

ROMAN OCCUPATION AND ITS ECONOMIC CONSEQUENCES IN THE NORTHERN PART OF SWITZERLAND

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Summary

During the first century AD, the Celts of Switzerland were incorporated into the Roman empire. This study shows the changes in the consumption of meat which were an expression of the new economic system established during the two following centuries. The evidence stems from approximately 200,000 animal bone fragments from over 140 stratified and reliably dated complexes from areas north of the Alps. The inhabitants of Celtic settlements subsisted on extensive agriculture. The great increase in population during Roman times led to an intensification of agriculture. In Celtic settlements, cattle bones are found less frequently than in Roman ones whereas sheep and goat bones occur more often. There are hardly any discernible differences between late Celtic and early Roman military settlements, which may however be due to the way in which the evidence has been presented. During the course of the first century AD, first changes in the meat diet can be observed in the newly established Roman settlements. Beef became considerably more important in the second and third centuries whereas sheep and goat meat became less important.

Résumé

L'occupation romaine et ses conséquences économiques en Suisse du nord.

Au cours du I^{er} siècle après J.-C., les Celtes de Suisse ont été incorporés à l'Empire romain. Cette étude montre les changements survenus dans la consommation de la viande, expressions d'un nouveau système économique qui s'établit durant les deux siècles suivants. Ceci est mis en évidence par l'analyse de quelque 200 000 restes osseux animaux provenant de plus de 140 ensembles stratifiés et bien datés du nord des Alpes. Les habitants des établissements celtiques vivaient en autosuffisance grâce à une agriculture extensive. La forte augmentation de la population à l'époque romaine a conduit à une intensification de l'agriculture. Dans les établissements celtiques, les restes de bovins sont moins fréquents que dans les sites romains, où les restes de moutons et de chèvres sont plus abondants. Il n'y a pratiquement pas de différences entre les derniers sites celtiques et les premiers sites militaires romains, ce qui peut être dû à la façon dont les données sont présentées. Au cours du I^{er} siècle après J.-C., les premiers changements dans l'alimentation carnée sont observés dans les nouvelles installations romaines. Le bœuf prend une place beaucoup plus importante au II^e et III^e siècles, alors que l'importance du mouton et de la chèvre diminue.

Zusammenfassung

Die römische Eroberung des nördlichen Alpenvorlandes und ihre wirtschaftlichen Auswirkungen.

Im Laufe des 1. Jh. n. Chr. wurde die keltische Bevölkerung der Schweiz in das römische Reich integriert. Im vorliegenden Artikel werden die Veränderungen im Fleischkonsum aufgezeigt, die in den folgenden beiden Jahrhunderten als Ausdruck eines neuen wirtschaftlichen Systems beobachtet werden können. Die Aussagen basieren auf der Auswertung von über 200 000 Tierknochenfragmenten aus mehr als 140 stratifizierten und datierten Fundeinheiten aus dem Alpenvorland. Die Bewohner der keltischen Siedlungen waren autark auf der Basis einer extensiven Landwirtschaft. Das starke Bevölkerungswachstum in römischer Zeit führte zu einer Intensivierung der Landwirtschaft. In den keltischen Siedlungen sind Rinderknochen seltener als in den römischen, während Knochen von Schaf und Ziege häufiger vorkommen. Zwischen spätkeltischen Siedlungen und römischen Militäranlagen lassen sich keine Unterschiede beobachten. Im Verlauf des 1. Jh. n. Chr. treten erste Veränderungen im Fleischverzehr in den neu gegründeten römischen Siedlungen auf. Rindfleisch wurde im 2. und 3. Jh. n. Chr. wesentlich wichtiger in der Ernährung, während die Bedeutung von Schafen und Ziegen abnahm.

Key Words

Celtic, Roman, Switzerland, Agriculture.

Mots clés

Celtes, Romains, Suisse, Agriculture.

Schlüsselworte

Keltisch, Römisch, Schweiz, Landwirtschaft.

