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Gargilius Martialis as a Medical Writer

by John M. Riddle

To Dr. Edelstein
with
regards
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Gargilius Martialis as a Medical Writer

JOHN M. RIDDLE

THE late Roman writers on medicine suffer in comparison to their more renowned predecessors who lived in the early Empire, such as Galen and Dioscorides, or those of the Hellenistic and the Classical Ages of Greece. A number of these medical and scientific authors, who lived and wrote from the third through the sixth centuries, were learned individuals in their own right and they were quoted as authoritative during the Middle Ages. Although these Latin works are not frequently listed in the "great writings" of Latin literature, the following formed a major bridge between Classical and Medieval medicine and they became authorities for medicine in the early Latin Middle Ages: Quintus Serenus Sammonicus (d. A.D. 212), the anonymous work we call Pseudo-Pliny and the text termed *De medicina*, Pseudo-Apuleius (probably 4th cent. A.D.), Theodorus Priscianus (*fl.* A.D. 390), Marcellus Empiricus (*fl.* A.D. 410), Cassius Felix (*fl.* 450), Caelius Aurelianus (?*fl.* 450), and Anthimus (*fl.* 500).[1] Rose,

1. The best currently available editions of these late Roman Latin authors are: Serenus Sammonicus: R. Pépin, ed. and trans. *Quintus Serenus (Serenus Sammonicus): Liber Medicinalis*, Paris, Presses Universitaires de France, 1950; Pseudo-Pliny: Alf Önnerfors, ed., *Plinii Secundi Iunioris qui feruntur De medicina libri tres*, Corpus Medicorum Latinarium (CML) III, Berlin, Academiae Scientiarum, 1964; Pseudo-Apuleius: [in] Ernest Howald and Henry Sigerist, eds., *Antonii Musae De herba vettonica liber. PseudoApulei Herbarius. Anonymi De taxone liber. Sexti Placiti Liber medicinae ex animalibus etc.*, CML, IV, Leipzig, Teubner, 1927, pp. 13–225; Marcellus Empiricus: Max Niedermann, ed., 2nd ed. rev. Eduard Liechtenhan, trans. by Jutta Kollesch and Diethard Nickel,

Professor John Scarborough read and made many and always good suggestions. Also, I have called upon a number of specialists who have assisted me in developing answers to some technical questions: Charles Apperson (Entomology), Richard Axtell (Entomology), Robert E. Brackett (Food Science), Guido Majno (Pathology), Vivian Nutton (Medical History), Joanne Phillips (Classics), and David Walker (Pathology). Each of these people has patiently given his or her time while helping me understand, interpret and relate some vexing questions. They can not, of course, be held responsible for how I received their advice but the reader may be assured that each of these scholars contributed immeasureably to this attempt to understand why Gargilius was considered a medical writer for so long.

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Niedermann, Howell, and Sigerist labored to produce reliable texts of several of these authors, but they did little with the analysis and evaluation of the medical content, in part because of the arduous task of providing good, modern texts. More recently, Drabkin, Kollesch, Nickel, and Liechtenhan have advanced our understanding of three of these authors through their excellent editions and translations, Caelius into English and Marcellus and Anthimus into German.[2]

Quintus Gargilius Martialis (*fl.* 220–260) was an author for whom the early Middle Ages had a high regard as judged by medieval testimonials and the number of modern survivals of his manuscript texts. For one example of a medieval testimony, there are the words of Cassiodorus (*c.* 480–*c.* 575):

> Gargilius Martialis has written most excellently on gardens and has carefully explained the raising of vegetables and the virtues of the latter, so that under the Lord's guidance by a reading of his treatise everyone may be filled and restored to health.[3]

Palladius (4th cent.), Servius (4th cent.), Isidore of Seville (d. *c.* 636), Macer or Marbode (11th cent.), the anonymous eleventh century editor of the Latin Alphabetical Dioscorides, ʾIbn-Hedijadi (11th cent.), and ʾIbn ʾAḥmad ʾibnᶜal-Awwâm (12th cent.) used Martialis' works.[4] Two new studies with texts, both published in 1978 in Italy, have appeared with new texts of fragments of Martialis' work, one by Sebastian Condorelli[5] and another by Innocenzo Mazzini.[6] In the United

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Marcelli De medicamentis liber, 2 vols., CML v, Berlin, Akademie-Verlag, 1968; Theodorus Priscianus: Valentin Rose, ed., *Theodori Prisciani Euporiston*, Leipzig, Teubner, 1894; also the trans. by Theodor Meyer, *Theodorus Priscianus und die römische Medizin*, Jena, Gustav Fischer, 1909; rptd. Wiesbaden, Martin Sandig, 1927, pp. 79–304; Cassius Felix: Valentin Rose, ed., *Cassii Felicis De medicina*, Leipzig, Teubner, 1879; Caelius Aurelianus: I. E. Drabkin, ed. and trans. *Caelius Aurelianus On Acute Diseases and On Chronic Diseases*, Chicago, University of Chicago Press, 1950; Anthimus: Eduard Liechtenhan, ed. and trans. *Anthimi De observatione ciborum ad Theordoricum regem Francorum epistula*, CML VIII 1, Berlin, Academiae Scientiarum, 1963.

2. Drabkin, (n.1) *Caelius*; Kollesch and Nickel, (n.1) *Marcelli*; Liechtenhan, (n.1) *Anthimus*.

3. Cassiodorus. *Institutiones*. 1. 28. 6, trans. by Leslie Webber Jones, New York, Columbia University Press, 1946. When citing ancient authors, I will follow the convention of citation by book, chapter, and paragraph or line, which are constant for all editions, rather than a particular page number, which varies from edition to edition.

4. Sebastian Condorelli, *Gargilii Martialis quae exstant* vol. 1: *Fragmenta Ad holera arboresque pomiferas pertinentia*, Biblioteca di Helikon, Testi e Studi, 11, Rome, L'erma di Bretschneider, 1978, pp. *xi*–xiv, 3–5; John M. Riddle, "Dioscorides," *Catalogus Translationum et Commentariorum*, Paul O. Kristeller and Edward Crantz, eds., 4 vols. to date. Washington, Catholic University Press, 1960–1981, 4, 1–143.

5. Condorelli, (n.4) *Gargilii*.

6. Innocenzo Mazzini, ed., *Q. Gargilii Martialis. De hortis*, Opuscula Philologa, 1, Bologna,

States, Ruth M. Tapper translated and annotated Gargilius' works.[7] Both Condorelli's and Mazzini's works assist our evaluation but, even so, each one was concerned primarily with textual, source, and philological problems and neither has addressed in detail the science and medical contents. Tapper's excellent doctoral dissertation is concerned with Martialis' materia medica, but her work does not evaluate why Gargilius was regarded as a medical writer, nor does it deal with his originality.

Gargilius is an author about whom some biographical information is found in various sources—an uncommon occurrence with late classical writers. Two tombstones are associated with him: one belonged to his parents which was found north of the Roman colony of Auzia in Mauretania, North Africa; another a stone dedicated by the citizens of Auzia to Q. Gargilius Martialis as their *patronus*.[8] Although doubt is expressed by some scholars,[9] Innocenzo Mazzini's exhaustive study proves that the two tombstones belonged to the author and his family.[10] The second inscription commemorates a soldier and local politician in the north African province of Mauretania, modern Morocco. A member of the equestrian class as was his father, Gargilius served as a prefect of a cohort in Britain and as a tribune of a cohort of Spanish troops in Mauretania Caesariensis. He received the usual titles for a provincial official and he was a *decurion* of two colonies, Auzia and Rusgunia, *patronus* of the province, and victor over a rebel named Faraxen. He died in a local Berber uprising and his benefactors, the

Patron Editore, 1978.

7. Ruth M. Tapper, "The Materia Medica of Gargilius Martialis," Ph.D. dissertation, Madison, University of Wisconsin, 1980.

