New evidence of Black Rat in Roman London

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THE BLACK RAT *Rattus rattus* (also known as the ship or house rat) has always held a morbid fascination for man because of its infamous association with bubonic plague[2]. Unlike its hardier cousin, the brown rat *Rattus norvegicus*, which lives freely in hedgerow and field in rural districts, the black rat seeks the warmth and security of human habitation, and needs to live in close contact with man. This commensal ('parasitic') habit has enabled black rat to thrive in northern latitudes, in a cooler and wetter environment than its tropical homeland in southern Asia.

Until 1979, when Rackham[3] identified and published the skeletal remains of black rats from a late Roman well in York, it was widely accepted that this animal was introduced to Britain no earlier than the late 11th to 12th century A.D.; the following declaration by Barrett-Hamilton and Hinton[4] often being used by zoologists and historians in support of this contention:

> '. . . There is no clear evidence of its presence in Europe . . . prior to the Crusades (1095, 1147 and 1191) . . . and there can be little doubt that it was imported from the Levant by the navies of the Crusaders'.

With the discovery of rat bones in the Roman levels in York it became clear that *Rattus rattus* had entered Britain much earlier, by at least the 4th century A.D. Excavations carried out in the City of London, at 5-12 Fenchurch Street, in 1983[5], have provided further conclusive proof of the presence in Roman Britain of black rat. In view of their importance in establishing the early history of this animal in Britain, the remains from Fenchurch Street, which were deposited in the mid 3rd century A.D., have been the subject of a special study, the results of which are presented in this paper. One of us (P.A.) while researching the Fenchurch Street specimens came across further evidence for the presence in Roman London of black rat, this time among the small mammal bones recovered from a 4th century A.D. pit at Crosswall[6] (Table 1). A full account of the Crosswall material is in preparation and will be published elsewhere. Together, the Fenchurch Street and Crosswall finds suggest that there was in the City of London a well established population of black rats, by the 3rd to 4th century A.D.

Roman well, Fenchurch Street (Fig. 1)

The site of 5-12 Fenchurch Street (TQ 3303 8092) lies to the south of the Roman forum. The structural remains excavated were for the most part of apparent 1st and 2nd century A.D. dates, but the well containing the skeletal remains of

Table 1: List of the skeletal elements of *Rattus rattus* from Roman London recently identified

Fenchurch Street (FEN 83) 3rd century A.D.

Context No.	Specimens	BM (NH) reg. nos. ARC 1983
1684	1 mandibular ramus (lower jawbone)	R5155
	1 tibia (from one immature rat)	R5156
686	2 pairs of mandibular rami and maxillae (upper jawbones) from 2 rats:	
	old individual	R5157 & 5158
	sub-adult	R5160 & 5161
	1 femur (? from one of the above)	R5159

Crosswall (XWL79) 4th century A.D.

Context No.	Specimens	BM (NH) reg. nos. ARC 1983
254	1 maxilla) 1 innominate bone) 1 tibia) 1 astragalus) 1 caudal vertebra) (from 2 rats, one adult and the other immature)	R5146

1. Dept. Urban Archaeology, Museum of London.
2. G. I. Twigg, 'The role of rodents in plague dissemination: a worldwide review', *Mammal Rev* **8** (No. 3) (1978) 77-110.
3. J. Rackham, *Rattus rattus:* the introduction of the black rat into Britain', *Antiq* **53** (1979) 112-120.
4. G. E. H. Barrett-Hamilton & M. A. C. Hinton, *A History of British Mammals*, vol. 3, London (1914-21), 582.
5. Site supervisor: Fredericke Hammer.
6. Excavated by John Maloney and Geoff Egan, 1979. Report forthcoming.

