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IN THE EUROPEAN ECONOMY. 1000-1800

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INDICE

Domenica 8 maggio – APERTURA DEI LAVORI

ERIK AERTS, *La religione nell'economia. L'economia nella religione.*

Europa 1000-1800pag. 3

Lunedì 9 maggio – TRA DOTTRINA E PRATICA DELLA VITA QUOTIDIANA: FINANZA

& CAPITALE / BETWEEN DOCTRINE AND PRACTICE OF EVERYDAY LIFE: FINANCE & CAPITAL

Relazioni

GIACOMO TODESCHINI, *Usury in Christian Middle Ages. A Reconsideration of the Historiographical Tradition (1949-2010)*pag. 119

MARKUS A. DENZEL, *The Curial Payments System of the Late Middle Ages and the Sixteenth Century: Between Doctrine and Practice of Everyday Life* » 131

JOHN MUNRO, *Usury, Calvinism and Credit in Protestant England: from the Sixteenth Century to the Industrial Revolution*..... » 155

JUAN M. CARRETERO ZAMORA, *Les Collectories de la Monarchie Hispanique et la banque Italienne aux XVI^e-XVII^e siècles (1506-1614)* » 185

Comunicazioni

JORDI MORELLÓ BAGET, *Searching the “Veros Valores” of Some Religious Centres of Barcelona (About the Ecclesiastical Subsidy of 1443)*pag. 207

DAVID KUSMAN, *Le rôle de l'Église comme institution dans la contractualisation des opérations de crédit en Brabant, XIII^e-XV^e siècle*..... » 227

Martedì 10 maggio – TRA DOTTRINA E PRATICA DELLA VITA QUOTIDIANA: FINANZA

& CAPITALE / BETWEEN DOCTRINE AND PRACTICE OF EVERYDAY LIFE: FINANCE & CAPITAL

Comunicazioni

MAREK SŁOŃ, *Die Rolle der kirchlichen Institutionen im Geldumlauf zwischen Stadt und Umland. Das Herzogtum Breslau im Spätmittelalter*.....pag. 249

ELISA SOLDANI, DANIEL DURAN I DUELT, *Religion, Warfare and Business in Fifteenth-Century Rhodes*..... » 257

GIOVANNI CECCARELLI, *Concezioni economiche dell'Occidente cristiano alla fine del medioevo: fonti e materiali inediti* » 271

MORITZ ISENMANN, *The Administration of the Papal Funded Debt: Structural Deficiencies and Institutional Reforms* » 281

FABIENNE HENRYOT, *La quête franciscaine aux XVII^e et XVIII^e siècles : théories et pratiques d'une économie de l'Évangile* » 293

PRESTON PERLUSS, *From Alms to Investments: Monastic Credit Structures in 17th and 18th Century Paris*..... » 307

Martedì 10 maggio – RELIGIONE E SVILUPPO ECONOMICO / RELIGION AND ECONOMIC DEVELOPMENT

Relazioni

RICHARD D. ORAM, Breaking New Ground: the Monastic Orders and Economic Development along the Northern European Periphery c.1070 to c.1300	pag.	331
STEPHANE BOISSELLIER, Capitaux ecclésiastiques, croissance économique et circuits épiscopaux dans la formation du Portugal, XI ^e -XIII ^e siècles.....	»	345
MURAT ÇIZAKÇA Long Term Causes of Decline of the Ottoman/Islamic Economies	»	361
CÁTIA ANTUNES, FILIPA RIBEIRO DA SILVA, In Nomine Domini et In Nomine Rex Regis: Inquisition, Persecution and Royal Finances in Portugal, 1580-1715....	»	377

Mercoledì 11 maggio – RELIGIONE E SVILUPPO ECONOMICO / RELIGION AND ECONOMIC DEVELOPMENT

Relazioni

MONICA MARTINAT, Un modello cattolico di sviluppo economico? La riflessione teorica e la pratica degli scambi nell'Europa mediterranea (secc. XVI-XVIII)	pag.	413
THIJS LAMBRECHT, "Nine Protestants Are to Be Esteemed Worth Ten Catholics." Representing Religion, Labour and Economic Performance in Pre-Industrial Europe c. 1650-c. 1800.....	»	431

Comunicazioni

HANNELORE PEPKE-DURIX, L'économie monastique bourguignonne en quête d'organisation rationnelle (XII ^e -XV ^e siècles).....	pag.	451
ANTONIO JOSÉ MIRA JÓDAR, La propiedad agraria eclesiástica en Valencia en la baja Edad Media. Rentas, gestión de la tierra y explotación campesina.....	»	465
GUIDO ALFANI, Reformation, "Counter-reformation" and Economic Development from the Point of View of Godparenthood: an Anomaly? (Italy and Europe, 14 th -19 th Centuries).....	»	477
LOREDANA PANARITI, "Non si acquista la scienza se non si studia". La componente ebraica nel sistema assicurativo triestino	»	491
MARIA GRAZIA D'AMELIO, MANUEL VAQUERO PIÑEIRO, Devozione e risorse monetarie: aspetti del finanziamento degli edifici religiosi tra Medioevo e età Moderna	»	499
ROMINA TSAKIRI, L'istituzione della cessione dei monasteri ortodossi nella Creta dei secoli XVI e XVII ed il suo contributo alle attività economiche degli ambienti circostanti	»	511
SAMIA CHERGUI, Institutions religieuses des habûs : nature, fonctionnement et impact sur les investissements immobiliers en Alger ottomane	»	529
MANON VAN DER HEIJDEN, ELISE VAN NEDERVEEN MEERKERK, ARIADNE SCHMIDT, Religion, Economic Development and Women's Agency in the Dutch Republic..	»	543
MARIA CIEŚLA, Between Religious Law and Practice. The Role of Jewish Communities in the Development of Town's Economy in the Grand Duchy of Lithuania in the 17 th and 18 th Centuries.....	»	563
MARÍA DOLORES MUÑOZ DUEÑAS, La formación de un discurso secularizado sobre el sistema económico de la Iglesia: la cuestión del diezmo en Córdoba, 1750-1820 ..	»	575
NICOLAS LYON-CAEN, Les jansénistes, le commerce et l'argent au 18 ^e siècle	»	585

Giovedì 12 maggio – RELIGIONE E CONSUMI / RELIGION AND CONSUMPTION

Relazioni

- PHILIP SLAVIN, Church and Food Provisioning in Late-Medieval England, 1250-1450: Production Costs, Markets and the Decline of Direct Demesne Management.....pag. 597

Comunicazioni

- TIMOTHY P. NEWFIELD, Epizootics and the Consumption of Diseased Meat in the Middle Ages.....pag. 619
- LAUREANO M. RUBIO PÉREZ, OSCAR FERNÁNDEZ ALVAREZ, Religion, Culture and Eating: Beliefs, Consumption Ways and Collective Practices in the Northwest of Spain from the 16th to the 18th Centuries » 641
- ISABEL DRUMOND BRAGA, Les familles de chrétiens nouveaux et la possession d'objets religieux (XVII^e et XVIII^e siècles) » 655
- BRECHT DEWILDE, JOHAN POUKENS, Confraternities, Jansenism and the Birth of a Consumer Society in 17th-18th-Century Leuven » 671

Giovedì 12 maggio – MOBILITÀ E MIGRAZIONE: PERSECUZIONE, PELLEGRINAGGI E TURISMO RELIGIOSO / MOBILITY AND MIGRATION: AGGRESSION, PILGRIMAGE AND RELIGIOUS TOURISM

Relazioni

- DAVID JACOBY, The Economic Impact of Christian Pilgrimage on the Holy Land, Eighth-Sixteenth Century – a Long-Term Overviewpag. 697
- CHRISTOPHE DUHAMELLE, Pèlerinage et économie dans l'Empire au XVIII^e siècle..... » 713

Comunicazioni

- JUDICAËL PETROWISTE, Pèlerinages et essor commercial dans les pays occitans médiévaux (XI^e-XIII^e siècle).....pag. 729
- FEDERICO PIGOZZO, I denari dei pellegrini. Oblazioni votive e istituzioni ecclesiastiche nell'Italia centrale alla fine del XIV secolo » 743
- CLÉMENT LENOBLE, Investimenti religiosi, civili ed economici. Diritto e teologia in alcuni aspetti degli scambi tra mercanti italiani e frati minori (Avignone secc. XIV-XV) . » 755
- MICHAEL A. PENMAN, The Economics of Faith: Approaches to Monastic Saints' Cults in Medieval Scotland..... » 765
- YVES JUNOT, Les migrants, un enjeu? Pacification religieuse et relance économique de part et d'autre de la frontière entre la France et les Pays-Bas espagnols (c. 1580-c. 1610) » 779
- MARIA MARTA LOBO DE ARAUJO, Les pèlerinages au Sanctuaire de Notre Dame de Porto de Ave en tant que moteurs de changement : la dynamisation de l'économie locale (XVIII^e siècle)..... » 793
- MARIA ENGRACIA LEANDRO, Quand la religion et l'économie se mêlent. Triomphe des croyances au tour du Sanctuaire de Notre Dame da Nazaré, triomphe de l'économie locale » 805

- Abstracts » 823

Timothy P. Newfield

*Epi-zootics and the Consumption
of Diseased Meat in the Middle Ages*

“...after a short sickness [cattle] generally died as if suddenly
and few animals of that species were left...people ate cattle dying of disease
in the aforementioned manner and by God’s ruling suffered no ill consequences.”¹

The cattle referred to here in the *Chronicon de Lanercost*, composed at Carlisle in north-western England, died of disease, alongside hundreds of thousands of other domestic bovines in the great panzootic of the early fourteenth century.² This is not the only source for the consumption of diseased animals in the wake of that massive pestilence. Across the Channel, Johannes de Beka, a fourteenth-century clerk of the diocese of Utrecht, implies carrion eating when writing that in 1316 “...the food shortage became great, to the extent that most poor people (if it is all right to say) were gnawing on the raw corpses of cattle just like dogs...” and the *Magdeburger Schöppenchronik* reports that in the same year “many starved from hunger, and also very many cattle died, and many poor people, who otherwise would have starved, saved themselves by eating dead cows.”³ Other texts as well document carrion eating in association to this panzootic and the Great European Famine (GEF) of the early 1300s.⁴ How often did medieval Europeans eat the flesh of diseased animals? Was the con-

¹ “...post modicum infirmitatem quasi subito moriebantur communiter, et pauca animalia illius generis remanserunt...homines tamen comedebant de pecoribus praedicto modo mortuis et Deo ordinante nihil malisenserunt.” *Chronicon de Lanercost*, ed. W. MACDOWALL, Edinburgh 1839, p. 240. I would like to thank Philip Slavin for his many comments on a draft of this paper. All mistakes remain mine. The Social Sciences and Humanities Research Council of Canada has supported the researching and writing of this paper.

² On this panzootic see P. SLAVIN, *The Fifth Rider of the Apocalypse: The Great Cattle Plague in England and Wales and its Economic Consequences, 1319-1350*, in *Le interazioni fra economia e ambiente biologico nell'Europa preindustriale sec. XIII-XVIII. Economic and Biological Interactions in Pre-Industrial Europe from the 13th to the 18th Centuries*, ed. S. CAVACIOCCHI, Florence 2010, pp. 167-181; IDEM, *The Great Bovine Pestilence and its Economic and Environmental Consequences in England and Wales, 1318-50*, in “Economic History Review”, forthcoming; T.P. NEWFIELD, *A Cattle Panzootic in Early Fourteenth-Century Europe*, in “Agricultural History Review”, 57, 2009, pp. 155-190.

³ “...valida fames invaluit adeo quod plerique pauperes (si fas est dicere) cadevera pecorum sicuti canes crude corroderent...” *Chronographia Johannis de Beka*, ed. H. BRUCH, The Hague 1973, p. 273; “In dem 1316 jare wart grot duer tid, dat vele lude van hunger mosten sterven, und ok stark vele vehes, und van den doden koien reddeden sik vele armer lude, de anders gestorven weren van hungere.” *Die Magdeburger Schöppenchronik*, ed. KARL JANICKE, *Die Chroniken der Deutschen Städte vom 14. Bis ins 16. Jahrhundert VII*, Leipzig 1869, p. 185. Considering the range of evidence for the presence of the panzootic in the Low Countries and Northern continental Europe (T.P. NEWFIELD, *A Cattle Panzootic*, cit., pp. 161-162), it is quite certain that Beka’s cattle and the bovines mentioned in the *Magdeburger Schöppenchronik*, like those of the *Chronicon de Lanercost*, succumbed to disease. I thank Rob Meens and Dagomar DeGroot for help with the translation from Old Dutch.

⁴ On the GEF see H.S. LUCAS, *The Great European Famine of 1315, 1316 and 1317*, in “Speculum”, 5, 1930, pp. 343-377; I. KERSHAW, *The Great Famine and Agrarian Crisis in England, 1315-1322*, in “Past and Present”, 59, 1973, pp. 3-50; W.C. JORDAN, *The Great Famine: Northern Europe in the Early Fourteenth Century*, New Jersey 1996 (Princeton University Press); B.M.S. CAMPBELL, *Nature as Historical Protagonist: Environment and Society in Pre-Industrial England*, in

sumption of diseased meat limited to the lower socio-economic strata and years marked by epizootics? Or did most Europeans on a regular basis dine on sick stock?