8. *Corpus Inscriptionum Latinarum* (Berlin, 1863–) VIII. 9047 and *C.I.L.* VIII. 20751, reprinted and discussed by Innocenzo Mazzini, "Dati biografici ed opera di un minore: Quinto Gargilio Marziali," *Atti Mem. Arcadia*, Ser.3a, 7: 99–121, 1977; Condorelli, (n. 4) *Gargilii*, p. 4; Tapper, (n. 7) "Materia Medica," pp. 3–5; see discussions by Hermann Stadler, "Gargilius," *Real Encylopaedie der classischen Altertumswissenschaft*, Stuttgart, 1910, 7, pt. 1, cols. 760–2, and Ludwig Schwabe, ed., *Teuffel's History of Roman Literature*, 5th ed., trans. by George C. W. Warr, 2 vols., London, Bell, 1900, rptd. New York, B. Franklin, 1967, 2, 276–78; M. Schanz, C. Hosius, G. Kruger, *Geschichte der römischen Literatur*, 4 vols., Munich, Beck, 1927–59; reissue, 1969, 3, 222–3.

9. Alfred von Domaszewski, *Die Personennamen bei den Scriptores Historiae Augustae*, Heidelberg, C. Winter, 1918, p. 54, n. 3; H. Barton, *La littérature latine inconnue*, 2 vols., Paris, 1956, 2, 261; Ludwig Edelstein, "Gargilius," *Oxford Classical Dictionary*, 2nd ed., Oxford, Clarendon Press, 1970, p. 458; and, finally, the early article by Conrad Cichorius, "Gargilius Martialis und die Maurenkriege unter Gallienus," *Leip. Stud. Clas. Philol.*, *10*: 319–27, 1887, who argued that the inscription belonged to the author.

10. Mazzini, (n. 8).

citizens of Auzia, erected at public expense the tombstone with the date of 7 April 260. The Emperor Alexander Severus (222–235 A.D.) raised the *municipium* of Auzia to a colony.[11] The *Historia Augusta* author of Alexander Severus' life spoke of Gargilius as a contemporary (*quae Gargilius eius temporis scriptor singillatim persecutus est*), who had written a description of the Emperor's diet.[12] Another *Historia Augusta* writer, the author of *Probus* (emperor in 271–2), included "Gargilius Martialis" among those more recent authors whose writings "have handed down to memory those and other details not so much with eloquence as with truthfulness."[13] These literary notices and the two inscriptions all support a reasonable conclusion that the Gargilius of these sources is the same person as the author for whom the Middle Ages had such high regard. To this evidence Mazzini has tied various circumstantial factors to support a connection between Martialis, the Roman soldier in Africa, and the Emperor Alexander Severus.[14] Finally, several autobiographical details in his works show that he was married, once wounded, and had a farm in Africa. (*vide infra*) Nothing in his biography as we know it indicates that he was a physician (*medicus*), not even a military physician. And yet, history has known him as a medical writer.

Considering his accomplished career as a soldier, Gargilius' writings were extensive—at least they were larger than what is now extant. There are many manuscripts with fragments from his works, many

11. Ibid.

12. *Historia Augusta: Severus Alexander*. XXXVII. 9. Ronald Syme, *Ammianus and the Historia Augusta*, Oxford, Clarendon Press, 1968, pp. 99–100, 200, and 203, takes an iconoclastic and critical approach to the biographers of the emperors, known as the *Historiae Augustae*, specifically raising a question whether the authors mentioned by Severus' biographer were real; however, Syme's position has not found universal acceptance. Those who have studied Gargilius accept this passage as pointing to the agricultural writer whose tombstone we have, viz. Mazzini, (n. 8); Condorelli, (n. 4) *Gargilii*, pp. 3–5. Mazzini (pp. 104–5) proposes that the Severus' biographer was referring to Gargilius' *Medicinae ex oleribus et pomis* when he spoke of an author on the Emperor's eating habits. Gargilius' work does have some dietetic items. In Mazzini's judgment, the Emperor may have been guided in his diet by Gargilius, who was, after all, from the same region of Africa as the Severi family; Alexander was born near Carthage. In contrast, Syme (*Emperors and Biography*, Oxford, Clarendon Press, 1971, p. 47) assumes that the author of *Severus* meant that Gargilius was a biographer of the emperor when Gargilius wrote of the imperial eating habits. See, David Magie, ed. and trans., *Scriptores Historiae Augustae*, 3 vols. Loeb Classical Library, London, Heinemann; Cambridge, Harvard University Press, 1921–32, 2, 251.

13. *Historia Augusta: Probus*, II. 8 in Magie, (n. 12) *Scriptores*. Mazzini, (n. 8), believes that the author of *Probus* (whom he accepted as being Flavius Vopiscus) referred to the same work by Gargilius as had the author of Alexander's life; cf. Syme, (n. 12) *Emperors*, pp. 47, 258, and 278, who rejects Vopiscus as the author's name.

14. Mazzini, (n. 8).

dating from the early Middle Ages. Originally one work was much larger than the fragments which remain: *Gardens* (*De hortis*) or *Vegetables and Fruit Trees* (*De holera arboresque pomiferas*).[15] From it Innocenzo Mazzini published the texts on the quince, peach, almond, and chestnut trees, each one of which has an extensive chapter devoted to each tree's botany and horticulture with nutritional and medicinal components. With the aid of a sixth century Bobbio manuscript, now in Naples, Sebastian Condorelli added fragments of the text on the cucumber, basil, pomegranate, quince, citron, fig, cherry, almond, pistachio, and chestnut.[16]

We know that Gargilius' *Gardens* once covered many more plants, herbs and trees because, among other evidence, Palladius[17] (*fl.* 4th cent.) cited Gargilius thirteen times with information from plants not presently extant in the manuscript texts.[18] Gargilius' only work on medicine was titled *Medicines from Vegetables and Fruits* (*Medicinae ex oleribus et pomis*). Although it is generally regarded as a separate work, it may have been a part of the large work, *Gardens*.[19] Mazzini proves on linguistic grounds that the same person wrote both works.[20] This text is to be distinguished from another treatise, known either by the title *De oleribus Martialis* or by *De virtutes herbarum*, published last by Valentin Rose in 1870. This text is not an authentic Gargilius work, but it is related to a Latin translation of the second book of the Hippocratic tract, *peri diaitēs*.[21] There is also a small veterinary tract attributed to

15. Mazzini, (n. 6) *De hortis*, pp. 86–125; for full listing of printed editions see Mazzini, (n. 6) *De hortis*, p. 11 and S. Condorelli, (n. 4) *Gargilii*, pp. xlv–xlvii.

16. Condorelli, (n. 4) *Gargilii*, pp. 9–53, also using fragments found in the works of: Palladius and 'Ibn 'al-Awwâm, with a doubtful fragment from Pseudo-Apuleius.

17. Palladius. *Opus agriculturae*, ed. J. C. Schmitt, Leipzig, B. G. Teubner, 1898.

18. Mazzini, (n. 6) *De hortis*, pp. 34–5; Condorelli, (n. 4) *Gargilii*, pp. x, xxii–xxiv; and earlier studies by Max Wellmann, "Palladius und Gargilius Martialis," *Hermes*, *43*: 3–15, 1908; J. Svennung, "De auctoribus Palladii," *Eranos*, *25*: 123–78, 1927. Portions of *Geoponica*, ed. H. Beckh, Leipzig, 1895, a Byzantine agricultural collection of various earlier writers, are also helpful in some reconstructions, *e.g.*, lines 80–6 and 132–5 on the peach, Mazzini, (n. 6) *De hortis*, pp. 96, 100.

19. Valentin Rose, ed., *Plinii Secundi quae fertur una cum Gargilii Martialis Medicina*, Leipzig, B. G. Teubner, 1875, pp. (129)–208.

20. Mazzini, (n. 8); Mazzini, (n. 6) *De hortis*, p. 10.

21. V. Rose, *Anecdota Graeca et Graecolatina*, 2 pts., Berlin, Ferd. Duemmler, 1870, pt. 2, 131–50, from text found in St. Gallen, Stiftsbibliothek Ms 762, s. IX, pp. 25–71, described by Augusto Beccaria, *I codici di medicina del periodo presalernitano (secoli IX, X e XI)*, Rome, Edizioni di Storia e Letteratura, 1956, pp. 388–90. Innocenzo Mazzini, "De observantia ciborum. Un 'antica traduzione latina del *peri diaitēs* pseudoippocratico I. II (editio princeps)," *Romanobarbarica*, *2*: 286–357, 1977. The Hippocratic treatise is also known as *Regimen*.

