



# Treasure in the Earth

EXHIBITION 2006 - 2009



## TREASURE IN THE EARTH

© Byggðasafn Skagfirðinga / Skagafjörður Folk Museum - Minjahúsið, Sauðárkrókur

**Translation:** Anna H. Yates

**Photos / Illustrations / Reconstructions:** Hólarannsóknin, Skagafjörður Folk Museum, Rikke Johansen, John Steinberg, Jan Heinemeier, Douglas J. Bolender, Þór Hjaltalín, Loftmyndir ehf., Skagafjörður Archives and Hjalti Pálsson.

**Map:** Anna Rut Guðmundsdóttir

**Front page:** Kristinn Ingvarsson, Cemetery excavation in Keldudalur.

**Backpage:** Fieldmap of Hólar from 1887.

**Design & printing:** Nýprent ehf.

SKAGAFJÖRÐUR FOLK MUSEUM

# Treasure in the Earth

EXHIBITION 2006 - 2009

# Forewords

The last five years have been pivotal for Icelandic archaeology as increased funding has expanded educational and research opportunities within the discipline.

Skagafjörður has benefitted from this increase in research which has been at both the local and the international level. The Skagafjörður Folk Museum presents the current exhibition, *Treasure in the Earth*, which is an overview of the various archaeological projects undertaken in the area during the last five years, including large research projects, rescue excavations, archaeological surveys and various smaller projects.

The focus of the exhibition is the results of four major archaeological projects: a large interdisciplinary research “The Hólar Project”, rescue excavations at the old harbour of Kolkuós, the medieval cem-



etry in Keldudalur and remote sensing and settlement surveying of various sites. The results of a major research project on turf and turf structures in Skagafjörður are also presented. Turf was the traditional building material in Iceland from the

time of the first settlement until the 20th century.

The exhibition is designed chronologically, first presenting an overview of the various projects and their locations and





then moving on to further details of the projects starting with the excavation in Kolkuós, the settlement period harbour, the excavations of pagan and 11th century graveyards at Keldudalur, the discovery of an 11th century longhouse at Glaumbær

and then the Hólar project, a large-scale international research project at the old Hólar episcopal see.

The exhibition is the culmination of a five-year research effort. Most of the proj-

ects, however, are still ongoing and the findings are thus preliminary and subject to change. Results from these projects and further research will provide the basis for many of the museum's future publications and exhibitions.



- 1** Hegrænes assembly site  
– remnants of booths (semi-permanent shelters used at assembly sites) dating from before 1200. Indications of a graveyard.



- 4** Reynistaður  
– traces of buildings from about 1300 southwest of the church, and probably of a 12th century longhouse on Langhúshóll



- 7** Kolkuós (Kolbeinsárós)  
– trading centre from the settlement (around 900 AD) to the 16th century. Imports: domestic animals, grain, utensils.



- 2** Glaumbær  
– previously unknown 11th-century longhouse and indications of older structures and ironworking.



- 5** Langholt  
– registered archaeological sites on all farms.



- 8** Hof  
– graveyard to 13th century, farming until 14th century – longer occupation than previously believed.



- 3** Stóra-Seyla  
– previously-unknown cluster of 12th century buildings.



- 6** Vesturdalur  
– dense habitation from the early days of Icelandic history to about 1300, at up to 400 metres above sea level.



- 9** Öxnadalshéiði  
– the ancient estate of Grund was probably inhabited until about 1300.



## 10 Hólar

– Centre of population for 800 years.  
Needlework centre. Printing press.



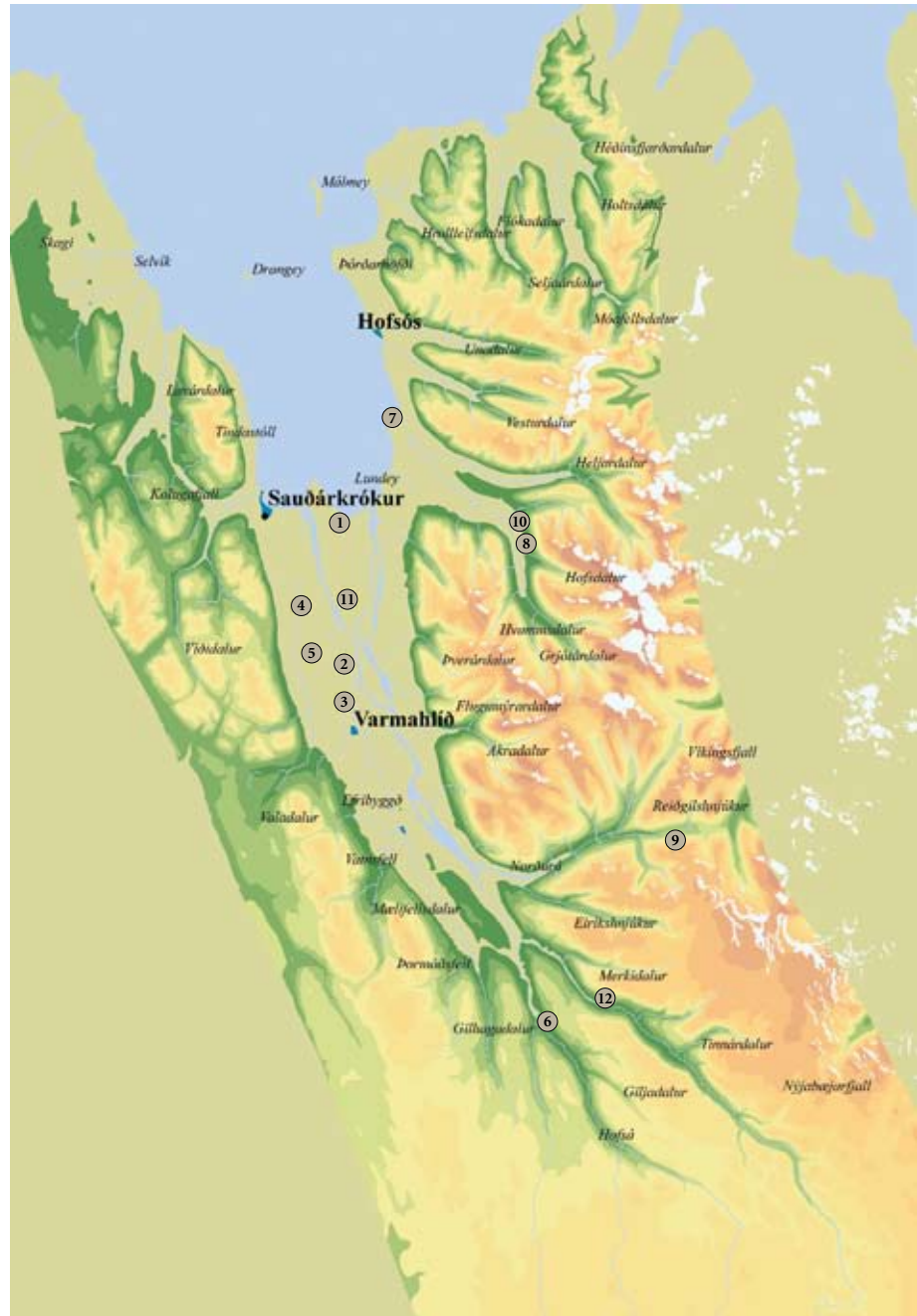
## 11 Keldudalur

– Viking-Age longhouse, pagan burial place,  
Christian family graveyard, status-symbol  
dogs



