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P. OXY. XVI 1919 AND MULE-BREEDING


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P. Oxy. XVI 1919 is a single column of accounts listing disbursements of various kinds. The papyrus was dated by its editors to the seventh century A.D. on the basis of the hand of its scribe.1 Our interest in the text concerns the entry in the last and fourteenth line: ὑπὲρ μολογενίας ἦτοι ἰπποβοῦρδονος. We shall argue that line 14 most likely concerned expenses encountered in the breeding of mules and that proper understanding of the line expands our knowledge of the technical terminology of Byzantine Egypt employed in the breeding of mules. The original editors assumed that line 14 should be understood with the line that preceded and they combined lines 13 and 14 together into a single entry as follows:

τῷ λαμπρῷ ἦτοι ἑτοιμηθάναι κρίθον ἐπὶ τιμής τιμς ἒ Λ ὄν[όματος] Φοιβάμμονος κεφαλαὶ σωτοῦ Ἀλεξ(ανδρείας) νομιμικάματα ἐ
ὑπὲρ μολογενίας ἦτοι ἰπποβοῦρδονος ὑ[ ] vac.
“To the most illustrious Agapetus for the price of 76 1/2 artabae of barley on account of Phoibamon, capitularius, for a mare’s or a horse’s mule, 5 sol. the Alexandrian standard.”

There can be little doubt, however, that two separate entries are involved in these two lines, as their presentation and spacing suggest. The first entry (line 13) was a payment to Agapetus for the price of barley; this entry was completed at the end of the line with the mention of the sum paid (5 solidi). The second entry (line 14) was the payment ὑπὲρ μολογενίας ἦτοι ἰπποβοῦρδονος and the amount paid was lost in the lacuna of 2.3 cm. directly to the right.2 In their critical apparatus the editors suggested that μολογενίας was an orthographic variant of μυλογενίας and that ἰπποβοῦρδονος was an orthographic variant of ἰπποβουρδόνος.3 In their note ad loc. the editors observed that both words, μ(υ)λογέν(ε)ς, “mare’s mule” in their translation, and their ἰπποβουρδόνος, “horse’s mule,” were novelties. When the two words were juxtaposed one to the another, the result was, they claimed, “an unnecessary pleonasm.”

Such an explanation for line 14 is unsatisfactory on several grounds. It is true that the papyri have furnished examples of upsilon replacing omicron.4 Hence it is not impossible that the scribe wrote μολογενίας for μυλογενίας. More likely, however, is that the scribe intended μουλογενίας, with omicron replacing the diphthong ου,5 because the Latin words mulus, mulio, etc.,

1 For corrections to the text of P. Oxy. XVI 1919, see BL VII 142. The papyrus was cut off at all sides in a rather regular fashion. It was mutilated by a large hole in the middle of the sheet and marred by numerous small holes. The lower margin is 9 cm.
2 After this lacuna is an empty space of 15 cm.
3 Indexed in P. Oxy. XVI as ἰπποβουρδόνος. But see the uncompounded form βουρδόν, βουρδόνος — which suggests a nominative ἰπποβουρδόν and a genitive ἰπποβουρδόνος for line 14. Although neither Preisigke, Wörterbuch, nor LSJ6 include the hapax ἰπποβουρδόν, derivatives such as βουρδόναριος also retain omega.
5 F.Th. Gignac, op. cit., 211f; see also CIL IV 2204, with μολα.
were normally transliterated μουλ-., whenever written with Greek characters. Perhaps by late antiquity this orthography was a deliberate effort to differentiate compounds based on the Latin root mul- (“mule”) from compounds based on the Greek root μυλ- (“mill”).

Once the editors had normalized the orthography as ἑπέρ μο(ν)λογέν(ε)ίας ἦτοι ἵπποβούρδωνο(ε), they offered the translation “for a mare’s or a horse’s mule.” This too is unsatisfactory, because the resulting pleonasm implies an indifference to the type of half-breed animal which was being indicated. That is, in the editors’ interpretation of the line, a sum of money was paid for barley for the hybrid animal that resulted either from the breeding of a mare and a he-ass (English “mule”), or from the breeding of a she-ass and a horse (English “hinny”). This specific indifference to the offspring produced violates ancient habits: when both mule and hinny were mentioned together in the same breath, there was a marked tendency to express a preference for the work capabilities and other virtues of the offspring from a mare and a he-ass (see further, below). It seems, therefore, worthwhile to begin again with the evidence available to see if a better explanation for the intention of line 14 can be found.

