

Favourable Conditions for Cattle Farming, one Reason for the Anglo-Saxon Migration over the North Sea?

About the Byre's Evolution in the Area South and East of the North Sea and England

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*The island is wealthy in crop
and trees, and suitable for cattle,
in some places it produces vines as well...*
(Beda Venerabilis, Historia Ecclesiastica)

The more profitable agriculture of England: an incentive for Continental people to migrate over the North Sea?

The theoretical question is, if the Migration Period was today, but still with a population as in the 5th century, with most people being farmers, what advantage would inhabitants of, say, the Netherlands, Northern Germany and Denmark have today in settling in England? It would be the same, we will propose, for the Anglo-Saxons in their time as for the farmer of today: it is the milder climate and hence the greater quantity of biomass even in winter, and furthermore the prevailing better soils. On the Continent, a division occurs where the wine climate terminates. Though Tacitus disapproved of the English summers as being too cool for satisfactory cultivation of wine,¹ since Early Medieval times,² and again today, vineyards have spread in England and Wales, while on the Continent the border lies far south of the area where the possible Anglo-Saxon settlers came from. We owe to Tacitus on the other hand the first record about the mild English winter.³ Comparison of climates in Europe⁴ brings us to the conclusion that it would have been a disadvantage to come over for the Latin-speaking world further south, but a clear advantage for those people, speaking Germanic languages, from areas abutting the North Sea in the south and east and from more distant Scandinavia.

Why there was migration across the North Sea, why Anglo-Saxons settled in England, these questions have often been discussed. More recently this migration has been questioned to varying degrees.⁵ One model, that many groups of Continental people went over, was countered by another, namely that only a few Continental people went over but that the indigenous inhabitants took over the 'Saxon' fashion,

because it was in vogue to behave like a Saxon. Many arguments have been exchanged; perhaps in the end DNA analysis will tell. One discussion, which began in the 'Frisian' coastal zone, could make the whole even more complicated. It could in particular imply that the inhabitants of, for instance, the Feddersen Wierde did not settle in England but in between Ems and IJsselmeer.⁶ These arguments, based on archaeological evidence, recall what once was proposed by Heeroma on considerations of comparative philology.⁷ Certainly influenced by Van Giffen's opinion,⁸ that during the Migration Period Saxon colonists settled in the Frisian coastal district, but with arguments from his dialect study, Heeroma stated that 'Frisian itself would be a Saxon dialect'.

In this paper, we will take the part of those still voting for a real migration from the Continent to England, for which Hamerow presents arguments.⁹ That, apart from this, the native people took over Saxon customs is reasonable, but why should they imitate only a negligible group of Saxons? There must have been some more Saxons to demonstrate the Continental way of life, language, and the technical world, including fashions in building.

Certainly there will have been a great number of reasons why these groups migrated. We have to search for these in political and social fields, the plague etc. In this paper, we will confine ourselves to advantages in the agricultural field. These certainly exist for both arable farming and animal husbandry. We concentrate here on the history of the byre. For the sake of comparison we will first give in the first part a short overview of archaeological finds of byres on the Continent and some of their characteristics. In the part on the housing of cattle we will consider what evidence can be gained from Anglo-Saxon England and later (in the following, byre will be used for both stable and byre and the meaning of the word cattle will include all beasts of pasture). Further chapters on the subject of byres and overwintering are published in Zimmermann 1999.

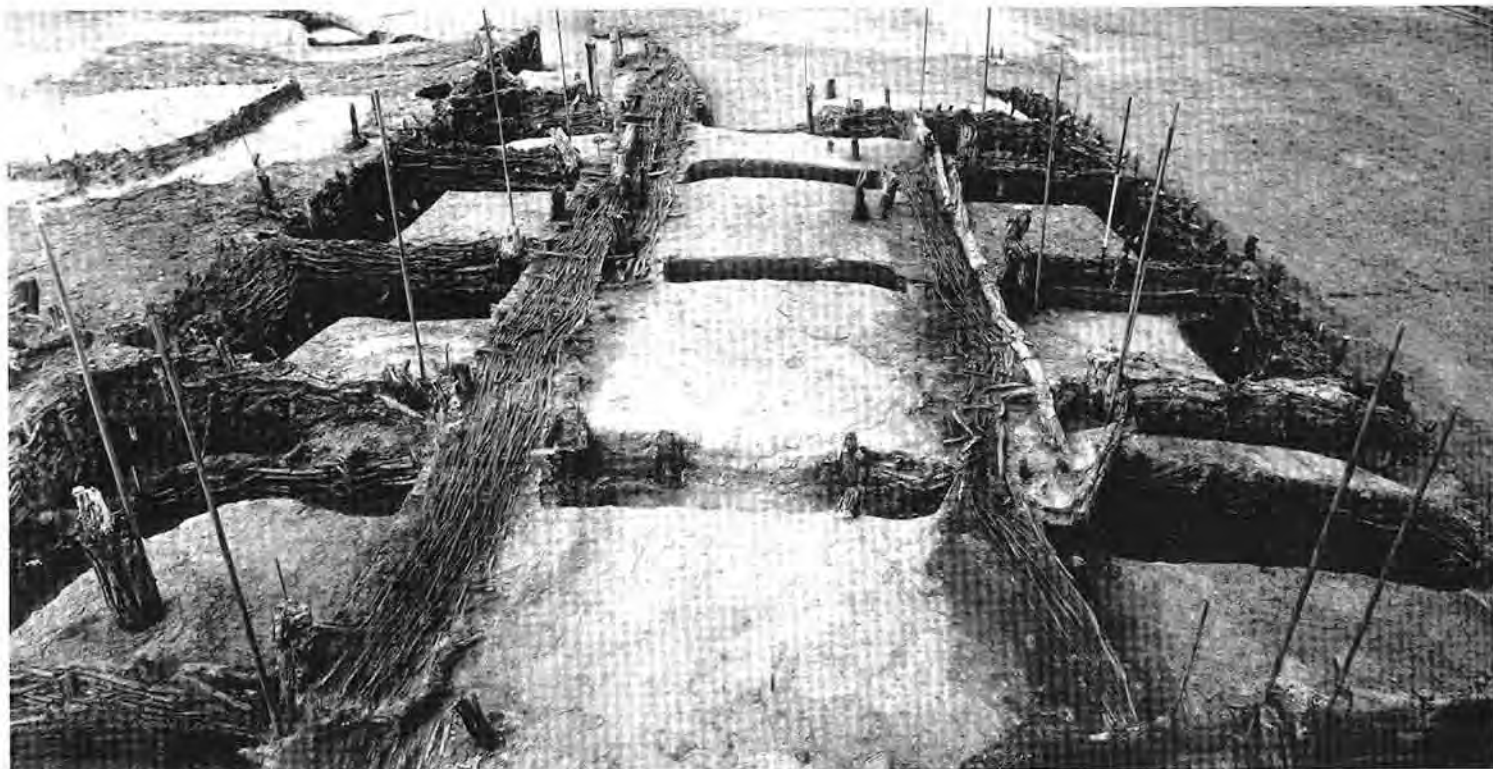


Figure 1 Byre in a house from the *Wurt Ezinge*, Prov. Groningen, the Netherlands (from Van Giffen 1936, pl. 4, 1).

Archaeological finds of byres on the Continent

Even more than evaluating the written records and popular beliefs, archaeology can contribute to the understanding of the evolution of the byre. The archaeozoologist's study of bones can tell about species and shape, about which animals were held in what percentages and how old animals were when they were butchered. This was often the case just before winter, because there was not enough fodder for more animals. An answer as to which species stood in which place in the byres can be given by analysing the dung and sieved-out remnants of mites. The archaeologist can study the animal's significance by examination, as we shortly will do here, not only of the archaeological remnants of byres but also of buildings like granaries and helms and structures like stacks, which were all used for storing food and fodder of animal and/or man.

Figurines of cattle give further evidence; hoofprints tell where cattle were driven, as is the case in Flögeln, where thousands of such traces went down to a drinking ditch.¹⁰

In Europe byres have been known from Neolithic times until today.¹¹ As far as we can judge from today's knowledge, they were very rare in Neolithic times, found only in alpine and southern German areas. Their importance grew in the area south and east of the North Sea during the Bronze Age and from then onwards.