## 12 Austurdalur

– indications of habitation before 1300. After  
a gap, habitation appears to be re-established  
in the valley.





# Kolkuós

Kolkuós (previously known as Kolbeins-árós) at the mouth of the river Kolka was one of Iceland's major ports from the time of the settlement around 900 AD until the 16th century. Archaeological excavations carried out in 2003-5 indicate that people stayed there in booths (semi-permanent shelters), and that activity there was considerable.

Clear indications were found of ironworking, and of trade in various commodities. Finds unearthed include a South German silver coin from the first half of the 12th century, an iron knife, remnants of an iron pot, worked whalebone, flints, flat rocks used for cooking, whetstones, fragments of clay vessels, etc.

Large quantities of animal bones have been found, e.g. of sheep, cattle, horses, pigs and many dogs, including bones of a Maltese dog. This small breed of dog was a popular pet among the European aristocracy in the middle ages, but this the first evidence that they were also kept in Iceland. Bones of all Iceland's principal species of birds and fish have also been found, along with bones of seal and whale. These provide evidence of the



species which were hunted for food.

In addition, the evidence suggests that the black rat (*Rattus rattus*) may have arrived in Iceland earlier than has been believed, as one of the large bones unearthed has toothmarks of a black rat. The rat could have gnawed the bone aboard ship, or come ashore when it docked, even if no

permanent settlement followed.

At Kolkuós the land appears to have subsided since the headland was first built upon, as some of the remains of buildings are about 6 cm below sea level. In recent years marine erosion has been rapid at Kolkuós, and when the excavation commenced almost no vegetation remained





on the headland. Thus archaeologists were pleasantly surprised by the richness of their finds. The site has many more, and more complex, remains than was originally believed.

Kolkuós must have offered an excellent natural harbour for ocean-going ships, if the island of Elínarhólmi or

Helenarhólmi was linked to the mainland by an isthmus or reef, as indicated by evidence. This would have been an outstanding berth for ships.

At Kolkuós a grave was excavated of a man who had been buried with a pig. It appears to be a heathen grave. Radiocarbon analysis indicates that the grave was

dug after the adoption of Christianity in Iceland (around 1000 AD).

# Keldudalur

## Pagan burial place

Traces of a pagan burial place were found during development work at Keldudalur, Hegranes, in the summer of 2003.

The skull of a woman was unexpectedly dug up by a backhoe excavator about 500 m north of the farm site at Keldudalur. Further examination revealed more human bones, in rather poor condition, from at least four graves. Other finds included horse and dog bones, beads, and a carved bone pin in Viking-Age style.

No grave goods of value were found in the graves, and it is possible that they had been robbed. Another possibility is that the bones were transferred from the pagan burial plot to the Christian graveyard which was found where the farmhouse of Keldudalur now stands. An example of bones being moved in this manner is known from Egils saga.

Such pagan burial plots are very rare finds in Iceland.

## High-class dog

Canine bones were found in two of the graves: in one grave the bones of an Ice-





landic sheepdog, and in the other the bones of a greyhound, a breed of dog kept only by the social élite.

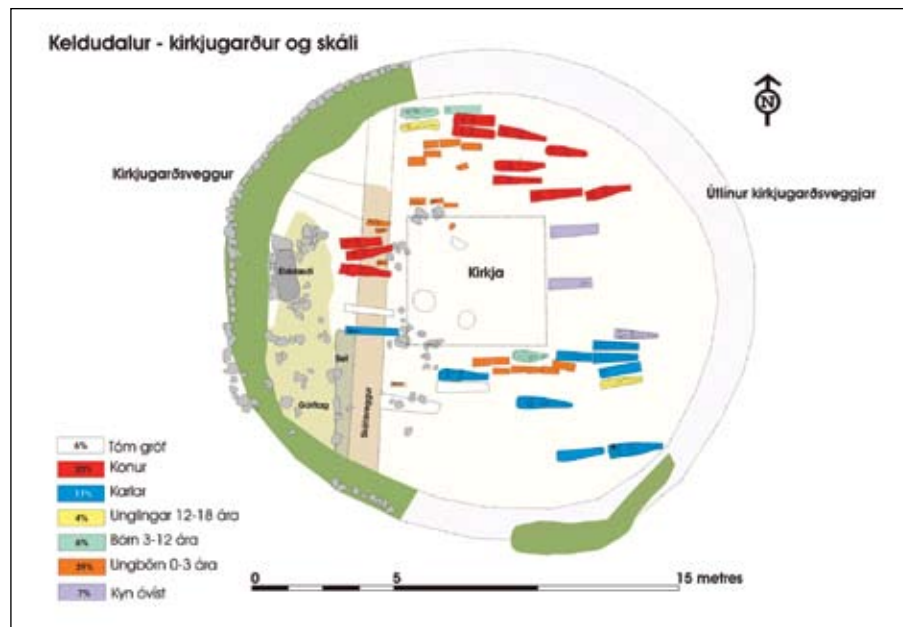
Large dogs are known in the Icelandic sagas, e.g. Sámur, the faithful dog of Gunnar of Hlíðarendi in Njáls saga. They were owned only by leaders of society. The greyhound bones found here, like the bones of the fashionable little Maltese dog found at Kolkuós, indicate that dogs were imported to Iceland as status symbols for the bishops and other chieftains of the region.

## Graveyard

During the construction of a building for tourist services at the farm of Keldudalur, skulls and other human bones were unearthed. Archaeological research on the site revealed a graveyard from the early days of Christianity in Iceland (after 1000 AD).