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Introduction

With the Roman conquest of the area north of the Alps, the local Celtic society was fundamentally changed. These changes affected not only political and social aspects of daily life, but also the economic system. Archaeozoological studies can shed light on prehistoric economic systems and highlight any possible change. Basing our studies on stratigraphically clearly differentiated complexes of animal bones from several sites in the north and west of Switzerland and the adjacent areas of France and Germany, we wish to look at how and when changes in agriculture took place under Roman influence.

The historical context: some general remarks

Our starting point is the following published hypothesis (Duval, 1979 ; Kaenel et Curdy, 1992).

The Celts lived in small villages and larger settlements (oppida) as well as isolated farms. Even the larger oppida can scarcely have had more than a few thousand inhabitants. The most important basic foodstuffs were produced and consumed locally. Only luxury items, above all wine, garum (fish sauce) and luxury crockery (Hecht *et al.*, 1991), were imported by the higher ranks of society from the already Romanized lands of the Mediterranean. The phase under study here (archaeologically speaking Latène D1 and Latène D2) thus represents the end of developments lasting several hundred years. The phase begins around 150 BC and ends with the Roman conquest which, in this area, was finally completed by around 15 BC with the alpine campaign of Augustus. After the Rhine frontier was militarily secured, the actual process of colonization began with the deliberate settlement of army veterans in towns (*colonia*), villages (*vici*) or villas. The native population was integrated into the new administrative system (Collectif, 1988: 40f).

The conquest by Roman troops necessitated the supply of highly nutritious foodstuffs to a large number of people within a short period of time. One legionary camp held at least 6000 soldiers as well as an unknown number of civilians. This could lead to short supplies, since local production was at first not sufficient to feed the soldiers. The consequences may have been a tightly organized system of self-provision and the associated importation of food (King, 1990: 116).

On the longer term, the newly established colonial towns and the larger roadside villages (*vici*), inhabited mainly by a romanized native population, made their decisive mark on the economic structure.

One new form of settlement are the farms (*villae rusticae*) which became densely scattered over the whole country in a short space of time, and which probably considerably increased agricultural activity in previously thinly populated areas. The farms were concentrated above all close to larger settlements (within 6-8 km), which had reached a size that made self-sufficiency in terms of basic foodstuffs unlikely. It can be assumed that the villas were oriented towards producing an excess of foodstuffs (UFAS, 1975: 70). This mutual dependence of various forms of settlement came about as a direct result of the Roman conquest, not having existed in this form before.

Material basis

For this study, it has been possible to draw on numerous, still unpublished data from recent excavations as well as published reports⁽¹⁾. The study was undertaken on the basis of percentage of pieces⁽²⁾. Insufficient data were available for an analysis using percentage of weight.

