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SOME REMARKS ON THE FAUNAL REMAINS
FROM THE ROMAN CASTELLUM AT VALKENBURG,
PROVINCE OF SOUTH-HOLLAND

(Fig. 6o)

In some countries, such as Switzerland, Germany, Austria, Hungary and Denmark, there is a long tradition of research in the bone material from prehistoric and early historic settlements. Mainly since the second world war there has been a tendency to group the data obtained in sequences of development not only of the individual animal species (domestic ox, horse, cf. Nobis, 1954, 1955) but also of the domestic animal and game populations in the successive periods: Neolithic, Bronze Age, Iron Age, Roman period and early Middle Ages (Boessneck, 1958; Hilzheimer, 1927; Hescheler and Kuhn, 1949; Bökönyi, 1959; Nobis, 1955). Apart from this, the picture of development of the domestic animals has been simplified by the conclusion that, except for the sheep and goat, they developed mainly in Europe from the indigenous wild species, although additional importation from the more advanced near-Eastern countries is certainly not to be excluded.

The observed variability is not only attributed to coexisting races of domestic animals, but rather to sexual dimorphism and to the early practice of castration, although the former can not be altogether excluded. The domestic ox descends from the aurochs, the domestic pig from the wild boar. There is evidence that the early domestic ox and pig did not differ much from their wild ancestors, but there is a tendency to become smaller, until in the Middle Ages dwarf forms of domestic cattle can be observed. Moreover the variation becomes greater, while there should also be an apparent lessening of the sexual dimorphism in domestic cattle (Nobis, 1954).

In the colonised areas the Romans imported, during their occupation, a larger breed of cattle that vanished again after their withdrawal. The same is to be observed for the horse. This animal also becomes smaller except for bigger specimens imported in Roman times. After the Roman occupation, however, the big horse does not vanish altogether, and contrives to exist in some places beside the smaller native forms. Several wild animals, among others red deer and wild boar, also show in the same time a tendency to become smaller. This fact is in general

	Domestic Animals							Wild Animals										Birds	Sturgeon	Inkfish	Oyster	Whelk																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	Domestic cattle	Domestic pig	Sheep	Sheep/goat	Goat	Horse	Dog	Elk	Red deer	Roe deer	Wild boar	Wild cat	Bear	Otter	Hare	Beaver	Whale						Porpoise																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Horn cores . . .	146	—	7	—	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

Table I. Valkenburg determination list of animal bones.

¹ In both cases the numbers refer to the same bones.

explained by the progressive contraction of their optimal biotope through the unceasing land clearances of man.

It would be interesting to compile for the Netherlands a similar sequence to compare with that of the surrounding countries. The loess area of Limburg, in the southernmost part of the Netherlands, was colonised at a very early date by agricultural and cattle breeding people, coming from central Europe (*Bandkeramik*), thus introducing a Neolithic economy to this country for the first time. Unfortunately, no bone material has been preserved from the ancient sites in this area. Four thousand years later the south of the country, up to the great rivers, was occupied by the Romans bringing this part of the Netherlands into close contact with urban civilisation for the first time. There are indications that in the part of the country north of the great rivers, conditions can be compared with those in Northwest Germany and Denmark. The only Neolithic site in the Netherlands from which the bone material has been published is the settlement of Hekelingen (Prov. of South Holland) (Van der Feen and Kortenbout van der Sluys, 1953). Alongside this Van Giffen (1913, *a, b*) discussed the game and dogs and Reitsma (1932, 1935) the sheep and pig from the Iron Age dwelling mounds (Dutch: *terpen*) in the Northern Netherlands (c. 400 B.C.–400 A.D.).

The Roman Castellum at Valkenburg (c. 42–c. 240 A.D.), excavated by Professor Van Giffen in the years 1941–1951, lies at the frontier of the Roman empire. This fact is reflected in the large bone material that has been preserved from the site. Here will follow some preliminary observations concerning this material (Table I), which was handed over to the *Biologisch-Archaeologisch Instituut* in Groningen by the *Vereniging voor Terpenonderzoek* in 1959.

Through systematic analysis it has become clear that the domestic fauna, *i.e.* the food animals, was native and closely related to that of the Frisian–Groningian and Northwest German dwelling mounds. The horse, on the contrary, is larger than the *terp*-horse and was evidently imported by the Romans. This was to be expected, as it is known that cavalry was kept at Valkenburg. The meat supply for the garrison was probably obtained by purchase or requisitioning of livestock from the local inhabitants.

For the food supply the wild animals, fish and shellfish were of little importance. The ratio of wild to domestic animals was 2 : 98. Among the domesticated animals the first place is taken by cattle, next to this is pig, sheep or goat, horse, dog and domesticated fowl.