Gargilius called *Curae boum*.[22] The concern of this paper will be principally with the text known as *Medicines from Vegetables and Fruits*.

As it now exists the tract discusses the medicinal usages of about sixty field and garden plants with a chapter devoted to each. There is no description of the plant, presumably because the tract is the lifted section of the larger work, *De hortis*, which has a full botanical description. Also Cassidorus referred to one work by Gargilius which told both of "the raising of vegetables" *and* their medicinal values. In its entirety, the first chapter reads:

> Radish. On the good authority of all medical people, a radish has a warming property [*virtus*], and yet it is proper for us to appreciate its value through experience [*de usu*]. Why, when it is mixed with other foods, it alone causes the stomach to belch, unless first it is cooked first? With three parts honey, it restores the hair destroyed by the injury from *alopecia* [probably, "fox-mange"]. Dropped in the ears, its juice truly improves earache [*gravitas aurium*].[23] It is an extraordinary antidote if it is taken by someone with an empty stomach. Against the "lice disease" [*phthiriasis*] its juice, which alone can penetrate because of its rarefied nature to the internal parts [*liniamenta*] of the body, is applied. Egyptian kings, whose concern it was to study the bodies of the dead and, when proof was exposed to view in order to examine the causes of illnesses, have reported that this kind of weakness is found in the very heart itself. With three parts honey, radish seed taken calms deep breathing [*suspirium*] and coughing is prevented. Taken alone with salt, it kills the living creatures of the stomach, stimulates sexual desire, promotes urination, and adds plenty of milk at [the time of] childbirth.[24]

In his critical text, Rose lists Pliny as Gargilius' source on the radish. In parts of two books, Pliny discussed all of the medicinal uses for the radish that Gargilius listed, much as Rose says.[25] Gargilius wrote that all doctors (*medici*) agree on the warming property and uses. Galen, Dioscorides, Scribonius Largus, Celsus, Nicander, and Theophras-

22. The most recent edition is published in *P. Vegeti Renati digestorum artis mulomedicinae libri*, ed. Ernest Lommatzsch, Leipzig, B. G. Teubner, 1903 and in English translation by Tapper, (n. 7) "Materia Medica," pp. 109–14 (notes and index, 115–23).

23. W. H. Jones in *Pliny Natural History*, 10 vols. Loeb Classical Library, London, Heinemann; Cambridge, Harvard University Press, 1938–63, 6 (1951), 19, translates the affliction as "deafness" but I favor a broader meaning.

24. Rose, (n. 19) *Medicina*, no. 1, pp. 133–4. John Scarborough assisted me in the translation, and Vivian Nutton and Joanne Phillips assisted me in the section pertaining to post-mortem examinations to be discussed below.

25. Pliny, (n. 23) *Natural History* (hereafter abbreviated *N.H.*), XIX. 26.85–7, XX. 13. 23–8.

tus,[26] to name some earlier authorities, have similar uses. Just as Gargilius said, there was little controversy in antiquity about radishes as a medicine. Moschion wrote an entire book on the plant according to Pliny.[27] When Gargilius said that there was a consensus about radish, he was being fair (although it is likely that he was employing Pliny in this chapter as his principal source).

Gargilius noted that radishes have a warming property, but here and in his other chapters, he was not employing the high learning of the writers on pharmacology who sought to determine two actions to redress humoral imbalance according to whether the drug's property (*dynamis* in Greek or *virtus* in Latin) was either warming or cooling *and* drying or moistening. According to what we now believe was the prevailing theory about drugs in the medicine of the Roman Empire, these actions were quantified up to four possible degrees of intensity.[28] Gargilius had apparently rejected the contemporary theoretical pharmacology, because we know that he had read Galen's works which explicated those ideas.[29] Gargilius said that radishes have a warming property while neglecting to specify the degree or its passive quality—that is, whether it is moistening or drying. Moreover, he was not administering the radish juice to rectify an imbalance produced by disorders which were cooling by their nature. He signalled his attitude towards the humoral balance theory for drug administration, when after his reference to a radish's warming quality, he wrote, "*and yet* it is proper for us to appreciate its value through experience." Galen and others, who accepted and expounded on what Dioscorides called the *logos* of *pharmaca* or pharmacology,[30] would have said, "warming *therefore* it is proper for medicinal uses for. . . ." Gargilius' proof of its warming property was a rhetorical question that raw radishes cause one to belch. This clue provides an interesting insight into the means by which the ancients derived properties from empirical evidence. Some of the pharmaceutical properties must have been postulated through sense perception, despite Galen's caution that the senses are faulty. In fact, taste and smell are useful in identifying many alkaloids, tannins, oils and other compounds which are usually the pharmaceutically active ingredients in plant chemistries.[31]

For the most part, the medicinal uses that Gargilius prescribed for the radish were common afflictions such as we would treat in the home by over-the-counter remedies. One of the more sophisticated usages might be *alopecia* or "fox-mange," which may be our alopecia, a progressive natural or abnormal baldness. Exactly what the Greeks and Romans meant by it is uncertain.[32]

One means of evaluating Gargilius' medical remedies is to observe what remedies were in his sources but which he chose to omit in his account. Pliny said that radishes expel kidney stones (*eiciunt calculos*), reduce the size of the spleen, are beneficial for dropsy, lethargy, epilepsy, melancholia, ileocolitis, colicotis, intestinal ulcers and suppurations of the diaphram (*praecordia*). Radishes rubbed on the hands, Pliny reported, enable one to handle horned vipers (*cerastes*) without harm, and a radish placed on a scorpion kills it.[33] Gargilius chose not to include these usages, nor does he include other usages in his sources, such as Dioscorides who recommended radishes as a diuretic, emetic, and of assistance in treating growths, ulcers, or boils known as *nomas* and *gaggrainai*. Dioscorides incidentally wrote that radishes taken internally with wine help those bitten by the horned viper. Dioscorides'

26. Galen, *De simplicium medicamentorum temperamentis ac facultatibus*. VIII. 17, C. G. Kühn, ed., *Galenus opera omnia*, 20 vols. in 22, 1821–33, rpt. Hildesheim, 1965, (hereafter abbreviated K) *12*, 111–2; Dioscorides. *De materia medica*. II. 112, Wellmann, ed., 3 vols., Berlin, Weidmann, 1906–14, repr. Berlin, 1958; Scribonius. *Compositiones*. 60, 133, 195–6, S. Sconocchia, ed. Leipzig, Teubner, 1983; Celsus. *De medicina*. II. 33 et passim., W. G. Spencer, ed., 3 vols. Loeb Classical Library, London, Heinemann; Cambridge, Harvard University Press, 1935–38; Nicander. *Alexipharmaca*. 430, A. S. F. Gow and A. F. Scholfield, eds. Cambridge, University Press, 1953; Theophrastus. *Enquiry into Plants*. IX. 9. 1 and 12. 1, Arthur Hort, ed., 2 vols. Loeb Classical Library, London, Heinemann; Cambridge, Harvard University Press, 1916.

27. Pliny, (n. 23) *N.H.* XIX. 26. 87.

28. On Galenic pharmacology, see Georg Harig, *Bestimmung der Intensität im medizinischen System Galens*, Berlin, Akademie Verlag, 1974; and Harig, "Der Begrift der lauen Warme in der theoretischen Pharmakologie Galens." *NTM*, *10*: 64–81, 1973.

29. Especially in Galen's treatise, (n. 26) *De simplicium medicamentorum temperamentis ac facultatibus*.

30. Dioscorides, (n. 26) *Materia Medica*, Preface. 5; see John Scarborough and Vivian Nutton, "The Preface of Dioscorides' *Materia Medica*: Introduction, Translation, Commentary," *Transactions and Studies of the College of Physicians of Philadelphia*, *4*: 187–227, 1982; and the discussion in John M. Riddle, *Dioscorides and Medicine*, Austin, Texas University Press, 1984 (forthcoming).