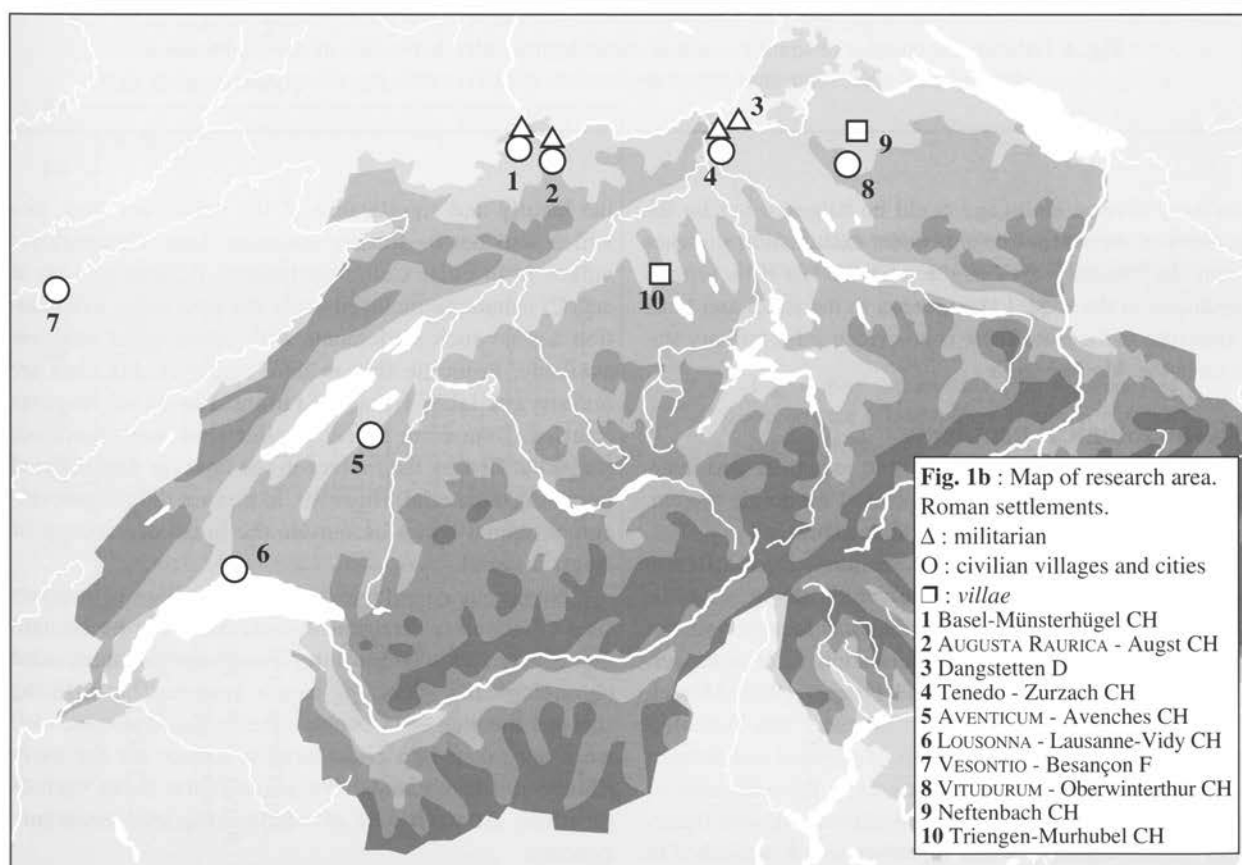
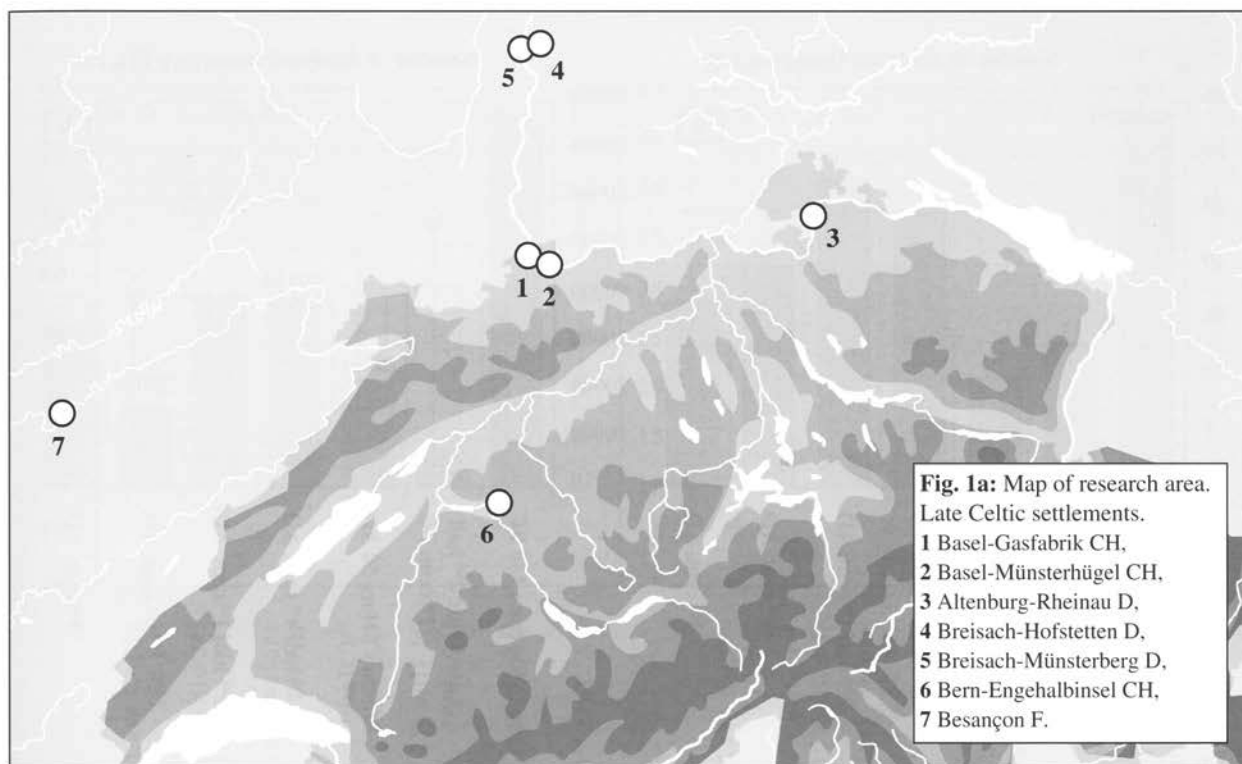
We were able to study a total of 7 sites from the late Celtic and 10 sites from the Roman period (fig. 1). Each site had several bone complexes which could be differentiated stratigraphically and chronologically, so that more than 140 units could be distinguished for analysis. The majority of the sites have also been studied archaeologically. Our analysis is on the basis of almost 200,000 animal bone fragments of the four most important domestic animals, cattle, sheep/goat and pig (fig. 2).

