κιχόριον is the best. It recommends its use for heart and stomach problems, for tertian and quartan fever and for cephalgia. At least its application to the heart is justified from the astrological point of view by the fact that the Sun presides over Leo, and that this in turn rules the heart and chest. The association between the ἡλιοτρόπιον to the κιχόριον is already present in Theophrastus (*HP* VII, 9.2), who however consider them to be two distinct plants. CCAG VIII, 2, 163, instead associates the ἡλιοτρόπιον with Kronos. In this case there are no real medical prescriptions, but magical uses, which however seem to emphasize its sedative and narcotic properties. Although the identification of κιχόριον varies, the one of ἡλιοτρόπιον as *Heliotropium europaeus* L. seems to justify the narcotic effects, and its use as a remedy for headache and fevers mentioned by Thessalus.[95] The same use against tertian and quartan fever is found mentioned by Dioscorides (IV, 190), who, however, with no little confusion for us moderns, considers it synonymous with σκορπίουρον.

Among the names in -γονον, the χρυσόγονον, plant of the second decan of Leo[96] should be mentioned. Because of its association to this sign ruled by the Sun, and the coloristic reference between the metal and the star. One would be tempted to approach it to the ἡλιόγονον, and indeed this identification appears in the version of the manuscripts used by Pitra.[97] Otherwise, the πολύγονον, literally "*with many children*" is the plant that the hermetic tradition most frequently associates with the sun,[98] with the explanation that the star, similar to the plant that must be prolific, is the archetype and the father of all things. The plant, therefore, finds its logical and sympathetic medical action

94 Friedrich 1968, 199-206.

95 Friedrich 1968, 199-200.

96 Ruelle 1908, 260.

97 Pitra 1888, 287.

98 CCAG IV, 134; CCAG VII, 233; CCAG VIII, 3, 159-60.

for the genitals and as an aid to conception. The same tradition, however, also provides another synonym, that is χαμαιλέων, which is worth dwelling on. Its association is pseudo-etymologically motivated, due to the fact that the sun governs the parts (τά μῆλα, lit. *limbs*) of the sky and the earth. Here we do not follow the idea of Festugière,[99] albeit interesting, according to which the para-etymology of the name would be based on χαμαι-λέων, in which the first part, χαμαι "*on the ground*", would indicate the earth, while the second "λέων", "*Leo*, or *lion*", would indicate the sky as the Sun has its home in the sign of Leo. The presence of the version "τά μῆλα" in the Napolitano manuscript (CCAG IV, 134) is interesting compared to that of τά μέρη ("*the parts*") preserved in the other two versions (CCAG VII, 233; CCAG VIII, 3, 159-60) since the latter, although apparently present a clearer and more readable text from the grammatical point of view, would not explain how the scribe of the Napolitano code was able to intervene in the text by changing τά μέρη in τά μῆλα, worsening the understanding. The scribe, indeed, does not seem particularly skilled in Greek and the text of the code has several grammatical errors. It is probable to think thus instead, that he has kept the original variant of τά μῆλα while the others have "trivialized" the text making it more understandable.

Another clue is in fact given by the fact that the text of Cyranides (I, 16, l.3) brings χαμαίμηλον as a synonym of πολύγονος and not χαμαιλέων, the name with which the para-etymology of "τά μῆλα" (Festugière) would certainly be clearer, but that the scribe of the Napolitano code did not know as he too writes "χαμαιλέων". It therefore seems more likely that χαμαίμηλον / *chamaimelon* was the original word of the name and that once it was corrupted, no longer understanding the origin of para-etymology, the scribes changed the more difficult τά μῆλα to the easier τά μέρη.

It is interesting to note that precisely among the Greek glosses of the Demotic magical papyrus of London-Leiden (verso, col. II, 1-6), there appears a plant with a similar name, χαμεμελον, and that this coincides with what is suspected to be the original variant. Furthermore, the χαμεμελον is also indicated as the plant of the third decan of Capricorn for the creation of an amulet and this again seems to suggest this as an original form also for the plant of Helios. As we have seen, in these texts, the same plant appears often several times in multiple associations. The reason for the association with Capricorn could be explained by the fact that this is governed by Kronos and by the assimilation of this with Helios (see below Ostracon Strasbourg D 251). If so, the gloss of the Demotic papyrus would be more precise than medieval and renaissance manuscripts.

In the London-Leiden papyrus (verso, II, 1), the χαμεμελον is in its turn translated into Demotic with the name of "*clean-straw*" (*thw w'b*), which does not appear very clear and perhaps refers to the disinfectant-purifying

99 Festugière 2006 (1944), 148, n. 2.

properties of the plant. A phytonym, *ṯḥw3*, appears frequently in medical papyri, and is used as an anti-inflammatory against swelling, to treat snake bites, for stomach diseases and as an apotropaic, but it is identified as "pea" (*Pisum sativum* L.), albeit the identification is uncertain.[100] A further similar name, *ṯḫw*, is instead attested just twice in medical papyri, and it might be an aromatic plant since its fruits are used for the preparation of the *kyphi*.[101] But it is more likely that the Demotic name *thw* comes from the Pharaonic phytonym *dḥ3*, translated as "*straw"*,[102] used in medical papyri for a problem concerning the knees. We do not know, however, if the Demotic designation may still indicate the same plant, both because the translation as straw appears generical and because the London-Leiden papyrus does not specify any use of the plant.

In Greek, χαμαίμηλον is named by Dioscorides (*De materia medica*, III, 137) as one of the synonyms for ἀντθεμίς, due to its smell similar to that of the apple, and is perhaps to be made to coincide with *Matricaria chamomilla* L. The identification, however, as it can be seen, is made complicated by this series of apparent synonyms among the texts and by the fact that the *Asteraceae* family, if this is its right location, greatly favors the confusion between species and makes a more precise identification impossible. In this case, however, the idea of a *Compositae* would remain suggestive, as the morphology of these flowers with a large central yellow circle and ligulate flowers that extend like rays outside, could have favored the association with the sun. The idea, however, contrasts with the equivalency of χαμαίμηλον with the πολύγονος, the other synonym given by the Hermetic texts for it. The latter, indeed, seems to belong to another family (*Polygonaceae*), unless there are two, originally different traditions (and therefore two plants) that became merged over time. Otherwise, a further solution would be to admit that the πολύγονος has nothing to do with the plant typically mentioned by the Greek authors and is simply a sort of an "encrypted" name referring to the creative power of the sun.