To be sure, neither μο(ν)λογενεία nor ἵπποβούρδωνο( ) occur in our Greek lexica. Nevertheless, μο(ν)λογέν(ε)ία is the term written out in full in the text; hence it seems better procedure to begin with this form. The translation “mare’s mule” or “a mule born from a female (horse)” for μο(ν)λογενεία is without parallel, as far as we are aware. Mo(ν)λογενεία appears to be a hybrid, composed of the Latin mulus and the Greek suffix -γενεία. Compound adjectives with the element -γενεία, the feminine form of -γενής, are generally passive in meaning — that is, “born from ....” But mules do not normally produce offspring — an objection that was surely in the minds of the first editors of the papyrus. When mules did, in fact, foal on rare occasions, it was regarded by Romans as an omen worthy of note: ...idcirco mulas non parere. Est in Annalibus nostris peperisse saepe, verum prodigii loco habitum... (Pliny NH 8.59.173). Hence, the element -γενεία in μο(ν)λογενεία is unlikely to mean “a female animal born from a mule.” The first editors no doubt proposed “mare’s mule,” because it served as a better complement to “horse’s mule,” their translation for ἵπποβούρδωνο. This, in turn, apparently led them to the judgment that the juxtaposition of the two words was pleonastic.

A few compounds ending in -γενεία, however, are substantives, expressing the abstract notion of the adjective from which the noun derived, such as εὐγενεία, “nobility,” “well

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6 For μουλ- (= “mul-”), see S. Daris, Il lessico latino nel Greco d’Egitto, Barcelona 1971, 74f.
7 Cf. P. Kretschmer and E. Locker, Rückläufiges Wörterbuch der griechischen Sprache, Göttingen 1963, 14. The suffix -γενεία occurs only in the word εὐγενεία, a poetical form of εὐγένεια. Hesychius has the lemma γενής = ἐγένος. But if γενής were the final element in the word μο(ν)λογενείας, the scribe used a nominative form instead of a genitive (F.Th. Gignac, A Grammar II, Milan 1981, 16, and for parallels, the literature cited in his footnote 1).
8 E.g. ἄφρογενεία = “foam-born,” “born from foam”; Κυπρογένεια = “Cyprus-born,” “born on Cyprus”; ποντογένεια = “sea-born,” “born from the sea”; Λατογένεια = “Leto-born,” “born from Leto,” etc. See LJS 9 for πρωτογενής and πρωτόγονο ἄρθρα apparently used interchangeably in the meaning “first-born.”
9 A. Hyland, The Endurance Horse, London 1988, 12, speaks of 14 recorded cases of mules foaling in America. H. Hauben took impetus from the first foaling of a mule under laboratory conditions to write his thorough study “Onagres” et “Hémionagres” en Transjordanie au III siècle avant J.-C., Ancient Society 15-17, 1984-86, 89-111 (cf. p. 110, footnote 126)
borne-ness.” But for μο(υ)λογέν(ε)τα, the abstract noun, passive meaning still entails the difficulty of birthing from a mule. A substantive that meant “mule breeding” may, however, find parallels in the use of κοιμογένεια, an abstract noun with active meaning — “creation of the world.”

LJS cites κοιμογένεια as a synonym for κοιμογονία from Julian’s Contra Galilaeos 49a, and this was not an uncommon interchange for late Greek authors. The following used both κοιμογένεια and κοιμογονία in the meaning “creation of the world,” sometimes mixing the two forms in the same work: Basilius, a 4th-century A.D. theologian from Caesarea in Cappadocia, in his Homilies on Psalms; Eustathius in his commentary on the Iliad; Gregory of Nyssa in his Against Eunomius and his Refutation of Eunomius’ Confession; Origen in his Against Celsus; and Photius in his Library. Following that analogy, μο(υ)λογένεια would thus mean “breeding of mules,” and hence it becomes an equivalent to the expected, but unattested, μο(υ)λογονία. Mo(υ)logéneia in line 14 of P. Oxy. 1919 in all likelihood refers to charges incurred in the breeding of mules.

