

SERGIUS ORATA: INVENTOR OF THE HYPOCAUST?

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PLINY THE ELDER PROVIDES the fullest statement in our sources about the activities of the mysterious entrepreneur Sergius Orata, though various other comments and anecdotes help fill out the picture to some degree.¹ On the basis of these scattered notices, some postulate that Orata invented the hypocaust, the system of underfloor heating used in Roman baths, and therefore occupies a central role in the early history of the development of the baths.² Despite clear archaeological evidence from Greece and Magna Graecia that proves Orata could not have invented the hypocaust *per se* (examples have been found that predate him by up to a century-and-a-half),³ the notion still carries widespread currency.⁴ Attempts at resolving the discrepancy between the literary and archaeological records have included suggesting that he refined rather than invented the hypocaust system,⁵ or denying a connection between the Greek "annular" hypocaust and the Roman-style pillared *suspensura*, the invention of which can then be ascribed to Orata.⁶ Can these difficulties be resolved and the nature of Orata's invention precisely defined? And, if so, what role did Orata play in the development of Roman baths?

Pliny's passage (Appendix, no. 1) is clear on a number of key points. It places Orata's activities in Campania in the 90s B.C. (Crassus was consul in 95 B.C. and the Marsic War was part of the Social War, 91–87 B.C.).⁷ It says that he was

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¹ For the sake of convenience, the chief *testimonia* for Orata and the *pensiles balineae* are collected and translated in the Appendix. The *testimonia* will hereafter be referred to by number. For the current reference, cf. Appendix, no. 1. (The translations are my own, unless otherwise indicated.)

² Italian scholars of the early part of this century championed this idea, which has come to be generally accepted, at least in essence: cf. the works cited by DeLaine (1988: 14–15) and those listed in n. 4 below.

³ Hypocausts of the third and second centuries B.C. are known, for instance, at Gortys in Greece and at Gela, Megara Hyblaea, and Syracuse in Magna Graecia. Ginouvès (1962: 208–209) suggests that Orata either introduced the Romans to the mechanism or perfected it in some way (a position which nonetheless accepts that the *pensiles balineae* means "hypocaust"; see next note).

⁴ The association of Orata's invention with the hypocaust can be found, to varying degrees, in, e.g., Hilton Turner 1947/48: 486–487; Brödner 1992: 22–23; Nielsen 1993: 1.20–22 and esp. 1.161, s.v. "Hypocaustum, etc." (where *pensiles balineae* is presented unequivocally as the earliest designation for the hypocaust); Lafon 1991, esp. 97; Yegül 1992: 357; Adam 1994: 265. Note, however, the reservations of Yegül 1992: 379 and 493, s.v. "Sergius Orata"; and Rook 1992: 6.

⁵ Cf., e.g., Ginouvès 1962: 208–209; DeLaine 1989, esp. 123; Lafon 1991: 97.

⁶ Nielsen 1993: 1.20–22. Her fuller arguments can be found in Nielsen 1985.

⁷ Macrobius (Appendix, no. 6) corroborates the date. For Crassus, cf. Broughton, *MRR* 2.11 and 579, s.v. "Licinius" (no. 55). For sources on the Marsic War, cf. Greenidge and Clay 1960: 138–179, s.v.

a fish-farmer who invented (rather than refined) both oyster ponds and *pensiles balineae*, which he is said to have installed in villas which were then sold for a profit. This latter statement finds some support in comments made by Cicero, a near contemporary, who presents Orata as involved in real estate transactions (Appendix, nos. 2a and b in reference to the same incident), and characterizes him as a man who lived most comfortably (Appendix, no. 3), implying that he enjoyed considerable wealth, although it is not made explicit that his wealth derived from real-estate speculations.

A central question for the current inquiry is the meaning of the term *pensiles balineae* (also called *pensilia balinea*). The written evidence is mostly mute. Pliny's notice provides no clue as to their appearance, nor does Cicero's comment in a fragment of the *Hortensius*, apparently in reference to Orata, which records that he was the first man to raise *balneola* and that he kept fish.⁸ Valerius Maximus offers the only hint as to what the *pensiles balineae* looked like (Appendix, no. 5). Since the word *balneum* can denote tubs or tanks as well as bath-buildings and the act of bathing,⁹ his statement seems to suggest that the *pensilia balinea* were raised pools of hot water (cf. below, 61–62). The overall unhelpfulness of the written record is not offset by archaeology: it is understandably difficult to locate something in the material record when it is unclear what is being sought.

