

# HOT ROCKS! BEER BREWING ON VIKING AND MEDIEVAL AGE FARMS IN TRØNDELAG

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## ABSTRACT

Cultural layers associated with farmsteads in Norway have received relatively little attention from archaeologists. This article describes test excavations at two sites in Trøndelag, Sparbu and Hitra. The aim of these surveys was to determine how common such layers are and to which period they date. The cultural layers were dominated by fire-cracked stones, so-called “brewing stones”. Furthermore, the article discusses whether these stones are actually related to brewing of beer and whether or not the brewing of beer was tied to larger social institutions.

*“Seductive... as warming as a log fire, as inviting as a cozy hearth; the perfect bedtime beer”—Michael Jacksons description of German “steinbier” in the television-series “Beer Hunter”.*

## INTRODUCTION

Norwegian settlement archaeology has traditionally been concerned with settlement from the Bronze- and Early Iron Age. One of the reasons for this is the relatively sparse settlement evidence from the Late Iron Age and Medieval period. It has been suggested that the reasons for the lack of finds is a change in building techniques or that the remnants of these settlements are actually beneath modern farmsteads (Martens 2009). The change from houses built with posts dug into the subsoil to cross-timbered houses appears to have occurred gradually from the beginning of the 10<sup>th</sup> century (Sørheim 2003; Weber 2003) and thus does not explain the relative lack of settlements

from the middle of the 6<sup>th</sup> century. It seems more reasonable that Late Iron Age and Medieval settlements had the same location as the modern farm.

The modern farm has traditionally been the subject for historians, and what we do know comes from historical sources. The farm between c. AD 600 to 1850 will, in this article, be labelled “the historical farm”. Most historical farms have a history which goes back at least to medieval times and from evidence in the sagas, written down in the 12<sup>th</sup>–13<sup>th</sup> century, we can be fairly certain that many of these farms have a history stretching back into the Viking Age. What is more uncertain is how old the historical farm is. A key to understanding the history of the

historical farm is archaeological research on cultural layers from the farmstead. Many of the farms in Trøndelag have cultural deposits from the farmstead with huge amounts of fire-cracked stones. These stones are called “bryggstein” (literally “brewing stones”) and are usually dated to between AD 600 and AD 1600. These deposits have, to a small degree, been the subject of research, but we know fairly little about them. It is these cultural deposits which are the main focus of this article. How common are they and can they be found on every farm with a history back to the Medieval Period? To answer this, several small test pits have been excavated at various farms in two areas of Trøndelag. The second objective of this article is to discuss the use of this large volume of fire-cracked stones. What were they used for and why the so many?

### “BREWING STONES”

Burnt or fire-cracked stones are common finds in archaeological contexts the world over. In Scandinavia they are primarily associated with cooking pits, which generally date to the Bronze Age or Early Iron Age (BC 1500–AD 550) (Gustafson 2005; Narmo 1996). “Brewing stone layers”, in this context, are defined as cultural layers on the modern farms, or on the site of farms which preceded the historical farm, in which fire-cracked stones are found in a high frequency.

The little we know about “brewing stones” comes from a description by the pioneering Norwegian sociologist Eilert Sundt, and was recorded during his trip to Hedmark in 1861. He noted that mounds of fire-cracked stones could be found on each farmstead. Upon asking about these, he was told that they were “brewing stones”, stones used for cooking in the old days, before iron pots became more readily available. It was further explained to him that many farmers levelled the mounds, or spread the stones out on the ground, and at many farms the layers were so

compact with stones that they could be used as foundations for new buildings (Sundt 1865).

Even though the relevance of these layers were understood by Sundt already in the 1860s, they have received little attention from modern archaeologists. Oddmund Farbregd (1985) conducted test trenching at the Egge farmstead in Steinkjer and found a cultural layer over a meter thick with a large amount of fire-cracked stones. A radiocarbon date from the bottom of the layer returned a result of AD 403–715 (uncal. 1460 ±90, T-06348). Dagfinn Skre was the first to use layers with brewing stones to identify farmsteads associated with church grounds (Skre 1988: 16f). In the same article, he addressed the presence of layers with large numbers of brewing stones found in medieval urban contexts. Birgitta Berglund investigated historical farms with large amounts of fire-cracked stones at Viklem, Ørlandet and Viggja, Skaun (Berglund 1997; 2003). Lars Pilø recorded fire-cracked stones in ploughed fields while field walking (Pilø 2005: 181). All layers dated by Pilø fell in the range 600 AD – 16th century (2005: 138). Kathrine Stene carried out research on the yard at Fusk farm, Askim, where large numbers of fire-cracked stones were recovered (Stene 2009). At Torgårdsletta, outside Trondheim, a series of excavations were undertaken in fields surrounding the modern day farms. Post-holes and cooking pits were found over a wide area. The dating of these settlement sites range from the mid-Bronze Age to the end of the Early Iron Age. One gets the impression that settlement ended after the 6<sup>th</sup> century. Smaller test excavations on the existing historical farms showed cultural layers with large amounts of fire-cracked stones on the farmsteads and that these layers started accumulating during the 600s (Grønnesby 2013; 2015). In 2013, a farmstead at Ranheim, outside Trondheim, was excavated. The farm once belonged to the abandoned Vik estate. Cultural layers that included large amounts of fire-cracked stones were



**Figure 1.** Mounds of fire cracked stones, or “brewing stones”, on Ranheim, Trondheim (Photo: Geir Grønnesby, NTNU University Museum).

identified here (Fig. 1). The farm settlement began in the 7<sup>th</sup> century and the accumulation of fire-cracked stones appears to have started somewhat later (Grønnesby and Heen-Pettersen 2015).

All of these studies have provided datings in the range AD 600–1600. Even though there are cooking pits from the Late Iron Age, the vast majority date to before AD 600 (Gustafson 2005; Narmo 1996). The close connection between large amounts of fire-cracked stone and the historical farms suggests that the transition to the use of stones to heat liquid in the cooking process should be seen as an expression of a change in settlement structure (Grønnesby and Heen-Pettersen 2015).