5. The houseleek

The Hermetic tradition associates with Kronos (the planet Saturn) not only the ἡλιοτρόπιον, but also the ἀειζώον, the houseleek (lit. "*ever-living*"). From this succulent plant, the juice is extracted and is recommended by Thessalus[103] to treat podagra in its various aspects. The association of ἀειζώον to Kronos could perhaps be explained by the similarity of its name to Χρόνος and then with the meaning of "*time*" of the latter and of "*ever-living*" of the plant. Clear is indeed Cicero's statement (*De natura deorum*, II, xxv) according

100 Germer 2008, 155-157.

101 Germer 2008, 157.

102 Germer 2008, 163.

103 Friedrich 1968, 215-218.

to which Kronos was only a variant of χρόνος, the time. Regarding its use, Kronos in iatromathematica, as a planet, of a dry and cold nature, presides over the podagra, as well as the legs, testicles, nerves, discharges, inflammation, bladder, cold and numerous other diseases (Vettius Valens, *Anthologiae*, I, 1, 13). Furthermore, it is noted how the use of ἀειζώον against podagra was also already indicated in the medical literature by Dioscorides (IV, 88-89).

Among the various synonyms that Ps.-Dioscorides (IV, 89 and 90) associates with the ἀειζώον is that of πετροφυές, "*growing stone*", which he uses as a synonym for both the ἀειζώον "*small*" (IV, 89), distinct from the "*big*" one (IV, 88), and for the third type (IV, 90). The first is identified as *Sempervivum tectorum* L.,[104] the second as a plant of the genus *Sedum.*[105] The name of πετροφυές recalls one preserved in the Demotic herbarium (P. Carlsberg 230 fr. 4 + 5, col. x + 2, 6-9), which dedicates indeed a column to a plant called *jny-pꜣ-nty-rt*, literally "*the stone that grows*". Even without this comparison, it is very clear that it must be a succulent plant since the papyrus also mentions the specific use of the juice. Excluding the *Lithops* spp. (also commonly called "*living stones*"), a genus of succulent plants that take their name because of their extreme similarity to a stone, but which are native to South Africa, it would be easily suggested for "*the-stone-that-grows*" a plant belonging to the *Crassulaceae* family. Among those present in Egypt, the *Sedum sempervivum* Raymond-Hamet (= *Rosularia lineata*), whose common name in English is stonecrop, is the one that is perhaps the most probable. This particular coincidence would seem to reinforce the idea of a common origin between the scientific and templar Egyptian environment and the list of synonyms of Ps.-Dioscorides (see below).

Curiously, through other ways, Betrò[106] had already proposed the identification of the κρινάνθεμον with a similar species, the *Sempervivum arboreum* L. The κρινάνθεμον appears together with the plants mentioned above, again among the glosses of the magical papyrus of London and Leiden (verso, col. II, 3). Although it is mentioned by Ps.-Dioscorides (III, 122), as a synonym of ἡμεροκαλλές, which Lily Beck[107] identifies instead with *Lilium martagon* L.. Hippocrates (*De natura muliebris* 32.7) indicates κρινάνθεμον as a rustic plant that grows on the roofs of houses, a characteristic attributed by Dioscorides to the "*small*" ἀειζώον (IV, 89). This suggests its identification as the *Sempervirum tectorum* L., a plant so rustic that it grows and resists practically everywhere and whose ability to grow on roofs has inspired its second name in the modern nomenclature. Further, the use suggested by Hippocrates, that

104 Beck 2017, 285.
105 Beck 2017, 285.
106 Betrò 1988, 87.
107 Beck 2017, 234.

is as help to release the uterus (as an aid in childbirth or as an abortion), appears also similar to the one of the Demotic papyrus, where "*the-stone-that-grows*" is used to give birth. The fact that in P. London-Leiden (verso, col. II, 3), the κρινάνθεμον is glossed in Demotic as *mn-pȝ-nfr-r-ḥr-y,* "*none is more beautiful than me*", is not necessarily against this identification, since, as it has been seen, it is possible that the κρινάνθεμον designated different but similar species, and that more names could refer to them. But the possibility proposed by Betrò for this gloss of the London and Leiden papyrus is indeed offered as a fortunate coincidence in this framework of commonality with hermetic plants. In this case, however, it is only by speculation that we can suggest that Greek medical knowledge (the application of the plant) may have been received from the Egyptian environment and the Demotic herbarium. The Egyptians themselves could have already reached the same use by independent means.

The role of the hermetic plants in the history of herbals

In this framework of commonality in the examples discussed, we want to offer here some ideas for reflection on the possible reciprocal influence of the texts of the herbalist tradition with the hermetic treatises of astrological botany, which are formerly seen as two distinct genres, though we do not claim to exhaust the aspects of such a complex topic in a systematic way in this paper.

1. Names (models in -gonon, animals, blood of, plant of x)

One of the characteristics that we have recalled in the study of these individual plants is the fact that the phytonyms that appear in hermetic texts or in herbaria are sometimes little or almost not attested in the corpus of Greek literature in the broad sense. This is true, for example, for the σεληνόγονον or for the ἡλιόγονον. Sometimes, instead, the plant is known in the Greek medical tradition, but with a different name, as it could be in the case of the houseleek. At other times, instead, they are well-known plants. One could therefore question the reason for the paucity of mentions for some names in other types of texts and the reason for such specificity. A first hypothesis can be formulated considering the particular function of phytonyms in hermetic or magical texts and on the very way in which they are formed or derived.

One of the recurring patterns is that of the names in -γονον of which the first part is made up of the name of a star (such as the σεληνόγονον or the ἡλιόγονον). This scheme gives the plant a direct affiliation to the star to which it is connected and therefore works both on the epistemological level, as it "organizes" the knowledge of the specific plant in a wider taxonomic system (see below), and on the "medical-magical" level, as the names of the plants recall the fact that they participates in the very essence of the star, and the patient benefits from this participation in the treatment of a specific disease. The awareness of the etymological meaning seems proven by the fact that

