Pastoralism in Roman Egypt

James G. Keenan

Loyola University Chicago, jkeenan@luc.edu

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1. Introduction

The communications of the IX International Congress of Economic History were recently (1988) published in a volume entitled *Pastoral Economies in Classical Antiquity*. The volume's papers very much follow, or anticipate, Deborah Hobson's advice to papyrologists in her essay, "Towards a Broader Context for the Study of Greco-Roman Egypt," *Echos du Monde Classique* 32, n.s. 7 (1988) 353-63. They rely as far as they can on literary and archaeological evidence, but where this fails (and even where it doesn't), they turn to the riches of comparative history and ethnology. Works prominently cited with praise include A.M. Khazanov's brilliant study of pastoral nomadic societies, and J.K. Campbell's much-admired ethnological work on the Sarakatsani. Equally, if not more influential, is the work of the French Annalistes, especially Fernand Braudel's famous pages on Mediterranean transhumance and nomadism. The contributors to the Cambridge volume on *Pastoral Economies*, therefore, sometimes write about pastoral nomadism and often about transhumance. The casual reader may find this concern obsessive and may also find himself lost in a bewildering forest of jargon about pastoral "strategies" and "specialisation," about various types of "transhumance"--"normal," "inverse," "vertical," "horizontal," "Alpine"; and about transhumance's structural opposite, sedentary agricultural-pastoral "symbiosis." He may even begin to worry over the problem of "manure loss."

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It may well be that the topic of transhumant pastoralism haunts the Cambridge volume because it is in fact more the historian's proper concern than sedentary animal husbandry. Transhumance, after all, implies market structures, profit motives and stable and effective state political apparatuses. But it is hard to prove overall whether transhumance anywhere or anytime was of greater economic importance than sedentary husbandry. It is tempting, therefore, to suggest that part of the reason why the subject of transhumance is so prominent is its romantic allure. Chapters 4-7 of Emmanuel Le Roy Ladurie's *Montaillou*, for example, with their description of the free and roving "life style" of the "happy shepherd," Pierre Maury, have captivated many a reader. But another, more serious reason for its corporate concern with transhumance is that the Cambridge volume limits itself to Greece, Italy and Rome's western provinces. There is one article on the Maghreb in North Africa, but nothing on the Near East, with its rich evidence, or on Egypt, with its wealth of papyrus documentation. Here I hope to begin to fill this gap for Egypt by drawing attention to a sampling of the papyrus evidence. Part of today's assignment, however, as I understand it, also requires asking questions of the papyrus documents that have not been asked before (and that may be unanswerable) and imagining structural connections and suggesting conclusions that are not explicit in the papyri. My concentration will be primarily, in fact almost exclusively, on sheep, secondarily and only occasionally on goats; in other words, on, as they are now popularly known, ovicaprids.

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8For the "Seminar on Comparative Approaches to the Social History of Roman Egypt," December 29, 1989, at the 121st Annual Meeting of the American Philological Association in Boston. Text and notes have been slightly expanded for this written version.
2. Comments on a Registration of Sheep and Goats

Earlier in this century, before the evidence of the Greek papyri had come to be assimilated into the historical mainstream, it was possible for the author of the Pauly-Wissowa article on sheep to state that Egypt's intensive system of agriculture left little room for sheep husbandry.9 His opinion was based on the paucity of relevant literary notices and on the supposed natural constrictions of the land itself. Similarly, C.S. Coon, in Caravan, his synthetic study of the Middle East, writes that "[t]he banks of the Nile did not provide much grazing . . . and the population of sheep and goats was much less per capita than in most other parts of the Middle East."10 The papyri suggest a slightly different view, though it must be said at the outset that they testify to pastoralism not so much for Nile bank villages as for places of (for Egypt) unusual topographies: the desert fringe villages of the Arsinoite nome (the Fayum), Oxyrhynchus (not on the Nile, but on the Bahr Yusuf), and Aphrodit (built on a tell in the Nile floodplain in Middle Egypt, modern Kom Ischkaw).

The evidence from these findspots is in fact varied. It includes petitions concerning livestock theft and damage to crops by trespassing animals, offers to lease pasturage, leases of sheep and goats, private letters and estate accounts; but possibly the most important single type of document for pastoralism in Roman Egypt is registrations of sheep and goats.11 These registrations run in date from the close of the first century BC till near the middle of the third century AD. The largest number are from the Oxyrhynchite nome; there are lesser, but significant numbers from the Arsinoite and Hermopolite nomes, and a few from other nomes. One example is P.Oxy. II 245, conveniently accessible in the Loeb series Select Papyri, vol. II (no. 322). Three specimens have recently been published by John Rea in P.Oxy. LV (3778-79, 3782), and of these I should like to single out 3778 in Rea's translation for comment:

9PWK-RE 2A.1 (1921) 373-79 s.v. Schaf (Orth), at 378.
10Carleton S. Coon, Caravan: The Story of the Middle East, rev. edn. (New York 1958) 188.
(1st hand) ‘Talao.’

(2nd hand) ‘To Hierax strategus from Demetrius and Dorus both sons of Apion, and Ammonius son of Heraclius, and Ptolion son of Nechtatytmis, and Apollonius son of Demetrius.

We register for the present 7th year of Tiberius Caesar Augustus [AD 21] the sheep which belong to us: thirteen sheep of Demetrius, ten sheep of Dorus, sixteen sheep and one goat of Ammonius, twenty-one sheep and one goat of Ptolion, twelve sheep and one goat of Ptolion son of Nechtatytmis, six sheep of Apollonius, total 78 sheep, 3 goats, and the lambs and kids accompanying, (all) mixed together, which will graze in the neighborhood of Talao in the Lower toparchy and throughout the entire nome, the shepherd being Apion son of Lycomedes, registered at (near?) the same village, and for which we will also pay the proper tax. Farewell.’

(3rd hand) ‘I, Apollonius(?), toparch, have certified seventy-eight sheep and three goats, total 78 sheep, 3 goats. Year 7 of Tiberius Caesar Augustus, Mecheir 3.’ [= 28 Jan., AD 21]

Let us now try to look at this registration, not as papyrologists concerned with establishing a text or as scholars concerned with administrative details, but rather as comparative anthropologists interested in pastoral practicalities. From that standpoint it is items like these that call for comment:

1. Six livestock owners submit the registration; they form a kind of consortium. Although registrations by single owners of small flocks are more common, it was often obviously advantageous or convenient for several sheepowners to combine their small flocks into one large one and to share the cost of hiring one shepherd to watch over it.13