31. R. W. Moncrieff, *The Chemical Senses*, 3rd ed., London, Wiley, 1967.

32. In the *De materia medica* of Dioscorides, *alopecia* is treated some thirty-five times (Antoine DuPinet, *Historia plantarum earum imagines*, Lyons, G. Coter, 1561, no. 320. Onions, garlic and white mustard ([n. 26] *De materia medica*. II. 151–4) were favorite remedies. In the pseudo-Galen, *Definitiones medicae*, 314, K. *19*, 431, *alopecia* is defined as baldness produced by a disease called by that name (see Aristotle, *Problemata*. X. 27 [893b. 38], W. S. Hett, trans., Loeb Classical Library, London, Heinemann; Cambridge, Mass., Harvard University Press, 1970, and Celsus, [n. 26] *De medicina*. VI. 4.2–3), but in the Galenic work, *Introductio seu medicus*, XIII, K. *14*, 757, alopecia is described as a type of *elephantiasis*. Cf. Pliny, (n. 23) *N.H.* XXIII. 54. 101.

33. Pliny, (n. 23) *N.H.* XX. 13. 25–6.

use of it as an emetic is in contrast to Pliny's more magical use.[34] Some of these afflictions required sophisticated diagnoses, such as "the enlargement of the spleen,"[35] and in distinguishing the *nomas* and *gaggrainae* from other dermatological and subcutaneous growths and ulcers.[36] Gargilius deliberately omitted these afflictions: he employed not only Pliny but Galen, Dioscorides, and Celsus, therefore Gargilius chose to omit almost all usages of the radish where a sophisticated diagnosis was required.

Gargilius' most intriguing comment is about the "Egyptian kings" sponsoring research which proved through post-mortem examinations that radish juice, alone among the drugs, was effective in penetrating deep within the body and successfully treats *phthiriasis*. Gargilius was simply copying Pliny's similar statement which reads in translation:

> They also say that radish juice is a necessary [*necessarius*] [drug in the treatment] for the disease of the diaphragm [*praecordia*], inasmuch as in Egypt, when the kings ordered *post mortem* dissections to be made for the purpose of research into the nature of diseases, it was discovered that radish juice alone was capable of removing *phtheiriasis* attacking the internal parts of the heart [*cor*].[37]

Phthiriasis (alt., *phtheiriasis*) meant in Greek "the lice disease." In a rare example in medical terminology, the ancient and modern words are apparently the same for similar distinctions: *phthiriasis* was and is a chronic lice infestation in distinction from *pediculosus* which is simply a lice infestation.[38] The disease is mentioned a number of times in ancient

34. Dioscorides, (n. 26) *De materia medica*. II. 112.

35. According to Galen, the spleen's purpose was to "eliminate the thick, earthy, atrabilious humors formed in the liver." See, Galen, *On the Usefulness of the Parts*, IV. 15, trans. Margaret T. May, 2 vols. Ithaca, Cornell University Press, 1968, 1, 232, and Galen, *De naturalibus facultatibus*. II. 50, K. *2*, 131 ff. On the diseases whose symptom is the enlargment of the spleen, see the Hippocratic work, *De internis affectionibus*, in Émile Littré, ed., *Œuvres complètes d' Hippocrate*, 10 vols., Paris, 1839–61; repr. Amsterdam, A. M. Hakkert, 1962, 7, 166–303, and Paulos Aegineta, *Seven Books of*, 3 vols., Francis Adams trans., London, Sydenham Society, 1844, 1, 577. And the study by Robert Herrlinger, "Die Milz in der Antike," *Ciba Z.*, *8*: 2982–3012, 1958.

36. Jeremiah Reedy, "Galen on Cancer and Related Diseases," *Clio Medica*, *10*: 227–38, 1975; and Riddle, (n. 30) *Dioscorides*.

37. Pliny, (n. 23) *N.H.* XIX. 26. 86. My translation was guided by the translation by H. Rackham in (n. 23) *Natural History* vol. 5, p. 477.

38. Caelius Aurelianus, (n. 1) *Chronic Diseases*. IV. 2. 14: "It [phthiriasis] takes its name not from the basic nature of the disease, but from the large number of lice present." Latin writers considered *morbus peducularis* as the same as *phtheiriasis*, *viz*. Celsus, (n. 26) *De medicina*. VI. 6. 15. For a modern discussion of lice, see Robert Matheson, *Medical Entomology*, 2nd ed., Ithaca, Cornell, 1950, pp. 194–217.

sources, but Thomas Africa observes that "the lice disease" was often used and misused by literary sources to denote a horrible death, often reserved for evil rulers who meet their just end in misery.[39] Doubts are expressed that any precise medical diagnosis could be made on the basis of these literary descriptions.[40] People do not die from lice, no matter how much they itch. Lice infestations on humans cause surface symptoms, such as eczema, infections from scratching, and disgusting odors —symptoms which do not readily apply to the internal corruption, sometimes with "worms," as described in the ancient accounts. Scabies together with other, and various, illnesses may be what are described in some of literary accounts according to a recent study by Keaveney and Madden.[41] Galen described phthiriasis as a serious illness and among its remedies were strong alkaloids, such as stavesacre (*Delphinium staphisacre* L.) and white hellebore (*Veratrum album* L.), in prescriptions for external application.[42] Caelius Aurelianus describes *phthiriasis*:

> The signs of the disease are sleeplessness, itching of the body, pallor, loss of appetite, weakness of the esophagus, and loss of hair. The affection is one which involves a state of looseness. For a considerable discharge of reddish bile appears through the thin pores, and it is from this matter that the animals are generated.[43]

39. Thomas Africa, "Worms and the Death of Kings: A Cautionary Note on Disease and History," *Classical Antiquity*, *1*: 1–17, 1982. Africa states: "What is common in all accounts [in the writings of ancient historians] is a fatal corruption of tissue in the lower abdomen, swarming with worms or 'lice' and emitting a terrible stench." While undoubtedly this is true with many of the literary accounts in the histories [although Africa's citation to Herodotus. *Histories*. *4*. 205 is not to phthiriasis or connected with lice], the medical writings do not mention "worms" nor do they describe phthiriasis as a lower abdominal disease. Part of the confusion arises because modern translators confuse *skōlēkobrōtos*, "eaten by worms" (from *skōlekosis*) with *phtheir* which is sometimes incorrectly translated as "worm," as observed by Arthur Keaveney and John A. Madden, "Phthiriasis and its Victims," *Symbolae Osloenses*, *58*: 87–99, 1982.

40. Africa, (n. 39); Rackham, (n. 37) *N.H.*, *5*, 476; Reinhard Hoeppli, *Parasites and Parasitic Infections in Early Medicine and Science*, Singapore, University of Malaya Press, 1959, pp. 342–59, refers to the numerous classical descriptions and assumes that, at best, what was being described was phthiriasis with subcutaneous and, perhaps, muscular infection; J. R. Busvine, *Insects, Hygiene, and History*, London, Athlona, 1976, pp. 195–203; A. T. Sandison, "Parasitic Diseases," in Don Brothwell and A. T. Sandison, eds. *Diseases in Antiquity*, Springfield, Charles C. Thomas, 1967, p. 181, has no mention of *phthiriasis* (a striking omission!) but he identifies pediculosis as appearing in Assyro-Babylonian documents. Galen's description is suggestive of a type of dermatitis in connection with the eyelids (*Introductio seu medicus*. 15, K. *14*, 771; cf. Celsus, (n. 26) *De medicina*. VI. 6. 15) and in the Pseudo Galen, *Definitiones medicae*. 353, K. *19*, 437, *phtheiriasis* is defined as a scabies (*lepidas*).