In the absence of clear ancient testimony, modern scholarship has advanced several propositions to explain the nature of Orata's invention. The phrase translates literally as "hanging baths," which antiquarians of old imagined as suspended bathtubs or shower-like devices.¹⁰ Yet most modern scholars interpret *pensiles balineae* to mean "raised baths" in the sense of a hypocausted bathing suite.¹¹ The belief is not unfounded. Vitruvius calls the hypocaust a *suspensura*,¹² which is reminiscent of the wording used in connection with Orata's invention

⁸ Appendix, no. 4. Orata is not expressly named, but he is the most likely subject. *Includit pisces* seems to mean that he built tanks for fish, compare Mart. 12.31.5. The term *pensiles balineae* does not appear in Cicero's writings, as Nielsen claims (1993: 1.161, s.v. "Hypocaustum, etc.").

⁹ Cf. OLD, s.v. (3).

¹⁰ Cf. the works cited by Benedum 1967: 96–98. Some of these ideas are not dead—the Loeb edition of Pliny the Elder's notice (tr. H. Rackham 1940) renders *pensiles balineae* as "showers." It is conceivable that spouts located above certain pools, both hot and cold, in the Stabian and Forum Baths at Pompeii and the Suburban Baths at Herculaneum could have served as showers for bathers in the pools (cf. Kretschmer 1960, esp. 106 [figs. 34–36]). However, this does not seem to have been the intended function of these spouts, which was rather to supply the pools with a continuous flow of water (Kretschmer terms them "bouches d'alimentation"; cf. Sen. *Ep.* 86.6 for flowing water in baths). To my knowledge, no distinct shower facilities on anything like the modern model are known from a Roman bath, nor even showers analogous to those illustrated in Greek vase paintings (cf. Ginouves 1962: 21–28).

¹¹ The fullest arguments are presented by Benedum 1967: 99–101; cf. the works cited above, nn. 2 and 4.

¹² Cf. Vitr. *De arch.* 5.10.2. Vitruvius also uses the term *hypocaustis* in connection with this system (*ibid.* 5.10.1), but apparently in reference to furnaces rather than raised flooring. An inscription (*ILS* 5711, Pitinum Pisaurense, no date) mentions a benefactor who *balneum suspensit*, which seems to mean that he installed a hypocaust, cf. OLD, s.v. "*suspensio*" (4b).

by Cicero and Valerius Maximus.¹³ In general, *pensilis* means “hanging” and can be imagined as applying to pools perceived to “hang” between the roof and the ground by being part of a raised underfloor heating system.¹⁴ In addition, the hypocaust is abundantly attested in the archaeological record, and it is seductive to adduce it as corroboration for the inferences drawn from the written material. The suggestion that the term denotes a hypocaust is therefore entirely reasonable and plausible.¹⁵

But there are some worrisome problems. It is noteworthy, for instance, that the words *suspensura* or *hypocauston*, used elsewhere to denote the underfloor heating system,¹⁶ are not used in connection with Orata’s invention, even by authors writing when these terms had been current for some time (such as Valerius Maximus or Pliny). Conversely, the phrase *pensiles balineae* never appears in the sources (notably Vitruvius) in connection with the heating system for baths. If Orata was generally considered the inventor of the hypocaust—a device with which many Romans would have come into daily contact, at least indirectly—the absence of any explicit connection between his invention and the heating system for baths is especially curious. It may be significant that Cicero, a man who chose his words with great care, uses the term *balneola* to denote Orata’s invention (Appendix, no. 4), rather than *balneum* or *balneae*, the terms he habitually uses in reference to baths for human use.¹⁷ Perhaps also pertinent is an inscription listing several waterfront structures, among them *Bal(neae) Faustines* and *aquae pensiles*.¹⁸ The point to note is that the “hanging waters” are not part of the bathhouse, but

¹³ Cf. Appendix, nos 4 (Cicero) and 5 (Valerius Maximus).

