

An Insect Fauna from a Roman Well at Empingham, Rutland

by *P.C. Buckland*

INTRODUCTION

The Roman villa at Empingham (N.G. Ref. SK943077) lay 1km south-west of the modern village at about 65 m O.D. overlooking the valley of the little river Gwash. The site was excavated in 1969-70 by the late Mr M. Dean and Mr M.S. Gorin in advance of the construction of a dam and the flooding of the area to create Rutland Water (Wilson, 1970; 1971; 1972). The main house, with hypocaust and painted plaster, lay north of the stream and other structures to the south. An aisled barn, 23 m × 11 m, was associated with two smaller structures, one possibly a shed, enclosing a well, which contained 20 sheep's heads and lower limb bones. The well, about 5 m deep, also contained a wooden shoe patten and a group of pottery of *ca.*270 (Wilson, 1971). As the final report upon the villa has yet to be prepared, the insect fauna merits separate publication.

THE INSECT FAUNA

The permanently waterlogged nature of the lower part of the deposits in the well provided ideal conditions for the preservation of fossil insects and many fragments were recovered during the sorting of samples for identifiable plant remains by R.C. Alvey at the University of Nottingham. Although the material was washed out over a 300 micron sieve, no attempt was made to separate the arthropod remains by any flotation technique (*cf.* Coope and Osborne, 1968) and recovery is therefore biased towards the larger, more evident individuals, resulting in a preponderance of Carabids and a paucity of the smaller taxa, including many of the phytophages (table 1). Despite the restrictions imposed by such an assemblage, several tentative conclusions may be drawn. Some plant hosts are indicated by the insect fauna (table 2) and the overall impression provided by the more peripatetic elements in the fauna, particularly the ground beetles, is of a cleared and cultivated landscape. Timber was indicated by the ubiquitous and predominantly synanthropic furniture beetle, *Anobium punctatum*, perhaps from the structure of the building around the well, the stag beetle, *Lucanus cervus*, and the click beetle, *Melanotus erythropus*. The latter species is recorded from most types of tree (Palm, 1959) and the four individuals could have been introduced in any piece of rotten wood, perhaps faggots intended for the fire. The stag beetle, *L. cervus*, most frequently breeds in large stumps of old oaks, although it is also recorded from beech (*op. cit.*), and is probably more common in parkland with old trees than in old woodland. The beetle is a strong flier and could be wholly adventitious in this assemblage. There are, however, no recent published records from the East Midlands (Clark, 1966) and, whilst there may be small relict populations of the species in the less disturbed parts of Sherwood Forest, the principal headquarters are now concentrated around London and in south-east Essex, about 100km to the south of the Empingham site. It is probable that the disruption of woodland and old parkland habitats by man has