12 These have discussed by Carla Balconi in an excellent article, just cited, in Aegyptus 64 (1984) 35-60.

13 For "partnering" in a modern Egyptian setting: Lucie Wood Saunders and Soheir Mehenna, "Village Entrepreneurs: An Egyptian Case," Ethnology 25 (1986) 75-88, esp. 83-84, 87. Cf. the communally engaged shepherd of early modern France, P. Goubert, French Peasantry in the Seventeenth Century 142. See also Fredrik Barth, Nomads of South Persia: The Basseri Tribe of the Khamseh Confederacy (Oslo 1964) 21-22: "... to facilitate the herding and tending of flocks, Basseri households usually unite in groups of 2-5 tents. They combine their flocks and entrust them to a single shepherd, and cooperate during milking time. As noted, a shepherd is readily able to control a herd of up to 400 head, and there is some feeling that very small herds are relatively more troublesome..."
2. The consortium’s flock is assigned to a single shepherd (νομεύς) whose origo (place of poll-tax payment) is indicated. One wonders under what kind of arrangement--contractual or customary--he worked. He was no doubt accountable for animal losses due to mortality and theft, for keeping the flock off of arable fields, and for keeping it moving "gently, quietly, in slow adagios" from grazing area to grazing area in an ecologically responsible manner. This points to a kind of "herdsman husbandry" (cf. Khazanov, Nomads and the Outside World 22-23) whereby the shepherd's mobility is a function of his employers' sedentarism.

3. Sheep far outnumber goats, by 78 to 3. Sheep are traditionally more valued than goats, though goats are not without value, for their hair and skins, milk and cheese, and surplus kids. They can graze (and browse--sheep cannot) in harsher and more rugged terrain than can sheep. Their presence in a flock overwhelmingly consisting of sheep is perhaps explained by the fact that, in Jacob Black-Michaud's words (Sheep and Land 41-42), "whereas goats can be ... kept in flocks apart, sheep cannot be herded satisfactorily unless the flock includes two or three large buck goats. For in a country where sheepdogs are unknown a flock of sheep is, without goats to lead it, apt to disperse over the terrain,


15Ehrlich, Solace of Open Spaces 21; Isaiah 40:11; Columella, De Re Rustica 7.3.26; Campbell, Honour, Family and Patronage 27; Keenan, YCS 28 (1985) 254 n. 22.

16Cf. similar figures in P.Oxy. 3779 (AD 20/21): 75 (or 79) sheep, 4 goats; and in 3782, of much later date (AD 172/73): 38 sheep, 12 lambs, 2 goats. In Roman Egypt's registrations of sheep and goats sheep always far outnumber goats, e.g., the long listing in P.Hamb. I 34 (Euhemeria in the Fayum, AD 159/60): 819 sheep, 28 goats; for a few more details, P.Hamb. I, p.148, n.10. See further Avogadro, Aegyptus 15 (1935) 194 n.4; Balconi, Aegyptus 64 (1984) 42.


18Cf. Black-Michaud, Sheep and Land 42; M. Schnebel, Die Landwirtschaft im hellenistischen Ägypten, Münch. Beitr. 7 (Munich 1925) 327-28; Dorothy J. Thompson, Memphis under the Ptolemies (Princeton 1988) 43.

19Columella, De Re Rustica 7.6.1, cf. 7.6.9.
in which case a single shepherd can no longer control it."20 No doubt the strongly hierarchical disposition of goats and the sociability of bucks (which is a trait of the goat family) fit them well for this role.21 In the Oxyrhynchite registration, however (apart from the question of the availability of sheepdogs),22 the three goats may not be bucks, but does, since they are each modified by the feminine form of the written word for "one"; but αἴξ is normally treated as feminine in gender (LSJ s.v.), and therefore the adjective μῖα may be entirely unrelated to the actual sex of the goats in the registration. Alternatively, and no doubt preferably, the goats are female and are included in the flock of sheep to provide the shepherd with goat's milk and its products while in the field.23 The mention of kids in this and other registrations, unless purely formulaic,24 is probably decisive.25

20 Cf. Khazanov, Nomads and the Outside World 27; Behnke, Herders of Cyrenaica 27, 71; Tibullus, Carm. 2.1.58 (he-goat as dux pecoris), with Walter Burkert, "Greek Tragedy and Sacrificial Ritual," GRBS 7 (1966) 87-121, at 100 (ref. owed to Laurie K. Haight). Can it be accidental that Polyphemos' helpers, the play's chorus, in Euripides' Cyclops are satyrs (goat-men)? Sheep flocks without goats can strike the observer as unusual, Doughty, Travels in Arabia Deserta II 256: "We soon saw a great flock trooping down in the rocky bay of the mountain in front. A maiden and a lad were herding them; and unlike all that I had seen till now there were no goats in that nomad flock." For a (Byzantine Egyptian) flock of goats only (a combined flock of more than 31 goats and kids), see P.Cair.Masp. II 67141.6.v.


22 Some classical references to sheepdogs: Iliad 10.183ff., 12.303, 18.578-86; Sophocles, Ajax 297; Plutarch, Demosthenes 23 (sheepdog fable); Aesopica I 342 (ed. B. Perry); Pausanias 1.43.7, cf. 2.19.8 (story of Linos, torn to pieces by his sheepdogs); Fronto, Epist. 2.10; Columella, De Re Rustica 7.12.8-9. From the papyri: PSI IV 368 (sheepdogs in the Zenon archive).


24 Cf. Balconi, Aegyptus 64 (1984) 50-51: the registration formula, by the abbreviation αἰγ-, insists on the plural for "goats" even when only one goat (αἴξ) is being registered.

25 Another possible reason for including goats in a sheep flock is suggested by the fact that among the Kazaks of Central Asia "goats are believed to protect the flocks from the attacks of wild animals."--C. Daryll Forde, Habitat, Economy and Society: A Geographical Introduction to Ethnology (repr. London/New York 1953) 341; but this does not seem a likely consideration for Egypt despite occasional reports of attacks by wild animals (crocodiles and hippopotami) in the hagiographic sources of the later period, e.g., Historia Monachorum 4.3 and 12.6-9.
4. The numbered animals are all adults. Lambs and kids are not included in the count in this registration, presumably because their final numbers were as yet unknown. Many or all may not yet have been born (the winter lambing had not been concluded), and once born would at first feed more from their mothers than from the land, especially in the first four to six weeks after birth. The "accompanying" lambs and kids are therefore those that the registered ewes and does were in the process of producing. In Oxyrhynchite registrations of Nero's reign, lambs were registered in a later, supplementary return. In some societies where the pastoral strategy aims at milk and its products, the lambs (after weaning) and even the yearlings are separated from the adult flocks and herded apart. Surplus male lambs would be sold for butchery. The presence of pregnant ewes and does, and the real and anticipated presence of lambs and kids, must have slowed and restricted the movement of the flock entrusted to the shepherd Apion's care in P.Oxy. 3778, which was in any case to be kept within the Oxyrhynchite nome. Interestingly, and somewhat ironically, adult sheep are much less mobile than goats, but "lambs can run with the herd from the day of birth"; kids cannot. But of what practical concern could be the kids produced by the three goats (on the assumption they were females) in the flock under Apion's care?