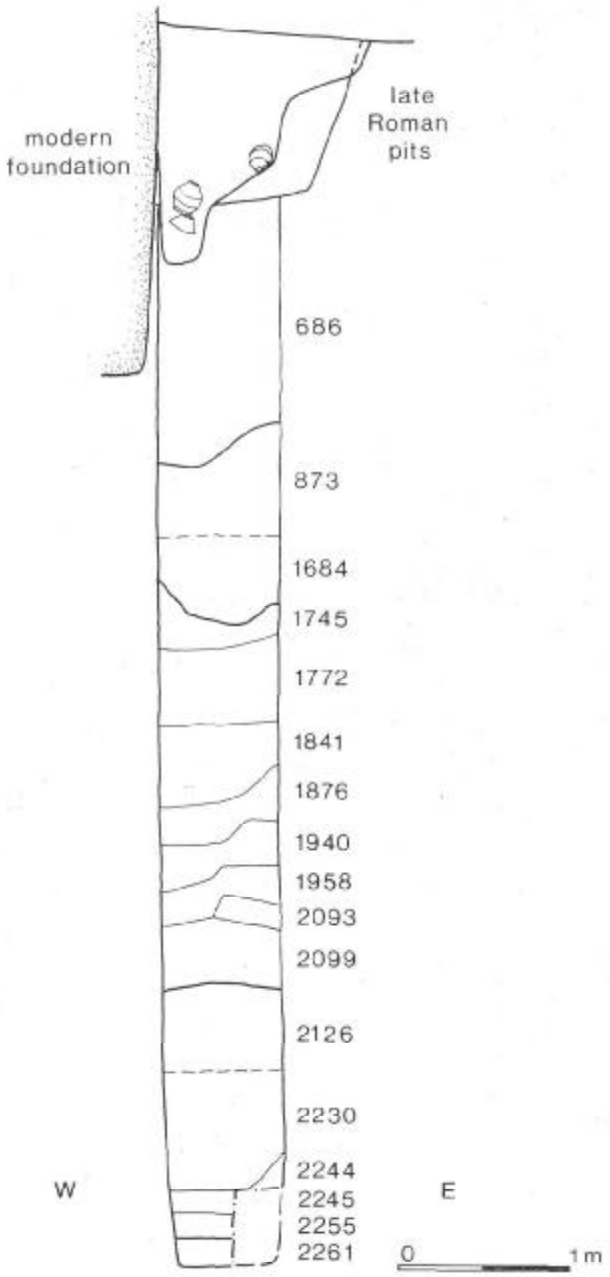

Fig. 1: Reconstructed section through the fills of the Roman well (767) Fenchurch Street, City of London, to show the levels associated with the collapse of the wooden lining and the successive periods of dumping and silting, with relationship to later features.

(Section drawn by Ken Steedman)

rats was of later date[7]. The well was the westernmost of two constructed within the same Roman trench; the other was only partially excavated due to lack of time. The probable method of construction involved the digging of this large subrectangular trench 6m (20ft) deep within which the two rectangular wells were erected as upstanding structures, one at either end, before refilling of the cut up to ground level. The structures were of wood, consisting of four corner posts and nailed planking. Very few structural traces remained *in situ* and, in the excavated well, the sides appeared to have collapsed inwards, possibly due to fire; their decayed remains (contexts 2126, 2230, 2244, 2245 and 2255) made up 1.50m (5ft) of the fill of the well immediately above the 0.15m (6in) of primary silt (2261). The small amount of silt present suggests a short working life.

Following the collapse of the well, the shaft was filled in with rubbish, accumulating just over 2m (6½ft) of dumped occupation and destruction layers (1745, 1772, 1841, 1876, 1940, 1958, 2093, 2099) above the decayed wood. This material probably represents the clearing away of both refuse and constructional debris, some obviously burnt, from adjacent areas. The dumping may have been to consolidate the shaft or the well may have been used as a convenient rubbish pit. A 1m (3ft) thick band of silt sealed these layers.

The silt (873 & 1684) was pure at the top, and inclusions increased in size and quantity towards the bottom. These included oysters, ragstone fragments and small animal bones among which was the remains of an immature rat (Table 1). Such an accumulation of silt implies that a fairly large volume of water was present for some time whether from use as a sump or through flooding.

After the period of silting, the dumping of refuse had resumed (686), most of this refuse being occupation debris, including a large amount of pottery, none of which was abraded, pointing to primary rather than secondary deposition. The bone deposited was mostly from large animals (kitchen waste) although also present were the skeletal remains of two black rats (one adult and one sub-adult) (Table 1). The excavated depth of this deposit of refuse was about 1.50m (5ft); it was not possible to ascertain the original extent due to truncation by later pitting. In the latest of these pits there were three late Roman pottery vessels, one of which contained a coin probably dating to the mid 3rd century A.D. Preliminary pottery dates place both the well and its

7. Roman well excavated by Ken Steedman. The successful recovery of the rat and other small mammal bones was entirely due to bulk sampling and wet sieving (1 mm mesh) of the well fills.

contents, and the fill of the deep constructional trench, within the same mid 3rd century A.D. date range and confirm the short use of the well. The remains of black rats from 686 and 1684 are therefore late in a sequence of dumping and silting which occurred in a limited period.

It should be noted that despite the apparent proximity of a modern concrete foundation found to the west (Fig. 1), the fills of the well at this point were not actually in contact with it and there is no possibility of contamination of the upper fill of the well (686) with modern material. There were no tunnels or crevices recorded in the sides of the well adjoining the concrete foundation to suggest intrusion by modern rats burrowing into the Roman contexts[8].

The location of the Fenchurch Street site immediately south of the forum and basilica may explain why rats would have been attracted to this part of the City. As the focal centres for the administrative and commercial life of the Roman city, these two major public buildings were surrounded by the highest concentration of settlement, including shops and warehouses containing stored food products; all of which would have formed an ideal environment for infestation by rats and mice[9]. In particular, stores of grain would have drawn rodents into the area and it is especially relevant that a deposit of burnt grain (context 1068), dated to the 1st to early 3rd century A.D., was also found at Fenchurch Street, suggesting the presence nearby of premises owned by a baker or grain dealer[10]. Previous evidence for the storage of grain in this part of the city was discovered in 1923 when the foundations of a Roman building identified as a granary were uncovered further along Fenchurch Street (Nos. 46-8)[11].