We cannot thoroughly treat all archaeological finds of byres but will only give a short overview of their evolution as demonstrated by more or less undoubted finds. Except for Neolithic times, we will mainly discuss finds from the area

south and east of the North Sea, where until now most finds have come to light.

This area is of special interest in this connection as the home country of the English Anglo-Saxons or bordering on it.

Neolithic byres

In Neolithic times there is only limited evidence of byres. In connection with *Bandkeramik*, Lüning tried to detect byres using phosphate mapping, with the result that there was no evidence.¹² The first hints of byres are known from the 4th millennium BC, e.g. from the Pfyn-settlement Thayngen-Weier, where stalling or the keeping of cows and goats in small yards was also found,¹³ from the Egolzwiler Culture from Egolzwil 3,¹⁴ all in Switzerland, and from the Altheim settlement Pestenacker in Bavaria.¹⁵ From the Swiss settlements, Rasmussen could state that livestock was foddered inside the settlement with leaf fodder in some kind of byre;¹⁶ very probably foddering took place during the winter. At Pestenacker, houses were arranged in rows, and all seem to be similar to a well preserved house, dating to 3496 BC. This contained two rooms, one for living; the second was a byre, according to the dung, which was probably from horned cattle. In a backyard lay dung, as well as the remnants of leaf fodder. All these settlements where byres were found are situated in bogs. Thus these Neolithic byres could be detected due to the favourable preservation conditions. Equivalent foundations on dry ground would, if at all, be recognised as houseplans, not necessarily as byres. So the question remains open, whether these finds were only special cases and byres restricted

to such settlements for reasons of security and perhaps difficult access to the grazing areas, or byres were built on dry ground as well.

There are more Neolithic houses which perhaps contained a byre, like those on Bornholm.¹⁷ Until now, here and in other cases as well, proof, *e.g.* by phosphate mapping, has been lacking.

From the Bronze Age to the Migration Period

The transition to three-aisled houses during the Bronze Age has simultaneously been seen as a shift to the byre. But function and construction cannot be connected with certainty in this way. As has been proved, there are many three-aisled houses without a byre and certainly there were two- or one-aisled houses with a byre. For example, a small, late Bronze Age house in the bog settlement Wasserburg Buchau, Württemberg,¹⁸ which has been a byre according to preserved dung layers, has no inner posts.

For Bronze Age three-aisled houses, in the area from the Netherlands to Denmark,¹⁹ the close spacing of trestles in one, mostly the eastern, half of the houses is convincingly interpreted as a byre. The often discussed but never substantiated question of when there was a byre, rather in Early or Middle Bronze Age three-aisled houses has acquired new evidence. According to Ethelberg,²⁰ he excavated houses from the Early Bronze Age date which are almost identical at two places in Southern Jutland. One house in Gram, Skrydstrup, did have dividing walls of stall boxes. Radiocarbon dating samples date it to the period between 1400 and 1200 cal. BC. A parallel has been uncovered at Højgård, Gram sogn. There, a phosphate mapping showed an area with higher phosphates in the eastern part, where in the Gram house the dividing walls of stalls were situated.²¹ Also of Early Bronze Age date (Montelius II or early III) is a house in Legård, Sønderhå, Thisted Amt in Jutland.²² Clear traces of the dividing walls of boxes together with increased phosphate values show that here the byre was situated in the centre of the house. According to Tesch, the oldest byres in the Köpinge area in Scania, Sweden, were as well introduced quite early, namely in between Bronze Age Montelius Period II and IV.

More recent Bronze Age houses in the clay district as well as in the sandy areas in the Netherlands show traces of dividing walls between the stalls.²³ These walls are very well preserved in a house with byre and living accommodation at Rodenkirchen, Lower Saxony, which is now under excavation.²⁴ The clay district sites, settlements on the flat earth, are waterlogged because they were later covered with clay, deposited there during later floodings. In Jutland, dividing walls of stalls have also been found in Bronze Age houses, but despite the great number of ground plans such finds are still quite rare.²⁵

More common are the dividing walls between the boxes in houses of the Pre-Roman Iron Age. Out of many finds, we quote only two examples: the foundations of these walls are

well preserved in wattlework in the clay-district settlement of Boomborg-Hatzum, Lower Saxony²⁶ or the stains of their traces in the dry ground settlement of Grøntoft, Western Jutland.²⁷ During the Roman Iron Age and Migration Period, and in the Northern Netherlands even since the Pre-Roman Iron Age (fig. 1), houses are preserved in the so-called *terpen* (Dutch), or *Wurten* (German), dwelling mounds, built against the rising water level. Here, preservation is due mainly to the dung, which was used together with clay for raising the house places and fill the gaps in between. At that time the dung was not needed for manuring because the sedimentation during floods provided sufficient nutrition. The best known example of such a wurt is the Feddersen Wierde.²⁸ Comparable houses are also known from dry ground in the Netherlands, Northern Germany and the Scandinavian countries, where only the colorations of postholes and foundation trenches are preserved. Convincing results can be obtained here by phosphate analysis, as carried out at Flögeln.²⁹

Medieval byres

In Early Medieval times, three-aisled houses with living quarters and byre under one roof still prevail on the *Wurten* such as Hessens,³⁰ Oldorf³¹ and Eisenhof.³² Except for these find places in the clay district, the classical three-aisled buildings are not or are only rarely to be found in Early Medieval times. Houses are then mostly one-aisled, or, from the 9th century onwards, secondary naves were attached to the house's long sides. However, this was not done regularly on both sides but obviously only where needed. Thus it often occurred only on one half side. In an Early Medieval farm with many buildings in Dalem, Lower Saxony the main building and the byre, erected for different functions, each had its own roof.³³ Both could be detected by in the one case low, in the other very high phosphate values. No indication of any internal structures was found in this byre, thus possibly the animals were not tethered, but could walk around freely. Until now, this is the only find of this kind on dry ground. But, as under such circumstances byres can only be detected by phosphate mappings, this method could help to find out how common such byres were. We will mention below a sunken byre from the wurt of Oldorf, Wangerland, Lower Saxony, dated to about AD 670.³⁴ This was a comparable one-aisled byre.

Not sufficiently but only casually dealt with are the byres in Medieval towns. We have more knowledge of the fact that holding livestock was generally practised there from written than from archaeological sources. The most frequent indicators are the extended dunglayers uncovered by many excavations. Where structures which once housed animals have been found in towns, these have been only of small dimensions. In Sindelfingen finds of byres exist only from period II (2nd half of the 13th and 14th century AD), while in the preceding period only pens or weather-roofs existed.³⁵ According to the finds of bones, only small livestock was held. Also the preserved dung out of the Sindelfingen excavation, containing

pupae of the house fly, gives indirect support to the existence of byres.³⁶

A byre of High Medieval date, Breite Straße 8 in Buxtehude, Lower Saxony, was well preserved and contained a lot of dung. At about 3 m square, it was only a small annex at the back of a townhouse, giving room for about two cows.³⁷

Assessment of how representative the Central and Northern European finds of byres are for the actual distribution This overview has necessarily to be short and thus suffers from many omissions, but it shows the state of knowledge, namely that the majority of archaeologically traced byres are recorded in the region south and east of the North Sea. There are some explanations for this, primarily the intensity of settlement archaeology in this region for more than 50 years. Also important is the history of research. The early excavations in the *Wurten* by Van Giffen (fig. 1) in the Northern Netherlands and Haarnagel and Bantelmann in Northern Germany have imprinted a fixed image of what a prehistoric byre should look like: being located in a three-aisled house with byre and living quarters under one roof. Though this is not the only solution that prehistoric man found, this prototype can indeed be detected from the Bronze Age to the Migration Period. This picture remained so clear until today simply due to the fact that byres can most easily be recognised in three-aisled houses. One of the few finds of byres further south, the Pre-Roman Iron Age Befort house in Luxembourg,³⁸ belongs to that type too. Furthermore, the similarity with the byres in recent vernacular Low German houses is responsible for the long period during which hardly any other solutions were considered by the archaeologists. That these existed, is shown by the one-aisled byres in Dalem and Oldorf (see above). One explanation for the fact that, outside of the North Sea area, evidence of the housing of livestock could seldom be produced is the fact that here mainly one- and two-aisled house types were characteristic. In these, proof of byres is possible only under very good preservation circumstances, as in the Neolithic and Bronze Age bog settlements mentioned above. In other cases, only phosphate mapping could provide indications. It could show that a byre was likely in a one-aisled house in the Alemannic settlement of Lauchheim.³⁹

Reconstructing the distribution of the different functions among the buildings of a farm, one has to consider that byres might not only have been at surface level but also in sunken-featured buildings. In the area south of the North Sea only sunken hut 108 in Wijster clearly shows the balk traces of cattle stalls.⁴⁰ However, ethnographic evidence of sunken buildings used as byres is far richer.⁴¹ Possibly, if archaeological research was concentrated on the sunken huts in areas where this is a common building type, some of these might be found to have been byres. This could be worthwhile in the regions where Slavonic tribes settled, where there is almost no evidence of byres hitherto. Except for the north-western area,

sunken huts are the prevailing building structures there.⁴² The wide distribution of the byre, documented by the Early Medieval laws *etc.*, makes it likely that the housing of livestock was more widely spread even earlier than archaeology could give evidence of. But on the other hand, as we will discuss below, outwintering of some or all of the livestock could also have been practised. Coverage of all byres in time and space is therefore not at all necessary.