This paper begins to answer these questions. It focuses on the human consumption of livestock that died of epizootic disease. Twelve references to carrion eating in animal plagues have been collected following a wide survey of medieval narrative sources.⁵ These references, which reveal episodes of epidemic carrion eating, are assessed here and put into context. The paper argues that the victims of epizootic disease were often eaten in the Middle Ages, that the lower socio-economic strata of medieval populations were the principal consumers of this diseased meat, and that widespread carrion eating may have been limited to animal plagues that coincided in time and space with general harvest failures and subsistence crises. To facilitate the setting of the collected references in their proper context, the paper provides a brief history of medieval livestock pestilences, establishes a preliminary reckoning of the frequency with which animal plagues irrupted in the Middle Ages, and considers the measures which medieval Europeans did take, and could have taken, to prevent and cope with stock pestilences. This discussion demonstrates the ubiquity of epizootic disease in medieval Europe and underscores the fact that most medieval epizootics would have inescapably left many dead animals in their wake and that diseased meat would have, consequently, often been available in large quantity. The paper then looks briefly at evidence for the consumption of diseased meat on a circumscribed basis in non-epizootic years in the medieval and post-medieval periods, and on an epidemic basis, following epizootics, in the eighteenth, nineteenth and twentieth centuries. When considered in this context and not in isolation, the references collected here appear far less sensational and all the more credible. In sum, Thorold Rogers' supposition that "the flesh of animals who died of disease was often eaten" finds much support here.⁶

Outside of these general comments, little can be said about patterns in the consumption of diseased meat in animal plagues. The collected passages are few and brief, and relevant material evidence is unknown.⁷ Neither regional nor cultural differences in the consumption of diseased stock are appreciable, let alone changes in the patterns of diseased meat consumption over time. Preferences for certain diseased animals or animals exhibiting particular diseases are also not evident.⁸ Nevertheless, the known evidence merits detailed

"Economic History Review", 63, 2010, pp. 285-314.

⁵ Medieval sources have been consulted afresh for this survey, as the vast majority of existing "catalogues" of historical livestock pestilences employ early and outdated secondary or tertiary scholarship, and questionable editions and translations of historical texts. These works also rarely pay critical attention to the date and place of composition, or reliability and literariness of the sources they consult. Additionally, they make and perpetuate numerous unsupported claims regarding the diagnosis, severity, and temporal and spatial parameters, of individual livestock pestilences, and serve, as such, to mislead assessments of the frequency with which epizootics occurred over space and time, and, more generally, the place of livestock disease in European history. Examples of such catalogues include J.-J. PAULET, *Recherches historiques et physiques sur les maladies épi-zootiques avec les moyen d'y remédier dans tous les cas*, Paris 1775; G. FLEMING, *Animal Plagues: History, Nature and Prevention*, London 1871.

⁶ J.E.T. ROGERS, *A History of Agriculture and Prices in England Vol. I: 1259-1400*, Oxford 1963, p. 54. Lucas and Jordan also mention the consumption of the victims of animal plagues in the context of the GEF: H.S. LUCAS, *The Great European Famine*, cit., 362, 370; W.C. JORDAN, *The Great Famine*, cit., p. 87.

⁷ Indeed, zooarchaeological, palaeopathological and palaeomicrobiological studies of diseased but butchered bones appear to be altogether lacking. The palaeopathological study of animal remains is, however, a burgeoning field. See, for example, J. SIEGEL, *Animal Palaeopathology: Possibilities and Problems*, in "Journal of Archaeological Science", 3, 1976, pp. 349-384; S. VANN, R. THOMAS, *Humans, Other Animals and Disease: A Comparative Approach Towards the Development of a Standardised Recording Protocol for Animal Palaeopathology*, in "Internet Archaeology", 20, 2006; L. BARTOSIEWICZ, *The Archaeology of Animal Disease*, Stroud forthcoming. Very little work has been done to date in the palaeomicrobiological sciences on pre-modern livestock disease. For one noted exception see R. BENDREY *et al.*, *Suspected Bacterial Disease in Two Archaeological Horse Skeletons from Southern England: Palaeopathological and Biomolecular Studies*, in "Journal of Archaeological Science", 35, 2008, pp. 158-190.

⁸ Cf. J.E.T. ROGERS, *History of Agriculture*, cit., p. 54.

examination. Individual plagues could leave thousands of dead animals in their wake. The early fourteenth-century panzootic claimed about 1.5 million domestic bovines in England alone.⁹ Though this outbreak may have been rather exceptional, epizootics regularly eroded European herds and flocks. As they did so, they cut into the human diet, negatively affecting food availability and entitlement. The vast majority of documented epizootics affected cattle and cattle plagues would have been especially devastating to food supplies, as they resulted not only in a loss of meat and milk, but a decline in the aggregate production of grain,¹⁰ as cattle were in many areas of Europe, throughout the Middle Ages, the primary source of traction and fertilizer used in arable agriculture. Put briefly, the diet of most medieval Europeans may not have been rich in meat, but meat would have been available in large quantities specifically on occasions when more pressure was placed on supplies of food – if people were willing to eat it. Consuming carrion in the wake of animal plagues could have been an important measure adopted to buffer the negative effects of plagues on basic sustenance in the short term. The consumption of diseased animals also carries an array of health implications, especially as some of the pathogens behind the livestock pestilences discussed below may have been zoonotic. Widespread consumption of diseased meat could have, in some instances, resulted in epidemic mortalities in human populations. Additionally, to consume livestock that succumbed to disease was to ignore Biblical dietary forbiddances.¹¹ Though religion's influence over medieval dietary practices cannot be underestimated, the evidence presented here suggests that medieval Europeans did not always adhere to Biblical dietary laws. Religion did not in all instances control consumption.

Some scholars might shy away from reading too much into medieval reports of widespread carrion eating. To be sure, accounts of the consumption of diseased animals in association to epizootics should be treated gingerly, as factuality, though it may very well be present, cannot be assumed. Descriptions of people eating animals that died of disease could satisfy multiple purposes. For instance, as to consume animals that succumbed to sickness was to consume carrion and to disregard Biblical forbiddances, reports of carrion eating in animal plagues could serve to emphasize the extent and severity of an epizootic. Carrion eating, in effect, could speak to both the depravity and destitution of a human population in the aftermath of an animal plague.¹² Medieval annalists, chroniclers and historians,

⁹ Slavin estimates that there were about 2.4 million domestic bovines in England prior to the panzootic in the early fourteenth century, though he notes this number needs to be taken with some caution. Pers. Corresp. 15 October 2011.

¹⁰ As manorial accounts demonstrate after the 1314/25 cattle panzootic: P. SLAVIN, *Fifth Rider of the Apocalypse*, cit., pp. 169-170; B.M.S. CAMPBELL, *Nature as Historical Protagonist*, cit., pp. 289-290. There are also some textual references to the negative impact medieval cattle pestilences had on arable agriculture. See, for instance, *The Anglo-Saxon Chronicle*, trans. G.N. GARMONSWAY, London 1975, p. 261; *Chronicon de Lanercost*, cit., p. 240.

¹¹ The consumption of carrion is banned in Leviticus 22:8, "That which comes to a natural death, or is attacked by beasts, he may not take as food", Exodus 22:31 "the flesh of no animal whose death has been caused by the beasts of the field may be used for your food; it is to be given to the dogs", and Deuteronomy 14:21 "You may not have as food anything which has come to a natural death." Medieval writers supplemented (relaxed or intensified) restrictions on carrion consumption. For discussion see B. FILOTAS, *Pagan Survivals, Superstitions and Popular Cultures in Early Medieval Pastoral Literature*, Toronto 2005, pp. 341-346; R. MEENS, *Pollution in the Early Middle Ages: The Case of the Food Regulations in Penitentials*, in "Early Medieval Europe", 4 (1995), pp. 3-19, 4, 8-10, 14, 18.

¹² The *Annales fuldenses* tells of a husband and wife eating the meat of a deer killed by wolves in a shortage in 850. The annalist writes that "Both were forced by necessity to revive themselves on the meat prohibited by the Law." / "Ambo tamen de carnibus lege prohibitis necessitate coacti se recrearunt." *Annales fuldenses*, ed. F. KURZE, *Monumenta Germaniae Historica* SRG, Hanover 1891, VII, pp. 40-41. The *Reineri Annales* and *Annales S. Nicasii Remenses* also reference carrion consumption in the context of a subsistence crisis in 1197, "A multitude of poor people died in famine. The carcasses of dead animals were indifferently consumed by them..." / "Multitudo pauperum fame moritur. Cadavera mortuorum animalium indifferenter ab eis comeduntur..." *Reineri Annales*, ed. I.M. LAPPENBERG, *Monumenta Germaniae Historica* SS, Hanover 1859, XVI, p. 652; "The strongest food shortage occurred, so that poor people for want of bread were driven to eat the carcasses of sheep, horses and oxen at

many of whom were clerics, may have also sought to influence contemporary behavior, to curb carrion eating by documenting mortalities of animals – humans included – that scavenged on dead and diseased stock. They may have as well simply intended to draw parallels with accounts of earlier plagues. Each of these possible motives for the documenting of the consumption of diseased meat can be identified in the references collected below. These references should not, however, be discounted consequently. While medieval authors may have documented carrion eating in terms intended to satisfy a variety of functions, not inclusive to a matter-of-fact recounting of events, very good reason to suppose that the references collected here reflect real experiences is found when they are read alongside each other and situated in their immediate and general historical context.

1. *Medieval evidence for the consumption of carrion in the wake of epizootics*

References to the consumption of the victims of animal plagues in the Middle Ages are scarce and scattered. This is neither surprising nor itself an indication that sick animals that succumbed to epizootic disease were rarely consumed. The vast majority of medieval accounts of livestock pestilences are very short. Indeed, annalists, chroniclers and historians seldom commented upon the origins, temporal or spatial extent, symptoms or epizootiology of livestock pestilences, let alone the consequences that sudden losses of stock had on human economy, health and society, or the measures that contemporaries took to absorb or buffer the impact of animal plagues.¹³ That reports of carrion eating in the wake of epizootics exist at all, considering the brevity typical of medieval references to livestock pestilences, should not be thought to signal that diseased meat was uncommonly consumed after stock died en masse. To be sure, some unavoidable consequences of epizootics, such as the decline in arable acreage that followed bovine mortalities, are also infrequently encountered in medieval texts.

A survey of the extant textual evidence for the early fourteenth-century panzootic produces what initially appears to be eight references to carrion eating in association to that great cattle mortality. These eight passages are found in four continental chronicles, composed near contemporarily in the Low Countries and Germany, and the work of three English historians, a contemporary, Johannes de Trokelowe, an anonymous canon at Lanercost, and a non-contemporary, Thomas Walsingham (d. 1422), who twice documents the consumption of the victims of the panzootic.¹⁴ In addition to the continental references found in the work of Johannes de Beka and the *Magdeburger Schöppenchronik* addressed above, the *Anonymi Chronicon Wirceburgense* reports that in 1316 "...there was a great food shortage and a large pestilence of oxen and cattle so that on account of their penury and the hunger, poor

Lent..." / "Facta est fames validissima, ita quod pauperes pre panis inopia morticiniis ovium equorum et boum etiam in ipsa quadragesima cogerentur vesci..." *Annales S. Nicasii Remenses*, ed. H. BRESSLAU, *Monumenta Germaniae Historica SS*, Hanover 1881, XIII, p. 84. Johannes de Victorensis also documents the consumption of carrion in his *Liber certarum historiarum* in the midst of a shortage in 1277, "...the food shortage was so great that people ate the bodies of dead cats, dogs and horses." / "...tanta fames extitit, ut homines cattas canes equos et mortuorum cadavera manducaverint." *Liber certarum historiarum*, ed. F. SCHNEIDER, *Monumenta Germaniae Historica SRG*, Hanover 1909, XXXVI.1, p. 239.

¹³ See, for instance, passages pertaining to the 809/10 and 1314/25 panzootics: T.P. NEWFIELD, *A Cattle Panzootic*, cit., pp. 161-171; IDEM, *A Great Carolingian Panzootic: the probable extent, diagnosis and impact of an early ninth-century cattle pestilence*, in "Argos: Bulletin van het Veterinair Historisch Genootschap", forthcoming.

¹⁴ Walsingham may have borrowed the two passages attributed to him here from the so-called *St. Alban's Chronicle* composed in the late fourteenth century: cf. T. WALSINGHAM, *Historia Anglicana I*, ed. H. RILEY, London 1863, pp. x-xi, xiii-xiv, xvi.

people were selfishly consuming the flesh of dead cattle,”¹⁵ and in the same year the contemporary William of Egmond, likely in Brederode, tells us that “it is known that some poor people approached the abandoned bodies of cattle and there, in the manner of dogs, devoured the detached raw flesh with their teeth.”¹⁶ These passages, like those from Johannes de Beka, the *Chronicon de Lanercost* and the *Magdeburger Schöppenchronik*, seem to be less complicated than those encountered in the works of Trokelowe and Walsingham.