8. Furthermore, the possibility that live black rats entered the Roman contexts by tunnelling down from higher and later levels is ruled out because (a) fills were comprised of undisturbed compact soil and refuse, and (b) *Rattus rattus* in the wild is arboreal and this is reflected in the behaviour of the commensal form which prefers to live above ground (e.g. in rafters of houses) and very rarely burrows in the ground.
9. Bone elements of House mouse, *Mus musculus*, were recovered from the Fenchurch Street well from contexts 686, 1684, 1772, 1841, 1876, 1940 and 2255. Specimens: BM (NH) reg nos. ARC 83.R5162-5169.
10. An earlier deposit of carbonised cereal grain (burnt in the Boudiccan fire of A.D.60) found in the vicinity of the forum is described by V. Straker, 'First and second century carbonised cereal grain from Roman London' (forthcoming).
11. P. Marsden, *Roman London*, London (1980), 72, 73.
12. G. S. Miller, *Catalogue of the Mammals of Western Europe*, London (1912), 851, 852; D. R. Rosevear, *The Rodents of West Africa*, London (1969), 273.

Identification of the specimens from Fenchurch Street

Using the dental characters described by Miller and by Rosevear[12] for distinguishing the black rat *Rattus rattus* from the brown rat *Rattus norvegicus*, the upper and lower jawbones of the young subadult individual from context 686 are identified as *Rattus rattus*, on the basis of the following features:

Upper cheek teeth (Fig. 2a): in the upper first molar there is no ridge at the anterior base of the crown; cusp 1 is distinct and not merged with 2; and in the upper second molar, cusp 9 is large, distinct and not merged with 8.

Lower cheek teeth (Fig. 2b): in the lower first molar there is a small lateral supplemental tubercle ('cusplet') present (N); in the lower second molar a small supplementary tubercle (N) is present at the anterior base of the first lamina and another, more rudimentary tubercle (RN) further back between the two laminae.

These dental characteristics could not be applied to the other pair of jawbones from 686 as this second animal is much older, with very worn teeth in which the original cusp pattern no longer survives. Unfortunately the alternative method of identifying species, based on the position of the condylar process and shape of the posterior angle, in the lower jawbone, could not be employed as the vertical ramus

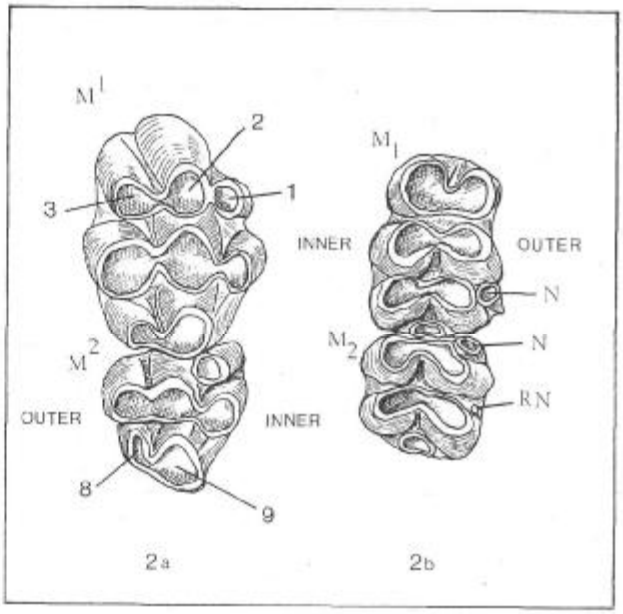

Fig. 2: Crown views of (a) upper right, and (b) lower right cheek teeth of young rat from Fenchurch Street, London (BM (NH) reg. nos. ARC 83. R5160 & 5161). Length of upper first molar is 2.7mm. Nomenclature for the cusps follows Miller (1912) and Rosevear (1969) with some modification.

(Drawings by Philip and Kate Armitage)

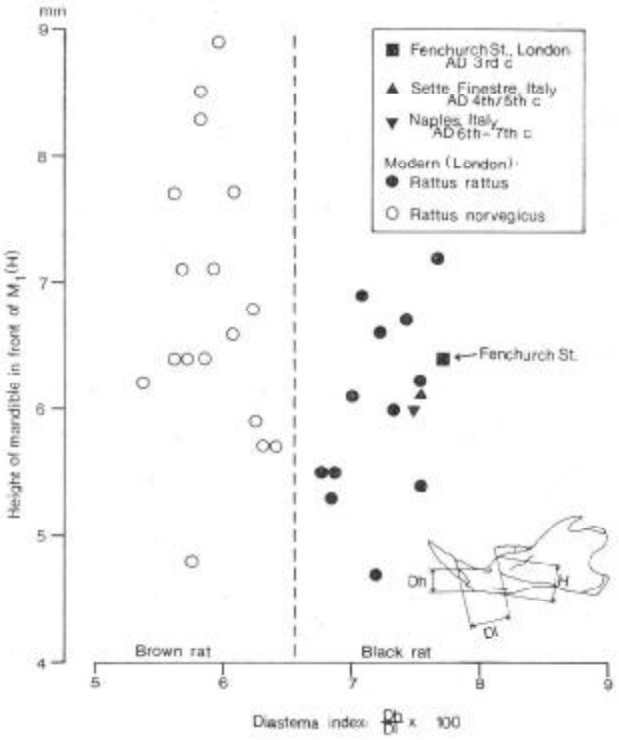

Fig. 3: Variation in the size and shape of diastema in the jawbones of modern black and brown rats from London in the collections of the BM (NH) compared with specimens from the Roman well, Fenchurch Street, London (BM (NH) reg. no. ARC 83.R5157) and Italian archaeological sites. All specimens are adult or sub-adult (with full dentition and cheekteeth in wear).
(Diagram by Philip and Kate Armitage)