Fitting-out of byres in three-aisled houses

The dividing walls in between the boxes
The byre can be detected most convincingly when the dividing walls of the boxes are preserved in wattle with the dung still in the stalls, but foundation trenches or even close spacing of trestles are also indicators when no further evidence exists. However, where only some dividing walls can be recognised, this could be some division in the living area, perhaps for sleeping or storage. Such walls were found on the Feddersen Wierde⁴³ and in Flögeln.⁴⁴ In the byres, most boxes on the Feddersen Wierde were used for cattle but some bigger ones were obviously used for horses.
The byre may be situated by preference in the eastern or in the central area of the houses.⁴⁵ Mostly, the dividing walls of the boxes were set at right angles to the long walls. In some areas, as on the Feddersen Wierde, almost all of these walls were bound to the trestle posts, while in Denmark and the Netherlands there were several 'free' dividing walls in between. In the three-aisled houses, the animals stood with their heads towards the long outer walls. In many areas they were turned round only in relatively recent times, standing now with their heads towards the feeding passage. We find discussions about this matter in the agrarian literature, *e.g.* in Bavarian literature from 1682 and 1783.⁴⁶ With the old method it was easier to get the dung out; the new method made foddering more comfortable, but with the disadvantage that more space was necessary between the animals in order to get out the dung. It was obviously because of this disadvantage, which meant bigger byres, that the old way survived so long. In the gulf-houses along the Dutch and North German coast, cattle stood in the old way until this century.

Dung gutters

Because cattle stood with their backs to the feeding passage, the dung gutters lined the latter on both sides. Dung gutters were found in the Pre-Roman Iron Age settlement Boomborg-Hatzum, where some were lined with timber.⁴⁷ On the Feddersen Wierde, dating to the Roman Iron Age,⁴⁸ the gutters were shallow depressions. Towards the feeding passage they were bordered by horizontal planking, which was nailed to the ground with wooden pegs. The gutters were lined with reed and opened out at the short side of the house into a gully, which was also lined with reed and timber. The leaning of the

houses, with the byre lower than the living area, made the cleaning-out of the dung easier. At other places, as on the *Wurt* at Ezinge, Prov. Groningen, the Netherlands, the dung gutters were laid out with wattle (fig. 1).⁴⁹ That such dung gutters also existed in houses on dry ground could be shown by the colorations of the wooden pegs in a Flögeln house of about AD 400.⁵⁰ In the *Wurten* of Early Medieval times, as at Hessens, Elisenhof⁵¹ and Oldorf,⁵² the dung gutters are constructed much more strongly, the gully being lined on the bottom and at both sides with timber.

Size of the stalls

According to Waterbolk, who compared the changes in the stall's width in the course of time, the mean available space for each head of cattle was highest during the Bronze Age, viz. up to 1.16 m.⁵³ This value decreased during the Pre-Roman Iron Age and Roman Age. The lowest values were found at Hodde, with 0.67 m. Where there was better grazing, as *e.g.* in the clay district, the values were somewhat higher than on the poor sandy soils. So the size of the stalls must reflect the size of the cattle. For comparison, for the far bigger Roman bovines *Columella* demands 9-10 feet and *Palladius* 8 feet,⁵⁴ values which are far higher than the prehistoric Dutch and German ones, but also more than double the highest value found in recent Friesland farms, which was 1.10 m. In an agrarian handbook of 1802, the proposal for one head of cattle is 3-4 feet in width by 7-8 feet in length. In Flögeln houses from the 1st to 5th century, the mean values were for the 1st century: 97 cm, for the 2nd/3rd centuries 93 cm, and for the 4th/5th centuries 87 cm.⁵⁵ Waterbolk explains the decline of the boxes' width with the zoologist's findings that the animals became smaller from the Bronze Age to the Early Middle Ages.⁵⁶

Sunken byres for production of manure

During the last few centuries, the sunken byre, as *e.g.* in Belgium and the Netherlands,⁵⁷ was normally used throughout the whole year. This was certainly not the case in more ancient times because, in general, keeping domestic animals under cover even in summer time was practised only for a few centuries in many areas; the development from the one to the other is clearly documented by a broad discussion in the agrarian literature of about three centuries ago. An important argument for having cattle in the byre the whole year round was that no green fodder is spoiled and thus more cattle could be fed from only small areas of grassland.⁵⁸

In the byres which were not sunken, the dung had to be brought out nearly every day, with the disadvantages that this meant a lot of 'litter' such as bedding straw, and that the dung was not ripe - it was not kneaded thoroughly by the animals' feet as in the sunken byre. Other advantages of sunken byres are that the dung could stay there for weeks, that there was more dung, and better too, because the dung fermented at lower temperatures and it did not lose the liquid and was not

lixiviated by rain.⁵⁹ The labour of taking out the manure was very heavy as it was often so hard that a pick had to be used; however, working capacity could be planned much better over time. The sunken byre had a further advantage: frost easily penetrates vernacular byres through the ground, while a sunken byre filled with dung acts as insulation against frost.⁶⁰ One severe disadvantage was that milk production suffered seriously under such insanitary circumstances.

Sunken byres were in Medieval times and until the early 20th century spread over large parts of Europe.⁶¹ They go back to the Pre-Roman Iron Age in Denmark⁶² and the Roman Iron Age in the Netherlands⁶³ and perhaps Belgium and Denmark. In Flögeln, sunken byres were found dating to the 5th/6th centuries. In the *Wurt* of Oldorf, Wangerland, Lower Saxony, a sunken byre was found in a house dating from about AD 670.⁶⁴ The dung was still 0.7 m in thickness. As at that time dung was obviously not used for manuring in the clay district but for raising the *Wurt*, this byre was built for the collection of this building material as well as to save time. In Peelo-Derkinge, Prov. of Drenthe, the Netherlands, Kooi excavated Gasselte B-type houses (nos. 68, 98, 99) dating from AD 1100-1400 with sunken areas in the side-naves.⁶⁵ These are the oldest finds of a type of sunken byre, which, known as *pot-stal*, was until recently typical of farms in many parts of the Netherlands. The finds mentioned produce evidence that sunken byres were widely known but, considering their isolated occurrence, were an exception rather than a rule.⁶⁶ There also exist buildings from the Late Neolithic/Early Bronze Age, where parts of houses were sunken. The phosphate method was not used in any of these cases, so whether the function was that of a byre or another one remains open. This is *e.g.* the case with the two-aisled Late Neolithic house under the Diverhøj, Tustrup, Djursland, Denmark. A broad area, sunk 30 cm beneath the surface, is interpreted by Asing and Boas as a possible byre.⁶⁷