¹⁴ It certainly does seem strange that something supported from underneath (like a hypocaust) can be described as “hanging,” but there is fairly convincing evidence that the word was used in this sense (cf. below, n. 31). Further, *TLL* 10.1.1101.20–47 (on “*pensilis*”) cites the references in Vitruvius, Valerius Maximus, and Pliny with the comment, *agitur de balneis hypocausti calefactis* (*ibid.* 1101.23–24); *OLD* (s.v. “*pensilis*” [3]) offers the meaning “that [which] is raised above the ground”; cf. Benedum 1967: 98–99.

¹⁵ Those who accept the *pensiles balineae*-hypocaust identification hold that Pliny’s comment that Orata fitted out villas with *pensiles balineae* (cf. Appendix, no. 1) means that he added hypocausted bathing suites, which seem only to appear in the material record in the first century B.C. (i.e., after Orata), cf. Fabricotti 1976, esp. 31–58; but note *ibid.* 104–105, where Fabricotti admits that the dating of these early houses is not secure, thus allowing the possibility that some of the early hypocausted bathing suites predate Orata. Indeed, it seems that the widespread belief in Orata’s contribution has helped determine the dating of at least some of these hypocausted baths. On early domestic baths, see further, Broise and Jolivet 1991: 95; Lafon 1991: 113; Yegül 1992: 50–55.

¹⁶ Cf., e.g., Vitruvius *De arch.* 5.10.2 (*suspensura*) and Pliny *Ep.* 2.17.23 (*hypocauston*).

¹⁷ Cf. *Rosc. Am.* 18; *Clu.* 141; *Vat.* 31; *Cael.* 61–62; *De or.* 2.223 (*balneae*); *Fam.* 9.16.9, 9.22.4, 14.20; *Att.* 2.3.4, 13.52.1, 15.13a.1 (*balneum*). Cicero’s linguistic precision is further illustrated by these references: he consistently uses *balneae* to denote public establishments and *balneum* for private ones (although he once uses *balnearia* [*hiberna*?] to describe baths on a property he was investing in, *Att.* 13.29.1). To be sure, the word *balneolum* could be applied to private bath suites (e.g., Sen. *Ep.* 86.4), but its absence in this sense from Cicero’s writings is what is noteworthy here.

¹⁸ *CIL* 6.29830: *Bal(neae) Faustines*, | *horrea*, | *Fo(rum?) Boar(ium)*, | *aquae pensiles*, | *For(um) Olitor(ium)*, | *portex Neptuni*, | *T(emplum) Apollonis*. The inscription accompanies a picture of the pertinent structures, located either on a river bank (the Tiber?) or on the seashore (the Campanian

a separate structure (although it is far from clear that *aquae pensiles* were the same thing as *pensiles balineae*).

If the *pensiles balineae* were raised pools of hot water (as implied by Valerius Maximus [Appendix, no. 5]), but not necessarily found in bathhouses, what were they? I believe that Orata's fish-farming activities provide the answer, and that his invention was used in connection with fish-raising rather than with human bathing. Orata was widely known as a fish-farmer, and may even have derived his *cognomen* from the practice.¹⁹ Tellingly, all the sources mentioning Orata and his *pensiles balineae* together strongly imply a connection between the device and Orata's fish-farming business;²⁰ in fact, Orata and his *pensiles balineae* are never explicitly linked to baths for human use. Furthermore, Pliny's notice appears in the general context of a section on men who invented fishponds.²¹ It is entirely possible that Orata earned a substantial income from pisciculture, as Pliny suggests.²² Oysters were a culinary delicacy among Romans; so farming them would have been big business.²³ This is especially true of Campania, which in Orata's time was starting to attract increasing numbers of wealthy Romans who built villas there.²⁴ Here may lie another of Orata's sources of income. Raising fish was a fashionable hobby among the Roman elite of the Late Republic. Cicero dubbed men given to the habit *piscinarii*, "fish-fanciers" (*Att.* 1.19.6, 1.20.3). Hortensius, for instance, was fond of his fish and spent huge sums equipping his villas (notably in Campania) with pools for keeping them;²⁵ Lucullus's fish were said to have fetched an enormous sum when sold after his death (Pliny

coast?). *TLL* 10.1.1101.42–43 includes the comment that the *aquae pensiles* are perhaps attached to the baths, but the wording suggests otherwise.