41. Keaveney and Madden, (n. 39).

42. Galen. *De compositione medicamentorum secundum locos*. I. 7, K. *12*, 462–3; cf. *De remediis parabilibus*. I. 1, K. *14*, 323, and other discussions in *Introductio seu medicus*. 14, K. *14*, 771; *De probis pravisque alimentorum succis*. 8, K. *6*, 793 and *De theriaca ad Pison*. 18, K. *14*, 290. Caelius ([n. 1] *Chronic Diseases*. IV. 2. 16–8) also employed these drugs in much the same prescriptions as Galen.

43. Caelius, (n. 1) *Chronic Diseases*. IV. 2. 15.

In another section of his work on the spleen, Caelius said that diseases of the spleen are sometimes accompanied with lice infestations.[44] (To be noted, Gargilius recommended radish juice both for spleen diseases and *phthiriasis*.) Morbidity is not mentioned by Caelius as a possible outcome of phthiriasis but Aristotle said: "Some people get this disease when there is a great deal of moisture in the body; some indeed have been killed by it."[45] Neither Caelius nor Aristotle give enough details for judgment about a disease we might recognize in our terms.

While phthiriasis today is not fatal, there is a possibility that what Gargilius, Pliny and some of the other ancients were describing is epidemic (louse-borne) typhus which is an acute infectious disease caused by *Rickettsia prowazeki* and transmitted by the human louse, *Pediculus humanus*. Rickettsiae are inoculated into the skin by a person scratching the skin. Once inside the skin, rickettsiae spread throughout the bloodstream and enter endothelial cells where they proliferate. During the course of the disease, various progressive neurological symptoms appear ranging from apathy through mental confusion, disorientation, twitching, delirium and convulsions to stupor and coma, a course which is roughly compatible with ancient literary accounts of phthiriasis. Vascular lesions are produced which lead to hemorrhaging; the cells of the brain, liver and kidneys in particular become heavily infected and will rupture, allowing the organism to escape; in the circulatory system the progressive developments can lead to myocarditis. Cardiac arrest is sometimes the cause of death.[46] The literary accounts which described worms swarming inside the victim could not be a proper description of such an infection.

It is important information which Martialis and Pliny related—that "Egyptian kings" sponsored experimental post-mortem examinations by autopsy in order to determine not only the cause of death but, in this case, to verify the proper drug therapy. Historians agree on the evidence that the Ptolemaic kings supported human dissections for anatomical research and, more a matter of controversy, vivisection for physiological investigations.[47] Postmortem examinations to determine the cause of death are less well known but are documented in various papyri. The earliest one extant is from 173 A.D. where a physician certifies in writing that a man's death was by strangulation.[48] In another papyrus from 182 A.D. a physician certified the cause of death in the case of a slave boy who fell from a window while leaning out "to see the dancers."[49] Cases of violent or abnormal death required official examinations, often by physicians.[50] Inasmuch as most of the legal and administrative practices of Roman Egypt were a continuation of Ptolemaic procedures, we can be reasonably sure that these second century testimonials are evidences of earlier practices.[51] Galen said that two kings, Mithridates VI and Attalus II, tested antidotes of poisons on condemned criminals,[52] but this practice is different from testing correct drug therapy through a post-mortem autopsy.

In attempting to make modern medical sense out of Gargilius' passage, one is faced with a number of perplexing problems. In modern post-mortem examinations of victims of rickettsial infection, the left ventricle is contracted, the right moderately dilated, the atria are distended with blood, and the myocardium shows pallor, loss of consistency and yellowish streaks and points.[53] This suggests that Gargilius' passage may have been a reference to epidemic typhus with post-mortem discoveries confirming correct drug therapy by sophisticated tissue examinations. However, modern pathologists report that the gross changes in cardiac tissue are slight or even negligible.[54] Clinically the

44. Ibid., III. 4. 52.

45. Aristotle. *Historia animalium*. v. 30. 557a, A. L. Peck, trans. Loeb Classical Library, London, Heinemann; Cambridge, Mass., Harvard University Press, 1965.

46. See, Theodore E. Woodward and Edward F. Bland, "Clinical Observations in Typhus Fever," *J. Am. Med. Assoc.*, *126*: 287–93, 1944; *Epidemic (Louse Borne) Typhus*, Department of the Army Technical Bulletin, TB MED 218 / NAVMED P-5052-3 / AFP 160-5-17 (6 December 1956), pp. 1–2, 5–7; Alfred J. Saah and Richard B. Hornick, "Ricksettsia prowazeki," in Gerald L. Mandell, R. Gordon Douglas, Jr., and John E. Bennett, eds., *Principles and Practices of Infectious Diseases*, 2 vols., New York, Wiley, 1979, 2, 1520–23; Matheson, (n. 38) *Medical Entomology*, pp. 205–8.

47. For general accounts of dissections and anatomical research, see G. E. R. Lloyd, *Greek Science After Aristotle*, New York, Norton, 1973, pp. 75–90; Lloyd, *Science, Folklore and Ideology*, Cambridge, University Press, 1983; Peter Marshall Fraser, *Ptolemaic Alexandria*, 3 vols. Oxford, Clarendon, 1972, 1, 338–60; for a rejection of vivisection, see, John Scarborough, "Celsus on Human Vivisection at Ptolemaic Alexandria," *Clio Medica*, *11*: 25–38, 1976.

48. Darrel W. Amundsen and Gary B. Ferngren, "The Forensic Role of Physicians in Ptolemaic and Roman Egypt," *Bull. Hist. Med.*, *52*: 336–353, 1978, from *Oxyrhynchus Papyri* 51.

49. Ibid., p. 344, from *Oxy. Pap.* 475, and discussed more recently with a full translation by Naphtali Lewis, *Life in Egypt under Roman Rule*, Oxford, Clarendon, 1983, p. 106.

50. Amundsen and Ferngren, (n. 48).

51. Lewis, (n. 49) *Life in Egypt*, pp. 14–7.

52. Galen. *De antidotis*. I. 1, K. *14*, 2.

53. S. B. Wolbach, J. L. Todd, and F. W. Palfrey, *The Etiology and Pathology of Typhus*, Cambridge, Mass., Harvard University Press, 1922, pp. 153–4.

54. David H. Walker, Christian E. Paletta, "Pathogenesis of Myocarditis in Rocky Mountain Spotted Fever," *Arch. Path. Lab. Med.*, *104*: 171–4, 1980.

most important organ affected is the brain, with a rickettsial encephalitis. It is questionable, therefore, that gross observation by Ptolemaic physicians of typhus victims could have detected the myocardial changes.[55]

Still, there is the consideration of radish juice. It contains sufficient saponins and other constituents that topical application in lice-infected body areas would in reasonable likelihood reduce the population.[56] Assuming, first of all, that typhus was a disease afflicting the ancients, would they have connected lice infestation with the symptoms of a louse transmitted disease, such as typhus? The answer must be speculative: perhaps, because Aristotle, Pliny, Celsus, and Caelius Aurelianus clearly made a connection between lice infestation and phthiriasis, which they described as having *some* typhus type symptoms. Certainty is illusive and doubt must remain. Possibly Gargilius and Pliny preserved a significant detail about Alexandrian science which escaped notice except by these two Romans who probably little understood what they said. North Africa, Gargilius' home, is the region where epidemic (louse-borne) typhus has been reported as recently as World War II.[57] Most likely neither Gargilius nor Pliny were aware of the actual pathology of the disease because each was copying from his source(s) and neither had likely experienced an autopsy. Perhaps Gargilius' motive in relating this story was similar to Pooh's words, written by W. S. Gilbert in *The Mikado*: "Merely corroborative detail, intended to give artistic verisimilitude to an otherwise bald and unconvincing narrative."[58] Regardless of how much he knew about what he related, the fact remains that his words and those of Pliny indicated that Ptolemaic physicians conducted post-mortem examinations to determine the cause of death and to test proper drug therapy. Whether real

55. I am grateful to David H. Walker and Guido Majno, pathologists, who have assisted me in this trying to understand the pathology of typhus as the Greeks may have seen it.