in PGM XII, 432, as already noted by Betrò,[108] this etymology of ἡλιόγονον is reactivated and decomposed in the analytic sense as γόνος ἡλίου. This pattern is not attested only for the names of the sun and moon. The list of Ps.-Dioscorides indeed handed down to us the synonym of γόνος Ὥρου for πράσιον (III, 105). Nevertheless, the most precious witness remains a list of "encrypted" names of plants said to be used by priests to keep the masses away (PGM XII, 401- 44), in which the γόνος ἡλίου is mentioned. In addition to the latter, the following are mentioned: γόνος Ἑρμοῦ (PGM XII, 418) for the dill; γόνος Ἡρακλέους (PGM XII, 433) for the rocket; γόνος Ἡφαίστου (PGM XII, 438) for the three-leaved plant (τρίφυλλον); γόνος Ἄμμωνος (PGM XII, 439) for the κρινάνθεμον and the γόνος Ἄρεως (PGM XII, 440) for the fleabane. It can be noted as many of the plants recorded in this list are the same present in the herbalist tradition. In addition to the κρινάνθεμον and the γόνος ἡλίου, the σκορπίουρον (PGM XII, 424) and the χαμαίμηλον (PGM XII, 442) are also present in the list and have been above discussed, while the τρίφυλλον (γόνος Ὥρου) also appears as a plant of the Taurus in one of the hermetic treatises (CCAG VIII, 2, 159). Further, as appearing both in this list and in herbals, it can be mentioned the lettuce (θρίδαξ ἀγρία, PGM XII, 434) appearing as "*the plant of the falcon*" in P. Carlsberg 500, A, verso, 8; the κόνυζα (PGM XII, 438), probably the plant of Anubis in P. London-Leiden, XIV, 31- 2[109]); the τιθύμαλλον (PGM XII, 441), present in P. London-Leiden verso, col. I, 7-11; the two ἀνθέμιον (PGM, XII, 423 and 426), which can be compared with the series of -άνθεμον flowers in P. London-Leiden, verso, col. II, 1-6; and the χρυσόσπερμον (PGM XII, 443) to be compared with χρυσόγονον (see above).

A similar system, and in a certain sense more complete at least in its transmission, is the one in the list of synonyms of the Ps.-Dioscorides, which preserves the names used by "προφῆται", to be likely understood as "encrypted" names used by Egyptian priests.[110] Here the plants are systematized in a series of correspondences with a god or an animal, according to the scheme αἷμα + genitive of the theonym or animal name (these are also attested in the list of PGM XII, 401-44). We therefore have for theonyms:

108 Betrò 1988, 85.

109 See Betrò 1988, 78-81.

110 Pommerening 2016, 98-103.

Ps.-Dioscorides	**PGM XII, 401-44 (P. Leid. J 384)**	**Hermetic texts**	**Herbals**
αἷμα Ἄρεως (= κρινάνθεμον*, (III, 102), houseleek or ἄσαρον*, (I, 10))	γόνος Ἄμμωνος (= κρινάνθεμον)	ἀείζῳον? (Thessalus, II, 3; associated to Kronos)	κρινάνθεμον (P. London-Leiden, verso, col. II, 3)
αἷμα Ἡρακλέους (= κρόκος (I, 26) or for κενταύρειον τὸ μέγα (III, 6-7) or κενταύρειον τὸ μικρόν (III, 7))			
αἷμα Τιτάνου (= θρίδαξ ἀγρία or ἱεράκιον* (II, 136)), wild lettuce	θρίδαξ ἀγρία (PGM XII, 434)		ϯιμ ⲛⲃⲡⲃⲛⲕ, "*the plant of the falcon*" (P. Carlsberg 500, A, vo, 8)
αἷμα Τιτάνου (= οὐρὰ σκορπίου*, (IV, 33)), heliotrope (?)	σκορπίουρον (PGM XII, 424)	σκορπίουρον (Thessalus, I, 7, Libra; Pitra 1888, 289, Scorpio)	ⲥⲕⲟⲡⲣⲓⲟⲛ (P. Carlsberg 500, E ro, 1-5)
αἷμα Ὥρου (= σέλινον κηπαῖον* (III, 64))			
αἷμα Ἰασίωνος (= βαλλωτὴ* (III, 104)), black horehound		βαλλωτὴ (CCAG VIII, 2, 160, Leo)	
αἷμα Ἀπόλλωνος (= σκόρδιον* (III, 111)),			
αἷμα Ἀθηνᾶς (= χαμαίπιτυς (III, 158)),			
αἷμα Ἑρμοῦ (= περιστερεὼν ὀρθός*, (IV, 59)), vervain		περιστερεὼν ὀρθός (Thessalus, I, 2, Taurus; Pitra 1888: 288, Libra)	ⲡⲉⲣⲓⲥⲧⲉⲣⲉⲁ (P. Carlsberg 500 (F vo, 5-14)
αἷμα Τυφῶνος (= λάπαθον* (II, 114))			

* Names for which Ps.-Dioscorides gives also the "*Egyptian*" name.

Regarding the animals instead we have:

Ps.-Dioscorides	PGM XII, 401-44 (P. Leid. J 384)	Hermetic texts	Herbals
αἷμα ἴβεως (= κυνόσβατον* (IV, 33)), rose		κυνόσβατον (CCAG IV, 6; CCAG VII, 235; CCAG VIII, 3, 160, Selene)	σεληνόγονον (P. London-Leiden, verso, col. I, 5)
αἷμα γαλῆς (= σκολοπένδριον (III, 134) or for the περιστερεὼν ὀρθός* (IV, 59)), vervain		περιστερεὼν ὀρθός (Thessalus, I, 2, Taurus; Pitra 1888, 288, Libra)	περιστερεὰ (P. Carlsberg 500 (F vo, 5-14)
αἷμα αἰλούρου (= στρατιώτης ὁ ἐν τοῖς ὕδασιν* (IV, 101))			
αἷμα κροκοδείλου (= ζῳόνυχον* or λεοντοπόδιον* (IV, 133)), *Leontice leontopetalum* L. (?)		λεοντοπόδιον (Pitra 1888, 287 and Ruelle 1908, 260, first decan of the Lion)	
αἷμα ὄνου (Αἰγύπτιοι)* (= πτέρις; προφῆται Ἑρμοῦ βάσιν, (IV, 184))			
αἷμα ταύρου or γόνος Ὥρου (!) (= πράσιον* (III, 105))[111].			

* Names for which Ps.-Dioscorides gives also the “Egyptian” name.

111 The latter is also a synonym for the βαλλωτὴ (Ps.-Dioscorides, III, 104), associated to the sign of Leo (CCAG VIII, 2, 160).

Other synonyms of the list of Ps.-Dioscorides seem instead to escape this system of names of deities / animals: αἷμα ὀφθαλμοῦ for ἀναγαλλὶς (II, 178); αἷμα πυρετοῦ for the κρότων (IV, 162); αἷμα ἀποκαθημένης for the λυχνὶς στεφανωματική (III, 101); and αἷμα ἀνθρώπου for the ἀρτεμισία μονόκλωνος (III, 113). At least for the first, however, one can think of an "encrypted" name for the moon or the sun (as deities in charge of the eye), while for the second one can think of a correspondence with Sirius and the beginning of summer.