¹⁹ He is said to have been especially fond of fish called *auratae*, hence his name "Orata"; cf. Appendix, no. 6, Columella *Rust.* 8.16.5. Festus (196L [182M]) preserves an alternative tradition, whereby Orata got his name from wearing two huge golden rings.

²⁰ This is especially noticeable in Pliny's passage (Appendix, no. 1) where the clause *nec gulae causa sed avaritiae* links the oyster ponds to the *pensiles balineae* via Orata's great profit-making. Note also that Cicero mentions fish in the same breath as the *balneola suspendit* (Appendix, no. 4) and that Valerius Maximus (Appendix, no. 5), having introduced the *pensilia balinea*, immediately continues with *idem, videlicet ne gulum Neptuni arbitrio subjectam haberet, pecuniaria sibi maria excogitavit* Benedum (1967: 101–102) is at pains to separate the device from fish-raising, claiming that there is no explicit connection between the two. In my view, this position does not do justice to the more informative literary evidence, where the implicit association of Orata, *pensiles balineae*, and fish-raising is clear, consistent, and strong. Even a passage like that in Macrobius (Appendix, no. 6) implicitly separates the *pensiles balineae* only from oyster beds, not from fish-raising as a whole.

²¹ The section (*HN* 9.168–173) is introduced with the sentence *quae mentio piscinarum admonet ut paulo plura dicamus hac de re priusquam digrediamur ab aquatibus* (9.167). Macrobius (Appendix, no. 6) also includes Orata in the context of fish-keeping.

²² Cf. Appendix, no. 1. The Umbricii Scaurii from Pompeii earned a fortune from this source; cf. Curtis 1991: 89–96.

²³ Cf., e.g., Mart. 12.48.3–4, 13.82; Andrews 1947/48, esp. 300.

²⁴ Cf. D'Arms 1970: 1–38.

²⁵ Varro *Rust.* 3.17.5: *Q. Hortensius, familiaris noster, cum piscinas haberet magna pecunia aedificatas ad Baulos, ita saepe cum eo ad villam fui, ut illum sciam semper in cenam piscis Puteolos mittere emptum solitum.*

HN 9.170; Macrobi. *Sat.* 3.15.6), and L. Crassus is reputed to have mourned the death of a lamprey as that of a daughter.²⁶ It is clear from the material remains that much effort went into keeping and raising fish, and complex technologies were developed toward that end.²⁷ All of this provides an apt context for Pliny's statement that Orata raised oysters and fitted out villas with his *pensiles balineae*, deriving great profit from both.²⁸ The *pensiles balineae* may have been specialized fishponds of some sort.

If so, what type of pond? In answering this question, the obtuseness of the literary evidence with regard to the precise nature of the *pensiles balineae* must again be noted. Archaeology is slightly more helpful, but not much, due to an unfortunate circumstance.

A recent study of artificial fishponds in Italy reveals that most were built on rocky shelves projecting into the sea;²⁹ it is difficult to see how such ponds could be described as "hanging." However, the term *pensilis* may provide a clue. This unusual adjective was used to describe pendulous objects such as bunches of grapes or male genitalia, as well as man-made structures.³⁰ When applied to the latter, it can indeed denote structures which, like the hypocaust, were raised on pillars.³¹ But it is also applied to gardens (Curt. 5.1.32), a promenade (Pliny *HN* 36.83), and a *tabularium* (CIL 13.6746). What does *pensilis* mean in these instances? A possible response is that it refers to terracing, a main feature of "hanging gardens."³² The adjective could have described, rather poetically, how each level seemed to hang over, or at least was raised above, the preceding one.

²⁶ Macrobi. *Sat.* 3.15.4. Pliny (*HN* 9.172) tells the same story of Hortensius. If the protagonist was indeed Crassus, his association with the fish-raising Sergius Orata (cf. Appendix, nos. 2a and b) is lent another significance.