The papyrus reads only ἵπποβορυφδόνο. What forced that form to be expanded and explained as ἵπποβορυφδόνο(c) was the editors’ supposition that, like μο(υ)λογέν(ε)τα, this term referred to the animal in whose interests 76 1/2 artabae of barley had been purchased and the purchase price of five solidi registered among the disbursements of the account. The abbreviation could equally well, however, stand for the genitive of ἵπποβορυφδόνο(γενεία)* or perhaps, ἵπποβορυφδόνο(γονία)*, or even ἵπποβορυφδόνο(ποίσια)*, vel simile. Preisigke offered two meanings for the connector ἐς τοῖ: 1) “or” (“oder”), as an expression equivalent to ἐς κατ’; 2) “and especially” (“und zwar”), as a means of giving additional information about a previous term. In some way, then, ἵπποβορυφδόνο( ) ought to be either an equivalent (1) of μο(υ)λογέν(ε)τα, or an elaboration and specification (2) of μο(υ)λογονία.

The following summary of mule breeding by Pliny the Elder highlights the desiderata in mule breeding: namely, the production of a very strong animal, preferably a female half-breed born from a mare and an ass, that was ideally suited for work on the farm.

...a mare coupled with an ass after twelve months bears a mule (mula), an animal of exceptional strength for agricultural operations. To breed mules they choose mares

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12 Εὐγένεια also knows the poetic form ἕγενεια.
13 Cf. also ἑγενηνησ in Eur. El. 1023.
14 MPG 29: 289.34.
16 Contra Eunomium 2.1.213.4, 2.1.228.4, 2.1.255.3, 2.1.264.3, 2.1.292.5, 2.1.443.2, 3.7.34.10 Jaeger, Leiden 1960.
17 Refutatio confessionis Eunomii 69.5 and 150.4 Jaeger, Leiden 1960.
18 Contra Celsum 6.29.6, 6.49.4 Borret, Paris 1967-69.
20 There is also the possibility that the scribe wrote μο(υ)λογονία, but intended μο(υ)λογονία, since the interchange of o ε is also attested in the papyri: see F.Th.Gignac, A Grammar I, Milan 1976, 209f.
21 If not an abstract noun, μο(υ)λογένεια would, by this argument, mean “a mare that bore mules.” As will become apparent below, we have been unable to see how this meaning could be joined through ἐς τοῖ with ἵπποβορυφδόνο, however expanded, since the term with a specific meaning must refer to the hybrid animal.
22 Wörterbuch I (Berlin 1925), col. 663. P.J. Sijpesteijn presently works upon a study of the use of ἐς τοῖ and ἐς τι.
not less than four or more than ten years old. Also breeders say that females of either
genus refuse stallions of the other one unless as foals they were suckled by females
of the same genus as the stallions; for this reason they stealthily remove the foals in
the dark and put them to mares’ or she-asses’ udders respectively. But a mule (mula)
is also got by a horse out of an ass, though it is unmanageable, slow, and obstinate.
Also the foals from old mares are sluggish. It causes miscarriage for a mare in
foal by a horse to be put to an ass, but not vice versa. It has been observed that
female asses are best coupled six days after they have borne a foal, and that males
couple better when tired. It is noticed that a female that does not conceive before she
casts what are called her milk-teeth is barren, as is one that does not begin to produce
foals from the first coupling. Male foals of an ass by a horse were in old days called
hinnies, while the term mules was used for the foals of a mare by an ass.23

Traditional usage was to reserve the term mulus / mula for the meaning “mule” — that is, an
animal with a mare as mother and an ass as father, as in the German “Maultier,” the French “mule,”
the Dutch “muildier,” etc., and to reserve burdo (βουρδόν) for the meaning “hinny” — that is, an
animal with an ass as mother and a horse as father, as in “Maulesel,” “bardot,” “muilezel.”25
Mulus could also be used in the place of mula to indicate the female as well as the male,26 and in
the passage from Pliny quoted above, mula was used for the broader mulus to indicate the strong
preference for the female hybrid, especially that born from a mare and a he-ass.