This system also allows us some more general considerations. The names formed with the theonym recall first of all that direct affiliation already earlier noted between plant and divinity and therefore correspond primarily to both epistemological and medical-magical reasons. With respect to the names of the stars, however, the only direct correspondences are here between the names of Ares and Hermes, while the other synonyms refer, at least apparently, to a wider system, of which the Egyptian derivation is evident at least for the name of "*blood of Horos*". We can wonder indeed if and in what way this system corresponded or knew that of the planets: for Typhon one can imagine its correspondence to Seth (and therefore to Ares?), Heracles to Kronos / Chronos; Apollos perhaps to Helios, but there is more difficulty with Iason, Athena and Titan and it will be more appropriate to consider them as they might have belonged to two distinct schools. Similarly, the system of animals can be partly made to correspond to that of the deities: ibis for Thot / Hermes; the cat for Bastet /?; the crocodile for Sobek/?; the donkey for Seth / Typhon; the bull for different deities. Also in this case, it must be underlined the Egyptian specificity of some species, such as the crocodile and the ibis; which better indicates the environment in which these synonyms must have been born. Moreover, most of these names of the Dioscorides' list also possess the Egyptian synonym (marked with * in the tables), that is their name in Egyptian language more or less transcribed and differently corrupted in Greek, from which only rarely is it possible to recognize a direct antecedent in the Egyptian language. The Egyptian names are not reported for all the plants of Dioscorides' work, but the high correspondence also seems to testify that most of these must actually have been present and known in Egypt during the Graeco-Roman era. Even more interesting to note is the fact that many of the plants of this system are made to correspond in the Dioscorides list to one of the plants of the hermetic tradition and / or indeed also present in the herbaria as noted above, to underline a common environment (perhaps templar) for the formation or circulation of these texts. We can also ask ourselves if these synonyms that appear quite curious as names of plants were not just an "encrypted" method to preserve a "mystery" knowledge of these plants, perhaps of ritual use, and the introduction of the plants' list in PGM XII points indeed in this direction (see below). If the correspondence with the god appears evident enough, the one with its corresponding animal (?), could perhaps represent a different layer of encryption. The name of αἷμα πυρετοῦ, among others, if we are right, seems indeed particularly "encrypted".

For sake of completeness, it must be underlined that the Demotic taxonomy system already knew similar correspondences, in the shape of compound phytonyms, such as *s3* + divinity. It can be brought as evidence *s3*-

Ỉs.t (*protection of Isis*: Charpentier 1981, 889; DG 403; CDD, s, 22), *s3-n-Ỉtn* (*protection of Aton*, Charpentier 1981: 890), both names of plants, and *s3-n-Ptḥ* (*protection / amulet of Ptah*, DG 403; CDD, s, 22). Similar formations are further known with *sym* ("*plant*"): *sym-n-Ỉmn* (CDD, s, 210; DG 430; Charpentier 1981, 910, "*plant of Amon*") and *sym-n-Ỉnp* (CDD, s, 210; DG 430; Charpentier 1981: 910 "*plant of Anubis*"). The importance of this system, however, mainly emerged in the Graeco-Roman age, even if in the Pharaonic period, associations between a natural element and divinity were already part of scientific knowledge (see below).

Slightly different instead may be the origin of the animal names we noted in the case studies above, even if the plants themselves are still linkable with the herbal and Hermetic field. Names such as "περιστερεὼν", "σκορπίουρον", or "ἱεράκιον", the latter not reported here but corresponding to the ϯιϻ ⲛⲃⲡⲃⲛⲕ, "*herb of the falcon*", of the Coptic herbarium (P. Carlsberg 500, A vo, 8-B ro, 10), do not seem to properly respond to a system of "encrypted" animal-divinity (-astro) correspondences, but appear as names that we could define, albeit probably improperly, "popular". Improper because this difference between scientific literature and common names is felt today just because of the development of a specific taxonomy and nomenclature that corresponds to a science, the botanical one, now separate and divided by the knowledge and beliefs of a non-specialist culture. It is clear, however, that at the origin of these names of animal-inspired phytonyms, there is no knowledge of an iatromathematic character, but observations on the shape or ecology of these plants. Thus, the σκορπίουρον has the inflorescence or the fruit in the shape of a scorpion's tail according to its identification,[112] the ἱεράκιον is loved by hawks to sharpen their sight (Plinius, *NH* XX, 60), the περιστερεὼν is appreciated by doves (Dioscorides, *De materia medica* IV, 59). That the Hermetic literature has further played on these names to associate the σκορπίουρον with the second decan of the scorpion seems a next step. The idea of "popular" names also arises from the fact that names such as "*colombina*", "*scorpion tail*" are still common names of these plants, just as they still are animal-inspired names for many other plants. It is further known as some of these were surrounded by magical traditions, which Plinius often dismissed as nonsense. The "περιστερεὼν" for example, that is the verbena, had to be collected with the left hand without the sun or the moon seeing the operation, after tracing a circle with iron around it and throwing honey and combs (*HN* XXV, 105-107). The relationship between magic and medicine in these educated authors was

112 The inflorescence if identified with the heliotrope, or the fruit if identified with the *Coronilla scorpioides* Koch (see above).

often controversial, as well as in Galen.[113] This third point, that is the "popular" substrate, could be a first explanation about why these phytonyms, often particular, were poorly attested in normal Greek literature, together with the epistemological and magical reason and the "cryptic" needs of this type of knowledge.

It should be also emphasized that these systems appear to be different and diversified and sometimes in contrast with each other. Indeed, they probably had to belong to different competing schools in the hope of perhaps attracting a greater number of customers. In this regard, the synonym Ἑρμοῦ βάσιν, literally "*foot of Hermes*", reported by Ps.-Dioscorides (IV, 184) for πτέρις seems to be connected with the plant Ἑρμοῦ δάκτυλον sometimes mentioned in medical papyri (PGM II, 76; III, 468; V, 212). One might wonder if a further "hermetic" school here did not have fun encrypting the names of plants, making them correspond to every part of the god's body.