5. The pasturing is specified as taking place near the village of Tala6 (in its narrowest circumscription) and throughout the nome (at its broadest). Thus, what we have here is a short-distance movement that is "horizontal," appropriate for a flock with young animals, but not "transhumant" because it is short-distance and does not cross from one climatic or ecological zone to another; and because the combined flock,

29Barth, Nomads of South Persia 16; cf. Isaiah 40:11: "He shall feed his flock like a shepherd: he shall gather the lambs with his arm, and carry them in his bosom, and shall gently lead those that are with young."  
though large enough to suggest an eye toward profit, is still too small for
the large commercial aims of transhumance. 31

6. The link between registration and taxation. "The proper tax" (τὸ καθήκον τέλος) is a licensing fee for grazing (the ἐννόμιον) throughout
the nome, inclusive of public domain lands,32 based on the number of
animals being pastured. One may well wonder how many licenses were
issued per locality per year; whether the motives were primarily fiscal, in
which case perhaps more licenses were issued than should have been and
competition among shepherds for available pastures would have arisen;
or whether the motives were primarily managerial, a governmental effort
to allocate and husband limited natural resources and to reduce
potential conflict.33 It can nevertheless be supposed that pasture areas
were easier to find in ancient than in modern Egypt, especially after the
nineteenth century's introduction of perennial irrigation and farming.34

7. Finally, the number of sheep and goats reported in the
Oxyrhynchus registration appears to be a real number. The owners have
not inflated the count with "sheep in the air" so as to secure access to
extra pasturage.35

31 "Transhumance was concerned with large flocks of at least several hundred head
of sheep."--E. Le Roy Ladurie, Montaillou 77, n.1. Ecological zones: e.g., Behnke,
Herders of Cyrenaica 68. In general: Stephen Hodkinson, "Animal Husbandry in the

32 S.L. Wallace, Taxation in Egypt from Augustus to Diocletian (Princeton 1938) 82-88,
and notes at back, 387-90; P.IFAO 1 5.1 and note; P.Ryl. II pp. 314-15. Cf. Varro,
Res Rusticae 2.1, for the link between registration and taxation of flocks moving between
Apulia and Samnium; further: Marino, Pastoral Economics in the Kingdom of Naples,
passim.

33 See John Reader, Man on Earth 74. Governmental or communal controls only
become important when resources are pressed. Cf. Stanley Crawford, Mayordomo:
Chronicle of an Acequia in Northern New Mexico (Albuquerque 1988) 171: "During times
of plentiful water a parciante [landowner or member-shareholder] can often take
whatever he can use from a ditch, regardless of how many piones or shares his place is:
the value of a pion as a share comes alive only when water becomes scarce." See also
Marino, Pastoral Economics in the Kingdom of Naples 1-81 and passim for governmental
control over pasture assignments, to mediate both between sheepowners and between
pastoralists and agriculturalists.

34 For a smaller-scale but analogous situation, cf. Abner Cohen, Arab Border-Villages
in Israel: A Study in Continuity and Change in Social Organization (Manchester 1965)
36ff.

35 Marino, Pastoral Economics in the Kingdom of Naples, passim, but esp. 151-53, for
"sheep in the air" (pecore in aerea).
Among critical (for our purposes) unstated details in the Oxyrhynchus registration is the breakdown of animals by sex.36 This was presumably irrelevant for the ancient purpose of licensing the grazing of animals of whatever sex, but this and the lack of information about the "age structure" of the flock leave the pastoral strategy being followed by the Oxyrhynchite consortium in doubt.37 The usual view38 is that sheep in Hellenistic Egypt were most valued for their wool.39 In parts of Egypt, today, however, sheep are raised for their meat.40 It is just possible that in making this assertion about an ancient wool strategy in Ptolemaic and Roman Egypt scholars have relied too much on a fragment of Kallixenos of Rhodes in Athenaeus' Deipnosophistae (5.201) on foreign sheep breeds at Ptolemy Philadelphus's procession in Alexandria, 279/8 BC, and on references, especially in the Zenon archives, to special breeds of wool sheep imported by the Ptolemies for the making of expensive clothing for the rich (Milean sheep in particular). But there are ways to

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36See, per contra, P. Oxy. XII 1458, a registration in which rams and ewes are distinguished.
39Cf. D. Thompson, Memphis 51 ff.; more generally, A.H.M. Jones, The Later Roman Empire, A.D.284-602 (Oxford 1964) 768; B.H. Slicher van Bath, The Agrarian History of Western Europe, A.D. 500-1850 (London 1963) 164-67, 286-88. For woolen garments in Roman Egypt, e.g., BGU III 928.21, PSI IX 1082.13 (στυχάρων), BGU III 816.18 (χιτών); BGU I 16 = WChr. 114.12, BGU V 1210 (Gnomon of the Idios Logos) paras. 71, 75, 76, cf. H.I. Bell, Cults and Creeds in Graeco-Roman Egypt (Liverpool 1957) 55 (Egyptian priests forbidden to wear woolen garments).
40C.B. Klunzinger, Upper Egypt, Its People and Its Products (New York 1878) 163; R. Neil Hewison, The Fayoum: A Practical Guide (2nd edn., Cairo 1986) 10; Hani Fakhouri, Kafir El-Elow: An Egyptian Village in Transition (New York 1972) 37; Taha Hussin, An Egyptian Childhood, trans. E.H. Paxton (London/Washington, DC, 1981) 45, 47, 84 n. 36. A late papyrus, P. Oxy. XVI 1862 (7th century) at lines 9-10 describes sheep as being in such poor condition as to be inedible. So sheep were used for mutton in antiquity, though this need not have been their main use.
approach the papyrus evidence that will show both that this conclusion is correct and that it is more widely applicable to sheep-raising in Egypt, to the Roman and Byzantine periods in addition to the Ptolemaic.

We may start by looking at a form of indirect evidence, from a variety of document types (though mostly petitions), pointing to the importance of pastoralism in Roman Egypt. I am referring to evidence for the theft of livestock, principally sheep. Sel.Pap. II 262 of AD 280-81, minutes of legal proceedings before the epistrategus at court in the Arsinoite nome, highlights the allegation that a certain Syrion had seized sixty sheep from the young sons and heirs of a deceased shepherd. Interestingly, these sheep seem at the time of the complaint to have been under the control of two shepherds who were their father's partners when he was alive. In P.Abinn. 44 of AD 342 (= P.Thead. 23, cf. P.Thead. 22), Sakaon of Theadelphia complains that a fellow-villager named Heron had stolen 82 of his sheep. His petition includes a telling detail: at the time of the theft (unfortunately unstated--the petition is dated Pharmouthi 3 = March 29), the sheep were "fully fleeced" (σύμποκα). Interestingly (again), the thefts are thefts by local parties known to the victims. Moreover, and quite obviously, not just the sheep, but their fleeces, too, were items of value--otherwise, why mention their being sympoka?--and this is borne out by two more documents from the Abinnnaeus archive, P.Abinn. 48 and 49 (both AD 346). In the former, Aurelius Aboul of the village of Hermopolis, complains of the nocturnal shearing of eleven of his sheep; in the latter, Aurelia Maria, landholder in the village of Theoxenis, complains that nine of her sheep had been nocturnally sheared, three others had been stolen. The former petition is dated Epeiph 5 (June 29), the latter Epeiph 11 (July 5): clearly the sheep were in fleece in the month of June. It may well have been a concern of the thieves that, whereas individual sheep were likely to be re-identified and reclaimed, their fleeces could not. Rather, they could be quickly used or "fenced." Individual animals were no doubt more valuable than their fleeces, but theft of fleeces was a quick and