is missing (lost in antiquity). Measurement of the intact diastema in the lower jawbone clearly identifies the second animal as *Rattus rattus*, however. In the specimen, the diastema is relatively shorter and more robust than in the brown rat (Fig. 3).

None of the available methods of determining species, described here, could be applied to the lower jawbone from 1684 as the specimen is incomplete (lacks the vertical ramus) and immature (diastema and cusp pattern both very little developed). The animal is presumed, however, to be black rat as it comes from a securely dated and undisturbed Roman context and so could not be brown rat, which the historical records show did not arrive in Britain until the late 17th and early 18th century A.D.[13].

Black rat in the Roman world

In order to explain the presence in Roman London of *Rattus rattus* it is first necessary to trace its early history in the Ancient World, and in particular examine when and how this animal arrived in Egypt from its homeland in south Asia: for it was through the entrepôt of Alexandria that the rat probably first entered into the Mediterranean and thence into northern Europe[14]. A search through the literature on maritime trade in the Ancient World reveals two possible periods during which rats could have unwittingly been carried by cargo ships from India to Egypt:

(1) During the 3rd millenium B.C.

Sea-borne trade in the Indian Ocean and Persian Gulf would have offered a good opportunity for the transportation of black rats out of India; the shipment of cotton from Mohenjo-daro and Harappa in the Indus valley to Sumer is well attested and it is conceivable that Indian merchants also traded with Egypt[15]. Certainly it may be suggested that wild rats living in the vicinity of Mohenjo-daro and Harappa were attracted by the large granaries built within these two cities, where they readily adapted to a new lifestyle as a 'weed species'; entry to this new ecological niche, based on close association with man, would then have permitted their transportation by ship or merchants' caravan along the trade routes of the Ancient World[16].

There are two serious flaws in this model, however. Firstly, the earliest known occurrence of black rat in the archaeological record of Egypt comes from Tell el-Dab'a, in the level dated *c.* 1600-1550 B.C.[17], some 150 years after the collapse of the Indus valley civilisation (*c.* 2500-1750 B.C.) — with the majority of the evidence of rats in Egypt appearing even later than this, in the Ptolemaic and Roman periods (see below). Secondly, the cytotaxonomic study of Niethammer revealed that *Rattus rattus* found today throughout the Mediterranean and northern Europe all have the chromosomal number 2n

13. G. E. H. Barrett-Hamilton & M. A. C. Hinton, *op. cit.* fn. 4, 609. In our survey of archaeological discoveries of brown rat, the excavated evidence reflects the historical evidence: in well-sealed contexts in which intrusion by burrowing, etc. was highly unlikely, no brown rats were found earlier than the 18th century.
14. W. H. McNeil, *Plagues and Peoples*, New York (1977), 111; J. F. D. Shrewsbury, *A History of Bubonic Plague in the British Isles*, Cambridge (1971), 10, 11.
15. G. Clark, *World Prehistory in New Perspective*, Cambridge (1977), 264-266.
16. W. H. McNeil, *op. cit.* fn. 14, 110.
17. J. Boessneck, 'Tell el-Dab'a III', *Osterreich Akad Wiss Denkschr Gesamtakad* V (1976).
18. von Jochen Niethammer, 'Zur taxonomie und Ausbreitungsgeschichte der Hausratte *(Rattus ratius)*', *Zool Anz. Jena* **194** (1975) 405-415.