TABLE 1

Arthropod remains from the Well

Isopoda		Leiodidae	
Oniscoidea		<i>Catops/Choleva</i> spp.	23
Porcellionidae		Silphidae	
<i>Porcellio scaber</i> Lat	1	<i>Silpha laevigata</i> (F.)	1
Insecta		<i>S. obscura</i> (L.)	4
Dermaptera		Staphylinidae	
Forficulidae		<i>Lesteva longoelytrata</i> (Goez.)	1
<i>Forficula prob. auricularia</i> L.	40	<i>Omalius</i> sp.	1
Hemiptera		<i>Coprophilus striatulus</i> (F.)	1
Lygaeidae		<i>Platystethus capito</i> Heer/ <i>nodifrons</i> (Mann.)	2
<i>Heterogaster urticae</i> F.	3	<i>Lathrobium</i> sp.	1
Jassidae		<i>Othius punctulatus</i> (Goez.)	1
<i>Aphrodes</i> sp.		<i>Gyrophypnus fracticornis</i> (Muell.)	4
Trichoptera		<i>Xantholinus linearis</i> (Ol.)/ <i>longiventris</i> Heer	4
indet.	1	<i>Philonthus nigrita</i> (Grav.)	1
Coleoptera		<i>Philonthus</i> sp.	1
Carabidae		<i>Staphylinus ater</i> (Grav.)	1
<i>Carabus monilis</i> F.	1	<i>S. olens</i> (Muell.)	5
<i>C. violaceus</i> L.	5	<i>Quedius tristis</i> (Grav.)	1
<i>Leistus spinibarbis</i> (F.)	3	<i>Quedius</i> spp.	2
<i>Nebria brevicollis</i> (F.)	16	<i>Tachinus signatus</i> (Grav.)	1
<i>Clivina collaris</i> (Hbst.)	4	Lucanidae	
<i>Trechus obtusus</i> Erich.	1	<i>Lucanus cervus</i> (L.)	1
<i>T. obtusus</i> Erich./ <i>quadristriatus</i> Schr.	3	Geotrupidae	
<i>T. micros</i> (Hbst.)	1	<i>Geotrupes stercorosus</i> (Scrib.)	1
<i>Bembidion lampros</i> (Hbst.)	1	Scarabaeidae	
<i>B. quadrimaculatum</i> (L.)	1	<i>Colobocterus fossor</i> (L.)	1
<i>Pterostichus madidus</i> (F.)	5	<i>Aphodius ater</i> (Deg.)	2
<i>P. melanarius</i> (Ill.)	32	<i>A. contaminatus</i> (Hbst.)	2
<i>P. nigrita</i> (F.)	1	<i>A. granarius</i> (L.)	22
<i>P. versicolor</i> (Sturm.)	1	<i>A. lividus</i> (F.)	1
<i>Pterostichus</i> spp.	20+	<i>A. obliterated</i> (Panz.)	2
<i>Calathus fuscipes</i> (Goez.)	19	<i>A. rufipes</i> (L.)	1
<i>Calathus</i> sp.	1	<i>Aphodius</i> spp.	5
<i>Synuchus nivalis</i> (Panz.)	3	<i>Oxyomus sylvestris</i> (Scop.)	5
<i>Agonum dorsale</i> (Pont.)	2	<i>Phyllopertha horticola</i> (L.)	1
<i>Amara aulica</i> (Panz.)	4	<i>Cetonia aurata</i> (L.)	1
<i>Amara</i> spp.	23	Elateridae	
<i>Zabrus tenebrioides</i> (Goez.)	3	<i>Melanotus erythropus</i> (Gmel.)	4
<i>Harpalus rufipes</i> (Deg.)	9	<i>Athous haemorrhoidalis</i> (F.)	1
<i>H. (Ophonus)</i> spp.	8	<i>Agriotes lineatus</i> (L.)/ <i>obscurus</i> (L.)	1
<i>Dromius linearis</i> (Ol.)	1	Anobiidae	
<i>Brachinus crepitans</i> (L.)	1	<i>Anobium punctatum</i> (Deg.)	15
Dytiscidae		Ptinidae	
<i>Agabus bipustulatus</i> (L.)	1	<i>Tipnus unicolor</i> (Pill. & Mitt.)	6
Hydrophilidae		<i>Ptinus fur</i> (L.)	12
<i>Helophorus</i> spp.	2	Cryptophagidae	
<i>Sphaeridium bipustulatum</i> F.	1	<i>Cryptophagus</i> sp.	1
<i>S. scarabaeoides</i> (L.)	1	Lathridiidae	
<i>Cercyon</i> sp.	2	<i>Lathridius minutus</i> (L.) (group)	2
<i>Megasternum obscurum</i> (Marsh.)	2	<i>Corticaria gibbosa</i> (Hbst.)	1
		<i>Corticaria/Corticarina</i> sp.	1

TABLE 1 (continued)