²⁷ Cf. Higginbotham 1991: 192–246 for the various construction techniques and modes of operation used in fishponds. The fishponds are part of a wider elaboration of senatorial properties characteristic of the second century B.C.; cf. Shatzman 1975: 11–46.

²⁸ An observation on Pliny's wording (Appendix, no. 1) may be instructive. He uses the word *mangonicatus* to describe the result of Orata's equipping villas with *pensiles balineae*. The term means "improved the appearance of," and is derived from *mango* ("slave-dealer"). Pliny's use of this rare term tends to imply that he viewed the *pensiles balineae* as a superficial improvement, analogous to the sleight-of-hand trickery common among slave-dealers in improving the appearance of their less attractive merchandise (cf., e.g., Quint. *Inst.* 2.15.25; Pliny *HN* 21.170; Sen. *Ep.* 80.9; Mart. 6.66). If this is the case, Pliny's choice of word would be more suitable for the addition to a villa's facilities of a frivolous feature such as an elaborate fishpond, rather than the more substantial addition of a hypocausted bathing suite. Note also the passion of Nero's aunt Domitia for adorning fishponds at Baiae (Tac. *Ann.* 13.21.6; Dio 61.17.2), testimony to the enduring tradition of pisciculture in Orata's area of operation.

²⁹ Cf. Higginbotham 1991: 16–191 where surviving Roman fishpond installations in Italy are described and catalogued.

³⁰ For these meanings and the pertinent citations, cf. *TLL loc. cit.* above, n. 14.

³¹ Cf. Pliny *HN* 18.302 and Columella *Rust.* 1.6.16 on *borrea* which were habitually raised on pillars to prevent dampness and deter vermin. Pliny (*HN* 36.104) also applies the term to Rome, an *urbs pensilis* over its subterranean vaults and sewers.

³² It is unclear, however, what *pensilis* describes here: the supporting structures or the pendent plants? In the case of the *ambulatio* and *tabularium*, "terraced" appears the most logical interpretation;

If so, *pensiles balineae* may have been terraced fishponds,³³ possibly a series of superimposed pools with water cascading from one pool to the next.³⁴ Finding examples of such an arrangement of ponds in the physical record is hampered by an unlucky coincidence: the Bay of Naples is noticeably lacking in archaeological remains of fishponds; so clear evidence from the very area where Orata was active is not forthcoming.³⁵

There are other possibilities. One is that *pensilis* denotes a pond built above the ground (as opposed to one dug into it), using the water-retaining properties of cement coated with *opus signinum*; the adjective may describe the ability of the pool to hold water while standing above ground, the water being in a sense "suspended." (Terraced ponds would tend to be of this type, lending perhaps a double significance to the meaning of *pensilis*.) It is also conceivable that Orata invented some sort of heated swimming pool as an off-shoot of his fishponds, and examples of such swimming pools are known from the more lavish public baths (e.g., the Suburban Baths at Herculaneum) and private villas (e.g., the Imperial Villa at Antium). On the other hand, we have seen above (58–60) that the evidence not only implicitly links the *pensiles balineae* with fish-raising but it nowhere connects Orata with human bathing. It is therefore difficult to see Orata as the inventor of the heated swimming pool which, in any case, seems to have been called *calida piscina* rather than *pensile balneum*.³⁶ So while the exact nature of the *pensiles balineae* may ultimately prove elusive, the evidence allows several plausible alternatives beyond seeing the device as the hypocaust.

However, there remains the issue of the hot water in the *pensiles balineae*, a feature of the invention mentioned by Valerius Maximus (Appendix, no. 5). A related notice is found in Pliny, who records that the doctor Asclepiades of Bithynia, a contemporary of Orata, was the first to use *pensiles balineae* for medical purposes.³⁷ The context clearly requires that the *pensiles balineae* contained hot

cf. the so-called Villa and the Ambulatio at Baiae, which features a promenade on the top level of the terraced complex overlooking the sea (Yegül 1992: 105–106).

³³ An early example is known from the Villa of Quintilius Varus at Tivoli, dated to the late-second/early-first century B.C.; cf. Higginbotham 1991: 76–80.

³⁴ I am indebted to Dr E. W. Haley for this suggestion.