The reasons for the association of a plant with a planet or a zodiac sign or a star can be different. In addition to the assonance of the name of the vegetable with that of the star (see λεοντοπόδιον, "*feet of the lion*", the plant of the first decan of the Lion[114]), which can partly justify in these texts the need to use a specific synonym over another, one of the reasons of the association, which is also a practical necessity, is that the plant (or part of it) had to be available at that precise moment of the year in which according to the hermetic text it was to be collected. This of course is particularly true for the zodiac signs, as the plant had to be usable in the month in which the sun was in the specific sign. A feature that, even within a collection practice outside of iatromathematica, must have contributed to creating a sort of relationship between the plant, the period of the year and therefore the dominant star or constellation. Secondly, the plant still had to correspond to medical needs, that is, it had to have specific properties. Indeed, it has been seen how many of their uses, beyond that they correspond to specific parts of the body over which the sign or planet presides, were already known and handed down by "classical" medical authors such as Dioscorides, indicating that the knowledge of these properties should somehow pre-exist their hermetic use (even if for some cases we have not found precise medical parallels and in these the significance of sympathy between the plant, the star and the part of the body, could have played a more relevant role). Indeed, other reasons for associations correspond to mechanisms of sympathy, even if they start from empirical observations of a different nature. There are therefore morphological reasons, such as the similarity between the plant or one of its parts and the star, as hypothesized for the *lunaria*; or physiological reasons such as the

113 see Papathanassiou 1999, 360; Greenbaum 2020, 364-367.

114 See Pitra 1888, 287 and Ruelle 1908, 260.

movement of the peony or heliotrope that move following its own star. Thus the mechanisms of sympathy constitute an intertwined and rather refined complex of knowledge based on empirical and not trivial observations. Furthermore, the same mechanism, as already mentioned, underlies the use of that specific plant in relation to its star or zodiac sign. All these mechanisms are operating in the associations of plant-celestial bodies discussed before, without that it is always possible to draw a neat line between them.

2. Some notes for a transmission of the herbarium texts

The commonality of specific phytonyms between herbarium texts and astrological botanical treatises does not seem insignificant. Already Betrò[115] had underlined on the basis of Leith[116] some points of contact between the herbalist and the hermetic culture. Furthermore, as mentioned, the limited presence of some of these names only to magical texts and their extraneousness to other types of literature (with the consequence of knowing few attestations), and the similarities with the "προφῆται" system handed down from the list of Ps.-Dioscorides push us further to ask ourselves if and in what way these types of texts could be contaminated.

It was recalled that the first sure traces of herbal texts with its fixed components of name, description of the plant and use, are attested in Egypt as early as the New Kingdom, therefore around the middle of the second millennium BC. Their presence as glosses within a medical papyrus (P. Ebers) already seems to be able to place this type of production within the templar environment or in any case of specialized libraries, where both these texts (herbal and medical) had to be produced and transcribed. Subsequent glosses date as early as the end of the Pharaonic period – beginning of the Ptolemaic period. These too are transmitted in a medical recipe book that deals especially with remedies for snake bites (the Brooklyn ophiological papyrus, 66a and 90a[117]). Also, in this case it could be assumed that it came from a templar or specialist library, but its context unfortunately remains unknown.[118] All these glosses do not have any element that can be defined as "magical" and even the phytonyms fall within the largely triconsonantal structure of the Egyptian language (although Sauneron[119] hypothesized for the plant *jṯr* mentioned in the Brooklyn ophiological papyrus a possible origin from the Bedja language).

When it is possible to resume the thread of herbal production, that is already in the Roman era (2nd century AD), with herbaria in Demotic and Greek

115 Betrò 2015, 57-59.

116 Leith 2006.

117 Sauneron 1989, 91-92 and 120-121.

118 Sauneron 1989, vii.

119 Sauneron 1989, 121.

languages, the panorama appears more varied. In the first place, compound phytonyms (such as "*growing stone*") and those of animal inspiration abound.[120] As mentioned, we need to think first of an internal development of the language, and perhaps a greater propensity of the Demotic to accept "popular" phytonyms. These abound, as we have seen, is present both in the *strictu sensu* herbaria and in the glosses (such as those of the London and Leiden papyrus), which also present a text structure quite similar to the former. In the glosses, in particular, it is evident how the herbarium texts were reused in the medical ones and how for those who wrote them should have had both available. These are textual insertions, whose purpose is always to explain a plant or a name that appears unknown to the reader. It is noted that in these glosses, the Greek name was followed by the description in Demotic. Although it is difficult to say whether this description was itself a translation from Greek, some of these seem possible to be taken from Demotic herbaria, in which the names were sometimes glossed with the Greek ones. This seems to be confirmed by the structure of the gloss of the "*ram's head*" plant (*tp n sr*, κεφαλεκε, P. London-Leiden, verso IV, 10-15), where the Greek name follows the Demotic one, and precedes the description in Demotic. It is well imaginable how the Greek name in the original was added at some point above the line and then inserted into the text. For the other cases, the reverse order of Greek and Demotic names could perhaps be explained imagining the writer writing down Greek names of unknown meaning for him and searching for the Demotic correspondence. These processes naturally presuppose the possibility for the editor to be able to consult both Greek and Demotic sources and also a certain active curiosity, partly due perhaps to necessity, in the search for translations and synonyms. Further, these researches would well explain the reason for the double names (Greek and Egyptian) in the later Coptic herbarium, since synonyms can easily become part of the text through the centuries when added above the line and then copied again.

This tradition, more exclusively herbal and medical, seems to have become contaminated at a certain point (perhaps around the 2nd century AD, when we are sure the hermetic texts were more or less formed. This influence will have been favored by a series of factors: by the fact that the knowledge of the plant world is by its nature at the service of different disciplines and activities (never completely distinct in the ancient world), as well as by the fusion between medicine and astrology, that Ptolemaeus already tells us to be typically Egyptian, and from the possibility of these editors, who can well be imagined as priests, to be able to consult several different sources and genres.

120 In addition to those reported here, see also the "*wolf ... plant*" in Ryholt 2019, 408.

Alongside the herbal glosses *strictu sensu*, indeed, in the London-Leiden papyrus we find names, such as ἡλιόγονον and σεληνόγονον, which seem to refer to an environment or ritual schemes different from those purely medical such as those of the Ebers papyrus. And it does not seem a coincidence that we can find this coexistence in a papyrus that can be defined mostly as a magical subject, but with a certain interest also in the curative components (XIX,1 – XX,33 contains several spells and remedies against bites, stings, poisons and for a bone in the throat; verso IV,1-5 for the water in the ear; verso V,1-3 and 9-13 for hemorrhage in the women; verso VIII-XI for the gout and feet ailments; verso XXXIII for the fever). It is therefore conceivable that these two glosses, formed only by the name and without description, may have been also taken from texts other than those of the herbaria that were or were already being formed in this period. Another example of influence is possibly instead represented by the gloss κεντρῖτις, which presents the typical structure of herbal texts, with the notation of the period of growth (or harvest?) of the plant in the month of Pauni, the latter specific to the astrological botanical treatises.