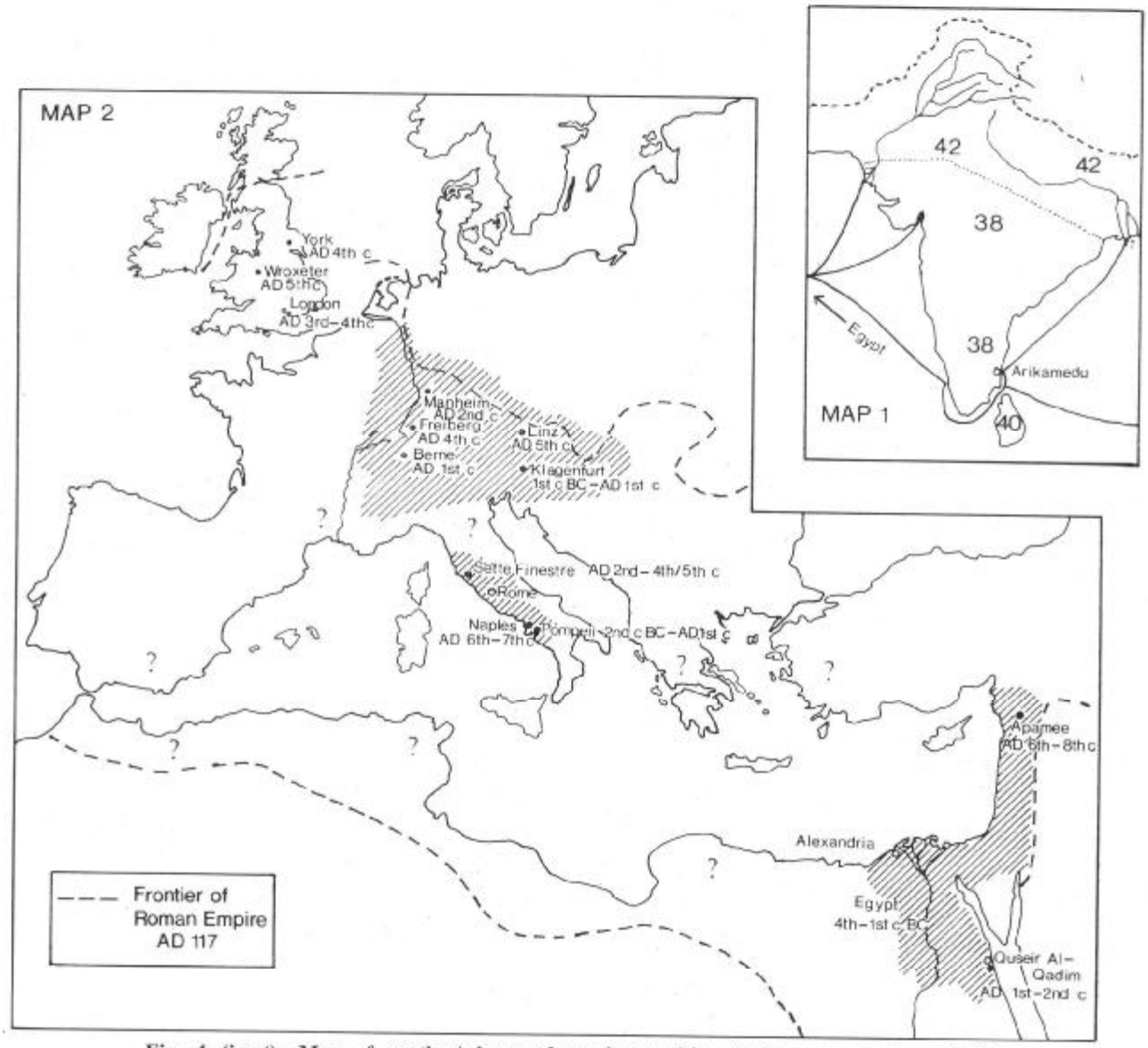

Fig. 4 (inset): Map of south Asia to show the maritime trade routes between India, the Far East and Egypt (*c.* 200 B.C. to A.D. 200) and the Roman trading port of Arikamedu (after Clark, 1977, Fig. 183, 319). Also indicated is the modern distribution of the three karyotypes (chromosomal variants) of *Rattus rattus* (after Niethammer, 1975, Fig. 3, 411).

Fig. 5: Map of continental Europe and the Mediterranean to show the conjectured distribution of black rat throughout the Roman world (cross hatched areas) based on records of rats from archaeological sites (solid circles). Central European and north Syrian sites after de Bruyn (1981).

(Both maps by Philip and Kate Armitage)

= 38[18], showing that their ancestors probably originated from southern India and not from north western India and Pakistan (including the Indus valley) where the chromosomal number is 2n = 42 (Fig. 4). Again this suggests a much later movement of rats out of India since trade between south India, Arabia and Egypt only developed from the 4th century B.C. on, as discussed below.

(2) During the Ptolemaic (323-30 B.C.), Roman and Coptic (30 B.C.-A.D. 641) periods

Under the Ptolemies, Egypt earned immense profits acting as a trading post between India and the Mediterranean world[19] and it was probably in the holds of merchant ships returning from India to Red Sea ports with cargoes of spices and other exotic products (e.g. teak, sandalwood and ebony) that rats were carried directly to Egypt in large numbers. Proof of the widespread existence in Ptolemaic Egypt of black rats is provided by the discovery of their remains in the stomachs of mummified raptorial birds at a number of ceremonial centres (associated with animal cults)[20].

The very lucrative trade with south Asia continued during the Roman occupation of Egypt, providing further opportunities for accidental importation of rats from India. Possible proof of this comes from the excavations carried out at Qusier al-Quadim on the Red Sea coast, 1978-1982, where, buried inside a building, was found the body of a large male domestic cat, wrapped in cloth, whose stomach contents and faecal material contained bones of at least six black rats[21]. The building in which the cat was found dates from the Roman period (1st to 2nd century A.D.) at the time when Qusier al-Quadim was a flourishing harbour town whose resident mercantile community was closely associated with the spice trade with India; this was demonstrated by the discovery at this site of imported pottery which has affinities with wares found by Sir Mortimer Wheeler during excavations at Arikamedu in southern India, in the 1940s[22]. Wheeler was able to show that Arikamedu functioned as a major trading port occupied by Roman merchants, between *c.* A.D.14-200[23].