Mycetophagidae		Hymenoptera	
<i>Typhaea stercora</i> (L.)	1	Formicidae	
Chrysomelidae		<i>Lasius fuliginosus</i> (Lat.)	1
<i>Phyllotreta nigripes</i> (F.)	1	Chrysididae	
<i>Longitarsus</i> sp.	1	<i>Chrysis ignita</i> (L.)	1
<i>Crepidodera ferruginea</i> (Scop.)	1	Parasitica	
<i>Chaetocnema concinna</i> (Marsh.)	2	indet.	1
Apionidae		Diptera	
<i>Apion pomonae</i> (F.)	1	Larvaevoridae	
<i>Apion</i> sp.	1	indet.	1
Curculionidae		Calliphoridae	
<i>Barynotus obscurus</i> (F.)	3	<i>Calliphora</i> sp.	1
<i>Sitona sulcifrons</i> (Thun.)	1	indet.	1
<i>Sitona</i> sp.	1	Muscidae	
<i>Hypera nigrirostris</i> (F.)	2	<i>Muscina</i> sp.	1
<i>Cidnorhinus quadrimaculatus</i> (L.)	2	Anthomyiidae	
<i>Ceutorhynchus litura</i> (F.)	1	<i>Paragle cinerella</i> (Fall.)	1
<i>Ceutorhynchus</i> sp.	1	indet. puparia	5
<i>Rhinoncus/Phytobius</i> sp.	1		
Scolytidae		Taxonomy follows Kloet & Hincks (1945) with revisions	
<i>Leperisinus varius</i> (F.)	1		

resulted in the disjunct distribution of this and many other *Urwald* insects (Buckland, 1979) at the present day.

Three other species from the Empingham sample also tend to be rather southern in their present distribution and these are not associated with timber. Both *Zabrus tenebrioides* and *Brachinus crepitans*, the bombardier beetle, reach their northward limit at about the latitude of South Leicestershire (Lindroth, 1974) and there are few recent records for the snail-feeding Silphid, *Silpha laevigata*, outside the South East. Other elements in the fauna have, however, only become widespread since forest clearance and the inhabitants of the 'cultursteppe', the man-made landscape (Hammond, 1974) are well represented. With many of the species of *Amara* and *Harpalus* and several dung beetles, *Zabrus tenebrioides* may be a late anthropochorous, perhaps Roman immigrant to Britain from the Continent. The adults of *Z. tenebrioides*, although omnivorous, feed principally on seeds, usually the unripe grains of cereals in the ear and the beetle has long been known as a serious pest of cereal crops in Western and Central Europe (Curtis, 1862; Jeannel, 1942; Lindroth, 1945). The insect is rarely found far away from arable land and the larvae are also cornfield pests, devouring the young green shoots (Jeannel, 1942). The species provides tenuous evidence for the cultivation of cereals on the villa estate. The synanthropic element, of insects associated with stored products, principally grain (Buckland, 1981), however, is absent from this assemblage.

Indicators of livestock are provided by the Scarabaeoid beetles, *Geotrupes*, *Coloboferus* and *Aphodius* spp., whose normal habitat is dung, and this group is second only to the ground beetles in frequency. These species are supplemented by several Hydrophilids and Staphylinids usually associated with dung or related habitats and the impression of a mixed farming economy is strongly reinforced. The dung fauna gives no indication of the species of herbivore involved and the majority of coprophiles from the Empingham well are eurytopic. *Coloboferus fossor* and *Aphodius obliteratus*, however, prefer open, exposed pasture (Landin, 1961), the habitat of the root feeders, *Phyllopertha horticola*, *Athous*

haemorrhoidalis and *Agriotes* sp., and these support the picture provided by the ground beetles, of an open landscape not dissimilar from that of the present day.