41 "In countries ill cultivated, and therefore but thinly inhabited, the price of the wool and the hide bears always a much greater proportion to that of the whole beast, than in countries where, improvement and population being further advanced, there is more demand for butcher's meat. Mr. Hume observes, that in the Saxon times, the fleece was estimated at two-fifths of the value of the whole sheep, and that this was much above the proportion of its present estimation. In some provinces of Spain, I have been assured, the sheep is frequently killed merely for the sake of the fleece and the tallow. The carcase is often left to rot upon the ground . . . "--Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, Bk. I, chap. XI, pt. iii. See Allan Chester Johnson, *Roman Egypt to the Reign of Diocletian* (Baltimore 1936) 231-32, for some sheep prices
ultimately safer way to turn a profit.\textsuperscript{42}

This points to the value of wool in a simple, direct and obvious way. More sophisticated, and leading to the same general conclusion, is Dominic Rathbone's treatment, in his dissertation on the Heroninos archive,\textsuperscript{43} of the third-century sheep leases from Theadelphia in the Fayum contracted by the brothers Nilammon and Kalamos.\textsuperscript{44} The brothers made a practice of leasing sheep and, to a lesser extent, goats from large estates. They were not themselves herdsmen of the leased flocks; rather, as entrepreneurs, they paid wage-earning estate shepherds and saw to the securing of pasturage for the flocks held under lease. They are evidenced from 255 to 276 as taking in lease a flock of sheep owned by one Antonius Philoxenus at a yearly rent of 2,000 drachmas. They leased a smaller flock from different owners from 261/2 to 270/1 for 800 drachmas a year. Rent payments were in two installments and keyed to months when shearing was conducted: Thoth (roughly September) and Phamenoth (roughly March). The lessees apparently paid their rents from proceeds of the sale of new fleeces. The flocks were, evidently at their owners' insistence, half ram and half ewe, a ratio which points to the owners' imposing a strategy of wool production on lessees who, if left to choose their own strategy, should have preferred a higher proportion of ewes to be exploited for their lambs and milk products. But arrangements were dictated by the flock owners who by contract provided themselves a regular cash income

and valuations in the centuries just before these Abinnaeus petitions. In early modern times, wool clips were valued at from one-fourth to one-third the value of the animal on the hoof; nowadays the valuation of the wool clip is about one-sixth the animal's value, a reflection of the declining importance of wool and the increased importance of meat: Marino, \textit{Pastoral Economics in the Kingdom of Naples} 52 and 319 n. 41.

\textsuperscript{42}Cf., for a few more examples of sheep theft, \textit{P.Ryl.} II 138 (AD 34), listing 15 measures of wool among items stolen from an agricultural "tower" ($\pi\upsilon\rho\gamma\omicron\varsigma$). \textit{P.Oxy.} XVI 1831 is a semi-literate fifth-century letter to the headman of the Oxyrhynchite village of Takona. In a borderland struggle between its shepherds and those of the neighboring village of Tholthis, the Takona shepherds had made off with some Tholthite sheep. \textit{P.Cair.Masp.} II 67143 recto 21-37 is a sixth-century estate account ($\gamma\nu\omega\sigma\varsigma\varsigma$) of stolen sheep and goats.

\textsuperscript{43}D.W. Rathbone, \textit{The Heroninos Archive and the Estate of Aurelius Appianus} (Ph.D. Cambridge 1986) 124-29; the book based on the dissertation is forthcoming.

\textsuperscript{44}The documents were edited by Jacques Schwartz in 1964 in \textit{Rech.Pap.} 3; abbreviation: \textit{P.Chept.}
based on wool production and assurance that their capital (their sheep and goats) would remain undiminished.45

For their part, the lessees took on responsibilities of securing pastures, paying shepherds' wages and keeping the flocks up to numerical strength despite mortality and theft. Their profits were derived from the sale of fleeces beyond those required for their rent payments, from the sale of milk products and the sale of lambs beyond those needed to replenish the flocks.46 The flocks were clearly envisaged as being mobile, at least within the Arsinoite nome, in a way analogous to that arranged for in P.Oxy. 3778 and other registrations of sheep and goats for their respective nomes; thus the manure of the registered sheep and goats would be lost to their owners' estates. At the same time, the nome-wide mobility of these flocks suggests a search for marginal lands on which to graze, as, for example, at Soknopaiou Nesos on the north shore of the Fayum's Lake Moeris;47 which use of marginal lands for grazing points in turn to wool, not to milk, cheese or meat, as the main product sought.48

4. Pastoralism at Aphroditto (6th Century)

To see whether a wool strategy prevailed in later centuries in Egypt, we now turn to the sixth-century evidence from the village of Aphroditto of the Antaipolite nome in Upper Egypt (the Thebaid). The first thing to note about the village of Aphroditto is that at least some of its shepherds were organized into a κοινόν (collegium) of shepherds and

45Cf. the concern of sheepowners in Basseri herding contracts to see that "the original capital value is secured in one way or another"--Barth, Nomads of South Persia 103-04. For the sheeponwer's concern to keep his "fixed capital--the flock itself--... constantly rejuvenated," see Marino, Pastoral Economics in the Kingdom of Naples 51-57, 319 n. 45.

46Similar arrangements are at hand in the dealings between the Alexandrian senator, Aurelius Hermias also called Apollonius, and his shepherd/lessee Akouis, at or near the village of Apias in the Fayum in the early third century: P.Alex.Giss. 5, P.Lond. III 851 (p. 48)--Allan Chester Johnson, Roman Egypt to the Reign of Diocletian 238-39 (#134)--cf. 855a (p. 51), 848v (p. 209). In the Alex.Giss. papyrus 112 sheep and 30 goats are leased for a four-year term; probably because of the number of goats involved, there are specific provisions about goatskins in addition to sheep fleeces.