In considering the sunken byre, it has to be questioned whether the depth was dug initially, whether it grew by taking out the dung together with some sand underneath or was even dug after abandonment in order to use the fertile soil. More recently, soil underneath was also taken, together with the dung, because the need for manure was immense. Not much evidence with respect to the use and littering of a sunken byre can be expected from investigating samples of its infill by pollen analysis, as the infill came to its present position after the abandonment of the sunken byre. Even the lowest layer will not necessarily give reliable results because, as said before, when the muck was taken out thoroughly some sand from the ground was picked up with it. Thus such infill will give almost the same answers as any pit in the settlement. While we know the Medieval and later names for the buildings housing sheep, goats and pigs from written records, and we can tell how these looked from Late Medieval to modern times on the basis of pictorial sources and the oldest vernacular architecture, it is mostly still quite unclear what the situa-

tion was before the High Middle Ages. Settlement excavations have provided only a few convincing results as to what types of buildings were erected for these animals. If there were structures, they could belong to the group which was erected outside of settlements. They might just as well belong to a category of lesser buildings within the settlement which have not left any imprint in the ground. From the Feddersen Wierde, Haarnagel mentions faint traces of hovels where he thinks pigs were kept.⁶⁸ The possibility of keeping not only cattle and horses but also sheep in a three-aisled house byre can be demonstrated by finds of hair and dung from these animals on the Early Medieval *Wurt* of Oldorf, Wangerland, Lower Saxony.⁶⁹

Records of pre- and protohistoric byres

Archaeology possesses some methods of tracing houses for livestock. The most convincing one is to uncover the buildings under favourable preservation circumstances with the walls and perhaps boxes and dung gutters preserved in wood and the dung still in the byre. Cautiously, such results can be used as arguments for reconstructing less well preserved buildings with a matching layout. This is true *e.g.* of the close spacing of the trestles, and also in cases like Flögeln, where there are not many traces of the dividing walls of the stalls preserved. On dry ground, phosphate analysis yields good results to map byres, provided that the correct method is applied.⁷⁰

Indirectly, manuring (see par. 2.3.1) could be used as an argument. In the literature, the size of the houses and the absence of hearths were used as an indication of a byre, but none of these is convincing. The size can be very different and there are finds of hearths in byres.

Manuring

Byre and pen as collecting places for manure can also be traced indirectly, by investigating the arable fields. Again, phosphate mapping and palaeobotanical analysis of the plough-soil can show deliberate manuring. If the byre was used, in its early stages as well as in its later ones, for the purpose of collecting manure, it should be possible to trace manuring in the fields. Scattered all over Europe, there is evidence for manuring of arable land from Neolithic times onwards. Bakels has recently compiled the sites.⁷¹ In several instances, domestic waste was used as an argument. To these finds, another recent investigation can be added from Bronze Age fieldsystems at Bjerre Enge, Hantsholm, Thy, Denmark.⁷² The oldest Neolithic evidence, in connection with cattle-byres, is known from the above-mentioned Swiss settlements.⁷³ At Thayngen-Weier, Troels-Smith showed manuring with dung on evidence of pupae of the house fly.⁷⁴ In more recent times, dung and household waste from the settlement can be proved in the prehistoric field soils by high phosphate values, as in the Pre-Roman Iron Age Celtic fields of Flögeln.⁷⁵ The domestic waste brought small potsherds out onto the fields. They help to date the agricultural activity. While mapping surface finds

during fieldwalking, this indicator for manuring has to be distinguished from other kinds of findscatter. This household waste can be traced back to Neolithic times according to the different references by Bakels.⁷⁶ Such finds have, as far as we know, never been tested with the aid of phosphate mapping. The oldest finds, until now, of *plaggen* soils go back to the Pre-Roman Iron Age. Here the dung was mixed with soil. Thus manuring meant accumulating an arable ground for deep rooting. This is true for the Celtic fields, also supported by higher phosphate values,⁷⁷ and for the Medieval *plaggen* soils.⁷⁸ It is not certain, but likely, that the practice, known from the area south of the North Sea from recent centuries, of using turfs (German *Plaggen*) as litter in the byres was from the very beginning the way in which dung and soil were mixed.

There exists ethnographic as well as archaeological evidence for fencing off fallow fields. Thus the animals manured directly and could eat what had been left after harvest. Harsema, for example, did find such fences in the Celtic fields of Hijken, Drenthe, the Netherlands.⁷⁹

The importance of manuring and thus of the byre was different according to the quality of the soil. In the area south of the North Sea, dung has been indispensable for manuring the poor sandy soils at least since the Pre-Roman Iron Age, while in the fertile clay district the dung could be used for other purposes such as for burning as well as suitable material for building up the *Wurt*, but this could equally have been done with the less effective clay.

The housing of domestic animals in England and on the continent as reflected in settlement archaeology

Settlement archaeology in England has brought to light a greater number of buildings of the earlier and later Anglo-Saxon Period.⁸⁰ From the Early Saxon Period onwards, we can follow house and farm to High Medieval times⁸¹ and further to the vernacular architecture of recent centuries.⁸²

The typical Anglo-Saxon house has a rectangular groundplan with no roof-bearing posts inside the building - one exception being an aisled house at Brandon⁸³ - but wallposts set in an alignment, whether or not in a walltrench. Interior division can be found in the form of the dividing walls of only a small room at one end. Arguing about the functions of such a rectangular plan itself does not provide much evidence;⁸⁴ there are no stall divisions and the situation of hearths is seldom known. This is due to the depth; the house foundations have been uncovered beneath the original surface at the time of settlement. Owing to the latter, it is also the case that surface finds, which could also be used for functional analysis, cannot be recovered.

Only in the Middle Saxon (about AD 650-900) settlement at Staunch Meadow, Brandon,⁸⁵ is one building interpreted as a byre. It is aisled, with a size of 12.3 by 6.7 m. According to the excavators, a series of shallow pits suggest stalling and

perhaps also 'the support of an upper floor'. Whether there really was a byre remains open. That the building is aisled is no argument since, as discussed above, one-aisled structures can be byres as well.

Thus convincing proof by archaeology of a byre in Anglo-Saxon times was, as far as we could detect, not possible.

The main functions detected on farms in the areas bordering the North Sea in the south and east are living and the housing of livestock in the main building, storage facilities in granaries, and worksheds in sunken huts.⁸⁶ An average English farm consisted of a house and one or more sunken huts.

Granaries, which are so very familiar in the Continental Dutch, Northern German and Danish settlements, have seldom been known up to now in Anglo-Saxon England, though four-post buildings were widespread in earlier times. Those granaries, which have been published from Catholme in England,⁸⁷ are, according to the kind communication from Gavin Kinsley, Trent & Peak Archaeological Trust, Nottingham, of quite young age. Highly comparable with Continental granaries and obviously of Anglo-Saxon date is a nine-post grating at Orton Hall Farm.⁸⁸ The second probable granary known to be of Anglo-Saxon age, the nine-post grating at Bonhunt Farm, Wicken Bonhunt,⁸⁹ is in comparison with the Continental ones of considerable size. It clearly belongs to the settlement.

Comparison of the capacity to store agrarian and other goods has not been possible up to now. Certainly on Continental farms there are far more structures, which can be detected by archaeology as being for storage. In Flögeln these were the lofts in the long-houses, as we propose for houses from the later Roman Iron Age and later, the granaries, post-gratings, lying parallel to the fences, storage pits and perhaps some of the sunken huts.⁹⁰ The storage space of Anglo-Saxon farms has not really been detectable hitherto. The main house's loft could have been used for this purpose too. When we consider that the sunken huts outnumber by far the surface-level houses and compare this with the ratio on the Continent, which is on average normally 1:2, we have to take into account the fact that some of those in England could have been used for storage.⁹¹ The practice of stacking crops and hay was widespread in Europe. Because stacking in England with the traditional straw-cap was widely distributed in more recent times,⁹² this could also have been a major storage facility in earlier times in the mild climate of Anglo-Saxon England. If not, the more advanced method, building a helm, was practised; a mere stack leaves no trace, or those with a central pole leave only one posthole, which is also archaeologically undetectable.

We went into this matter more deeply to weaken the argument that the absence of granaries could mean there was no need to supply winter provision of fodder for cattle and thus would be an argument for the non-existence of byres.

Furthermore, even when there was no housing of livestock, some provisions for harsh winters had always to be collected and stored.

Comparing the farms on either side of the North Sea leads to the impression that the Anglo-Saxon surface-level houses would have been used for living and working; the ratio in comparison with the sunken huts would be even bigger if parts of the houses were byres. As we did above for Slavonic sunken huts, it should, however, be taken into consideration that some of these could have been byres. Because, nevertheless, the Anglo-Saxon structures do not, according to the present state of knowledge, provide arguments for or against byres, we will argue from a different viewpoint. We will try to follow the history of cattle with respect to where they were held during the 2nd millennium AD, which indeed allows conclusions to be drawn.