Several elements in the fauna can be associated with the immediate environment of the farmyard, as distinct from those which reflect a sample of the more active ground-living animals which entered the building and became trapped in the pit fall of its well. Both spider beetles, *Ptinus fur* and *Tipnus unicolor*, are flightless and, whilst there are outdoor records from birds' nests and 'old wood' (Hunter et al, 1973), their present cosmopolitan distribution must reflect accidental transport by man. With *Typhaea stercorea* and the large number of individuals of the earwig, *Forficula* prob. *auricularia*, they may be associated with hay stored in the immediate vicinity. The few phytophages in the assemblage (table 2) include feeders upon nettles and knotgrass, probable elements in the more neglected corners of a farmyard. Surprisingly, the carrion element, which might be expected from the sheep bones in the well is poorly developed and the probability is that these were devoid of flesh before they were thrown down the disused shaft.

DISCUSSION

Despite several studies of insect faunas from Roman sites, there is still insufficient evidence to suggest that the Empingham assemblage is typical of any type of settlement and Amsden and Boon's (1975) criticism that 'the endless lists can but signal the severely restricted utility of the work from an archaeological standpoint' is wholly unjustified. Faunas from two other villa wells have been published, from Barnsley Park in Gloucestershire (Coope & Osborne, 1968) and Rudston in East Yorkshire (Buckland, 1980). In addition, two urban wells, one at Alcester in Warwickshire (Osborne, 1971) and one in the Colonia at York (Hall et al., 1980), are relevant. All the wells clearly acted as pit fall traps for the active ground fauna, as well as receiving other debris, either deliberately or otherwise, and Kenward (1975) has rightly argued for caution in interpretation. Yet, even allowing for the stochastic element in any pit fall trapping exercise (Adis, 1979), the similarity of the Empingham assemblage to that from Barnsley Park is remarkable and Coope and Osborne's (1968) comment that 'All the species in the faunal list might be found today in any settled rural area in the southern part of England' is equally apposite. Allowing for its more northerly position, Rudston is also very similar and it is perhaps possible to identify a generalised open ground background fauna distinct from the urban assemblage of Alcester (Osborne, 1971) and York (Hall et al., 1980). Whether it will eventually be possible to take this further and differentiate between variations in land exploitation between villas and lesser settlements remains to be seen, although Robinson (1983) has recently suggested that it is possible to derive arable to pastoral ratios from insect assemblages. The similarity to modern associations does suggest that the fauna of our 'cultursteppe' had come together by the Roman period; on the Chalk of Wiltshire, Osborne's (1969) work upon the Wilsford shaft has shown that several elements, assembled from their refuges in the continuous forest of the mid-Holocene, had been brought together by the Late Bronze Age. Much more research is necessary, however, before the detail can be added.

Although the small size of the fauna and sorting bias of the sample impose strict limitations on the environmental reconstruction, the insect fauna provides a picture of a farm practising a mixed farming economy in a cleared landscape, not dissimilar from that of the present day.

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TABLE 2
Plants indicated by the insect remains

Cruciferae	<i>Phyllotreta nemorum</i>
Papilionaceae	<i>Sitona sulcifrons</i>
<i>Trifolium</i> spp. (clover), <i>Ononis spinosa</i> (restharrow)	<i>Phytonomus nigrirostris</i>
Polygonaceae	<i>Rhinoncus</i> sp.
Polygonaceae esp. <i>P. aviculare</i> (knotgrass)	<i>Chaetocnema concinna</i>
<i>Urtica dioica</i> (greater stinging nettle)	<i>Heterogaster urticae</i>
	<i>Cidnorrhinus quadrimaculatus</i>
Prob. <i>Quercus</i> spp. (oak)	<i>Lucanus cervus</i>
<i>Fraxinus excelsior</i> (ash)	<i>Leperisinus varius</i>
<i>Carduus</i> , <i>Cirsium</i> spp. (thistles)	<i>Ceutorhynchus litura</i>
Cereals	<i>Zabrus tenebrioides</i>
Cereals but also other low vegetation	<i>Crepidodera ferruginea</i>

(Date from Dieckmann, 1972; Hoffman, 1954; 1958; Lindroth, 1945; Mohr, 1966; Palm, 1959)

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