48Chamber's Encyclopaedia XII 467.
fieldguards. This, together with the fact that more villagers are identified as shepherds in the Aphrodito documents than in documents for any other town or village of Roman or Byzantine Egypt, suggests a degree of specialization greater than that attested for anywhere else by the papyri; and this very specialization points toward production for exchange rather than for subsistence alone.49 Some of the traditional responsibilities of Aphrodito's koinon of shepherds and fieldguards are formally set out in a long document (P.Cair.Masp. I 67001) of AD 514.50 By this agreement the shepherds are corporately responsible for guarding the fields, particularly for preventing the theft of livestock (see above) and agricultural machinery from the village's "estates" (κτήματα), and for general prevention of damage. The koinon is represented in this document by thirteen of its members. This of course gives a "bottom line" number for Aphrodito's shepherds at a single time without enabling calculation of the total number of village shepherds. It can at least be said that the nomenclature of the shepherds in this document, whatever its ethnic implications, is predominantly Egyptian in tone, and that the shepherds are all evidently adult males. At the level of social organization, therefore, we have to do with men. Actual practice, however, may have been another matter. Whether, for example, the droving of flocks and their tending when in the pastures were, as in many tribal and peasant communities, including those of modern Egypt, tasks for women or children is unknown.51

49 Cf. J.F. Cherry, "Pastoralism and the Role of Animals in the Pre- and Protohistoric Economies of the Aegean," in Pastoral Economies in Classical Antiquity 6-34, at p. 8. Cherry quotes K.F. Galvin: "... the more herding can be considered an occupational specialisation, the more likely herd management practices will reflect production for exchange, rather than subsistence." The Byzantine practice of including a person's trade or job as a regular component in formal identifications means that more is known about the specialized occupations of individuals in the Byzantine period than in the Roman. This applies generally and not just to shepherds. The practice begins in the fourth century and is well established by the fifth. See ZPE 11 (1973) 51-56.


51 Cf. the Biblical David, the youngest of eight sons as his father's shepherd, 1 Sam. 17:12-15; Exod. 2:16 ff.: the daughters of Reuel the Midianite water their father's sheep at a well; Varro, Res Rusticae 2.10: boys and girls tend flocks near the farm; men care for flocks on the range. See further: E. Le Roy Ladurie, Montaillou, 73: a boy becomes a professional shepherd at about age 12; Emile Guillaumin, The Life of a Simple Man, trans. Margaret Crosland (Hanover, NH, 1983) 7 ff.: in 19th-century France, a 7-year-old boy assumes responsibility for the family flock from his 12-year-old sister; Jerome R. Mintz, The Anarchists of Casas Viejas (Chicago 1982) 43-44: in 20th-century Spain, from the age of 6, 7 or 8 a boy tends to his family's livestock; at 13 or 14 his father teaches him farming; Leo V. Cassanelli, The Shaping of Somali Society: Reconstructing the History of a Pastoral People, 1600-1900 (Philadelphia 1982), upper plate on p. [13]: from age of 6 or 7
Further inklings of the "infrastructure" of Aphrodito's shepherds are provided by *P.Cair.Masp.* I 67090, a safe conduct pass issued by an official of the provincial bureau of the Thebaid. The addressees include the village headmen of Aphrodito and "the entire collegium of shepherds, their officers in particular." In another document, in fact a series of documents (*P.Cair.Masp.* III 67328), the yearlong duties of shepherds as fieldguards are assured by guarantees sworn to the village riparius (police officer) in AD 521. What all three documents--*P.Cair.Masp.* 67001, 67090, 67328--indicate when taken together is that Aphrodito's shepherds traditionally guarded the village's fields. Some traditional duties, together with their perquisites, came into written form in the early 6th century. Shepherds at Aphrodito were identified as individuals by their calling, but were also recognized as a group (collegium) with its own leaders. How these leaders were selected, whether there was any system of rotation, how formal the entire process was--all this and more is unknown.

It is likely, though, that some shepherds were more important, bigger men, than others.52 One approach to measuring this is to look at Aphrodito's shepherds in relation to village land on the assumption that some shepherds controlled more land, by ownership and by leasehold, than others and that this economic index was a function in their social importance. It is first necessary to point out that Aphrodito was a basin village built on a tell (modern Kom Ischkaw). It was not therefore bounded by the Nile; rather it was μεσόγειος, "midland." Its arable area spread out in the four directions of the compass into northern, eastern, southern and western "plains" (πεδιώδες). This was one way Aphrodito's land was notionally divided; but there was another way that is more

children tend sheep and goats; Forde, *Habitat, Economy and Society* 340-41: Kazak boys in charge of pasturing a thousand or more sheep; Abner Cohen, *Arab Border-Villages in Israel* 36-38: children tend to household flocks; larger flocks are assigned to shepherd-youths; adult, professional shepherds are at the bottom of the social ladder; Hamed Ammar, *Growing up in an Egyptian Village, Silwa, Province of Aswan* (New York 1966) 31: animal tending as the main responsibility of boys aged 7-12; Nicholas S. Hopkins, *Agrarian Transformation in Egypt* (Boulder, CO/London 1987) 87-88: women and animal husbandry; the women I saw in Sept. 1989 driving sheep toward the Bahr Yusuf at Hawara in the Fayum. See Plates 1-2 (below, pp.199-200). Shepherding can, however, be a man's job: Behnke, *Herders of Cyrenaica* 35.

significant for our concern here. This was the practice of categorizing village land as estates (κτήματα), farms (γεώργια), and pastures (βοσκήματα).

An initial question is how distinctions were drawn among the three. It is relatively easy to begin by separating out the "estates," because ktēmata in Aphrodito landleases tend to be described in such detail as to show they might include, in addition to arable land, such items as cisterns, wine vats, towers, barns, vegetable gardens, and orchards with trees of various kinds--date palms, olives, mulberries, citrons, acacias.\(^53\) An estate might even include within its boundaries a "pasture" (βόσκημα)--P. Michael. 48; and it is pasture land that one might expect Aphrodito's shepherds to own (cf. P. Michael. 45) or to take in lease (e.g., P. Cair. Masp. II 67240 frag.). In fact, Aphrodito's shepherds do figure in leases of pastures. In P. Michael. 48, two village shepherds rent a pasture in the village's "Eastern Plain" for a one-year term. In place of rent they are to do 25 nights of service, most likely as fieldguards. In P. Cair. Masp. I 67112, a shepherd, apparently not native to Aphrodito, leases a pasture (the papyrus is damaged where the location is specified) for a one-year term for a money rent. In P. Lond. V 1692(a) and (b), a shepherd from the Panopolite village of Psinabla, for a money rent, leases pastures in Aphrodito's territory, again for a one-year term. The fact that in two of these leases the shepherds are non-Aphroditans may be significant for questions of pastoral mobility. That the leases are all three for one-year terms may indicate that the label "pasture," while possibly indicating land of quality too poor for farming, may equally possibly have been a temporary, one-year label for land being left fallow and about to benefit from a year's manuring.\(^54\) If so, this is a clear case, for one Egyptian village, of an agricultural-pastoral "symbiosis."