Trokelowe and Walsingham’s three references are really one. Written roughly one hundred years after the outbreak, Walsingham’s accounts of carrion eating in the early 1300s are nearly identical and stem from a common source. In both passages, Walsingham speaks of dogs (*canes*) and ravens (*corvi*) eating (*comedentes*) from the carcasses (*de caveribus*) of cattle, and in each passage these scavengers are then said to have swelled up (*intumescerent*) as if intoxicated with poison (*quasi toxicati veneno*) and collapsed in death (*et mortui caderent/corruerunt*). Following this, no human is said to have dared (*fuit ausus*) to consume (*comedere/edere*) the flesh of cattle. While the form and content of the two passages are nearly identical, and the Latin of both is quite similar, in the second and longer of the two passages addressed here, Walsingham provides an extra comment about the infectious nature of the meat. In his *Ypodigma Neustriae*, composed c. 1420, Walsingham reports,

“...there was a pestilence of oxen. They were so lethally infected that dogs and ravens eating from their corpses swelled and collapsed in death, as if intoxicated with poison. For this reason no one dared to eat bovine or cow flesh.”¹⁷

In his *Historia Anglicana*, following comments on the irruption and dissemination of the pestilence in England in 1319, Walsingham writes,

“...dogs and ravens eating from bodies of the dying cattle immediately swelled up as if infected with poison and collapsed in death. For this reason no person dared to eat bovine flesh because the pestilence was strong in the beef especially.”¹⁸

Not only are Walsingham’s passages very similar, but Walsingham lifted his material almost verbatim from Trokelowe, his early fourteenth-century predecessor at St. Albans. Similarities in the form and content of Walsingham’s two passages and Trokelowe’s are clear enough. Trokelowe too wrote of dogs (*canes*) and ravens (*corvi*) eating (*vescebantur*) from the flesh (*de cadaveribus*) of cattle before they swelled up (*intumuerunt*) and died (*obierunt*). After this, Trokelowe, like Walsingham, reports that no person (*nullus erat hominum*) ate bovine flesh (*carnes bovinas*). In his *Historia Anglicana*, Walsingham labeled these events as incredible (*incredibile*); Trokelowe labeled them miraculous (*mirabile*). Like Trokelowe as well, Walsingham, in his *Historia Anglicana* described the pestilence as irrupting in England in Essex (*in Essexia/in Estsexia*) at, or around the time, of Easter (*tempore Paschali/circa tempus Paschale*), spreading throughout the island (*per totam Angliam/per totam insulam*) and persisting for a year

¹⁵ “...magna fames erat et pestilentia grandis boum et pecorum, ut pauperes prae penuria et fame carnes mortuorum pecorum certatim comedebant.” *Anonymi Chronicon Wireburgense*, ed. J.G. VON ECKHART, *Commentarii de rebus Franciae orientalis et episcopatus Wireburgensis*, Würzburg 1729, I, p. 821. F. CURSCHMANN, *Hungersnöte*, cit., p. 215.

¹⁶ “...quod magis est, veritate percipitur pauperes quosdam ad abjecta pecorum cadavera procedere et ibi more canum carnes crudas dentibus abstractas deglutire.” *Willelmi Capellani in Brederode postea monachi et Procuratoris Egmondensis chronicon*, ed. C. PIJNACKER HORDIJK, Amsterdam 1904, p. 90. These cattle, like those Beka referred to, certainly succumbed to disease. Cf. n. 3 above.

¹⁷ “...fuit pestis boum qui tam letifere fuerunt infecti ut canes de caveribus eorum comedentes et corvi quasi toxicati veneno intumescerent et mortui caderent. Quamobrem nemo fuit ausus comedere carnes bovinas aut vaccinas.” T. WALSINGHAM, *Ypodigma Neustriae*, ed. H. RILEY, London 1876, p. 252.

¹⁸ “...canes de cadaveribus pecorum morientium comedentes et corvi illico intumuerunt quasi toxicati veneno et mortui corruerunt. Quamobrem nullus erat hominum qui fuit ausus carnes bovinas edere quia in bobus maxime valuit pestis illa.” T. WALSINGHAM, *Historia Anglicana I*, cit., pp. 156-157.

(*per annum integrum duravit/durans per totum annum*). Trokelowe's account runs as follows,

"In this pestilence a miraculous thing occurred whereby both the dogs and ravens that feasted on the bodies of dead cattle immediately swelled up and died of the infection. After this, there was no person who presumed to taste bovine flesh lest having been infected he might succumb from the carrion."¹⁹

A wider reading of the medieval evidence for livestock disease further complicates our use of Walsingham and Trokelowe's references. Indeed, Trokelowe appears to have taken much of his account from Matthew of Paris, another monk at St. Albans. In his account of a cattle epizootic in 1252, in his mid thirteenth-century *Chronica majora*, Paris as well writes of dogs (*canes*) and ravens (*corvi*) eating (*vescebantur*) from the carcasses of dying cattle (*de pecorum mortuorum/mortuo cadaveribus*). They then swelled up (*intumuerunt*) and died of the infection (*infecti obierunt*). Thereafter, Paris writes no human (*nullus erat hominum*) dared to eat (*comedere auderet*) the flesh of cattle.²⁰ Like Trokelowe and Walsingham, Paris also prefaces these comments with a remark on the irruption and spread of the disease in England.

"In this pestilence a miraculous thing occurred, whereby both the dogs and ravens that were feasting on the bodies of dead cattle swelled up right away and died of infection. After this, there was no person who dared to eat the flesh of oxen lest by chance they become one of the aforementioned carcasses."²¹

Several features of Paris' account are also not unique and may be partially dependent on earlier texts. Not only did medieval annalists, chroniclers and historians often write of animal plagues that afflicted multiple species, but reports of birds and dogs scavenging on dead and diseased stock, like that found in the work of Paris, have a long textual history. For instance, in his late antique poem *De mortibus boum*, Severus Sanctus Endecheus writes of flocks of birds (*agmina avium*) and packs of dogs (*greges canum*) tearing at the entrails of cattle that died in a massive pestilence,²² and the ninth-century *Annales Fuldenses* documents dogs tearing to pieces the carcasses of cattle that had succumbed to an epizootic in 878 and been deserted in fields. Not only does this Carolingian annalist report that these dogs disappeared after scavenging on cattle (none were found "living or dead") but he also qualifies the event as a wondrous thing (*res miranda*), not unlike Paris, Trokelowe and Walsingham's qualification of the events of 1252 and c. 1320.²³ Long after our period, deaths of animals scaveng-

¹⁹ "In qua peste hoc evenit mirabile quod de pecorum mortuo cadaveribus etiam canes et corvi qui vescebantur in loco intumuerunt et infecti obierunt. Unde nullus erat hominum qui carnes bovinas gustare praesumebat ne forte de moticiiniis eorum intoxicates succumberet." J. DE TROKELOWE, *Annales*, ed. H. RILEY, London 1866, pp. 104-105.

²⁰ There is some indication that Walsingham employed both Trokelowe and Paris. For instance, Walsingham, like Paris but unlike Trokelowe, specifies that dogs and ravens swelled up "immediately" (*ilico/illico*) after scavenging on diseased bovines.

²¹ "In qua peste hoc evenit mirabile, quod de pecorum mortuorum cadaveribus etiam canes et corvi qui vescebantur ilico intumuerunt et infecti obierunt. Unde nullus erat hominum qui carnes boum comedere auderet ne forte ipsae essent de morticiinis memoratis." MATTHEW OF PARIS, *Chronica Majora*, ed. H.R. LUARD, London 1880, V, p. 321.

²² He does not remark whether they thereafter died. ENDECHEUS, *De Mortibus Boum*, in *Anthologia Latina sive Poesis Latinae Supplementum*, F. BUECHELER, A. RIESE eds., Leipzig 1906, pp. 334-339 (no. 893), 337.

²³ The full passage reads "There was an immense pestilence of oxen in Germania, especially around the Rhine, which was followed by a notable mortality of humans. In the county of Worms, there is a certain villa, called Walahesheim, close to the palace of Ingelheim, where a miraculous thing happened. Dead animals were dragged daily from their stalls to fields, where the dogs close to this village, as is their custom, tore the carcasses to pieces and ate them. On a certain day nearly all [the dogs] came together in one place and dispersed, so that none of them were thereafter found dead or alive." / "Boum pestilentia in Germania immanissime grassata est maxime circa Rhenum quam cladem non mediocrius hominum mortalitas secuta est. Villa quaedam in Wormacense haud

ing on the victims of epizootics were still regularly reported. In the mid eighteenth century, for example, Thomas Short writes that dogs scavenging on cattle carcasses abandoned in the wake of the great pan-European cattle panzootic of the early 1700s died “the same day.”²⁴ There is even a longer textual history of birds and dogs dying after scavenging on human corpses after epidemics and wars.²⁵

Clearly, the deaths of scavenging birds and dogs in the 1252 epizootic, or the 1314/25 panzootic, owe more to textual allusions and pre-modern conceptions of disease transmission, than to a matter-of-fact reporting of events.²⁶ Whatever the relationship between Paris’ reference and that of the *Annales Fuldenses*, Paris’ account of scavenging birds and dogs dying after eating diseased meat should not be taken at face value. That Paris, Trokelowe and Walsingham’s accounts are loaded with other meaning, however, does not invalidate our use of them as indirect references to carrion eating in the 1252 epizootic or the 1314/25 panzootic. Certainly, not every aspect of their accounts should be discounted. There is, for instance, manorial evidence for the canine consumption of dead cattle in the 1314/25 panzootic in England.²⁷ Though the human consumption of cattle that succumbed to disease is merely implied in these passages – Paris, Trokelowe and Walsingham suggest that people were not worried about eating diseased animals, or that they did not stop eating dead cattle, until scavenging dogs and ravens began to die – Paris and Trokelowe could have witnessed or heard of carrion eating in the early 1250s and 1320s and related it in any number of ways. Both may have intended to influence contemporary behaviour and curb carrion eating in the wake of epizootics. Paris, Trokelowe and Walsingham may have as well sought to demonstrate their awareness of earlier writers and draw parallels between English or, in the case of Paris, European experiences with epizootic disease. The survival of multiple independent references to the consumption of diseased meat in association to the early fourteenth-century panzootic, however, does strongly suggest that at least Trokelowe’s reference satisfied multiple purposes.

The three other known medieval references to carrion consumption in association to epizootics too may have served several purposes. In form and content, the first and third of these are quite similar to the continental references addressed above and the passage from the *Chronicon de Lanercost*. The second, in telling – or warning – of the consequences of consuming the byproducts of diseased animals, may have been intended to influence behaviour and curb the eating of diseased animals. In the context of the animal plague of the mid 1040s, Bernold of Constance refers to the consumption of carrion in his eleventh-century

procul a palatio Ingalenheim sita est nomine Walahesheim ubi res Miranda contigit: nam dum animalia mortua cotidie de domibus traherentur in argos canes qui in eadem villa erant iuxta morem suum eadem cadavera laniando comedebant; quadam vero die pene universi in unum locum congregati inde discesserunt ita ut nullus eorum postea neque vivens neque mortuus inveniri potuisset.” *Annales Fuldenses*, cit., p. 92.

²⁴ T. SHORT, *A General Chronological History of the Air, Weather, Seasons, Meteors, etc.*, London 1749, II, p. 2; IDEM, *A Comparative History of the Increase and Decrease of Mankind in England*, London 1767, p. 89.

²⁵ In his description of the Plague of Athens of c. 430 BCE, Thucydides reports that “all the birds and beasts that feed on human flesh either avoided the many bodies that lay unburied or tasted them and perished. Evidence for this was the obvious absence of such birds: they were not to be seen anywhere, and certainly not doing that. But this effect was more clearly observed in the case of dogs, because they are more familiar with human beings.” THUCYDIDES, *On Justice, Power and Human Nature: Selections from the History of the Peloponnesian War*, trans. P. WOODRUFF, Indianapolis 1993, p. 48. Gregory of Tours also recounts birds and dogs tearing at human bodies after an early sixth-century massacre: GREGORY OF TOURS, *Libri Historiarum* X, B. KRUSCH, W. LEVISON eds., *Monumenta Germaniae Historica Srm*, Hanover 1951, I.1, p. 104.

²⁶ Indeed, it should not be presumed, on the basis of these passages, that the epizootic of 1252 or panzootic of 1314/25 were zoonotic.

²⁷ A manorial account from the demesne of Tibberton (Worcestershire), compiled in the midst of the panzootic, states that the flesh of a bullock that died in the pestilence was delivered to dogs (*liberatur canibus*). Worcester Cathedral Archives C793. I thank Philip Slavin for this reference. Pers. Corresp. 21 October 2011.

Chronicon, when writing that in 1044 “the great strength of the food shortage drove people to eat unclean animals.”²⁸ Nearly two hundred years later, in 1224, the *Annals of Connacht* documents the consumption of meat and dairy from diseased animals in one of the lengthier known references to the eating of the victims of epizootics,

*“A heavy and terrible shower fell in part of Connacht this year...which brought about disease and very great sickness among the cows and beasts of those regions...when people drank of the milk of these cattle and ate of their flesh, they suffered internal pains and various diseases.”*²⁹

Later in the thirteenth century, in 1282, the *Annalium Pragensem* reports, in the context of a cattle pestilence also documented below, that “...the most miserable and unhappy people...not being able to find food, devoured the carcasses of oxen and cattle...”³⁰

Where does this leave us? No source corroborates a specific instance of carrion eating. Some do, however, address the consumption of the victims of epizootics in the same general region. In the early fourteenth century, the *Chronicon de Lanercost* and Johannes de Trokelowe refer generally to carrion eating in England, Johannes de Beka and William of Egmond to carrion eating in the Netherlands, and the *Magdeburger Schöppenchronik* and *Anonymi Chronicon Wirceburgense* to carrion eating in Germany. Yet the consumption of diseased animals reported in the *Annals of Connacht* is not cited in other Irish annals, nor is the carrion eating documented by Bernold of Constance or in the *Annalium Pragensem* confirmed by another source. Neither the implied carrion eating nor the deaths of dogs and ravens reported by Paris are encountered in another source. There is, though, a comparatively significant body of evidence for the consumption of the victims of the 1314/25 panzootic across a large portion of the area affected by that plague. This in itself suggests that dead cattle were then eaten. Regardless of the fact that no reference corroborates any specific instance of carrion eating or that those who penned these passages may have sought to satisfy multiple purposes not inclusive to a matter-of-fact recounting of events, there seems to be little reason to question the authority of any of these references, with the exception of those encountered in Walsingham’s texts. If we remove the birds and dogs from Matthew of Paris’ reference or, for instance, the implication that the disease that afflicted cattle in 1224 was zoonotic, we are still left with a reference – direct or indirect – to the human consumption of cattle that died in an epizootic. Trokelowe too referred to epidemic carrion eating, though indirectly and in another’s words.