56. According to James A. Duke, "Phytotoxin Tables," *C.R.C. Crit. Rev. Toxicol.*, 5: 232, 1977, *Raphanus* contains: acetaldehyde, acetone, butyraldehyde, ethyl alcohol, isobutyraldehyde, isovaleraldehyde, methanethiol, methanol, oxalic acid, propionaldehyde, pyrocatechol, and saponins. Soybean and alfalfa saponins interfere with midgut proteases of *tribolium* larvae (J. R. Whitaker and R. E. Feeney, "Enzyme Inhibitors in Foods," *Toxicants Occurring Naturally in Foods*, 2nd ed., Washington, National Academy of Sciences, 1973, p. 292). I acknowledge the assistance of Richard Axtell and Robert Brackett in forming this judgment. While both Martialis and Pliny employed radish juice as an applicant, Caelius Aurelianus recommended it as an emetic in the treatment of phthiriasis.

57. Matheson, (n. 38) *Medical Entomology*, p. 206; (n. 46) *Epidemic Typhus*, p. 5.

58. *Complete Plays of Gilbert and Sullivan*, New York, Modern Library, 1936, p. 390.

or not, the concept is there. What phthiriasis was in antiquity remains uncertain; typhus appears a possibility, albeit a small one.

Throughout *Medicines from Vegetables and Fruits*, Gargilius usually gave general information without attribution where there was general agreement and cited his source when the information appeared unique or controversial. He named some twenty authorities, some of whose works are no longer extant (except as preserved by quotations in later works), including Olympia Thebena, Sextius Niger, and Diocles of Carystos.[59] Probably most of the authorities that he cited actually were taken from Pliny as an intermediate source.[60] Most of the authorities Gargilius named, whether as direct or indirect sources, wrote in Greek. Dioscorides (*fl.* 40–79 A.D.) and Galen were most frequently cited, Dioscorides in fifteen chapters and Galen in thirteen.

Gargilius' discussion of the pomegranate affords an example of how he dealt directly with Greek sources.[61] Dioscorides' chapter on *rhoa*[62] was translated by Gargilius into Latin as *malus granatus* ("grainy apple"), the fruit of the *punicus arbor* ("Punic tree"). Citrons, cherries, quinces, apples, pomegranates, and, eventually, lemons and oranges were all called *mala* or "apples." Differentiation came from the adjectives.[63] An apple meant a fruit with a fleshy outside and a hard kernel, seed or core. In Latin, *malus* for "apple" was often interchanged with *pomum* meaning "fruit." Thus, a pomegranate was called *malus grana-*

59. For fragments, see, Max Wellmann, "Sextius Niger: Eine Quellenuntersuchung zu Dioscorides," *Hermes*, *24*: 530–69, 1889; and Max Wellmann, "Die Fragmente der sikelischen Ärtze Akron, Philistion und des Diokles von Karystos," *Fragmentsammlung der greichischen Ärzte*, *1* Berlin, Weidmann, 1901, 117 ff.

60. In order of encounter and with Rose's chapter number, Heras Cappadox (2), Diospoliticus (3), Galen (4–7, 23, 27, 30, 40, 42, 44, 46, 51–2), Xenocrates (4—via Pliny. *N.H.* xx. 82. 218), Olympia Thebana (5 via Pliny *N.H.* xx. 84. 226), Sextius Niger (5 via Pliny. *N.H.* xx. 84. 226), Dioscorides (5–6, 11, 21, 27 [?], 30, 40–3, 46–7, 53, 56, 60 [?]), Hippocrates (9, 18, 21), Glaucia (17 via Pliny. *N.H.* xx. 99. 263), Diocles [of Carystos?] (18, 35), Praxagoras (18), Chrysippus (19, 22 via Pliny. *N.H.* xx. 48. 119, and 30), Asclepiades (27 via Pliny. *N.H.* xx. 20. 42), Pythagoras (29 via Pliny. *N.H.* xx. 87. 236, and 49 via Pliny. *N.H.* xxiii. 63. 122), Pliny (29, 49), Cato (30 via Pliny. *N.H.* xx. 33. 78, 34. 84), Cornelius Celsus (30), Melitus (30), Democritus (35 via Pliny. *N.H.* xx. 9. 19) and Dionysius (35 via Pliny. *N.H.* xx. 9. 19). For a discussion of Gargilius sources, see I. Mazzini, (n. 6) *De hortis*, pp. 41–4, and compare those in the large tract of *De hortis* on pp. 35–41.

61. (n. 19) *Medicina*, No. 41, p. 179, Rose ed. In the new reconstruction of fragments of the work, Martialis discussed the arbor culture of the pomegranate, *viz.* it flowers beginning in May; its fruits ripen in the Autumn and proper fertilizer procedures. See Condorelli, (n. 4) *Gargilii*, pp. 11–2.

62. Dioscorides, (n. 26) *De materia medica*. I. 110.

63. Jacques André, *Lexique des termes de botanique en latin*, Paris, C. Klincksieck, 1956, pp. 196–9; Hermann Fischer, *Mittelalterliche Pflanzenkunde*, Munich, Münicher Drucke, 1929, p. 280.

tus, *malus punicus*, *pomum granatum*, and *pomum punicum*. There was much confusion; for an example, Pliny's *malus granatus* is a citron, also called the Assyrian apple (*malus Assyria*) and the Median apple (*malus media*/ alt., *medicus*). This misled later writers to use the term "Medical apple" for the citron and, when it was discovered in the Middle Ages, the lemon.[64] The English "pomegranate" retains the Latin base for "grainy fruit," thus showing a gradual resolution in distinctions between lemons and pomegranates. Also the modern scientific name for pomegranate, given by Linnaeus, is *Punica granatum*, and for citron is *Citrus medica*. Translating Dioscorides for botanical identification and medicine requires knowledge which Gargilius displayed when he correctly took Dioscorides' *rhoa* to mean "grainy apple" or pomegranate. The modern phrase "comparing apples with oranges" obscures the history that once oranges were apples.

A general consensus exists among authorities, Gargilius wrote, that pomegranates have an astringent property.[65] Modern science agrees about their quality because pomegranates have a tannin and an alkaloid called pelletierine.[66] We now recognize the crude drug from pomegranate as effective against the tapeworm, a use noted by Dioscorides,[67] but Gargilius did not include its anthelmintic use. Modern use of it as an anthelmintic is restricted because it is toxic. Possibly seeing the requirement to control carefully the dosage, Gargilius preferred not to recommend this use in his simple cures. We have seen, however,

64. Pliny, (n. 23) *N.H.* XII. 7. 15–6. Most authorities agree that the lemon was either not known or not employed in Graeco-Roman medicine; see Friedrich A. Flueckiger and Daniel Hanburg, *Pharmacographia*, 2nd. ed., London, MacMillan, 1879, pp. 114–5; F. Adams in Paulos, (n. 35) *Seven Books*, vol. 3, pp. 472–3; Wolfgang Schneider, *Lexikon Zur Arzneimittelgeschichte*, 7 vols. Frankfurt a. M., Govi, 1974, 3, pt. 2, 321–4. But some scholars, such as Max Meyerhof, (*Moses Maimonides. Glossary of Drug Names*, Trans. from French by Fred Rosner, Philadelphia, American Philosophical Society, 1979) say that Dioscorides' *melea persica* ([n. 26] *De materia medica*. I. 115) is a lemon but this is not accepted by J. Berendes, *Des Pedanius Dioskurides aus Anazarbos Arneimittellehre*, Stuttgart, Ferdinand Enke, 1902, pp. 137–8. For references which support a medieval discovery of the lemon, see H. Fischer, (n. 63) *Pflanzenkunde*, p. 265. The lemon is seen drawn in a medieval madonna and child painting where Jesus is seen holding a lemon; see Reay Tannahill, *Food in History*, New York, Stein and Day, 1973, p. 180. The ancients' *malus medica* was the fruit of the *Citrus medica* Risso which we call citron, which is related to the lemon. See William Thiselton-Dyer's identification of the Greek term in *Theophrastus. Enquiry into Plants*. 2 vols., trans. Arthur Hort. London, Heinemann; Cambridge, Harvard University Press, 1948. 1, 311.