But possibly more significant for the theme of agricultural-pastoral symbiosis is that in the Aphrodito papyri shepherds do not just figure in


\(^{54}\)But cf. Schnebel, Landwirtschaft 84-87, evidence for use of animal manures restricted to vineyards. See also the manuring of the barren fig tree located in a vineyard (ἀμπελόν) in the parable at Luke 13:6-9. But perhaps the evidence for manuring vineyards exists because the animals could not be left casually in them and special arrangements were required for effecting the job; the manuring of lands in fallow or stubble, however important for soil replenishment, would have been customary and unremarkable (D.W. Rathbone, letter of 22nd November 1989). See Marino, Pastoral Economics in the Kingdom of Naples 60-61.
leases of pasture. They also appear as lessees of γεώργια, farms, for farming, not for pasturing. Despite exceptions, one-year terms in land leases to shepherds predominate. Rents are in terms of farm produce. Thus, clearly, shepherds could and did function as tenant farmers at Aphrodito and paid the rents expected of tenant farmers. But also, at times, they could pay, in part, from the "secondary products" of their flocks—in wool, for example, for the rent of pastures (P.Lond. V 1695), in cheeses for the rent of farmland (P.Michael. 46). Cheeses in Aphrodito land leases are not, however, a component in the base rent to be paid by shepherds—or indeed by lessees more generally—but rather figure in a series of landlord's perquisites beyond rent that regularly included quantities of charlock (Sinapis arvensis), wild mustard, as well. It is, of course, possible that the cheeses were produced from goats' rather than from ewes' milk. The charlock may have been intended for consumption by animals, as a dietary supplement for ewes, for example, after lambing, rather than for making mustard for humans or for use as a green vegetable. In small amounts it may serve to curdle milk. Charlock is an annual that in later Egyptian practice (which may date to a much earlier time) was weeded out of grain fields in the month of Tybi (roughly January). It can grow up to two feet high, and according to Mrs. Grieve's herbal, "is much liked by cattle and especially by sheep." In any case, the fact that these "ceremonial renders" (BASP 22 [1985] 146 n. 47) are expected of shepherd and non-shepherd tenants alike further

55 Note a reverse case of a farmer renting pasturage for a three-year term in P.Cair.Masp. III 67325 IV r, but it is a pasture that is apparently part of a farm, γεώργια, line 19.
57 Cf., additionally, P.Cair.Masp. I 67106, 67113 (land located in a neighboring village, Pthla), P.Flor. III 281 (also for land at Pthla), PSI VIII 931.
58 P.Cair.Masp. I 67113 and P.Michael. 46 are for three-year terms.
59 BASP 22 (1985) 146-47 and nn. 45-47.
60 In modern British practice, "[t]o increase the number of doubles, ewes are sometimes put on good fresh grass, rape or mustard a week before the tups go out."—The Encyclopaedia Britannica, 11th edn. (Cambridge 1910) XXIV 821, cf. Julia de Bairacli Levy, The Complete Herbal Handbook for Farm and Stable, rev. edn. (London 1984) 162.
suggests a blurring of the distinction between shepherd and farmer at Aphrodito and points (again) to an agricultural-pastoral symbiosis. So also does the very use of shepherds as fieldguards noted above.63

The symbiosis was not always without friction. *P.Cair.Masp. I 6708764* is an affidavit about damage to crops by trespassing sheep—they trampled the crops in the mud, bent them, uprooted them. The sheep driver in his defense offered the existence of a customary right of way through the field in question. The problem of damage to crops by livestock is "endemic" to Egypt at all periods65 and is no doubt most prevalent in those agrarian settings where agriculture and animal husbandry are conducted, as in Egypt, side-by-side, and where, as I witnessed last September (1989) in the Fayum, animals graze on stubble in fields that are not fenced off from adjacent fields awaiting harvest.66

A peaceful rotation of flocks between fields, kept track of in an estate account, may be recorded in the lengthy *P.Cair.Masp. I 67141*; but the key passage (2.v.23-28), like much else in 67141, is subject to ambiguity. The document as a whole is a papyrus-leaf notebook whose binding was stitched and reinforced with a piece of parchment. It dates to the sixth century67 and, in the editor’s view, may belong to the estate accounts of the Convent of St. Michael of Aphrodito. The notebook’s leaves were scattered when found; the correctness of their re-ordering is not entirely assured. The contents are mixed. Seemingly related passages are separated by unrelated documents, such as the prescriptions for headaches at 2.r.20-29. Numerous hands are represented. A principal compiler of the accounts is one Dioscorus, apparently not the famous Dioscorus of the Aphrodito archives, but surely not, as Maspero thinks, a shepherd. (I doubt a shepherd, unless a leading entrepreneur, would have inspired such a lengthy document in whole or in part.) But

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66Many examples in the early Roman-period petitions from Euhemeria in the Fayum, published in *P.Ryl. II*: 132 (sheep eat 26 sheaves); 138 (sheep destroy 200 olive plants), cf. 141; 143 (sheep destroy ca. 20 artabs of young aracus); 147 (12 artabs of barley); 149 (5 artabs of vegetable seed); 152 (an olive-yard destroyed).

67Late in the century according to Maspero, partly on strength of the appearance in the accounts of one John, son of Cornelius; but John appears in the documents as early as AD 523, *P.Lond. V* 1687, cf. *P.Ross.-Georg. III* 37.22 n.
that the ledgers often concern pastoral matters, and that this is the single most important document for pastoralism in Byzantine Egypt, are without question.

As mentioned, 2.v.23-28 may concern the peaceful rotation of flocks between fields. Maspero's alternative is that this extract has to do with calculating the day's wages owed to two shepherds, Phoibammon and Dioscorus. Everything hinges on the meaning of the word ἔγγας. In Maspero's view it must mean something like "under the control of"; in the suggested alternative, it signifies "on the property of" (French chez, cf. P. Oxy. LI 3640.3 n.). In this case, from Tybi 3 to 17 (15 days inclusively reckoned), the flocks were pastured in Phoibammon's fields, from Tybi 18 to Mecheir 2 (15 days) in the fields of Dioscorus; from Mecheir 3 to 21 (19 days) in Phoibammon's, from Mecheir 22 till Phamenoth 1 (10 days) in Dioscorus'; from Phamenoth 2 to 15 (14 days) in Phoibammon's, from Phamenoth 16 to 22 (7 days) in Dioscorus'. In all, the flocks would have spent 48 days in Phoibammon's pastures, 32 days in Dioscorus' over this nearly three-month period running from the end of December till mid-March, a critical time especially for pregnant, lambing and nursing ewes, when they should have been more stationary, on good pasture or well-foddered, possibly with newly weeded-out charlock (see above). Maspero's alternative, which, as I write this, seems equally attractive, presents a picture of two shepherds taking turns in driving and grazing estate flocks throughout the district, a scenario much like that indicated for the Roman period by the sheep and goat registrations and leases discussed above in parts 2 and 3.

