

# INTERNAL ORGANIZATION OF AN EQUINE STABLE AT POMPEI

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**Abstract** - The Casti Amanti stable is an interesting example of the zootechnical habits during the Pompeian age. As the skeletons remained in situ, we could not only study the stable architecture, but also hypothesize the dynamics of the death of the equids living there and perform a morphological study. From this study we know the five equids were, probably, four donkeys and a mule aged between 4 and 9 years and that they all were males. Probably they were employed as pack-animals to transport the bakery goods all around the area. An analysis on food remains was carried out. The short bakery activity due to seismic damage and the presence of five equids in working age led us to suppose an earthquake occurred shortly before the eruption of the Vesuvius.

**Résumé** - L'organisation d'une écurie à Pompéi. L'étude de l'écurie de la maison Casti Amanti de Pompéi fournit d'importants renseignements de nature zootechnique. La conservation in situ des squelettes d'équidés nous a permis non seulement d'étudier l'architecture de l'écurie, mais aussi de proposer des hypothèses sur la dynamique de la mort des animaux qui y vivaient, ainsi que d'effectuer une étude morphologique de leurs restes. Les cinq équidés dont les squelettes ont été retrouvés dans l'écurie étaient vraisemblablement quatre ânes et un mulet, âgés entre 4 et 9 ans. Ils étaient tous de sexe masculin. Ils étaient probablement utilisés comme bêtes de somme pour le transport de produits de boulangerie. Une analyse des restes de fourrage a également été conduite.

**Key-words:** Equids, Pompei, Casti Amanti house, Stable, Bakery, Earthquake.

**Mots clés:** Equidés, Pompéi, Maison Casti Amanti, Ecurie, Boulangerie, Tremblement de terre.

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The Casti Amanti house excavation is still going on and represents an example of modern archaeology. This house is in via dell'Abbondanza nn. 6 and 7, Insula 12, Regio IX. Its excavation began in 1987, even if the front of the house was been excavated just before the first world war, during the unearthing of the whole via dell'Abbondanza. The building takes up about 1,000 m<sup>2</sup>, and it is very interesting from the architectural, artistic and social points of view (Varone, 1989).

One of the most important findings is certainly the big bake house whose wideness and central situation show that it was an important bakery in via dell'Abbondanza. It was probably property of *Caius Iulius Polybius*, a man living in the neighbouring house. This

hypothesis is confirmed by archaeological and historical data. We know that Polybius was a rich baker and an important politician. His richness is confirmed by the data collected in the multidisciplinary study on his home carried out in 1996-97. An inscription on a wall requests the people to vote for Polybius which is able to prepare good bread "*Caium Iulium Polybium aedilem oro vos faciatis, panem bonum fert*" (Varone, 1989). In the Casti Amanti house were found 2 stables, a big oven (Fig.1) and four wheat grindstones (Fig.2).

In the principle stable five equid skeletal remains were found, and left in situ following current archaeological methodology (Fig.3). Morphological, morphometrical, histological and genetic studies were carried out on these



Fig. 1 – The oven.



Fig. 2 – The grindstones.



Fig. 3 – The stable.

remains (Cocca *et al.*, 1995; Genovese *et al.*, 1998).

As the skeletons remained in situ, we could not only study the stable architecture, but also hypothesize the dynamics of the death of the equids living there.

The figure 4 shows a map of the stable with the skeletons (A, B, C, D and E).

The subject A, has been found in the NW corner of the stable, in right lateral decubitus, the fore and hind legs slightly bent, so it seems to be clear that at the moment of the death his head was put on the manger. Many of the bones remained embedded in the plaster casting. Morphological (Tab.1) and morphometrical data suggest that this equid is a 4-5 years old male donkey (Cocca *et al.*, 1995).

Similarly, subject B (Fig.4) resulted a 7-8 years old male donkey. The equid C (Fig.4) is in right lateral decubitus. Its head is oriented toward S, the fore right leg appears bent at carpal joint and the hind ones are slightly wide. The skull is crashed laterally and bones are fragmented. It is a 6,5-7 years old male donkey.

The body of the equid D (Fig.4), a 8-9 years old male donkey, is oriented toward S. We think that at the moment of death, the animal was in left lateral decubitus oriented toward SW and its head was rested on the wood manger. The subsequent settlements of the ground dragged the hind right leg, the pelvis and consequently the vertebral column till the thoracic vertebrae toward NW at the lower level while the left hind leg remained partially embedded in the volcanic ash where the equid was laid. In fact, the bones of this leg are still well jointed while the right leg's ones appear disjointed.