Some strands of non-textual evidence suggest that the victims of the 1252 epizootic and 1314/25 panzootic were indeed consumed in parts of England and lend support to Paris and Trokelowe’s accounts. In both 1252 and 1320, general prohibitions on the selling and consumption of diseased meat were enacted in England. Regardless of how well these prohibitions were enforced, they signify, at the very least, a concern for the consumption of diseased meat following these pestilences and suggest that it was not unusual or unthinkable for people to consume the animals that plagues left dead.³¹ There is also some evidence

²⁸ “Magna vis famis homines immunda animalia comedere coegit.” *Bernoldi Chronicon*, ed. G.H. PERTZ, *Monumenta Germaniae Historica SS*, Hanover 1844, V, p. 425.

²⁹ *Annals of Connacht*. I have consulted the *Annals of Connacht*, *Annals of Inisfallen*, *Annals of Loch Cé*, *Annals of Tigernach*, *Annals of Ulster* and *Chronicon Scotorum* on The Corpus of Electronic Texts (CELT): <http://celt.ucc.ie/publishd.html> (accessed 14 and 15 March 2011). As has been noted elsewhere, the dating of the annals provided on CELT is sometimes in conflict with the paper copies of the same annals.

³⁰ “...homines miserrimi et infelices, egestate nimia depressi, naturam corporis sui fovere nutrimentis consuetis non valentes, devorabant cadavera iumentorum, pecorum...” *Annalium Pragensem pars III. a. 1279-1283*, ed. D.R. KÖPKE, *Monumenta Germaniae Historica SS*, Hanover 1851, IX, p. 206.

³¹ W. ADDINGTON, *An Abridgment of Penal Statutes*, London 1778, pp. 85, 556. Another text, from Central Europe, observes, in the context of a fairly general outbreak of disease in cattle c. 1300, that “there was a great mortality and it was forbidden to consume oxen.” / “Mortalitas magna extitit et commestio boum prohibebatur.”

from London for the selling of diseased animals at market c. 1320. For example, in the fall of 1319, some six months after the fourteenth-century cattle panzootic irrupted in England, a London butcher was found guilty of intending to sell “two beef carcasses, putrid and poisonous” that “died of disease.”³² In July of the following year another butcher was found guilty of intending to sell “putrid and poisonous flesh-meat” that was “unfit for human food” and had “died of disease,” and in early August that same year, another man was found guilty of falsely accusing another of buying “putrid flesh-meat” and a carcass for the purposes of selling it.³³ Additionally, on 8 September 1320 a London butcher was accused and condemned of “exposing putrid meat for sale” and made to stand “on the pillory and there remain until the meat be utterly consumed by fire.”³⁴ It is uncertain, of course, whether all these meats derived from cattle that died in the panzootic, but considering how sparse evidence is for the selling, or intention of selling, “bad meats” in fourteenth-century England, this coalescing of evidence c. 1320 when cattle herds were failing in England, signals that these meats were from victims of that plague, and, thus, that people were selling, buying and eating meat harvested from animals that died in the panzootic not far from where Trokelowe wrote.

More support for the consumption of the victims of medieval epizootics is had when these references are put into their general historical context below. However, we also stand to learn much about these references, and medieval carrion eating in epizootics in general, when they are set in their immediate historical context. The passages collected here have much in common. All, of course, refer to carrion eating in association to an animal plague. With the exception of those penned by Matthew of Paris and Trokelowe, all also refer directly to the widespread eating of diseased meat, not isolated instances, but multiple people eating multiple animals. Bernard of Constance refers to people (*homines*) and animals (*animalia*), the *Annals of Connacht* to people and cattle, the *Annalium Pragensium* to people (*homines*) and oxen and cattle (*jumenta, pecora*), Johannes de Beka to most poor people (*pleri pauperes*) and cattle (*pecora*), the *Magdeburger Schöppenchronik* to many poor people (*vele armer*) and cows (*vebes*), William of Egmond to poor people (*pauperes*) and cattle (*pecora*), the *Anonymi Chronicon Wirceburgense* to poor people (*pauperes*) and cattle (*pecora*), and the *Chronicon de Lanercost* to people (*homines*) and cattle (*pecora*). Several texts also clearly identify the poor as the primary or only consumers of this meat. William of Egmond goes so far as to observe that the animals, which the poor consumed in the Netherlands in the early 1300s, had been abandoned by their owners, suggesting that only the destitute generally resorted to consuming the victims of animal plagues. This, in turn, points to the fact that these passages universally refer to the consumption of diseased animals left dead in fields, not the consumption of diseased meat sold at markets, as in London c. 1320. That these passages all refer to a carrion eating of a specific sort in a specific context, despite the temporal and spatial distance between them, lends each of them more credibility.

Several of the passages also connect the consumption of animals in epizootics to general crises of subsistence. For instance, Johannes de Beka notes that the poor consumed carrion only after the food shortage – the GEF – had become great, Bernold of Constance observes that a food shortage drove people to eat carrion, the *Annalium Pragensium* reports that the poor were unable to find food, the *Magdeburger Schöppenchronik* notes that the poor were starved from hunger, and the *Anonymi Chronicon Wirceburgense* remarks that the poor ate cattle on account of their penury and the current food shortage. William of Egmond’s ref-

F. CURSCHMANN, *Hungersnöte*, cit., p. 203.

³² *Memorials of London and London Life in the XIIIth, XIVth and XVth Centuries*, ed. H. RILEY, London 1868, pp. 132-133.

³³ *Ibid.*, pp. 139-140.

³⁴ *Calendar of Letter Books*, ed. R.R. SHARPE, London 1903, E, pp. 132-133.

erence is also encountered in a long passage about the GEF. A wider survey of the textual sources reveals that all documented instances of carrion eating in epizootics correspond temporally and spatially to periods marked by major subsistence crises. In the mid 1040s, Eastern, Central and Northwestern Europe were afflicted by shortage.³⁵ Perhaps the greatest food crisis of the first 50 years of the thirteenth century occurred in the early and mid 1220s. Large tracts of Eastern, Central and Western Europe were affected.³⁶ In the early 1280s, a subsistence crisis again hit Eastern and Central Europe, as well as the Western Mediterranean,³⁷ and the worst European food shortage on record, the GEF, took place between 1314 and 1322. Textual references to people turning to carrion for relief in periods of shortage are known for non-epizootic years as well.³⁸ If carrion was typically consumed as a famine food, as it appears to have been, epizootics may have provided hungry segments of a population with respite, if only temporary, from starvation and death.

That the reports of carrion eating collected here all correspond to periods of shortage, emphasizes that the poor were indeed the primary consumers. Those most affected in subsistence crises were those who turned to carrion. It also, of course, suggests that the widespread eating of diseased meat was a phenomenon associated to the coincidence of epizootics, crop failures and subsistence crises. This finds support in a couple textual references to animal plagues in non-famine years which suggest that diseased animals were then ignored.³⁹ It may be suspected that the extent of carrion eating was proportionate to the scale of the animal mortality and the magnitude of harvest failures and human hunger. More evidence may survive for the consumption of the victims of animal plagues in the early 1300s on account of the massive scale of both the 1314/25 panzootic and the harvest failures of 1315, 1316, 1317 and 1321.⁴⁰ Still, it should not be assumed that the widespread consumption of diseased animals was strictly limited to those instances for which we have evidence for it. As the following sections demonstrate, epizootics were anything but uncommon and meat, though diseased, would have been available in large quantities somewhat regularly.

³⁵ F. CURSCHMANN, *Hungersnöte*, cit., pp. 116-18; N. HYBEL, *Klima og hungersnod i middelalderen*, in "Historisk Tidsskrift", 102, 2002, pp. 265-281, 281.

³⁶ F. CURSCHMANN, *Hungersnöte*, cit., pp. 167-71; N. HYBEL, *Klima og hungersnod*, cit., 281.

³⁷ F. CURSCHMANN, *Hungersnöte*, cit., pp. 191-97; PERE BENITO I MONCLÚS, *Fams i caresties a la Mediterrània occidental durant la baixa edat mitjana. El debat sobre 'des crisis de la crisi'*, in "Recerques", 49, 2004, pp. 179-194, 191.

³⁸ Natural conditions capable of ruining harvests could also claim significant numbers of livestock. For animal mortalities stemming from extreme weather and short-term climatic anomalies, and for carrion eating in the midst of subsistence crises in non-epizootic years, see nn. 12 and 151, as well as D.CH. STATHAKOPOULOS, *Famine and Pestilence in Late Roman and Early Byzantine Empire: A Systematic Survey of Subsistence Crises and Epidemics*, Aldershot 2004, pp. 83-84, 162-63, A.B. APPLEBY, *Famine in Tudor and Stuart England*, Stanford 1978, p. 7, and P. CAMPORESI, *Bread of Dreams: Food and Fantasy in Early Modern Europe*, trans. D. GENTILCORE, Chicago 1989, p. 40.

³⁹ For example, in 1264 a central European text reports that "...there was a death of animals so that no one presumed to eat or buy the flesh of cows" / "...extitit mors animalium ut nullas carnes bovinas comedere vel emere presumerent." F. CURSCHMANN, *Hungersnöte*, cit., p. 182. Such direct reports of the avoidance of diseased animal, however, should not be universally taken at face value. Edmund of Dynter (c. 1375-1448) reports in this account of the 1314/25 panzootic, contrary to several contemporaries, that "...no one dared to consume or chew the flesh of bovines and especially the flesh of cows." / "...populus nullas carnes bovinas et specialiter carnes vaccarum audebat comedere aut manducare." *Chronica Nobilissimorum Ducum Lotharingiae et Brabantiae ac Regum Francorum*, ed. P.F. DE RAM, Bruxelles 1856, II, p. 497. Yet other passages do imply that diseased animals were not always eaten in the wake of epizootics. The *Anglo-Saxon Chronicle* observes that following a livestock pestilence "...meat and cheese and butter were in short supply." Had carrion been consumed, meat would have been in abundance: *Anglo-Saxon Chronicle*, cit., p. 261. Additionally, Johannes de Victorensis reports the consumption of dead cats, dogs and horses in 1277, but not cattle, which died in a plague that year (see nn. 12 and 143).

⁴⁰ B.M.S. CAMPBELL, *Four Famines and a Pestilence: Harvest, Price, and Wage Variations in England, 13th to 19th Centuries*, in *Agrahistoria pa manga satt*, B. LIJEWALL et al. eds., Stockholm 2009, pp. 23-56, 24-25, 28-29, 42-43, 49.

2. *A brief history of medieval animal plagues*

The history of livestock disease in medieval Europe is in its infancy. A general history of medieval epizootics is wanting and numerous plagues have yet to be identified reliably in time and space. Much work remains for historians, zooarchaeologists, palaeopathologists and palaeomicrobiologists, as both the epizootics and the baseline of enzootic disease that afflicted stock in the Middle Ages remain largely unknown to us. Nevertheless, it is clear that animal plagues, of cattle especially, were not uncommon.⁴¹ Tens of stock pestilences are encountered in a variety of sources from across Europe prior to the early fourteenth-century panzootic.⁴² The evidence that exists, which can hardly be regarded as representing a “complete” record of livestock pestilences, indicates that most people in the Middle Ages would have been acquainted with epizootic disease. For example, plagues struck animals in regions of Carolingian Europe in 791,⁴³ 801,⁴⁴ 809,⁴⁵ 810,⁴⁶ 820,⁴⁷ 860,⁴⁸ 868,⁴⁹ 870,⁵⁰ 878,⁵¹ 887,⁵² 896,⁵³ 939,⁵⁴ 940,⁵⁵ 941,⁵⁶ 942,⁵⁷ and possibly 843 and 849.⁵⁸ Between 800 and 1300,

⁴¹ Indeed, roughly 68 per cent of the nearly 160 references to livestock plagues gathered here concern cattle. Several vague references to “plagues of animals” also clearly speak to deaths of cattle.

⁴² As I have suggested elsewhere, several of the Eastern and Northern continental European epizootics of 1290s, early 1300s and early 1310s, with the exception of those reported in Ireland, may have been related to the panzootic of 1314-25: T.P. NEWFIELD, *A Cattle Panzootic*, cit., p. 175.

⁴³ “...equorum lues exorta est...” *Annales qui dicuntur Einhardi*, ed. F. KURZE, *Monumenta Germaniae Historica* SRG, Hanover 1895, VI, pp. 89, 91; “...excepto quod tanta lues eius legionis quam rex duxit aequos morbo consumpsit...” *Poetae saxonis annales de gestis Caroli magni imperatoris*, ed. G.H. PERTZ, *Monumenta Germaniae Historica* SS, Hanover 1826, I, p. 248.