Once black rats from south India had infested Egypt, the way was open for their dispersal throughout the lands of the eastern Mediterranean littoral and to Italy and southern Gaul. The introduction of black rats into the heartland of the Roman world was probably facilitated by the regular shipment of grain from Alexandria to Italian ports, in vessels which were often of considerable size — the largest reputedly over 1,000 tons[24]. The early arrival of black rats into Italy is indeed well attested by their presence at Pompeii in levels dated to the late 2nd century B.C. (certainly not later than A.D.79)[25] and in the occupation debris within the rooms of a 2nd century A.D. villa at Sette Finestre (Fig.5). Very shortly after their introduction into Italy, black rats probably spread rapidly throughout the western Mediterranean as a consequence of the considerable sea-borne trade between Italy, Gaul, Spain and north Africa, whilst the Rhône-Rhine commercial route would have opened up northern Europe to invasion by these animals; the archaeological record clearly shows that black rats had reached Switzerland and West Germany by at least the 1st century A.D. (Fig. 5)[26].

It is not yet possible to ascertain exactly when and how black rats first reached Britain[27]. On the basis of the late dates of the London and York specimens (3rd to 4th centuries A.D.) however, it may be suggested that certain of these animals were brought over from Europe as a consequence of the trade with the Rhineland. It may well be that other black rats arrived in Britain much earlier directly from the Mediterranean. Certainly there would have been plenty of opportunity for this in London since the city in the mid 1st century A.D. was apparently settled by merchants who dealt in imported goods from the Mediterranean[28]. Some of the bulk commodities handled by these merchants would have been shipped via the Straits of Gibraltar, rather than by way of the Rhône-Rhine route, thus offering a direct passage for rats out of the Mediterranean to Britain. Although Britain has always been thought of as an exporter of 'corn' during the Roman period, recent evidence has come to light showing that at least one shipment of grain was imported to London from the Mediterranean or Near East in the 1st

19. L. Casson, 'Maritime trade in antiquity', *Archaeol* **34** (No. 4) (1981), 37-43.
20. Dr Lortet & G. Gaillard, 'La faune momifiee de l'ancienne Egypte', *Archives du Museum d'Histoire Naturelle de Lyon* **8** (1903), 38-40.
21. A. von den Driesch & J. Boessneck, 'A Roman cat skeleton from Quseir on the Red Sea Coast', *J Archaeol Sci* **10** (1983) 205-211.
22. D. Whitcomb & J. H. Johnson, 'Egypt and the spice trade', *Archaeol* **34** (No. 6) (1981), 16-23).
23. M. Wheeler, *Rome Beyond the Imperial Frontiers* Middlesex (1955), 141-152, 164-182.
24. L. Casson, *op. cit.* fn. 19, 38.
25. Including part of a cranium of black rat from the temple of Apollo (context VII B, 74), Anthony King *(pers comm).*
26. Distribution of excavated rats from central Europe and northern Syria taken from T. de Bruyn, 'Huisrat *(Rattus rattus)* en Bruine rat *(R. Norvegicus)* in archeozoologische context'. Unpublished dissertation, Ghent Univ. (1980-81).
27. While carrying out research for this article, our attention was drawn to some rat bones from 2nd century Wroxeter recently identified by Dr T. O'Connor *(pers comm)*; which may yet prove the earliest record of Black rat in Britain. However, as research by Dr O'Connor into the faunal remains from this site is not yet completed and confirmation of the date of the rat bones is still awaited, this discovery has not been included in our discussion.
28. P. Marsden, *op cit* fn. 11, 29.
29. V. Straker, *op cit* fn. 10.