In spite of these clearly stated preferences about how to breed the more useful animal,
grounded in experience with the hybrid’s capacities in hauling and in agricultural work in the
fields, linguistic practice violated “traditional usage,” and the terms mulus and burdo (βουρδόν)
were used without the precision the terms theoretically afforded.27 That is, popular usage in
Greco-Roman antiquity approximated the looseness with which the English word, “mule” is

23 Ex asino et equa mula gignitur mense xiii, animal viribus in labores eximium. ad tales partus
equas neque quadrimis minores neque decennibus maiores legunt. acerice utrumque genus ab
altero narrant nisi in infantia eius generis quod ineat lacte hausto; quaproprier subreptos pullos in
tenebris equarum uberi asinarumve eculeos admovent. gignitur autem mula et ex equo et asina, et
effrenis et tarditatis indomitae, lenta omnia et e vetulii. (172) conceptum ex equo secutus asini coitus
abortu perimit, non item ex asino equi. feminas a partu optime septimo die implicerat observatum,
mares fatigatos melius implere. quae non prius quam dentes quos pullinos appellant iaciat con-
ceperit steriles esse intellegitur, et quae non primo initu generare coeperit. equo et asina genitos
mares hinnulos antiqui vocabant, contraque mulos quos asini et equae generarent. Text and
translation are from H. Rackham’s edition of the Natural Histories for Loeb Classical Library,

24 For mulus / mula: see TLL VIII, cols. 1619-1621. “Mulus: usu sollemni de animali ex asino et
equa natus (Varro Ling. 9.28 and Rust. 2.8.1; Paul. Fest. p. 33; Pliny NH 8.172). Mula: “usu
sollemni de animali nato ex asino et equa (Varro Ling. 9.28 and Rust. 2.8.6 Columella 6.37.3).”

25 For burdo, see TLL II, col. 2248; “Isid. Orig. 12.1.61: burdo ex equo et asina nascitur (Eug.
Tolet. Carm. 42.2: burdonem sonipes general commixtus asellae; CGL V 493.25; 563.45).”

26 Mulorum appellacione etiam mulae continentur (Iul. Dig. 32.62). Cf. also TLL VIII, col.
1620.62ff.: de toto hoc genere animalium, sc. ita ut mili simul intellegantur, dictum esse videtur
(fortasse quia mulae magis idoneae erant ad usum): Colum. 6 praef. 6; 6.35.2; 6.36.1 (cf. epitomen
loci Pallad. 4.14.1 mulorum).

27 Modern scholars have, in fact, often assumed that there was greater rigor in the terminology:
thus, W. Richter, Der Kleine Pauly vol. 3, col. 1090, “Die Römer unterscheiden beide Arten auch
sprachlich (hinnus, hinulus, in der Kaiserzeit auch burdo = M.-Esel, mulus, mula = M.-Tier).”
employed.\(^{28}\) *Mulus* / *mula* was used in the meaning “hinny” and *burdo* in the meaning “mule.”\(^{29}\) Further, both *mulus* and *mula* could use on occasion refer to either mules or hinnies without discrimination.\(^{30}\) Diocletian’s *Edictum de pretiis* seems to afford examples of a single word being used for both mule and / or hinny.\(^{31}\) At 11.4 under the rubric *perī cαγματων,* only a *burdo,* an *asinus,* and a *camellus —* a mule, an ass, and a camel — are mentioned; similarly at 14.9-11, where the text looks to burdens carried by a *καμμωλος,* *βουρδων,* and ὄνος. Or again in 17.17, when the topic is drivers for beasts of burden, the men listed are καμηλαριος, ἦτοι ὄνηλατης, ἦτοι βουρδωνάριος, although a μουλίων appears by himself at 17.19. Finally, when it comes to whips in 10.16f., only a φλάγελλον μουλωνικόν (*i.e.* *flagellum mulonicum cum virga*) is mentioned. As these examples suggest, a single term “mule” often suffices in everyday speech; an attempt at greater precision comes largely when the discussion’s intent is to draw attention to the mentioned. As these examples suggest, a single term “mule” often suffices in everyday speech; an attempt at greater precision comes largely when the discussion’s intent is to draw attention to the two, quite different mules offspring that result from the two, quite different breeding procedures.