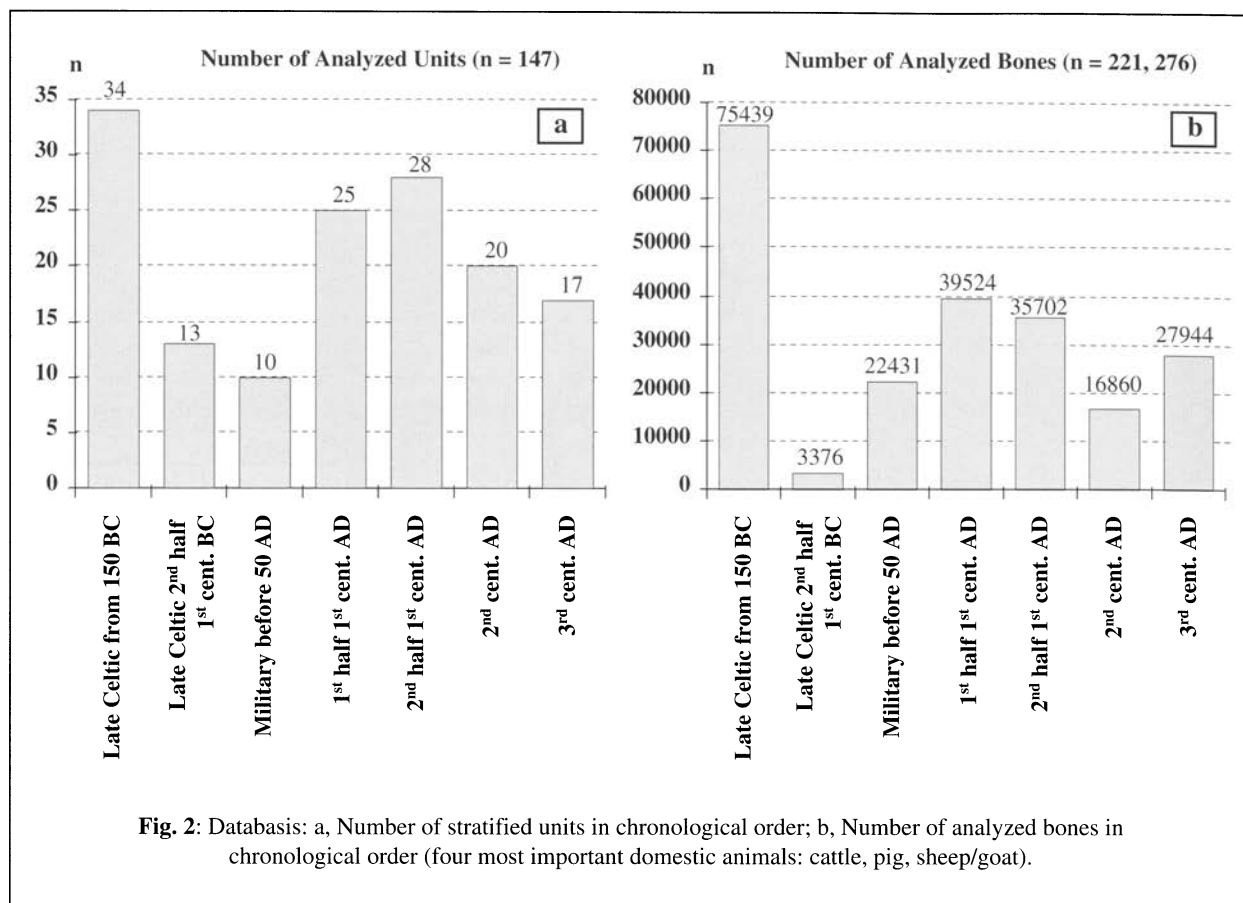
Procedure

All the material was divided into six periods, defined as closely as possible, between ca. 150 BC (beginning of the Latène D1 period) and ca. 300 AD. In addition, we looked at the early Roman military stations from 15 BC until the middle of the first century AD as one block. The literature repeatedly indicates that the latter are distinguished by a high percentage of pig bones (King, 1984; Deschler-Erb *et al.*, 1991: 128). Care was taken that only those stations were used for comparison which shared broadly the same geographical factors. Small variations in

⁽¹⁾ We thank especially G. Breuer, P. Lehmann, P. Morel and B. Stopp for data from ongoing analyses (P. Morel, 1994; Lehmann and Breuer, in preparation; Stopp in preparation).

⁽²⁾ We derived data from the following publications: Uerpman (1977); Arbinger-Vogt (1978); Karrer (1986); Moser (1986); Wiesmiller (1986); Schibler and Furger (1988); Méniel (1992).





this very diverse landscape could be balanced out by the quantity of data used. The area under examination stretches from the Freiburg area in the north to the hills around Besançon in the west, Lake Geneva in the south and Lake Constance in the east. There is no evidence for military stations in the Alpine region.

Methodological problems

The aim of the comparison is to recognize and interpret changes over time within a closed economic system. Secondary aspects will not be mentioned here.

Variations in the quantities of bones from different animals within one site (intra-site) which are known to be due to social, functional or chronological factors were not taken into account. For more information, refer to the relevant publications (Schibler and Furger, 1988; Méniel, 1992; Stopp and Schibler, 1994; Schröder and Deschler-Erb, in prep.; Ebersbach, in prep.; Lehmann and Breuer, in prep.; Stopp, in prep.). Variations in the quantities of bones from different animals between various sites (inter-site) can have greatly differing causes which are linked to

the history and significance of the individual sites, and which will not be further discussed here. Comparative values from older Celtic settlements (Latène periods B and C) cannot be included since the area under examination has no such settlements with osteological analyses available. From the first to third centuries AD, data are mainly available from the colonial town of Augusta Raurica. Data from other, smaller sites were therefore studied at first by themselves to see how far they differed from Augst material. However, in no case did the percentage of animal bones lie outside the limits of variance of Augst material.

Numerous osteological studies of *villae* or military sites (Vindonissa, Ersigen-Murain) could not be brought into consideration because the bones were not subdivided chronologically according to our system. The differing size and function of individual sites (*villae*, colonies, *vici*) were not taken into consideration except for the early Roman military camps. We assume that these various locations are each part of whole integrated economic systems.