Although cultural layers with fire-cracked stones seem to be commonly associated with historical farms, there is little systematic data concerning them. With the exception of Pilø’s (2005) work in Hedmark, and the smaller studies at Torgårdsletta (Grønnesby 2013; 2015), there has been no systematic recording of cultural layers on farmsteads. If it turns out that these layers are common on farms with a known history back to medieval times, it may confirm that major changes in population structure occurred during the transition to the Late Iron Age. They would then also be a very important source of knowledge about society in the Late Iron Age and Medieval Period.

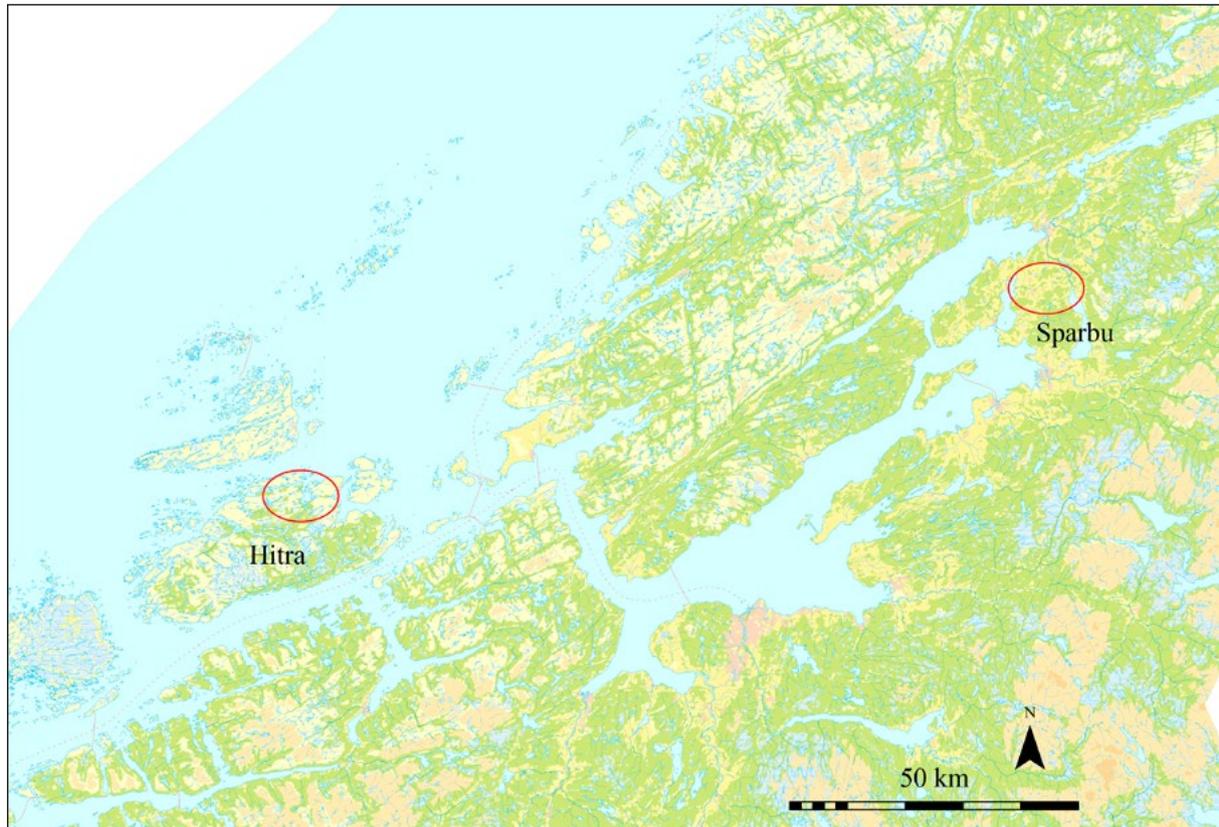


Figure 2. Map showing the two survey areas.

### THE SURVEY

Two locations in Trøndelag were chosen to investigate whether these layers actually are a common feature of historical farms. Sparbu, Steinkjer, Nord-Trøndelag is taken to be an example of a typical agricultural area, and one rich in Iron Age grave finds. The second location, the northern section of Hitra, South Trøndelag, has been chosen as an example of a coastal environment where the exploitation of marine resources took precedence over arable farming (Fig. 2).

Test trenches measuring ca. 50 × 50 cm were dug by hand at various farmsteads in both of these areas;

their locations on each farm were selected based on visual analysis of the topography and in consultation with the land owner and other locals. The main purpose was to identify the presence or absence of these layers rather than to define their extent, as well as to recover material for radiocarbon dating.

To the extent that it was possible, the trenches were dug down to the sterile underground. Investigations at each farm area ceased as soon as the layers were identified. It may be, therefore, that the nature of the layer on a given farm, in terms of its extent and thickness, differs somewhat from the impression given by the test trenching. If there was no prior

information about the moving of the farmstead, the excavations were undertaken on the existing farm, around the houses and preferably on the lawn. In situations where no finds were made on existing farmsteads, other locations in the immediate area with strong potential for positive results were investigated. It is not uncommon that earlier farmsteads are today ploughed fields, making it difficult to identify substantial remains of cultural layers.