In *P. Oxy.* 1919.14 a payment was listed ὑπὲρ μο(υ)λογε(ν)εια, which should either refer to a specific animal, “a mule-bearing mare,” or to the abstract “breeding of mules.” As the first editors rightly saw, it was difficult to understand ἱπποβουρδωνον\(^{32}\) as involving any animal other than the hybrid. Hence, their translation “mare’s mule” was perhaps the result of compelling μο(υ)λογε(ν)εια into being an equivalent for their ἱπποβουρδωνον, “horse’s mule.” Yet if μο(υ)λογε(ν)εια is the abstract “mule breeding,” the addition of ἦτοι ἱπποβουρδωνον- (-γενιας, -γονιας, κτλ.) introduces a further specification to the breeding of a mule or mules\(^{32}\) — the animals to be bred were ἱπποβουρδωνες, ἦτοι βουρδωνες whose mother was a ἰπποκες\(^{33}\) and that variety of the half-breed valued the more highly in antiquity, as well as today. As noted already by Aristotle, it was the mother who influenced the constitution and the appearance of her offspring to the far greater degree.\(^{34}\) What remains unclear about line 14 is whether the expenses incurred (but lost in the lacuna at the right side of the papyrus) were for stud services in the covering of a mare by a he-ass, or for the costs of the valuable hybrid animal or animals expected

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28 Cf. R.G. van Gelder, s.v. “Mule,” in *Encyclopaedia Americana* 19, 1972, 553-54: “a term applied to any hybrid, but most commonly to the offspring of a jackass and a female horse.”


30 For *burdo,* see *TLL* II, col. 2248, and cf. *CGL* III 189.6-7: “imonos (*i.e.* ἧμιονος, for the use see H. Hauben, *loc. cit.* [above, note 9], 102ff.) *mulus malaus burdo*” and *CGL* II 324.56: ἧμιονος εξ ἰπποκε θηλειας και ὄνου, *mulus urdo.*

The words μεσοβουρδόνων / μεσοβουρδόνων / μεσομουλάρων are not relevant for the meaning of *mulus* / *mula* and *burdo,* since they mean “a small burdo” / “a small mulus” (cf. J.M. Diethart, *Papyrologica Florentina* XIX, Firenze 1990, 141 note to lines 3/8).


32 *I.e.* ἦτοι, according to the second use given by Preisigke, “und zwar.”

33 If our explanation of the word ἱπποβουρδων is correct, the word ὄνοβουρδόν may have existed as well, although to date it has not survived in written form.

34 *HA* 577b: τὸ μέγεθος τοῦ σώματος καὶ τὸ έδώκα καὶ ἤ ἰγχις μᾶλλον τῷ θήλει ἄφοροι οὐτι τοῦ γενομένου. Cf. also *Colum.* 6.37.5 and *Pliny NH* 8.69.171 (quoted above, note 23).
to be the result of that covering.\textsuperscript{35} In any case, because of the difference in the capabilities of mules and hinnies, it was important to specify how the mule breeding was to proceed, and ἡτοι ἵπποβουρδόνοι (-γενίας, -γονίας, κτλ.) added that specification to ύπέρ μο(ύ)λογεν(ε)ίας in \textit{P. Oxy}. 1919.14.

Breeding mules was not an easy business.\textsuperscript{36} Nonetheless, dealing in the production of mules was highly profitable.\textsuperscript{37} The future emperor Vespasian may have resorted to the mule business, when short of cash after his governorship in Africa.\textsuperscript{38} Mules were not employed within Egypt as beasts of burden with the same frequency as camels and donkeys. For example, no mules appear in the nearly 1000 customshouse receipts published to date,\textsuperscript{39} and a list of animals (γραφὴ τετραπόδων) in accounts from the Heroninos archive shows that at one point in time the estate of Aurelius Appianus near Theadelphia possessed 13 full-grown asses, but only a single mule.\textsuperscript{40} That lone mule gathered hay (χορτηγία) together with some seven or eight asses over a period of days.\textsuperscript{41} Camels and asses also outnumber mules in an extensive account from another estate that included parcels of land at Theadelphia, Dionysias, and Alexandrou Nesos in 239/40 A.D.; although the hauling of various items was assigned to camels and female asses, the one and two mules mentioned were said to be stabled with 22 and 23 male asses.\textsuperscript{42} On the other hand, Zenon often used mules as baggage carriers both in Palestine and in Egypt,\textsuperscript{43} and a significant number of terra-cotta representations of mules have been unearthed in Egypt as well.\textsuperscript{44}