³⁵ Cf. Higginbotham 1991: 148–149. The *curipi* at the House of Loreius Tiburtinus at Pompeii (located at II.ii.2) contains some pools built perpendicular to and overlooking a larger pond (cf. Spinnazola 1953: 369–434). Terraced pools, possibly with cascades, are known from later fisheries, e.g., Lixus, Mauretania (cf. Ponsich and Tarradell 1965: 17–18) or Sahara (*ibid.* 68–71). However, in these cases the pools appear to have been used for salting rather than raising fish. In any case, use of the *pensiles balineae* may have been restricted geographically (and chronologically?), cf. below, 62–63.

³⁶ Pliny *Ep.* 2.17.11; Suet. *Nero* 27.2 (*calida piscina*). It seems that this device was a later invention: Maecenas was the first to build one at Rome (Dio 55.7.6).

³⁷ Appendix, no. 7 (Pliny's wording is difficult here, and perhaps requires an emendation in the last clause from *pensili* to *pensilium*, although this is not justified in the MSS. The sense of the passage, however, is clear enough). Asclepiades is said in other sources to have used baths (*balnea*) in his treatments (e.g., Celsus *Med.* 2.17.3); so the passage may appear initially to offer strong evidence for the identification of the *pensiles balineae* with the heating system of baths (cf. esp. Benedum 1967). The main ancient source for Asclepiades is Pliny *HN* 26.12–20 and some passing references

water and explains Pliny's comment that the treatment was especially pleasant. How does this fit with Orata's fishponds? One suggestion has been that Orata invented heated fishponds, which were then adapted by Asclepiades for medical purposes.³⁸ But heated fishponds are an unlikelihood, since the Romans are not known to have kept any species of fish that would require heated water.³⁹ Concern for temperature regulation, if anything, took the opposite tack: shaded areas could be provided to keep the fish cool.⁴⁰ On the whole, it is also unlikely that Asclepiades submerged his patients in fishponds.

The answer to this conundrum may lie in the possibility that Orata and Asclepiades were mutually acquainted, since they shared an association with L. Crassus.⁴¹ If so, there may well have been some cross-fertilization of ideas between the two with regard to the potential uses for the *pensiles balineae*. Asclepiades' concern with water treatments would have made him interested in Orata's piscine invention; maybe he saw some feature in it that suited his own particular purposes. Because the doctor more than the fish-farmer would have been concerned with the combined effects of hot and cold, dry and wet, it is quite possible that Asclepiades, not Orata, introduced hot water into the *pensiles balineae*.⁴² On this view, Valerius Maximus must have confused or conflated the separate uses made of the device by Orata and Asclepiades when he refers to the virtual "raised seas of hot water."⁴³

On a broader perspective, Asclepiades' treatments provide the only explicit bridge between Orata's *pensiles balineae* and human bathing. But two points need

elsewhere. Modern treatments are: Wellmann 1895, 1908; Rawson 1982; Vallance 1990, 1993 (the latter includes a list of his fragments).

³⁸ Cf. DeLaine 1988: 15; Nielsen 1993: 21; Yegül 1992: 43, 379. (The heated fishponds are seen as a forerunner to the heated pools for human use, with Orata standing behind both.)

³⁹ Cf. Higginbotham 1991: 247–273. In this connection, note Martial's quip (2.78): *aestivo serves ubi piscem tempore, quaeris? in thermis serva, Caeciliane, tuis*. The joke lies in the implication that Caecilianus' *thermae* were cold, i.e., that his fish did not need heated water (see also next note).

⁴⁰ The warm waters of Campania made this a requirement. Some examples (with page references to Higginbotham 1991 in brackets) are: Rome, Monteverde (70–72); Tivoli, "Villa of Quintilius Varus" (76–80); Circeo, "Piscina di Lucullo" (107–113); Sperlonga, "Grotto of Tiberius" (116–120); Isola di Ponza (126–140); Ventotene (140–147).

⁴¹ Cic. *De or.* 1.62 (Asclepiades); Appendix, nos. 2a and b (Orata). Cf. also Rawson 1982: 361 on the possible association of Orata and Asclepiades.