Equid E (Fig.4), the only mule aged 8-9, male, appears leaning against the exit door and its fore legs are bent mainly at the shoulder joint and elbow joint levels. The head is bent between the fore legs and the mouth is shut. From the position of the body, we can imagine that this subject was trying to escape from the out-door.

None of the equids shows signs of skeleton

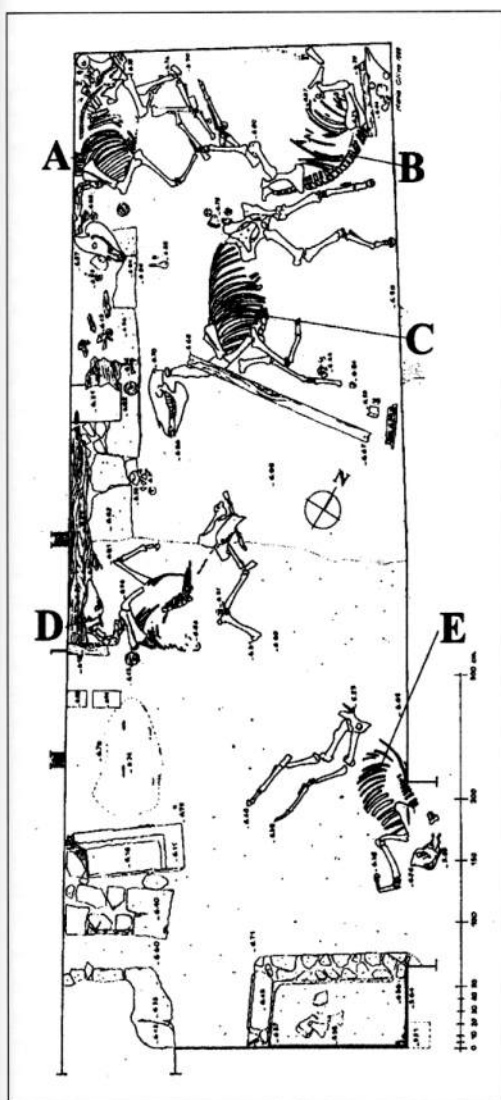


Fig. 4 – Plan of the stable.

Tab. 1 - Results from morphological study.

Subject	Skull	Columna Vertebralis	Scapula	Humerus	Radius	Ossa m.Pelvini	Os femoris	Tibia
A	As	-	As	-	As	-	As	As
B	As	As	As	As	As	-	As	As
C	As	-	As	As	As	-	As	As
D	As	As	As	As	As	As	As	As
E	As	-	Cb	Cb	As	-	Cb	-

Morphological types: As= *E. asinus* ; Cb= *E. caballus*

or joint pathologies whether in vertebral column or limbs. It is important to underline their ages and their healthy state because we know that in this period of the life their value is highest, due to their work ability. For this reason we think they were employed as pack-animals and not as grind animals.

The bread production steps need animal work for the transport or grind work.

It is difficult to hypothesise the dynamics of the Casti Amanti equids death because even though we can observe their position at the death moment, several elements are still lacking.

Looking at the position of the five animals in the stable, we would say that the A and D subjects appear to be linked near the wood manger, but in order to be sure of this, it would be necessary to excavate again under their neck. Ancient Romans used to keep the equids linked in the stable and to separate them with stable cross-bars (Vigneron, 1987), but it was impossible for us to find any trace of them in the stable. Finally, the positions of the subject B and E let us think that their death was caused by asphyxia.

Histological and genetic studies have been carried out on the skeletons in order to study the state of preservation of biological material. In transverse sliced sections of long bones it was possible to observe well-defined osteocyte lacunae, osteons and interstitial system. In addition, in these ones, the good state of preservation of bone was indicated by the high degree of birefringence at polarised light microscope and by DNA presence histochemically and genetically demonstrated (Genovese *et al.*, 1998). The stable is rec-

Tab. 2. - Some morphometrical data. In accord with Van Den Driesch, 1976.