At the same time, it seems likely that the same editors of these magical texts still had the opportunity to also consult those of the herbarium, whose tradition was more ancient. A proof, albeit indirect, seems to be that of the κρινάνθεμον, which is glossed in Demotic as *mn-pȝ-nfr-r-ḥr-y* in the magical London-Leiden papyrus, and which, as said, could correspond to a similar or same plant of the Demotic herbal P. Carlsberg 230 ("*the-growing-stone*"), texts both dated to 2nd century AD. If we admit indeed that the writer was here adding Demotic explanations and descriptions to Greek names, one could also imagine that he could have found the κρινάνθεμον in a magical text, rather than medical, and that he added further details from an herbal.

It, therefore, seems that the influence may have occurred already in this "high" period (beginning of the Roman era), in the direction from herbaria to magical/ritualistic texts and/or vice versa.

Also in this period we can perhaps place the activity of "encryption", synonymy, and subsequent translation into Greek of many phytonyms for perhaps ritualistic (or rather mystery?) purposes. It is logical that one would then have to refer to the herbaria and their knowledge to "decrypt" such names, and it is also conceivable how these synonymic systems subsequently led to the production of lists, which would have partly merged, with further influences, in the subsequent herbalist tradition such as that of Ps.-Dioscorides or Ps.-Apuleius. In this regard it can be emphasized how the gloss χαμεμέλον in the London-Leiden papyrus, attested also in the later Cyranides, could preserve the original of the then corrupted χαμαιλέων of the hermetic texts (see above). This could constitute a direct trace of the thread of Egyptian production in Greek with the later one, even if names are easily subjects of corruption.

More recently, Leith[121] has shown how the direction of influences could also be of another kind. The Greek illustrated herbarium of Antinoopolis from the 4th-5th century AD seems indeed to derive its purely medical text from the hermetic text of Thessalus (before 400 AD ca.[122]). The editor of the herbarium would therefore have simply cleaned the iatromathematic text of astronomical elements, copying only the name of the plant and the recipe with the ingredients and its measures. The description is missing here (as in fact in the iatromathematical texts), but it is interestingly replaced by the illustration of the plant. The description, indeed, had to be less essential in astrological botanical treatises than in herbal treatises (those who did not know a name could consult the latter), while the moment of collection gains relevance, since it represents the novelty element in iatromathematical theories. This operation naturally presupposes that hermetic texts well took already shape and spread, and the dating is coherently later than the previous examples.

It must certainly be emphasized that the text of Thessalus, compared to the other hermetic texts of astrological botany, differs in the fact that its recipes are of the same type as that to which the "classical" medical authors have accustomed us. The author reports the precise list of ingredients with their measures, followed by the preparation of the drug and the methods of its administration, while the other texts are limited to a quick description of the preparation of the remedy, or the mere preparation of the amulet. We could therefore wonder if this peculiarity of Thessalus is not due to the fact that he in turn built his book by combining iatromathematical methods and plant-planet / zodiac sign associations with recipes drawn from medical authors, which we have not received, that mentioned the plant he was interested in. As mentioned, this "cleaned up" herbarium seems to mark a reversal of trend for this time, that is, an exclusion of astrology from medicine. A reverse trend compared to it is that, finally, the Medieval manuscripts that transmit the herbarium of Ps.-Apuleius and the Dioscoridean text with its lists of synonyms seem to indicate instead the triumph of "mixed" herbariums, where elements attributable to the astrological or magical tradition, if not exactly Hermetic, are added to the herbal text *strictu sensu*.

For the Coptic herbarium (P. Carlsberg 500) of the 4th century AD such a cleaning operation does not seem to be demonstrable. However, it seems at least curious that all the three plants of animal inspiration are common to the hermetic tradition. Unfortunately, the data stops at the commonality of names. With regard to the uses, indeed, those of the scorpion plant, are unfortunately lost in the herbarium, just as we have no information regarding those of the ἱεράκιον in the possible hermetic texts (but its synonym, the lettuce, is reported

121 Leith 2006.

122 Leith 2006, 152.

among the "encrypted" names above), while those of the περιστερεὼν plant, although common in the herbarium, in the hermetic texts and in the medical one, are not so evident as to recognize a direct affiliation. It is imaginable, however, that over time, the popularity and interest in iatromathematical texts and its practice have constituted a selection factor in the plants present in the herbal tradition and therefore in the herbaria themselves.

The advent of Hermeticism, whose knowledge had to begin to form when the Persian domination began, but which then seems to explode, at least for the sources we have, in the Roman period, had to partly upset, reshape, and select over time the texts on which there was more interest, also from the point of view of customers interested in "easy" remedies such as amulets.

3. Plants, magic, and cultural contacts

The last consideration leads us to think about magic, even more than about "learned" medicine, as a catalyst for exchanges of a cultural nature between "Greeks" and "Egyptians", although these labels have their obvious limits for the period of Graeco-Roman Egypt.

First of all, it should be remembered that the system of associations between the plant (or natural element) and divinity is not foreign to pre-Ptolemaic Egyptian culture, since they were part of the medical practice already during the Pharaonic period[123] insofar as mythological knowledge was integrated into empirical one.[124] Nevertheless, to our knowledge, the sure attestations of systematic lists of μελοθεσία do not date back to before the Saitic age (with the possibility of course that these texts were formed at an earlier age). These associations were already indeed known from the Brooklyn ophiological papyrus (snake-deity), from the Jumilhac papyrus (XV, 9-XVI, 22[125]) and from the Ptolemaic treatise on incense,[126] and to some extent also from the hieratic papyri of Tebtunis.[127] More interesting for our purpose are two short lists, one dating back to the Saitic period (P. Berlin P. 29027[128]) and the other to the Ptolemaic one (Pap. Hal. Kurth Inv. 33 AC[129]), which show us the association of a plant to a divinity according to the structure *jr* + plant name + divinity. The two texts are practically identical, with only few variations. Pap. Hal. Kurth Inv. 33 A-C differs from P. Berlin 29027 essentially in two points: regarding the tree *jm3*, Osiris is also added to the triad Atum, Shu and Tefnut;

123 Győry 2011, 154-155.

124 Győry 2002, 50-56.

125 Vandier 1961, 127-128.

126 Chassinat et alii 1990, II, 2, 205, 12-208-5; Chermette – Goyon 1996, 50-81.

127 Osing 1998, 257; see Betrò 2001, 148; Betrò 2015, 58-59.

128 von Lieven 2004.