The difference between the words stable and byre illustrates the difference in building in Britain and on the Continent, where the bigger domestic animals were held in their own compartments, but together in the same building.⁹³ This difference also shows that there was a break, that husbandry in England followed a tradition other than the Continental one.

Comparing Anglo-Saxon and Continental houses

We think we have shown earlier that there is a direct route from the Continental to Anglo-Saxon long-houses.⁹⁴ Comparison of three-aisled buildings in the region from the Netherlands to Scandinavia and from the Bronze Age to Early Medieval times revealed that the layout followed a principle which regulated the spacing of the trestles by varying the length and sequence of these sections. Proof of this is provided by fully and partly congruent houseplans. We conclude from this phenomenon very close cultural contacts and that the houses were built by carpenters who were bound to traditional rules. As no trestles occur in the Anglo-Saxon houses, comparison is more difficult. But as it could be shown during evaluation that other items too, such as the whole length, situation of entrances and partition walls, match in this congruency as well, these can be used for correlation. The plates in Zimmermann 1988 (*Abb.* 6, 7), in Hamerow in this volume figs. 1 and 2, and our fig. 2 show how well Anglo-Saxon and Continental houses match. The difference at first sight, namely that most Continental houses are three-aisled while almost all in England are one-aisled is no contradiction. During the later Roman Iron Age and the Migration Period on the Continent house evolution proceeds from three- to one-aisled, the inner posts moving into the long walls. The innovation first begins in the west, in the Netherlands, and can be followed with some delay via Northern Germany to Denmark, Sweden and Norway. The first stages of this improvement, making the room free of inner posts, were first observed in Wijster. Wim van Es, whose work we are celebrating, was the first to observe and describe this innovation.⁹⁵ The Anglo-Saxon houses of the 5th and 6th centuries have anticipated this achievement. However, comparisons have not been made for all buildings and it remains uncertain whether a convincing picture will arise for all English houses. Hamerow in her

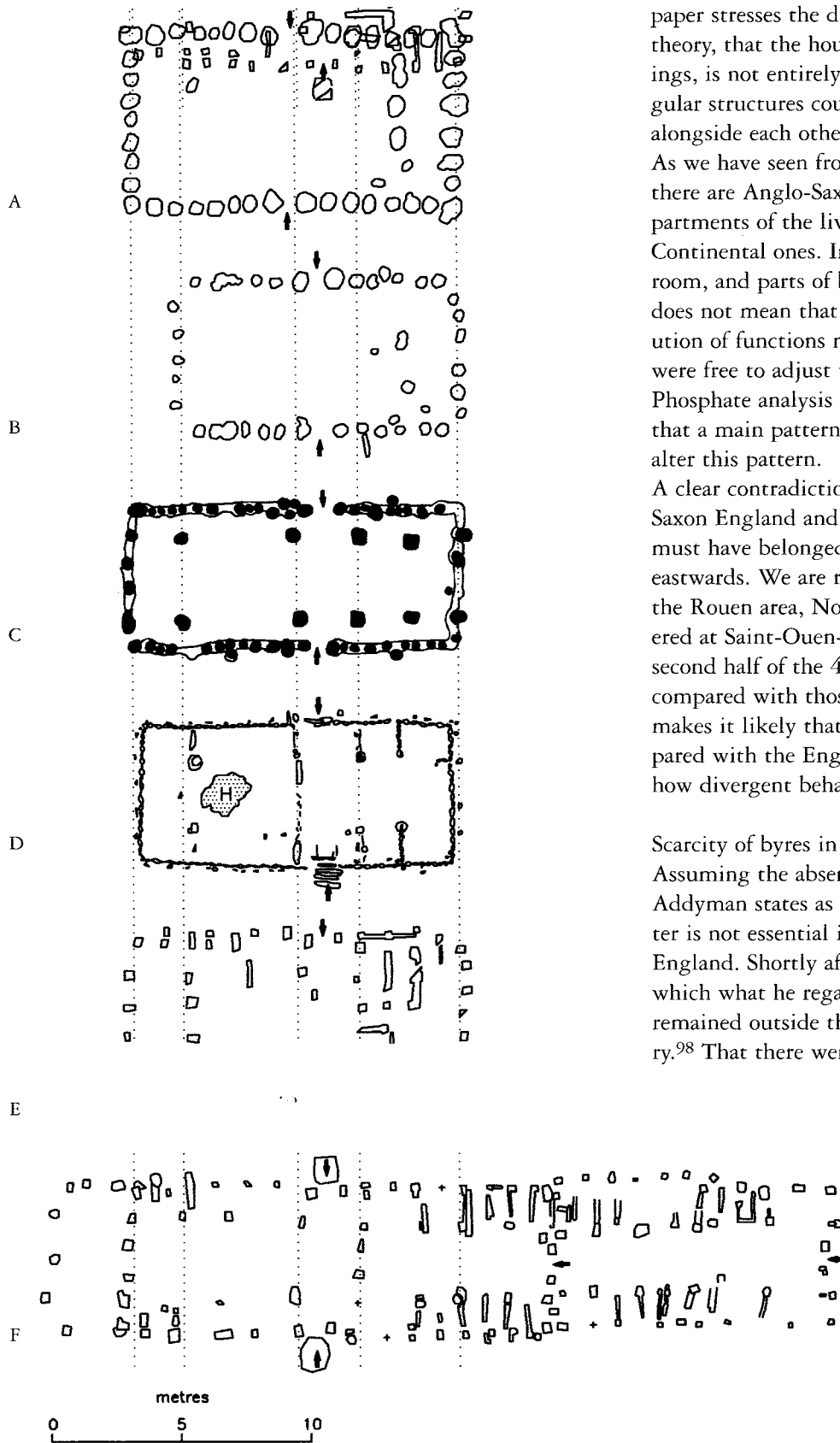


Figure 2 Congruent houseplans: A Mucking, Essex, house 1; B Mucking, Essex, house 2; C Flögeln-Eekhöltjen, house 59; D Feddersen Wierde, house 30; E Wijster, house LI; F Wijster, house LVII.

paper stresses the diversity of these groundplans. So the other theory, that the house could derive from Celto-Roman buildings, is not entirely contradicted. Several traditions of rectangular structures could have been brought together or used alongside each other.

As we have seen from those houses which we could compare, there are Anglo-Saxon buildings which correspond to compartments of the living area and/or to the central part of the Continental ones. In the latter case these are the entrance room, and parts of both the living quarters and the byre. This does not mean that beyond the actual ground plan the distribution of functions must also have been copied. Here people were free to adjust the interior pattern to their requirements. Phosphate analysis of many long-houses on Flögeln has shown that a main pattern existed,⁹⁶ but that people were free to alter this pattern.

A clear contradiction is seen in the one-aisled houses of Anglo-Saxon England and, further south, three-aisled houses which must have belonged to Germanic people from much further eastwards. We are referring to the spectacular housefinds in the Rouen area, Northern France. Paul Van Ossel has uncovered at Saint-Ouen-du-Breuil three-aisled houses dating to the second half of the 4th century AD,⁹⁷ which can be very well compared with those south of the North Sea. The spacing makes it likely that they contained byres. The difference compared with the English houses is striking. This exemplifies how divergent behaviour of settlers can be.

Scarcity of byres in Anglo-Saxon England?