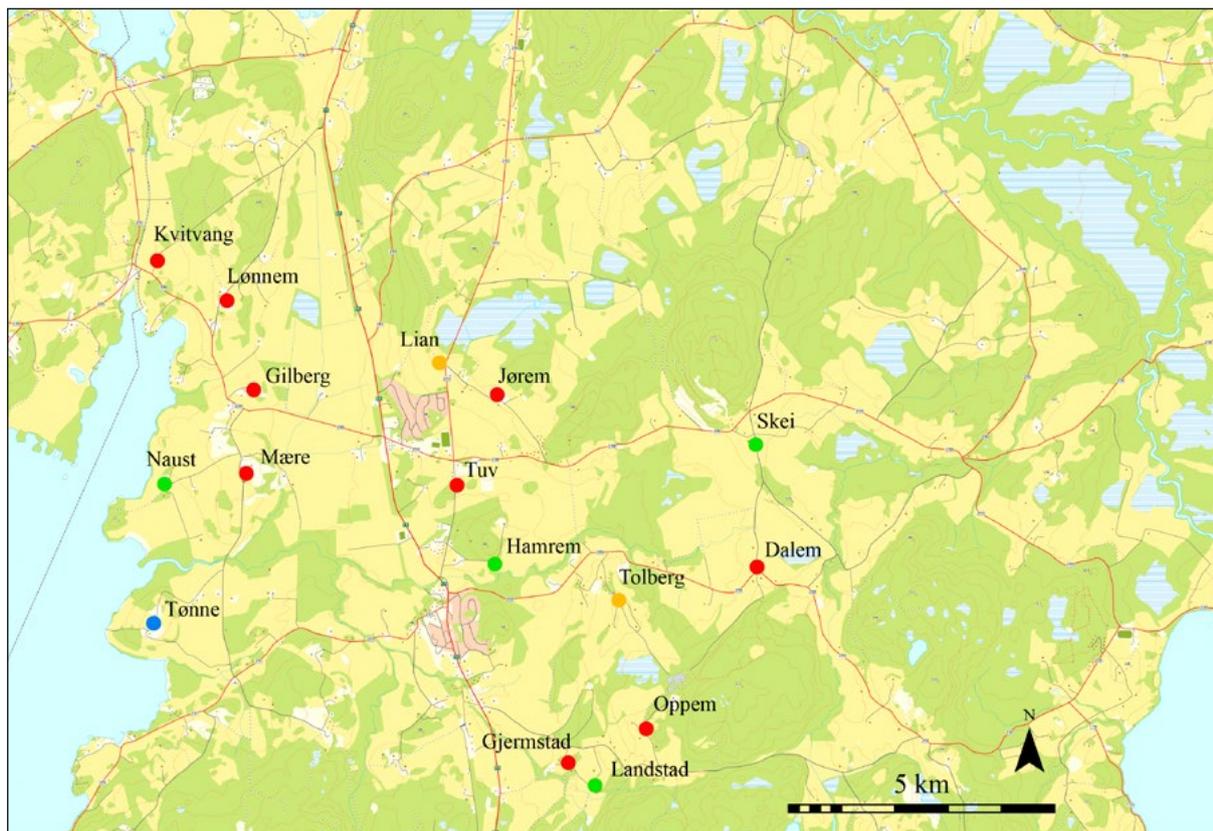
The results are divided into four categories:

1. *Positive*: clearly identifiable cultural layer in which brewing stones are a primary component. This includes positive results on existing farmsteads, former farmsteads and sites traditionally believed to have been farmsteads at one time. This category further includes positive results from older farmsteads with no oral tradition recording their existence and where there are no cultural layers associated with the modern farmstead. Examples where there is only weak evidence of a cultural layer, but where the land owner has information about finds or the clearance of large amounts of black soil and fire-cracked stones, are also registered as positive.
2. *Probable*: presence of a disturbed cultural layer with some fire-cracked stones. This may be, for example, presence on a site of a previous farmstead, but where the soil has been afterwards ploughed. The basis for classification in this category can also be an oral tradition of an earlier farmstead combined with the land owner's personal observation of cultural layers and stones. Many of these may be seen as positive, but the evidence is slightly weaker than those results in the Positive-group.
3. *Negative, but where there has been insufficient research*, that is, that more comprehensive investigation might identify evidence of an earlier farmstead. Sites where an oral tradition suggests the presence of an earlier farmstead, but where test trenches provide weak evidence of its location, are assigned to this group. In one case, oral tradition relates the location of an earlier farmstead in an area now destroyed due to gravel extraction, making it impossible to verify the presence of an earlier farmstead.
4. *Negative*: no evidence of a cultural layer with brewing stones within the assumed limits of the earlier farmstead.

### SPARBU AND HITRA

A total of 16 farms were investigated at Sparbu (Fig. 3). One of these is a smaller excavation conducted by the NTNU University Museum (Dalem). Of these 16, 9 were registered as positive (56,25%), 2 as probable (12,5%), 4 as negative but with insufficient research (25%) and 1 negative (6,25%). At Hitra 8 farms were investigated. Five were classified as positive (62,5%), 1 probable (12,5%), 2 negative but with insufficient research (25%) and none negative (Fig. 4).

On certain farms, preserved cultural layers were found below the modern day farmstead (Sparbu: Gilberg, Mære, Jørem, Oppem. Hitra: Hofstad, Akset). These cultural layers vary in thickness from 30cm to 1m (many test trenches were not excavated all the way through the cultural layer: in these situations the actual thickness of the layer is greater than reported) and are comprised of large amounts of somewhat compact fire-cracked stones. The upper layers produced animal bone, pottery fragments, glass and roof tile. The layers are stratified, with varying amounts of stone in each layer.