Bone	Parameter	Subject				
		A	B	C	D	E
Scapula	LG	-	-	-	58.7 (d)	-
	GLP	-	-	-	89.9 (d)	-
	BG	-	-	-	46.5 (d)	-
	SLC	-	-	-	63.5 (d)	-
Humerus	GLC	-	-	-	-	263.8 (d)
	GLI	-	-	-	-	277.7 (d)
	Bp	-	-	-	-	91.2 (d)
	BT	-	-	-	71.5 (d)	69.5 (d)
Radius et Ulna	GL	417.5 (s)	-	-	-	375 (d)
Radius	GL	352 (s)	-	-	-	322 (d)
	PL	334 (s)	-	-	-	306(d)
	SD	35.2 (s)	-	-	-	35.8 (d)
	Bp	8.6 (s)	-	-	-	7.65 (d)
	BFp	-	-	-	-	6.9 (d)
	Bd	-	-	-	-	7.35 (d)
	BFd	78 (s)	-	-	-	6.0 (d)
	LO	80 (s)	-	-	-	-
Ulna	SDO	48 (s)	-	-	-	425 (d)
	DPA	66 (s)	-	-	-	60.2 (d)
Os metacarpale III	GL	239 (d)	234 (d)	239 (d)	231 (s)	-
	LI	231 (d)	226 (d)	230 (d)	225 (s)	-
	SD	-	34.4 (d)	35.6 (d)	-	-
	Bp	55.1 (d)	53.0 (d)	56.8 (d)	50.0 (s)	-
	Dp	37.3 (d)	36.0 (d)	36.3 (d)	-	-
	Bd	-	49 (d)	54 (d)	-	-
Os coxae	LA	68 (s)	-	-	-	65 (d)
	LAR	59 (s)	-	-	-	56 (d)
Os femoris	GL	-	392 (s)	388 (s)	-	370 (d)
	GLC	358 (s)	353 (s)	353 (s)	-	346 (d)
	Bp	124 (s)	119 (s)	117 (s)	119 (s)	-
	DC	58 (s)	56 (s)	58 (s)	59 (s)	-
	SD	44 (s)	41.5 (s)	43 (s)	45 (s)	-
	Bd	95 (s)	-	90.3 (s)	-	85 (d)
Tibia	GL	-	360 (s)	360 (s)	-	348 (d)
	LI	-	-	-	-	-
	SD	44 (s)	39 (s)	40 (s)	39 (s)	40(d)
	Bp	-	94 (s)	100 (s)	95 (s)	94 (d)
	Bd	75 (s)	74 (s)	74 (s)	-	68 (d)
	GL	283 (s)	275 (s)	275 (d)	-	-
Os metatarsale III	LI	277 (s)	269 (s)	268 (d)	-	-
	GLI	280 (s)	271 (s)	273 (d)	-	-
	CD	103 (s)	105 (s)	98 (d)	-	-
	Bp	51 (s)	50 (s)	51 (d)	-	-
	Dp	43 (s)	43 (s)	42.5 (d)	-	-
	Bd	50 (s)	48 (s)	48 (d)	-	-

tangular: long side measures 8.10 m. while the short one 2.80 m., the total area is about 23 m<sup>2</sup>. Height is occupied by a mezzanine at 2.30 m from the ground. The floor is made by pozzolana and lime pasted with heap of stones and fragments of terra-cotta, so is quite hard. Pompeians used to pave with hard materials, considered useful for the equids feet exercise (Vigneron, 1987).

Moreover, there is a slight slope toward N corner. Probably, here is an outlet, connected with the well located just outside in the alley. Such device was useful to keep the equids feet clean and dry. It has been impossible to locate such outlet because there lies down one of the skeletons. In the stable Varone described the ruins of a wood-manger, and the traces of a watering place, already undermined at the moment of the eruption (Varone, 1989). The stable shows two accesses, one to the alley at NE, and the other to the near bake house. The little window on the NE side gave air and light to the stable. A little flat with a closet is in the part of the building at SE of the stable. It was probably inhabited by the groom. He had to clean the stable, the equids, give them food, change the bedstead and all other activities connected with the stable. Near the closet there is a rainwater well. A staircase led on to the mezzanine and to another room. On this mezzanine the archaeologists found a large amount of fodder, mainly oats (*Avena fatua*) and broad-beans (*Vicia faba*) which is still today the kind of fodder used for those equids that have to work very hard.

As final consideration, the authors remind that:

- i. five young equids were in the principle stable;
- ii. just one grind was working at moment of eruption;
- iii. restoration works were in the bakery.

These data fit the hypothesis that the destruction of Pompei had been a continuative event that commenced with the earthquake of AD 62. In fact it is clear that five healthy equids for packing were too much for a bakery partially working. It is notable that the volcanological literature accepts that there were

intermittent earthquakes until the eruption (Bullard, 1984; Francis, 1993; Varone, 1993).

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