Among the game it is an outstanding fact that the aurochs, which has been found at the dwelling mounds is missing. Of red deer and wild boar approximately the same number of bones has been found, not counting the many fragments of shed antlers of red deer which have been worked. The elk is represented by a lower jaw.

Beyond this there were some bones of the roe deer, the lower jaw of a hare and a beaver, and a skull fragment of an otter and of a beaver. Bear also dwelled in the vicinity as is demonstrated by a canine of a lower jaw of this animal. Of marine mammals there were some lumbs of whalebone and a lumbar vertebra of a porpoise.

Of the shellfish it is possible to name the oyster, never missing from a Roman occupation site, and the whelk. Detailed determination lists of the Valkenburg mollusca are given by Van Benthem-Jutting (1941-1944) and Van Andel (1944-1953).

A great many bone plates of the sturgeon give witness to the practise of fishing.

The bird remains belong for the greater part to ducks and ducklike birds.

The cattle are small; the dimensions were on the whole the same as those found by Nobis (1954) for the German *Wurtenvind*. The large Roman cattle found in Central Europe (Boessneck, 1958) are missing, as are the hornless cattle met with in the dwelling mounds from the Northern Netherlands (fig. 60, Table II).

[illegible]

Table II. Some measurements of bones from the domestic cattle of Valkenburg. The metacarpal A and the metatarsals B and C represents to all probability oxes.

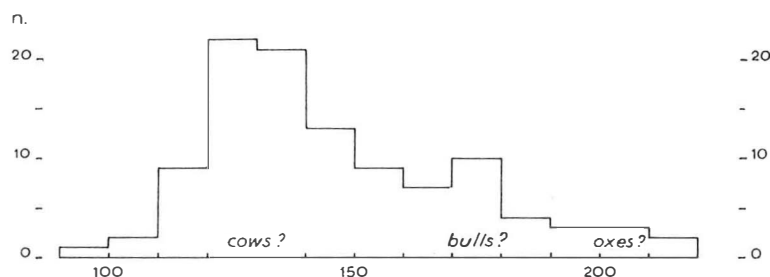


Fig. 60. Horn cores of cattle; circumference at the base and numbers.

The remains of domesticated pig point to a small animal, comparable to the pig from the *terpen* area (Reitsma, 1935; Nobis, 1955) and from other Roman sites, such as Cambodunum in Germany (Boessneck, 1958) (Table III). Of the skull fragments four were male and five female.

Mandibula	Min.	Max.	Average	Number
Length molar row	59	78	64	18
Length M ₃	28	39	32	28
Breadth M ₃	13	18.5	15.5	30
Scapula				
Width of the scapula at its neck	17.5	29	21.5	18
Humerus				
Width distal end	33.5	41.5	36.5	16
Radius				
Width proximal end	24	31	27	7
Tibia				
Width distal end	22	32.5	27	25

Table III. Some measurements of the mandibula, scapula, humerus, radius and tibia of the domestic pig.

Bones were also found of sheep and goat. The separation of these two species by their bone remains is difficult, and is only to be obtained with certainty for the skull and horn cores. According to the skulls and horn cores there would have been twice as many sheep as goat; of the seven skulls of the sheep, two were hornless. From the dentition of the lower jaws it can be concluded that a relatively large portion of the animals was slaughtered at an early age. In order to give an impression of the size of sheep and goat Table IV, showing the measurements of the lower jaw, the metacarpals and the metatarsals, has been compiled. In one

Mandibula		Min.	Max.	Aver- age	Number	Goat
Length (backcorner of the jaw-alveole I ₁)	. . .	157.5	178.5	168.5	3	(175)
Length (backcorner of the jaw-for. ment.)	. . .	129.5	148	139.5	4	137
Length of the six cheek teeth	. . . . .	65	84	73.5	20	72
Length molar row	. . . . .	45	57	50	20	49
Length praemolar row	. . . . .	23	27.5	24	21	24.5
Length M ₃	. . . . .	18	27	21.5	20	22.5
Width M ₃	. . . . .	6.5	9	7	23	(7)
Height behind M ₃	. . . . .	33.5	42	36	20	35
Height before P ₂	. . . . .	18.5	24	21	23	18
Metacarpal						
Length over all	. . . . .	144.5	126	126	133	120
Width proximal end	. . . . .	27	20.5	—	—	19.6
Width distal end	. . . . .	33.5	22	24	27	22
Smallest width of the diaphysis	. . . . .	18.5	13.0	12.5	14.5	11
Index $\frac{\text{width proximal end}}{\text{length over all}} \times 100$	. . . . .	18.6	16.2	—	—	16.3
Metatarsal						
Length over all	. . . . .	117.5	142	136	140	133.5
Width proximal end	. . . . .	19	19	19	18	18.5
Width distal end	. . . . .	23	22.5	21.5	21.5	22
Smallest width of the diaphysis	. . . . .	12.5	11	11	10.5	11
Index $\frac{\text{width proximal end}}{\text{length over all}} \times 100$	. . . . .	16.2	13.2	14.1	12.7	14.5
					13.4	13.8
					14.2	14.2
					15.2	15.2

Table IV. Some measurements of the mandibula, metacarpal and metatarsal of the sheep and goat found at Valkenburg.