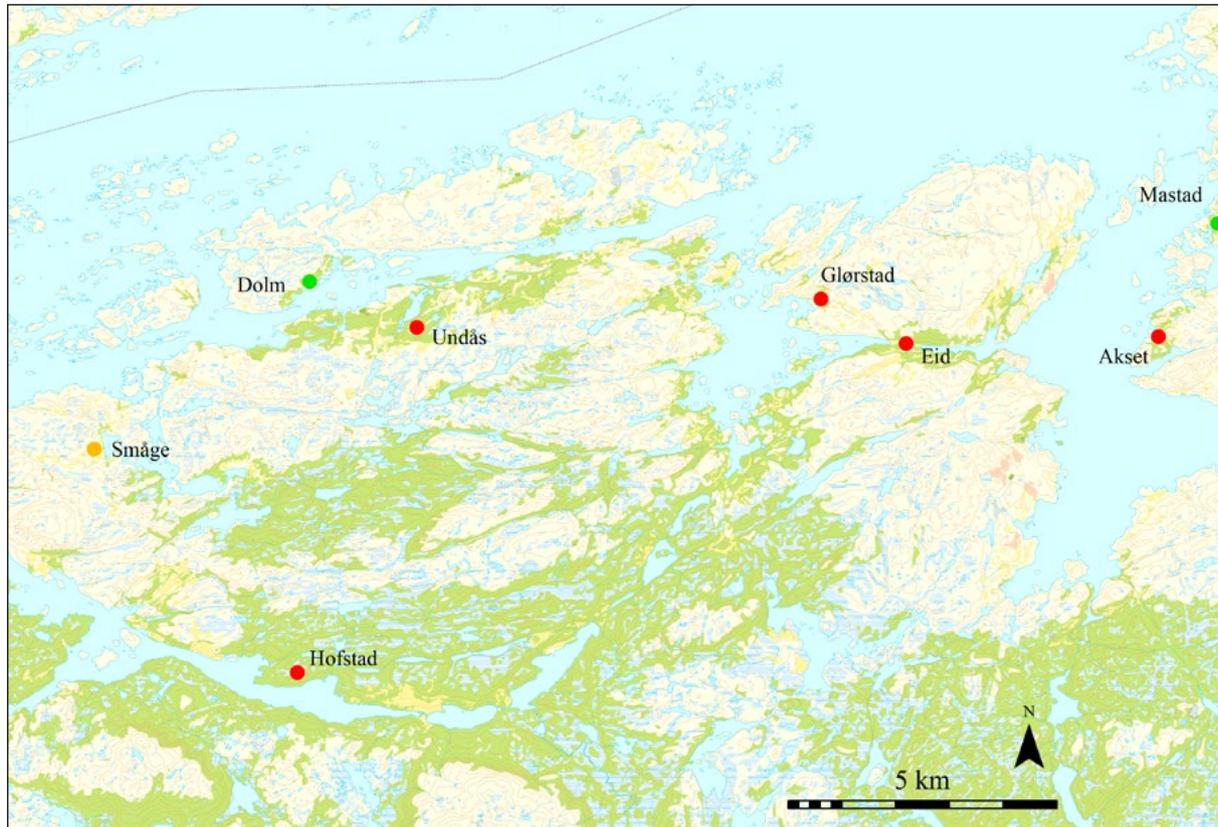
**Figure 3.** Farms surveyed in Sparbu, Steinkjer. Red dots = positive, orange dots = likely positive, green dots = not fully examined, blue dots = negative.

In some examples, cultural layers were not identified under the modern day farm, but in the immediate vicinity. Some of these secondary locations were traditionally associated with earlier farmsteads (Sparbu: Lønnem øvre. Hitra: Glørstad, Eid), while others lacked the oral tradition but provided clear enough surface evidence (Sparbu: Gjernstad, Tuv. Hitra: Undås, Glørstad). The layers were destroyed at Glørstad, but information from the previous land owner who cleared and ploughed the area was deemed reliable.

In other situations, where no traces were found on the modern farmstead and there exists no tradition

of an earlier farm on the site, topography, remains of disturbed cultural layers and information from the land owner confirm that the location of an earlier farmstead had been identified (Sparbu: Lian, Tollberg (Nordgården). Hitra: Småge).

A number of farms produced no finds (Sparbu: Landstad, Hamrem. Hitra: Dolm, Mastad), but time restrictions limited the extent to which each farm could be investigated, and it may be that further test trenching in these areas will return positive results. The Naust farm, at Sparbu, where there is a tradition of an earlier farm having been located on the site but evidence of possible cultural layers



**Figure 4.** Farms surveyed in Hitra. Red dots = positive, orange dots = likely positive, green dots = not fully examined, blue dots = negative.

is very weak, is also assigned to this group as there are areas of good potential at various locations on the farm which have yet to be investigated.

Tønne, at Sparbu, is the only farm which has been categorized as negative. There is a tradition of an earlier farm having been located on the site, and disturbed cultural layers were noted. The layers, however, contained very little fire-cracked stone.

All of the original farmsteads in Sparbu were placed on higher ground with good visibility and one, or several, large burial mounds below them. Many farmsteads were moved to lower ground over the course of the 19<sup>th</sup> century. It is unclear why this was

done, but it may be associated with the large scale restructuring of agriculture at that time. Moving the farm to lower ground did make transport to and from the farm less onerous. It may be that the original location of the farmsteads, on higher ground, was for security purposes, that it was necessary to have a clear view of the surrounding landscape. There also may have been a symbolic value in such locations that waned over the 19<sup>th</sup> century. Changes in the structure of land and property ownership at this time may have had an effect on the location of farmsteads. A study of both the archaeological and historical records would be required to adequately address this

topic. In any case, the moving of these farmsteads makes the connection between the farmsteads and the large burial mounds less obvious. Today many of these mounds lay isolated in the landscape. The relationship between farmstead and burial mound/grave field was at one time much clearer than the modern landscape suggests. The farm at Lian is a good example. Modern gravel extraction has possibly removed much of the evidence of the earlier farmstead, but if it was indeed located in this area, it would have been flanked by large burial mounds. Today, with the modern farm located far down the hillside, the close relationship between farmstead and burial mound is lost. The large mounds stand alone on the higher ground. At Oppem and Lønnem, both of which probably lie on the site of earlier farmsteads, two and one large burial mounds, respectively, lie just below the farms. Large burial mounds are also known from the Early Iron Age, but this does not necessarily mean that the relationship between burial mound and farmstead was as close as in the Later Iron Age.

It seems that in the northern section of Hitra the oldest farmsteads were well protected from the wind and the weather. They did, however, have access to the sea. The farm at Småge is an example of this. Today the farm lies inland, but a few meter increase in sea level would have provided it with direct access to the sea. This same applies to the vicarage at Undås which was possibly moved to Dolm due to isostatic uplift. A marked difference between Sparbu and Hitra is the absence of large burial mounds in the vicinity of the farmsteads at Hitra.

### **SURVEY RESULTS**

Between Sparbu and Hitra, 58.33% of the farms returned positive results, 12.5% probable, 25% negative but with insufficient research, and 4.17% negative.