\textit{P. Oxy}. 1919 lacks an exact date, although this reference to mule breeding in line 14 may indicate that the expenses were incurred during the spring of the year, because, according to Columella,\textsuperscript{45} mares used for breeding mules were covered at the spring equinox, or, according to Varro, between the spring equinox and the summer solstice.\textsuperscript{46} The mule or mules whose production \textit{P. Oxy}. 1919.14 anticipated were not likely to have been destined for service in the Roman

\textsuperscript{35} For the price of asses / donkeys (but not mules) and other beasts of burden in the early 4th cent., see R.S. Bagnall, \textit{Currency and Inflation in Fourth Century Egypt = BASP Supplement} 5, 1985, 67-68. The price of asses rose from 15 talents in 305 (\textit{P. Oxy}. XLIII 3143) to 39 talents in 316 (\textit{SB XIV} 11278) and 40 talents in 331 (\textit{CPR VII} 36). For the amount spent on an undisclosed number of mules in 345/46, see \textit{P. Oxy}. LVI 3874.19-22.

\textsuperscript{36} Cf. A. Nibbi, \textit{ZÄS} 106, 1979, 167.

\textsuperscript{37} Cf. Isaeus 6.33; Plautus, \textit{Aulularia} 494; Colum. 6.37.11; Martíal 3.62.3.

\textsuperscript{38} This is the usual interpretation put on Vespasian's nickname \textit{mulio} in the Suetonius biography (Vita Vesp. 4.3): rediit certe nihilo opulentior, ut qui prope labefactata iam fide omnia praedia fratri necessarioque ad manganicos quaeus est sustinendae dignitatis causa descenderit; propter quod vulgo mulio vocabatur.

\textsuperscript{39} See the survey in P.J. Sijpesteijn, \textit{Customs Duties in Graeco-Roman Egypt}, Zutphen 1987, 51-57; A. Leone, \textit{Gli animali da trasporto nell’Egitto greco, romano e bizantino}, Rome and Barcelona, 1988, does not treat mules, but only donkeys and camels.


\textsuperscript{41} \textit{SB VI} 9409, (1).69 and 9409, (5).12.

\textsuperscript{42} \textit{P. Mich. XI} 620.284 and 292.

\textsuperscript{43} E.g. \textit{P. Lond.} V I 1930.48 and 1973.4 (νυστοφόροι ἵμιονοι).


\textsuperscript{45} 6.37.9; cf. also 6.27.3.

\textsuperscript{46} \textit{Agricult.} 2.7.7, for breeding of horses; as for mules, “we mate them at the same season in which we mate horses” (2.8.7). Cf. A. Hyland, \textit{Equus: the horse in the Roman world}, London 1990, 31.
imperial army, since deliveries of mules for military service had been replaced by an animal tax, the χρυσὸς βουρδόνων, by the seventh century A.D. In the 4th cent. mules had seen service in transporting public moneys, and the Roman government continued in subsequent centuries to use mules as carriers in the postal service. It is possible that official employment loomed ahead of the mule or mules of 1919.14. But perhaps the more likely guess is that the hybrid or hybrids would some day work on one of the large estates in the vicinity of Oxyrhynchus, hauling hay and carrying out other agricultural duties.

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47 S. Daris, op. cit. (above, note 6), 36, and to his list, add P. Oxy. XLVIII 3420 and 3424. Cf. also J. Gascou and K.A. Worp, ZPE 56, 1984, 122ff.; B. Kramer, Archiv 32, 1986, 44, line 11, note ad loc. In text no. 13 of the so-called Abinnaeus Archive, the exactor Philammon seems to scold Abinnaeus, when he received horses from him instead of a payment of cash.


50 Cf. J. Gascou, loc. cit.