No record of a church or graveyard at Keldudalur appears in written sources. Radiocarbon analysis indicates that the graveyard dates from the first half of the 11th century, and that it may have been abandoned in the 12th century. Over fifty skeletons were unearthed from the graveyard.

The graveyard provides remarkably



favourable conditions for preservation of bones and other organic materials. At Keldudalur, an interesting interface between paganism and Christianity is seen, as the graveyard was located on the site of the original longhouse, and a pagan burial site is close by.



Around the church and graveyard was a circular wall, which had been partly damaged by the development work. A single row of stones marked the outer edge of the base of the wall, which was otherwise built of turf. Tephrochronological analysis revealed that the wall was



originally built in the 11th century, and rebuilt in the early 12th century.

The church site had been damaged by the development work, leaving only the postholes of its cornerposts, and part of a beam, probably from a stave wall. The position of the graves indicates that the church was small, about 5x5 metres. There was no trace of turf walls; hence the church was probably of the cornerpost type, i.e. a stave structure with cornerposts embedded in the ground.

## Longhouse

One of the most interesting results of the excavations in 2003 was the discovery of a longhouse at the westernmost part of the graveyard. The longhouse, whose turf walls were built of wedge-shaped klömbruhnaus and strips of turf (strengur) appears to have collapsed before burials in the graveyard commenced.

In the longhouse was a long hearth, and a large quantity of burnt animal bones. Traces of benches (where inhabitants of a longhouse slept and sat) were also found along the east wall.

## Links to early Christian graveyards

As more sites are excavated, it becomes increasingly clear how much the earth



has yet to reveal, and how limited is our knowledge of life in Iceland and the early days of Christianity.

In Skagafjörður four early Christian graveyards have recently been discovered, at Sauðá, Steinsstaðir, Neðra-Ás and Keldudalur.

## Bone research

The graveyard at Keldudalur provides good insight into the society of the first generations of Christians in Iceland.

The graveyard was in use for about a hundred years. The number of graves in-

dicates that this was a family burial plot.

As in many early Christian graveyards in Iceland, the sexes are separated at Keldudalur: women were buried to the north of the church, men to the south. Children were buried on both sides. As the sex of infants cannot be determined from their bones, it is impossible to tell whether they too were buried according to gender, but it appears to be likely, in view of the distribution of their graves.

Infant mortality was high. Half the graves were those of infants in their first year. Only two graves of older children,





and two of adolescents, were found, indicating that life expectancy was good if a child survived his/her first year. Of the adults in the graveyard, several had reached the age of 60, which was old age for the time.

The bones unearthed can yield a variety of evidence, such as age, sex and height, as well as signs of certain diseases. Diseases identified from the Keldudalur bones included a range of arthritic degeneration, dental infections and deficiency diseases. Injuries could also be discerned. One young male had spina bifida. The bones and entheses (muscle attachment sites) of the Keldudalur folk are unusually sturdy, indicating that they lived in demanding conditions. Signs of osteoarthritis are also common.

Most of the dead were buried in coffins, including the infants. Graves of infants are relatively rarely unearthed in Iceland, and little is known of infant burials in early Christian times.

# Turf construction

An unusually large number of turf structures remain intact in the Skagafjörður region; this is due not only to favourable climatic conditions, but also to the fact that turf construction persisted longer in Skagafjörður than in many other parts of the country. Over the past decade, remains of turf structures have been studied and compared, in order to glean information on construction methods and variations relating to different types of structure.



**Barn wall, Breiðagerði, Tungusveit.** The lower part of the wall is far older than the upper: the lower part is built in herringbone pattern (klambra), without strengur (strips of turf) for reinforcement. The upper part is in herringbone pattern with strengur between layers. Several layers of strengur in the centre of the picture are

remnants of the top section of the original wall.



**Sheepshed wall, Krithóll, Neðribyggð.**

Remnants of a very old klambra (herringbone-pattern) turf wall, atop a base of rocks. Almost the entire wall has been dismantled and rebuilt using strengur (thin strips of turf) and recycled turves (roftorf). Turf walls must be built with a layer of rocks at the base, to prevent rising damp.

**Ingveldarstaðir, Hjaltadalur: doorway.**

The walls and doorway are built of rocks with strengur (strips of turf) between the layers. In Skagafjörður, buildings for livestock were constructed with more rock in the walls than human dwellings; stone-built walls are sturdier than turf, and less likely to be damaged by sheep and cattle.



The top section of the wall is of klambra (herringbone) construction, with strengur (strips of turf) between layers.

**Arched doorways, Flatatunga, Kjálki (left) and Krossanes, Vallhólmur (right).**

The Krossanes doorway is constructed of corner turves (hornhnaus), the wall of klambra (herringbone-pattern), with strengur (thin strips of turf) between layers. The same applies to the Flatatunga doorway, except that here the corner is built in herringbone-pattern.





## Turf buildings

Turf was an excellent building material which provided good insulation from the cold. The word torf (turf) applies to the tough tangled mat formed by the root systems of marsh plants, which can be cut into lumps using a spade, or into strips using a long blade. Turf also had other applications: as mattresses for beds, and for pads placed under pack-saddles on horses.



Turf was used for insulation in the walls of wooden buildings until well into the 20th century. Diverse terms are used for turf, according to appearance and how it is cut. A torfljár (turf-scythe) was used to cut strengur (a strip of turf tapering to one side) and torfa (a strip tapering on both sides), while the rectangular kvíahnnaus, wedged-shaped klömbruhnaus or klambra, corner piece (hornhnaus) and diamond-shaped snidda were dug using a spade. The names used for turves vary in different regions of Iceland.



### Passage wall, Mið-Grund, Blönduhlíð.

The passage was arched, as the remaining wall indicates. Some time during the 20th century the upper part of the wall was dismantled and rebuilt using strengur (strip turf) on top of the existing klambra (herringbone-pattern) wall. Where the wall is broken down, the klömbruhnaus wedges and strengur strips are visible. The wall is so thin that the narrow ends of the klömbruhnaus wedges overlap. At the bottom

of the wall are several layers of rocks with strengur turf.



### End wall of a sheepshed, Hof, Hjaltadalur.

The wall is constructed of diamond-shaped kvíahnnaus, laid flat or overlapping. The base of the wall is rock and strengur turf. The wall was originally built of kvíahnnaus, arranged in a herringbone pattern. Much later, when the wall was rebuilt, the turves were laid flat.