There are a number of possible explanations for the lack of preserved cultural layers with fire-cracked

stones on seven of the farmsteads in the study. It may be that these farms were established at the 16<sup>th</sup> century. It may be that the test trenches were simply put in the wrong place. The cultural layers may have been destroyed, or maybe they were never there to begin with. If this last is the case, then the basic assertion of this article, that all farms with a history dating back to the Viking/Medieval Period engaged in an activity which produced cultural layers with fire-cracked stones, is incorrect. It may be that the test trenches at Landstad and Mastad were simply placed in the wrong location. The topography at both sites suggests that they would be ideal locations for earlier farms. The vicarage and church at Dolm may have been established at its present location in the 15<sup>th</sup> or 16<sup>th</sup> centuries (Brendalsmo 2006: 411f). This may have been a result of isostatic uplift, which made it impossible to travel to the church at Undås by boat. So it may be, as Brendalsmo suggests, that Norddolm is the actual location of the earlier farm at Dolm. From a topographic perspective, the location of this farm shows similarities with those of other older farms in the northern section of Hitra. The farm at Norddolm, however, was not investigated in this project. The only farmstead with a negative result which is difficult to explain is Tønne at Sparbu. Today there are two farms on a marked elevation. Test trenches were taken along the entire elevated area. Tradition indicates that the original farmstead was located on the area where the border between the modern day farms lies. Black soil with some fire-cracked stones was found in this area, but very little. It is likely that the fill of the cultural layer was removed at some stage.

If the farms which have not provided clear results, situations where there is reason to believe further work would return a positive result, are not considered, the number of results classified as positive and probable rises to over 90% of the total. This high percentage of positive/probable results, and the low

percentage of negative results, suggests that cultural layers with fire-cracked stones are present, or have been present, on all farmsteads with a history dating back to the Viking/Medieval Period. Preservation conditions are, however, very different. It appears that there are more well preserved cultural layers at Hitra than at Sparbu, where many farms have been more systematically levelled, or worked, and the material from the cultural layers thus removed. Another factor is the complex history individual named farms can sometimes have. Farms get divided up. Sometimes they are reunited. Fields and boundaries change. Both Tuv and Dolm are examples of farms with complex histories. That there is little evidence of these layers on some farms can be put down to these factors. Kvitvang and Glørstad are examples of farms where we know there have been thick cultural layers with fire-cracked stones, but where the layers have been decimated by levelling, cultivation and ploughing.

The most important difference amongst farmsteads is, therefore, not whether or not there are cultural layers with brewing stones present, but the preservation conditions. This is a cultural heritage category which is, or has been, common, but one which is threatened. At farms such as Kvitvang, in Sparbu, and Glørstad, in Hitra, there is very little evidence of these layers left. Fortunately, due to information from local farmers with firsthand knowledge of these layers, we do know that they were once present. This may also be the case at, for example, Naust and Tønne, where there is also little evidence of these layers and where the modern land owners have no knowledge of them. The need for level farmsteads has increased due to the requirements of modern farming equipment. There is thus reason to fear that many more examples of this type of cultural layer will disappear in the coming years.

It is puzzling that we know so little about cultural layers from farmsteads, particularly given

the important role both the Viking and Medieval periods have played in the development of the Norwegian national identity (Holm 1999; Gjerpe 2014; Grønnesby and Heen-Petersen 2015). The vast majority of the population in the Late Iron Age and Medieval Period lived on farms. Many Norwegian farmsteads are likely sitting upon a rich assemblage of cultural historical material from the Late Iron Age/Medieval Period. Excavations at Ranheim are an example of the great potential lying in cultural layers on farmsteads (Grønnesby and Heen-Petersen 2015).

This type of cultural layer can be found at various locations in Trøndelag. A preliminary, and unsystematic list assembled by the author shows over 100 farmsteads in Trøndelag where their presence has been either registered or indicated by secondary evidence. Datings are available from 47 of these sites (Fig. 5). Apart from one Pre-Roman Iron Age date (Undås, Hitra), and one 19<sup>th</sup> century date from Hamrem, at Sparbu, they all fall in the range 600 AD-17<sup>th</sup> century. While the dated material from Undås was recovered from a secure brewing stone context, the Hamrem date comes from an insecure context. Most of the samples taken during the registration project returned dates post-1000 AD. The lack of dates from the period 600 AD-1000 AD suggests that the samples were rarely taken at the bottom of the layer.

Layers with so-called brewing stones are not limited to farmsteads. The phenomenon can also be found in medieval urban contexts (Skre 1988). At Torgårdsletta, beneath the farm at Torgård West, a smaller brewing stone layer was identified near a well. Evidence of a smaller brewing stone layer in the vicinity of where there historically had been a well at Ystgården, in Sparbu, may reflect the same process. In addition to these, a mound of brewing stones is known from Melandsjø, at Hitra (Grønnesby 2013: 86). The farms at Hitra had access to the sea, and