Assuming the absence of byres in the West Stow houses, P.V. Addyman states as early as 1972 that provision of winter shelter is not essential in the southern and eastern parts of England. Shortly after this, G. Beresford gives the date until which what he regarded as the small number of cattle remained outside the whole year round as the mid-14th century.⁹⁸ That there were no or at least seldom byres in Anglo-

Saxon times is repeated in the more recent publications, such as the article by H. Hamerow in this volume. But uncertainty seems to persist. Thus K. Wade declares about the functions of the buildings in Wicken Bonhunt:⁹⁹ 'Some of the buildings were undoubtedly workshops, barns, and byres,' but he modifies the latter by referring to Addyman, as cited above. Wade is referred to by Crabtree¹⁰⁰ as stating that some of the buildings 'appear to have served as...byres'. This uncertainty is substantiated as the groundplans, taken alone, remain silent about what the buildings were used for. Certainly, phosphate analysis would help further, and not only to solve the byre question. There have been demands in Britain to use this method to detect whether a building was used for housing livestock,¹⁰¹ in the first instance in Roman aisled buildings, but as far as we see phosphate analysis has only been used on a larger scale, to find the settlements themselves, not at a more intimate level, to reconstruct the spatial distribution of functions in and around the houses. This means that all well preserved Anglo-Saxon houses, not overlying each other, which have already been excavated, are lost opportunities. We can only encourage its use in future excavations (or perhaps at the old spots, if the site is not destroyed). A mapping should not only cover the house but the further surroundings as well, and a method should be used which detects almost all phosphates contained in the samples.¹⁰² In Flögel, we tried to show advantages and limitations of this method.¹⁰³ In personal argument, the lack of aisled buildings is used as evidence that there could not have been byres. Though we do not want to contradict the latter but will underline this with other arguments, one-aisled buildings were common in the Anglo-Saxon homeland in later Saxon times; they were also used as byres.¹⁰⁴ Evidence of manuring the ancient fields, as well the results of phosphate mapping, can indirectly indicate an economy where dung was collected in byre and dungyard.

Archaeozoologists such as P. J. Crabtree and G. Done have made judgements from the bones about the different domestic animals kept and their use.¹⁰⁵ Perhaps the special case of West Stow, where most domestic animals were sheep, was overgeneralised. Depending on different factors like soils, moist or dry areas, the composition of livestock in terms of the different domestic animals may have differed in England as on the Continent.

The bones alone offer no evidence about where the livestock was held. The small size of the animals, which can be reconstructed from the bones, is certainly a result of meagre fodder supplies. Better fodder would before long result in growth. But bad or good diet is not dependant on whether or not animals were kept in a byre. So, using the results which both archaeology and archaeozoology have presented up to now, it cannot be proved whether there were byres or not. Therefore phosphate mapping is urgently needed.

Comparing the results of archaeological proof of byres in Britain and in the zone from the Netherlands to Scandinavia one could object that further south on the Continent there

have been but seldomly found byres as well. However the support by documentary evidence is different. It implies for England, as we could show with different sources, for a long lasting outwintering tradition. On the other side the laws dating to the second half of the first millennium AD give early evidence of byres on the Continent.

Cattle and horses kept outside in the winter

For many central and northern European archaeologists there is no question that in their working areas during the last millennia cattle could only be kept in byres in winter. This cannot any longer be stated so exclusively. In another paper we discuss where cattle could be held in winter and we summarise the motives of early man when he introduced the byre.¹⁰⁶ Of the eight purposes we enumerate, the climate is only one and its significance is more a question of production of biomass and of duration of snowcover than of the direct temperature influences on the livestock. Therefore the shift from the byre house on the Continent to doing without byres or having far fewer byres in England can be explained by the fact that production of biomass during wintertime in the south of England was greater than on the Continent. Let us cite two quotations in this connection: first a historic voice from Early Medieval times should be heard. Bede Venerabilis,¹⁰⁷ who lived from 673 to 735, in his *Historia ecclesiastica gentis Anglorum*, I, part 1 praises Britain for its climate and surplus (see this paper's epigraph), but this is even better in the case of Ireland: 'Ireland surpasses Britain in the latitude of its location and its healthful and mild climate, so that snow rarely stays for more than three days. Because of the moderate winters nobody is haymaking or builds byres for his cattle.' This description is certainly not only a literary exaggeration but also gives some important hints. We can deduce from it that Bede obviously knew byres from England. Furthermore, he uses the same arguments as we do here in this paper, combining the significance of more biomass as an advantage of the Irish climate with not having to gather winter fodder and not needing byres.

Another important text on cattle holding, this time in the south of England, we owe to the well known Finnish botanist Per Kalm.¹⁰⁸ He wrote in 1748 under the title 'What advantages an English farmer has over a Swedish one': 'It is well known that the winters in England can in no way be compared with our Swedish ones. I here refer especially to the southern parts and around London, for farther north in England also, they are sharper. The snow seldom lies more than two or three days on the ground. Cows, horses, sheep and other animals here go out the whole winter, and feed on the grass which stands green and flourishing the whole year through. There is no month in the year in which they cannot plough and sow the fields. November, December, January, February and March are seldom so cold that any frost could prevent them from tilling the ground....' Kalm, a pupil of Linné, is known as an important scientist and as a very atten-