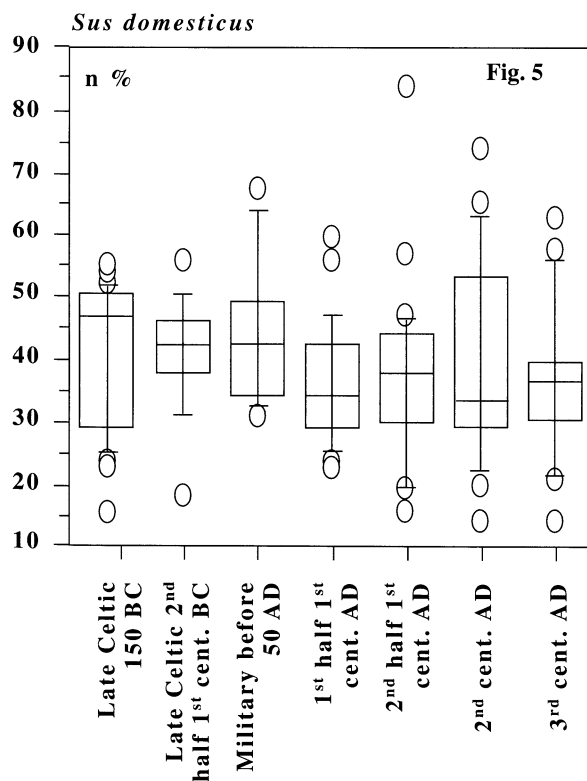
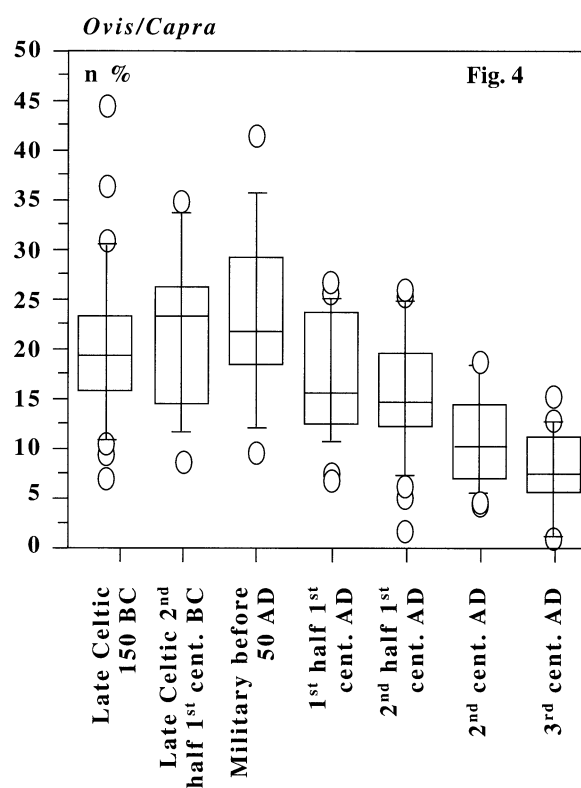
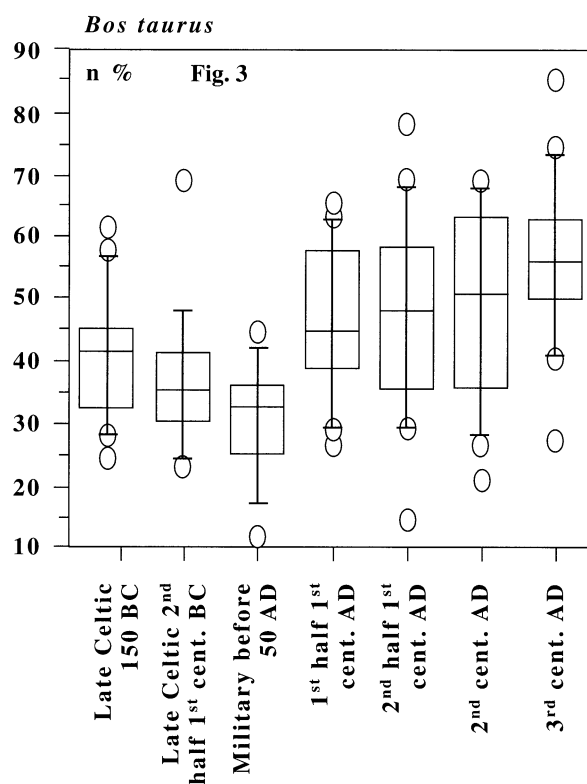


Fig. 3: Box and whisker plot: frequency of occurrence of cattle bones in chronological order.