⁴⁴ “...pestilentia magna hominum et peccorum...” *Annales Lobienses*, ed. W. WATTENBACH, *Monumenta Germaniae Historica* SS, Hanover 1881, XIII, p. 230.

⁴⁵ “...mortalitas magna animalium...” *Chronicon Moissiacense*, ed. G.H. PERTZ, *Monumenta Germaniae Historica* SS, Hanover 1826, I, p. 309; “...nefanda lues pecudum...” *Poetae saxonis annales de gestis Caroli magni imperatoris*, cit., pp. 263-264.

⁴⁶ “...boum pestilentia...” *Annales regni Francorum*, cit., p. 132; “Mortalitas boum maxima pene in tota Europa nec non et hominum plurimorum...” *Annales Laurissenses minores* ed. G.H. PERTZ, *Monumenta Germaniae Historica* SS, Hanover 1826, I, p. 121; “Magna mortalitas animalium fuit.” *Annales sancti Emmerammi maiores*, ed. H. BRESSLAU, *Monumenta Germaniae Historica* SS, Leipzig 1934, XXX.2, p. 739; “...magna mortalitas boum et aliorum animalium erat in ipso anno...” *Annales Xantenses*, ed. B. VON SIMSON, *Monumenta Germaniae Historica* SRG, Hanover and Leipzig 1909, XII, p. 4; “...mortalitas boum...” AGOBARD OF LYON, *De grandine et tonitruis*, ed. L. VAN ACKER, *Agobardi lugdunensis opera omnia*, Turnholt 1981, pp. 14-15; “...quingenta boum paria repentina peste...extincta.” N. BALBULUS, *Gesta Karoli magni imperatoris*, ed. H.F. HAEFELE, *Monumenta Germaniae Historica* SRG ns, Berlin 1959, XII, pp. 75-76.

⁴⁷ “[H]ominum et boum pestilentia tam inmane longe lateque...” *Annales regni Francorum*, ed. F. KURZE, *Monumenta Germaniae Historica* SRG, Hanover 1895, VI, p. 154; “...hominum et boum pestilentia longe lateque.” *Annales fuldenses*, cit., p. 22; “...in mortalitate animalium, in pestilentia hominum...” *Hludovici et Hlotharii epistola generalis*, ed. V. KRAUSE, *Monumenta Germaniae Historica* CAP, Hanover 1897, II, p. 4; “...pestilentia hominum et animalium.” ASTRONOMER, *Vita Hludovici pii*, ed. E. TREMP, *Monumenta Germaniae Historica* SRG, Hanover 1995, LXIV, pp. 420, 422.

⁴⁸ “...mortalitas animalium.” *Annales Alamannicorum continuatio Sangallensis prima*, ed. G.H. PERTZ *Monumenta Germaniae Historica* SS I (1826), p. 50; “...mortalitas animalium.” *Annales Weingartenses*, ed. G.H. PERTZ, *Monumenta Germaniae Historica* SS, Hanover 1826, I, p. 66; “mortalitas animantium.” *Annales Sangallenses*, ed. G.H. PERTZ, *Monumenta Germaniae Historica* SS, Hanover 1826, I, p. 76.

⁴⁹ “...mortalitas hominum et animalium.” *Annales Alamannicorum continuatio Sangallensis prima*, cit., p. 51; “...mortalitas hominum et animalium.” *Annales Weingartenses*, cit., p. 66; “...mortalitas hominum et animantium.” *Annales Sangallenses*, cit., p. 76.

⁵⁰ “Boum...pestilentia...” *Annales fuldenses*, cit., p. 72.

⁵¹ “Boum pestilentia...” *Ibid.*, p. 92; “...mortalitas hominum et pecorum magna.” *Folcwinii gesta*, ed. O. HOLDER-EGGER, *Monumenta Germaniae Historica* SS, Hanover 1881, XIII, p. 622. “Boum pestilentia...” *Petri bibliothecarii historia francorum abbreviate*, ed. G.H. PERTZ, *Monumenta Germaniae Historica* SS, Hanover 1826, I, p. 418.

⁵² “...boum...et ovium pestilentia.” *Annales fuldenses*, cit., p. 105.

livestock died en masse in parts of England and Wales in at least 800,⁵⁹ 810,⁶⁰ 895/97,⁶¹ 986,⁶² 987,⁶³ 1040,⁶⁴ 1048,⁶⁵ 1049,⁶⁶ 1086,⁶⁷ 1111,⁶⁸ 1115,⁶⁹ 1131,⁷⁰ 1156,⁷¹ 1187,⁷² 1201,⁷³ 1252,⁷⁴ 1254,⁷⁵ 1258,⁷⁶ 1268,⁷⁷ 1274,⁷⁸ 1275,⁷⁹ 1276,⁸⁰ 1279/80⁸¹ and 1286.⁸² Between 750

⁵³ "...maxima pestilencia equorum..." *Ibid.*, p. 127.

⁵⁴ "...mortalitas animalium." *Annales Colonienses*, ed. G.H. PERTZ, *Monumenta Germaniae Historica SS*, Hanover 1826, I, p. 98.

⁵⁵ "Mortalitas iumentorum." *Annales capituli Cracoviensis*, ed. G.H. PERTZ, *Monumenta Germaniae Historica SRG*, Hanover 1866, XI, p. 15; "...pestis animalium..." *Cronicon Suevicum universale*, ed. H. BRESSLAU, *Monumenta Germaniae Historica SS*, Hanover 1881, XIII, p. 67; "...pestis animalium..." *Herimanni Augiensis chronicon*, ed. G.H. PERTZ, *Monumenta Germaniae Historica SS*, Hanover 1844, V, p. 113.

⁵⁶ "...boum pestilentia..." WIDUKIND OF CORVEY, *Res gestae Saxonicae*, H.-E. LOHMANN, P. HIRSCH eds., *Monumenta Germaniae Historica SRG*, Hanover 1935, LX, p. 94; "...boum pestilentia..." *Annales Sangallenses*, cit., p. 78.

⁵⁷ "...immense mortalitas boum..." ADALBERT OF MAGDEBURG, *Chronicon*, ed. F. KURZE, *Monumenta Germaniae Historica SRG*, Hanover 1890, I, p. 162; "...mortalitas...maxima boum grassata est..." FLODOARD OF REIMS, *Annales*, ed. G.H. PERTZ *Monumenta Germaniae Historica SS*, Hanover 1839, III, p. 389.

⁵⁸ Nithard may refer a cattle pestilence when writing that the winter of 842/43 was "full of diseases" and "harmful to cattle." *Historiarum libri iiii*, ed. E. MULLER, *Monumenta Germaniae Historica SRG*, Hanover 1907, XLIV, p. 49. A later Danish text, which may have draw upon sources no longer extant, also reports a mortality of animals in 849, "...fames et mortalitas hominum et pestis animalium." *Annales Rerum Danicarum Esromenses a Nato Christo ad Annum 1307*, ed. J. LANGEBEK, *Scriptores Rerum Danicarum Medii Aevi I*, Copenhagen 1969, p. 229.

⁵⁹ "Facta est et magna pecorum strages in locis diversis." *Symeonis monachii opera omnia: Historia Regum*, ed. T. ARNOLD, London 1885, p. 63.

⁶⁰ "Mortalitas pecorum in Britannia." *Annals Cambriae*, ed. J. WILLIAMS AB ITHEL, London 1965, p. 11.

⁶¹ "...[the Danes] were much more severely crushed during those three years by murrain and plague." *The Anglo-Saxon Chronicle*, cit., p. 90.

⁶² "...the great pestilence of cattle..." *The Anglo-Saxon Chronicle*, cit., p. 125; "...a mortality took place upon the cattle in all the island of Britain." *Brut y Tynysogyon: Peniarth MS. 20 Version*, trans. T. JONES, Cardiff 1952, p. 10.

⁶³ "...lues animalium, quae Anglice "scitta" vocatur, Latine autem fluxus intraneorum dici potest, totam Angliam plurimum vexaverunt..." *The Chronicle of John of Worcester*, trans. J. BRAY and P. MCGURK, Oxford 1995, pp. 436-37.

⁶⁴ "...during this same year more cattle died than anyone remembered before either by reason of diseases of various kinds or because of the inclement weather." *The Anglo-Saxon Chronicle*, cit., p. 163.

⁶⁵ "Mortalitas hominum et animalium multas occupavit Angliae provincias..." *Symeonis monachii opera omnia: Historia Regum*, ed. T. ARNOLD, London 1885, p. 164.

⁶⁶ "There was also great mortality of men and cattle." *The Anglo-Saxon Chronicle*, cit., p. 167.

⁶⁷ "...a pestilence among livestock..." *Ibid.*, p. 217; "...animalium pestis..." *Symeonis monachii opera omnia*, cit., p. 213; "...animalium pestis..." *Chronicon ex Chronicis*, ed. B. THORPE, London 1849, II, p. 19.

⁶⁸ "...the worst murrain..." *The Anglo-Saxon Chronicle*, p. 243; "Mortalitas tunc erat animalium maxima..." MATTHEW OF PARIS, *Chronica Majora*, ed. H.R. LUARD, London 1874, II, p. 138; "...mortalitas hominum, pestis animalium..." *Chronicon ex Chronicis*, cit., p. 64.

⁶⁹ "...there was a fearful pestilence among cattle." *The Anglo-Saxon Chronicle*, cit., p. 246.

⁷⁰ "...murrain among cattle and pigs..." *Ibid.*, p. 261.

⁷¹ "Gravis pestilentia animalium et pecorum." *Chronicon Abbatie de Parco Lude*, ed. E. VENABLES, London 1891, p. 6.

⁷² "...gravis et pestifera hominum et animalium et pecudum mortalitas." *Gesta Regis Henrici Secundi*, ed. W. STUBBS, London 1965, II, p. 29.

⁷³ "...in diversis regionum partibus immensa gentium erat morina et aliorum animalium praecipue vero ovium cujusmodi mortalitas et morina nunquam antea videbantur." *Chronicon de Lanercost*, cit., p. 1.

⁷⁴ "...tanta pestifera armentorum mortalitas..." MATTHEW OF PARIS, *Chronica Majora*, cit., V, p. 321.

⁷⁵ "...tanta ovium et ferarum pestis mortifera ut ovialia ovibus forestae feris vacuarentur..." *Ibid.*, p. 427.

⁷⁶ "...pecudes necuit pubescentes ita ut ovium et agnorum pestis fieret generalis." *Ibid.*, p. 674.

⁷⁷ "...pestis grassaretur in pecudes armenti..." *Chronicon de Lanercost*, cit., p. 85.

⁷⁸ "...infesta lues domesticorum animalium..." *Opus Chronicorum*, ed. H. RILEY *Chronica et annales*, London 1866, pp. 37-38.

⁷⁹ "Infirmitas generalis, scilicet, scabies per totum corpus venit super oves Anglie." *Chronicon Abbatie de Parco Lude*, cit., p. 18.

and 1310, the Irish annals document epizootic disease in 777,⁸³ 778,⁸⁴ 779,⁸⁵ 909,⁸⁶ 917,⁸⁷ 954,⁸⁸ 960,⁸⁹ 987,⁹⁰ 993,⁹¹ 1044,⁹² 1057,⁹³ 1077,⁹⁴ 1085,⁹⁵ 1101,⁹⁶ 1111,⁹⁷ 1113,⁹⁸ 1129,⁹⁹ 1133,¹⁰⁰ 1134,¹⁰¹ 1191,¹⁰² 1206,¹⁰³ 1207,¹⁰⁴ 1224,¹⁰⁵ 1260,¹⁰⁶ 1286,¹⁰⁷ 1296,¹⁰⁸ 1298,¹⁰⁹ 1302¹¹⁰ and 1308.¹¹¹ Between 1230 and 1310, animal plagues ravaged stock in Denmark in 1230,¹¹²

⁸⁰ "Mortalitas ovium hoc anno incepit in Lindeseia et per plures durans annos per totam fere Angliam dispersebatur." *Chronicon ex Chronicis*, cit., p. 217.

⁸¹ "Magna morina ovium fuit quae incepit in anno praecedenti." *Annals Cambriae*, p. 106.

⁸² This pestilence of cattle appears in manorial accounts: K. UGAWA, *The Economic Development of Some Devon Manors in the Thirteenth Century*, in "Transactions of the Devonshire Association", 94, 1962, pp. 630-83, 647, 675; I. KERSHAW, *Great Famine*, cit., p. 28.

⁸³ "A great murrain of cows." *Annals of Ulster*. The Irish annals have been consulted on CELT. See n. 29 above.

⁸⁴ "...the great murrain of cows." *Annals of Ulster*.

⁸⁵ "The murrain of cows did not cease." *Annals of Ulster*; "A murrain of cattle, and a great mortality..." *Annals of Inisfallen*.

⁸⁶ "A murrain of cows." *Annals of Ulster*.

⁸⁷ "A mortality of cattle and birds, such that the sound of a blackbird or a thrush was scarcely heard that year." *Annals of Inisfallen*. The *Chronicon Scotorum* attributes the mortalities of 917 to adverse weather, "There was great frost in this year and great snow which inflicted destruction on beasts."

⁸⁸ "A great murrain of cattle..." *Annals of Ulster*.