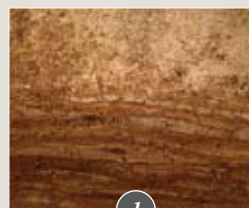
## Unearthed turf structures

1. Section through a turf wall built of strengur in the homefield at Reynistaður.

2. Section through the turf wall of a long-house in Keldudalur: klambra (herringbone) structure

3. Section through the turf wall of a structure at Fagrahlið, Austurdalur. The "Settlement Layer" of tephra, from a volcanic eruption in 871 AD ( $\pm 2$  years), is identifiable in the wall.

4. View of the top of a turf wall at Glaumbær. The wedge-shaped klömbruhnaus turf pieces are placed side-by-side, with the narrow ends towards the inside of the wall, which has been filled up with earth.



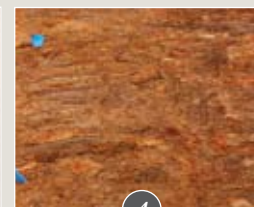
1



2



3



4





# Ancient habitation in the inland valleys

In 2003 - 2005, preliminary trenches were excavated in a number of places in the inland valleys of Skagafjörður, in connection with the compilation of a history of the region. Seven estates in the Austurdalur and Vesturdalur valleys appeared to have been abandoned before 1300, and the evidence suggests that three of these were founded before 1000 AD. The same applies to sites investigated in Goðdaladalur and on Öxnadalshéiði heath. At four of the sites, habitation was re-established shortly after 1300.

## **Tephra layers used for reference:**

871 ± 2 years, the “Settlement Layer”, greyish-green

1000 – eruption under the Vatnajökull glacier, black layer

1104 – Mt. Hekla eruption, light-coloured layer

1300 – Mt. Hekla eruption, blue-grey layer

1766 – Mt. Hekla eruption, black layer

## **Grund, Öxnadalshéiði**

Indistinct traces of buildings and field walls on a slope north of the Grjóta river,

Öxnadalshéiði. Built after 1000 AD, but apparently abandoned before 1300.

## **Hæðarnes, Goðdaladalur**

Very clear remains of ancient buildings on a rocky headland by a deep ravine, apparently dating from shortly after the volcanic eruption of 1000 AD. Buildings abandoned shortly before 1300.

## **Einarsdalskot**

Clear remains of two structures, believed to be the old farmstead of Einarsdalskot. One dates from after the eruption of 1104, and was abandoned some time before 1300. The turf wall of the other structure was rebuilt after 1300.

## **Ófriðarstaðir, Austurdalur**

Field wall and indistinct traces of buildings constructed shortly after 1000, and abandoned some time before 1300. Signs of reconstruction after that time.

## **Fagrabrekka, Austurdalur**

Indistinct traces of buildings, and remains of a more recent sheepshed. Built 1000-1104, abandoned by 1300. Habitation was resumed later.

## **Sandgil, Austurdalur**

Very indistinct traces of structures in a birch wood. The oldest traces appear to

date from shortly after the Settlement Layer of about 871 ± 2. The site appears to have been inhabited before 1104, but not shortly before 1300. Habitation was resumed later.

## **Miðmundarlækur, Vesturdalur**

Very indistinct traces of buildings from after 1104. The buildings were beneath a layer of tephra, probably from 1300, and hence it is likely that the farmstead was abandoned before that time.

## **Hrísastaðir, Vesturdalur**

Indistinct traces of buildings and field wall of turf. Signs of habitation before 1000, abandoned by 1300.

## **Tunga (Tungukot), Vesturdalur**

Field wall around remnants of a small longhouse at Lambatungur. Abandoned by 1000 AD.

## **Fossar, Vesturdalur**

Indistinct traces of buildings, and perhaps traces of a field wall. A section was cut where a building wall appeared to be, revealing a turf wall in which the Settlement Layer of tephra was discernible, along with traces of the tephra layer of 1000 AD. The entire area was covered by the tephra layer of 1300.

# Glaumbær and remote sensing

Remote sensing is a range of geophysical techniques which may detect buried archaeological features that are not visible on the surface. In recent years a team of American specialists has been working in Skagafjörður, exploring sites using remote sensing, coring and small scale test trenches— in order to 1) develop a technique for locating subsurface archaeological remains in an Icelandic setting, 2) assess the function and dates for those sites, 3) assess the possible economic ties between farmsteads.

The research has revealed that several farmsteads in the Langholt area were established before 1000 AD and that some of the settlements relocated shortly before the tephra fall of 1104. Results also indicate that there was little cultivation of grassfields prior to 1000, that the size of the fields may be an indication of a farmer's economic prosperity, and that after 1300 the grassfields were less productive than before.

One of the sites which yielded interesting new information was Glaumbær, where the Skagafjörður Folk Museum is located.



Remote sensing at Glaumbær in 2001 revealed subterranean ruins in the grassfield about 150 metres east of the old farmhouse, beneath the light-coloured layer of ash from the Mt. Hekla eruption of 1104. Surveys indicated a longhouse measuring approximately 39 x 8 metres. A preliminary section dug in the summer of 2002 confirmed that it was a longhouse or hall.

In the summer of 2005 the entire site was uncovered and the previous remote sensing survey measurements were veri-

fied. In addition, collapsed walls of annexes to the building were uncovered, and also a large midden (refuse dump) to the east of the longhouse. The building was in use during the 11th century, but abandoned by 1104. Evidence of ironworking, and considerable quantities of bog iron, were uncovered.