129 Fischer-Elfert 2008.

for the *jmȝ* tree, Osiris is placed after the triad reported in the Berlin papyrus. The relationship between the two versions does not therefore necessarily appear linear or direct: several editions of this text probably had to circulate, which could have been updated or modified on the basis of the traditions that the priests knew or rethought. The trees mentioned in these texts are typical of the Egyptian tradition and also the possible reasons for these associations, mostly of a morphological character, do not seem to show foreign influences: the conifers are all associated with Osiris, as in the Book of Breathing, they are resinous and aromatic plants, related to sarcophagi[130]; *snḏm* is perhaps associated with Seth due to the red color of its wood; the sycamore is Nut as a heavenly mother (the sycamore produces the latex that can resemble mother's milk). The presence of this type of associations in the texts mentioned above, as Betrò has already argued,[131] are not simple learned games, nor do they correspond to pure mythological motivations, but appear as an attempt at a precise systematization of the natural world similar to our modern taxonomy, where, however, instead of genres and families, the single elements take their affiliation to a specific divinity on the basis of observations of an empirical and not random nature, so as it has been suggested for the Hermetic texts.

However, this taxonomic modality is not exclusive to the Egyptian world, but we also find it in the classical one, where plants, often due to myths involving metamorphosis, were associated with a specific divinity, and are present even in the Amerindian worlds.[132] Moreover, these associations, at least from what we can observe, seem to be detached from strictly astronomical observations and considerations, as it will be in the hermetic texts.

The formation of astronomical botanical texts, indeed presupposes the introduction into Egypt of new knowledge, such as those on the horoscope and on the Babylonian μελοθεσία, probably also penetrated thanks to the period of Persian domination. An example can be found in Ostracon Strasbourg D 251,[133] which gives a Demotic list of the five planets (the sun and the moon are excluded) assigning each to a different god. Here, Saturn (*ḥr-pȝ-kȝ*, "***Horus the Bull***") is said to be the star of Ra (*pȝ sjw pȝ Rʿ*, ll.1-2), which Ross[134] compares to the Babylonian MUL.APIN, where Saturn is identified as the star of the sun, as also confirmed by Diodorus Siculus (***Bibliotheca Historica*** II, 30, 3-4). This ostracon dates back to the Ptolemaic era (3rd century BC) and demonstrates

130 See Goyon 1972, 238-241.

131 Betrò 2001, 148; Betrò 2015, 58.

132 See Lévi-Strauss 2015 (1962), 52-54.

133 Neugebauer 1943, 120-122.

134 Ross 2007, 14.

how the idea of affiliations had already spread.[135] The formation of the hermetic texts is still problematic in itself, especially for the period preceding the Roman one, but it is possible that over time, both Greek-speaking personalities operating in cultural centers such as in Alexandria, with some knowledge also of Egyptian or perhaps only mediated by Egyptian astrology and medicine contributed to it, like Ptolemaeus himself, a native of Egypt, as well as the circles of priests working in the temples. After all, purely Egyptian knowledge such as those on the decans converge in the hermetic texts, alongside those of near Eastern origin such as those on the horoscope of the twelve signs.

However, it is only in the Roman age that we are sure the pamphlets of astrological botany took shape by grafting onto the whole system of astrological observations and correspondences between stars, zodiac signs, decans, fixed stars, and parts of the body. The priestly class probably had to play a not secondary role in their formation. Rather eloquent is the story of Thessalus[136], even if it should be taken more as an exemplum than literally. The author, indeed, reported to have received this revelation by the god himself at Diospolis after having studied at Alexandria and traveled throughout Egypt. This revelation is received through the mediation of an Egyptian priest performing a ritual not too far from those we are accustomed to in the Greek magical texts.[137] Naturally that of Thessalus represented only one of the many revelations, schools and doctrines that competed for the primacy and the superior efficacy of their treatments, so as to attract a greater number of clients eager to heal themselves or satisfy other desires. And it is precisely this clientele, also Greek speaking, that the priests acted as mediators in part also assimilating elements of plant knowledge extraneous to the Egyptian culture of the pharaonic age and reusing them in such a way as to make these remedies more attractive even to a different clientele. Some of the Greek-Demotic casts present in magical texts could be explained in this way. Alongside this lucrative component, however, it is clear that there was also a more learned interest on behalf of Egyptian priests in transmitting and learning a type of botanical knowledge different from theirs and in applying it. Proof of this is the simultaneous presence of Greek and Demotic herbaria in the Templar library of Tebtunis,[138] but also, as noted, the structure of the glosses of the London and Leiden papyrus, in which the description in Demotic followed by the Greek

135 Note that another kind of association, that is the one between parts of the body-divinities also sometimes appear in pharaonic spells, where the diseased or deceased are transfigured or magically identified with a god. See for example, P. Leiden I 348, Spell 14 (Borghouts 1971, 22-23). For Babylonic μελοθεσία of body parts, see Greenbaum 2020, 356.

136 Friedrich 1968, 45-60.

137 Cumont 1918, 24-27.

138 Ryholt 2013, 235.

name presupposes an original research activity of the glossar either in Greek herbaria or at least his knowledge of Greek that would allow him to move between different sources.

On the other hand, even Greek speakers not necessarily belonging to intellectual circles such as Ptolemaeus, were assimilating elements of Egyptian knowledge about plants thanks also to the interest that Egyptian magical and religious knowledge exercised. The ἀνουβιάς mentioned in the magical papyri is likely a name of Egyptian origin, corresponding to the *p3-sjm-n-Ỉnp* of the glosses of the London-Leiden papyrus, or in the gloss of the κεντρῖτις (PGM IV, 799-814). As Betrò[139] has noted that Egypt is defined as "*Km.t*", that is "*black land*", it is then denoted as a foreign country in the eyes of the writer. She, therefore, hypothesizes that the author of the gloss is a non-Egyptian who was consulting an Egyptian text. But the same Berlin magical papyrus (PGM CXXII, 1-5) claims to have drawn the spell "*from the holy book called Hermes, found in Heliopolis in the innermost shrine of the temple, written in Egyptian letters and translated into Greek*".[140] Similarly, of great interest is the introduction to the list of "cryptic" names of plants that are transmitted in PGM XII, 401-44, in which reference is made to the curiosity of the masses, which pushes the Egyptian scribes to encrypt these names so that to hide their ritual secrets.