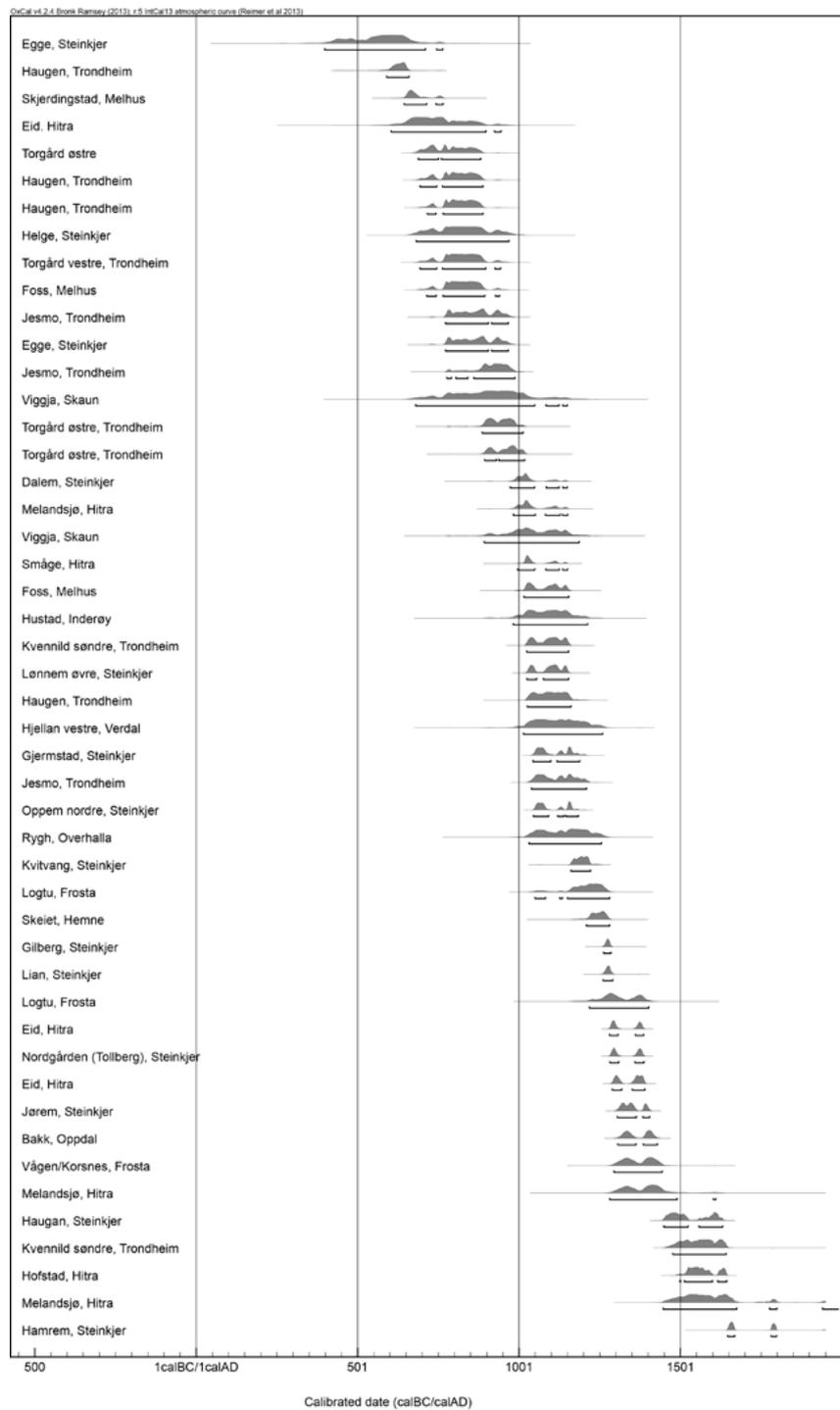


Figure 5. Calibrated 14C-dates from cultural deposits on farm yards. The 14C-date from Undås, Hitra is omitted of practical reasons.

many of these coastal points have been named after the adjacent farms, for example Meland – Melandsjø and Hopen – Hopsjøen. This mound of brewing stones must therefore be seen in connection with activities undertaken near the beach.

### **FIRE-CRACKED STONES AND SOCIETAL STRUCTURES**

A number of mounds of brewing stones were identified during the excavation of sections of a Late Iron Age farmstead at Ranheim, outside Trondheim (Grønnesby and Heen-Petersen 2015). The mounds, however, were not purely made up of stones, but had a stratigraphy which included cultural layers without any stones. Within the mounds, all of which date to the Merovingian/Viking Period, large amounts of tooth enamel of animals was found. Test trenching at Sparbu and Hitra produced animal remains, pottery fragments and tiles, primarily in the upper layers. This suggests that the mounds are not merely piles of brewing stones, but waste heaps where brewing stones, food waste, hearth waste, butchery waste and general rubbish was deposited. At Ranheim, it appears that the mounds lay at the edge of the farm. Even though the mounds must be understood as waste heaps, the amount of stone is so overwhelming that Sundt (1865) seems to have interpreted them as pile of fire-cracked stones. Sundt further reported that farmers levelled these mounds, or spread the stones on the ground.

There are, therefore, few mounds of brewing stones to be found today. One exists at Melandsjø, Hitra (Grønnesby 2013; 2015), providing a reason to believe, as the example from Hofstad illustrates, that some mounds registered as burial mounds may actually be mounds of brewing stones. The test trenching and excavations at Ranheim have demonstrated that the cultural layers on farmsteads can be complex. One of the reasons for this is the practice of levelling the mounds. A review of the

NTNU University Museum's collections highlights that when farmers deliver in artefacts such as loom weights, fragments of soapstone vessels, spindle whorls, etc., they are often recovered from the farmstead or from where "the old farm" had once stood. Both at Glørstad and Akset, the land owners had in their possession various finds from cultural layers with brewing stones. These can be things which were thrown on the waste heap, but may also be from house remains in the cultural layers.

The registrations at Sparbu and Hitra have demonstrated that all, or at least most, of the farms with a history dating back to the Medieval Period have cultural layers with large amounts of fire-cracked stones.

Hitra and Sparbu are different in terms of both climate and topography. The farms at Hitra are not as well suited to cultivation as at Sparbu, and it is the exploitation of marine resources as well as pastoralism which provided the inhabitants with a means of living. Fishing in particular has provided resources and wealth beyond mere subsistence. And yet the phenomenon of cultural layers with large amounts of brewing stones occurs at both locations in significant levels. The reason for the large amounts of fire-cracked stones must therefore be found in some overarching structure not directly related to subsistence.

### **BREWING BEER WITH HOT STONES**

In general, one can say that brewing stones have been cracked due to heat exposure. It further appears that these are cracked to a greater extent than stones typically found in cooking pits as they tend to be smaller. It is also rare that one finds such stones with well-preserved original surfaces (see also Pilø 2005: 136). There is little historical literature on boiling liquid with heated stones. The single example is an Icelandic saga, *Ljósvetninga saga*, which tells of milk warmed by stones (Skre 1988). The advantage of this cooking technique is that one can boil larger amounts of liquid in a wooden vessel than is possible

in a soapstone vessel. Even though larger soapstone vessels are known, most are relatively small, with a diameter of 20–30 cm (Skjølsvold 1961: 20). So there is reason to believe that the stones were used to boil large quantities of liquid. They may have been used in association, for example, with butchery (e.g. scalding of pigskin) or cheese production.