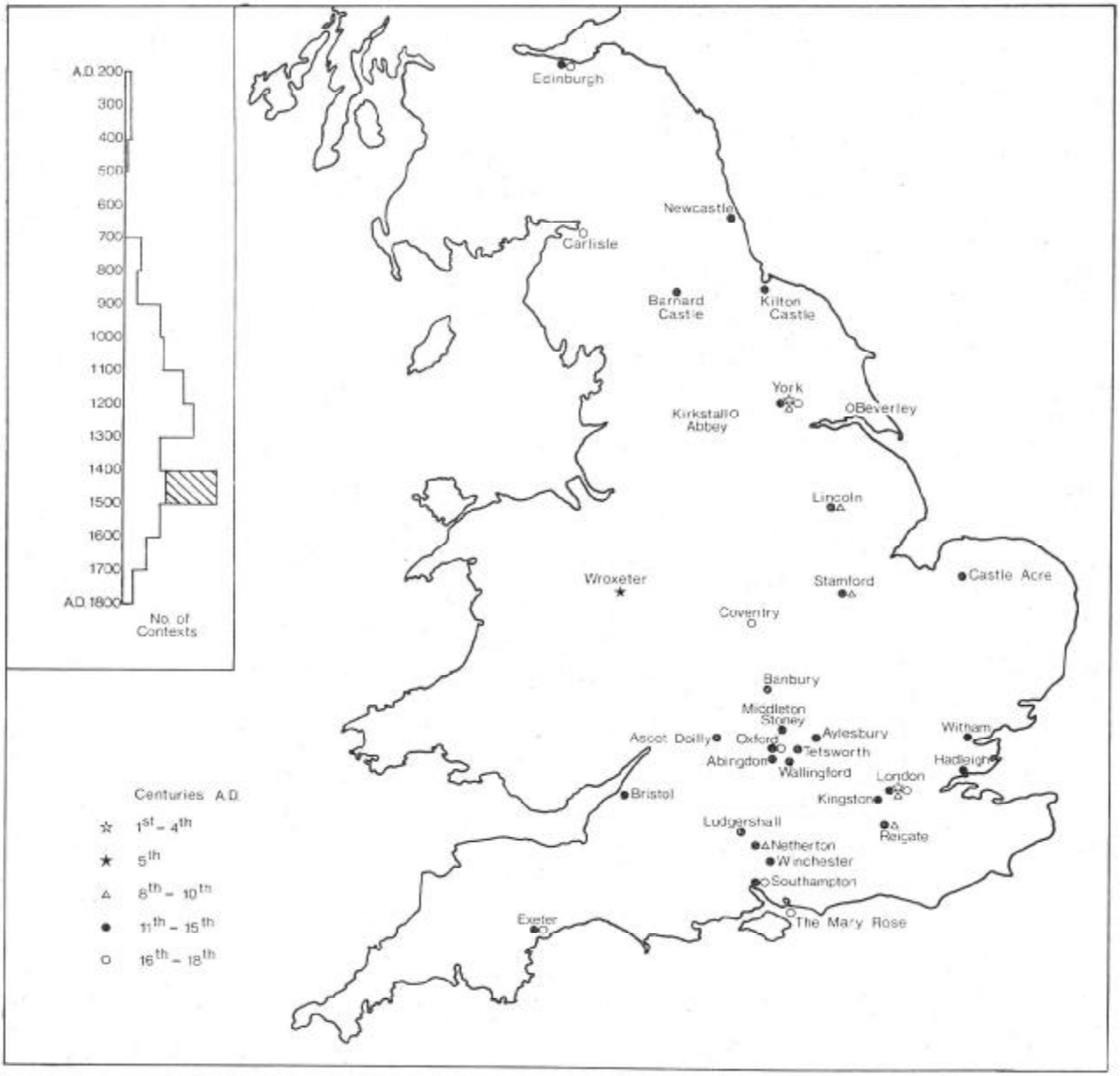

Fig. 6: Archaeological discoveries of *Rattus rattus* in Britain. Inset: histogram showing numbers of contexts (dated by century) in which bones of black rat were found (see note 36).

(Map and inset by Barbara West)

century A.D.[29], and one may speculate that the vessel carrying this cargo could also have brought in rats to the city. Further accidental importation of rats in grain and other cargo ships elsewhere in Britain might also have continued into the post-Roman period: Frere, for instance, mentions the arrival in Exeter, in the 6th century A.D., of a 'cornship' from Alexandria in time to relieve a famine[30].

Whatever the date of the first introduction to Britain, there is evidence that by the end of the Roman period black rats had penetrated far inland, as shown by their presence at Wroxeter in levels associated with the abandonment of the town in the

5th century A.D.[31]. The eventual fate of these early rats in Britain following the collapse of urban life in the post-Roman era is unclear: perhaps isolated colonies of rats continued to survive in the ruins of the towns, or in rural settlements outside. Expansion of international trade in the subsequent Anglo-Saxon and Anglo-Scandinavian periods (8th to 11th century A.D.) once again offered opportunities for the introduction of rats, creating a new (second) wave of invasion by these animals, as demonstrated by the discovery of rat bones in archaeological contexts at Lincoln and York (8th to 10th century A.D.)[32] and London (late 10th century A.D.). By the medieval period, there was in Britain a sizeable population of black rats scattered throughout the country, in cities, towns, villages and castles (Fig. 6).

Possibility of bubonic plague in Roman Britain

It would be pointless to speculate, in the absence of precise descriptions of disease symptoms, whether the pestilence ('plague of Galen') which is said to have been one of the contributing factors in the decline in the London settlement in A.D. 150-250[33], was bubonic plague or some other contagious disease. We simply present the observation that the black rat, a known carrier of bubonic plague, was certainly in the City during the 3rd century A.D., if not earlier, and that as there seems to be an inordinately long interval between the apparent appearance in Libya and Egypt of bubonic plague in the 3rd century B.C. and the pandemic of Justinian's reign which swept through the Mediterranean in the 6th century A.D.[34], the possibility may be suggested that some of the unidentified pestilences which afflicted the Roman world between these dates could have been bubonic plague. We leave it to the medical historian to decide whether this matter is worthy of further consideration. However, we do strongly advise re-examination of the view[35] that the pestilence mentioned by Bede, which raged in England in the 7th century A.D., could not be bubonic plague because there were no black rats in the country at that time. This interpretation should now be reconsidered in the light of the finds of black rats in Roman and post-Roman contexts in London, York and Wroxeter.