65. Rose, (n. 19) *Medicina*, No. 41, p. 179.

66. Henry Kraemer, *A Textbook of Botany and Pharmacognosy*, 4th ed., rev., Philadelphia and London, Lippincott, 1910, pp. 534–6; George Edward Trease and William Charles Evans, *Pharmacognosy*, 11th ed., London, Bailliere Tindall, 1978, p. 120.

67. *The Dispensatory of the United States of America*. 25th ed., Philadelphia, Lippincott, 1950, pp. 1797–8.

that Gargilius recommended the radish against "living things" in the intestinal tract, doubtlessly tapeworms. Radish was employed as an anthelmintic up until the eighteenth century when it fell out of favor. As a drug, it was less dangerous than pomegranate. Gargilius' practice was to recommend mild drugs for simple medical problems.

Gargilius began the chapter on pomegranates as he did with the one on radishes. In an unattributed quotation possibly from Dioscorides, Gargilius noted that the sweet kind of pomegranates was warming and good for the stomach against flatulency, but it ought not be given for fevers. In contrast, Galen listed pomegranate fruits as having a cooling property, hence implicitly suitable as a possible antipyretic remedy.[68] Dioscorides had only referred to the sweet pomegranate without giving its properties. Pliny noted that there were at least five kinds of pomegranates.[69] Gargilius was critically evaluating his material to clarify at least a potential for a mistake by making sure that he did not cite the contradictory testimony of his sources, as between Dioscorides and Galen, nor the unnecessarily complicating information that was in Pliny.

Continuing his discussion, Gargilius cited Dioscorides by name about pomegranate flowers but his translation and understanding were truly imperfect:

> A remedy from pomegranate flowers is believed to be effective for all eye afflictions. Dioscorides simply reports that, when there begins a bursting of the loosening action [i.e., when the flower calyxes break open in blooming], the flowers, three in number, are swallowed without touching any tooth.[70]

This is a purported translation for what Dioscorides had written:

> Pomegranate flowers, which are also called *kytinoi*, are astringent, drying, checking, and drawing together bloody wounds—the same purposes as those drugs from [the other parts of] the tree. The flowers serve in a mouthwash for moistening rotten gums and for making strong teeth and in an applicant they have an adhesive quality for hernias. It is reported that one who has as much as three small flowers does not have eye trouble for a year.[71]

68. Galen, (n. 26) *De simpl. med. temp. ac fac.* IV. 3, but in VIII. 17, Galen did not give cooling as the fruit's property.

69. Pliny, (n. 23) *N.H.* XIII. 33. 113, cf. *N.H.* XXIII. 57. 107, where Pliny said that the Sweet pomegranates are strictly forbidden for fevers.

70. Rose, (n. 19) *Medicina*, No. 41, p. 181: Ex cytinis fit remedium quod creditur tutos ab oculorum dolore praestare. Dioscorides simplicius in hunc modum tradit ut cum primum cytini erumpere incipiunt, tres numero additi sine contactu dentium transvorentur.

71. Discorides, (n. 26) *De materia medica*. I. 110. 2–3.

Gargilius' citation of Dioscorides is very muddled. Pliny, not Dioscorides, referred to swallowing pomegranate flowers without touching the teeth but Pliny's use was for the purpose of preventing eye trouble.[72] Although Gargilius displayed some knowledge and critical skill about pomegranates, overall, he was careless with his information in contrast to his chapter on radishes.

Gargilius' citations are usually straightforward. "A cooking of celery and its roots boiled in drinking water effectively combats dangerous poisons,"[73] Gargilius wrote in what was or could have been a literal translation of Dioscorides, but he did not name his source. At times, Gargilius was less precise in his citations even when he was combining sources:

> Both Sextius Niger and Dioscorides believe that *malva* [*Hibiscus sylvestris* or *Alcea rosea*[74]] is useless for the stomach. Dioscorides and Galen complain that *malva* is only slightly nourishing to the body but quickly it runs through the bowels and is evacuated.[75]

As earlier noted, the full text of Sextius Niger's work is now lost, but it is not apparent that Gargilius had seen it either. Likely Gargilius received the citation from Pliny, who named Sextius but was not named by Gargilius.[76] Dioscorides said that the plant was bad for the stomach (upper tract), good for the lower digestive tract, and that its roots given in a broth was an antidote by causing vomiting.[77] Galen, not Dioscorides, said that *malva* was only slightly nourishing but he gave no purgative or emetic qualities to it.[78]

Rue is pharmaceutically a strong plant, containing a volatile oil, which is a powerful local irritant,[79] and rutin, which is a vasopressor agent.[80] Dioscorides said that mountain rue is fatal, if too much is ingested. Carefully he prescribed its use for a number of things from headaches and earaches to such hard to diagnose and treat problems as *erysipilis*, *herpes*, *achor*, and *exanthema*,[81] which are various subcutaneous eruptions and growths whose specific etiologies are not known to moderns. In the area of dermatological afflictions in general, we are unsure of precisely the distinctions the Greeks were making. Uncharacteristically Gargilius included rue among his plants,[82] most of which were mild drugs,[83] and Gargilius employed Dioscorides as a source for information on rue. Gargilius warned of the plant's harmful potentialities and related only the mild, simpler uses—totally omitting the difficult dermatological usages as well as the employment of rue as an abortifacient which Dioscorides gave as well.[84]

Occasionally Gargilius was critical of his authorities. He said that Dioscorides believed that dried Damson plums or prunes would impede bowel movements but Gargilius noted that Galen thought Dioscorides to be incorrect about this.[85] While Gargilius did not express his opinion directly, at least he put the correction in his text, without explaining Dioscorides' inexplicable error about prunes.

The study of Gargilius' use of Dioscorides as an authority begins what will be a long, complex series of problems. It appears that he had a text that he believed to be Dioscorides but one which differs from the texts we attribute to him. On the *castanea* or Sardian acorn, Gargilius wrote, "Dioscorides thought it to be a purgative," but no statement of this sort is found in any copy known of Dioscorides' Greek text in the chapter on *castanea*.[86] Similarly Dioscorides' opinion is cited for *hypomelidius* but that statement is not found in Dioscorides.[87]

72. Pliny, (n. 23) *N.H.* XXIII. 59. 110.
73. Rose, (n. 19) *Medicina*, No. 2, p. 135.
74. André, (n. 63) *Lexique*, p. 195.
75. Rose, (n. 19) *Medicina*, No. 5, p. 139.
76. Pliny, (n. 23) *N.H.* XX. 84. 226.
77. Dioscorides, (n. 26) *De materia medica*. II. 118. 1.
78. Galen, *De alimentorum facultatibus*. II. 42, K. 6, 629.
79. (n. 67) *Dispensatory*, p. 1832. Gargilius' *ruta* is *Ruta graveolens* L. + sp.
80. Walter H. Lewis and Memory P. F. Elvin-Lewis, *Medical Botany. Plants Affecting Man's Health*, New York, Wiley, 1977, p. 190.
81. Dioscorides, (n. 26) *De materia medica*. III. 45. 4–5.

82. Rose, (n. 19) *Medicina*, No. 3, pp. 136–7.
83. Another strong plant which Gargilius included is the cultivated opium poppy (*papaveris*= *Papaver somniferum* L., (Rose, [no. 19] *Medicina*, p. 152), however Gargilius did not recommend opium. His source, Pliny (*N.H.* XX. 76. 202), said: "When the heads themselves and the leaves are boiled down, the juice is called *meconium*, and is much weaker than opium." Gargilius began the chapter with this statement from Pliny but he omitted entirely the discussion of the drug opium. Dioscorides ([n. 26] *De materia medica*. IV. 64. 7) distinguished between the latex of the *opus* or opium, and an extract of the whole plant, *mekonion*. Gargilius' usages were for simple problems, like a headache, but he did recommend another variety called a wild poppy (*Papaver rhoeas* L. or horned poppy) as effective for tumors.
84. (n. 67) *Dispensatory*, p. 1832, says that the alleged abortifacient effect is probably a product of its general toxicity.
85. Rose, (n. 19) *Medicina*, no. 46, p. 191: "Dioscorides sicca cocta aluum restringere existimat, quod Galenus non inmerito falsum esse contendit." Cf. Dioscorides, (n. 26) *De materia medica*. I. 121; Galen, (n. 26) *De simpl. med. temp. ac fac.* VII. 35.
86. Rose, (n. 19) *Medicina*, no. 56, p. 203: "adeo ut Dioscorides putet etiam cathartico dato per hanc potionem iri obviam posse, si plus quam necesse sit purget." Cf. Dioscorides, (n. 26) *De materia medica*. I. 106.
87. Rose, (n. 19) *Medicina*, no. 60, p. 207: "De hypomelidibus. Hoc pomum Dioscorides frigidissimum adfirmat atque ideo et laborem digestionis incutere." Cf. Dioscorides, (n. 26) *De materia medica*. I. 109.