The following discussion, however, will focus on beer brewing as a significant cultural activity. Sundt reports talking to an “elderly” crofter who explained that the stones in these mounds were “brewing stones”, used to boil liquid in “the old days before they got iron pots”. The labelling of these layers as “brewing stone layers”, and the stones themselves “brewing stones”, rests on this crofter’s statement. However, there is reason to believe that the term “brewing stone” was current in the latter half of the 19<sup>th</sup> century because it referred to a living tradition. There is, therefore, a distinct possibility that they are primarily associated with beer brewing. We know that Germanic peoples on the continent consumed beer and other alcoholic beverages, mead, among others, already in the Roman and Migration periods (Nelson 2005: 78ff), and that this was a part of social and religious life linked with various institutions. We have little evidence of the consumption of beer in Early Iron Age Norway, but traces of organic materials on pottery fragments suggest that this did occur (Rødsrud 2012: 84ff). The same seems to have been the case in the Viking Period, although with a greater emphasis on beer than other alcoholic beverages (e.g. mead). In *The Saga of Harald Fairhair*, the bard Torbjørn Hovklove says “Fain outside would he drink ale at Yule-tide, the fray-loving folk-warder, and Frey’s game play there” (Sturluson 1999: 72). *The Saga of Håkon the Good* describes how all participants should consume beer during sacrifices. It further relates that “The sacrificial beaker was to be borne around the fire, and he who made the feast and was chieftain, was

to bless the beaker as well as all the sacrificial meat. Óthin’s toast was to be drunk first – that was for victory and power to the king – then Njorth’s and Frey’s, for good harvests and for peace...Men also drank toasts also in memory of departed kinsfolk – that was called *minni* [memorial toast]” (ibid.: 107).

The social and ritual significance of beer, as with many other aspects of pagan society, was adopted by Christianity. Håkon the Good decreed that Yule should be celebrated at the same time as the Christians and the beer should be brewed for the festivities. The institutional significance of beer drinking can be seen in old law tracts. The Gulating Law, for instance, grants equal validity to decisions or agreements made in the “beer house” to those taken at church assemblies or on a “fully-manned ship” (Hauge 1996: 13). This was true for many types of decisions including for agreements on the transfer of land and giving away of children as debt bondage. The consumption of beer was also an important aspect of feasting associated with gatherings such as marriages, funerals and the like. In addition, there were various seasonal celebrations, such as Christmas, Easter, Midsummer and Michaelmas in the autumn (Robberstad 1981: 322).

Beer drinking was thus an integral part of the society’s social and religious institutions and was, to a certain extent, subject to social control (Nordland 1969: 283ff). The oldest laws regulating beer production on farms must be seen against the background of the institutional significance of beer production. The Gulating Law required that three farmers work together when brewing. Each farmer would brew a one *mæle*, a traditional unit of volume, for himself and one for his wife. The beer should be blessed and dedicated to Christ and the Holy Mary. Only those who had fewer than six cows or less than six *såldså* of arable land were exempt (Robberstad 1981: 19). Whoever failed to brew beer had to pay three marks to the bishop. An individual who failed to brew beer

for three consecutive years was required to cede half of his farm to the bishop, the other half to the king and leave the country.

There is some evidence that the institutional significance of beer lessened over the course of the Medieval Period. This can be seen in the late 13<sup>th</sup> century law-code of Magnus Lagabøte, where feasts were of less importance and the first regulations limiting the consumption of beer appeared (Hauge 1996: 14). The law-code included, amongst other things, a prohibition against bringing beer to the Thing. The final rupture between beer and social institutions seems to have come with the Reformation. The former social control inherent in the relationship between social institutions and beer disappeared and over the course over the 16<sup>th</sup> century and drunkenness became a major problem, as attested by the number of alcohol related killings. Provisions were also established prohibiting the sale or serving of beer during church services. In 1607, the sale of beer at church rectories was banned (Hauge 1996: 15f).

Production of beer on farms, however, continued to the 1800s. Interestingly, beer production was still strongly linked to superstition. Production was surrounded by numerous rules to ensure that the brewer had the help of supernatural forces and there are accounts of purification rituals associated with production. Beer was placed under the house as a sacrifice to *tøltebonden* (the first to have cultivated the land on the farm) as well as to various supernatural beings, *gardvorden* (or *tunvorden*), *haugatussen* and *nisser*. Beer was sacrificed to the grain fields, to *tuntreet* and to *haugabonden* (in the burial mound associated with the farm). Some places were sacrificed to *kråkjerringene*, or *årevetten*, (a supernatural being associated with the hearth). There were also rules dictating who was allowed to taste the beer and in what order. Still, the consumption and serving of beer remained tied to special events like Christmas,

marriages and funerals. The quality of the beer one produced was a matter of honor, and was measured in how intoxicated people became. It is said that hosts would become upset if their guests were not drunk, and some guests would therefore pretend to be more intoxicated than they actually were so as not to offend their host (Nordland 1969: 263ff).

Norwegian society went through major changes over the course of the 19<sup>th</sup> century, one consequence of which was the disappearance of local beer production. The traditional values and practices of the farming community disappeared, the cash economy became dominant, the first brewery was built and temperance became a strong social force (Nordland 1969: 13 and 286ff). Although the final rupture between social institutions and beer consumption occurred during the Reformation, it was not until the 1800s that the break between the consumption of beer and rural social norms occurred. With this, the connection to older pagan practices disappeared as well. Only in some rural areas, such as Stjørdal, in Nord-Trøndelag, is brewing still a living tradition. In recent decades, brewing has regained popularity and many of the old techniques are again put to use.