⁴² Following the suggestion that Orata's *pensiles balineae* were terraced pools with cascades (above, 61), it is easy to see how Asclepiades would find them attractive: a patient could be submerged in a pool with constantly running water all around. Heating the water would then be a simple and, for Asclepiades, logical step.

⁴³ Cf. Appendix, no. 5. A close look at the wording seems to support this proposition: Valerius comments that the expense started out small, but *ended up* almost as raised seas of hot water. This may be taken to imply that the feature of hot water, like the increase in size, was a secondary step. Alternatively, Maximus may simply have confused a characteristic of Asclepiades' later use of the pools with Orata's original invention of them.

to be borne in mind in this connection. First, as it is possible that Orata and Asclepiades were acquaintances, it can be suggested that use of the *pensiles balineae* may have been restricted to a relatively small circle of people.⁴⁴ Second, since he was known both for the odd nature of his remedies and for the emphasis he placed on bathing in his treatments, Asclepiades may have employed the *pensiles balineae* for very specific, even unusual, purposes. His use of the pools does not therefore secure the identification of the *pensiles balineae* with the hypocaust.

Disappointingly, it has to be concluded that the evidence does not permit a precise determination of the nature of Sergius Orata's *pensiles balineae*. The sources give no clear indication of what the invention was like, and archaeology is not especially helpful. However, the identification with the hypocaust has been shown to be, at best, tentative. It is only one possibility among many, and should be recognized as such. In fact, the written evidence as reviewed above would strongly suggest a connection between Orata's innovation and his fish-farming activities; certainly, there is no express association of *pensiles balineae* with the hypocaust of Roman baths, and it is only through Asclepiades of Bithynia that a link can be established between the device and human bathing. To be sure, there are difficulties identifying what type of fishpond Orata may have pioneered but, overall, the suggestion that the *pensiles balineae* were an above-ground and/or terraced arrangement of fishponds fits better the literary testimony. Ultimately, though, this too is only a possibility, albeit more in keeping with the general sense of the written evidence than the notion that Orata invented the hypocaust. Perhaps we are hampered by our trust in the ancient languages: the term may have been tantamount to a brand-name, and not necessarily accurately descriptive. *Pensilis* is a rare adjective with a poetic ring to it,⁴⁵ and the application of the term *balineae* to tanks designed for fish may have been considered humorous.

In sum, the widespread and largely unchallenged belief that Orata's *pensiles balineae* represent a stage in the development of the hypocaust is not supported by a close analysis of the written evidence and should be reconsidered. I have suggested that, instead, the evidence points to the use of the *pensiles balineae* primarily in fish-raising, and to a lesser degree in human bathing as part of Asclepiades' hydropathic treatments. If these arguments are accepted, the answer to the problem of Orata's place in the development history of Roman baths is a radical one: his complete exclusion. The archaeological evidence, in fact, is now sufficient to trace in outline the evolution from Greek to Roman hypocaust;⁴⁶

⁴⁴ Both Pliny and Valerius Maximus (Appendix, nos. 1 and 5 respectively) state that Orata was the first (*primus omnium*) to invent the *pensiles balineae*—Macrobius (Appendix, no. 6) merely says that he "had" them—which shows only that they expected their readers to recognize the term, and not that the device was in general use.

⁴⁵ E.g., Juv. 1.158–159; Apul. *Met.* 5.20. It is also used colourfully by Pliny (*HN* 36.120).

⁴⁶ Cf., e.g., DeLaine 1989.

Orata represents a wrench in the works whose removal can only clarify the issues.

APPENDIX

LITERARY TESTIMONIA FOR *PENSILES BALINEAE* AND SERGIUS ORATA

1. Pliny *HN* 9.168:

ostrearum vivaria primus omnium Sergius Orata invenit in Baiano aetate L. Crassi oratoris, ante Marsicum bellum, nec gulae causa sed avaritiae, magna vectigalia tali ex ingenio suo percipiens, ut qui primus pensiles invenerit balineas, ita mangonicatas villas subinde vendendo.

Sergius Orata was the first man to invent oyster ponds, on the Gulf of Baiae in the time of the orator L. Crassus, before the Marsic war; his motive was not gluttony but avarice, and he earned a great income from his cleverness, in that he was the first inventor of *pensiles balineae*, by selling villas, the appearance of which had been improved with this device.