⁸⁹ "Cattle suffered a great plague, with snow and diseases." *Chronicon Scotorum*.

⁹⁰ "The beginning of the cattle-plague..." *Chronicon Scotorum*. "A great outbreak of St Vitus' Dance, and it caused death to a large number of people and cattle..." *Annals of Ulster*.

⁹¹ "A great mortality of people, cattle, and bees..." *Annals of Ulster*.

⁹² "...an unidentified pestilence, so that most of their people and stock were killed." *Chronicon Scotorum*.

⁹³ "...murrain of cattle, pigs, etc." *Annals of Inisfallen*.

⁹⁴ "In the above year sinech, viz. many lumps, afflicted the cattle vastly, and even human beings used to contract them." *Annals of Inisfallen*.

⁹⁵ "Destruction of people and stock in this year." *Chronicon Scotorum*.

⁹⁶ "A great mortality of cattle..." *Annals of Inisfallen*.

⁹⁷ "A murrain great and sudden and most tormenting diseases in this year." *Annals of Tigernach*.

⁹⁸ "A great cattle-murrain." *Chronicon Scotorum*.

⁹⁹ "...a great mortality of beasts and cattle." *Annals of Inisfallen*. This mortality may have been drought-induced.

¹⁰⁰ "A great cow mortality occurred throughout all Erin..." *Annals of Loch Cé*; "A murrain in this year which killed the cows of Ireland and almost all its pigs." *Chronicon Scotorum*.

¹⁰¹ "The same cow mortality again..." *Annals of Loch Cé*. Later in the same year and text we find "A great murrain..." In the *Chronicon Scotorum* we encounter "The cattle of Leth Cuinn were still suffering the same murrain."

¹⁰² "Violent wind this year, and it blew down churches, houses, and woods, and caused great mortality of people and of the stock of the men of Ireland." *Annals of Inisfallen*.

¹⁰³ "A great destruction of men and cattle in this year." *Annals of Loch Cé*.

¹⁰⁴ "Great destruction on people and cattle in this year." *Annals of Ulster*.

¹⁰⁵ See above.

¹⁰⁶ "A common cough this year affecting human beings and horses, which was called *galar na placodi*." *Annals of Inisfallen*.

¹⁰⁷ "The spring of the cattle-plague was this year." *Annals of Connacht*; "The spring of the cow-mortality in hoc anno." *Annals of Loch Cé*.

¹⁰⁸ "...a great murrain of cattle and loss of life also." *Annals of Inisfallen*.

¹⁰⁹ "Great murrain that year on cattle." *Annals of Ulster*.

¹¹⁰ "Great plague and destruction among the cattle..." *Annals of Connacht*; "A great destruction of cows, and mortality amongst all cattle..." *Annals of Loch Cé*.

¹¹¹ "...destruction of men and cattle..." *Annals of Connacht*; "...there was destruction of people and cattle..." *Annals of Loch Cé*.

1280,¹¹³ 1281,¹¹⁴ 1299,¹¹⁵ 1300,¹¹⁶ 1308¹¹⁷ and 1310.¹¹⁸ Between 1100 and 1300, outbreaks of disease devastated livestock in Central Europe (Germanic lands mainly) in 1124,¹¹⁹ 1129,¹²⁰ 1145,¹²¹ 1149,¹²² 1150,¹²³ 1151,¹²⁴ 1155,¹²⁵ 1162,¹²⁶ 1166,¹²⁷ 1167,¹²⁸ 1171,¹²⁹ 1187,¹³⁰ 1200,¹³¹ 1205,¹³² 1223,¹³³ 1224,¹³⁴ 1225,¹³⁵ 1226,¹³⁶ 1237,¹³⁷ 1250,¹³⁸ 1258,¹³⁹ 1264,¹⁴⁰ 1267,¹⁴¹ 1272,¹⁴²

¹¹² "...pestilentia hominum et iumentorum magna fuit." *Annales Ryenses*, ed. E. JORGENSEN, *Annales Danici Medii Aevi*, Copenhagen 1920, p. 109.

¹¹³ "...pestilentia magna pecorum fuit in Dania." *Chronicon Danicum ab anno 1241 ad 1420*, ed. J. LANGEBEK, *Scriptores Rerum Danicarum Medii Aevi*, Copenhagen 1969, V, p. 531.

¹¹⁴ "Pestilentia pecorum." *Annales Essenbecenses*, ed. E. JORGENSEN, *Annales Danici Medii Aevi*, Copenhagen 1920, p. 147; "...pestilentia pecorum fuit in Dania." *Petri Olai Excerpta ex Historicis Danorum a Svenone Tingskaeg ad Ericum Menved*, ed. J. LANGEBEK, *Scriptores Rerum Danicarum Medii Aevi*, Copenhagen 1969, II, p. 265; "Pestilentia pecorum." *Chronologia Rerum Memorabilium ab Anno 1020 usque ad An. 1323*, ed. J. LANGEBEK, *Scriptores Rerum Danicarum Medii Aevi*, cit., p. 527.

¹¹⁵ "Gravis pestilentia pecorum fuit in Dancia." *Petri Olai Minoritae Roskildensis Annales Rerum Danicarum, a Cimbrorum exitu ad An. Chr. 1541*, ed. J. LANGEBEK, *Scriptores Rerum Danicarum Medii Aevi*, cit., I, p. 189.

¹¹⁶ "Pestilentia pecorum." *Annales Essenbecenses*, cit., p. 148; "Omnia pecora in Gutlandia moriebantur" *Annales Fratrum Minorum Wisbyenses ab An. 67 ad 1525*, ed. J. LANGEBEK, *Scriptores Rerum Danicarum Medii Aevi*, cit., I, p. 257; "...fuit et pestilentia hominum et pecorum." *Chronologia Rerum Memorabilium ab Anno 1020 usque ad An. 1323*, ed. J. LANGEBEK, *Scriptores Rerum Danicarum Medii Aevi*, cit., II, p. 525.

¹¹⁷ "Pestilentia pecorum." *Annales Essenbecenses*, cit., p. 148; "Pestilentia pecorum." *Chronologia Rerum Memorabilium ab Anno 1020 usque ad An. 1323*, ed. J. LANGEBEK, *Scriptores Rerum Danicarum Medii Aevi*, cit., II, p. 528.

¹¹⁸ "...fuit maxima pestilentia pecorum in Dacia" *Annales, 1275-1347*, E. JORGENSEN, *Annales Danici Medii Aevi*, Copenhagen 1920 (Gad), p. 202; "...fuit maxima pestilentia pecorum in Dacia" *Chronicon breve Danicum, 1275-1347*, ed. J. LANGEBEK, *Scriptores Rerum Danicarum Medii Aevi*, cit., VI, p. 253.

¹¹⁹ "Mortalitas quoque animalium maxima;" "...maxima pestilentia boum, ovium atque..." F. CURSCHMANN, *Hungersnöte*, cit., p. 132.

¹²⁰ "Pestilentia maxima boum, vacarum et porcorum, aprorum, cervorum, capreorum." *Ibid.*, p. 137.

¹²¹ "...mortalitas hominum et animalium, pestilentiae et fames..." *Ibid.*, p. 141.

¹²² "Magna mortalitas pecorum." *Ibid.*, p. 144.

¹²³ "...pestis animalium;" "...gravissima pestilentia et mortalitas tam hominum quamquam et pecorum..." *Ibidem*.

¹²⁴ "Pestis etiam animalium gravissima...maxime caballorum." *Ibid.*, p. 145.

¹²⁵ "...pestilentia animalium..." *Ibid.*, p. 147.

¹²⁶ "...mors pecudum valida..." *Ibid.*, p. 148. A hard winter may have been at the heart of this mortality.

¹²⁷ "...magna puerorum mortalitas et iumentorum." *Ibid.*, p. 150.

¹²⁸ "Pestis valida pecudum..." *Ibidem*.

¹²⁹ "Gravis pestilencia pecorum..." *Ibid.*, p. 151.

¹³⁰ "...pestilentia hominum simul et animalium." *Ibid.*, p. 155.

¹³¹ "Inaudita mortalitas boum..." *Ibid.*, p. 161.

¹³² "Mortalitas permaxima ovium et ceterorum animalium..." *Ibid.*, p. 162. A hard winter and dearth of fodder might account for these deaths.

¹³³ "...pestilentia maxima pecudum et iumentorum..." *Ibid.*, p. 168.

¹³⁴ "Mortalitas maxima animalium..." "Pestilentia animalium..." "...pecorum mortalitas..." "Pestilentia animalium..." *Ibid.*, pp. 169-70.

¹³⁵ "...mortalitas animalium..." "Pestilentia pecudum maxima..." "Pestilentia animalium..." *Ibid.*, pp. 170-71.

¹³⁶ "...mortalitas boves et vacce..." "...pestilentia equorum..." *Ibid.*, p. 171.

¹³⁷ "Lues...equorum..." *Ibid.*, p. 174.

¹³⁸ "...pestilentia animalium..." *Ibid.*, p. 177.

¹³⁹ "...boum et vaccarum...mortalitatis..." "...pestilentia pecorum..." *Ibid.*, p. 179.

¹⁴⁰ "...mortalitas animalium;" "Mortalitas animalium." *Ibid.*, p. 182. These mortalities may have stemmed from famine conditions.

¹⁴¹ "...pestilencie hominum et pecudum..." *Ibid.*, pp. 182-83.

¹⁴² "...mortalitas ovium;" "...pestilentia pecorum..." *Ibid.*, p. 185.

1277,¹⁴³ 1281,¹⁴⁴ 1285,¹⁴⁵ 1298,¹⁴⁶ 1299¹⁴⁷ and 1300.¹⁴⁸

This is but a small sample of the extant medieval written evidence for epizootic disease. It represents only the bare minimum occurrence of epizootic disease between 750 and 1300 in some parts of Europe. From these references several large plagues spanning multiple years and regions can be identified. Though relatively few epizootics appear to have been panzootic in scope, or similar in scale to the 1314/25 cattle mortality, an outbreak in 809/10 afflicted cattle across large parts of Austria, Belgium, Britain, France, Germany, Italy, Luxembourg, the Netherlands, Spain, Switzerland, and possibly Ireland and Denmark.¹⁴⁹ In 868/70 and 939/42, disease also appears to have spread in cattle through large tracts France and Germany, and in 986/87 bovines seem to have been affected across much of Great Britain, as they may have been in the 1040s and 1130s. In Germanic lands, significant outbreaks took place in at least the early 1150s, mid 1160s and mid 1220s. The latter pestilence may have spread into the British Isles, and the pestilences documented by Matthew of Paris in 1252, 1254 and 1258 may have been associated with those reported in Central European texts in the 1250s. Epizootic disease as well seems to have been widespread in cattle in Central and Northern Europe in the early and mid 1280s, as it was c. 1300.

Far more attention, however, must be directed to the passages collected here. To reconstruct the contours of the livestock pestilences they refer to, it will be essential to consider the temporal and spatial proximity of individual passages to the plagues they document, and of the textual relationships between passages. Some passages, from Carolingian texts and the Irish annals in particular, are clearly derivative and may in fact be misdated.¹⁵⁰ Moreover, a few references collected here may not in fact refer to disease-induced mortalities, but mass die-offs associated with extreme weather or short-term climatic anomalies.¹⁵¹ Still, it is clear that epizootics struck regularly. In Carolingian Europe animals were hit at least once every thirteen years; in England and Wales epizootic disease eroded herds or flocks at least once every twenty-one years between 800 and 1300, and one year every sixteen between 1000 and 1300 when the record is most dense; in Ireland stock were struck at least once every nineteen years between 750 and 1310, and one year every sixteen between 1000 and 1310; in Denmark, epizootics spread through animals at least once every eleven years between 1230 and 1310; and in Central Europe livestock were struck at least once every seven years between 1100 and 1300.¹⁵² Despite the meagerness and preliminary nature of this collection, it demonstrates that in no fewer than 90 years, or one year in every six, did epizootic disease affect animals in some part of Europe between 750 and 1300.

¹⁴³ "...pestilencia pecorum..." *Ibid.*, p. 189.

¹⁴⁴ "...mortalitas maxima animalium..." *Ibid.*, p. 192.

¹⁴⁵ "Pestilencia pecudum..." *Ibid.*, p. 198.

¹⁴⁶ "...pestilencia animalium..." *Ibid.*, p. 203.

¹⁴⁷ "...pestis animalium..." *Ibidem.*

¹⁴⁸ "...maxima pestilencia animalium et maxime vaccarum..." *Ibidem.*

¹⁴⁹ See my discussion of the sources, extent, diagnosis and impact of this panzootic in *Great Carolingian Panzootic*, cit., forthcoming.

¹⁵⁰ For instance, the dates assigned to the entries collected here from the Irish annals on CELT do not always correspond to the dates given in the paper editions of the same texts. The dating of several of these annalistic entries may need to be altered slightly. Cf. Newfield, *A Cattle Panzootic*, cit., pp. 170 (n. 72), 170 (n. 76). Also see Dan McCarthy's *Irish Chronicles and their Chronology*, www.scss.tcd.ie/misc/kronos/chronology/synchronisms/annals-chron.htm (accessed 16 March 2011).

¹⁵¹ Though an attempt has been made to differentiate disease-induced mortalities from weather/climate-induced mortalities, some of the references to livestock deaths collected above, from the Irish annals especially, may have been the result of extreme weather or short-term climatic anomalies. Take, for instance, the *Annals of Inisfallen* entries for 1129 and 1191, the *Annals of Ulster* entry for 1207, and the continental chronicle entry for 1205.