Fig. 4: Box and whisker plot: frequency of occurrence of sheep/goat bones in chronological order.

Fig. 5: Box and whisker plot: frequency of occurrence of pig bones in chronological order.

Osteological results

Observations

Cattle.— The frequency of occurrence of cattle bones (fig. 3) shows a clear tendency over time: in late Celtic settlements cattle bones account for 30 to 45 per cent of all bones. From the first century AD this percentage increases markedly. The difference in the amount of cattle bones becomes particularly clear if late Celtic settlements are compared with those of the third century AD where the amount of cattle bones never drops below 50 per cent. The military settlements up to the middle of the first century AD yield lower percentages than the late Celtic settlements, but the results are overlapping.

Sheep/Goat.— The frequency of sheep and goat bones (fig. 4) shows an opposite development: their share shows a slight increase in early Roman military camps compared to about 20 per cent in late Celtic settlements. A steep fall can be observed from the first century AD, leading to less than 15 per cent in the second century. In the third century the figure drops to below 10 per cent.

Pig.— Surprisingly, the frequency of pig bones (fig. 5) shows no clear tendency. The differences within one period are enormous and the overlapping areas are broad. Early Roman military camps do not yield increased shares of pig bones.

The early Roman military period shows hardly any differences in comparison with late Celtic. An increase in pig bones is not discernible. The reason why the amounts of pig bones from individual settlements vary enormously probably lies in the way the evidence has been presented. In order to further investigate this aspect - which however is not the aim of this study - one would have to take into account that each military camp has its own size, composition of troops and historical development.

Suggestions for interpretations

The relatively even distribution of the bones from the four major types of domestic animals in late Celtic settlements, in our view, points towards an extensive pastoral economy in which the more demanding cattle husbandry played no overriding role. The emphasis rather lay on the less demanding keeping of small ruminants which can feed themselves even in fallow lands and woods.

The presence and influence of the Romans led to the introduction of more intensive agricultural methods. More cattle were now kept and fewer sheep and goats. In our view the emphasis on cattle husbandry is related to the greatly intensified cultivation of fields which was

necessary to provide enough carbohydrates for an increased population. For this big, strong cattle were necessary as team animals for ploughs. Along with the intensified cultivation of existing fields, new agricultural land was probably taken into use with the spread of rural villae in previously unsettled areas. This, as well as a greater demand for meat products, led to an increase in the rearing of cattle.

In the present type of study, pigs are of little use as an indicator of the degree of Romanization of the population as a whole or as evidence of a military presence. The higher amounts of pig bones observed in the early phases of military settlements are insignificant in the overall picture. We suppose that the chosen chronological grid is too rough to yield useful data. Greater numbers of pig bones probably only occur in the first phase of Roman military occupation which only lasted a few years. We would like to point out already existing studies of individual settlements which look at historical developments, the composition of troops, as well as at game and fowl bones and other archaeological finds (Deschler-Erb, 1991; Deschler-Erb *et al.*, 1991; Morel, 1994).

The results presented here emphasise the presumptions about the course of romanization which have already been published elsewhere. In addition they offer for the first time concrete scientific indications which help an understanding of the economic development of the Roman provinces.

Future perspectives

It would be of great interest to have data on the density of bone finds in order to avoid the mutual dependence of percentage reckoning. Following our interpretation here, we would expect a strong increase in the density of cattle bones while that of pig bones would remain constant and that of sheep and goat bones would either also remain constant or decrease. One problem which has been discussed again and again is the increase in size of cattle under Roman influence (Teichert, 1990). Unfortunately there is rarely a sufficient quantity of data to resolve this question in a statistically satisfying manner and in a big enough chronological framework. Finally, questions about the development of the countryside should be addressed in collaboration with botanists. First indications point to an increase in open areas in the course of Roman colonization (Deschler-Erb, 1991: 336). One hopes that in future the database for bones found in stratigraphically well defined and closely datable complexes might be enlarged so that the entire economical system can be better understood.

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