2a. Cic. *Off.* 3.67:

M. Marius Gratidianus, propinquus noster, C. Sergio Oratae vendiderat aedes eas quas ab eodem ipse paucis ante annis emerat. eae serviebant, sed hoc in mancipio Marius non dixerat; adducta res in iudicium est. Oratam Crassus, Gratidianum defendebat Antonius.

M. Marius Gratidianus, our relative, had sold a house to C. Sergius Orata which he had bought from the very same fellow a few years prior. The property was under a servitude, but Marius had not stated this in the sale. The matter was brought to court. Crassus defended Orata, Antonius defended Gratidianus.

2b. Cic. *De or.* 1.178 (L. Crassus speaking):

nuper, cum ego C. Sergii Oratae contra hunc nostrum Antonium iudicio privato causam defenderem, nonne omnis nostra in iure versata defensio est? cum enim M. Marius Gratidianus aedis Oratae vendidisset neque servire quandam earum aedium partem in mancipii lege dixisset, defendebamus, quicquid fuisset incommodi in mancipio, id si venditor scisset neque declarasset, praestare debere.

Recently, when I was pleading the case of C. Sergius Orata against our friend Antonius here in a private case, was not our entire defence concerned with the law? For when M. Marius Gratidianus had sold the building to Orata, he had not stated that a certain part of the building was under a servitude, in accordance with the law of sale. We argued in defence that if there was some disadvantage in the sale and the seller knew it but did not state it, recompense ought to be paid.

3. Cic. *Fin.* 2.70 (Cicero speaking):

Quid offers cur Thorius, cur Cbius Postumius, cur omnium horum magister, Orata, non iucundissime vixerit?

What reason can you give for thinking that Thorius, or Postumius of Chios, or the master of them all, Orata, did not live extremely pleasant lives? (tr. H. Rackham)

4. Cic. *Hort.* cited in Non. 194M (285L), s.v. *balneae*:

primus balneola suspendit, inclusit pisces

He was the first to raise little baths; he kept fish.

5. Val. Max. 9.1.1:

C. Sergius Orata pensilia balinea primus facere instituit. quae inpensa levibus initiis coepta ad suspensa [or suspensae] caldae aquae tantum non aequora penetravit.

C. Sergius Orata was the first man to arrange the building of *pensilia balinea*. This expense, having started out small, went almost as far as raised seas of hot water.

6. Macrob. *Sat.* 3.15.2–3 (Furius Albinus speaking):

huic opinioni M. Varro consentit, adserens eodem modo Licinios appellatos Murenas quo Sergius Orata cognominatus est, quod ei pisces qui auratae vocantur carissimi fuerint. (3) hic est Sergius Orata qui primus balneas pensiles habuit, primus ostrearia in Baiano locavit, primus optimum saporem ostreis Lucrinis adiudicavit. fuit autem aetate L. Crassi illius diserti, qui quam gravis et serius habitus sit etiam Cicero docet.

M. Varro agrees with this view [i.e., that the Licinii came to be called “Murena” due to their love of fish], when he maintains that the Licinii were called “Murena” in the same way that Sergius Orata was named, because he was especially fond of the fish called “auratae.” The latter is the Sergius Orata who first had *pensiles balneae*, first set up oyster beds at Baiae, and first attributed the best taste to Lucrine oysters. Moreover, he was a contemporary of that eloquent L. Crassus, who, even in Cicero’s view, was very austere and serious in his demeanor.

7. Pliny *HN* 26.16:

Asclepiaden adiuvare multa in antiquorum cura nimis anxia et rudia, ut obruendi aegros veste sudoresque omni modo ciendi, nunc corpora ad ignes torrendi solesve adsiduo quaerendi, in urbe nimbo, immo vero tota Italia imperatrice, tum primum pensili balinearum usu ad infinitum blandiente.

Many features in the curative practices of the ancients, which were excessively disparate and unsophisticated, helped Asclepiades, such as burying the ill with clothes and inducing sweating in every way, sometimes roasting the body near fires or continually seeking out the sun’s heat in the rainy city, or rather throughout all of imperial Italy. At that time, *pensiles balneae* were first put to use, soothing to an infinite degree.

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