Subsequent pages of the 67141 account are noteworthy for their listing of sheep by categories. Here sheep are principally distinguished according to male and female sex; also according to whether they are winter- or summer-born; also according to whether they are μέγα or νεόκουρα. It is here that we run into another semantic problem because, on the surface, μέγας and νεόκουρος do not yield a neat antinomy. Maspero's solution is that, since μέγας must mean "adult," νεόκουρος in context must mean "young." LSJ gives the expected definition of

68See YCS 28 (1985) 252 n. 11, cf. Campbell, Honour, Family and Patronage 21, for a system of daily rotation. Elizabeth E. Bacon, Central Asians under Russian Rule: A Study in Cultural Change (Ithaca, NY, 1980) 121, remarks that "[s]heep, because of their grazing habits, must be shifted from pasture to pasture at intervals." They "eat grass and other plants right down to the roots, while their sharp hooves churn up the soil"--J. Donald Hughes, Ecology in Ancient Civilizations (Albuquerque 1975) 75-77, at 76.
νεόκουρος, including reference to 67141, as "newly sheared"; if this is
right, then μέγας has to mean something like "in full fleece." On the
balance, however, it seems Maspero is correct on this point (67141.3.r.2
is conclusive). Finally, in small numbers, sheep are identified as being
black.

In a section of one of the better preserved pages of 67141 (3.r.1-7) a
"sister Pelias" is said to control 35 sheep. Of these, 21 are winter-born
males (2 being young); 12 are winter-born females (2 being young).
There are two summer-born females. Together these sheep yield 234
pounds of wool.

In the section immediately following (lines 8-16) Dioscorus controls
23 sheep. Of these, 10 are winter-born males, 13 are winter-born
females (2 being young). One of the males is black and unshorn; two of
the females are black; one of these is unshorn. Together these sheep
yield 131 pounds of wool.

Some observations based on these extracts:

1. The number of young sheep in both flocks is very small, too small
for flock replenishment. But for conclusiveness, it is essential to know
more about the ages of all the sheep, not in general, but in specific
terms.69 That the vast majority of the sheep are winter-born suggests a
system of a single annual winter lambing; there are a few summer-born
lambs because perhaps "some ewes inadvertently got serviced again, or
perhaps if they did not bear for the winter lambing they were re-serviced
deliberately."70

2. A large proportion of male animals is kept and counted. In the
combined two flocks there are 31 males and 27 females. In the two
flocks there are six young animals. Whether both flocks would continue
mixed--male, female, adult and young--or be somehow separated at a
later date71 cannot be determined. In another section of 67141 (4.r.7-21)
I tally 41 sheep, 27 of which are males.

69Cf. Black-Michaud, Sheep and Land 134-39. For a model based on a 15% a year
stock loss and a 15% increase: Marino, Pastoral Economics in the Kingdom of Naples 54.
70D.W. Rathbone, letter of 26th October 1989. For the possibility of a systematic
of Cyrenaica 29-30 (lambing twice-a-year is possible, but only "in a particularly good year, or
after a succession of good years"; otherwise, a once-a-year autumnal lambing and kidding
is the rule). According to Columella, De Re Rustica 7.3.11, melior est autumnalis [sc.
agnus] verno . . . ; breeding was regulated accordingly.
71Cf. Black-Michaud, Sheep and Land, 43, 47, and see above, pt. 2, item #4.
3. The fact that black sheep are identified (their wool being traditionally less valued) and the large number of male animals suggest that of the various "pastoral strategies" theoretically available to Pelias and Dioscorus, these two flocks were being kept mainly for their wool, less for their milk products and not for their mutton. Where milk and its products are the main objects of a pastoral economy, wool color is irrelevant, though where sheep-raising has become "a highly cultivated art" sheep can be "raised to give wools of certain colors."

4. And, in fact, the 35 sheep of the first flock produce an average of 6.68 pounds (2.2 kg.) of wool; the 21 sheep of the second flock yield an average of 6.24 pounds (2.0 kg.). Black-Michaud (Sheep and Land 48-49, 140, 145) uses 1.8 kg. (nearly four pounds) in averaging clips of Luri and Kermanshah ewes from an annual shearing; ram fleeces would be somewhat heavier; yearling fleeces are rated at 1.2 kg. In a June shearing, the ewe clipped by Thomas Hardy's Farmer Oak (Far from the Madding Crowd, chapt. XXII) yielded a fleece rated at three and a half pounds; the ewe was probably from Hardy's fictional, but wool-bearing, "old Wessex horned breed" (chapt. L). These weights and the 67141 weights are poor by today's standards, where a good average ewe fleece goes at ca. 4.5 kg. (roughly ten pounds). It is possible that the Aphroditto sheep were shorn twice a year, once near the end of winter,

72Black-Michaud, Sheep and Land 49; Marino, Pastoral Economics in the Kingdom of Naples 53. Cf. BGU VII 1564.10 (high premium on the "whitest wool," AD 138), Columella, De Re Rustica 7.2.4-5: Color albus cum sit optimus. . .


74 See Doughty, Travels in Arabia Deserta II 333, the bracketed addition on the black-fleeced sheep of the Harb and Shammar whose ewes were believed to yield more milk than other sheep.


76 More on wool weights: Slicher van Bath, Agrarian History of Western Europe 287-88, for some poor, early modern wool yields; Marino, Pastoral Economics in the Kingdom of Naples 52: "Average yield was 2-3 libbra (1 libbra = about 0.33 kg) per mature sheep in spring, 1 libbra less for lambs, 1 libbra more for castrated rams." The latter was from an annual April/May shearing. Willem Jongman, The Economy and Society of Pompeii (Dutch Monographs on Ancient History and Archaeology IV: Amsterdam 1988) 161: "Wool productivity of sheep varies considerably, but to indicate the possible order of magnitude, the estimated average productivity of breeds other than Merino or Crossbred in 1954-55 was 1.13 kg. per head greasy, 0.56 clean." Jongman considers this a likely maximum for sheep near ancient Pompeii. For wool in general, Nina Hyde, "Wool--Fabric of History, National Geographic 173.5 (May 1988) 552-91; for grease and fleeces: 578-79.
centering on the month of Phamenoth (roughly = March), and again in late summer, in which case these fleece weights would be quite respectable. If, however, they are the result of a single annual shearing, then "the figures probably represent the annual wool-yield from a short-wool breed on poorish pasture (i.e. small animals), and perhaps sheared less efficiently than nowadays."

5. No dates are preserved on 67141.3.r. An earlier page of the account refers to the month of Phamenoth (roughly March); a later passage (7.r.7ff.) is an "account of shearing" (λόγ(γος) κουράζ) dated to Mecheir 23 (= Feb. 17). It is noteworthy that the sheep are all shorn together, not in batches at different times by age or by sex.