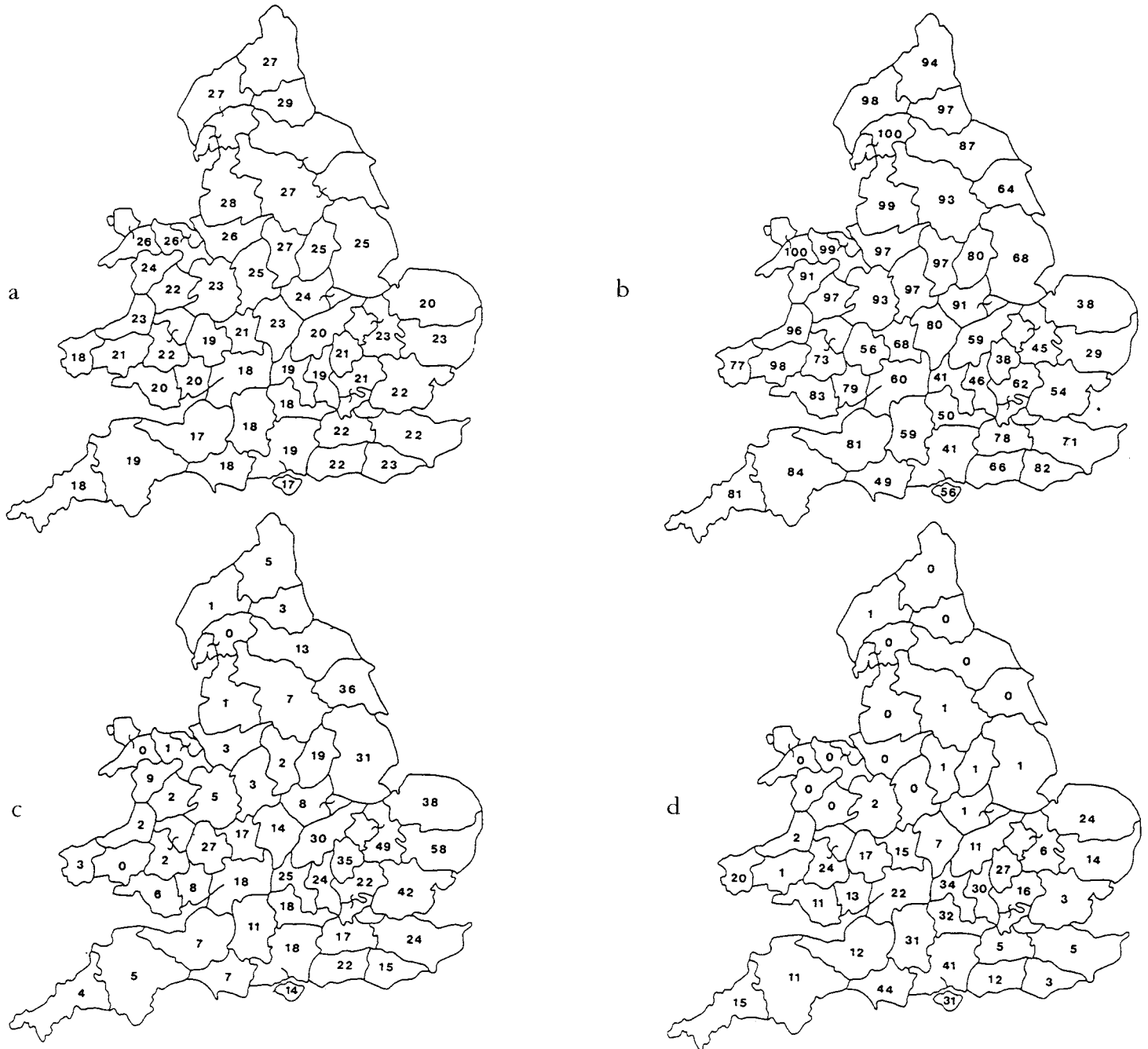
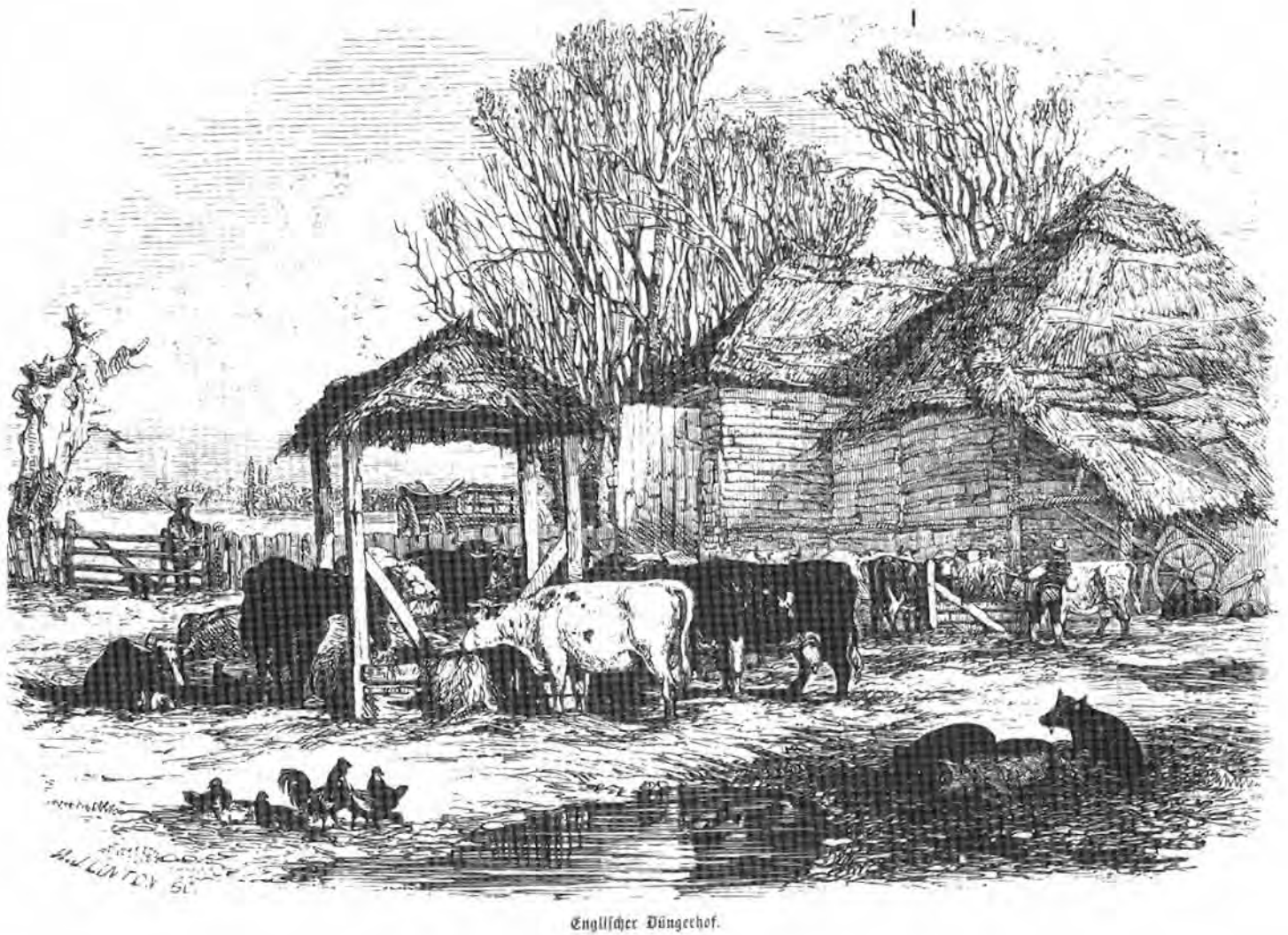


Figure 3 Cattle in byres, yards or outwintered in the counties of England and Wales, after the National Milk Records (from Grundy 1970). Legend: a) duration of winter housing 1954-1957 (in weeks); b) herds housed in cowsheds Febr.-Mar. 1956 (in %); c) herds housed in yards, Febr.-Mar. 1956 (in %); d) herds lying out day and night, Febr.-Mar. 1956 (in %); in part valid for adjacent county too.

tive observer, so these observations can be taken very seriously. The difference between the Continent and Scandinavia on the one hand and the British Isles and the area south of the Channel on the other is also often dealt with in agricultural publications. According to Könekamp the conditions for cattle- and horsefarming in the south of England, Yorkshire, Ireland and Normandy are less burdensome because even in winter grassland is almost uninterruptedly green.¹⁰⁹ As it was an improvement, the Anglo-Saxon farmers certainly adapted easily to the needs of the new situation in England. We may even state that this advantage was one of several

incentives for people to migrate.

How traditional farmers can adapt to divergent natural conditions is illustrated by the divergent solutions farmers found in the different districts of England, as described below. Per Kalm¹¹⁰ gives good examples of the varied behaviour of new settlers, in this case in America in 1749. While the English practised their traditional custom from their homeland of not having a byre, the Swedish and Finnish people, after first having built housing for domestic animals, learned from the English that they could do without, and only horses were kept inside. On the other hand, the Germans built cowsheds



Englischer Düngehof.

Figure 4 'English Dungyard' (from Hamm 1872, 173).

throughout, as they were used to. That cattle sometimes froze to death, when frost followed rain, was one disadvantage of outwintering for Swedes and Finns. An even greater disadvantage was the consequence for the fields. To put it in Kalm's words:¹¹¹ 'Manure is very difficult to obtain and therefore people rather leave the fields uncultivated. In that interval it is covered with all sorts of plants...and a fallow or never plowed piece of ground is cultivated. The cattle here are neither housed in winter nor tended in the fields, and for this reason they cannot gather a sufficient quantity of dung.' A further handicap is: 'the cattle degenerate here and gradually become smaller. The cows, horses, sheep and hogs are all larger in England... The climate, the soil and the food together contribute towards producing this change.'

How closely climate, soil and the different methods of holding cattle are connected is shown by Grundy.¹¹² As this important publication is not easily accessible to Continental scholars, we depict his maps here in our fig. 3. Grundy evaluated the English and Welsh data for 1954 to 1957 which the Milk

Marketing Board collected about dairy cows which were members of the National Milk Records, *i.e.* 29% of the national dairy herd. But the values given here can be generalised as being valid for a longer period because the differences shown are reflected by the very local vernacular architecture. As the data does not cover several centuries we cannot, however, accept it.

It shows that dung yards as described below still existed in the 1950s, but that the situation was very different depending on the soil and how moist or dry the climate is in the particular area. In four maps, Grundy gives the following figures: the duration of winter housing ranges from 17 weeks in the south to 29 in the north. This means up to 50% more fodder to be stored. A more east-west division is illustrated by where herds were housed. While cowsheds are favoured in the north and west, moist pastoral regions where straw is scarce, open yards were concentrated in the eastern arable counties, arable areas with abundant straw and low rainfall. A situation which perhaps comes closest to that of Anglo-Saxon times is presented

by the map of herds lying out day and night in February and March 1956. While in the north there were almost none, in the south this was true of up to 44%.

The crew yard

According to G. Beresford, who presents examples from Barton Blount and Goltho, the crew yard was probably developed in the second half of the 14th century.¹¹³ As the phenomenon is widespread, in early Danish law texts the word *fægarth* (cattle-yard) is found for a fenced yard,¹¹⁴ and the *Barg-Hof*¹¹⁵ in the Hamburg Region is a yard with a helm, the crew yard for cattle could be a far older phenomenon, but at the time in question it began to be spread more widely. Even in Roman times, yards at the farm for cattle were widespread, as witnessed by the words *cohors* and *cors*.¹¹⁶ Such a yard, at 6 by 10 metres rather small, lay adjacent to the byre in the *villa* of 'Gewährhau', Nordrhein-Westfalen.¹¹⁷ Palladius, the author of an agricultural calendar, who probably lived during the first half of the 5th century AD, describes such a yard with a weather-roof against the heat.¹¹⁸ Perhaps the pen-like areas which have been uncovered during several settlement excavations, as in Flögeln, had the same purpose, but the interpretation is not certain in all cases. The weather-roof or a simple shielding is found in the crew yard until recently.¹¹⁹

New cropping discoveries and new methods gave cattle breeding new stimulus during the 18th century.¹²⁰ Not as many domestic animals as earlier had to be butchered in autumn as they could be kept over winter. So the cattle in the crew yards and sheep in folds produced more manure and so promoted arable farming even more.