Radius					
Length over all	331	334	345.5	346.5	
Metacarpal					
Length over all	227	231.5	250		
Width proximal end	51	(54)	55.5		
Width distal end	48	47.5	55		
Smallest width diaphysis	32.5	32.5	36.5		
Index $\frac{\text{width proximal end}}{\text{length over all}} \times 100$. .	22.4	23.4	22.1		
Index $\frac{\text{smallest width diaphysis}}{\text{length over all}} \times 100$	14.3	14.0	14.6		
Tibia					
Length over all	335.5	(364)			
Metatarsal					
Length over all	250	257	261	263	(265) 276 278 282.5 284
Width proximal end	45	43	49	46.5	51 49.5 46 50 50
Width distal end	43.5	45	44	45	44 47 47.5 50.5 49.5
Smallest width diaphysis	27	30	31	28	30 30.5 30 32 32
Index $\frac{\text{width proximal end}}{\text{length over all}} \times 100$. .	18.0	16.7	18.8	17.6	19.2 17.9 16.5 17.7 17.6
Index $\frac{\text{smallest width diaphysis}}{\text{length over all}} \times 100$	10.8	11.6	11.9	10.6	11.3 11.1 10.7 11.3 11.2

Table V. Some measurements of the radius, metacarpal, tibia and metatarsal of the horses from Valkenburg.

	One individual										One individual
Humerus											
Length over all	77.5	77	88								
Width proximal end	20.5	21	24								
Width distal end	16	16	18								
Smallest width diaphysis	7	7.5	9								
Femur											
Length over all	85	85	90.5	80.5							86
Intersection proximal end	17	17	18	16							16
Intersection distal end	16	17	18.5	16							16.5
Smallest width diaphysis	7	7	7.5	7.5							7.5
Tibiotarsus											
Length over all	121.5	121.5	115	124 (114)	125	104.5	—	—			
Width proximal end	22	22	22	21	22	22	19.5	21.5	22		
Width distal end	12	12.5	11.5	13	(11)	12	10.5	—	—	15.1	
Smallest width diaphysis	7.5	7	7.5	8	6	7	6	—	—	9	
Tarsometatarsus											
Length over all	82.5	83									88
Width proximal end	15	15									14
Width distal end	14.5	14.5									14.5
Smallest width diaphysis	7	7									6.5
Length of spur	lost	lost									11

Table VI. Some measurements of the humerus, femur, tibiotarsus and tarsometatarsus of the domestic fowl from Valkenburg.

case the lower jaw is certainly of a goat as it was discovered together with the skull.

The remains of the horse are few. The horse was a riding or draught animal, not used for food. This is further illustrated by the fact that the horse bones have not been broken. The horses were bigger than those found in the dwelling mounds of the Netherlands and Northwest Germany (Nobis, 1955). On the bases of the measurements of metacarpals and metatarsals they belong to moderately large to large animals. In Table V the measurements for the radii, tibiae, metacarpals and metatarsals of the horses from Valkenburg are given.

Of the cat some bones, all belonging to the same individual, are found; humerus, length 99.5 mm.; tibia, length 122; radius, length 104; ulna, length 122. This individual was determined by P. J. H. van Bree, Amsterdam, as *Felis cf silvestris* (Schreber). Domestic cat, present in the dwelling mounds from Ezinge (excavation Van Giffen, 1923-1934) and Tritsum (excavation Waterbolk, 1958-1960) in the Netherlands, and from Tofting (Nobis, 1955) in Northwest Germany, has not been found.

The bones of dog suggest midsized animals. They are being studied by A. E. van Giffen.

Among the remains of the domestic fowl there are certainly some 10 individuals recognizable; two of them were roosters (Table VI). Domestic fowl were also found in Tritsum and Ezinge.

In summary, it is to be said that for the garrison of the Roman Castellum at Valkenburg the cattle, the domesticated pig and the sheep and goats were the most important food animals. Those animals they got from the local inhabitants, the larger Roman cattle was apparently not imported. Hunting was of little importance. The horse had in all probability a predominantly military significance.

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