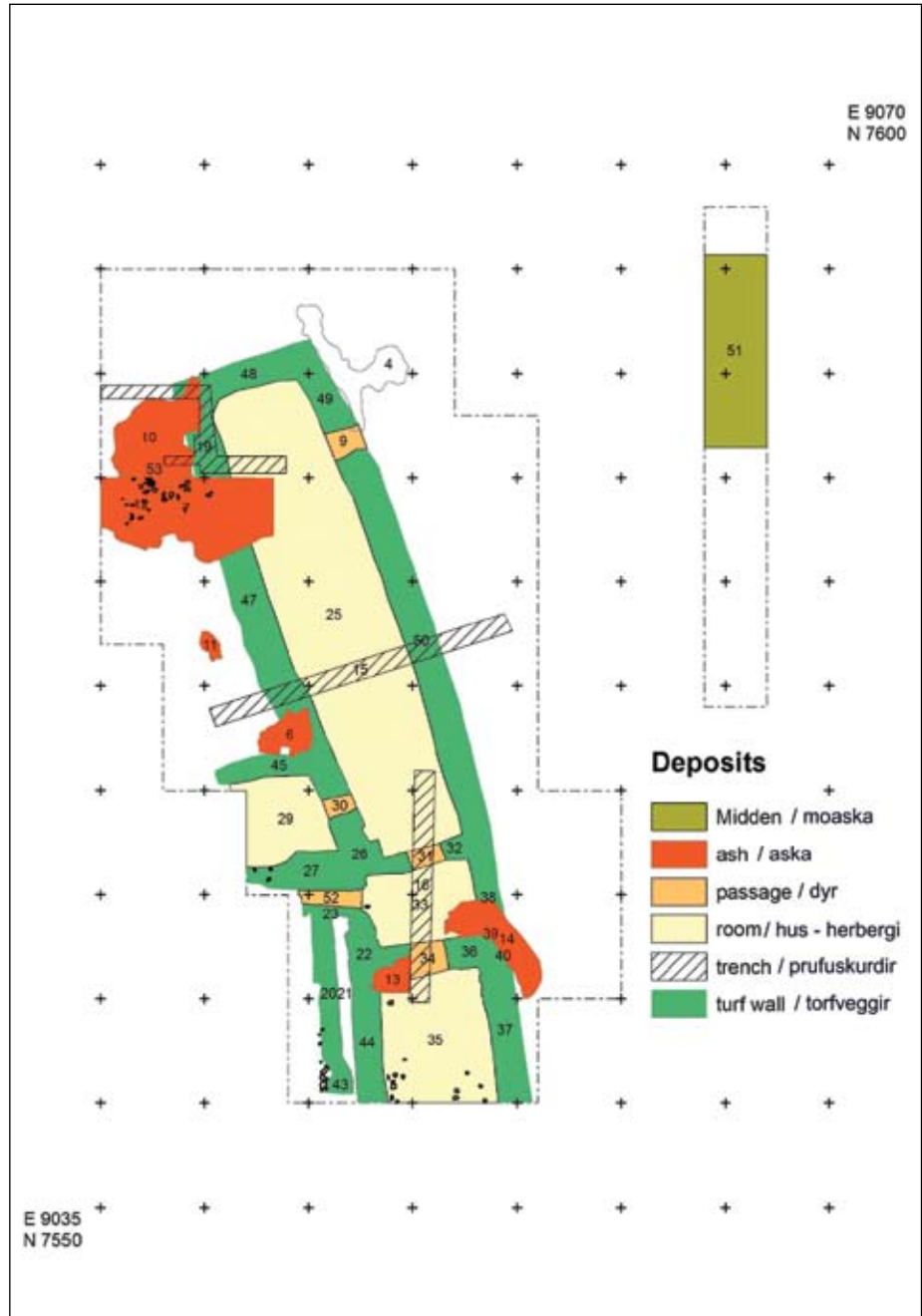
Before this discovery, it had been believed that the farmhouse of Glaumbær had always stood on the site of the present turf farmhouse. An exploratory section



cut into the midden revealed that it was not used until after 1104.

The finds at Glaumbær demonstrate that much information remains to be revealed, even where no clue remains on the surface or in written sources. At Glaumbær the first and last stages of the evolution of the Iceland turf farmhouse are preserved, but further research is required, in order to find out when Glaumbær was first settled.

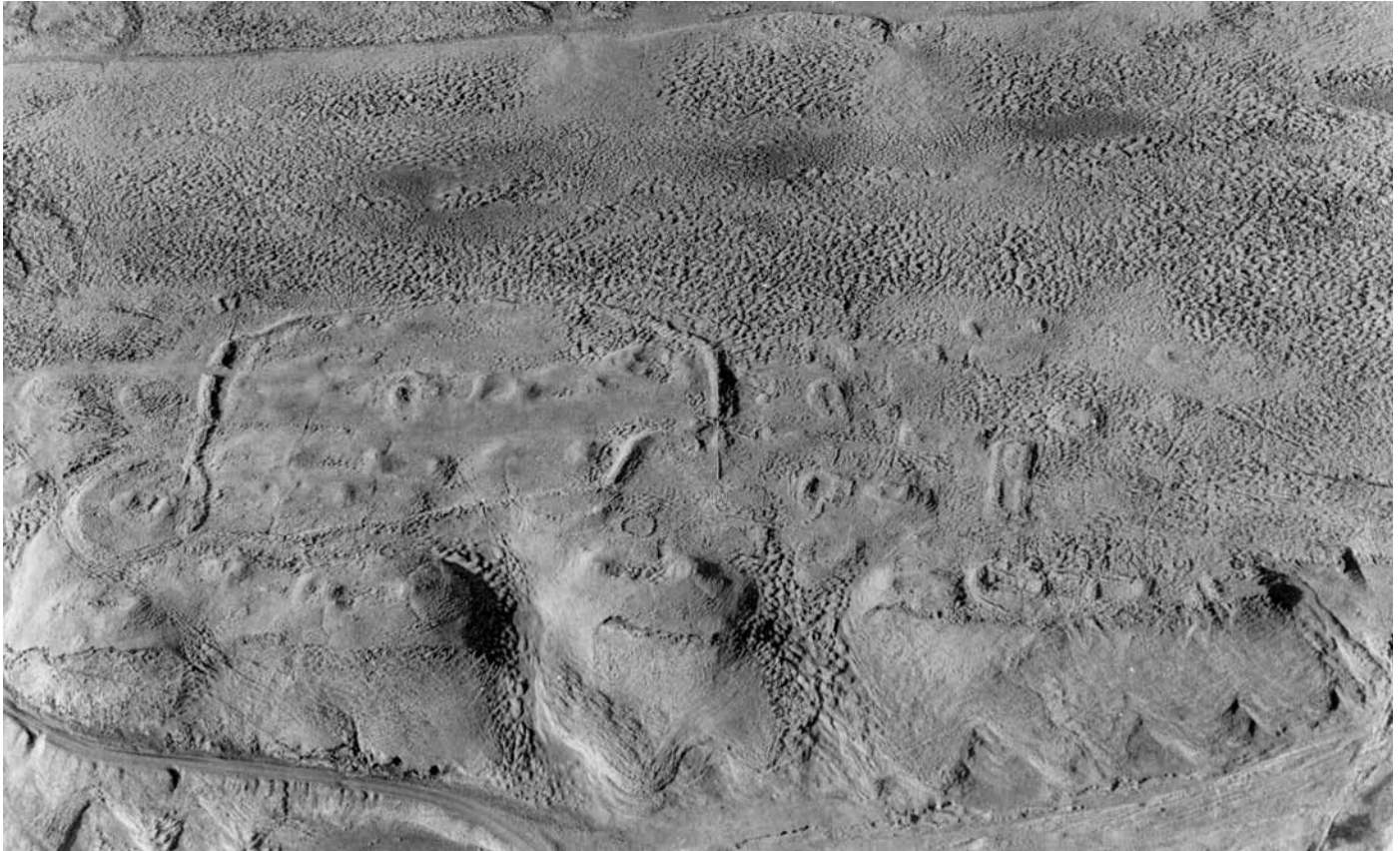
The Saga of Greenlanders tells of Por-





finnur karlsefni Þórðarson and his wife Guðríður Þorbjarnardóttir, who attempted to settle in the New World (Vinland) around 1000 AD, and eventually settled at Glaumbær. Their son Snorri, born in America, is said to have built the first church at Glaumbær for his mother Guðríður. Archaeological excavations may never produce evidence to corroborate the story, but nonetheless Glaumbær offers a wealth of evidence that has yet to be unearthed.