¹⁵² Of course, a reassessment of the dates assigned to some passages may affect these calculations.

3. *Preventing and coping with animal plagues in medieval Europe*

Not only did epizootics often erupt in medieval stock, but medieval Europeans were widely ill-equipped to prevent or curb outbreaks of virulent and highly transmissible diseases like those doubtlessly behind the majority of the plagues referenced above. Peasants and lords would have had an established repertoire of methods and measures to draw upon when their livestock fell sick, but it is highly unlikely that these measures would have been able to curb the spread of highly transmissible diseases or cure diseased stock outright. Here attention is given to the approaches Europeans did take, and the tactics they could or could not have taken: blessings, charms, culls, medicinal remedies, prayers and quarantines. While very little evidence from the Middle Ages survives on the topic of livestock quarantines and culls, more is known of charms, cures and prayers. As is suggested here, this likely reflects the measures most commonly exercised and a general failure, in the Middle Ages, of livestock disease prevention. Though this discussion is again preliminary, it illustrates that many animals would have inevitably died when they were exposed to pathogens capable of generating the aforementioned plagues and, consequently, that diseased meat would have undeniably been available in large quantity after most epizootics.

That epizootics are regularly encountered in medieval sources itself signals that medieval Europeans were generally unable of orchestrating effective quarantines or culls on a regional, national or international scale in order to either limit the spread of transmissible diseases or prevent outbreaks altogether. Quarantines and culls, like those employed in the eighteenth and nineteenth centuries to stamp out plagues of what are generally held to have been the rinderpest virus (RPV) and contagious bovine pleuropneumonia (CBPP), and more recently in 2001 to eliminate the spread of the foot-and-mouth disease virus (FMDV), were by no means established in medieval Europe. This is not surprising. Such measures require strong central governance, and considerable administrative and financial resources, not to mention dense pre-existing networks of communication and cooperation between farmers, landowners and the governing elite.¹⁵³ A belief that plagues were transmissible between like animals (as the great plagues of cattle known to modern science are, such as RPV, CBPP and FMDV), and some form of compensation for quarantined and culled stock, would have also been fundamental. In the Middle Ages, however, a range of phenomena was held accountable for livestock disease. Indeed, prior to the dominance of the germ theory in the late nineteenth-century, multiple theories of disease causation and transmission coexisted.¹⁵⁴ Some thought animal disease a product of miasma and the dangerous effluvia associated with putrescence. Others attributed sickness in stock to human sin, weather, the diet or workload of the afflicted animals, humoral imbalances, sorcery, foul play, or even dust.¹⁵⁵

¹⁵³ On these issues see P.M. BIGGS, *Infectious Animal Disease and its Control*, in "Philosophical Transactions of the Royal Society of London", 310, 1985, pp. 259-274; and A.L. OLMSTEAD, *The First Line of Defense: Inventing the Infrastructure to Combat Animal Diseases*, in "The Journal of Economic History", 69, 2009, pp. 327-357. Even then modern governments have struggled to contain outbreaks of disease in livestock: A. WOODS, *Flames and Fear on the Farms: Controlling Food and Mouth Disease in Britain, 1892-2001*, in "Historical Research", 77, 2004, pp. 520-542.

¹⁵⁴ "Divine disapproval" was still widely considered the cause of livestock disease in the nineteenth century: S. MATTHEWS, *Explanations for the Outbreak of Cattle Plague in Cheshire in 1865-1866: "Fear the Wrath of the Lord"*, in "Northern History", 43, 2006, pp. 117-135.

¹⁵⁵ For instance, in his *Decretum*, Burchard of Worms observes the belief that livestock disease was the product of cursed pastures and fodder, or of bewitched herbs, knots and other items placed along routes stock regularly travelled, and Albertus Magnus informs us that "both the heat of the surrounding element and the heat caused by their movement are conducive to those things which cause [animals] to die more quickly and to incur these plagues. For this is how horses, cows, sheep, humans and many other animals of this sort die." For other examples see B. FILOTAS, *Pagan Survivals*, cit., pp. 205, 258, 306; AGOBARD OF LYON, *De grandine et tonitruis*, cit., pp. 14-15; S. WILSON, *Everday Ritual and Magic in Pre-Modern Europe*, London 2000, pp. 103-104, 106; ALBERTUS MAGNUS, *On Animals: A Medieval*

Additionally, livestock insurance was an early modern phenomenon.¹⁵⁶

Though evidence for the implementation of large-scale quarantines and culls, not to mention embargoes on livestock markets, transport and trade in times of animal plague, is lacking prior to the early modern period, there is some indication that these measures were carried out on a local scale in the Middle Ages. Before our period, Columella and Vegetius, in the first and forth/fifth centuries CE respectively, not only demonstrated a belief that disease could be spread between like animals but advocated that the sick be diligently isolated from the healthy in epizootics.¹⁵⁷ Their texts do not appear to have been well known in the Middle Ages,¹⁵⁸ but strands of evidence for small-scale quarantines and culls throughout our period suggest that these measures were a part of the traditional ecological knowledge possessed by medieval peasants and lords. Indications of small-scale quarantines and culls come in various shapes and colours: for example, in his account of the 809/10 panzootic in his biography of Charlemagne, the Poeta Saxo not only implies that diseased animals were sometimes culled but also that healthy animals were kept from the pastures and stalls of the sick; in his treatise on animals, Albertus Magnus stipulates that a rabid dog be kept separate from other dogs to prevent the spread of infection; the records of some twelfth-century Cistercians in Northwestern Europe show that they deliberately folded their sheep in areas where disease was not known; a late thirteenth-century Scottish parliamentary document suggests that sheep, in the midst of an outbreak of disease, be kept to their own “lands and pastures”, presumably to prevent the spread of infection; English manorial accounts demonstrate that localized culls were orchestrated on a few English manors in the midst of the early fourteenth-century panzootic; and a late medieval veterinary text advises that equines afflicted with “scab” be isolated from like animals to prevent the spread of disease.¹⁵⁹

Summa Zoologica, trans. K.F. KITCHELL, I.M. RESNICK, Baltimore, pp. 632, 634-640.

¹⁵⁶ Without compensation, peasants and lords would have certainly resisted or evaded culls and quarantines, let alone restrictions on livestock trade, had they been implemented. Livestock insurance may have appeared first in Spain, in the mid 1500s, and late in England, in the mid 1800s. Even then coverage was often restricted to less virulent diseases: C. WALFORD, *The Insurance Cyclopaedia I*, London 1871, pp. 468-473; S. MATTHEWS, *Cattle Clubs, Insurance and Plague in the Mid-Nineteenth Century*, in “Agricultural History Review”, 53, 2005, pp. 192-211, 192-193, 205-206.

¹⁵⁷ Columella writes, “...the cattle must be divided up, in a number of groups, and sent to distant places and those which are infected segregated from the healthy so that no infected animal may come into contact with the rest and destroy them with their contagion. When they are thus isolated, they have to be taken to places where no herd is pastured so that they may not by their arrival bring the plague there also.” / “...in plures partes distributo pecore longinquae regiones petendae sunt, atque ita segregandi a sanis morbi, ne quis interveniat qui contagione ceteros labefaciat. Itaque cum ablegabuntur in ea loca perducendi sunt quibus nullum impascitur pecus ne adventu suo etiam illi tabem afferant.” LUCIUS JUNIUS MODERATUS COLUMELLA, *On Agriculture/Res Rustica II*, trans. E.S. FOSTER, E.H. HEFFNER, Cambridge, Mass. 1954, pp. 144-145. Cf. FLAVIUS VEGETIUS RENATUS, *Digestorum Artis Mulomedicinae Libri*, ed. E. LOMMATZSCH, Leipzig 1903, p. 16. For further discussion see L. WILKINSON, *Animals and Disease: An Introduction to the History of Comparative Medicine*, Cambridge 1992, pp. 13-15; IDEM, *Veterinary Cross-Currents in the History of Ideas on Infectious Disease*, in “Journal of the Royal Society of Medicine”, 73, 1980, pp. 818-827, 818.

¹⁵⁸ For instance, two copies of Columella’s *Res Rustica* survive from the Carolingian period and twenty or so from the fifteenth century. Like Cato and Varro, Columella and Vegetius only became widely known in the late fifteenth and sixteenth centuries when they “burst into print.” COLUMELLA, *On Agriculture/Res Rustica I*, trans. H. BOYD ASH, Cambridge, Mass. 1960, pp. xx-xxi; *Texts and Transmission: A Survey of Latin Classics*, ed. L.D. REYNOLDS, Oxford 1983, pp. 146-147.

¹⁵⁹ *Poetae saxonicis annales de gestis Caroli magni imperatoris*, cit., p. 263-264; ALBERTUS MAGNUS, *De Animalibus*, ed. J.J. SCANLAN, *Man and the Beasts: De Animalibus (Books 22-26)*, Binghamton 1987, p. 84; R.A. DONKIN, *The Cistercians: Studies in the Geography of Medieval England and Wales*, Toronto 1978, p. 95; *The Records of the Parliaments of Scotland to 1707*, K.M. BROWN et al eds., St. Andrews, 2007-2011, www.rps.ac.uk/trans/1293/8/1 (accessed 16 March 2011); P. SLAVIN, *Great Cattle Plague*, cit., p. 171; A.C. SVINHUFVUD, *A Late Middle English Treatise on Horses*, Stockholm 1978, pp. 109.

Still, animals often fell ill and in large number. When they did, some peasants and lords would have engaged divine powers – through blessings, charms, incantations and prayers – for a supernatural cure. Others would have employed medicinal remedies made of herbs and other materials.¹⁶⁰ Of course, the efficacious qualities of these therapies should be questioned. Some remedies may have been of therapeutic value – such as a tenth-century remedy for “leprosy” in equines (perhaps elephantiasis or ulcerative lymphangitis) that entailed the washing of the infected area with urine “as hot as the horse can stand” and the smearing of a salve made of butter or fish grease blended with hareswort (haresfoot) which could have alleviated the hardness of the affected skin, encouraged circulation and diminished swellings – but most of these measures would have been of little significance.¹⁶¹ Take, for instance, the Old High German charm that called for one to whisper into the ear of an ill horse and hit it on the foot regardless of where the animal presented with disease, or the thirteenth-century blessing meant to protect pigs from sickness that entailed the reciting of four gospel passages and the sprinkling of holy water over their fodder. Sick stock were also taken to relics and shrines, marked with a cross, and led through hollow trees thought to protect from disease.¹⁶²

Pre-modern agricultural treatises stressed that sick animals were a losing investment,¹⁶³ but medieval Europeans were by and large helpless in the face of epizootic disease. Outbreaks of virulent and transmissible diseases, perhaps of RPV or CBPP, would have spread mostly unchecked between animals and inescapably left large numbers of livestock – possibly tens or hundreds of thousands – dead in short periods of time. The animals exposed to virulent diseases like these, or others such as soil-borne anthrax, would have rarely recovered. After plagues burnt out, the mass of the dead would have been left in fields, as several texts observe, or perhaps buried or burned.¹⁶⁴

4. Other diseased meat consumption

The eating of diseased meat hardly appears to have been limited to years marked by epizootics in the Middle Ages. There is, in fact, an array of non-textual evidence for the consumption of diseased animals on a circumscribed basis in the medieval period, and on

¹⁶⁰ Blessings/charms/incantations/prayers and medicinal remedies were not, however, mutually exclusive.

¹⁶¹ Other measures may have done more harm than good. For example, a charm encountered in an early eleventh-century manuscript calls for one to carve Christ's cross on the head and back of a sick horse with a knife, deep enough so “that it bleed”, in order to cure it of a stomach ailment (possibly colic). One was also to puncture the animal's left ear and hit it on the back with a staff: L.L. REMLY, *Magic, Myth and Medicine: The Veterinary Art in the Middle Ages (9th-15th Centuries)*, in “Fifteenth Century Studies”, 2, 1979, pp. 203-209.

¹⁶² For these and many more like examples see, L.L. REMLY, *Magic, Myth and Medicine*, cit., pp. 203-205, 208; B. FILOTAS, *Pagan Survivals*, cit., pp. 148, 205, 258, 263, 292, 306; W.C. JORDAN, *Charms to Ward off Sheep and Pig Murrain*, in *Medieval Christianity in Practice*, ed. M. RUBEN, Princeton 2009, pp. 67-75, 67-68; B. AITCHISON, *Holy Cow!: The Miraculous Cures of Animals in Late Medieval England*, in “European Review of History”, 16, 2009, pp. 875-892; S. WILSON, *Everyday Ritual*, cit. pp. 101-103; ENDELECHIUS, *De Mortibus Boum*, cit., pp. 70-5; GREGORY OF TOURS, *De Virtutibus Sancti Martini Episcopi*, ed. B. KRUSCH, *Monumenta Germaniae Historica SrM*, Hanover, 1885, I.2, p. 187. For ancient medicinal remedies see MARCUS PORCIUS CATO, *On Agriculture*, cit., pp. 78-81, 94-95; MARCUS TERENTIUS VARRO, *On Agriculture/Rerum rusticarum libri III*, trans. W. DAVIS HOOPER, H. BOYD ASH, Cambridge, Mass. 1960, pp. 326-329; LUCIUS JUNIUS MODERATUS COLUMELLA, *On Agriculture/Res Rustica I*, trans. H. BOYD ASH, Cambridge, Mass. 1960, pp. 142-147; PETRUS DE CRESCENTII, *Ruralia Commoda*, ed. W. RICHTER, Heidelberg 1995, pp. 58, 111.