We understand from the different records, that until the end of the Medieval Period cattle were 'outwintered' in most parts of England. Small numbers of cattle are still outwintered today. While cattle remained in the fields and forests during Medieval times, specialisation took place in pastoral farming at the end of this period. Cattle then stayed in the so-called 'crew yards'. The different distribution patterns of long-houses for both people and animals on the one hand and the 'crew yards' on the other depend on climatic conditions and on the availability of bedding straw.

Hamm¹²¹ describes the 19th century situation, together with a depiction of a 'dung yard' (fig. 4): 'In England the cattle are often left outside, even at times when they are not at grass. The byres are only prepared to give sufficient shelter in very bad weather. The cattle are held depending on the circumstances together or in divisions the whole day in the yard, where they are also fed. This yard is well supplied with straw, in order not to lose any dung. The underlying soil is dug away annually and replaced by fresh. A dung yard like this will not fail to improve the appearance of an English farm.' From Gloucestershire, Peters reports that the lack of surviving cow-houses and stables earlier than late 17th century is not a question of decay or replacement.¹²² Even writers in the 18th and

19th centuries complain about the scarcity of housing for livestock. The animals were at that time mostly overwintered and milked in the field, even where farmers had specialized in dairy products. While in Wales the stable could be traced further back in time, the byre was introduced quite recently. According to Wiliam,¹²³ in north-east Wales it was only during the 19th century that all cattle began to be housed. During a visit in 1794 on behalf of the 'Board of Agriculture', G. Kay noted of Denbighshire that even the newer farms were 'still deficient in room to contain all the cattle, which is undoubtedly necessary for producing a greater quantity of dung'.

We could go on with more examples of the dung yard as well as of outwintering on grass outside the settlements. Livestock was not only outwintered in England and Ireland. It seems that there has been a practice of holding livestock apart by keeping them in byre and yard, and of outwintering them both in a domestic and in a feral state. For instance feral horse herds, which were rounded up annually for the provision of hardy all-round horses, were common in most parts of Europe until the 18th century and in some cases until today, like the feral horse herds in moors and forests in Britain. This practice can be traced back in Europe to quite early times. In the Domesday Book (1086) several references may be found to *equae silvaticae* and *equae indomitae*, meaning feral horse herds.¹²⁴ Except of feral horses there were and to a lesser degree still are feral cattle and goats in Britain.¹²⁵ We can note that, even in areas with Continental and thus very cold winters with long snow cover, some animals could still be outwintered with advantages to their health. As long as there is sufficient fodder animals can stand severe cold. Könekamp summarises this as:¹²⁶ *Satte Tiere frieren nicht, i.e. 'Satisfied animals do not freeze'*. We discuss the question of outwintering domestic and feral livestock more thoroughly in another paper.¹²⁷ In this we treat not only the past but also the present, namely the recent development in modern cattle holding of outwintering part of the livestock.

The byre in Medieval England, state of knowledge

Livestock management flourished in Medieval England. One example among many is given by Henry of Huntingdon, writing in 1155 of an important trade between England and Germany, exports from England including cattle and wool.¹²⁸ This is one of the earliest dates available for the export of cattle, which culminates some centuries later in a network of important trade routes stretching all over Europe.¹²⁹ Many excavations have uncovered the remains of Medieval settlements. Much new knowledge is owed especially to the 'Deserted Medieval Village Research Group'. The main building, commonly known as a long-house, is in several instances described as containing living accommodation and a byre.¹³⁰ While living accommodation is detected by a central fireplace,

often the 'byre' is arguable. For instance, Jope and Threlfall say of the 13th century main building of the farm of Beere, North Tawton, Devon,¹³¹ that 'The space to the E. of the cross-passage seems to have been a byre', and they use as argument 'an irregular greyish clayey deposit...the result of constant trampling by animals'. Field just speaks unreservedly of a byre.¹³² The byre in the Riseholm house, near Lincoln, also mentioned by Field: 'there were signs that the smaller room was used as a byre', must be questioned as well. Also important is Field's note, referring to Barley,¹³³ that in houses like Wharram Percy it is just as likely that families lived together or that living quarters and byre were under one roof. Morris has put together a catalogue of byre finds,¹³⁴ many of which are arguable. As for the Anglo-Saxon houses, there is a need for new research to collect convincing arguments.

We owe more evidence on the probable existence of byres to the study of written records in which byres are mentioned. For example, it is stated that there were byres in a written record of 1340 from a court held at Hallow, namely 'the oxen of the pittancer should have their stall (*stalla*) in the long-house (*longa domus*)'.¹³⁵ Morris again cites more examples of early written evidence.¹³⁶

Conclusions

Summing up the scarce evidence of byres, the different references mentioned above make it likely that until Medieval times byres were only sparsely distributed in England, and even in Medieval times, when livestock management was flourishing, their numbers seem to have increased only slowly. The time-consuming work of gathering the necessary winter fodder formed a large part of the whole year's work on a farm in Central and Northern Europe. Often until recently people did not even have the means to collect enough fodder. There are many chronicles which tell that in spite of all efforts winter fodder was often so scarce that cattle had to be carried out to grass half starving. In Southern and Northern Germany, the expression *Schwanzvieh* (= tail-cattle) was used for such weak animals, which had to be pulled up by their tails and often had to be driven to grass.¹³⁷ The same story is told in almost all European areas. To take just one reference, Myrdal gives various examples from Swedish historical sources of how weak cattle were after winter.¹³⁸

Taking this into account, it becomes clear that the advantage of getting rid of this burden in a region with a better climate must have been an important stimulus to go to such a region. Even more so, the soils were on average better as well. This meant that collecting manure, one of the main purposes of byre and yard, was less important. Therefore both more biomass and less need for dung resulted in less building of housing for domestic animals.

These advantages allowed farmers to have more cattle, as the amount of winter fodder and the size of the byre did not

restrict the number. This important economic but also social factor, namely more cattle and better soils, was certainly one of several arguments in favour of migration. So the existence or non-existence of the byre helps us understand the migration of the Anglo-Saxons, and why some centuries later the Norman people settled in the British Isles and Normandy rather than on the Continent south of the North Sea.

Acknowledgements

I have to thank H. Kaiser, Cloppenburg, for valuable information.

Notes

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3. Manley 1970, 81.
4. Manley 1970 together with the other chapters in Wallén 1970.
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8. Van Giffen 1936.
9. Hamerow 1994 and in this volume.
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16. Rasmussen 1990, 77.
17. Nielsen 1999.
18. Kimmig 1992.
19. See *e.g.* the papers in Fokkens & Roymans 1991; Waterbolk 1975; Harsema 1997; Assendorp 1997.
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21. Ethelberg in prep.
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24. Strahl 1998.
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29. Zimmermann 1992.
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46. Haushofer 1975, 14.
47. Haarnagel 1969, 78; 1984.
48. Haarnagel 1979, 115.
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57. Slicher van Bath 1960.
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60. This and the following information we owe to H. Kaiser, Cloppenburg.
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63. Huits, 1992, 195; Buurman 1992; Verwers 1998, 56, 75-6.
64. Schmid 1994, 244.
65. Kooi 1995, 188-91.
66. Zimmermann 1992a, 150-1.
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69. Schmid 1994.
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77. Zimmermann 1995, 303-4.
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87. Losco-Bradley 1977; Losco-Bradley & Wheeler 1984, 109.
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90. Zimmermann 1992a.
91. Zimmermann 1992a, 215-6.
92. Zimmermann 1992b.
93. Zimmermann 1999.
94. Zimmermann 1988, 472; see also Hamerow in this volume.
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105. Crabtree 1996 and Done in: Hamerow 1993, 74-9.
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127. Zimmermann 1999.
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