There seems to be little doubt that overall, the astronomical botanical treatises had to be formed in an Egyptian environment, even if the cultural stratifications within them are naturally richer and more complex. Beyond the decanic plant, an obvious example is the association of Helios and Selene with the eyes, and therefore the use of their affiliated plants for ophthalmias and other eye diseases (see CCAG VIII, 3, 159-60, where the plants of the Sun and of the Moon protect the eyes because the two stars are in charge of them), or of the synonym κιχόριον for heliotrope, words that according to Plinius (*NH*, XIX, 129) had Egyptian origin, or the presence of the Egyptian synonyms in the list of Ps.-Dioscorides, next to the names of the prophets. The treatises trace this knowledge directly to Egyptian personalities such as Egyptian priests, King Nechepso, or directly to the god Hermes / Thot, or to the figure of Petosiris, but also to Alexander or Solomon (the latter mentions completely different plants than the other editors). The important role in the Demotic astrological culture of by now probably fictitious personalities of Nechepso, Petosiris (or Petose) and Imhotep / Asclepius has been confirmed by the recent publication of a series of new Demotic texts which contains a series of predictions on astrological bases attributed precisely to these figures.[141] The implantation of basic Egyptian knowledge (with the mediation and stratification of the Near Eastern ones)

139 Betrò 2015, 55.

140 Translation of Betz 1986, 316.

141 Quack – Ryholt 2019, 161-177.

seems evident, as well as the very evolution of this knowledge such as the emergence in Demotic of phytonyms composed perhaps of more "popular" inspiration, but the final product must have been the result of decades (or centuries!) of mediation between intellectual circles of Greeks and Egyptian priests, polyglot clienteles eager to be healed or to obtain fortune, and figures of magicians and doctors who sometimes appeared to be charlatans like Crinas of Marseilles mentioned by Plinius (*NH*, XXIX, 9), of whom he says that he had combined medicine and astrology, a custom that certainly must have been more widespread than we know, but that it also had its role in the spread of magical knowledge relating to plants and hence their names.

Conclusions

Over the centuries, therefore, on both Greek and Egyptian sides there must have been mediators with knowledge of either the language or the culture of the other, perhaps superficial in some cases, but driven by genuine interest, who continued to operate at different levels and with different interests (intellectual and economic). An example is represented by priests inside the temples who continued to transcribe but also to rework magical and medical texts, assimilating different cultural elements from time to time and also possibly mixing writings that we consider or that we have studied as two different "genres". Investigating herbals of Roman period from the point of view of the Hermetic texts has indeed led to consider at least very similar the hypothesis of contamination between the two and also to underline the importance of magic field as space of cultural transmission and exchange of knowledge.

Tracking down the cultural marks of each element and the way they have combined, is however, as it has been seen, difficult and also a quite arbitrary operation; but influences are indeed present at different levels. Medical and astronomical theories in iatromathematica are mixed, but they are inserted and further transformed also in an Egyptian context, already modified by Babylonian influences. The association of a plant to a celestial body, as underlined, can be seen sometimes due to the assonance of the "popular" name with the planet, where the origin of this name, even if transmitted in Greek, could have rooted in Egyptian religion, or be common in both cultures since the shape of a part of the plant could have inspired it independently, especially if it is a species common in the whole Mediterranean (i.e. the scorpion and the dove plant). Other times, the association seems directly drawn from Greek medical practices, and linked with the planet just because it held that part of the body. Again other times, it is the scribal practice of writing down synonyms together with the need to "encrypt" plants' names that permits us to see how the herbalist tradition could be reused not just in medical texts, but also in magical ones.

Influences appear, however, not just on cultural level (Egyptian/

Greek, medical/magical, “popular”/“intellectual”), but also ecological, due to the presence of foreign species, which were introduced and assimilated into the system of correspondences, and also possibly reshaped it (like the rose or peony as plant of the moon). As whole, then, above than questioning the sharpness of the borders of each field (herbals vs. hermetic texts) and the rightness of considering them distinct, the Hermetic plants, and their connection to the herbalist tradition that we tried to underline, also give some hints about the cultural environment of Roman Egypt and its role as a bridge towards the Northern Mediterranean tradition.

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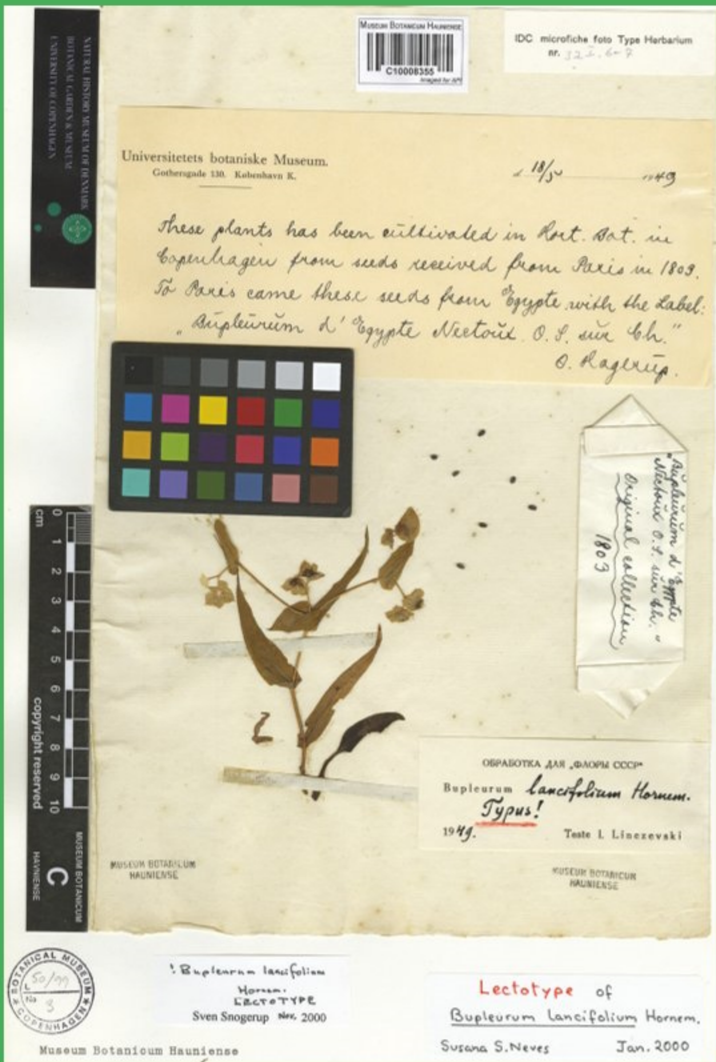
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To Paris came these seeds from Egypte with the Label:
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O. Hagerup.
Original collection
1803
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