## Hegranes assembly place

During the period of the Old Commonwealth (930-1262), spring assemblies for the Skagafjörður region were held on the estate of Garður, Hegranes, where remnants of walls and the booths (semi-permanent shelters) used at the assembly

are still visible. A farm or sheepshed was later built at the assembly site, which was known as Litli-Garður (Little Garður).

In 2003 the Hegranes assembly site was examined, in order to ascertain the nature of the booths and walls and deter-

mine their date. A booth to the north of the assembly site, which had been damaged by soil erosion, was constructed of rock and turf, cut shortly after the eruption of Mt. Hekla in 1104 deposited a layer of tephra. All the remains of buildings

on the site are covered by the tephra layer deposited in the eruption of Mt. Hekla in 1766. Around the site of the booth, layers of soil and refuse had formed, and refuse appears to have been discarded just outside the building.

A section was cut at the junction of two wall structures: a circular structure about 30 m in diameter at the south of the site, and a larger wall enclosing an area of about 800m<sup>2</sup>. The structures appear to be more recent than the booths. No written sources throw light on their function. In the 19th century scholars proposed various theories, for instance that the circu-

lar enclosure was a “judgement circle,” i.e. the site of a court of justice, and the smaller a field enclosure around a small homestead.

The study revealed that the circular enclosure was built mostly of turf, after 1104. The larger enclosure, which is mostly built of sea-washed rock, apparently piled up into shape, is super-imposed on the circular enclosure, and thus it must be more recent. The circular enclosure may be a graveyard, as it contains depressions which could be graves. Further research is required to prove or disprove this hypothesis.

The Hegranes assembly site is an excellent subject for research, as it is well preserved, and may yield important evidence on booths at assembly sites and the general form of such sites, while also throwing light on development on this site.

*The research was carried out by the Institute of Archaeology in collaboration with the Hólar Project.*

*Photo Hjalti Pálsson*

## Hólar

Hólar in Hjaltadalur was largely uncharted territory in archaeological terms before the Hólar Project began in 2002. Hólar, the see of the northern diocese from 1104, was the de facto capital of North Iceland for centuries, and it was obvious that much important information on the history of church and nation must lie hidden there. In spite of – or perhaps precisely because of – the existence of extensive written historical sources on Hólar, only

very limited archaeological and historical research had been carried out.

The Hólar Project, which is based upon interdisciplinary collaboration between cultural / historical / scientific disciplines, has added much to existing knowledge of Hólar. Written sources and the diverse findings of archaeological research are brought together to produce an overall picture of the buildings and way of life at old Hólar.

Archaeological excavations commenced on six separate sites at Hólar. Initially it was feared that repeated construction and disturbance over the centuries might have damaged the layers of human habitation in the soil and remains of buildings, so that archaeological research might yield little result. The uppermost layers had indeed been disturbed, but relics from the 18th century and earlier were largely intact. The area adjacent to the



Cathedral had been disturbed most, while the old farmhouse site, below the road, southwest of the Cathedral, was mostly undisturbed. The conclusion was that rich material is available for research by the experts of the Hólar Project, and conditions for preservation are good. The main areas of excavation have been zone D, the farmhouse site, and zone E, a midden.

#### **Farmhouse site**

The farmhouse site at Hólar is one of the most extensive in Iceland. Knowledge of building techniques, interior fittings, and the community of Hólar in the 17th and 8th centuries has been greatly enhanced; in addition, the research has led to improved understanding of the extant written inventories and descriptions of the buildings from different period.

The discovery of pieces of type removed all doubts about the location of the printing press. East of the printing house, a kitchen, pantry and large room were excavated. These were all connected by passages. A structure, assigned the number 7, was not directly connected with other buildings excavated on the farmhouse site. The oldest walls appear to have been used for a long time, although their function may have changed.



Study of this structure is in its early stages, but it appears to be connected with other structures which have yet to be excavated. In the building about 400 scraps and threads of leather and textiles have been unearthed, along with gold thread, buttons and glass beads.

A passage from the church to the farmhouse was uncovered by the graveyard wall, but this has not been fully excavated or studied. The position of the passage, however, gives an indication of the position of buildings in 17th and 18th century as described in inventories and other sources.

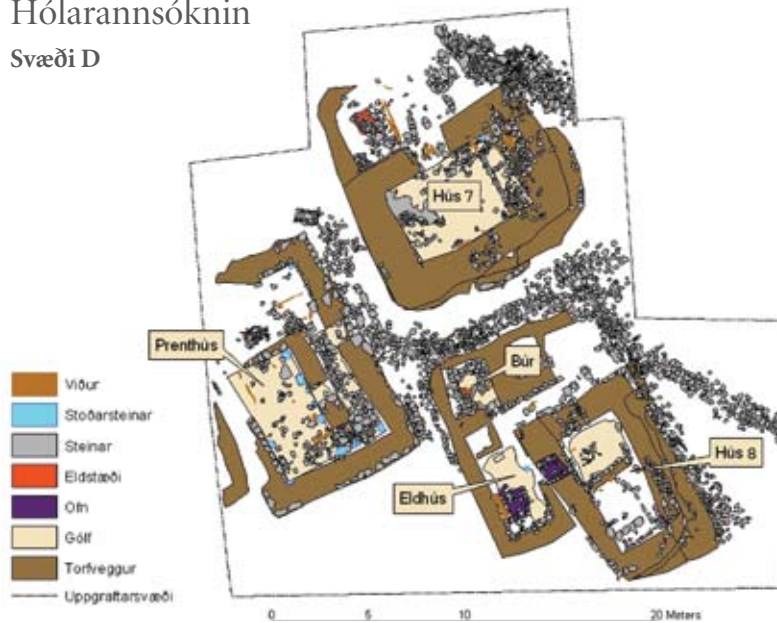
### Midden and artefacts

When a large community lives in a place for centuries, large middens (refuse dumps) naturally accumulate, and these generally tell an important story about the inhabitants' conditions and way of life. The Hólar midden has been disturbed somewhat over the centuries, but it remains an important source of relics of human habitation.