¹⁶³ For instance, VARRO, *On Agriculture*, cit., p. 327; “If there be a beast that begins to fall ill, lay out money to better it...” *Walter of Henley*, cit., p. 25.

¹⁶⁴ *Poetae saxonis annales de gestis Caroli magni imperatoris*, cit., pp. 263-64; *Annales Fuldenses*, cit., p. 92; F. CURSCHMANN, *Hungersnöte*, cit., p. 177; T.P. NEWFIELD, *A Cattle Panzootic*, cit., pp. 163, 166, 168; W.C. JORDAN, *The Great Famine*, cit., p. 37; IDEM, *Charms*, cit., p. 68.

circumscribed and epidemic basis in the post-medieval period. Though not all diseased meat consumed on a circumscribed basis was likely carrion, as most animals suffering from non-epizootic disease were probably slaughtered before they succumbed to their sickness,¹⁶⁵ and though the majority of diseased meat consumed on this limited basis was likely acquired at market rather than from animals abandoned in fields, evidence for the consumption of diseased meat in non-epizootic years nevertheless demonstrates a willingness in the Middle Ages to consume the flesh of the sick. Like post-medieval evidence for epidemic carrion eating, it serves to strip medieval references to the consumption of animals in epizootics of their sensational qualities. When paired with reports of carrion consumption in epizootics, and considered in light of the evident ubiquity of epizootic disease in medieval Europe and the certainty that diseased meat would have often been available in large quantities in the wake of animal plagues despite the best efforts of contemporaries, this evidence gives us more reason to think that animals would have been regularly consumed following plagues.

Prohibitions of the selling and consumption of diseased meat were enacted in many parts of Western Europe in the high and late Middle Ages in what appear to have been non-epizootic years. For instance, in 1337, the town council of Valencia in Christian Spain prohibited the selling of meat from diseased pigs, possibly “pork measles” (meat from swine infected with *cyclospora*, a non-contagious parasitic infection).¹⁶⁶ Similar bans on the selling of diseased meat were issued in several other cities in non-epizootic years in the twelfth through fifteenth centuries, in Avignon, Florence, Mirepoix, Marseilles and Toulouse for example.¹⁶⁷ There is also indirect evidence for the consumption of diseased meat in fourteenth-century London, like that addressed above in relation to the 1314/25 panzootic, in non-epizootic years.¹⁶⁸ In 1348, for instance, two people were found guilty of selling “putrid and stinking meat” as well as carrion, and in 1350, two butchers were found selling “putrid meat” and condemned to the pillory with “the meat being burnt under them.”¹⁶⁹ These cases, and many others like them,¹⁷⁰ not only demonstrate a concern for eating bad meats, but signal that carrion was consumed outside of epizootics.

Medieval English agricultural treatises also suggest that diseased animals were often eaten. For example, Walter of Henley implies that the meat of diseased stock was consumed when warning against the use of the flesh of sheep that succumbed to disease in his late thirteenth-century treatise. The near-contemporary *Husbandry* also suggests that the carcasses of animals that died of disease be used, like their fleeces and hides, to the lord’s advantage, perhaps a reference to the consumption of diseased meat, and the *Fleta*, the earliest

¹⁶⁵ While virulent epizootic diseases could devastate herds in a short period of time as the *Chronicon de Landercost* suggests of the 1314/25 panzootic, less acute and transmissible diseases would have allowed more time for slaughter. In virgin populations, some plagues, such as RPV, can kill animals rapidly, before they exhibit signs of disease. Nevertheless, the diseased may have very rarely been slaughtered in medieval animal plagues, irregardless of the length of sickness, the breadth of outbreak, or the human ability to conduct large scale culls in short periods of time. Manorial accounts indicate that very few sick animals were butchered in England in the early fourteenth-century panzootic: P. SLAVIN, *The Great Bovine Pestilence*, cit., forthcoming.

¹⁶⁶ For some discussion see M. CORDERO DEL CAMPILLO, *Veterinary Medicine in the Medieval Period: The Christian Kingdom of Spain*, in “Historia Medicinae Veterinariae”, 22, 1997, pp. 73-96, 91.

¹⁶⁷ M. FERRIÈRES, *Sacred Cow, Mad Cow: A History of Food Fears*, New York 2006, pp. 16-19, 29, 30, 44.

¹⁶⁸ Sabine attempts to link several of these cases to epizootics. E.L. SABINE, *Butchering in Mediaeval London*, in “Speculum”, 8, 1933, pp. 335-53, 337-339.

¹⁶⁹ *Memorials*, cit., pp. 240-241; *Calendar of Letter Books*, ed. R.R. SHARPE, London 1904, F, p. 208.

¹⁷⁰ *Memorials*, cit., pp. 266-67, 367, 464; *Calendar of the Plea and Memoranda Rolls, a.d. 1323-1364*, ed. A.H. THOMAS, London 1926, pp. 249-251; *Calendar of the Plea and Memoranda Rolls, a.d. 1364-1381*, ed. A.H. THOMAS, London 1929, p. 12; *Calendar of the Letter Books*, ed. R.R. SHARPE, London 1905, G, pp. 173, 175, 259, 332-333. The fourteenth-century Ordinance for Bakers, Brewers and other Victuallers also set penalties for the selling of ‘swines flesh meazled or flesh dead of the murrain.’ W.R. RIDDELL, *The food and drink of an Englishman: by Statute*, in “Journal of the American Institute of Criminal Law and Criminology”, 18, 1928, p. 528.

extant revision of the *Seneschauy*, outwardly praised the use of flesh from sheep that had succumbed to disease.¹⁷¹ Other such sources suggest that English tenants made the flesh of healthy animals appear sick so they could “hurry it off to the table.”¹⁷² Similar indications that the lower strata of society ate diseased animals are found in texts far removed from high medieval England. For example, the twenty-third chapter of the *Capitulare de Villis*, an idealized account of the management of royal Carolingian estates possibly composed in Aquitaine in the late eighth or early ninth century, prescribed that stewards provide meat for their superiors from “...lame oxen not suffering disease, and cows or horses which are not scabby, and other animals not suffering disease.”¹⁷³ The implication being that it was not then unthinkable that “diseased” or “scabby” animals be consumed and that some people did eat the flesh of diseased animals in the ninth century.

Diseased animals were also consumed on a circumscribed and epidemic basis in post-medieval Europe, as several modern historians stress. Indeed, Ferrières, Koolmees and Waddington all observe that markets were flooded with diseased meat following panzootics in the eighteenth and nineteenth centuries, and Spinage surveys numerous eighteenth-through twentieth-century bans on the selling of diseased meat, restrictions on the buying and selling of sick livestock, and medical accounts of human deaths associated with the consumption of diseased animals.¹⁷⁴ Here too the lower socio-economic strata were the principal consumers. Sick animals were also regularly consumed in non-epizootic years in post-medieval Europe. For instance, upwards of 20 per cent of all meat sold in the 1850s in England – in what was a non-epizootic decade – is known to have come from diseased animals.¹⁷⁵ Stock suffering from a range of non-acute, enzootic diseases, such as bovine tuberculosis, brucellosis, tapeworm infestation and trichinellosis – all of which pose a threat to humans in one way or another – appear to have been regularly bought and eaten in nineteenth- and twentieth-century Europe, by the poor especially.¹⁷⁶ Animals apparently dead of anthrax too were made available to markets, often at reduced prices, and again for the poor.¹⁷⁷ A wider view indicates that this European history of diseased meat consumption is anything but unusual. The eating of diseased meat on a circumscribed and epidemic basis is documented for many parts of the world in the nineteenth and twentieth centuries.¹⁷⁸

¹⁷¹ Walter of Henley and other Treatises on Estate Management and Accounting, trans. D. OSCHINSKY, Oxford 1971, pp. 184, 378-379, 423.

¹⁷² *Ibid.*, p. 184.

¹⁷³ “...boves cloppos non languidos et vaccas sive caballos non scabiosos aut alia peccora non languida.” *Capitulare de Villis*, ed. A. BORET, *Capitularia Regum Francorum*, Hanover 1883, I, p. 85.

¹⁷⁴ K. WADDINGTON, *The Bovine Scourge: Meat, Tuberculosis and Public Health, 1850-1914*, Woodbridge 2006, pp. 17; IDEM, *To Stamp Out “So Terrible a Malady”: Bovine Tuberculosis and Tuberculin Testing in Britain, 1890-1939*, in “Medical History”, 48, 2004, pp. 29-48, 29; IDEM, “Unfit for Human Consumption”: Tuberculosis and the Problem of Infected Meat in Late Victorian Britain, in “Bulletin of the History of Medicine”, 77, 2003, pp. 636-661, 636-37; M. FERRIÈRES, *Sacred Cow, Mad Cow*, cit., pp. 207-210, 215, 221-223; P.A. KOOLMEES, *Epizootic Disease in the Netherlands, 1713-2002: Veterinary Science, Agricultural Policy, and Public Response*, in *Healing the Herds: Disease, Livestock Economics, and Globalization of Veterinary Medicine*, K. BROWN AND D. GILFOYLE eds., Athens, Ohio 2010, pp. 19-41, 28; C.A. SPINAGE, *Cattle Plague*, cit., pp. 37, 73, 98-9, 108, 110, 115, 117, 149, 165, 202, 222, 242, 272-274, 317, 395; also see L. WILKINSON, *Animals and Disease: An Introduction to the History of Comparative Medicine*, Cambridge 1992, p. 53, and P.J. ATKINS, *The Glasgow Case: Meat, Disease and Regulation, 1889-1924*, in “Agricultural History Review”, 52, 2004, pp. 161, 163-64-182.

¹⁷⁵ K. WADDINGTON, *The Bovine Scourge*, cit., pp. 16-20.

¹⁷⁶ For instance, A. WOODS, *Breeding Cows, Maximizing Milk: British Veterinarians and the Livestock Economy, 1930-50*, in *Healing the Herds*, cit., pp. 59-75, p. 71 n. 13; L. WILKINSON, *Animals and Disease*, cit., p. 132.

¹⁷⁷ L. WILKINSON, *Animals and Disease*, cit., pp. 124-125.

¹⁷⁸ For instance, R. PEMBERTON, *Animal Disease and Veterinary Administration in Trinidad and Tobago, 1879-1962*, in *Healing the Herds*, cit., pp. 163-179, 165-166, 168-169; R.J. PERRINS, *Holding Water in Bamboo Buckets: Agricultural Science, Livestock Breeding, and Veterinary Medicine in Colonial Manchuria*, in *Healing the Herds*, cit., pp. 195-

5. Conclusion

There is little direct evidence for the consumption of animals that succumbed to disease in the Middle Ages. What does exist is scattered across regions and centuries. This paper has presented twelve textual references to carrion eating in the wake of animal plagues, collected following a wide survey of medieval narrative sources. Though medieval authors did not seek universally to report material world events as they were “experienced” when writing of carrion eating, consideration of the immediate and general historical context of these references indicates that they can be taken as evidence for the human consumption of animals that died in epizootics. This paper has argued that carrion eating was epidemic when animal plagues, harvest failures and subsistence crises coincided in time and space, and that animals that died in epizootics were principally consumed by the lower socio-economic strata of medieval populations. The paper has also suggested that the widespread eating of diseased animals may have been more common than it appears. It has done so by considering the impact that epizootics, of cattle in particular, would have had on food supplies, the frequency with which animal plagues eroded European herds and flocks, the generally inefficacious measures Europeans took to prevent and cope with epizootic disease, and evidence for circumscribed carrion eating in medieval Europe and epidemic carrion eating in post-medieval Europe.

When put into their immediate and general historical context, reports of epidemic carrion eating in medieval animal plagues seem far less sensational and all the more credible than they do when encountered in isolation in medieval narrative sources. Diseased stock may have been regularly consumed following plagues in order to buffer, in the short term, the negative effects of animal mortalities on food availability and entitlement. In this light, epizootics may be understood as providing the lower socio-economic strata an unusual, perhaps spectacular, opportunity to eat meat. In situations where harvests had failed and hunger had already set in, animal plagues may have been a blessing to some.

Of course, this carrion eating has wider implications. It demonstrates that medieval Europeans did not always abide by Biblical dietary forbiddances, that religion did not in all instances control consumption. The eating of animals that died of epizootic disease may have also had consequences for human health, as the passage in the *Annals of Connacht* and possibly several references in medieval texts to plagues affecting both humans and animals suggest. The widespread consumption of livestock that succumbed to diseases that could be transmitted to humans through the consumption of meat, such as anthrax and bovine tuberculosis, could have had serious demographic and economic ramifications. When epizootics and subsistence crises corresponded in time and space, and carrion eating was epidemic, virulent zoonotic diseases may have contributed significantly to excess human mortality.¹⁷⁹ The occurrence and impact of zoonoses in the Middle Ages, however, is but one aspect of the medieval history of livestock disease that awaits attention.

214, 196; C.A. SPINAGE, *Cattle Plague*, cit., pp. 29, 520, 543, 571, 580.

¹⁷⁹ Cf. H.S. LUCAS, *The Great European Famine*, cit., p. 358. Still, far from all epizootic diseases are zoonotic. For example, RPV and CBPP, the best “modern” candidates for widespread medieval outbreaks of disease in cattle, do not affect humans.