It is a great mystery who owned the wool recorded in P.Cair.Masp. 67141, unless Maspero is right in his conjecture that these are convent accounts. Likewise unknown is whether this wool would all have been used by its owners or whether it would in some way have been marketed. An answer on a smaller scale and in a different social setting is provided in part by P.Cair.Masp. II 67127, a "sale in advance of delivery" dating to AD 544. In this document a shepherd, Aurelius Apollōs, son of Hermauōs, agrees that he has received a cash payment in advance for wool (1/3 gold solidus, a triens or tremissis) from Flavius Dioscorus, son of Apollōs, that is, the well-known Dioscorus of the Aphroditos archives. Whether this is a case of a cash-poor shepherd mortgaging his future "crop" or a genuine though small-scale commercial transaction cannot

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77See P.Chept. 9, cf. below.
78Schnebel, Landwirtschaft 327, on winter/summer shearing in Hellenistic Egypt, cf. Diodorus 1.36. For summer shearing in the later Roman period: PSI III 305 (with ed. intro.) and 313.4 and note, both 3rd/4th century from Oxyrhynchus. For twice-a-year shearing in Roman Spain: Varro, Res Rusticae 2.11.8. Columella, De Re Rustica 7.4.7, points to an annual, but variable-date shearing, which nevertheless fell in late spring or early summer, depending on the weather.
80Black-Michaud, Sheep and Land 48-49; Encyclopaedia Britannica, 11th edn., XXIV 821.
81For an earlier (third-century) example with wool as the commodity, see P.Chept. 17, as discussed by D.W. Rathbone, The Heroninos Archive 561f. (n. 49). For a fragmentary, late example (AD 434): P.Lond. V 1777. See, for a modern parallel, Marino, Pastoral Economics in the Kingdom of Naples 74ff.
be established;\textsuperscript{83} but at least it is clear that this is a personal, not an institutional or corporational, transaction. Its dates are of interest. The contract is drawn up on Phamenoth 15 (= March 11); presumably Dioscorus hands over the money to the shepherd on the spot. Repayment in wool is set for the first of the intercalary days (= August 24). If there is any calendaric relationship between 67127 and 67141 or any customary pastoral calendar at Aphrodito, it is possible to suggest that 67127 was agreed to in March after the conclusion of a late February/early March shearing. Repayment was to be made five and a half months later from the results of a summer shearing conducted in August. All this is speculative, and does not of course solve the problem of Dioscorus and the wool he has bought. Was this all this shepherd's wool crop from this shearing or only a part of it? How much wool (and of what quality) would 1/3 solidus paid in advance be likely to purchase? The papyri give many prices for finished articles of clothing, whether of wool or of linen, but little in the way of prices of wool as a commodity.\textsuperscript{84} There is a tendency to give wool weights without reference to prices or prices without reference to the weights of wool or numbers of fleeces being bought.\textsuperscript{85} But the contemporary \textit{P.Lond.} V 1695 and \textit{P.Cair.Masp.} III 67300, when taken in tandem, suggest that 1/3 solidus would purchase 12 pounds of wool (because 1/3 solidus and 12 lbs. of wool appear as alternative fees for use of pastures on the same estate). This is obviously a small amount.

More questions: Was the wool just for household use, and was it therefore going to be worked into clothing by local artisans (fullers, linen weavers, tailors and a dyer are listed in \textit{P.Cair.Masp.} III 67288); or did Dioscorus intend, as another one of his and his family's entrepreneurial


\textsuperscript{85}Weights without prices: e.g., \textit{P.Antin.} I 32, \textit{P.Fouad Crawford} 99, \textit{O.Mich.} 255, \textit{BGU} III 927 = \textit{WChr.} 178; prices without weights or quantities: e.g., \textit{P.Oxy.} IV 791 desc., XXXI 2474, \textit{P.Cair.Masp.} I 67053.8-9, II 67138.1.r.3, 6.r.3.
activities (especially "renting in" and "renting out" land), to market it as a middle man? If so, how many other payments in advance might he have made this year, or how many resale or less formal brokering arrangements? Presumably, his family's connections, his own included, beyond Aphrodito, would have made him an ideal broker for Aphrodito's wool producers. Where was the (hypothetical) market, and how would Dioscorus have moved the wool there for sale?

We are becoming now increasingly imaginative and wildly speculative, but this is in the spirit of today's enterprise. We assume Dioscorus owned draft animals, and we know he owned one cart, elaborately described and leased out for the harvest of AD 553 (P.Cair.Masp. III 67303). We assume he would not have rented out his one and only cart; he must have owned more. He may have transported the wool, adding in appropriate charges to the wool's base price. But would he have used carts for a fairly long-distance transport to market, whatever its location and distance from Aphrodito? Moreover, there is no evidence in the Aphrodito papyri for a wool market, but there is evidence for a livestock market, P.Cair.Masp. 67002, p. 2. This met at least annually at This (Tihna), downriver from Aphrodito, below Antinoopolis, the provincial capital of the Thebaid. The market specialized in pack animals (donkeys and camels). The Aphroditans went there once a year in a group (there were thirteen participants in the occasion described in 67002) at a time of year as yet unknown. They sold the increase or surplus of their animals, possibly at auction (the text is obscure but suggestive), and depended on these sales, so they say, for their own and their family's survival. Given the prevalence of sheep and wool at Aphrodito and the evident importance of sheep husbandry, and


88For market specializations, see Hopkins, Agrarian Transformation 152-53; but cf. the general livestock market in modern Daraw, a village upstream from Kom Ombo, described by Charlie Pye-Smith, The Other Nile, Penguin Bks. edn. (Harmondsworth 1987) 124-25 and pl. 12.
given the existence of the livestock fair, we should be inclined to say that if there were no wool market for Aphroditan products, it would have to be invented.

But this is far too bold an assertion. It is, however, true that it is precisely here, in the transition between production and manufacture, in marketing, that is, that the papyri fail us, for wool as for other commodities. Sophisticated detective work is needed to fill the gap, with a careful attention to details that earlier generations of papyrologists, concerned more with legal technicalities and the workings of the Roman-Egyptian bureaucracy, have overlooked.

This paper, now concluded, contains just about everything I have been able to gather to date on the subject of pastoralism in Roman Egypt, from three main vantage points—papyrological, anthropological, zoological (the order is a quantitatively descending one). Some of what has been presented may be extraneous to the subject (there is clearly anthropological overkill in some of the notes, for example); there are no doubt errors needing correction and still more gaps in the presentation waiting to be filled. I am accordingly painfully aware that much more can be done. At the same time I am convinced that the results will repay the effort, and that a comparative approach will be essential to the endeavor's success.

Loyola University of Chicago

James G. Keenan

89 Cf. A.H.M. Jones, "The Cloth Industry under the Roman Empire," in *The Roman Economy* (Oxford 1974) 350-64. See, however, PSI V 459, official concession to sell wool by the fleece and by weight, Karanis, AD 72 (Johnson, *Roman Egypt to the Reign of Diocletian* 333, 383-84 [#233]).

90 I owe many thanks to Dominic Rathbone, especially, but not exclusively, for communicating information from his Cambridge dissertation and for sharing his ideas on *P.Cair.Masp.* II 67141.
Plate 1

Sheepflock, Hawara in the Fayum, vigilant married woman (dressed in black) and dog in the lead
Plate 2

The same flock, a second woman, some donkeys and (possibly) a goat