### Medieval feasting hall

At the bottom of the midden, layers of human habitation from the 10th century were uncovered. Above these lie the well

## Hólarannsóknin Svæði D



preserved remains of a medieval structure, the earliest yet to be uncovered at the site. The structure is unusual in many ways: for instance it is a free-standing single building, it is roughly square in shape, and has two doorways, one at either gable, all of

which is different from known vernacular buildings of that time period. The building has been interpreted as a possible feasting hall or a structure with a special function of some sort. Further research will be carried out on the building in coming years.



Printing House



House 7



Kitchen



House 8

### Research on artefacts

In addition to evidence of age, research on artefacts can provide diverse information on use of materials, crafts, commerce, economic prosperity, and contacts within the country and abroad.

Over 30,000 artefacts have been unearthed, dating from the middle ages to the 19th century: clay vessels, clay pipes, stone implements, iron utensils, keys, toys, chessmen, and various articles relating to clothing, such as buttons, beads, textile

fragments, leather shoes and gold thread. Many of the artefacts are imported from abroad: all the clay pots, for instance, are from the Netherlands, Germany or England.





### Tobacco

Experts at the Hólar Project are busily analysing the finds, and analysis of the clay pipes is nearing completion. About 2,500 shards of clay pipes have been unearthed at Hólar; most are fragments of pipe stems, but a few well-preserved pipe bowls have also been found. Many are ornamented, and some bear a stamp on the heel. Such stamps, ornamentation and the size of the pipe bowl can provide evidence of their origins.

Most of the pipes which have been analysed are from the Netherlands, while

fragments of English, German and Danish pipes have also been found. The pipes date from the 17th and 18th centuries.

### Printing-house

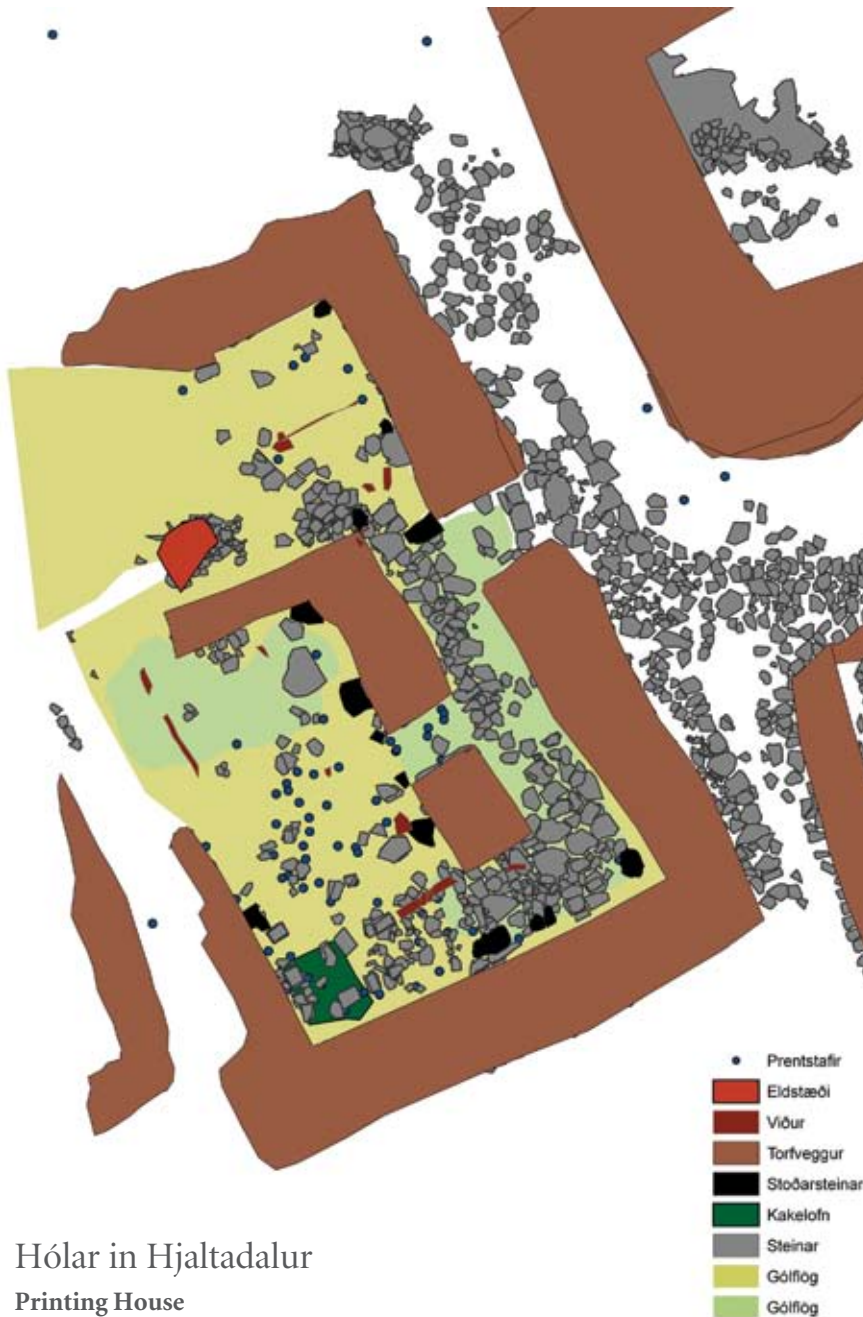
Study of the printing-house at Hólar, the cradle of printing in Iceland, has yielded much interesting evidence. In the early 17th century the printing-house was a well-constructed building with a tiled floor, glass windows and a tiled stove (kachelöfen). The building was constructed of turf and rock, with a fully-panelled interior. In the period 1600-1800, at least



three different building phases can be discerned.

At least 1,400 pieces of type have been unearthed; the more recent they are, the better preserved. The type is lead, but one wooden letter B has also been found, probably from the first printing-house, where the first Icelandic translation of the Bible (“Guðbrandur’s Bible”) was printed in the 1584. Pieces of print have also been found scattered around outside the printing-house. Many other artefacts were also unearthed from the floor layers, such as leather for bookbinding, clay pipes, clay vessels, candle sockets, buttons and leather shoes.