On the onion, Gargilius cited Galen as stating that as an applicant it stimulates hair growth more rapidly than sea-foam.[88] The statement is found both in Galen and Dioscorides,[89] thus raising the question as to why Gargilius chose to attribute the statement to Galen and not to both. Gargilius attributed to Galen a statement of a constraining effect of green pears on the stomach but a statement to this effect is not found in those Galenic texts published by Kühn.

Such instances as these led Innocenzo Mazzini to conclude that Gargilius did not employ Dioscorides and Galen directly.[90] This postulate represents a full turn from the assertions of earlier scholars who, noting that Gargilius was the first Latin writer to cite Dioscorides and knowing that Dioscorides was translated into Latin by the sixth century, proposed that Gargilius had himself translated the full text of Dioscorides.[91] The evidence, as I see it, points to a middle position: Gargilius employed Greek sources and he made his own translations for quotation in his work. In so doing, he made errors which mean that his knowledge of Greek was poor. He often referred to "Greek writers," thus he was aware that they wrote in Greek. Had he only used Latin sources, such as Pliny, he might not have been aware of this fact. Since there is no evidence that Galen's tract on simple medicines was translated into Latin before the twelfth century, likely Gargilius read Galen in Greek. There was no intermediate source for these citations. Furthermore, there is no evidence that Diocles of Carystos, Praxagoras, and Chrysippus were ever available in Latin, but Gargilius cited them.[92] This leads me to believe that Gargilius conducted his own research by reading Latin and Greek sources as best he could and supplemented it with his experiences. Most of his citations of Latin and Greek authors are accurate. Sometimes he misunderstood his source and at other times, he summarized so severely as to misrepresent. Occasionally as on prunes, he made corrections. Finally, he either confused some other source for Dioscorides and Galen or else he had

88. Rose, (n. 19) *Medicina*, no. 27, pp. 161–2.

89. Galen, (n. 26) *De simpl. med. temp. ac fac.* VII. 58; cf. Discorides, (n. 26) *De materia medica.* II. 151.

90. Mazzini, (n. 6) *De hortis*, pp. 42–4.

91. John Riddle, (n. 4); Lynn Thorndike, *History of Magic and Experimental Science*, 8 vols., New York, Columbia University Press, 1923–58, I, 608.

92. In n. 60 above, there are Greek authors whom Gargilius cited but he took the quotations from Pliny. It remains possible that those citations to the authors not found in Pliny were also indirectly derived from some other Latin source no longer extant.

texts of Dioscorides and Galen which are different from the extant copies. Some of his citations were of such a nature that they could have been simple translation errors.

Gargilius related his own experiences with drugs. One of those experiences was unhappy. He testified to the anodyne effect of a celery (sometimes, parsley[93]) seed recipe with anise, henbane, celery seed and sprouts, formed into pills and taken with wine when one wished to sleep. "Would," Gargilius wrote, "that disaster had not forced me to learn from personal experience how much power this drink has."[94] He personally testified as to the effectiveness of horseradish boiled in barley water for chest problems.[95] A recipe of almonds (*amygdala*), gentian (*gentiana*), and wormwood (*absinthium Ponticum* = *Artemsia absinthium* L.) for the liver and spleen is strong "as I have proven by testing it in my own home [*domestica*] for by it my wife was saved."[96] Besides being our only evidence that he was married, this statement is the only indication that he may have practiced medicine. It's isolation, however, suggests that, even if he had practiced medicine, he did not necessarily do so as a physician. More likely he was a farm manager who had to treat illness and injury. The work entitled *Medicines* appears unencumbered by the preoccupations of medicine as a profession; it merely suggests the utility of simple, household remedies in the running of a farm. Some medical knowledge seems appropriate to a retired veteran of bloody military encounters.

Any judgment of Gargilius' work should be based on an understanding of the kind of book he wrote. He wrote on horticulture. For this reason he discussed those common cultivated plants and wild field plants that would be found useful and growing on and around the farm. He followed in the tradition of Cato, Varro, and Columella, authors frequently employed in the extant portions of *De hortis*. "While a garden feeds people, it also heals them," Cato said.[97] The legacy of

93. André, (n. 63) *Lexique*, p. 35.

94. Rose, (n. 19) *Medicina*, no. 2, p. 136; trans. by Tapper, (n. 7) "Materia Medica", p. 25: "quantum haec potio valeat utinam nulla calamitas coegisset ut experimento meo nossem." Cf. Pliny, (n. 23) *N.H.* XX. 441. 112–5 (*et passim.*); Dioscorides, (n. 26) *De materia medica.* III. 64; Galen, (n. 26) *De simpl. med. temp. ac fac.* VI. 51.

95. Rose, (n. 19) *Medicina*, no. 32, p. 171.

96. Ibid., no. 53, p. 200: "vehemens hoc esse etiam domesticis in uxore servata experimentis probavi." Cf. Pliny, (n. 23) *N.H.* XXIII. 75. 144–5; Dioscorides, (n. 26) *De materia medica.* I. 123; Galen, (n. 26) *De simpl. med. temp. ac fac.* VI. 36.

97. Cato. *On Farming* 8. 2, trans. Ernest Brehaut, New York, Columbia University Press, 1933.

Roman medicine had many roots on the Roman farm, as John Scarborough has shown.[98] Because it was useful information, Gargilius Martialis included a section on the medicinal uses of the plants on and around the farm. In doing this, he knew enough to go to good Greek medical authorities rather than to restrict his literary research to those who had written on horticulture. He consistently limited his selections to easily diagnosed and treated afflictions. Although some of the authorities dealt with rather complex medical issues, he selected from his sources and described medicines in what the Greek would call *euporista* or "household remedies." For an example, he did not use Book Four of Dioscorides' *De materia medica*, where there are strong medicines such as atropine alkaloids.

Even though he made errors, especially when dealing with Greek authors, he exhibited critical judgment in what he chose to include and exclude. In the words of K. D. White, he did it in a style that "is clear, simple and unaffected."[99] For these reasons, people from Cassiodorus' time regarded Gargilius as a medical authority. Undoubtedly his simple remedies using common, seemingly pharmaceutically simple plants spoke to the needs of the farm, manor and monastery in the early Middle Ages. If one today were writing a history of medicine during Antiquity, one could very well omit Gargilius Martialis and still be complete. If one were writing the same about the Middle Ages, Gargilius would have to be included although he did not live in the age.

Today we are aware of prejudices whose presence distorts values and judgments about individual people because of their race, religion, ethnicity, sex, or sexual affection. Perhaps Gargilius Martialis and other late Roman writers are victims of another kind of prejudice, when they are labelled as decadent epitomizers in the late autumn of classical civilization. Certainly in the case of Gargilius, he should not be criticized for writing a medical book because it was not such a book he wrote. He wrote on *Vegetables and Fruit Trees* and in so doing he told us fairly well what he thought useful and that included medicine. The medicines were those from mild herbal plants and how they were useful for easily treated afflictions. Martialis' contributions should be judged on the basis of what he wrote, for the purposes for which he

98. John Scarborough, *Roman Medicine*, Ithaca, Cornell University Press, 1969.
99. K. D. White, *Roman Farming*, Ithaca, Cornell University Press, 1970, p. 30.

intended, and not the purposes another age had him to serve. In the re-evaluation process, perhaps we can examine just how decadent or creative, how much of an epitomizer or how original, each of the late Roman writers was on topics judged as medicine.

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