Acknowledgements

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30. Life of St. John the Almsgiver — S. S. Frere, 'The end of towns in Roman Britain' in J. S. Wacher (ed) *The Civitas Capitals of Roman Britain* Leicester (1966), 87-100.
31. Unpublished, Dr. T. O'Connor *(pers comm)*.
32. The specimens from Coppergate, York included in Fig. 6 represent only part of the total rat bones from this site, and a full report by Dr. T. O'Connor and Prof. M. Williamson is in preparation.
33. H. Sheldon, 'A decline in the London settlement A.D. 150-250?', *London Archaeol* **2** (No. 11) (1975), 278-284. R. Merrifield, *London: City of the Romans* London (1983), 147.
34. W. H. McNeil, *op cit* fn. 14, 109-110.
35. J. F. D. Shrewsbury, *op cit* fn. 14, 11-13, 21.
36. Only specimens recovered from well-dated deposits were included. The concentration of sites in southern England undoubtedly reflects archaeological activity rather than rat distribution, and much more data is needed, particularly from sites in Scotland and Wales. Negative evidence would also be valuable, but only if the recovery bias were known. Unfortunately, information is not readily available as to the occurence and amount of sieving carried out on these and other sites.

    Despite the fact that *numbers* of rat bones in each context were not taken into account (inset), the histogram still shows an interesting peak in the 12th-13th century (if one discounts the shaded area, representing an apparent infestation at Barnard Castle!) However, this may also be a reflection of archaeological activity, since a high proportion of the sites are medieval castles.

Appendix: Sources for Fig. 6.

R. Chaplin and L. Barnetson, 'Animal Bones' in N. McQ. Holmes, 'Excavations within the Tron Kirk, Edinburgh, 1974', *Post Med Archaeol* **9** (1975), 153-60.

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Excavations & post-excavation work

City, by Museum of London, Department of Urban Archaeology. A series of long term excavations. Enquiries to DUA, Museum of London, London Wall, E.C.2. (01-600 3699).

Brentford, by West London Archaeological Field Group and Museum of London Excavation and processing. Enquiries to 273A Brentford High Street, Brentford, Middlesex. (01-560 3880).

Croydon & District. Processing and cataloguing of excavated and museum collections every Tuesday throughout the year. Archaeological reference collections of fabric types, domestic animal bones, clay tobacco pipes and glass ware also available for comparative work. Hon. Curator, Croydon Natural History & Scientific Society Ltd., Museum Building, Croydon Biology Centre, Chipstead Valley Road, Coulsdon, Surrey. (01-660 3841 or 22 43727).

Hammersmith & Fulham, by Fulham Archaeological Rescue Group.

Processing of material from Sandford Manor and Fulham High Street. Tuesdays, 7.45 p.m.-10 p.m. at Fulham Palace, Bishops Avenue, Fulham Palace Road S.W.6 Contact Keith Whitehouse, 86 Clancarty Road, S.W.6. (01-731 0338).

Inner London Boroughs, by the Museum of London, Department of Greater London Archaeology (Inner/North London). Several rescue sites in various areas. (01-242 6620).

Kingston, by Kingston-upon-Thames Archaeological Society. Rescue sites in the town centre. Enquiries to Marion Hinton, Kingston Heritage Centre, Fairfield Road, Kingston (01-546 5386).

North-East Greater London, by Passmore Edwards Museum. Enquiries to Pat Wilkinson, Passmore Edwards Museum, Romford Road, E.15. (01-534 4545).

South West London Boroughs, by Museum of London, Department of Greater London Archaeology, (South West London), excavations and processing. Enquiries to Scott McCracken, St. Luke's House, Sandycombe Road, Kew. (01-940 5989).

Southwark, by Museum of London, Department of Greater London Archaeology (Southwark and Lambeth). Several sites from the Roman period onwards. Enquiries to Derek Seeley, Port Medical Centre, English Grounds, Morgan's Lane, SE1 2T. (01-407 1989).

Surrey, by Surrey Archaeological Unit. Enquiries to David Bird, County Archaeological Officer, Planning Department, County Hall, Kingston, Surrey. (01-546 1050 x 3665).

Vauxhall Pottery, by Southwark and Lambeth Archaeological Society. Processing of excavated material continues three nights a week. All enquiries to S.L.A.S. c/o Cuming Museum, 155 Walworth Road, S.E.17 (01-703 3324).

The Council for British Archaeology produces a monthly Calendar of Excavations from March to September, with an extra issue in November and a final issue in January summarising the main results of field work. The Calendar gives details of extra-mural courses, summer schools, training excavations and sites where volunteers are needed. The annual subscription is **£5.50** *post-free, which should be made payable to C.B.A. 112 Kennington Road, S.E.11.*