The use of stones to boil liquid appears to have ceased in the 16<sup>th</sup> -17<sup>th</sup> centuries, and is thus coincident with the Reformation. The change is also, however, coincident with the development of the Norwegian mining industry, and it may be that this drove a transition towards boiling in metal vessels rather than wooden tubs with stones (Skre 1988: 16). However, one can imagine that the new metal vessels were expensive to purchase, while a wooden vessel was something most people could produce. For the time being, this issue must remain open, but it seems to be the case that the end of the use of brewing stones for heating liquid coincides with the break between beer consumption and social institutions.

If it is true that the presence of cultural layers with brewing stones, at places as diverse as Sparbu and Hitra, can be attributed to overarching structures in the form of institutional frameworks surrounding the production and consumption of beer, then such layers should also be found elsewhere in Norway. After Trøndelag, Eastern Norway is the area of the country where these are best known (Skre 1988; Østmo 1991; Pilø 2005). While finds of brewing stones in farm mounds in northern Norway are rare, there are some examples, such as Kulstad, Vefsn (Wik 1988) and Vik, Saltdalen (Oppvang and Kjellman 2015).

Two or three such examples are known from Rogaland (pers. comm. Trond Meling) and three from the west coast (pers. comm. Soren Diinhoff, University of Bergen)

The practice of cooking with heated stones must have been in use in Iceland since the technique is recorded in *Ljósvetninga saga* (Skre 1988). The lack of brewing stones in both Iceland and northern Norway can be explained by the unfavorable conditions for grain cultivation in those areas.

The use of heated stones in beer brewing is also known from Germany, where the tradition of “stone beer” continued up to 1917 (Simonsson 1956: 241). The practice was revived in recent times and “stone beer” is produced today in Germany. The types of stones used, however, tolerate heat without fracturing, and would therefore not be as obvious in the archaeological record as Norwegian brewing stones (Oliver 2011: 764–765; Nordland 1969: 124). Layers with fire-cracked stones are also known from the Viking settlements on the Orkney Islands and Shetland. These have been interpreted as saunas, but it has also been suggested that they may be associated with brewing (Dineley and Dineley 2008).

Boiling liquid with heated stones in connection with brewing is also known from England, Finland and the Baltics (Simonsson 1956: 244). The

presence of cultural layers of fire-cracked stones are also known from several Late Iron Age/Medieval sites in Denmark and Sweden (Christensen 1991 (Lejre); Nielsen and Fiedel 2001; Nielsen and Love Luck 2011 (Stavnsager); Jørgensen 1998; Söderberg 2002 (Järrestad)). These are defined as central or significant places and the layers are interpreted as an expression of cult and/or handcraft activity. If one uses the slightly imprecise descriptions of the sizes of these layers, they vary between 150 and 1200 m<sup>3</sup>. In comparison, 700 m<sup>3</sup> of fire-cracked stones were removed from Ranheim (Grønnesby and Heen-Petersen 2015), an amount which represents only part of the farmstead. At Egge, in Steinkjer (Farbregd 1985), the volume of the layer is estimated to be approximately 1,080 m<sup>3</sup>, and at Vik, Flatanger (Farbregd 1979) this number is 1471 m<sup>3</sup>.

While these numbers must be read with some caution, they do illustrate that the size of the cultural layers and the volume of fire-cracked stones associated with them are not necessarily less in Mid-Norwegian farms than they are on southern Scandinavian central sites. At both Egge in Steinkjer, and Vik, in Flatanger, the cultural layers seem to be quite extensive. They are, however, generally found on a far smaller scale. In 2014, shovel tests were taken at the Valderåsen farm in Melhus. Here, cultural layers with fire-cracked stones were identified on a site which tradition suggested was the site of an earlier farmstead. The amount of stone, however, appears to be far less than at Egge and Vik. This may reflect the size of the farm. If the amount of fire-cracked stone reflects the amount of beer that was produced, and the amount of beer produced reflects the size of the farm, then the lower amount of stone at the Valderåsen farm is only logical and natural. This could mean that these layers are far more common than previously thought, not only in Norway, but in Sweden and Denmark, and are not necessarily associated with a function as a central place.

## CONCLUSION

This investigation has demonstrated that cultural layers are very common on farmsteads in Trøndelag and may be a feature on all farms with a history dating back to medieval times. In some cases, the farmsteads were moved to a more convenient location, particularly in the 1800s. In cases where tradition describes the previous location of the farm, that location is often referred to as “the old farm”, “toft” or something similar. There is great variation in the preservation of the layers, however, generally due to leveling, removal and ploughing.

The fact that this phenomenon can be found in areas as topographically and climatically distinct as Sparbu and Hitra, suggests that the cause must exist in some overarching structure and not in local conditions. The close relationship between production/consumption of beer and social institutions may be just such an overarching structure. The most obvious effect of this was the legal regulation of beer production. If this is correct, there should be similar evidence in other parts of the country. The long tradition of “stone beer” in Germany, and extensive cultural layers of fire-cracked stones in Denmark and Sweden, indicate that the phenomenon is much wider ranging than merely Mid-Norway, or Norway in general.

It has been previously noted that the relatively little attention given to cultural layers on farmsteads is a question of recognition (Grønnesby and Heen-Pettersen 2015). Investigations on farms at Sparbu and Hitra have shown that there is great archaeological potential on the yards of historic farms. Here can be found cultural layers, artefacts and building remains which represent an important resource, not merely for the history of the farm or even general settlement history, but for the economic, social and political history of the Viking and Medieval periods. A majority of the population lived on farms, and farmsteads still contain traces of those

individuals. Late Iron Age settlement has received increased attention in recent years (e.g. Iversen 2013 Eriksen 2015), partially as a result of a focus on the 536 AD “dust veil” (Axboe 2007; Gräslund 2007, Gräslund & Price 2012; Iversen 2013; Löwenborg 2012, Nielsen 2005). Future research on Late Iron Age and Medieval settlement should be based in the yards of historic farms. The investigations at Sparbu and Hitra have shown that there is great variation in the preservation levels of these cultural layers. One important question which must be addressed, therefore, is what are the preservation conditions in other parts of the country? The answer to this may dictate the urgency of archaeological research on historic farmsteads.

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