The Hólar printing press is believed to have been brought to Iceland around 1530, on the initiative of Bishop Jón Arason, the last Catholic bishop of Hólar before the Reformation. The press is believed to have been at Hólar initially. It was the property of the Rev. Jón Mattheusson from Sweden, who became pastor of Breiðabólstaður in Vesturhóp in 1535, and ran the press there until his death in 1567. Two leaves are extant which are believed to have been printed in the time of Bishop Jón Arason, from the *Breviarium Holense*. The oldest book printed in Iceland which survives complete is *Passio, það er píning*





*vors herra Jesu Christi, sex predikanir, útskrift af Antonio Corvino* (The Passion of our Lord Jesus Christ, six sermons by Antonio Corvino), printed at Breiðabólstaður on the initiative of Bishop Ólafur Hjaltason (1552-1569).

Jón Mattheusson's son, Jón, inherited the printing press, which was still at Breiðabólstaður when the Rev. Guðbrandur Þorláksson became pastor there. When he was appointed Bishop of Hólar (1571-1627), he had Jón move to Hólar

with the press. Bishop Guðbrandur is believed to have bought the press from Jón, and owned it personally from 1593. The bishop had improvements made to the press, and publishing flourished at Hólar during his episcopate. About 90 books were published in his time, and his successors continued the good work. In 1589 Bishop Guðbrandur had the press moved to Núpafell in Eyjafjörður, where it remained for three or four years before being returned to Hólar.

#### **Tiled stove (kachelöfen)**

In the printing-house, clay tiles and tile-shards were found, which were from a large German tiled stove. These are the oldest such tiles found in Iceland. Such stove tiles are very rare finds in Iceland.

The oldest form of the tiled stove or kachelöfen was like an open hearth, but they gradually evolved into imposing closed stoves, whose appearance reflected fashions in interior decoration. Such stoves were the preserve of the wealthy. A kachelöfen was a striking feature, while also providing a good source of heat.

Tiled stoves were often ornamented: around 1500 tiles with Biblical scenes in the Gothic style were in use, while secular themes were also seen. The images of-



ten formed a set. Around 1550 the Renaissance style became dominant in the Nordic world: clay tiles with classically-inspired motifs became popular, while religious themes also remained common. At that time the tiles were generally glazed

in black or dark green.

The stove tiles from the printing-house date from about 1550-1650. The oldest shards probably date from the time of Bishop Guðbrandur (1571-1627). Many are ornamented: among the

themes are the Cardinal Virtues. At Hólar four tiles have been unearthed, depicting Charitas (charity/love), Temperantia (temperance), Spes (Hope) and Iustitia (justice).



# Interdisciplinary approaches

As stated in various parts of the exhibition, a range of methods is used in research on archaeological finds, involving many different fields of scholarship.

## Entomological analysis

Analysis of insect remains can yield evidence of the conditions in the building excavated, e.g. humidity and temperature, and the function of the building.

Some insects flourish in proximity with human beings, others with animals. They are highly sensitive to environmental changes, and hence they can provide an indication of climate and even vegetation at different periods.

## Tephrochronology

Layers of volcanic ash (tephra) are a useful tool in dating archaeological remains.

In Iceland, layers of tephra deposited in volcanic eruptions can often be dated with great accuracy with reference to other historical sources, and so anything found beneath the layer of tephra is known to be from before that date.

## Pollen research

Study of pollens can provide evidence of climate, vegetation and human influence



*Tephra layers.*



*Button from Hólar.*



*C-14 sampling.*



*Evidence of marrow extraction.*



*Worked bone.*



*Clay-pipe stems.*

on the environment at different periods. A total of about 450 different pollens are found in Iceland, of which 90 are believed to have been introduced to the island by Man.

### **Radiocarbon dating**

Using radiocarbon (C14) analysis, organic remains can be dated with great accuracy, by measuring the decay of a radioactive isotope, indicating how long ago the organism was alive, and absorbing Carbon 14. Radiocarbon dating is in a constant

process of evolution, and grows ever more precise.

### **Zooarchaeology**

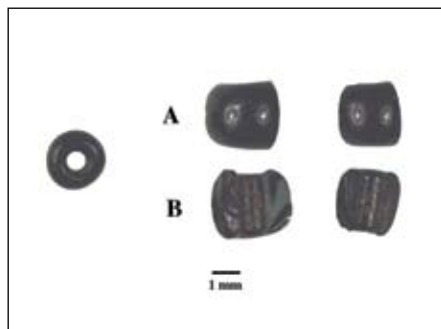
Animal bones from archaeological sites provide evidence of diet, the livestock that was kept, and how much of the diet derived from domestic animals, and how much from hunting/fishing. Zooarchaeology provides evidence of how people made their living, and how prosperous they were.

### **Placenames**

From time immemorial, man has always named the places around him. Place-names can provide evidence of the natural environment and how it has changed. They also yield knowledge of human habitation, ways of life, folk custom, legends and folk beliefs.

### **DNA**

Analysis of mitochondrial DNA in unearthed human bones has opened up a whole new area of research into people's geographical origins, kinship, genetic characteristics, etc.



*Glass pearls.*



*Golden thread.*

# MELIKWADI

Mall 1887

Melikwadi  
Kuching  
1. Melikwadi 1887  
2. Melikwadi 1888  
3. Melikwadi 1889  
4. Melikwadi 1890  
5. Melikwadi 1891  
6. Melikwadi 1892  
7. Melikwadi 1893  
8. Melikwadi 1894  
9. Melikwadi 1895  
10. Melikwadi 1896  
11. Melikwadi 1897  
12. Melikwadi 1898  
13. Melikwadi 1899  
14. Melikwadi 1900  
15. Melikwadi 1901  
16. Melikwadi 1902  
17. Melikwadi 1903  
18. Melikwadi 1904  
19. Melikwadi 1905  
20. Melikwadi 1906  
21. Melikwadi 1907  
22. Melikwadi 1908  
23. Melikwadi 1909  
24. Melikwadi 1910  
25. Melikwadi 1911  
26. Melikwadi 1912  
27. Melikwadi 1913  
28. Melikwadi 1914  
29. Melikwadi 1915  
30. Melikwadi 1916  
31. Melikwadi 1917  
32. Melikwadi 1918  
33. Melikwadi 1919  
34. Melikwadi 1920



Melikwadi

0 1000 2000 Stades

London Street

Legend

Water  
Road  
Field  
Forest  
Meadow  
Pasture  
Swamp  
Lake

Water  
Road  
Field  
Forest  
Meadow  
Pasture  
Swamp  
Lake

Water  
Road  
Field  
Forest  
Meadow  
Pasture  
Swamp  
Lake